



**Kuala Lumpur, Malaysia**  
**25-29 August 2024**



50th World Congress of the International Society of Surgery ISS/SIC

# **International Surgical Week**

The World's Congress of **Surgery**

[isw2024.org](http://isw2024.org)

Jointly organized with the 51st Annual Scientific Congress of the  
College of Surgeons Academy of Medicine of Malaysia (CSAMM)

# **ABSTRACT VOLUME**

**International Society of Surgery ISS / SIC**  
and its Integrated Societies

IAES - International Association of Endocrine Surgeons  
IATSIC - International Association for Trauma Surgery and Intensive Care  
IASMEN - International Association for Surgical Metabolism and Nutrition  
BSI - Breast Surgery International  
ISDS - International Society for Digestive Surgery  
ASAP - Alliance for Surgery and Anesthesia Presence

**#ISW2024KualaLumpur**

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**isw2024.org**

# **Abstract Volume ISW 2024**

## **International Surgical Week ISW 2024, Kuala Lumpur, Malaysia**

**25 – 29 August 2024**

**Kuala Lumpur, Malaysia, 25 - 29 August 2024**

held by the

**INTERNATIONAL SOCIETY OF SURGERY ISS/SIC**  
and its Integrated, Associated and Participating Societies

incorporating the  
**51<sup>st</sup> Scientific Congress** of the  
**College of Surgeons Academy of Medicine of Malaysia CSAMM**

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<b>ASAP</b>	Alliance for Surgery and Anesthesia Presence Miliard Derbew, Ethiopia / Gerald Henry, Malaysia <a href="http://www.asaptoday.org">www.asaptoday.org</a>

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<b>CSAMM</b>	College of Surgeons Academy of Medicine of Malaysia <a href="http://csamm.org.my/">http://csamm.org.my/</a>
<b>FELAC</b>	Federación Latinoamericana de Cirugía Italo Braghetto, Chile / Samuel Shuchleib, Mexico / Eduardo Montalvo Jave, Mexico / Natan Zundel, Colombia <a href="http://www.felacred.org">www.felacred.org</a>
<b>IASSS</b>	International Association of Student Surgical Societies Sulé Burger, South Africa / Jessica Davies, South Africa / Yuki Julius Ng, Malaysia <a href="http://www.iasss.org">http://www.iasss.org</a>

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and their Representatives in the Program Committee of ISW 2024

<b>AAST</b>	American Association for the Surgery of Trauma Eileen Bulger, USA <a href="http://www.aast.org">www.aast.org</a>
<b>ACS</b>	American College of Surgeons Krista L. Kaups, USA <a href="http://www.facs.org">www.facs.org</a>
<b>APIMSF</b>	The Ambroise Paré International Military Surgery Forum Horst-Peter Becker, Germany / Kosala Somaratne, Sri Lanka / Norman M. Rich, USA <a href="http://www.apimsf.org">www.apimsf.org</a>
<b>AWS</b>	Association of Women Surgeons Christine Laronga, USA / Chantal Reyna, USA <a href="http://www.womensurgeons.org">www.womensurgeons.org</a>
<b>ISBI</b>	International Society for Burn Injuries David Greenhalgh, USA / David N. Herndon, USA <a href="http://www.worldburn.org">www.worldburn.org</a>

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The Authors' Index lists the presenting authors of the submitted Abstracts and indicates the Session Numbers in which the presentation is given (e.g. 55.03 refers to Session Number 55, Presentation Number 3).

**PW...** refers to Poster Walk presentations. The Poster Walks are organized by the various societies and posters in this category are briefly discussed during the session.

**PE...** refers to abstracts included in the Poster Exhibition of the Congress but not presented within a regular Session.

The Congress Program ISW 2024 lists all presentations by the session numbers which serve as a reference to the Abstract.

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<b>Kumar Bagaria</b> Dinesh, India	PW 3.04	<b>Mohd Nasir</b> Nur Fatin Najlaa, Malaysia	168.03
<b>Kumar Khanna</b> Ajay, India	71.02, PW 2.23		PE 027, PE 207
<b>Kumar Rajanthra</b> Saravana, Malaysia	PE 248	<b>Mok</b> Chi Wei, Singapore	30.01
<b>Kumar Shah</b> Bikash, Nepal	PE 195	<b>Momose</b> Yuzuko, Japan	123.06
<b>Kumar Yadav</b> Sanjay, India	62.01, 68.02, PE 169	<b>Monrabal Lezama</b> Manuela, Argentina	121.01
	PE 331	<b>Mori</b> Akira, Japan	107.06
<b>Kuo</b> Ting-Chun, Taiwan	66.03, PW 8.06	<b>Moro</b> Kazuki, Japan	PE 170
<b>Kwak</b> Han Deok, South Korea	115.014	<b>Mothayapan</b> Prasad, Malaysia	PE 134
<b>LLL</b>		<b>Mudarisov</b> Rinat, Russia	17.04
<b>Lai</b> Carol Man-Sze, Hong Kong	PE 069	<b>Mui</b> Jasmine, Australia	46.02
<b>Lai</b> Szu-Tsen, Taiwan	PE 142	<b>Mukohyama</b> Junko, Japan	89.02
<b>Lai</b> Wai Yin, Hong Kong	PE 171	<b>Munoz Wilson</b> Daniela, USA	66.07
<b>Lai</b> Szu-Tsen, Taiwan	PW 3.05	<b>Murai</b> Kaiki, Japan	PE 292
<b>Latifi</b> Rifat, USA	123.03, 123.05, PW 5.08, PE 258	<b>Musafir</b> Hamda, UAE	PE 009
<b>Lau</b> Siew Ping, Malaysia	PW 3.02	<b>Muzić Radović</b> Vedrana, Croatia	PE 155
<b>Lea</b> Kang Yee, Malaysia	PE 222	<b>NNN</b>	
<b>Lee</b> Jun Sung, South Korea	PE 346, PE 347	<b>Nabil</b> Mohammad Azmi, Malaysia	PW 2.25
<b>Lee</b> Lian Wei, Malaysia	97.05	<b>Nagata</b> Takuya, Japan	71.01
<b>Lee</b> Wynne Yu, Singapore	PE 090	<b>Nagireddy</b> Tejus v, India	26.04, PW 1.11
<b>Ler</b> Pang Xin, Singapore	PE 051	<b>Naidu Nadarajan</b> Dinesh, Malaysia	PE 003
<b>Li</b> Qian, China	PW 1.23	<b>Nakamura</b> Masanori, Japan	PE 251
<b>Liebert</b> Cara, USA	66.05	<b>Nandury</b> Bhargav Chandra, India	PE 202
<b>Lim</b> Yee Siew, Malaysia	27.01	<b>Nerlander</b> Maximilian, Sweden	159.04
<b>Lim</b> Raymond Zhun Ming, Malaysia	125.02	<b>Ng</b> Jyi Cheng, USA	161.05, PW 1.08
<b>Lin</b> Gang-Hua, Taiwan	PE 084	<b>Ng</b> Zer Liang, Malaysia	PE 237
<b>Lin</b> Zhimin, Singapore	PW 10.03	<b>Nielsen</b> Stanton, USA	20.07
<b>Ling</b> Chieng Loo, Malaysia	PE 020, PE 185	<b>Ninomiya</b> Riki, Japan	89.05
<b>Liu</b> Long, China	169.01, PE 259	<b>Niu</b> Anita, Australia	PE 095
<b>Loh</b> Qiang Lin, Malaysia	87.02	<b>Nobe</b> Rie, Japan	PE 074
<b>Londero</b> Ambrogio P., Italy	PE 234	<b>Nur Atira</b> K, Malaysia	PW 4.06
<b>Long</b> Kristin L., USA	PE 085	<b>Nur Khalip</b> Azwin, Malaysia	PE 023
<b>Luitel</b> Prajwol, Nepal	158.04	<b>Nur Nahsuhah Binti Zainal Abdin</b> , Malaysia	PW 2.13
<b>Luo</b> Bin, China	PE 114	<b>Nylén</b> Carolina, Sweden	20.03
<b>MMM</b>		<b>Nyman</b> Johan, Sweden	161.02
<b>Ma</b> Lorraine Wai Yan, Hong Kong	62.03	<b>OOO</b>	
<b>Macek</b> Martin, Sweden	66.04	<b>Ogizbayeva</b> Alina V., Kazakhstan	PE 329
<b>Maizatul</b> Aliaa, Malaysia	97.01	<b>Okabayashi</b> Koji, Japan	115.012
<b>Mande</b> Sharvari, India	PW 5.10	<b>Okada</b> Manabu, Japan	PW 10.12, PE 083
<b>Mano Zac</b> Mathews, India	PE 124	<b>Okamoto</b> Hirotaka, Japan	PE 281

**Okuno** Kota, Japan 87.08  
**OMAROV** TARYEL, Azerbaijan 87.07  
**Omi** Yoko, Japan PW 10.11  
**O'Neill** Christine, Australia PW 9.01  
**Onoda** Naoyoshi, Japan 36.06  
**Orbelian** Liudmila, Russia PW 1.17  
**Orimoto** Hiroki, Japan 107.03  
**Osei-Poku** Dorcas, Ghana 68.07  
**Oshiro** Kenichi, Japan PE 061  
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**Paiella** Salvatore, Italy 123.04  
**Pal Singh** Somendra, India 97.04  
**Panyko** Arpád, Slovakia PW 2.06, PE 302, PE 304  
**Papachristos** Alex, Australia 84.01  
**Parfenov** Anton O., Russia 137.02  
**Park** Brittany, New Zealand 37.06, 145.01, PE 013  
**Paterson** Claudia, New Zealand PW 1.01  
**Pavlyk** Ihor, Ukraine PE 275  
**Pérez Gómez** Lucía, Spain 169.07  
**Pilecki** Grzegorz, Ukraine 137.07  
**Pitesa** Renato, New Zealand PW 2.26, PE 269  
**Pocevski** Božidar, Serbia, Republic of PE 290  
**Pooja G** , India PE 287  
**Premkumar** Monisha Tarini, UK PE 210  
**Priyadarsini Behera** Dibya, India PE 203  
**Procopio** Priscilla Francesca, Italy 12.06, PW 9.07  
**Ptasnuka** Margarita, Latvia PW 1.15  
**Puzhakkal** Shikhil, India PE 047

#### QQQ

**Qiu** Si-Yuan, China PE 160

#### RRR

**Rachel F** , Malaysia PE 039  
**Raduan** Firdaus, Malaysia 161.06  
**Raghunathan** Rajam, USA PW 10.09  
**Rahalkar** Ashwinee, India PW 10.13  
**Raj** Navin, Malaysia PW 1.10, PE 312, PE 313  
**Raja Othman** Raja Syahmi, Malaysia PE 198  
**Ramasamy** Pavitra, Malaysia 97.02, 97.06  
**Rangas Paran** Lavannya, Malaysia PE 205  
**Rao P S Venkatesh**, India 30.05  
**Rao Shirish**, India 160.06, PW 5.11, PW 5.15  
**Ravikumar** Krishnan, India 71.05, 68.01  
**Rebrova** D.V., Russia PE 072  
**Reddy** Pramod, South Africa PE 227  
**Ren** Tianrui, Australia 12.02  
**Reva** Viktor, Russia 159.01, 159.03, 159.06  
**Reyes** Natalia, Chile PW 4.20  
**Ricau Musi** Jorge Andres, Argentina PW 4.04  
 PE 010, PE 011  
**Rodríguez** José Manuel, Spain 20.08, PE 068  
**Rodríguez González** José Manuel, Spain PW 10.10  
**Rodriguez Schaap** P. M., Netherlands PE 113  
**Rome** Cambia, USA 47.02  
**Roy** Shubhajeet, India 137.05, 145.03

#### SSS

**Sabaretnam** Mayilvaganan, India 87.01, PE 327  
**Sada** Alaa, USA PW 8.07, PE 089  
**Said** Surita, Malaysia PE 212  
**Sakamoto** Kyoko, Japan PW 1.04  
**Sallam** Ibrahim, Egypt PE 211  
**Sandelin** Kerstin, Sweden 46.04, 158.06

**Sanmugachandran** Visalini, Malaysia PE 110, PE 241  
**Sato** Hiroshi, Japan 87.04  
**Saunders** Christobel, Australia 30.04  
**Savage** Alexandra, USA PE 087  
**Savla** Hritik R, India PW 2.11, PW 2.12, PE 018  
**Sawada** Yasunari, Japan PW 2.07  
**Saxena** Mehul, India 125.04  
**Scott-Coombes** David, UK PW 8.13  
**See Mee Hoong**, Malaysia 30.02  
**Selvarajan** Aroona, Malaysia PE 016  
**Selvarajoo** Ghaithiry, Malaysia 62.05, PE 055  
**Selvj Rajoo** Theyveeka, Malaysia PW 2.20  
**Serrao-Brown** Hazel, Australia PW 8.05, PW 10.06  
**Severtsev** Alexey, Russia 50.01, 50.02, PE 273  
 PE 278, PE 279

**Sevvanthee** A, Malaysia PW 4.10  
**Shahimin Bin Soaid** Mohd, Malaysia PE 059  
**Shahirah** Adilla MS, Malaysia PE 060  
**Sharir** Siti Aainaa, Malaysia PE 019  
**Sharma** Jyoti, India 160.04  
**Sharma** Pushkar, India PE 131  
**Shazmie** Tuan Naimi, Malaysia PE 031, PE 240  
**Shazwani AR** Nurul, Malaysia PE 025  
**Shi** Weiyi, China PE 161  
**Shibutani** Masatsune, Japan PW 2.05  
**Shikata** Shohei, Japan PE 192  
**Shinde** Ishaan, India PE 230  
**Shogen** Yusaku, Japan 27.06  
**Shukri** M. Z. Mohamad, Malaysia PE 024, PE 254  
**Shukri Bin Mior Hamzah** Mior, Malaysia PE 181  
**Shyuan** Cheong Hui, Singapore PW 4.18, PE 141  
**Sim** Christina Loo Poh, Malaysia PE 002  
**Singh** Kul Ranjan, India PW 9.10  
**Singh** Pankaj, India 161.01  
**Singh** Priyanka, India PW 8.12  
**Singh** Saumya, India 25.05, PE 320  
**Singh** Somendra Pal, India PE 177  
**Sivrajah Gridharan** Kanchana, Malaysia PW 3.01  
**Sleptsov** Ilya, Russia 20.06  
**Sobri** Nabila, Malaysia 25.04  
**Soh** Bennett, Singapore PW 10.03  
**Soltanzadeh-Naderi** Yasmin, Sweden 161.03  
**Sonbankoh** Sutida, Thailand 50.04  
**Song** Chin Vern, Netherlands 158.02  
**Sreekumar** Athulya Laila, India PE 075, PE 076  
**Srividya** A.Bhargavi, India 121.03  
**Sugitani** Iwao, Japan 20.04  
**Suhani** , India 46.03, 66.06  
**Suzuki** Tatsunori, Japan PW 1.24

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**Takayama** Satoru, Japan PW 2.02  
**Takou Horline** Bougoue, Cameroon PW 4.16  
**Tan** Xi Jin, Malaysia PE 028, PE 029, PE 030  
**Tan** Yee Wen, Malaysia PE 298  
**Tan Chor Lip** Henry, Malaysia PW 4.11, PE 156  
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**Tan Su-En** Grace, Singapore PE 062  
**Tarpley** Margaret J., USA PE 332  
**Telishevskiy** Anton, Russia PE 194  
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**Tengku Yusof** Tengku Nazim, Malaysia PW 3.07  
**Teoh** Keat How, Malaysia PE 111  
**Teoh** Yik Shen, Malaysia PW 4.05  
**Tharane** Chandra Keshavan, Malaysia PE 225  
**Thomas Jacob** Akhil, India PE 348



<b>Thongphataysack</b> Sommano, Laos	66.02
<b>Ting</b> Tee Shi, Malaysia	PW 4.09
<b>Tomiie</b> Yumi, Japan	PE 109
<b>Tong</b> Chai Wei, Australia	PE 097
<b>Torng</b> Neoh Yee, Malaysia	PE 220
<b>Trembach</b> Nikita, Russia	PW 5.12, PE 340
<b>Turial</b> Salmai, Germany	PE 056, PE 057

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<b>Udagawa</b> Daisuke, Japan	89.01
<b>Ueda</b> Junji, Japan	75.02
<b>Umo</b> Ian, Papua New Guinea	PW 5.02, PE 334
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#### VVV

<b>Vaghaiwalla</b> Tanaz, USA	PE 121
<b>Vaidya</b> Advait A., India	68.06, 115.15
<b>Vallimanalan</b> Gaushinee, Malaysia	PW 4.02, PE 014
<b>van de Berg</b> Daniël J., Netherlands	36.05, PE 104
<b>van de Warenburg</b> Milly, Netherlands	168.02
<b>van Dijkum</b> Els Nieveen, Netherlands	PW 10.02
<b>van Duinen</b> Alex J., Norway	PW 5.06
<b>Velázquez Fernández</b> David, Mexico	PW 8.01
	PW 8.08, PE 098
<b>Venkatesan</b> Preethi, India	PE 295
<b>Viknesh</b> Muthu, Malaysia	PE 216

#### WWW

<b>Wada</b> Norihito, Japan	145.04
<b>Wak</b> Dickson Rollef, Papua New Guinea	125.05
<b>Walsh</b> Danielle S., USA	PW 6.06, PW 6.07
<b>Wang</b> Robert C., USA	PE 123
<b>Wang</b> Rongzhi, USA	PE 108
<b>Wang</b> Tim Hsu-Han, New Zealand	71.04, 107.04
<b>Wang</b> Rongzhi, USA	PW 9.08
<b>We</b> Shoun-Jwi, Malaysia	PE 034
<b>Wetzig</b> Neil, Congo	PW 5.14, PE 333
<b>Wong</b> Pak-chiu, Hong Kong	115.13
<b>Wong</b> Tiffany, Hong Kong	PE 172
<b>Wongkhumjan</b> Thanakan, Thailand	PE 184
<b>Wu</b> Ming-Hsun, Taiwan	PE 080

#### XXX

<b>Xu</b> Shuqin, China	75.01
<b>Xuan</b> Hii Chan, Malaysia	68.08, PE 309

#### YYY

<b>Yadav</b> Sneha, India	PE 226
<b>Yahya</b> Zarif, New Zealand	PE 186
<b>Yamamoto</b> Atsushi, Japan	PE 288
<b>Yamanashi</b> Yuki, Japan	60.03
<b>Yamashita</b> Hiroyuki, Japan	PE 099
<b>Yamazaki</b> Haruhiko, Japan	PW 8.02
<b>Yan</b> Xiaopeng, China	75.07, 115.09, PW 1.02, PW 1.13
	PW 1.26
<b>Yang</b> Lei, China	PE 249
<b>Yang</b> Michael, Australia	12.04
<b>Yao</b> Woo Sze, Malaysia	PE 189
<b>Yao</b> Mingyue, China	PE 115
<b>Yap</b> Wendy, Brunei Darussalam	PW 2.04
<b>Yazit</b> Aishah, Malaysia	125.06
<b>Yokoe</b> Takamichi, Japan	158.05
<b>Yokoi</b> Keito, Japan	PE 127
<b>Yoshida</b> Yusaku, Japan	PE 067
<b>Yu</b> Joyce, Australia	PE 126

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<b>Zadey</b> Siddhesh, USA	160.05, PW 5.04
<b>Zaghloul</b> Zahraa, Brunei Darussalam	PE 343
<b>Zaiasraf bin Zainurin</b> Muhammad, Malaysia	PE 050
<b>Zainudin</b> Syaza, Malaysia	PE 201, PE 224
<b>Zhang</b> Jing Hong, Australia	PE 088
<b>Zhang</b> Jiujiu, China	PE 143
<b>Zhang</b> Miaomiao, China	115.02, 137.04, PW 1.03
	PW 2.27, PE 307
<b>Zhang</b> Qiang, China	36.02, PW 8.10, PW 9.12, PE 100
	PE 101
<b>Zulkifli</b> Nurhamizah, Malaysia	PE 004

## 12.01

### DOES A RESTRICTIVE DIAGNOSTIC WORK-UP FOR PALPABLE THYROID NODULES LEAD TO A DIFFERENT THYROID CANCER PATIENT POPULATION

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#### Introduction

The 2015 American Thyroid Association (ATA) guidelines recommend de-escalating treatment for papillary thyroid cancer (PTC). However, their recommendation is based on population studies from the U.S. In the Netherlands, thyroid patients are only referred when a palpable nodule is detected. The diagnostic work-up for thyroid malignancies is more restrictive potentially leading to the selection of relative more advanced tumors. This study aims to assess how this restrictive referral pattern influences the thyroid cancer population and staging

#### Methods

From the Dutch national cancer registry, patients with PTC diagnosed between 2005 and 2015 were included. Patients were classified as low-risk or high-risk PTC based on the ATA risk-stratification. Baseline characteristics, disease-free interval (DFI), and overall survival were compared between both groups. Furthermore, the TNM-stage of the Dutch and U.S. patients were given.

#### Results

Of the 3368 patients included, 1813 (53.8%) had a low-risk PTC, and 1555 (46.2%) had a high-risk PTC. In the U.S. population, T1 tumors occurred in 63.4% of the patients, versus 45.8% T1 tumors in Dutch patients. T2 (34.9% vs. 22.0%) and T3 (19.3% vs. 14.6%) tumors were more prevalent in the Dutch PTC population. Central (10.2% vs. 6.7%) and lateral (16.6% vs. 12.5%) lymph node metastases occurred more in Dutch patients. After multivariate Cox regression analysis, only age >55 years (hazard ratio [HR], 2.1; 95% confidence interval [CI], 1.6-2.8;  $p < .001$ ) in low-risk patients, and N1a- (HR, 2.9; 95% CI, 1.2-6.7;  $p = .015$ ) and N1b-stage (HR, 2.3; 95% CI, 1.7-3.2;  $p < .001$ ) were independently associated with recurrence.

#### Conclusion

which. A restrictive diagnostic strategy increases the likelihood of high-risk features in patients with DTC, which emphasizes the need for caution to apply guidelines from other nations. We advocate a de-escalation strategy for DTC patients, but the effect of diagnostic strategies should be considered when counseling for hemithyroidectomy.

## PROPHYLACTIC CENTRAL LYMPH NODE DISSECTIONS FOR SMALL PAPILLARY THYROID CANCERS REDUCES SUBSEQUENT RADIOACTIVE IODINE THERAPY: A BINATIONAL COHORT STUDY

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### INTRODUCTION

For small papillary thyroid cancers (PTCs) with no lateral nodal involvement, American Thyroid Association (ATA) guidelines recommend performing prophylactic central lymph node dissection (CLND) if it influences further management. Our large, binational study explored to what extent performing prophylactic CLND for small PTCs can affect subsequent therapy, including completion thyroidectomy and adjuvant radioactive iodine (RAI) ablation.

### MATERIALS & METHODS

Adults with small papillary thyroid cancers ( $\leq 4\text{cm}$ ) were identified from over 42 thyroid surgery centres across the prospectively maintained Australian & New Zealand Thyroid Cancer Registry (ANZTCR) between 2017-2023. Patients were excluded if they had clinical nodal involvement or distant metastases. The rate of completion thyroidectomy, RAI ablation and surgical complications were compared between patients with and without CLND.

### RESULTS

Of 1,636 patients with small PTCs (78% female; median age 52 years), 889 (55%) received a total thyroidectomy, 546 (33%) received a hemithyroidectomy only and 201 (12%) received a completion thyroidectomy. Prophylactic CLND was performed for 747 patients (46%). Of those treated with a hemithyroidectomy, the rate of completion thyroidectomies was similar between patients with and without CLND ( $p=0.34$ ). Instead, decision for completion thyroidectomy was driven by lymphovascular invasion (adjusted relative risk [aRR] 2.84;  $p<0.001$ ), multifocality (aRR 2.12;  $p<0.001$ ) and tumour size (aRR 1.03;  $p<0.001$ ). However, performing CLND resulted in a 10% lower risk of a patient being recommended RAI ablation (aRR 0.90; 95%CI 0.86-0.94;  $p<0.001$ ). Furthermore, CLND was not associated with higher risks of recurrent laryngeal nerve injury ( $p=0.36$ ), permanent hypoparathyroidism ( $p=0.23$ ), post-operative infection ( $p=0.29$ ) or return to theatre ( $p=0.86$ ).

### CONCLUSION

In specialised, high caseload settings across Australia and New Zealand, prophylactic CLND for T1, T2 papillary thyroid cancers reduced subsequent RAI therapy, even though it did not influence the rate of completion thyroidectomy. There were no additional risks of surgical complications post CLND.

## DIFFERENCES IN TREATMENT OUTCOMES BETWEEN ULTRASOUND- GUIDED PERCUTANEOUSLY MICROWAVE ABLATION AND ENDOSCOPIC THYROIDECTOMY FOR PATIENTS WITH BENIGN EUTHYROID SOLITARY NODULES.

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### Introduction:

Percutaneous ultrasound guided microwave ablation(MWA) for benign solitary thyroid nodules is the newest treatment modality having faster recovery, fewer complications, better protection of thyroid function, superior aesthetic results relative to open thyroidectomy. However, differences in treatment outcome between MWA and endoscopic thyroidectomy vestibular approach (TOETVA) for patients with benign euthyroid solitary nodules remains unknown. We are sharing initial results from our prospective matched cohort study.

### Methods:

Prospective study at 3 time points in patients planned for treatment (pre-operative, 1 week, 12 weeks and 12 months). Data were collected at a tertiary teaching institute in India. Patients ranged from 18-60 years with a diagnosis of benign euthyroid nodule undergoing MWA or TOETVA. Exclusion criteria were: pre-existing vocal cord abnormalities, undergoing surgery for recurrent nodules, Neuro-muscular disease affecting swallowing ability. Outcome measures were clinical and comparison of thyroid related quality of life using ThyPRO39hin and swallowing related quality of using SWAL-QoL.

### Results:

Of the 36 patients included, 20 underwent TOETVA and 16 MWA. Both groups were comparable in terms of demographic and clinicopathological profile. The nodule volume reduction rate at 12 months after MWA was 75.10%+/-8.8% and 100% for TOETVA ( $p<0.5\%$ ). The mean pre-operative ThyPRO39hin and SWAL-QoL scores were comparable in all domains between the two groups. Mean scores on post operative day 7 were significantly better in MWA but became comparable at 12 weeks. However, at the end of 12 months the scores became significantly better in TOETVA group as compared to MWA group.

### Conclusion:

Clinical outcomes, thyroid related quality of life and swallowing related quality of life after TOETVA and MWA has not been reported in literature. Our findings suggest that TOETVA results in significant superior clinical outcomes, thyroid related quality of life and swallowing related quality of life.

## 12.04

### LYMPH NODE YIELD AS A QUALITY-CONTROL INDICATOR IN THYROID SURGERY

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#### Introduction

Lymph node yield (LNY) is a validated quality-control metric in colorectal cancer, reflecting adequate oncological resection. No formal guidelines exist in the context of central and lateral compartment lymph node dissection for papillary thyroid cancer (PTC). This study aimed to investigate the association between LNY and regional recurrence in PTC patients, and to define a threshold LNY that indicates adequate compartmental lymphadenectomy.

#### Methods

We performed a retrospective analysis of prospectively collected clinical, pathological and follow-up data on PTC patients, surgically treated with central (CLND) or lateral compartment (LND) (level II, III, IV, Vb) dissection between 1992 and 2022. The cohort was stratified by local recurrence, defined as pathologically-proven nodal disease in a previously dissected lymph node level. Patients with new nodal disease in an undissected nodal level were included in the 'no recurrence' group. Multivariate logistic regression analysis was performed to examine the relationship between nodal yield and local recurrence.

#### Results

1208 patients were included in the CLND group, and 183 in the LND group. On univariate analysis, male gender, tumour size, T-stage, gross extrathyroidal extension, extranodal spread, lymph node ratio and lymph node yield were all significantly associated with local recurrence. ROC curve analysis was used to define the optimal LNY cut-point associated with local recurrence. After controlling for all significant prognostic factors on multivariate analysis, a central LNY $\leq$ 3 (OR 2.19, 95% CI 1.15-4.17,  $p=0.018$ ) and lateral LNY $\leq$ 20 (OR 2.45, 95% CI 1.24-5.31,  $p=0.007$ ) remained independent adverse prognostic factors for local recurrence.

#### Conclusions

This study highlights the importance of systematic approach to compartmental lymphadenectomy in PTC. Our findings suggest that minimum LNY thresholds ( $>3$  for central,  $>20$  for lateral) may serve as quality-control indicators of adequate dissection.



**DEVELOPING A LARGE-SCALE THYROID CANCER QUALITY IMPROVEMENT INITIATIVE**

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**Introduction:** Over the past two decades, international practices for thyroid cancer have shifted to address concerns about overdiagnosis and overtreatment of low-risk malignancies. Despite these changes, disparities exist worldwide in thyroid cancer care. This study aimed to identify key areas for improvement in the quality of surgical thyroid cancer care in the United States at the state level.

**Methods:** We leveraged an established state-wide Surgical Quality Collaborative (SQC) focused on improving outcomes and healthcare utilization through standardized (nurse-abstracted) data collection on 20% of select surgical procedures, analytics, benchmarking, and initiatives. A team of nine thyroid cancer and quality improvement (QI) experts identified and introduced ten thyroid cancer-specific variables in January 2023 as potential quality measures: preoperative thyroid nodule cytology (FNA), post-operative surgical pathology, TNM stage, tumor size, margin status, extrathyroidal extension, lymph node status, postoperative complications during hospitalization and within 30-days, and documented follow-up treatment or surveillance plans.

**Results:** Over the initial 9 months of data collection, 137 thyroidectomies were performed for thyroid cancer in 36 hospitals by 65 surgeons. Notably, pre-operative FNA was not performed in 33.9% (n=40) of patients with thyroid cancer on final pathology. When evaluated by tumor size, 70.4% (n=19) of patients with <1cm thyroid cancers underwent total thyroidectomy and 17.6% (n=3) of patients with cancers >4cm underwent thyroid lobectomy. Positive tumor margins were found in 16.8% (n=21) of patients on final pathology report, and 19% (n=26) of patients lacked documented follow-up or surveillance plans within 30 days post-surgery.

**Conclusion:** These findings highlight several areas for large-scale QI in thyroid cancer care including utilization of pre-operative FNA, extent of index thyroidectomy based on tumor size, and practices to ensure appropriate cancer surveillance. The SQC offers a model for establishing thyroid cancer QI initiatives across diverse healthcare settings in other states and countries.

## IS NOT-SURGICAL TREATMENT ALWAYS SAFE IN UNIFOCAL CLINICALLY T1A/NODE NEGATIVE PAPILLARY THYROID CARCINOMA (PTC)?

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**Background.** Clinical management of unifocal cT1aN0 papillary thyroid carcinoma (PTC) is controversial, being active surveillance (AS) and/or thermal ablation (TA) possible alternative to thyroid lobectomy (TL). However, non-surgical treatment does not allow evaluation of aggressive pathologic features or occult node metastases, which play a primary role as prognostic factors.

**Materials & Methods.** Among 4216 thyroidectomies for malignancy (January 2014- November 2023), TL plus ipsilateral central neck dissection (I-CND) was performed in 203 (4.8%) unifocal cT1aN0 PTCs. Completion thyroidectomy (CT) was accomplished in case of positive frozen section examination of removed nodes and within 6 months from index operation in presence of aggressive pathologic features.

**Results.** Nodal metastases (pN1a) were detected in 76 patients (37.4%). CT was performed as single or two-step procedure in 63 (31%) cases. The mean number of metastatic nodes was 2.6 (1-8). pN1a patients were significantly younger compared to pN0 patients (37.3±12.2 vs 43.9±11.7,  $p=0.001$ ). Multifocality, angioinvasion, aggressive variants and extracapsular invasion were detected in 69 (34%), 83 (40.9%), 41 (20.2%) and 5(2.4%) patients, respectively. Moreover, 89 (43.8%) patients presented ≥2 risk factors. At univariate analysis, age<40 years ( $p=0.001$ ) and multifocality ( $p=0.001$ ) were significantly associated with nodal metastases. After backward stepwise logistic regression, age<40 years (OR=4.04,  $p=0.001$ ) and multifocality (OR=5.45,  $p=0.001$ ) were identified as independent risk factors for nodal metastases.

**Conclusion.** Size alone is not enough to define clinical behaviour of PTC. Forty percent of unifocal cT1aN0 PTC unexpectedly showed combined aggressive pathologic features. AS and TA must be carefully evaluated to avoid undertreatment, especially in young population.

## 17.02

### **A SINGLE CENTER EXPERIENCE: RARE ANATOMICAL VARIANTS ENCOUNTERED DURING LAPAROSCOPIC CHOLECYSTECTOMY IN LOW RESOURCE CONDITIONS AND THE CONVENIENT CONCEPT OF THE SAFE ZONE OF DISSECTION**

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#### **Abstract**

##### **Introduction**

*The severity of surrounding adhesions, anomalous anatomy, and technical issues are considered the main factors that make cholecystectomy difficult. This study focused on determining the types and frequency of laparoscopic anatomical variations found during laparoscopic cholecystectomy in our limited-resources condition and defining the safe zone of dissection.*

##### **Method**

*The present prospective study was conducted at Al-Naqib Hospital in Aden/Yemen from 2012 to 2019. A total of 375 patients, comprising 355 females (94.7%) and 20 males (5.3%), presented with symptomatic gall bladder and underwent standard 4-port laparoscopic cholecystectomy. The discovered related regional laparoscopic variations were evaluated and recorded.*

##### **Result**

*Out of 375, there were 26 (6.9%) patients with laparoscopic anatomical variations, of whom 19 (73%) had vascular variations and 7 (27%) had ductal variations. Double cystic artery of separated origin 7 (28%), Moynihan's hump 6 (24%), double cystic artery of single origin 4 (16%), thin long cystic duct 4 (16%), subvesical duct 3 (12%), cystic artery hocking the cystic duct 2 cases (7.6%).*

##### **Discussion**

*Anatomical variations are to be expected at any location in the extrabiliary system and are not restricted to the hepatobiliary triangle. The safe zone of dissection is the main stage of anatomical variations and should be handled with care. The majority of the detected variants were associated with the cystic artery. An overlooked accessory cysto-biliary communication can cause complicated biliary leakage.*

##### **Conclusion**

*A surgeon's skills and knowledge of laparoscopic anatomical variants, which could be expected at any dissected zone, are essential for performing a safe laparoscopic cholecystectomy.*

**ENDOSCOPIC REPAIR OF DIASTASIS RECTI IN PATIENTS WITH CONNECTIVE TISSUE DYSPLASIA**

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*Introduction:* Ventral hernias are commonly associated with diastasis recti abdominis (DRA) requiring surgical repair. DRA is a common but understudied condition, often following pregnancy, prolonged physical activity or due to obesity. Despite recent advances in surgical management, hernia recurrence in patients with DRA remains high.

*Materials and Methods:* We operated on 80 patients with DRA. All patients presented with one or more musculoskeletal signs of connective tissue dysplasia, the most common of which were scoliosis, multiple joint dislocations, limb curvature, joint hypermobility syndrome, transverse flat foot, and arachnodactyly. Clinical examination revealed the following phenotypic and visceral signs of connective tissue dysplasia: astigmatism, mitral valve prolapse, myopia, malocclusion, atrophic scars (striae), and auricular deformities. We evaluated the efficacy of laparoscopic and endoscopic DRA repair combined with ventral hernia repair in patients with connective tissue dysplasia using minimally invasive techniques, including SCOLA, TESAR, eTEP, TARM, and non-prosthetic laparoscopic suturing.

*Results:* We developed a complex management system for surgical patients with DRA based on the severity of connective tissue dysplasia manifestations. No intraoperative complications were observed in the patient pool. The major postoperative complications were seroma in 18% and hematoma in 1.2% of patients after subcutaneous and sublay plasties, respectively.

*Conclusions:* Despite the simplicity of laparoscopic DRA closure, we encountered a cosmetic defect, the postoperative formation of a skin roll. Therefore, when preparing a patient with DRA for elective repair of anterior abdominal wall hernias, we believe it is necessary to identify patients with connective tissue dysplasia and personalize the choice for method and surgical technique, which together will significantly improve the treatment outcomes and patients' quality of life.

### CHOICE OF ANTERIOR ABDOMINAL WALL PLASTY IN CKD PATIENTS WITH INGUINAL HERNIAS

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*Introduction:* Surgical methods of hernia repair are similar in HD and non-dialysis patients. Although anterior abdominal wall hernia is a contraindication to PD, it is common in CKD patients receiving PD.

*Methods and Materials:* In our center, we divided CKD patients receiving PD and diagnosed with inguinal hernia into 3 groups according to the surgical technique used. Patients of all three groups were operated with eTER, TARR and Lichtenstein technique, respectively, and matched for age, gender, CKD severity, comorbidities, and hernia size.

*Results:* In Group 1, PD was resumed 2 days after surgery and was well tolerated. Patients in Group 2 and 3 received PD on postoperative days 5-7 at the earliest. The reason for temporary refusal of PD was post-TARR peritoneal healing time in Group 2 and PD-associated pain syndrome in the surgical area in Group 3. During that period, patients in both groups had to be preventively transferred to temporary HD, which required an additional hospital stay or transfer to a nephrology department for the placement of tunneled central venous catheter (TCVC) to initiate HD.

*Conclusions:* Endoscopic extraperitoneal hernia repair (eTER) in CKD patients receiving PD with a diagnosed anterior abdominal wall hernia has all the advantages of minimally invasive surgery over conventional surgery, in addition to avoiding HD. With eTER, there is a significantly reduced risk of infectious and thromboembolic complications associated with TCVC placement and hemodialysis. Patients need less medications, have a shorter hospital stay and rehabilitation period. Therefore, eTER could be recommended as a treatment of choice for anterior abdominal wall hernia repair in CKD patients receiving PD.



### IMPACT OF PRE-OPERATIVE RISK ASSESSMENT ON PATIENTS UNDERGOING EMERGENCY MAJOR ABDOMINAL SURGERY IN A REGIONAL AUSTRALIAN HOSPITAL

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#### Introduction

Routine preoperative risk assessment (RPRA) using objective risk prediction tools may improve the perioperative outcomes of Emergency Major Abdominal Surgery (EMAS). This project aims to identify whether the introduction of RPRA with the 'National Emergency Laparotomy Audit (NELA) Calculator' as standard of care for EMAS at a regional Australian hospital has improved postoperative outcomes, improved postoperative Critical Care Unit (CCU) utilisation, and impacted pre-operative palliative decision making.

#### Materials & Methods

A retrospective audit between September 2017 and August 2022 was performed of all adult general surgery patients planned for EMAS at Bendigo Health in regional Victoria, Australia. Operations for appendicitis, cholecystitis, trauma and diagnostic laparoscopy were excluded. Patients planned for surgery who did not proceed due to preoperative palliation were also included. Patient data including baseline demographics, preoperative NELA score, CCU admission and postoperative outcomes was collected and compared between patients undergoing surgery before and after the introduction of RPRA.

#### Results

691 patients were included in the analysis. Median NELA score was 5 (IQR 1.5-11.75). Amongst all patients assessed for surgery, 30-day in-hospital mortality was 7.09% and preoperative palliation rate was 2.60%. Following introduction of RPRA, the operative subgroup saw a significant reduction in unplanned CCU admissions, from 9.14% to 3.48% ( $p=0.044$ ). There was no significant change in rates of postoperative mortality, severe complications or planned CCU admissions.

#### Conclusion

Mortality and complication rates were not significantly reduced following introduction of RPRA. RPRA reduced rates of unplanned CCU admission. RPRA appears useful in guidance of preoperative palliative decision making, however larger, prospective auditing is required to fully assess its use in this context.

### **PERSISTENT ELEVATION OF PARATHYROID HORMONE AFTER CURATIVE PARATHYROIDECTOMY: AN EARLY SIGN OF RECURRENT PRIMARY HYPERPARATHYROIDISM**

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#### **Background:**

Up to 45% of patients may have persistently elevated parathyroid hormone (PTH) levels after curative parathyroidectomy for primary hyperparathyroidism (PHPT), although the clinical significance is unclear. We aimed to assess the long-term clinical significance of early persistently elevated PTH after parathyroidectomy.

#### **Methods:**

A prospectively collected institutional database was queried for patients who underwent parathyroidectomy for sporadic PHPT between 12/99-6/22 and had normal serum calcium levels at 6 months postoperatively. Demographic and clinical data were collected, including diagnoses associated with secondary HPT (gastrointestinal malabsorptive diseases, kidney disease, vitamin D deficiency). Patients were divided into two groups: normal PTH or elevated PTH at 6 months postoperatively. Rate of persistently elevated PTH, average time to PTH normalization, and time to recurrence were determined.

#### **Results:**

The final cohort included 1043 patients; 849 (81.4%) had normal PTH levels and 194 (18.6%) had persistently elevated PTH levels at 6 months postoperatively. Among 194 patients (mean follow-up: 50±53 months), 14 (7.2%) developed recurrent PHPT and 86 (44.3%) had normalization of PTH levels (median time to normalization: 12 months (IQR 9,15)). There was no difference in presence of diagnoses associated with secondary HPT between patients who had recurrent PHPT, normalization of PTH levels, or remained normocalcemic with persistently elevated PTH levels. Median time to recurrence was 22 months (IQR 11,48) for the 7.2% patients who developed recurrent PHPT (mean follow-up: 105±70 months), compared to 2.4% in the 849 patients with normal calcium and PTH levels at 6 months ( $p<0.001$ ).

#### **Conclusions:**

Following curative parathyroidectomy, persistent elevation of PTH levels is not uncommon. Although most patients have durable cure, it may be an early sign of persistent/recurrent PHPT. Long-term surveillance for recurrence is necessary.

**ASSOCIATION OF OBESITY AND THYROIDECTOMY-SPECIFIC PERIOPERATIVE OUTCOMES**Kelvin Memeh<sup>1</sup>; Sara Abou Azar<sup>2</sup>; Tanaz Vaghaiwalla<sup>3</sup><sup>1</sup>Department of Surgery, Methodist University Hospital, Methodist Cancer Institute, Memphis, TN, USA<sup>2</sup>Division of Endocrine Surgery, Department of Surgery, University of Chicago Medicine, Chicago, IL, USA<sup>3</sup>Division of Endocrine Surgery, DeWitt Daughtry Department of Surgery, University of Miami Miller School of Medicine, Miami, FL, USA

*Introduction:* The global incidence of obesity is rising. Previous studies reported the deleterious association of obesity and perioperative outcomes; however, research on thyroidectomy-specific outcomes remains scarce and limited to small institutional studies. The study seeks to evaluate the association between obesity and thyroidectomy-specific outcomes using a large real-world surgical outcomes dataset with appropriately classified BMI.

*Method:* A pooled thyroidectomy dataset was created by linking the 2016-2019 NSQIP General Participant User File (PUF) with the corresponding Targeted-Thyroidectomy PUF using the unique case numbers. Primary outcomes included rates of postoperative voice hoarseness (PVH), postoperative neck hematoma (PNH), and hypocalcemia. Secondary outcomes included operating room (OR) time and postoperative length of stay (LOS). BMI was evaluated as both continuous and categorical variables per WHO classifications. An inverse-probability-weighted (IPW) model was deployed to estimate the effect of obesity on the outcomes of interest. Sensitivity-analysis was performed for robustness of study results.

*Results:* Of 24,370 patients evaluated, average BMI was 30.4 with mean age of 51.8yrs, 77.5% female, and 71% non-Hispanic white. Univariate analysis showed patients with BMI>30 were more likely to suffer PVH (6.65 vs 5.78%,  $p=0.005$ ), PNH (2.09 vs 1.66%,  $p=0.014$ ), with no difference in hypocalcemia rates (5.98 vs 6.02%,  $p=0.903$ ). Fully adjusted multivariate IPW model showed BMI>30 was associated with higher rates of PVH (RR=1.14, 95%CI 1.03–1.25,  $p=0.014$ ) and PNH (RR=1.31, 95%CI=1.09–1.57,  $p=0.005$ ), but not hypocalcemia (RR=0.99, 95%CI=0.90–1.10,  $p=0.906$ ). Patients with BMI>30 had longer OR time (118 vs 112 minutes,  $p<0.001$ ) with no difference in LOS (28 vs 26.8hrs,  $p=0.056$ ). Our results were robust to sensitivity analysis with multivariable logistic and linear models.

*Conclusion:* This study fills a gap in literature by evaluating the association between obesity and thyroidectomy-specific outcomes using a large national cohort. A BMI>30 was associated with increased OR times, postoperative voice hoarseness, and neck hematoma.

## MITOCHONDRIAL- AND SKELETAL MUSCLE REMODELLING AFTER PARATHYROIDECTOMY IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM

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### Introduction:

Patients with primary hyperparathyroidism often complain of skeletal muscle weakness. Previous studies from our group have shown that proximal muscle strength performance improves after parathyroidectomy measured by timed stand test (TST) where the patient rises from a chair ten times as fast as possible. We study changes in skeletal muscle RNA expression after parathyroidectomy to unravel the mechanism behind muscle strength improvement.

### Materials and Methods:

21 women with pHPT, planned for surgery, were included in the study. Only postmenopausal women were included to control for hormonal differences. Muscle strength tests were performed, before and three months after surgery. MRI scans were done to study muscle volume and compositional changes after surgery. A muscle biopsy from m. vastus lateralis was taken before and three months after surgery, RNA was extracted and sent for sequencing. The changes before and after surgery were analysed with Wilcoxon signed rank test (non-normally distributed data).

### Results:

All patients had histologically proven parathyroid adenomas and were normalised in ionised calcium and phosphate after surgery. All patients followed up (n=17) improved significantly in muscle strength three months after parathyroidectomy. The TST mean time was reduced by 6 seconds ( $26 \pm 9$  to  $20 \pm 6$  sec mean  $\pm$  SD,  $p < 0.0001$ ). Biodex isokinetic muscle strength, measuring peak torque (Nm) of the quadriceps and hamstrings at three different speeds (degrees per second), were all significantly increased ( $p < 0.0001$ ). Preliminary data from the RNA sequencing revealed changes in RNA expression of genes involved in mitochondrial function and skeletal muscle remodelling.

### Conclusion:

Skeletal muscle strength improves after parathyroidectomy in patients with primary hyperparathyroidism, which is important to recognise in the decision about surgery, especially in the elderly, frail population. The expression of genes responsible for mitochondrial function and skeletal muscle remodelling are changed in muscle biopsies after surgery, and could explain the increase in skeletal muscle strength.

**LONG-TERM OUTCOMES OF ACTIVE SURVEILLANCE (AS) FOR LOW-RISK PAPILLARY THYROID CARCINOMA (PTC): PROGRESSION PATTERNS AND TUMOR CALCIFICATION**

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*Introduction:* AS for low-risk PTC originated in Japan and is now globally acknowledged as a valid management strategy. While older age is identified as a favorable factor for progression, long-term evidence is limited and lifelong monitoring is considered essential. This study investigated progression patterns and tumor calcification under long-term AS since the 1990s and explored the possibility of completing follow-up.

*Materials & Methods:* A total of 650 patients with low-risk PTC who chose AS were enrolled. Tumor calcification was categorized into four grades: none, micro, macro, and rim. Progression was defined as either tumor enlargement ( $\geq 3$  mm from initiation) or development of clinically apparent lymph node metastasis (LNM).

*Results:* Median observation period was 8 years, with 45.2% were under surveillance for over 10 years. During AS, tumor enlargement was noted in 71 patients and LNM occurred in 9 patients. Overall, 80 patients (12.3%) exhibited progression. Median age and observation period at the time of progression were 55 years and 4 years, respectively. Only 2 patients showed progression after 15 years of follow-up and 5 patients showed progression after reaching the age of 80. Of 40 surgeries due to progression, 36 (90.0%) were conducted within the first 10 years. Among 48 patients with tumor enlargement within 5 years, surgery was performed at that time in 22 patients. The remaining 26 patients continued surveillance and 17 (65.4%) subsequently showed halted growth. The degree of calcification correlated with age and observation period, with enhancement observed in 249 patients (38.3%) during AS. No cases with rim calcification exhibited subsequent growth.

*Conclusions:* Progression during AS was extremely rare in older patients with long-term surveillance and in tumors with rim calcification. Intensive monitoring might not be necessary for those patients. Instances of progression halting after enlargement are not uncommon.



**TWENTY-YEAR FOLLOW-UP OF A RANDOMIZED CLINICAL TRIAL OF UNILATERAL THYROID LOBECTOMY WITH OR WITHOUT POSTOPERATIVE LEVOTHYROXINE TREATMENT**

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*Introduction:* The aim of this study was to validate in a 20-year follow-up (FU) the initial outcomes reported in World J Surg 2010;34(6):1232-8 on recurrent nodular goiter in the contralateral thyroid lobe among patients after unilateral thyroid lobectomy for unilateral multinodular goiter (MNG) receiving versus not receiving postoperative prophylactic levothyroxine (LT4) treatment.

*Materials and Methods:* Some 150 consenting patients underwent a unilateral thyroid lobectomy for unilateral MNG in 2000 – 2003. They were randomized to two groups, 75 patients each. Patients in group A received prophylactic LT4 treatment postoperatively (dose range 75-125 microg/day to maintain thyroid-stimulating hormone values below 1.0 mU/L), whereas patients in group B received no postoperative LT4 treatment. Obligatory 60-month FU was extended to 240 months for all the consenting patients. The primary outcome was prevalence of recurrent goiter in the contralateral thyroid lobe. The secondary outcome was reoperation rate for recurrent goiter. The outcomes were stratified according to individual iodine metabolism status assessed by urinary iodine excretion.

*Results:* During the 5-year FU (5 patients were lost) and a 20-year FU (29 patients were lost), recurrent goiter within the contralateral thyroid lobe was found in patients receiving vs. not receiving LT4 in 1.4% and 3.3% vs. 16.7% and 32.7% of patients, respectively ( $p=0.001$ ). During 20-year FU 5.0% vs. 29.5%, respectively, of patients receiving vs. not receiving LT4 required contralateral thyroid lobe surgery ( $p<0.001$ ). LT4 decreased the recurrence rate among iodine-deficient patients (10.0% vs. 75.0%, respectively;  $p=0.029$ ) but not among iodine-sufficient patients (2.5% vs. 12.2%, respectively;  $p=0.172$ ).

*Conclusions:* Twenty-year FU data confirmed that prophylactic LT4 treatment significantly decreased the recurrence rate of nodular goiter in the contralateral thyroid lobe and the need for completion thyroidectomy, mostly among patients with persistent iodine deficiency.

### **TENSION-FREE THYROIDECTOMY (TFT) WITH MEDIAL APPROACH TO THE RECURRENT LARYNGEAL NERVES: A NEW PARADIGM OF THYROID SURGERY**

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*A method of TFT was suggested by our team in 2021. Current TFT principles are the following:*

- the surgery is performed with the thyroid kept inside the neck to avoid excessive traction of the vessels, fascia, nerves etc.;*
- dissection of every vein should be preceded by a dissection of an artery to avoid blood hypertension in the thyroid tissue, the lateral (Kocher's) vein should be protected till the end of the surgery;*
- the surgery should start from a complete dissection of Berry's ligament in medial-to-lateral direction and a complete release of the thyroid lobe from the recurrent laryngeal nerve (RLN) and the trachea;*
- division of the parathyroid glands (PG) from the thyroid should be performed before the extraction of the thyroid from the neck.*

#### **Methods**

*A group of 700 consecutive patients underwent TFT. Indications for surgery were cancer, Graves disease, follicular neoplasia, nodular toxic and compressive goiter. Neuromonitoring was used in all the cases. Laryngoscopy was used prior to and after the surgery to evaluate vocal cords mobility. Calcium and parathormone levels were measured after total thyroidectomy on the 1st, 14th, 30th, 90th postoperative days.*

#### **Results**

*Unilateral RLN palsy was observed in 0,9% from RLN at risk. In all but 1 case it was transient, the rate of permanent RLN palsy was 0,12%. Complete unintentional PG removal appeared in 0,3% of PGs at risk, fragment of PG tissue with diameter of less than 2 mm was removed in 3,8% of PGs at risk. Hypoparathyroidism occurred in 9,2% of patients with TT. In all but 1 of the cases PG function restored, rate of permanent hypoparathyroidism was 0,6%.*

#### **Conclusion**

*Tension-free surgery of the thyroid gives the opportunity to decrease the rate of complications, such as permanent RLN palsy and hypoparathyroidism.*

### PREDICTING DISEASE SPECIFIC SURVIVAL IN PATIENTS UNDERGOING ACTIVE SURVEILLANCE FOR PAPILLARY THYROID CANCER

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#### **Background:**

American Thyroid Association guidelines support active surveillance (AS) for low-risk papillary thyroid cancer (PTC). We developed a calculator to aid patient selection.

#### **Methods:**

From 2004-2020, 148,904 PTC patients were selected from the surveillance, epidemiology, and end results (SEER) database. Univariable and multivariable analysis evaluated patient and treatment characteristics. Patients were randomly allocated into training (80%) or validation sets (20%). Coefficients generated a mathematical model to predict 5- and 10-year disease specific survival (DSS). Area under the curve (AUC) assessed the model's performance.

#### **Results:**

The mean DSS was 15.5 years with 5- and 10-year DSS of 99.3% and 98.6%. Age, sex, race, median household income (MHI), tumor size, and nodal status were significant on multivariable analysis ( $p \leq 0.05$ ). 2,404 patients underwent non-operative management; they were more likely older, male, higher MHI, larger tumor size, and less nodal positivity.

Area under the curve (AUC) for 5- and 10-year DSS were 0.83 and 0.81 for the training set and 0.81 and 0.79 for the validation set.

Example: Age 65, Hispanic, female, MHI of >\$75,000, presenting with a 1.3cm PTC and cN0 has a predicted 5- and 10-year DSS of 97.4% and 94.2% with AS. Surgery improves 5- and 10-year DSS to 99.6% and 99.0%.

Alternatively, if this patient were male with a 1.7cm tumor, the predicted DSS at 5- and 10-years is 95.0% and 89.1% with AS and 99.1% and 98.1% with surgery.

#### **Conclusions:**

As awareness of AS for PTC expands, it is important to consider objective data to guide informed decision making. This validated calculator is a useful tool to predict DSS for patients considering AS for PTC.

## THE INFLUENCE OF THE CLINICAL, THERAPEUTIC AND SOCIO-PERSONAL PROFILE ON THE QUALITY OF LIFE OF PATIENTS WITH MULTIPLE ENDOCRINE NEOPLASIA TYPE 1

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**Introduction.** Multiple Endocrine Neoplasia Type 1 (MEN1) syndrome is characterized by presenting different pathologies with different degrees of tumor aggressiveness, which can greatly affect the quality of life (QoL) of affected patients. **Objectives:** to determine the QoL of MEN1 patients and to analyze the influence of socio-personal (SP), clinical and therapeutic variables.

**Material and Methods.** A study was conducted on MEN1 patients in a tertiary hospital [2018-2020]. Quality of life was evaluated using the SF-36 questionnaire and two specific questionnaires (EORTC-QLQ-C30 and GINET21). The SF-36 scores were compared with those of a control group (CG) of a healthy population. Statistical analysis: Student's t-test / ANOVA test or Mann Whitney / Kruskal Wallis test. A multivariate analysis was applied to assess the SP, clinical and therapeutic variables affecting QoL.

**Results.** The MEN 1 patients reported lower levels of general health (47,03 vs 69,8), vitality (57,15 vs 64,31) and mental health (62,36 vs 67,29) with respect CG. Patients with pancreatic pathology presented a worsening in most dimensions of the SF-36 questionnaire ( $p < 0.05$ ). In addition, pancreatic surgery influenced 3/9 dimensions and the mental component score (MCS) ( $p < 0.05$ ). In the multivariate analysis, occupational status and pancreatic surgery were the variables most related to the QoL of patients with MEN1 ( $p < 0.05$ ), in addition to the existence of a carcinoid tumor, which influenced the physical component score (PCS) ( $p < 0.05$ ). In EORTC QLQ-C30 scale, pancreatic surgery (1/3) and tumor stage (2/3) were associated with worse quality of life ( $p < 0,05$ ). In GINET 21 scale, pancreatic surgery (4/9) ( $p < 0,05$ ).

### Conclusion

MEN1 patients have worse QoL than the general population. Unemployment, carcinoid pathology, and pancreatic disease, mainly the surgery of these patients, are variables that decisively influence their QoL.

## ASSOCIATION BETWEEN MULTIMORBIDITY AND POSTOPERATIVE MORTALITY IN PATIENTS UNDERGOING MAJOR SURGERY: A PROSPECTIVE STUDY IN 28 COUNTRIES ACROSS EUROPE

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**Background:** Multimorbidity is an increasing issue affecting delivery of healthcare globally. This study aimed to describe the prevalence of multimorbidity and outcomes in a contemporary cohort of patients undergoing major abdominal surgery.

**Methods:** This is a pre-planned analysis of a prospective, international cohort study, CASCADE, including consecutive adult (aged  $\geq 18$  years) patients undergoing major abdominal surgery. We did a three-way decomposition mediation analysis using natural effects models to explore associations between number of long-term health conditions (no vs one vs two or more, multimorbidity) and 30-day postoperative mortality, adjusting for confounders and potential mediators (presence of frailty and ASA physical status 3 - 5).

**Results:** Between January 24, 2022, to April 3, 2022, 24,227 patients were included (446 hospital, 28 countries). Of these, 28.9% ( $n=7,006$ ) had one and 43.9% ( $n=10,486$ ) had multimorbidity. Most common long-term health conditions were primary cancer (39.6%), hypertension (37.9%), chronic kidney disease (17.4%) and diabetes (15.4%). Patients with multimorbidity had higher rates of frailty and ASA physical status 3-5 compared to patients with no or one long-term health condition. 30-day mortality was higher in patients with multimorbidity (aOR: 2.22, 95% CI: 1.35 - 3.64). Presence of frailty and ASA physical status 3-5 mediated 36.9% of 30-day mortality in patients with multimorbidity. There was no improvement in 30-day mortality in patients with multimorbidity who received pre-operative (elective surgery) or inpatient (emergency surgery) medical assessment.

**Conclusion:** Multimorbidity is common, and outcomes are poor among surgical patients across Europe. Existing pre-operative and inpatient medical assessment did not alter outcomes favourably in those with multimorbidity. Addressing multimorbidity in elective and emergency patients requires innovative strategies to account for frailty and disease control. Developing these strategies that integrate care targeting whole surgical pathways to strengthen current systems is urgently needed for multimorbid patients.



## 25.02

### ASSESSING THE ACCURACY GAP: ADMINISTRATIVE DATA VERSUS MANUAL CURATION IN POSTOPERATIVE COMPLICATION SURVEILLANCE – CLINICAL AND ECONOMIC IMPLICATIONS

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#### Introduction

Improving surgical quality is crucial for both patients and healthcare systems alike. Surgical outcomes and postoperative complications (PCs) are often assessed through administrative data, specifically ICD-10 codes. The objective of this study was to assess the quality of administrative data for 13 individual PCs when compared to manual curation of EHRs, and subsequently to assess healthcare resource utilization associated with actual (manual curation) versus logged (ICD-10 codes) PCs.

#### Materials & Methods

EHR data from 11,827 surgical cases were extracted, spanning 11 specialties across 18 hospitals in Denmark for the month of November 2021. All cases were manually curated for the presence of the 13 studied PCs and all logged ICD-10 codes relevant for the studied PCs were extracted as well. Outcomes as proxy for resource consumption (readmission, total admission days, admission days related to primary admission, Intensive Care Unit days, number of reoperations, and number of radiology procedures) were also assessed for both manually curated and ICD-10 coded PCs.

#### Results

In total 1,047 PCs were found through manual curation and 439 PCs were found through ICD-10 codings. Of these, only 218 PCs were present in both data sources – corresponding to a correct ICD-10 coding of 20.8% of PCs. Across PCs the ICD-10 coding sensitivity ranged from 0.023-0.571, specificity from 0.997-1, Positive predictive values from 0.08-1, and Negative predictive values from 0.990-0.999. Patients with PCs experienced on average across PCs a 6.6 higher readmission rate, additional 6 days of admission, additional 2 days in ICU, a 7.7 higher reoperation rate, and 4 times more radiology exams compared to patients without PCs.

#### Conclusion

Administrative coding in the form of ICD-10 codes only capture approx. 21% of PCs and is thus not usable for surgical quality monitoring. These PCs are associated with significant resource burdens on healthcare systems.

**THE EVOLUTION OF INPATIENT REPLACEMENT TECHNOLOGIES IN A MULTIDISCIPLINARY HOSPITAL**

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*Introduction:* In recent years, stationary replacement technologies have proven themselves well.

*Short-term inpatient care (SIC) is a branch of modern medicine that is a priority in the healthcare of all developed countries.*

*Materials and Methods:* The analysis and comparative characteristics of 3295 patients operated in a short-term hospital according to the profile of surgery in a multi-profile hospital were carried out.

*Results:* The structure of the operation in the SIC according to the surgery profile in 2019-2020 looked as follows:

*Removal of benign neoplasms of various localization of skin and subcutaneous tissue – 65%; removal of gastric and colon polyps – 13%; various abdominal hernias – 15%; laparoscopic cholecystectomy – 3%; hemorrhoidectomy and operations for varicose veins of the lower extremities - 4%;*

*During the year, less than 800 operations were performed in the department. Of all these operations, only 10% of the operations were performed laparoscopically. The structure of operations in the SIC surgery was less than 20% of all planned operations of the surgical department.*

*The situation has changed significantly in 2022 and 2023.*

*During the reporting period, 2495 operations were performed in the SIC department, which is 71.1% of all planned surgical operations – 3508. The proportion of small operations decreased to 37% (926); the number of operated hernias in SIC – 981 (39.3%); laparoscopic cholecystectomy – 401 (16%); other operations – 7.7%.*

*More than 90% of patients with abdominal hernias in SIC were operated laparoscopic.*

*Conclusions:* Thanks to the use of minimally invasive, low-traumatic modern operations, modern equipment, precision surgery techniques, careful selection of patients who can be operated on in the SIC department, proper preoperative preparation and adherence to the ideology of Fast Track, it was possible to obtain good medical and economic results of patient treatment.

### COLORECTAL CHRONICLES: TACKLING FAP IN MALAYSIA'S DIVERSE DISTRICTS

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#### Introduction

*This study examines the diversity of clinical presentations in three patients diagnosed with Familial Adenomatous Polyposis (FAP) from diverse ethnic backgrounds which poses significant challenges in diagnosis and management, particularly in district healthcare settings in Malaysia.*

#### Case 1

*A 37-year-old Indian woman with a history of papillary thyroid carcinoma, presented with symptomatic anemia due to chronic per rectal bleeding. Colonoscopy showed multiple rectal polyps which histologically proven as moderately differentiated rectal adenocarcinoma. She underwent a course of chemo-radiotherapy (CCRT) with post-CCRT MRI reassessment, considering potential resection later.*

#### Case 2

*A 26-year-old Chinese woman with strong family history of colorectal cancer; presented with right hypochondriac pain, altered bowel habits, and per rectal bleeding. Colonoscopy revealed a malignant rectal tumor with CT evidence of extensive metastasis. Unfortunately, she succumbed to the disease before treatment initiation.*

#### Case 3

*A 47-year-old Malay man, reported abdominal pain, distention, and weight loss. Colonoscopy identified a rectal tumor with multiple polyps throughout colon. HPE shows high-grade adenoma rectal tumour with malignant transformation. Imaging revealed local infiltration, prompting laparoscopic-assisted diverting sigmoid colostomy followed by chemo-radiotherapy for disease management.*

#### Discussion

*This retrospective analysis underscores challenges in early FAP diagnosis and management within district settings. Understanding diverse presentations is crucial for optimizing outcomes. Tailored approaches considering genetic, clinical, and extraintestinal factors are essential. The study highlights specific district healthcare challenges, emphasizing the need to enhance access to specialized care, raise awareness, educate both healthcare practitioners and the population on colorectal screening importance, and overcome logistical hurdles for effective management.*

#### Conclusion

*Optimum management of FAP in district hospital is possible despite requiring extensive and comprehensive approach to improve outcomes for individuals affected by FAP in Malaysia.*

**A QUALITY IMPROVEMENT STUDY TO ASSESS PATIENT SATISFACTION IN SURGICAL OUTPATIENT DEPARTMENT AT A TERTIARY CARE HOSPITAL IN NORTH INDIA: A CROSS SECTIONAL STUDY**

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Quality of care is fundamental to universal health coverage. Perceived quality of medical services is one of the most determining factors of modern health care service utilization. As per the evidences 5.7 and 8.4 million deaths are attributed to poor-quality care each year in Low- and Middle-income countries (LMICs), and up to 15% of overall deaths are due to poor quality. This study aims to assess the perceived quality of medical services and associated factors at Outpatient departments of public hospitals at one of the Tertiary Care public hospitals of North India. A facility-based cross-sectional study was conducted on the quality of care among Surgical outpatient department attendants of One of the leading hospitals of North India (for a period of three months). A total of 300 study participants were included. An exit interview was used to collect data using a pretested and structured questionnaire. Then it was analysed using the Statistical Package for Social Science (SPSS). Both bivariable and multivariable linear regressions were carried out. Significant predictors were reported at  $p < 0.05$  with a 95% confidence interval. With a 100% response rate. 80% were satisfied with the doctors and health care providers while only 30% were satisfied with the available facilities. 72.7 % perceived the treatment cost as reasonable. Conclusion: Majority of patients using outdoor and indoor services were satisfied with the care received and the behaviour of the hospital staffs. However, Registration process needs to be streamlined to reduce waiting time and delays. The regional health department should understand the issue to improve outpatient service quality by providing necessary medication, reducing wait times, and designing job training for health care providers. A system for patients feedback may be institutionalised at all health facilities to improve quality of care.

### REVEALING THE CURRENT STATUS OF FEMALE SURGEONS IN JAPAN

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*How many of you know that Japan, the fourth largest GDP country in the world and a member of the OECD, is a country where women's participation in society is very low?*

*According to the Global Gender Gap Report for 2023, Japan ranks 125th out of 146 countries, the lowest among high-income countries, and the lowest among 19 countries in the East Asia-Pacific region. In the medical field, it was revealed in 2018 that scores were deducted from the entrance exams at medical schools simply because the person was a female.*

*Particularly in surgery, signs of improvement are minimal. According to Japan's national clinical data, female surgeons are likely to lose their surgical experience. They are more likely to be assigned to patients with pre-existing conditions and comorbidities, regardless of the difficulty of the surgery.*

*A search by Pubmed found that 34 papers about Japanese female surgeons were published between 2008 and 2023. Twenty of these were published by four female surgeons, and it means, unfortunately, there are so few surgeons who have repeatedly complained about gender officially. On the other side, this represents the current situation of the Japanese surgical community, which has shown little change despite repeated appeals. Most of the 34 papers appeal for eliminating discrimination against women, less income, and few educational opportunities compared with male surgeons. I would like to present the summarized results once again, and by showing these results to the world, I hope to collect voices from many countries so that we can push up the movement in Japan to stop the global delay.*

### COULD SOCIAL MEDIA HELP ACADEMIC PRODUCTIVITY FOR INTERNATIONAL SURGEONS?

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#### *Background:*

Social media is a tool for surgeons to network and promote their academic efforts. The purpose of this study is to determine the X and LinkedIn usage trends and academic productivity of International Society of Surgeons (ISS) officers.

*Methods:* A list of current ISS officers was compiled from the website. We searched LinkedIn and X for publicly available profiles. The profiles were analyzed from the date they first joined to Jan 9th, 2024. Demographic information was collected. X and LinkedIn profiles were analyzed for their activity, number of followers, following, number of posts, and the year joined. PubMed and SCOPUS were searched for number of publications and H index. *Results:* Of the 18 ISS officers, 9 (50%) use X, and 11 (61.1%) use LinkedIn. 55% of X users were male, compared to 90.9% of LinkedIn users; however, this difference was not significant ( $p=0.07$ ). Most officers joined LinkedIn in 2008 and X in 2016. 64% of the LinkedIn users had >500 connections, and 36% had LinkedIn activity within the past year. The median number of X followers was 422 (interquartile range ([IQR]) 64-2329), size of following was 99 (IQR 21-732.5), and officers had an average of 213 posts (IQR 24-2035.5). In looking at the research productivity of the officers, there was no difference in the average number of PubMed publications between the two groups ( $143 \pm 78$  publications for X officers versus  $91 \pm 94$  publications for LinkedIn officers,  $p=0.1$ ) However, the average H index of X officers was  $44 \pm 20$  and  $209 \pm 233.7$  for LinkedIn users ( $p=0.02$ ).

*Conclusions:* Overall, the ISS officers active on LinkedIn had a higher H index, indicating that that LinkedIn could be a useful tool in reaching a wide audience to promote

## 26.01

### INTESTINAL MID-GUT MALROTATION

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*Intestinal malrotation is a congenital anomaly caused by an incomplete rotation or non-rotation of the intestine along the axis of the superior mesenteric artery during embryological development. It is a clinical-surgical pathology that is part of the pediatric surgeon's daily life, but it becomes a diagnostic challenge when symptoms develop in adult patients. The reported case shows an atypical presentation of a complication secondary to intestinal malrotation in a 43-year-old adult. Informed consent was obtained from the patient prior to writing this case report. This video intends to be an example of how to diagnose, manage and what are the results of a malrotation correction to colleagues that eventually encounter similar conditions.*

### LAPAROSCOPIC TRANSABDOMINAL PREPERITONEAL HERNIA REPAIR IN EMERGENCY CASES OF ACUTELY INCARCERATED RECURRENT INGUINAL HERNIA AFTER MULTIPLE OPEN HERNIOPLASTIES

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#### Case summary:

*This is a 70 years Gentleman Presented with painful irreducible left inguinal hernia for the past 3 days associated with obstructive symptoms such as abdominal distension and vomiting. He had 3 prior inguinal hernia repair at the same side. He has underlying Parkinson disease on Madopar and Benign Prostate Hyperplasia on dual therapy. Contrast CT abdomen revealed incarcerated left inguinal hernia, measures 3.3cm in width and 2.9cm in length. Small bowel is herniated through the defect. There is no bowel dilatation or other bowel wall thickening. He had emergency Laparoscopic left inguinal hernia repair due to prior history of open repair.*

*In this case, we approach intraperitoneal in an attempt to reduce the hernia content first. Fortunately, the hernia content reduced spontaneously with pneumoperitoneum creation. Inspection laparoscopically did not revealed any non viable bowel. Therefore, stand TAPP was performed. Nonetheless, we encountered dense adhesion at the medial to inferior epigastric artery and near the the pubic tubercle. This suggest the previous open hernia repair with mesh had created much underlying adhesions. Following combination of sharp and monopolar dissection, we could identify the landmark of pubic tubercle, hernia defect, inferior epigastric artery and the classical triangle doom, pain and myopectineal orifice.*

*The Mesh was placed at preperitoneal space and attached to anterior abdominal wall with Tackers.*

#### Conclusion:

*With increasing interest of laparoscopic hernia repair, its use in emergency setting has allow hernia repair in different plane with better physics (especially crucial in recurrent hernia following prior open hernioplasty. It also potentially lower risk of recurrence and morbidity (in term of post op pain, wound size).*



**LAPAROSCOPIC BILATERAL INGUINAL HERNIA REPAIR VIA TRANS-ABDOMINAL PRE-PERITONEAL (TAPP) APPROACH IN A PATIENT AFTER OPEN RADICAL PROSTATECTOMY**

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*Inguinal hernia (IH) is a common occurrence in patients worldwide. Laparoscopic repair of IH remains the preferred choice over the open approach due to its benefits including lesser pain for patients, smaller incisions, better cosmetic results and faster recovery. While this is a common surgical procedure performed, previous open radical prostatectomy may result in a challenging and more complicated surgery. With the aid of a surgical footage, we demonstrate how the trans-abdominal pre-peritoneal (TAPP) approach can be employed safely in a patient post open radical prostatectomy. An 84-year-old male with a background of open radical prostatectomy underwent laparoscopic bilateral IH repair via the TAPP approach. Large bilateral indirect inguinal hernia containing healthy small bowel on the right and some sigmoid on the left. There were dense midline adhesions in the pre-peritoneal space due to previous prostatectomy and further medial dissection could not be carried out. Patient underwent operation smoothly with no complications and was discharged later the same day. The dense adhesions to surrounding structures which develop in the space of Retzius post radical prostatectomy make access to and exposure of Cooper's ligament challenging. While studies have shown no evident advantage of TAPP over the totally extraperitoneal (TEP) approach, TAPP has the added advantage in the above case of bypassing difficult internal adhesions of the preperitoneal cavity. Once the pre-peritoneal space was dissected, the mesh – trimmed to fit the space – is then tacked securely in place on its upper edge and the upper side of the iliopubic tract. Performing laparoscopic bilateral IH repair after open radical prostatectomy requires careful consideration of the patient's past medical history and the specific challenges associated with both the hernia repair and the prior prostatectomy. We demonstrate how TAPP is a safe and reasonable approach that could circumvent these potential challenges.*

### ROBOTIC PARTIAL NEPHRECTOMY WITH IOUS AND ICG NAVIGATION

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34y/o gentleman with exophytic lower pole lesion s/o T1a RCC with low complexity RENAL nephrometry score. Was planned for robotic partial nephrectomy. With the standard robotic port placements, dissection started with colon mobilization. Tracing the gonadal vein, the renal vein identified. Peri renal fat is dissected all around the lower pole and tumor dissected free. Making sure kidney is free all around. Ultrasound probe is introduced to assess the depth and margin of the tumor. Probe is used all around. Marking the line of incision with monopolar scissors. ICG is injected. Firefly activated. A line of demarcation between perfused and non perfused areas are clearly seen. The planned line of incision is well above the line of demarcation. Vascular clamps are applied over the renal artery. Resection began across the line of incision with monopolar scissors and suction is used to keep the area clean. Lower pole resection is completed. With the firefly, rechecking the specimen for ICG. Defect is then closed with the help of barbed sutures in double layer with sliding renorrhaphy technique. Hemo lock clips used to keep sutures in place. Vascular clamps removed and the hemostasis checked again, warm ischemia time was 19.46minutes. Specimen retrieved. Final histopathology report suggested of Well encapsulated left renal tumor, Clear cell RCC with pT1a N0 with clear margins(1.5cm away), capsule intact and no e/o perinephric fat invasion. In patients with malignant tumors, ICG-RAPN is associated with less blood loss than standard RAPN without a more positive margin rate. More and more studies with larger cohorts and prospective designs are necessary to verify the intraoperative and functional advantages of the green dye.

**Keywords:** robot-assisted partial nephrectomy, renal cell carcinoma, indocyanine green, nephron sparing

### INNOVATING SURGICAL EDUCATION: A FIRST-PERSON PERSPECTIVE APPROACH

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#### Introduction

*In the evolving landscape of surgical education video resources have emerged as a pivotal tool for acquainting trainees with complex procedures. Despite their widespread utility, conventional video resources, characterized by a third-person perspective, frequently fail to offer an immersive learning experience that effectively bridges the gap between observation and practical execution. These resources typically lack a comprehensive, pragmatic perspective, crucial for understanding the subtleties of surgical procedures. This limitation impedes trainees from fully grasping critical technical nuances, including patient positioning, precise hand placement, and optimal line of sight, all pivotal for successful surgical interventions.*

#### Methods

*To address this challenge, we employed a reverse design thinking approach and analyzed existing educational videos with the goal of improving visualization of the technical aspects of the procedure. Our innovative solution records surgical procedures from the surgeon's perspective using a head-mounted camera, providing trainees with a more immersive and informative experience than conventional videos. To optimize learning and maintain trainee engagement, we ensure that these videos are concise, continuous, and free from unnecessary interruptions, thereby reducing cognitive load and enhancing focus.*

#### Results and Conclusions

*We produced a succinct video demonstrating the ultrasound-guided insertion of a central venous catheter in a mannequin model. We hypothesize that this approach will augment trainees' comprehension of technical intricacies and contribute to their overall surgical proficiency. To validate this claim, we will be conducting a study across various trainee levels and specialties, assessing whether the first-person point of view increases competence compared to standard available videos.*

### DOES REFRIGERATOR OWNERSHIP PLAY A MAJOR ROLE IN THE GLOBAL DECLINE OF GASTRIC CANCER INCIDENCE?

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*In 1986, Howson, Hiyama and Wynder elegantly put forward the hypothesis that the decrease in consumption of nitrate/nitrite food and year-long availability of fresh fruits and vegetable on account of the refrigerator was of prime importance in the decrease of gastric cancer, in the United States and many other countries. It is now more than 30 years since Howson's hypothesis was published. The rates of stomach cancer continues to decline globally.*

*Refrigerators are ever more common throughout the world.*

*We examined the evidence from data of refrigerator ownership from as many countries as we could get data useful data from and compared their trend in stomach incidence. The best available age-standardised incidence (ASI) rates of gastric cancer was obtained from GLOBOCAN 2023 or where possible from national cancer registries. Data on refrigerator ownership was accessed via GlobalDataLab Area Database.*

*To date we have data from China, Thailand, Malaysia, Singapore, Indonesia, Bangladesh, India, Pakistan, Belize, Brazil, Chile, Cuba, Haiti, Angola and a number of other countries. Data on refrigerator ownership is not as complete as we desire and the work is on going in the search for more complete information. Countries that already have high rates of refrigerator ownership in the past four decades or more, such as in Europe and North America posed a greater challenge to get the information wanted.*

*China, an example, has a declining rate of stomach cancer as refrigerator ownership rose. However, the decline appears to have started even before a majority of the population had refrigerators. The decline of stomach cancer is seen with the concurrent rise of refrigerator ownership however is seen in many countries. However, a number of countries still have a rising incidence of stomach cancer and low rates of refrigerator ownership.*

## EFFECT OF DIFFERENT RECONSTRUCTION METHODS ON POSTOPERATIVE QUALITY OF LIFE IN PATIENTS WITH GASTRIC CANCER AFTER GASTRECTOMY

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**Objective:** During radical gastrectomy of distal gastric cancer, the way of digestive tract reconstruction affects the postoperative quality of life of patients. In this study, we compared the effects of B-I anastomosis, B-II anastomosis and Uncut Roux-en-Y anastomosis on postoperative quality of life.

**Methods :** Clinical data of 83 patients undergoing radical gastrectomy for distal gastric cancer were retrospectively collected, including 23 patients undergoing BI anastomosis, 26 cases underwent B-II undergoing anastomosis and 34 cases undergoing Uncut Roux-en-Y anastomosis. The symptom domain, life status domain and quality of life domain of the three groups were compared with PGSAS-37 designed by the Japan Working Group on Post-gastrectomy Syndrome (JPGSWP).

**Results :** 1. Symptom domain: In terms of whether there was stomach pain or discomfort ( $P=0.015$ ) and acid reflux symptoms ( $P=0.025$ ), B-II anastomosis showed better results than B-I anastomosis. Uncut Roux-en-Y anastomosis also showed better effects than the B-I anastomosis in terms of stomach pain and discomfort ( $P=0.001$ ), acid reflux symptoms ( $P<0.001$ ) and mouth pain ( $P=0.014$ ).

2. Life status domain: Including the average daily staple food frequency ( $P=0.002$ ), B-II anastomosis was significantly less than B-I anastomosis. In terms of physical status in the past month ( $P=0.014$ ), Uncut Roux-en-Y anastomosis also showed obvious advantages over B-I anastomosis.

3. Life quality domain: B-II anastomosis showed better results than B-I anastomosis in the degree of dissatisfaction with chest and abdominal symptoms ( $P=0.013$ ).

**Conclusion :** The postoperative quality of life of gastric cancer patients who received Uncut Roux-en-Y and B-II anastomosis during radical gastrectomy was better than B-I anastomosis. No statistically significant difference was found in postoperative quality of life in patients receiving Uncut Roux-en-Y and B-II anastomosis, both of which could improve the quality of life in patients undergoing radical resection of distal gastric cancer.

**ASSESSMENT OF HEPATIC STEATOSIS BEFORE AND AFTER LAPAROSCOPIC SLEEVE GASTRECTOMY**

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*Background: Non-alcoholic fatty liver disease (NAFLD) is the cause of the new epidemic of chronic liver disease. Most patients are asymptomatic and accidentally diagnosed by imaging. Unfortunately, NAFLD can progress to inflammation, NASH, fibrosis, cirrhosis, HCC, decompensated cirrhosis, death, and/or liver transplantation might be required.*

*Laparoscopic sleeve gastrectomy (LSG) has positive effects on the comorbidities associated with obesity. FibroScan and controlled attenuation parameter (CAP) can assess NAFLD non-invasively by measuring an area a hundred times larger than a biopsy sample.*

*Aim: To assess hepatic steatosis pre and post LSG by laboratory investigations and imaging (fibroscan and CAP).*

*Methods: Thirty patients were included in a prospective observational study according to the inclusion criteria. Full medical history, preoperative laboratory investigations and imaging were recorded. All patients underwent LSG and were followed up for 6 months postoperatively. Data were coded and analysed by using (SPSS) version 29.*

*Results: LSG was associated with a significant improvement in the controlled attenuation parameter CAP values, stiffness values and accordingly grades of steatosis and fibrosis as well as a highly significant decrease in BMI, and on follow-up fibroscan 6 months postoperatively. There was a significant improvement in total cholesterol, triglycerides, LDL and HDL.*

*Conclusion: LSG is associated with a significant improvement in BMI, lipid profile, CAP measurements and liver stiffness measurements which means improvement of steatosis. In morbidly obese candidates of bariatric surgery, Fibroscan with CAP (using the XL probe) was used as a simple non-invasive tool for detecting steatosis and fibrosis*

## LAPAROSCOPIC LIVER RESECTION FOR HEPATOCELLULAR CARCINOMA IN PATIENTS WITH AND WITHOUT PORTAL HYPERTENSION: A CASE-CONTROL STUDY

Deycies Gaete Letelier<sup>1</sup>; Alexandre Saure Maritano<sup>2</sup>; Omar Orellana Espinoza<sup>3</sup>; Hanns Lembach Jahnsen<sup>4</sup>; Carlos Mandiola Bunster<sup>5</sup>; Jaime Castillo Koch<sup>6</sup>; Juan Carlos Diaz Jeraldo<sup>7</sup>

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*Introduction:* This study aimed to compare the short-term outcomes after laparoscopic liver resection (LLR) for HCC in cirrhotic patients with and without clinically significant portal hypertension (CSPH).

*Methods:* Retrospective case-control study that included cirrhotic patients with HCC who underwent LLR from 2016 to 2023. Patients were divided into two groups according to the presence or absence of CSPH (defined by hepatic venous pressure gradient  $\geq 10$  mmHg or the presence of indirect signs of portal hypertension).

*Results:* The study included 40 patients, comprising 15 patients (37.5%) in the no-CSPH group and 25 patients (62.5%) in the CSPH group. There were no differences in baseline characteristics, extent of resection, transfusion, duration of surgery or Pringle maneuver, and need for conversion. There was no 90-day mortality, and severe morbidity rates were similar between groups (Clavien Dindo  $\geq$  III, 7% in no-CSPH and 8% in CSPH). Neither were significant differences between no-CSPH and CSPH in the rate of ascites (13.3% vs 24%), post-hepatectomy liver failure (13.3% vs 0), encephalopathy (0 vs 4%), post-operative liver decompensation (20% in both), and pulmonary or abdominal infection (13.3% vs 12%). The median postoperative stay was 4 days in both groups. The negative margins were similar (no-CSPH 7% vs CSPH 12.5%). The median follow-up was 25 months (range 2-89). Overall survival rates at 1 and 3 years were 100 and 78%, respectively, without a significant difference between the groups ( $p = 0.1448$ ).

*Conclusion:* LLR is safe in patients with CSPH in our center, with no mortality and good short-term results.

## DO ALL THE GALL BLADDER CANCER PATIENTS WITH STAGE IV HAVE SIMILAR OUTCOMES? AND PROGNOSTIC FACTORS AFFECTING THE SURVIVAL OF SURGICALLY TREATED GALL BLADDER CANCER PATIENTS

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### Background:

Gall bladder cancer is a highly aggressive disease and carries the lowest median survival. GBC with Stage IV disease has dismal prognosis and the stage IV has many subsets and the outcomes may not be similar. Prognostic factors affecting survival need to be identified for better management and outcome of the patients.

**Material and methods:** Prospectively maintained database of the operated GBC patients at a north Indian tertiary care centre between 2001-2019 was analysed. Out of 427 operated GBC patients, 233 diagnosed as IGBC were included. OS and DFS were calculated using Kaplan-Meier curves.

**Results:** Out of 427 surgically treated GBC patients, 233(54.57%) were IGBC group and 194(45.43%) were DGBC group. Curative surgical resection was performed in 217/427 patients with the curative resection rate (CRR) of (63.4%). The final histopathological staging in the curative resection group was stage I-52(21.7%), II-65(27.19%), III-88(36.82%), IV-34(14.22%). 5yr stage specific survival was I- 85.6%, II-68.4%, III- 47.9%, and IV- 10.7%. Five year survival of LN positive patients was 17.6% against 71.6% with node negative patients. On univariate analysis, the factors affecting the DFS were staging, liver invasion, positive LNs and margin positivity. On multivariate analysis, factors affecting the DFS were staging and margin positivity. However, the significant factors affecting OS (both univariate and multivariate) were staging, positive LNs margin positivity and liver invasion.

**Conclusion:** The prognostic factors affecting the long-term survival of GBC patients are staging, LN involvement, margin positivity and liver invasion. Among the stage IV disease, patients presenting with isolated port site metastasis have better 5-year survival. Patients presents with isolated epigastric port site metastasis after a DFI of more than a year (even stage IV) should be curatively treated.



**RESECTABILITY AND SURVIVAL OUTCOMES OF TREATMENT IN RAS/BRAF-MUTATED RECURRENT COLORECTAL CANCER**

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**BACKGROUND:** Resection for metastatic recurrence of colorectal cancer (CRC) has been reported to contribute to better prognosis, but the impact of RAS/BRAF mutation status on resectability of recurrence has not been fully investigated.

**METHODS:** This single-center, retrospective study included 80 patients with recurrence after curative resection for CRC stage II-IV between 2015 and 2020 who were tested for RAS/BRAF status. We assessed the duration from surgery to recurrence, the sites of recurrence, and the treatment for recurrence.

**RESULTS:** Patients were classified into 3 groups according to the RAS/BRAF status: RAS/BRAF wild-type (WT; n=36), RAS mutated (RASmt; n=36), and BRAF mutated (BRAFmt; n=8). Regarding the first recurrence site, lymph node/peritoneum were more frequently found in BRAFmt group compared with other groups (WT : RASmt : BRAFmt = 58% : 72% : 88%). There was no significant difference in the duration from primary surgery to first recurrence among the 3 groups (WT : RASmt : BRAFmt = 8.7m : 7.3m : 7.3m,  $P = 0.64$ ). Resection rate for the first recurrences was significantly lower in BRAFmt compared with other groups (WT : RASmt : BRAFmt = 52.8% : 27.8% : 12.5%;  $P = 0.03$ ). Despite resection, 18 patients (22.5%) showed re-recurrence. Resection rates for re-recurrences were lower in BRAFmt compared with other groups (WT : RASmt : BRAFmt = 72.7% : 50.0% : 0%;  $P = 0.29$ ). BRAFmt showed significantly shorter duration from primary surgery to unresectable status than other groups (WT : RASmt : BRAFmt = 23.9m : 11.2m : 7.3m,  $P = 0.01$ ).

**CONCLUSIONS:** BRAF-mutated CRC patients showed lower resection rates of recurrences or re-recurrences and shorter duration to become unresectable, suggesting that these patients need to be more strictly followed-up and may be considered for more intensive perioperative treatments at the primary surgery.

**A RANDOMISED CONTROLLED FACTORIAL TRIAL OF TOPICAL ANALGESIA POST-HAEMORRHOIDECTOMY (TAPH TRIAL)**

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*Background: Haemorrhoidectomy is often complicated by post-operative pain. We developed a combination topical cream targeting three hypothesised pain mechanisms and performed a RCT testing these agents after haemorrhoidectomy.*

*Methods: The TAPH trial was a multi-centred double blinded factorial trial conducted in adult participants undergoing excisional haemorrhoidectomy. Participants were randomly assigned (1:1:1:1) to one of four parallel arms of combination topical creams containing: 10% metronidazole (M), 10% metronidazole and 2% diltiazem (MD), 10% metronidazole with 4% lidocaine (ML), or 10% metronidazole, 2% diltiazem and 4% lidocaine (MDL). Permuted block randomisation was used. Allocations were concealed from both the investigator and the patient. Patients were instructed to apply topical treatments thrice daily for seven days. The primary aim of the study was to assess whether the addition of diltiazem or lidocaine to metronidazole reduces pain. The primary outcome was pain on the visual analogue scale on day 4.*

*Results: Between Sep 2020 and Jan 2022, 192 patients were randomised (48 per group), and all were analysed. There was no significant difference in pain and recovery scores when diltiazem or lidocaine was added to metronidazole (estimate MD vs M: -3.69, -13.3 to 5.94 p= 0.46. ML vs M: -5.67, 95%CI -15.5 to 3.80, p=0.24). Combination MDL did not further reduce pain. The interaction model showed a significant difference between the best (ML) and worst group (MDL) in both pain scores and functional recovery scores. There was no significant difference in analgesia usage, complications or return to work between groups. There were no significant adverse events.*

*Findings: Metronidazole and lidocaine appears to be an efficacious combination topical treatment and could be considered as part of a multimodal approach to enhanced recovery following excisional haemorrhoidectomy.*

*Trial Registration: NCT04276298*

*Funding: Health Research Council of New Zealand 22/056*

### **MCW LICAP- VERSATILE FLAP IN THE ERA OF ONCOPLASTIC BREAST SURGERY**

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*Breast reconstruction following oncological resection is becoming more common in recent years. In most Asian ladies, implant reconstruction is not ideal due to significant implant visibility or palpability. Autologous reconstruction addresses the limitations of implant reconstruction but results in potential donor site morbidities. To date, there is no clear advantage subscribed to any technique. A unique physical attribute in our patient population is the presence of adequate lateral mammary fold bulk even in the slimmest of patient. Owing to this, the authors have developed a modified chest wall lateral intercostal artery perforator flap (MCW-LICAP) technique which have successfully addressed previous limitations as observed in reported studies.*

## 30.02

### 3D VIDEO ASSISTED NIPPLE SPARING MASTECTOMY AND IMMEDIATE RECONSTRUCTION: HOW I DO IT?

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*This is a comprehensive video guide on ""3D Video-assisted Nipple-Sparing Mastectomy and Immediate Reconstruction - How I Do It?"" The video delves into the intricate details of employing three-dimensional (3D) video technology to enhance the precision and effectiveness of nipple-sparing mastectomy procedures. This video offered a step-by-step walkthrough of the surgery, highlighting the significance of immediate reconstruction post-mastectomy. The incorporation of 3D video not only provides surgeons with a detailed perspective but also serves as an invaluable educational tool. This approach underscores a commitment to patient outcomes and aesthetic considerations, showcasing the transformative potential of advanced surgical techniques. By merging technology with refined methodologies, this presentation offers a forward-thinking perspective in the realm of breast cancer surgery. It serves as a vital resource for medical professionals seeking to stay abreast of cutting-edge advancements in the field and further underscores the intersection of innovation and surgical practice.*

### **A FIRST-TIMER: 1ST ROBOTIC RISK-REDUCING MASTECTOMY WITH IMMEDIATE RECONSTRUCTION IN PORTUGAL**

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#### **Introduction:**

*Skin-sparing mastectomy and nipple-sparing mastectomy (NSM) have improved oncologic outcomes and quality of life for patients compared to conventional mastectomy. Immediate breast reconstruction is facilitated by preserving the skin envelope, and NSM has gained popularity due to its better patient satisfaction and cosmetic results. Increased BRCA1/2 genetic testing and public awareness have led to a rise in risk-reducing mastectomy. Endoscopic NSM was developed to minimize visible scarring and incision size but has limitations. Robotic nipple-sparing mastectomy (RNSM) has emerged as a potential solution.*

#### **Material/Methods:**

*We present a case of a 55 year-old woman with a family history of breast cancer: mother at the age of 56 and a sister at the age of 37, being this the index case.*

*Being an asymptomatic BRCA2 mutation carrier since 2005, the patient underwent annual screening. On 2023, she was proposed to bilateral risk-reducing nipple-sparing mastectomy.*

#### **Results:**

*The patient was put on the decubitus position with ipsilateral arm above the head and injection of adrenaline. Lateral chest wall incision and dissection allowing a multiple-port trocar placement (3 trocars). Insufflation was set to 10 mmHg to help with the dissection, which is then completed with monopolar scissors and a grasper to allow the mastectomy per si.*

*Immediate breast reconstruction was done with smooth round breast implants (Profile M+ 300cc), and a 10Fr drain was placed.*

#### **Conclusion:**

*Rather than making incisions in the underwire area below the breasts, using a single-port robot to enter the breast from the armpit to remove tissue and reconstruct the breast, avoids nerve damage that could result in desensitization. In addition, it has a better cosmetic result. It is indeed a new era on the breast surgery area, being this the first robotic risk-reducing mastectomy performed in Portugal.*

### **BREAST CONSERVING SURGERY WITH A HAND-HELD PROBE TO DETECT RESIDUAL CANCER WITHIN THE SURGICAL CAVITY**

*Professor Christobel Saunders<sup>1</sup>; David Speakman<sup>2</sup>; Cathie Poliness<sup>3</sup>; Sophie Nightingale<sup>4</sup>; Aroosha Safari<sup>5</sup>*

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#### *Introduction:*

*Up to 20% of patients undergoing breast-conserving surgery (BCS) require a second operation due to positive histological margins. This has significant clinical, psychological, and financial implications. Quantitative Micro-Elastography (QME) (Elora, OncoRes, Australia) is an innovative imaging technology that maps tissue stiffness on a microscale, enabling differentiation between breast cancer and normal tissue with high accuracy. QME has been incorporated into a hand-held probe that can scan the surgical cavity for residual cancer after the removal of the main specimen, with the aim of reducing re-excision rates.*

#### *Material and methods:*

*We present a video of a patient with early-stage breast cancer who underwent breast-conserving surgery at the Peter MacCallum Cancer Centre in Melbourne, as part of a clinical trial ANZCTR12623000205639. Per the standard of care, a wide local excision of the tumor was made, and specimen removed. Using the hand-held probe, QME scans of the surgical cavity margins were performed to assess the tissue for residual disease. QME does not require pre-operative systemic injections and does not require a change in current surgical practice. Images from the scans are collected as part of the clinical trial to compare to final histology as part of assessment of the investigational medical device.*

#### *Results:*

*The QME system set-up was straightforward. Its ease of use, both inside (probe) and outside (workstation) of the sterile field, allowed for seamless integration into the surgical workflow and the scanning process was intuitive.*

#### *Conclusion:*

*Reducing surgical re-excision rates following breast-conserving surgery is an important goal to improve the clinical care for patients with breast cancer. QME demonstrated safe and effective differentiation of tissue during breast-conserving surgery. This investigational medical device offers future potential in the surgical management of breast-conserving surgery.*

## 30.05

### TRANSAXILLARY NIPPLE SPARING MODIFIED RADICAL MASTECTOMY: HOW I DO IT

P S VENKATESH RAO<sup>1</sup>

<sup>1</sup>KADRI CLINIC

*Steps of surgery as shown in the video:*

*Incision made along the anterior axillary line on the side of early breast cancer. The skin above the breast is dissected off with the nipple-areola complex. The medial, superior, and inferior edges of the breast are dissected. then the breast is dissected of the pectoralis muscle. Axillary dissection is completed and the specimen is removed. Mop and instrument counts and hemostasis is checked. Tube suction drains are inserted and the wound closed in 2 layers with 2-0 Monocryl continuous suture.*

**HYPERCALCEMIC PATIENTS HAVE A LESSER RISK FOR PSYCHIATRIC COMPLICATIONS AFTER PARATHYROIDECTOMY**

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*Psychiatric disturbances frequently manifest in primary hyperparathyroidism, yet existing studies often rely on surveys from small cohorts. We sought to investigate the influence of parathyroidectomy on the incidence of psychiatric complications in hypercalcemic patients using large administrative data.*

*Patients with calcium levels above 10.4 mg/dL and a PTH test were classified into classic hyperparathyroidism (PTH > 88 pg/mL), normohormonal hyperparathyroidism (PTH 12–88 pg/mL), less likely hyperparathyroidism (PTH < 12 pg/mL), and isolated hypercalcemia when follow-up calcium returned to normal. Hypercalcemia due to renal or other secondary causes were excluded. Pre-existing psychiatric conditions before the first high calcium reading were not considered. Cox regression was utilized to assess the risk of ensuing psychiatric issues.*

*Our cohort included 7655 patients, predominantly female (72.8%) and white (64.4%), with a mean ( $\pm$  SD) age of 61  $\pm$  14 years. Of these, 1852 (24.2%) underwent parathyroidectomy. Anxiety (30.5%), depression (28.7%) and impaired cognition (19.1%) were the most prevalent psychiatric complications. After adjusting for common psychiatric risk factors such as age, substance abuse and comorbidities, patients who had parathyroidectomy showed a reduced hazard ratio for new-onset impaired cognition (HR: 0.54, 95% CI: 0.43–0.68) and schizophrenia (HR: 0.27, 95% CI: 0.12–0.64), but not for anxiety (HR: 0.99, 95% CI: 0.83–1.19) or depression (HR: 0.89, 95% CI: 0.73–1.08).*

*Additionally, these patients were less likely to require emergency (2.5% vs 4.6%,  $p = 0.035$ ) or inpatient care (1.5% vs 4.6%,  $p = 0.001$ ) for psychiatric conditions.*

*The likelihood of developing new cognitive impairment or schizophrenia is lower in hypercalcemic patients after parathyroidectomy. Therefore, parathyroidectomy is advisable to mitigate the psychiatric effects associated with primary hyperparathyroidism.*



## APPLICATION OF AUTOFLUORESCENCE OF PARATHYROID GLANDS AND INDOCYANINE GREEN IMAGING TO EXPLORE A NEW STRATEGY FOR PARATHYROID GLAND PROTECTION DURING THYROID SURGERY: A RANDOMIZED CONTROLLED TRIAL

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### Abstract

#### Introduction

Hypoparathyroidism is one of the most common complications of thyroid surgery. This study aimed to apply near-infrared autofluorescence (NIRAF) light and indocyanine green (ICG) fluorescence imaging to investigate a new method for recognizing and protecting parathyroid glands.

#### Materials & Methods

All enrolled patients were randomized into the first NIRAF&ICG group, the second NIRAF&ICG group and the control group. The two NIRAF&ICG groups adopted different parathyroid autotransplantation strategies. The primary outcome of this study was the incidence of temporary postoperative hypoparathyroidism. We also performed a multivariate logistic regression of the factors associated with postoperative hypoparathyroidism and developed a nomogram based on it. The performance of the nomogram was determined by the ROC curve, decision curve analysis, and calibration curve.

#### Results

A total of 532 people were randomly assigned to 3 groups. Of these, 177 were assigned to the first NIRAF&ICG group, 176 to the second NIRAF&ICG group, and 179 underwent conventional thyroidectomy (control group). The incidence of postoperative temporary hypocalcemia was 7.3% in the first NIRAF&ICG group, 2.3% in the second NIRAF&ICG group, and 15.6% in the control group, showing a significant difference between groups ( $P < 0.05$ ). However, there was no significant difference in the incidence of permanent hypocalcemia. Univariate and multivariate analyses revealed that the use of NIRAF&ICG, different transplantation strategies, lymph node dissection, and the presence or absence of autotransplantation were all able to significantly influence the incidence of hypoparathyroidism. The nomogram showed good discriminatory and calibrative ability with an AUC of 76.5%, and decision curve analysis indicated that it could be applied in clinical practice.

#### Conclusions

The combination of NIRAF and ICG fluorescence imaging is a safe and effective technique for parathyroid identification and functional assessment during thyroid surgery. Our proposed new transplantation strategy based on NIRAF & ICG can significantly reduce the incidence of hypoparathyroidism.

**EXPLAINABLE ARTIFICIAL INTELLIGENCE FOR ULTRASONOGRAPHIC SEGMENTATION AND RISK STRATIFICATION OF THYROID NODULES**

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**Introduction:**

The interpretation of thyroid ultrasonography (USG) is a challenging task for both human and artificial intelligence (AI). Pre-operative decision making is high-staked and diagnostic AI tools require meaningful information of how an AI decision was rendered. This study aims to develop a multimodal eXplainable AI (XAI) system for thyroid nodule risk stratification into benign or malignant.

**Methods:**

414 USG images were collected from 105 patients undergoing thyroidectomy. Classification ground truth is exclusively gold-standard surgical histopathology. Relevant nodules were annotated by a dedicated study radiologist and surgeon. The AI architecture was trained to identify the relevant nodule and classify identified nodule into benign or malignant. Gradient-Weighted Class Activation Map(Grad-CAM) is used to provide saliency mapping for visual interpretability of the XAI system's prediction. The XAI was subsequently concatenated with clinical information including FNA results to produce an experimental multimodal risk stratification system.

**Results:**

**Segmentation:** The XAI system achieved best performance identifying lesional boundaries with 98.4% accuracy on a training dataset and 92.4% on a testing dataset.

**Classification:** The XAI system predicts histology with an accuracy of 93% vs 90%, F-score 90% vs 89%, sensitivity 93% vs 91% and specificity 92% vs 91% on a training dataset vs a testing dataset respectively.

**Grad-CAM:** Visual interpretability maps demonstrate salient areas for a benign nodule diagnosis overlaps spongiform areas and malignant diagnosis salient areas overlap solid components of a partially cystic-solid nodule and microcalcifications within nodules.

**Experimental multimodal model:** The XAI multimodal system predicts histology with an 93% accuracy, F-score 92%, sensitivity 93% and specificity 92%.

**Conclusion:**

Benchmarking histopathology as ground truth and providing visual interpretability can produce a clinically veritable XAI tool for thyroid nodule diagnostics. XAI additionally provides risk accountability and better understanding of the AI black-box.

## THE GENOMIC LANDSCAPE OF PAPILLARY THYROID CARCINOMA ON NEXT-GENERATION SEQUENCING IN PATIENTS UNDERGOING TOTAL THYROIDECTOMY

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### INTRODUCTION:

Papillary Thyroid Carcinoma (PTC) is the most common thyroid cancer globally, with a rising incidence. Its molecular biology remains insufficiently characterized. This cohort study aims to investigate the genomic landscape of PTC, including somatic mutations and fusion-genes/chromosomal translocations through Next-Generation Sequencing (NGS), in patients undergoing total thyroidectomy.

### PATIENTS AND METHODS:

Among 116 surgical candidates, 103 eligible patients (age= 42.9+/-13.7y; Male: Female= 14:89) with benign or malignant thyroid nodules were studied. Live thyroid tissue samples harvested intraoperatively that passed a qualitative/quantitative check for DNA and RNA yield were subjected to NGS on the Illumina HiSeq platform for mutational and transcriptomic analysis respectively.

### RESULTS:

Histopathology comprised 20 malignant (19.4%) and 83 benign (80.6%) cases including 16 PTC (15.5%) cases. On NGS, DNA-sequencing of PTC lesions revealed recurrent somatic mutations in established thyroid cancer-related genes including BRAF (n, %:16, 100%), ALK (9, 56.3%), RET (3, 18.8%), PIK3CA (2, 12.5%), NTRK1 (2, 12.5%), NTRK2 (14, 87.5%), NTRK3 (2, 12.5%), NRAS (1, 6.3%) and unestablished thyroid cancer-related gene PTCH1(5, 31.3%). RNA-sequencing revealed novel fusion-genes including MKRN1-BRAF, RN7SL1-CDH1, IRF2BPL-MED12, MED12-IRF2BPL, CPM-MDM2, and AC005895.3-PDGFRB not previously reported pathogenic in the Cancer Genome Atlas. SNP variant in NTRK1 gene at position NC\_000001.11:156879016 in chromosome 1 and other in ALK gene at position NC\_000002.12:29717663 in chromosome 2 were associated with malignancy (p<0.05). Another SNP in the ALK gene at position NC\_000002.12:29193706 was completely reported as homozygous alternate allele in the entire population of 103 patients. Notably, BRAF V600E and RET-PTC fusion-genes were absent.

### CONCLUSIONS:

This pioneering Indian NGS study elucidates novel somatic mutations and fusion-genes in PTC. The distinct genomic landscape in Indian PTC cases, specific to our population may have implications in precision diagnostics and personalized therapies, advancing our understanding of PTC tumorigenesis.

## LONG-TERM ONCOLOGICAL OUTCOMES OF FOLLICULAR THYROID CANCER IN ADOLESCENTS AND YOUNG ADULTS: A NATIONWIDE POPULATION-BASED STUDY

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*Introduction:* Follicular thyroid carcinoma (FTC) in adolescents and young adults (AYAs) is rare and data on long-term oncological outcomes are scarce. This study aimed to describe the long-term recurrence and survival rates of AYAs with FTC, and to identify risk factors for recurrence.

*Material & Methods:* We conducted a nationwide, retrospective cohort study, in which we combined two national databases. Patients aged 15 – 39 years, diagnosed with FTC in The Netherlands between 2000 and 2016, were included. Age, sex, pT-stage, pN-stage, size of tumor, focality, positive margins, angioinvasion were included in a cox proportional hazard model to identify risk factors for recurrence.

*Results:* 192 patients were included. Most patients presented with a minimally invasive FTC (MI-FTC) (95%). Five patients presented with synchronous metastases (2.6%). During a median follow-up of 12.0 years, three patients developed a recurrence (1.6%), of which one patient developed a regional recurrence (33%), and two patients presented with distant recurrences (67%). Five patients died during follow-up (2.6%). Cause of death was not captured. A cox proportional hazard model could not be performed, due to the low number of recurrences.

*Conclusion:* FTC in AYAs is generally characterized as a low-risk tumor, as it exhibits a very low recurrence rate, a high overall survival rate, and it typically presents as MI-FTC without synchronous metastases. These findings underscore the favorable long-term oncological prognosis of FTC in AYAs.

**PREDICTIVE FACTORS OF DISTANT METASTATIC RECURRENCE IN INTERMEDIATE-RISK PAPILLARY THYROID CARCINOMA**

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*It is uncertain whether adjuvant radioactive iodine therapy (RAIT) can additionally improve prognosis of intermediate-risk papillary thyroid carcinoma (PTC). We investigated predictive factors for distant recurrence that could indicate appropriate candidates for adjuvant RAIT.*

*Patients and methods:* From 15,041 PTC patients who underwent initial surgery from 2005 to 22, a total of 4,030 intermediate-risk conventional PTC cases were extracted and the outcomes without RAIT were examined (IRB approval 20200709-1).

*Results:* Lobectomy (LT) and total thyroidectomy (TT) was performed in 11.5% and 88.5%, respectively. Thyroid hormone supplementation was needed in 53.0% of LT and all TT cases. Recurrent laryngeal nerve paralysis and persistent hypoparathyroidism was observed in 1.3% and 2.4% ( $p = 0.180$ ), and in 0% and 3.5 of LT and TT cases ( $p < 0.001$ ), respectively.

*During the follow-up period (median 84 months), 56 cases (1.4%) had distant recurrence. Recurrence-free survival rates at 10 years was 93.5%. There was no significant difference in recurrence rate between LT and TT. Age  $\geq 55$ , cN1b, and tumor diameter  $\geq 31$  mm significantly associated with distant recurrence. There is a strong relationship between the number of positive risk factors and recurrence; the distant recurrence rate in cases of 0, 1, 2, and 3 positive factors is 0.3% (4/ 1203), 1.3% (25/ 1889), 2.7% (23/ 830) and 7.1% (4/ 52) (HR 6.46 (2.34-17.86), Log-rank  $< 0.001$ ).*

*The 10 years overall and the cancer-specific survival rate was 97.2% and 99.6%, and was significantly worse in patients who were age  $\geq 55$ , male, and had a tumor diameter  $\geq 31$  mm.*

*Conclusion:* For intermediate-risk conventional PTC, there is no difference in prognosis even if LT was conducted, showing fewer complications than TT. However, in patients with risk factors for distant metastatic recurrence, such as age  $\geq 55$  years, cN1b, and tumor size  $\geq 3$  cm, adjuvant RAIT should be considered.

### CREATING A TRAUMA SURGERY REGISTRY APP IN A MALAYSIAN METROPOLITAN TRAUMA SERVICE

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#### *Introduction:*

The Hospital Sultanah Aminah Johor Bahru (HSAJB) Trauma Surgery Service has faced challenges due to the absence of a comprehensive computerized trauma registry, hindering effective surgical audits and our quality improvement efforts. Our main goal was to create a trauma surgery registry application (app) within our service, and after a year of successful implementation, we conducted a comprehensive assessment of its effectiveness.

#### *Methodology:*

Formal ethical approval was obtained before commencing the design and development of the trauma registry app. We designed the registry app as a flat file and securely hosted on a dedicated server. The app is cost-free, compatible with multiple devices (phones, tablets, desktops), and automatically calculates ISS, RTS, and TRISS scores. Comprehensive training was provided to users, and data capture was seamlessly integrated into patient care processes. We assessed data entry compliance rates from January to December 2022 and user satisfaction as we reached the one-year milestone post-implementation.

#### *Results:*

The registry app's design, construction, and integration into our service were successful. We extracted and audited data, revealing 1052 patient entries. Compliance rates reached an impressive ninety-eight percent, indicating the app's effectiveness. High user satisfaction is reflected by its user-friendly interface and functionality. However, deficits, such as underreported deaths and omitted weekend discharges, were identified for improvement.

#### *Conclusion:*

Launching our trauma surgery registry app signifies our dedicated effort to improve trauma care quality in our service. This cost-free, user-friendly, and easily replicable app is precious for non-computerized trauma centers, especially in low and middle-income countries. Following a thorough one-year audit that uncovered deficiencies, we are actively working on strategic solutions to integrate the registry app into our clinical care workflow seamlessly.

**EMERGENCY SUBTOTAL COLECTOMY OUTCOMES: A TERTIARY WESTERN AUSTRALIAN EXPERIENCE WITHIN THE ACUTE SURGICAL UNIT MODEL**

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*The Acute Surgical Unit (ASU) model has become increasingly popular given the demonstrated benefits in improved access to timely in-hours surgery, reduced length of stay and complication rates. The ASU is staffed by general surgeons with varying subspecialty interests and experience. An emergency subtotal colectomy is indicated in various aetiologies including ischaemic colitis, large bowel obstruction (LBO), inflammatory bowel disease (IBD), and toxic megacolon. We aim to identify factors that influence patient outcomes following an emergency subtotal colectomy performed within the ASU model.*

*A coding search of 'subtotal colectomy' performed within the emergency theatre between January 2016 and June 2022. Primary endpoints were mortality and 30-day readmission. Secondary endpoints include length of stay, return to theatre, ICU admission, primary anastomosis. Subgroup analysis was performed on timing and duration of surgery, and the intraoperative impact of a colorectal surgeon.*

*Emergency subtotal colectomies were performed for ischaemic colitis (n=18), LBO (n=18) IBD (n=16), perforation (n=2), volvulus (n=1), toxic megacolon (n=1). Malignancy was the most common cause for LBO (n=14/18).*

*The ischaemic colitis group was associated with high mortality (27.8%), and ICU admission (n=94.4%) rates. Mortality rates were lower within the LBO (n=0) and IBD (n=1) groups. Primary anastomosis was performed in 55% of LBO cases (n=10). There were no anastomotic leaks within this cohort.*

*Patients undergoing overnight operations required higher rates of ICU admission compared to daytime cases (73% vs. 36%, p=0.03). The intraoperative presence of a colorectal surgeon did not result in any differences in primary or secondary endpoints.*

*Ischaemic colitis requiring emergency subtotal colectomies are associated with high morbidity and mortality. Primary anastomosis may be safely performed for LBO. Experienced general surgeons may safely perform emergency colorectal procedures within the ASU model.*

## INDICATIONS AND OUTCOME OF INTENSIVE CARE UNIT ADMISSIONS AFTER SURGERY IN THE TERTIARY HOSPITAL IN CAMEROON

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**Introduction:** Surgical procedures carry significant morbidity and mortality sometimes requiring intensive care unit (ICU) admission. There is however a dearth of data from Cameroon regarding the indications and outcome of surgical patients admitted to the intensive care unit. The study aimed at assessing the indications and the outcome of patients admitted to the ICU after surgery in a tertiary hospital in Cameroon, Douala General Hospital (DGH).

**Materials and Methods:** In the 5-year retrospective study that was conducted, all patients admitted to the ICU after surgery from January 2018 to December 2022 were included. The data collected were analyzed using the Statistical Package for the Social Sciences version 25. Factors associated with poor outcome were identified using multivariate logistic regression. A p-value < 0.05 was considered statistically significant, at a confidence interval of 95%.

**Results:** The study included 352 patients aged 43.6 + 19.8 years, 209 males and American Society of Anesthesiologists (ASA) Physical Status scores predominantly (71.6%) in the III/IV classes. Majority of the admissions were unplanned (54.8%). Intraoperative cardiovascular compromise (51.7%) and prolonged surgery (18.5%) were the most common indications of unplanned admission while ASA > 2 (40.6%) and Age > 60 years (13.4%) were the commonest in the planned category. Of the 352 patients 20.2% (71) had prolonged ICU length of stay. Significant predictors of prolonged ICU stay were metabolic (OR: 5.508, CI: 2.640-11.491, p<0.001) and infectious complications (OR: 3.452, CI: 1.816-6.565, p<0.001), and the need for mechanical ventilation (OR: 17.463, CI: 7.367-41.393, p<0.001). The mortality was 22.7%. Multivariate logistic regression revealed that developing cardiovascular (OR: 19.608, CI: 0.017-0.146, p<0.001), respiratory (OR: 38.462, CI: 0.007-0.091, p<0.001) or infectious complications (OR: 16.667, CI: 0.016-0.224, p<0.001), and requiring ventilation (OR: 7.092, CI: 0.057-0.353, p<0.001), vasopressors (OR: 4.484, CI: 0.086-0.575, p=0.002) or dialysis (OR: 34.482, CI: 0.003-0.323, p=0.004) was predictive of mortality, and prolonged ICU stay (OR: 5.450, CI: 1.652-17.975, p=0.005) was an independent risk factor for mortality.

**Conclusion:** The majority of postoperative ICU admissions were unplanned, intraoperative cardiovascular compromise, prolonged surgery and intraoperative respiratory compromise being the leading indications of admission to intensive care. One fifth of patients had prolonged ICU stay and in-ICU mortality was high. The development of cardiovascular, respiratory and infectious complications requiring appropriate therapy, and prolonged ICU stay should be considered important predictors of mortality.

**Keywords:** Intensive care unit, indications, admissions after surgery, outcome,



**INFLUENCE OF TRAINING ON THE PERFORMANCE OF TRAUMA TEAM**

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*Background: Worldwide trauma constitutes 10% of all deaths. In UAE, trauma is the 2nd leading cause of death for both patriots&expatriates, accounting for > 20% of all fatalities. Trauma affects all ages, especially adolescents&young adults. Most trauma cases are preventable. Morbidity& mortality can be decreased after trauma by adopting a systematic approach to trauma victim. Simulation-based training is beneficial by allowing imitation of a variety of real-life situations without compromising patient safety. Objectives: This study aims to assess impact of trauma team training(TTT) on the performance of the trauma team and the time of staying of trauma patients in A&E. Methods: In SKMC Ajman, TTT program was started early for all members of the trauma team including (airway doctor, radiographer, trauma technician, procedure nurse, assessment doctor, surgeon, scribe, social worker, circulation nurses, primary survey doctor, recorder, team leader) in addition to in addition to all personnel recruited during trauma. The 1-day training program, concentrated on the discipline of each member of the trauma team during simulated patient treatment, and his role in the team. Assessment of Influence of TTT on the performance of the trauma team is performed by interrogating the participants in this training. Time spent to resuscitate patients in A&E is measured before and after the training of the trauma team personnel. Results: Following implementation of TTT, results show that the meantime of performance is decreased by approximately 75% from 220.8 min to 54.48 min. Patient's stay in A&E is decreased significantly from 9 -827 minutes before training to 14–206 minutes after training. Conclusion: Training reinforces the already learned skills, corrects and minimises mistakes. Implementation of TTT is of utmost importance to be adapted in every trauma centre to achieve optimal performance and benefit to patients.*

## EXPLORING MILITARY-CIVILIAN TRAUMA SYSTEM INTEGRATION AS A TOOL FOR INTERNATIONAL TRAUMA SYSTEM DEVELOPMENT

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### Objectives:

Utilizing partnerships between military and civilian entities to integrate trauma systems may offer a viable route to reduce duplication of services, expand cost-effective quality care, and support military objectives. The Integrated Military Partnerships and Civilian Trauma Systems (IMPACT) Study was initiated to examine and address the challenges faced in establishing integrated systems of trauma care.

### Methods:

Through a survey this study comprehensively gathered data on trauma system capabilities and the current degree of military-civilian integration of 77 individual countries. Our research collaborative developed a scoring method based on participant responses; countries were classified into three distinct integration types, ranging from minimal (Type I) to robust (Type III). This method allowed analysis of the association of numerous trauma system factors with increased integration status.

### Results:

In total the survey collected 246 responses from 77 individual countries. Improvements in resource availability with increased integration status were assessed in different aspects of trauma care delivery. Ambulance personnel availability was found to be improved with increased integration status (Type I: 48%, Type II: 69.2%, Type III: 84.6%), demonstrating a statistically significant correlation ( $\text{Tau-b}=0.299, p<0.05$ ). In the rehabilitation/post-hospital setting, a positive correlation with rehabilitation provider and therapist availability was also noted with increased integration status ( $\text{Tau-b}=0.230, p<0.05$ ); Type I: 40%, Type II: 80.8%, Type III: 96.2%.

### Conclusion:

Our comprehensive dataset allows us to understand not only factors surrounding resource availability, but also patient-care, communication, finances, and many other components of trauma care. This analysis helps us understand the global landscape of military-civilian trauma system integration. From this foundation, our group aims to build an adaptable framework for implementation of trauma system integration that can significantly reduce the burden of traumatic disease globally.

**FRAILITY IN THE 'REAL-TIME' SETTING OF EMERGENCY LAPAROTOMY: A COMPARISON BETWEEN THE 5- AND 11-ITEM MODIFIED FRAILITY INDICES**

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*Background:* Emergency laparotomy (EL) is a high-risk operation performed on an evolving demographic in an ageing first world. Objective frailty assessment using a validated index has the potential to improve risk stratification. The NSQIP-based 11-Item modified frailty index - and shortened 5-Item version have demonstrated strong correlation with mortality and complications following EL using the NSQIP database. The predictive power and usefulness of both indices have not been examined in clinical practice. The goal of this study was to assess the correlation between frailty using the 11-Item mFI, mortality and other post-operative outcomes for older EL patients. Secondary aims were to compare the 11-Item and shortened 5-item mFI in terms of value and predictive ability in the EL setting.

*Methods:* A prospective multi-center observational study of older EL patients was conducted across five hospitals in New Zealand between 2017-2022. Both indices were calculated by dividing the number of factors by the total number of possible factors. Spearman's  $\rho$  was used to assess correlation between the two indices. Predictive logistic regression models - both unadjusted and adjusted for age, gender and ethnicity - were created for each outcome.

*Outcomes:* Frailty was assessed in 861 participants. Spearman  $\rho$  was 0.6 ( $p < 0.001$ ). Despite the 5-Item mFI classifying an additional 119 participants as frail, both models demonstrated strong correlation with long-term mortality, major complications, admission to ICU, admission for rehabilitation, and 30-day readmission. The 11-Item mFI model demonstrated a greater association with early mortality and independent relationship with reoperation and increased length of stay.

*Conclusions:* Frailty was strongly correlated with mortality up to one-year post-EL and other important outcomes for older patients. While the 11-Item mFI may provide additional information, the reduced number of required variables for the 5-Item mFI may make this an appropriate substitute for the emergency setting.

### **SENTINEL LYMPH NODE BIOPSY IN EARLY BREAST CANCER USING METHYLENE BLUE DYE ALONE: A SAFE, SIMPLE, AND COST-EFFECTIVE PROCEDURE IN RESOURCE-CONSTRAINED SETTINGS**

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#### *Introduction:*

SLNB plays a crucial role in early breast cancer management by sampling axillary nodes without the need for complete axillary dissection. Typically, SLNB combines radioisotope and blue dye; however, resource limitations hinder access to these techniques. Methylene blue dye alone for SLNB emerges as a promising alternative due to its cost-effectiveness and accessibility. This study aims to evaluate the efficacy, outcomes, and cost-effectiveness of SLNB using methylene blue dye in patients with early breast cancer.

#### *Methods:*

A retrospective review involved 997 clinically node-negative early breast cancer patients who underwent SLNB with methylene blue dye alone between 2011 and 2023. Patient data, tumor characteristics, SLN identification rates, positivity rates, and follow-up details were analyzed. Surgical techniques, histopathological examination, adjuvant therapies, and postoperative morbidity were assessed.

#### *Results:*

The cohort comprised mostly cT2 tumors (62.7%) and predominantly ER-positive cases (68.6%). SLNs were successfully identified in 95.9% of patients, with a positivity rate of 23.6%. No adverse reactions to methylene blue dye were reported, no lymphedema or axillary nodal recurrences were documented during follow-up.

#### *Discussion:*

The study demonstrated the high efficacy of methylene blue dye alone in identifying SLNs, adequate positivity rates, and safety without reported adverse reactions. This technique's low cost, simplicity, and comparable outcomes make it a feasible alternative in resource-limited settings, aligning with the observed low morbidity and absence of axillary nodal recurrences.

#### *Conclusion:*

Methylene blue dye alone for SLNB in early breast cancer showcases acceptable identification and positivity rates, negligible adverse effects, and low postoperative morbidity. Its cost-effectiveness, safety, and effectiveness in detecting sentinel nodes position it as a viable option, especially in resource-constrained healthcare setups. The study strongly supports considering this technique for its multiple advantages in surgical centers with limited resources.

### ENHANCED RECOVERY AFTER SURGERY FOR ONCOLOGICAL BREAST SURGERY REDUCES LENGTH OF STAY IN A RESOURCE LIMITED SETTING

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#### *Background:*

Early recovery after surgery (ERAS) protocols in breast surgery has optimised resources and reduce healthcare costs.<sup>1</sup> These protocols are well established in tertiary centres, but slow to implement in regional centres.<sup>2</sup> These protocols hold even greater significance in smaller hospitals, where there are limited resources and persistent challenges with bed shortages and mounting waitlist pressures.<sup>3</sup> Our study aims to assess the feasibility of early discharge with the application of our ERAS protocol to mastectomies in a resource-constrained and rural setting.

#### *Methods:*

Breast cancer patients who underwent mastectomies with or without reconstruction between January 2017 to July 2023 was retrospectively reviewed. From January 2022, we implemented a standardised ERAS protocol for patients undergoing mastectomy. This incorporated a combination of pre-, intra- and post-operative elements to enhance patient readiness for discharge. Our study compared these patients (ERAS group) with the outcomes of mastectomies performed prior to January 2022 (Pre-ERAS group).

#### *Results:*

104 patients were identified. 74.4% were discharged within 24 hours in the ERAS group compared to 23.1%. Length of stay was reduced from 2.26 to 1.42 days. There was no differences in unplanned clinician reviews or early representation to the emergency department between the two groups.

#### *Conclusion:*

Reduced length of stay without increased complications can be achieved in a uniquely resource limited environment with our protocolised ERAS principals. Our protocol has been instrumental in allowing safe discharges within 24 hours. Other centres may benefit in adopting selective strategies implemented by us for their own ERAS protocols in breast surgery.

**CLINICAL APPLICABILITY OF WHOLE-BODY LOW DOSE CT SCAN FOR DETECTING BONE METASTASIS IN BREAST CANCER PATIENTS**

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**Background:** Skeletal scintigraphy has limited availability and use in developing countries. We devised a Whole-Body Low Dose CT (WBLDCT) scan protocol for detection of bone metastasis in breast cancer patients.

**Methodology:** This cross-sectional study was conducted from November 2021 to May 2023 at tertiary center in India with aim to study clinical applicability of WBLDCT scan for detecting bone metastasis in breast cancer patients. Breast cancer patients with primary tumor measuring 5cm or more, pathological axillary lymph node metastasis, Stage III/IV disease and disease recurrence were included. WBLDCT and Bone scan were done within 2 weeks. WBLDCT was done alongwith conventional dose CT scan done for staging workup. Image analysis was performed by Radiologist and Nuclear medicine experts in blinded fashion. Sensitivity, specificity, positive and negative predictive value, concordance rates were calculated. Agreement amongst WBLDCT and Bone scan was calculated using Inter-rater agreement.  $p$  value  $<0.05$  was taken as significant.

**Results:** 110 patients were enrolled with mean age of 48.5 years. Around 75% had stage III disease. Estrogen receptor positive disease was seen in 43.64% and 30% were triple negative. Bone scan was done in 107 patients. Both bone scan and WBLDCT detected bone metastasis in 19 patients. Bone scan picked up additional metastasis in three patients which were missed on WBLDCT. WBLDCT detected bone metastasis additionally in three patients which were missed on Bone scan. Sensitivity and specificity of WBLDCT for detection of bone metastasis was 86.36% and 96.47% respectively. Concordance rate between Bone scan and WBLDCT scan was 94.39% with inter-rater Kappa(k) quotient for agreement of 0.828 ( $p<0.0001$ ). WBLDCT and bone scan were similar for detecting per-anatomical site bone metastasis.

**Conclusion:** WBLDCT scan has comparable diagnostic capability to skeletal scintigraphy in detecting bony metastasis in breast cancer and may be useful alternative in resource limited settings.

### PATIENTS WITH BILATERAL AUGMENTATION IMPLANTS AND BREAST CANCER - INTERNATIONAL VIEWS ON OPTIMAL MANAGEMENT

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*Background:* International Society of Aesthetic Plastic Surgeons reported in 2022 over 2 million breast augmentations (BA) predominantly in women between 18-34 years (54%) and 35-50 years (36%). In women with BA and suspicious breast pathology, targeted projections with mammography, ultrasound and MRI are adjuncts that can better visualize the glandular tissue. Biopsies must avoid damaging the implant especially when located prepectoral. For the surgical procedure both breast conservation and mammography are options. When Radiotherapy increases the risk of capsular contracture. Current practice guidelines are lacking.

*Aim:* To explore the views of the global breast surgical society regarding experience and management of patients with BA.

*Material and methods:* An online questionnaire was developed after feedback from experienced international breast surgical specialists. The survey was distributed via surgical societies. Recipients answered 40 questions and a case scenario anonymously, denouncing work setting, public or private and number of years in practice.

*Results:* Ninety-six responders from four continents 19 countries, answered. The majority being in breast practice > 10 years, working within multidisciplinary settings as part of an oncoplastic team. Majority treated <10 cases per annum. National guidelines and multidisciplinary recommendations prevailed but also patients' choice. MRI was integrated in the work up except in the UK. The implant could be left if possible and breast conservation performed when suitable. Radiotherapy was not a contraindication but a concern when the implant was retained. Revision surgeries and symmetrization procedures were offered both in private and in public. Patient participation determined.

*Recourse restraints* were mentioned as limiting factors for additional surgeries in Sweden.

*Conclusion:* BA and breast cancer is emerging as an entity and thus optimal management for patients and health providers is needed. Our survey proved that relative consensus prevailed globally, mainly on limited empirical grounds.

**PROSPECTIVE STUDY EVALUATING FEASIBILITY, COSMETIC OUTCOMES, STRESS AND SATISFACTION LEVELS IN PATIENTS UNDERGOING RISK REDUCING SURGERY AT A TERTIARY CARE CANCER CENTRE IN LMIC**

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**Background**

Risk Reducing Surgery (RRS) in breast cancer is an emerging field in LMIC. In last one decades the focus on genetic testing has increased, so the numbers of patients with pathogenic germline mutations and these patients and their relatives need risk reducing interventions. This study aims to evaluate feasibility, cosmetic outcomes, stress and satisfaction levels in patients undergoing risk reducing surgery.

**Materials and methodology**

This prospective study was conducted in the Department of Surgical Oncology, AIIMS, New Delhi from 2018-2022. Patients diagnosed with breast cancer with pathogenic genetic mutation and patients undergoing any type of risk reducing surgery are included.

**Results**

Total 60 patients with pathologic mutation were analysed. RRS alone done in 13 (22%) patients. Both RRS and definitive surgery were done in 28 (47%) patients. Out of 41 patients, Risk Reducing Mastectomy alone was done in 15(37%) patients, RRSO alone in 5(12%) patients and, both RRM and RRSO in 21(51%) patients. BRCA1 mutation seen in 64% of patients and BRCA2 mutation seen in 22% of patients. Implant based reconstruction done in 44% patients. Cosmesis for reconstruction after RRS was well accepted in 90% patients. Ninety percent patients were satisfied with RRS. Stress regarding future development of cancer relieved in 75% patients. Quality of life was measured three months after RRS. Patient physically feels fit in 31(76%) patients, socially active which constitutes 36 (88%) and psychologically fit in 32(78%) patients

**Conclusion**

Risk Reducing Surgery are feasible now in LMIC (India) particularly in terms of acceptance for risk reduction surgery, willingness for reconstruction, availability of implants and dedicated surgeons. Stress regarding future development of cancer is relieved after Risk Reducing Surgery and good quality of life in terms of physical, social and psychological wellbeing.



**PATIENT PERSPECTIVES ON RECONSTRUCTION FOLLOWING MASTECTOMY: A PROSPECTIVE STUDY**

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**Introduction:**

Majority of women having a mastectomy for breast cancer treatment do not undergo breast reconstruction, with rates of reconstruction ranging from 25%-35% in population-based studies of women treated between 2003-2007 in UK. Even among women treated in National Cancer Institute-designated cancer centers participating in the National Comprehensive Cancer Network, just over 50% of those having mastectomy underwent reconstruction. No such study has been done in India.

The purpose of this study is to examine the rates of both immediate and delayed breast reconstruction, and correlates of their use, patient attitudes toward reconstruction and identify whether there is a significant unmet need for reconstruction after completion of cancer treatment.

**Methods:**

This prospective study was conducted at a tertiary care centre in central India. All the patients undergoing mastectomy for breast cancer were asked to fill a questionnaire to assess their perspective regarding breast reconstruction following mastectomy.

**Results:**

Response rates were 95%. Of 85 patients none underwent immediate reconstruction or delayed reconstruction at the end of 18 months follow-up. Factors significantly associated with not undergoing reconstruction were two sites of surgery, major comorbidity (AOR, 2.27 [95% CI, 1.01-5.11];  $P = .048$ ), and fear of disease. The most common patient-reported reasons for not having reconstruction were the desire to avoid additional surgery (75.5%) and the belief that it was not important (60.8%). Education level and rural or urban status were insignificant.

**Conclusion and relevance:**

Reconstruction rates largely reflect patient demand; most patients are not willing for reconstruction in our set up. As opposed to common perception education level and urban or rural status did not influence reconstruction rates. Specific approaches are needed to address lingering patient-level and system factors with a negative effect on reconstruction among women in this region.

## **PRACTICE OF ENHANCED RECOVERY AFTER CAESAREAN DELIVERY: A RANDOMISED CONTROLLED CLINICAL TRIAL IN A TERTIARY HOSPITAL IN YAOUNDÉ-CAMEROON**

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*Introduction:* Enhanced recovery after surgery (ERAS) is a new and evolving concept whereby strategies are put in place in the perioperative period to ensure better and accelerated patient recovery with fewer complications. Being a new protocol in our milieu, the need for pre-implementation trials motivated our study in elective caesarean section (CS) in the Yaoundé Gyneco-Obstetric and Pediatric Hospital (YGOPH).

*Methodology:* A single-blinded randomized controlled trial, in the ratio 1:1, from December 2020 to August 2021, compared the ERAS in caesarean section (ERAS-CS) treatment package, with standard care (Non-ERAS group). ERAS-CS package included pre-operative counselling, reduced pre-operative fast, warming of fluids intraoperatively, use of Dexamethasone and Ondansetron (to prevent post-operative nausea and vomiting) and early oral feeding as well as early mobilisation. Satisfaction 24 hours after surgery as well as complications were evaluated in both groups. Data analysis was with STATA.

*Results:* We enrolled 42 women, 21 in each arm. Average age of participants was 31.9 years. A body temperature drop of 0.6 degree Celsius in the ERAS group versus 1.7 degree Celsius in N-ERAS group,  $p=0.001$  was noted.

Intraoperative nausea and vomiting (IONV) was significantly decreased in the ERAS group ( $p=0.038$ ) as well as per-operative hunger and cold. ERAS patients felt significantly more capable of looking after their personal toileting and hygiene, and in control with a greater feeling of well-being than those in the N-ERAS group, 24 hours after surgery.

*Conclusion:* The ERAS-CS program led to fewer pre and post-operative complications, and faster recovery of patients.

*Key Words:* Caesarean section; enhanced recovery; complications; satisfaction

**ENHANCED RECOVERY AFTER ENDOCRINE SURGERY (ERAES): USHERING IN A NEW ERA TOWARDS HEALTH CARE PARITY**

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*Enhanced recovery after surgery efforts have been shown to improve surgical outcomes. In this study we evaluated the effects of ERAS pathways after endocrine surgery on improving health care disparities and opioid prescription practices.*

*Methods: 1289 patients who underwent parathyroidectomy and thyroidectomy between June 2020 and December 2023 were divided into two groups: pre-ERAES (before 7/2021) and ERAES (after 3/2022). The ERAES group was subdivided into low ( $\leq 2$  interventions) and high ( $> 2$  interventions) adherence. Patients were stratified by race/ethnicity, age ( $< 65$  or  $\geq 65$ ), and sex. Outcomes of interest included peri-operative morphine milligram equivalents (MME) administered, length of stay (LOS), and receipt of opioid prescription.*

*Results: ERAES patients had shorter LOS (-4.3 hr,  $P < 0.0001$ ), decreased MME (-18.11 MME,  $p = < 0.0001$ ), and lower prescription rates (-8.56%,  $p = 0.014$ ). Differences were most pronounced in the high ERAES adherence group. Low ERAES adherence Hispanic patients were administered higher MME (33.5 vs 15.8 white,  $P < 0.0001$ ), had higher LOS (19hr vs 11.9hr whites,  $p = 0.0009$ ), and prescribed more opioids (54.9% vs 37.4% white,  $p = 0.018$ ). With high ERAES adherence, differences were no longer significant. Low ERAES adherence black patients were prescribed more opioids (51.3% vs 37.4% white  $p = 0.027$ ). With high ERAES adherence opiate prescription differences were not significant. In pre-ERAES and low adherence ERAES, younger patients received more MME (21.8 vs 15.0 MME,  $p = 0.011$ ) and higher rates of opioid prescription (+9.6%,  $p = 0.041$ ). In the high adherence ERAES group, opioid consumption and prescription rates decreased in younger patients and were no longer significantly different from older patients. Low adherence ERAES females received more post-operative MME (20.9 VS 14.1 MME,  $p = 0.0289$ ) with no difference seen with high adherence ERAES between sexes.*

*Conclusion: High adherence to ERAES pathways for endocrine surgical patients improve health care parity for minority groups and sex/age practice differences resulting in decreased peri-operative opioid use and LOS.*

**BLEEDING IN SEVERE ACUTE PANCREATITIS (PANCREONECROSIS)**

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*The course of severe acute pancreatitis/pancreatic necrosis (SAP-PN), complicated by bleeding, is associated with the final unfavorable outcome of treatment in this group of patients.*

**MATERIALS AND METHODS.** For the period 2014 - 2023. of 387 patients with TOP-PZ, 38 (9.81%) developed bleeding:

(A) in 23 patients had parapancreatic, in 21 cases - intraluminal. 6 had both intraluminal and parapancreatic bleeding;

(B) in 37 patients – “major”, in 7 cases – “small”;

(C) in 34 patients - for the first time (primary), in 4 cases - postoperative bleeding;

The average duration of pancreatitis until admission to the hospital in patients with developed bleeding was  $3.2 \pm 0.9$  days (delay in admission).

**RESULTS:** Predictors of bleeding were: delay in hospitalization in a specialized hospital, organ failure, infected pancreatic necrosis, systemic sepsis - bacterial and fungal (co-infection).

In multivariate analysis, infected necrosis and the presence of fungal sepsis were significant factors. The need for surgical intervention (laparotomy, and more) (84.2% vs. 24.1%), length of stay in intensive care ( $17.3 \pm 4.2$  vs.  $8.6 \pm 1.1$  days) and mortality (63.2% versus 20.9%) were significantly higher in patients who developed bleeding.

5 patients had arterial embolization, 22 patients required surgical intervention (laparotomy, and more.), including after 1 unsuccessful embolization. 23 of 23 patients with intra-abdominal bleeding required surgical intervention (laparotomy, etc.), in 4 successful embolization was achieved. CT severity index and surgery were significantly associated with intra-abdominal bleeding. Organ failure and surgery have been associated with the development of severe bleeding.

**CONCLUSIONS:** Bleeding in SAP-PN is clearly associated with increased mortality. Infected necrosis increases the destruction of the vascular wall, which contributes to the development of bleeding. Bleeding into the lumen of hollow organs may indicate erosion of adjacent internal organs.

### FEATURES OF FAST-TRACK FOR TOTAL PANCREATECTOMY

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**INTRODUCTION:** Over more than 15 years of history, accelerated recovery protocols have penetrated the vast majority of surgical areas. Enhanced recovery (ERAS) protocols are now increasingly used in the most labor-intensive and advanced procedures, such as hepatobiliary and pancreatic surgery.

No data have been published to date on accelerated recovery following total pancreatectomy (TP). The purpose of this study was to highlight the characteristics of patients who have undergone TP that allow us to determine the key points when creating an enhanced recovery system (ERAS) protocol for TP.

**MATERIALS & METHODS:** TP was performed from 2008 to 2022 by a single surgical team using the traditional open method. In all cases, accelerated recovery techniques were used in the perioperative period. The observation period included the entire hospitalization period and 30 days from discharge.

**RESULTS:** The results of treatment of 25 consecutively operated patients were studied. Demographic indicators: men 16, women 9; average age is 61 years (43-83). In all cases, the indication for surgery was a suspicion of a pancreatic tumor. The average duration of inpatient treatment was 21 days. Of the 25 patients, 4 died due to postoperative complications. Data on key aspects of accelerated recovery (including nutritional status, metabolic status, glycemic control, antimicrobial prophylaxis, intraoperative features) were analyzed during the study to create a truly new protocol (both in general and for fast-track).

**CONCLUSIONS:** Enhanced recovery protocols (ERAS) can be used in all patients undergoing TP, taking into account the characteristics of both the operation itself and the course of the postoperative period. Recommendations developed for pancreaticoduodenectomy are insufficient for LT and require significant changes.

**PREDICTING POST HEPATECTOMY LIVER FAILURE (PHLF) IN RESECTABLE HEPATOCELLULAR CARCINOMA(HCC) USING ASPARTATE AMINOTRANSFERASE TO PLATELET RATIO INDEX (APRI) SCORE**

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**Introduction**

Posthepatectomy liver failure(PHLF) remains one of the most dangerous and feared consequences after hepatectomy in Hepatocellular Carcinoma(HCC) patients. Despite significant improvements in surgical procedures and therapy over the last few decades, PHLF is a leading cause of postoperative mortality, therefore a reliable preoperative prediction of the risk of PHLF is critical. The purpose of this study was to determine the efficacy of a preoperative aspartate aminotransferase-to-platelet-ratio index(APRI) score in predicting the risk of PHLF in patients with HCC after liver resection, as well as to compare the APRI's discriminatory performance with the Child-Pugh score(CPS) and model for end-stage liver disease(MELD) score.

**Method**

Retrospective data from 2015 to 2020 in two Hepatobiliary centres were collected and analysed. A total of 200 consecutive HCC patients who had major and minor liver resection were included and examined. Univariate and multivariate analyses were used to explore risk variables linked with PHLF. The area under the ROC curve was used to analyse the predictability of APRI, CPS and MELD scores for PHLF. The cutoff value, specificity, and sensitivity of the APRI score for predicting PHLF were determined using ROC analysis.

**Result**

PHLF occurred in 39 patients (19.5%). Univariate and multivariate studies indicated that Child-Pugh and APRI scores were strongly related to PHLF. According to the area under the ROC curve, the APRI score was much more accurate at predicting PHLF than CPS or MELD (AUC 0.819, 0.614, 0.619 respectively). With an ideal cutoff value of 0.50, the APRI score predicted PHLF with 82.1% sensitivity and 79.5% specificity.

**Conclusion**

APRI score can accurately predict the risk of PHLF comparing to CPS and MELD Score and may be useful in guiding surgical treatment of patients with HCC.

## PREDICTIVE FACTORS OF SEVERE ACUTE PANCREATITIS

*Predictive factors of severe acute pancreatitis*

*Sutida Sonbankoh, Chalerm Eurboonyanun, Kulyada Eurboonyanun, Tharatip Srisuk, Somchai Ruangwannasak*

### *Introduction*

*Severe acute pancreatitis (SAP) develops in about 20-30% of patients with acute pancreatitis (AP) and is associated with a high risk of mortality. However, currently, there is no definite and ideal scoring system with a high sensitivity and specificity for severity stratification at early stage. The aim of our study was to evaluate the factors and ability of BISAP, RANSON, CTSI score to predict severity and mortality in acute pancreatitis patients from our institution.*

### *Methods*

*We retrospectively reviewed the association between acute pancreatitis severity and clinical parameters in patients with acute pancreatitis from January 2016 to December 2021 at Srinagarind Hospital, Khon Kaen University, Thailand.*

### *Results*

*A total of 117 patients were enrolled. 9 (8%) and 14 (13%) patients had severe and moderate acute pancreatitis, respectively and 1(1%) patients died despite multidisciplinary treatment. In a multivariate analysis, blood urea nitrogen (BUN) (OR=1.08, 95%CI=1.02-1.15, p=0.013) was an independent factor for moderate and severe acute pancreatitis. BISAP > 3 (OR=12.41, 95%CI= 0.90-171.12, p=0.06) had a highest Odd ratio however there is no statistical significant.*

### *Conclusion*

*Among the clinical parameters, BUN is the only independent predictors of severe acute pancreatitis. More research is required to investigate the predicting factors of severe acute pancreatitis.*

*Cat general surgery*

*Submission type oral or poster*

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## ROBOTIC VERSUS LAPAROSCOPIC GENERAL SURGERY IN THE EMERGENCY SETTING : A SYSTEMATIC REVIEW

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### Introduction

Robot - assisted general surgery is on the increase and has proven benefit over laparoscopy in some elective procedures. The superiority of robotic surgery in the urgent general surgery operations is unclear. This systematic review aimed to compare the outcomes of robotic versus laparoscopic surgeries in the acute setting.

### Method

A systematic search of MEDLINE, EMBASE, Science Citation Index Expanded, and Cochrane library was performed and a literature review of articles comparing perioperative outcomes of general surgery emergencies managed laparoscopically versus robot-assisted was conducted.

### Results

Of 1073 articles screened, 6 articles comparing outcomes of robotic and laparoscopic procedures reporting on 1058 patients were analysed. Two looked at cholecystectomy and the rest looked at ileocaecal resections, subtotal colectomy, hiatal hernia repair and repair of perforated gastrojejunal ulcers. The level of evidence was low. The operative time for cholecystectomies was shorter for robot-assisted cases, but significantly long for all the others. The length of stay was shorter for robotic cases except in the case series.

### Conclusion

Urgent operations for some general surgery conditions can be done robotically and the perioperative outcomes are non-inferior to laparoscopic surgery. The significantly low evidence mandates a large, multi-centre RCT with standardised reported outcomes.



**PARTIAL ADRENALECTOMY: A SINGLE INSTITUTION SERIES OF 745 CASES**

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**Introduction**

*In selected cases, partial adrenalectomy (PA) is the alternative to total adrenalectomy. PA enables the preservation of adreno-cortical function, particularly in cases of hereditary and/or bilateral diseases. Furthermore, PA may simplify the removal of neoplastic adrenal tissue in an eccentric position. This study analyzes our experience with retroperitoneoscopic PA and its impact on adrenal function.*

**Materials and Methods**

*From January 2010 to January 2024, a total of 745 partial adrenalectomies were performed in 686 patients (411F; mean age of  $49.6 \pm 15$ , range: 10-85). This group represents 38% of all retroperitoneoscopic adrenalectomies during this period. There were 263 cases of pheochromocytoma, 238 of Conn's, 115 of Cushing's, 58 of non-functioning adenoma, 34 of adrenal metastases, and 37 of other pathologies. The mean tumor size was  $2.7 \pm 1.5$  cm (range: 0.5-15 cm). 83 patients had bilateral disease (47 pheochromocytoma, 12 Conn's, 15 Cushing's, and 9 others). The retroperitoneoscopic approach was performed using standard techniques (3-port or single incision). The data were prospectively collected and retrospectively analyzed.*

**Results**

*The median operating time was 60 minutes (range 15–210). Blood loss was negligible (<20 ml) with no need for blood transfusion. There was no perioperative mortality. Minor complications were observed in 3.1% of cases, including pneumothorax (n=2), hematoma (n=3), incisional hernia (n=2), abdominal wall relaxation (n=15), with one major complication being bowel perforation in a redo case. Notably, redo surgery for postoperative bleeding from the remnant did not occur. The mean hospital stay was 2 days. In 22% (n=166) of cases, the tumor size exceeded 4 cm. In bilateral cases, 4 patients (4.8%) required corticoid substitution therapy postoperatively.*

**Conclusion**

*This study represents the largest cohort of patients with PA. PA is feasible and safe. Larger tumor size is not a contraindication per se. PA allows the preservation of adrenal function in more than 90% of bilateral cases. PA is essential in the armamentarium of adrenal surgeons.*

## A NATURAL LANGUAGE PROCESSING-INFORMED ADRENAL GLAND INCIDENTALOMA CLINIC IMPROVES GUIDELINE-BASED CARE

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### Introduction

Adrenal gland incidentalomas (AGIs) are found in up to 5% of cross-sectional images. However, rates of guideline-based workup for AGIs are notoriously low. We sought to determine if a natural language processing (NLP)-informed AGI clinic could improve the rates of indicated biochemical evaluation and adrenal-specific imaging.

### Methods

An NLP algorithm was created to detect clinically significant adrenal nodules from radiology reports of cross-sectional images at a single, large, academic institution. The NLP algorithm was applied retrospectively to scans occurring between June 2020-July 2021 and clinical data was extracted from the medical record to form a baseline cohort. The NLP algorithm was re-applied to scans from August 2021-February 2023 and identified patients were invited to join an outpatient clinic dedicated to AGIs. To test if this intervention influenced AGI workup rates, data from patients evaluated in the clinic from March 2022-February 2023 were collected prospectively. Statistical analysis utilized chi-square, t-test, and a multivariable logistic regression.

### Results

The baseline and intervention cohorts included 1,784 and 322 unique patients, respectively. Patients in the intervention cohort were more likely to be female (59% vs 51%,  $p=0.01$ ), be younger ( $59.7\pm13.2$  vs  $64.1\pm13.1$  years,  $p<0.001$ ), have smaller nodules ( $1.9\pm1.9$  vs  $2.1\pm1.2$  cm,  $p<0.001$ ), have had biochemical workup (99% vs. 13%,  $p<0.001$ ), and have had adrenal-specific imaging (40% vs 11%,  $p<0.001$ ). In a multivariable analysis adjusting for sex, age, nodule size, and reason for initial NLP-flagged scan, intervention cohort patients were significantly more likely to have had biochemical workup (OR: 2,114.4, 95% CI: 607.1-13874,  $p<0.001$ ) and adrenal-specific imaging (OR: 11.4, 95% CI: 7.9-16.6,  $p<0.001$ ). Sixteen (5.0%) patients in the intervention group underwent adrenalectomy.

### Conclusion

The implementation of an NLP-informed AGI clinic was associated with more than a seven-fold increase in biochemical workup and a greater than three-fold increase in adrenal-specific imaging in participating patients.

## THE FREQUENCY OF POSTOPERATIVE HYPOGLYCEMIA AFTER PHEOCHROMOCYTOMA SURGERY IS DECREASING

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**BACKGROUND:** Hypoglycemia after pheochromocytoma resection is a postoperative complication occurring in 12-43% of patients. Clinically, the frequency of postoperative hypoglycemia seems to be decreasing in recent years, possibly due to changes of the environment including anesthesia techniques, surgical procedures, and perioperative management. We reviewed our own experience and examined factors related to the postoperative hypoglycemia in pheochromocytoma patients.

**METHODS:** Fifty-nine patients (male/female = 28/31, median age: 44 years, range: 18-82) with pheochromocytoma who underwent initial surgery at our department between 1996 and 2022, who did not receive steroids perioperatively, and received the same alpha-blockers preoperatively were collected. They were divided into two groups in the middle of the era: Group1 (G1.1996-2009, male/female = 15/13, median age: 45 years, range: 18-82) and Group2 (G2.2010-2022, male/female = 13/18, median age: 44 years, range: 21-81). We compared two groups.

**RESULTS:** Hypoglycemia occurred less in G2 with a significant difference ( $p=0.0035$ ): 7% (25%) in G1 versus 0% in G2. Preoperative diabetes was less in G2, with 7 patients (25%) in G1 and 2 (6.5%) in G2. Preoperative alpha-blocker doses were significantly higher in G2 ( $p=0.0063$ ).

There were no significant differences in 24-hour urine metanephrines or normetanephrines ( $p=0.2661$ ,  $p=0.0527$ ), however there was a trend toward less normetanephrines in G2.

**CONCLUSION:** The recent trend toward milder cases and higher doses of alpha-blockers suggests in addition to differences in the timing of surgery, severity of illness and alpha-blocker dose might also be related to postoperative hypoglycemia.

Recent reports suggest preoperative alpha-blocker administration may be omitted from the perioperative hemodynamic perspective. However, from the viewpoint of prevention of postoperative hypoglycemia, adequate alpha-blocker administration may be necessary, and caution should be exercised in omitting it.

Postoperative hypoglycemia in pheochromocytoma surgery depends not only on patient factors but also on perioperative management methods. Further analysis is desirable for safe management.

## A SYSTEMATIC REVIEW AND META-ANALYSIS OF DIAGNOSTIC PERFORMANCE OF FLUORESCEIN GUIDED SENTINEL LYMPH NODE BIOPSY IN EARLY BREAST CANCER

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### Background:

Evaluation of axillary lymph nodes status in cN0 axilla is performed by sentinel lymph node biopsy (SLNB) utilizing a combination of radioactive isotope and blue dye. There is a paucity of radioactive tracer in many countries of transitional economies. Hence, alternatives to isotope have been explored, viz. indocyanine green (ICG), superparamagnetic iron oxide nanoparticles (SPIO). This systematic review and meta-analysis, evaluates the diagnostic performance of Fluorescein Sodium (FS) guided SLNB.

### Objectives:

The objective was to evaluate the diagnostic performance of FS for sentinel lymph node biopsy

### Methods:

*Eligibility criteria:* Studies where SLNB was performed using FS.

*Information sources:* PubMed, EMBASE, Cochrane library and online clinical trial registers

*Risk of bias:* Articles were assessed for risk of bias using the QUADAS-2 tool.

*Synthesis of results:* The main summary measures were pooled detection rate and pooled false negative rate using random effects model.

### Results:

Seven studies were included in the meta-analysis. The pooled detection rate was 93.2% (95% confidence interval [CI], 0.87–0.97 87% to 97%). Five validation studies were included for pooling the false negative rate and included a total of 211 patients. The pooled FNR was 5.6% (95% confidence interval [CI], 2.9–9.07).

### Conclusion:

Fluorescein -guided SLNB is a viable option for detection of lymph node metastases in clinically node negative patients with early breast cancer. It achieves a high detection rate of 93% with a false negative rate of 5.6% for the detection of axillary lymph node metastasis. We recommend larger multinational trials to confirm its high detection with very low false negativity.

## MEANINGFUL ENGAGEMENT OF PEOPLE LIVING WITH CANCER: LEVERAGING BREAST CANCER SURVIVORS IN A STIGMA REDUCTION INTERVENTION IN TANZANIA

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### Introduction

Cancer-related stigma is a key driver of advanced breast cancer stage in Sub-Saharan Africa. This study developed and tested the impact of a breast cancer survivor-led stigma reduction intervention on intrapersonal stigma and treatment adherence of women newly diagnosed with breast cancer.

### Methods

Breast cancer survivors were trained on breast cancer knowledge and motivational interviewing. A total of 4 trained survivors delivered a stigma reduction intervention (standardized flipchart breast education talk, personal testimony, and motivational interviewing) to 30 newly diagnosed breast cancer patients before treatment. Patients completed a pre and post intervention knowledge survey and stigma scale which were analyzed via Fisher's exact test and Wilcoxon rank-sum tests. A focus group was held with the survivors after the intervention period to elicit feedback on intervention experience.

### Results

Thirty female patients had an average age of 55 (SD:16). Among the patients, breast cancer knowledge (median overall percent correct) increased from 28% (IQR: 18-45%) to 85% (IQR: 79-88%) ( $p < 0.001$ ) and stigma (median total stigma score) decreased from 75 (IQR: 57-81) to 53 (IQR: 44-66) ( $p < 0.01$ ) following the intervention. Half of the patients asked to see the survivor's mastectomy scar out of disbelief of meeting a true survivor. All participants were willing to pursue hospital-based treatment after undergoing the intervention. Eighty-seven percent ( $n=26$ ) initiated treatment at 8 week follow up after intervention. All survivors endorsed feeling empowered and valued in their role in this intervention and reported to voluntarily educate members of their community using the intervention's education talk (estimated 236 people were educated).

### Conclusions

Breast cancer survivors are a powerful group to combat lack of knowledge and stigma in community and healthcare settings. Expanding the scope and scale of this intervention holds promise for improving treatment-seeking behavior and ultimately breast cancer outcomes in Sub-Saharan Africa.

**CORRELATION ON METABOLIC QUIESCENCE ON POSITRON EMISSION TOMOGRAPHY AND PATHOLOGICAL COMPLETE RESPONSE IN BREAST CANCER PATIENTS AFTER NEOADJUVANT CHEMOTHERAPY**

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Neoadjuvant chemotherapy for breast cancer patients had been established for long. There had been gaining interest in using Positron Emission Tomography (PET) for evaluation of treatment response. We aimed to determine the accuracy of metabolic quiescence (MQ) on PET in predicting pathological complete response (pCR) after neoadjuvant treatment. Between 1 January 2014 through 30 June 2019, 356 consecutive patients completed neoadjuvant treatment and underwent PET scan. 207 patients (58.1%) achieved metabolic quiescence and 128 patients (36.0%) achieved pathologic complete response. Among MQ patients, 101 out of 207 (48.8%) had pCR. Among pCR patients, 27 out 128 (21%) did not achieve MQ on PET. Overall sensitivity of predicting pCR with MQ is 78.9%, specificity of 53.5% and the area under curve (AUC) was 0.691. Subgroup analysis of using MQ to predict breast / axilla pCR had a sensitivity of 76.2% / 67.9%, specificity of 54% / 62.1% and AUC of 0.682 / 0.675 respectively. Sensitivity and specificity among luminal breast cancer were 85% and 59.6%, HER2 positive 58.1% and 63.5%, triple negative 82.1% and 80%. There was little difference on sensitivity and specificity among high and low Ki67 proliferation index (78.3% vs 75% and 52.1% vs 62.5%). There was significant discrepancy in patients who achieved MQ and those who had pCR. There was also no particular subgroup of patients where concordance of MQ better reflect pCR. PET scan was a useful tool in monitoring systemic response in breast cancer but its role in predicting local response to neoadjuvant treatment was limited.

**DOES MAMMOGRAPHY DENSITY CHANGE THE RESPONSE TO NEO-ADJUVANT CHEMOTHERAPY AND THE OUTCOME OF BREAST CANCER?**

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*Introduction:* High mammographic density (MD) is a known risk factor for breast cancer patients, but its pathological and outcome correlations are not well established. The present study evaluates its correlation to response to neoadjuvant chemotherapy (NACT), molecular markers, tumor grade, locoregional recurrence (LRR), and distant metastasis.

*Methods:* The study retrospectively gathered data from patients who underwent breast cancer-related surgery between January 2018 and June 2021 and prospectively followed them until June 2023. The diagnostic mammogram defines MD based on ACR's density classes A–D. Pathological NACT response and outcome parameters were correlated with MD using chi-square and Pearson's correlation coefficients.

*Results:* Of the total 557 carcinoma breast patients, 554 were female, with a mean age of 46.8 years. 54.5% were premenopausal. 83.7% of patients received NACT. 23.1% (N = 129) were luminal A, 14.1% (N = 79) were luminal B, 14.5% (N = 81) were triple positive, 23.3% (N = 130) were Her2 positive, and 24.8% (N = 138) were TNBC. 27.2% were high-grade tumors, and 64.7 had high ki67. On multivariate analysis, MD had a significant association with pathological complete response (PCR), her two positive and TNBC receptors, and LRR. A multidisciplinary team planned either two or three weekly doses of anthracycline and cyclophosphamide, followed by taxanes. Her two positive patients received trastuzumab either in combination with taxanes or as part of a TCH regimen (taxane, carboplatin, and herceptin). A negative correlation ( $r = -0.515$ ) existed between PCR and mammographic density. However, the correlation was weak ( $r = 0.299$ ) between the receptor and PCR. A positive correlation ( $r = 0.49$ ) existed between MD and LRR in a median follow-up of 3 years.

*Conclusion:* High MD patients exhibit a poor response to NACT and a high likelihood of LRR.

## PATIENT REPORTED OUTCOME MEASURE IN BREAST SURGERY USING BREAST Q: A MULTICENTRIC PROSPECTIVE STUDY

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**Background:** Breast cancer, most prevalent cancer in women globally, accounted for 32.9% of new cases in Malaysia in 2020. Assessing patient satisfaction and quality of life (QOL) is crucial in the current era with improved survival rates. Longitudinal studies on post breast conserving surgery (BCS) and mastectomy QOL in Malaysian patients are limited. The BREAST-Q, featuring independently functioning scales, is used to compare the impact of mastectomy and BCS on the QOL of breast cancer survivors.

**Methods:** Multicentric prospective cohort study includes 245 breast cancer patients (Stage 0–III) undergoing mastectomy or BCS. Utilizing BREAST-Q questionnaires, data collection spans January 2022 to April 2023, covering preoperative, 6-month, and 12-month postoperative assessments. Standardized Q-score measures results, with descriptive statistics for socio-demographic and clinical data. Chi-square tests explore surgery type associations, and T-tests compare mastectomy vs. BCS mean differences. ANCOVA performs statistical analysis, with significance set at  $P < 0.05$ .

**Results:** Of 245 female breast cancer survivors, 55% underwent mastectomy, and 45% underwent BCS. Older (56.7%) and Chinese women (45.9%) preferred mastectomy. The mastectomy group exhibited higher seroma and infection rates ( $p = 0.000$ ). Preoperatively, BCS patients had superior sexual wellbeing ( $p = 0.002$ ). At 6 months, BCS showed improved psychosocial ( $p = 0.000$ ) and sexual wellbeing ( $p = 0.000$ ). By 1 year, BCS had higher overall QOL scores ( $p = 0.000$ ). Preoperatively, the BCS group expressed greater satisfaction with their breast; at 6 months and 1 year post-op, satisfaction with the breast improved.

**Conclusion:** Results underscore greater satisfaction and improved overall QOL in BCS patients over mastectomy, emphasizing the consideration of BCS for those who might otherwise undergo mastectomy. BREAST-Q emerges as a feasible guide, reducing decisional conflict and enhancing patient preparedness in the decision-making process.



## BREAST CANCER CARE FOR THE AGING POPULATION: A FOCUS ON AGE-RELATED DISPARITIES IN BREAST CANCER TREATMENT

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**Objective.** Breast cancer is a major health issue among women worldwide, and poses unique challenges for people of all ages. Many concerns exist about the treatment and outcomes of breast cancer in older women. The goal of this study is to compare breast cancer management and outcomes across different age groups, with a particular emphasis on women aged 70 and older, in order to identify potential disparities in treatment and prognosis.

**Methods.** We conducted a retrospective analysis of all female patients diagnosed with breast cancer at our medical facility between January 2002 and January 2023. The primary outcome measures in this study were overall survival (OS), disease-free survival (DFS), cumulative local recurrences, and cumulative distant recurrences.

**Results.** The study included 2478 women over 70 (31.12%), 4690 women aged 45-69, and 795 women younger than 45 (9.98%). According to the study, older women were more likely to have advanced-stage cancer, whereas they received less aggressive treatment, including fewer adjuvant therapies and surgical interventions. We also observed a worse prognosis in this group of patients if compared with women aged 45 to 69 years. Moreover, data showed that the incidence of breast cancer among older women has increased over time.

**Conclusions.** As supported also by EUSOMA guidelines, our findings highlight the need for tailored treatment strategies for older breast cancer patients, in order to balance treatment efficacy with quality of life considerations. These findings call for a strategic reevaluation of treatment protocols and emphasize the importance of personalized care, particularly for the elderly, in order to improve outcomes without sacrificing quality of life, while maintaining maximum survival potential.

## EXTENDED REALITY IN GENERAL SURGERY AND SURGICAL EDUCATION, PERSPECTIVES AND CHALLENGES: SCOPING REVIEW

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### Introduction:

Precision surgery is a clinical approach that focuses on assessing, evaluating, and making decisions to control disease progression. It is defined by six criteria: safety, predictability, controllability, standardization, individualization, and systematization. High-tech technologies like extended reality (XR) i.e. virtual reality (VR), augmented reality (AR), and mixed reality (MR) are extensively used in precision surgery, offering personalized treatment.

### Methods:

The systematic review was conducted using PRISMA-ScR guidelines and Arksey and O'Malley's 5-stage methodological framework. Relevant studies were searched in Science citation databases, Pubmed, and Ovid Embase before October 15, 2023. Topics like extended reality, mixed reality, virtual reality, augmented reality, navigation surgery, robotic surgery, and general surgery were searched simultaneously. Articles were selected based on PICOS criteria, which specify inclusion and exclusion criteria.

### Results:

The study retrieved 4297 research publications from 3 databases. The final analysis included 29 relevant studies. Two of these were preoperative, eleven were intraoperative, and sixteen concerned surgical training. The majority of the XRs used were VR, with 18; AR, with 9; and MR, with 2 interventions. Virtual reality enhances safety in surgical procedures by improving preoperative and intraoperative understanding. VR simulators enhance performance, reduce operating time, and aid novice surgeons. AR-assisted planning reduces complications, while HoloLens synchronizes visual-motor axis.

### Conclusion:

The use of VR simulators in surgeon training and AR and MR navigation systems in XR-assisted surgery is growing due to hardware and software advancements. These tools may minimize postoperative complications and reduce injury, making XR-assisted surgery a crucial next-generation surgical support tool.

### Key words:

Extended Reality, Surgery, Surgical education, Image navigation Surgery

**SAFE LAPAROSCOPIC APPENDECTOMY PERFORMED BY GENERAL SURGERY RESIDENTS**

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**Abstract**

**Background:** Minimally invasive surgery become popular worldwide. Nowadays, laparoscopic appendectomy (LA) is frequently performed by US general surgery residents. However, general surgery residents in Thailand have far fewer experiences in LA. Aim of our study was to investigate the effects of fresh cadaveric training program on the proficiency of general surgery residents in LA.

**Material and Methods:** We retrospectively review the outcome of LA and open appendectomy (OA) performed by general surgery residents from 1st January 2019 to 31st December 2022. We evaluated the conversion rate as the primary endpoint. LA and OA were compared regarding mean operative time, length of hospital, reoperation rate and readmission rate.

**Results:** 259, and 270 patients were underwent LA and OA, respectively. The overall conversion rate of LA was 3.5%. Complicated appendicitis was a significant risk factor for conversion (14.0% vs 0.9%,  $p < 0.001$ ). LA group had shorter mean operative time (76 minutes vs 76 minutes,  $p = 0.902$ ) and length of hospital stay (3.3 days vs 4.5 days,  $P < 0.001$ ) when compared to OA group. However, the proportion of complicated appendicitis was significantly lower in LA group when compare to OA (19.3 vs 32.6%,  $p < 0.001$ ).

**Conclusion:** Fresh cadaveric skill training program in LA can enhance resident skill and maintain patient safety. After the program, we can entrust general surgery residents to perform LA without supervision. This strategy is safe and can stimulate surgical autonomy.

**COMPARISON OF EFFECTIVENESS IN PHANTOM MODELS FOR THYROID THERMAL ABLATION TRAINING AND SIMULATION**

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*Introduction:* Ultrasound guided thermal ablation has become increasingly prevalent and holds promise for treating benign thyroid nodules. Traditionally, thyroid thermal ablation training has been delivered in lecture-based format including teaching videos which can be inefficient or ineffective. Phantom models are types of artificial tissue used to simulate in medical education to simulate surgical procedures and range from simple anatomical coverage to complex anatomical geometries that mimic real human body. This study investigated the effectiveness of different phantom models for thyroid thermal ablation training and simulation.

*Material and methods:* This study was a quasi-experimental study starts from January, 2022 throughout December 2023. We included 45 endocrine surgeons received course lecture and training simulation using gelatin-based, chicken heart within pork meat, and anthropomorphic silicon phantom model mimicking the thyroid and surrounding anatomical structures for thyroid thermal, including radiofrequency and microwave ablations. The trainees' learning outcomes were assessed are using a pre-test, post-test, and the delayed post-test administered before the start, at the end, and 12 months after the end of the study.

*Results:* The results of the study showed that the phantom models had significantly higher learning outcomes than the course lecture training on all three assessments. Specifically, the phantom model group scored significantly higher on the post-test and delayed post-test in terms of knowledge acquisition, procedural skills, and safety awareness.

*Conclusion:* The results of this study suggest that phantom models are an effective way to train endocrine surgeons in thyroid thermal ablation. Phantom models are more cost-effective and accessible than lectures with video, and they more accurately represent the human anatomy and physiology. Additionally, further development of specific model models would be beneficial to simulate a variety of image-guided techniques, which can help trainees' to develop the skills safely and effectively.

## PRACTICE AND EVALUATION OF COMPETENCE IN ASSESSMENT OF ARTERIAL CIRCULATION OF THE LOWER LIMBS: A SYSTEMATIC REVIEW

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### Introduction

A recent study on patients with acute lower limb ischemia showed that the proportion of inadequate examination of lower extremity circulation was associated with higher rate of amputation and death. The aim of this systematic review was to explore the evidence for how practical competence in performing a peripheral vascular status of the lower limb should be taught and examined.

### Methods

The systematic review followed PRISMA guidelines and was published in PROSPERO. A pre-specified search strategy together with a librarian was formed. Articles were searched for in PubMed, Cochrane Library and Embase. The result was processed by two researchers. After title- and abstract screenings, articles were scrutinized in full text for inclusion, result extraction, risk of bias assessment using MERSQI and evidence grading with the GRADE approach.

### Results

Thirteen studies were included. Two studies were RCTs. Study samples varied between medical students (n=9), junior doctors (n=3) and residents (n=3). Interventions varied between theoretical, practical, repetitive training, feedback-based learning, and clinical experience. Assessed measurements were ankle-brachial index (ABI) (n=9), theoretical knowledge (n=4), pulse palpation (n=1) and complete vascular status (n=1). Experienced residents had better theoretical knowledge than inexperienced residents, but performance of the ABI procedure without any mistake according to guidelines was inadequate in both groups. One RCT showed that experimental training significantly increased ability to perform ABI measurements, but this ability decreased after six months without repetition. Ultrasound training significantly improved medical students' ability to palpate the femoral artery.

### Conclusion

Theoretical training alone is not sufficient in ensuring proficiency in vascular examination of the lower limbs. Continuous practice and clinical exposure are crucial to maintain proficiency in performing vascular examination of the lower limbs. Data was limited and heterogenous. The level of certainty for the evidence was very low.

**USABILITY OF THE ENTRUST ASSESSMENT PLATFORM IN THE COLLEGE OF SURGEONS OF EAST, CENTRAL, AND SOUTHERN AFRICA (COSECSA): A QUALITATIVE ANALYSIS**

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*Introduction: ENTRUST is an online case-based virtual patient simulation platform to assess clinical decision-making across pre-operative, intra-operative, and post-operative phases of surgical care. Prior quantitative studies demonstrated high usability of the platform. The aim of this study was to qualitatively evaluate the usability of ENTRUST in high-stakes examinations in low-and-middle-income countries.*

*Materials & Methods: The ENTRUST platform was piloted during the COSECSA Membership of the College of Surgeons (MCS) examination in November 2021 with n=110 examinees across 15 sub-Saharan countries. Upon completion of three ENTRUST online virtual patient examination cases, examinees completed an online survey eliciting feedback on the usability of the platform. Qualitative analysis of open-ended responses was performed with deductive analysis using the Nielsen-Shneiderman Heuristics framework and inductive analysis to identify emerging themes.*

*Results: Seventy-one examinees (72% response rate) completed the survey. The most frequent heuristics valued about the ENTRUST platform included match (system and content matches users' expectations and clinical experience) and feedback (users are given prompt and informative feedback on their actions). Additional themes identified in inductive analysis included enjoyment, educational value, and ease of use. The most frequent theme identified as suggestion for improvement was time, with 86% expressing a desire for more time to complete the ENTRUST exam, followed by suggestions for technical ease, match, and training. Participant quotes exemplifying strengths of ENTRUST highlighted how the platform represents 'real time patient management with application of surgical knowledge,' 'marries the clinical and theory knowledge well,' and 'easy to use.'*

*Conclusion: The ENTRUST Assessment Platform demonstrated acceptability, ease of use, and perceived educational value in this population. Qualitative analysis highlighted the usability heuristics most valued by users, including match and feedback. Constructive feedback will inform ongoing development of the platform. ENTRUST holds potential as a scalable tool for learning and assessment in competency-based surgical education globally.*

**DEVELOPING AN INNOVATIVE, INDIGENOUS, LOW-COST TASK TRAINER FOR TEACHING CORE NEEDLE BIOPSY: A LONG STORY CUT SHORT**

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*Introduction* Low and high technology simulation is equivalent in skill acquisition if fidelity is reasonable. We developed low-cost innovative task trainer for teaching the skill of performing core needle biopsy (CNB) to undergraduate medical students.

*Methodology*

Low cost, innovative task trainer for performing CNB was developed by authors. Task-trainer was designed to allow repeated easy punctures. Inside body of task trainer, structure mimicking a lump was kept. Lump was conceptualized to have tough non collapsable wall and resilient interior wherein a soft material could be placed. The wall when pierced gave a “give-way” feel for the performer to know correct positioning inside the lump, which was to be sampled. The material to be sampled was pliable enough to get caught in biopsy slot without lump to allow multiple uses.

*Result*

We used toy ball made of synthetic material, opened it from one side and filled it with cotton wool. Red rubber pipette bulb was taken and filled with colored slime. This was kept inside the cotton filled ball. The ball was then sutured back in place and fixed onto a stand. The ball would be pierced after palpating and fixing lump with opposite hand. The needle would then pass through rubber ball and go inside with a give way feel confirming the position for firing of the gun. As gun is fired, yellow slime would move inside biopsy slot. Erroneous sampling revealed cotton wool or red rubber in biopsy slot. Fidelity of task trainer was improved by using skin-colored silicon sheet obtained from extra material of anesthesia manikins. This was used to train 30 undergraduate students. 90% students reported excellent to good fidelity. Correct sampling was done by 92% students in first attempt.

*Conclusion*

Low-cost innovative task trainer developed using locally available resources are useful for training skills to trainees.

## **SURGERY RESIDENTS' PERCEPTIONS OF FEEDBACK IN THE UNITED STATES**

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*Introduction-* Feedback (FB) in training is extensively studied, yet research on residents' perceptions of FB is mostly from relatively small samples. This study aims to identify surgery residents' (SR) perceptions of feedback in the United States. *Methods-* In January 2023, SR completed an optional, post-American Board of Surgery (ABS) In-Training Examination survey detailing feedback experiences. Overall satisfaction was rated 1-10, while frequency and initiation were reported in categories. Percentages of FB character (positive, constructive, non-specific, and real-time) were reported for intra and non-operative settings. SR self-reported gender and race. White and Asian SR were considered non-underrepresented (URM). Bivariate, multivariable analyses, and ordinal mixed models were performed. *Results-* A total of 9853 responses were received with a mean response rate of 80%: 50% female, 21% URM. Mean satisfaction was 7.20 (SD +/-1.9). Most SR received feedback once/week or less (n=3475, 51%). More often, attendings initiated FB (46% vs 40% vs 14%) and gave FB in real-time intra-operatively (71% intra-op vs 48% non-op)  $p<0.001$ , for all). Male SR reported higher frequency (2-3 days vs once/week), more positive FB (56% M v 52% F v 42% non-binary), and higher satisfaction (7.44 +/-1.8 M v 6.97 +/-1.9 F v 6.35 +/-2.2 non-binary) ( $p<0.01$  for all). Ordinal regression showed female and non-binary SR had 0.6x and 0.4x lower odds of satisfaction than male SR ( $p<0.01$ ), which remained predictive after adjusting for FB character (0.7x F v 0.3x non-binary,  $p<0.01$ ). URM residents reported similar positive FB (54.4% v 53.6%) but lower satisfaction (7.15 +/-2.0 URM v 7.24 +/-1.8 non-URM,  $p<0.01$  for all). Race did not remain predictive when adjusted for FB character. *Conclusion -* SR FB satisfaction is high overall but lower for non-male and URM residents. Targeted intervention should be employed to address these disparities



## A STUDY ON IMPACT OF PROPHYLACTIC CALCIUM AND CALCITRIOL SUPPLEMENTATION IN PREVENTING POST THYROIDECTOMY TRANSIENT HYPOCALCEMIA

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**Introduction:** Transient hypocalcemia is a well known complication of total thyroidectomy (TT), which is reported in up to 40% of cases. Routine oral calcium and Activated Vitamin-D (Calcitriol) usage have been proposed to prevent symptomatic hypocalcemia reducing morbidity and promoting early discharge.

**Patients and methods:** A total of 486 cases (non toxic benign) out of 654 cases, undergoing TT, were serially randomized into Three groups: Group A (no supplements were given), Group B (oral calcium - 2g/day given), and Group C [ Oral calcium(2g) and calcitriol - 1 mcg/day were given).

Patients were monitored for Symptomatic and biochemical hypocalcemia (serum calcium, [Sr. Ca] <8 mg/dl), along with serum intact parathormone (Sr. PTH) and magnesium level 6 hours Post surgery and Sr. Ca every 24 h till discharge. Intravenous (IV) calcium infusion was started, if any of the above Three groups exhibit frank hypocalcemia. **Results:** All groups were age and sex matched. Pre-Operative parameters [ Vitamin-D ,PTH ,Calcium and Magnesium] and Intra-Operative parameters [Parathyroid preservation and Auto-Transplantation] were comparable between the groups. Hypocalcemia was observed in 192/486 (39.5%) cases. Occurrence of hypocalcemia was higher in Group-A [82/186(44.08%)] and Group-B [79/186(42.4%)] compared to Group C [31/186(16.66%)]. Hypocalcemia requiring Intravenous calcium occurred in 67/486(13.78%) patients. IV calcium requirement was higher in Group-A[ 34/82(41.4%)] and Group-B [28/79(35.44%)] compared to Group C [5/31(16.12%)].

**Conclusion:** Prophylactic Post-operative supplementation of oral calcium and Calcitriol helps in the prevention of post thyroidectomy transient hypocalcemia and avoids intravenous calcium necessity. Addition of Calcitriol has huge impact in study outcomes.

**FEASIBILITY AND ACCURACY OF LOW COST LARYNGOSCOPE FOR THE ASSESSMENT OF VOCAL CORD FUNCTION: A PROSPECTIVE STUDY**

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*Introduction:*

*Peri-operative evaluation of vocal cords in patients undergoing thyroid and parathyroid surgery is mandatory to avoid complications and medicolegal issues. However, in most low resource settings, pre-operative evaluation is done with indirect laryngoscopy which has low accuracy. Likewise, immediate post-operative assessment is usually not possible due to non-availability of flexible direct laryngoscopy (DL) in the operating room (OR). In this prospective study we have evaluated the feasibility and accuracy of a low-cost Endoscopic Vocal Cord Assessment (LEVA) device.*

*Method:*

*All patients undergoing thyroid and parathyroid surgery were evaluated with LEVA. Pre-operative assessment was done in the outpatient department and results were compared with IDL. Post-operative assessment was done in the OR, immediately after extubation. Results were compared with IDL on day 1 and DL done between 7-10 days after surgery by a laryngologist.*

*Results:*

*A total of 60 consecutive patients were included in the study. Total number of nerves at risk was 84. All sixty patients had successful LEVA immediately after extubation, making it 100% feasible. Four patients with failure of LEVA pre-operatively, had successful visualization of vocal cords in the OR. Post-operative IDL on Day 1 was feasible only in 70% of the patients. Post-operative standard DL on 7th day was compared with post-operative LEVA and there was 100% correlation. Hence, the accuracy of LEVA was 100%.*

*Conclusion:*

*In patients undergoing thyroid and parathyroid surgery, LEVA is a feasible and accurate method for assessment of vocal cord function. This is especially beneficial and suitable for low resource settings.*

**ROLE OF INDOCYANINE GREEN (ICG) IN MAPPING SENTINEL CERVICAL LYMPH NODE INVOLVEMENT IN PATIENTS OF ORAL SQUAMOUS CELL CARCINOMA USING CONVENTIONAL ICG SURGICAL SYSTEM: DATA FROM A UNIVERSITY HOSPITAL**

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**Introduction**

Lymph node (LN) positivity is an important determinant in a patient of oral SCC. Sentinel lymph node (SLN) biopsy may aid in minimizing the extent of elective neck dissection (ND). ICG dye facilitates the visualization of lymphatic vessels, and sentinel nodes, and provides high penetration during surgery.

**Materials and Methods**

It is a prospective observational study in 2021-2022. N=32 patients of oral SCC were injected with 1mL of ICG submucosally in 4 quadrant fashion (3,6,9 and 12 o'clock). After elevation of the platysmal flap and posterior retraction of the sternocleidomastoid muscle (15 minutes after injecting ICG), fluorescing LNs were detected using conventional surgical NIR (Near Infra-red) fluorescence imaging (STRYKER AIM 1588 camera system) and were sent for frozen section and histopathological examination (HPE).

**Results**

The majority were carcinoma buccal mucosa (53%), followed by the tongue (22%) and GB sulcus (12.5%). The most common method of ND was modified radical ND 78%, followed by supra omohyoid 12.5%, extended supra-omohyoid 6.25%, and radical ND 3.1%. A total of 755 LNs were harvested. 82 lymph nodes were identified as SLN using the ICG method. Level Ib was identified as SLN in 26/32 of the cases, followed by level Ia and level IIa (3/32 cases each). 22 out of 82 SLN were positive in the frozen section and HPE respectively with a sensitivity of 100%, specificity of 91.8% and NPV (negative predictive value) of 100%. Routine pathology demonstrated occult metastasis exclusively in SLN in 10 cases (31.25%).

**Conclusion**

NIR using ICG is a feasible and promising method for SLN biopsy in cN0 oral SCC using a conventional surgical ICG system.

## COMPARISON OF SUCTION VERSES MICRODISSECTION METHOD FOR HARVESTING SUPPORTING CELL FROM INNER EAR

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### Introduction:

Deafness is a large burden of morbidity around 466 million people worldwide have disabling hearing loss and nearly 34 millions of these are children. Supporting cells in the cochlea include Hensen's cells, Deiters' cells, inner and outer pillar cells, Claudius cells and inner supporting cells have reported to have some self-regenerating capacity in studies done on avian inner ear cells. We propose a novel method to isolate the human inner ear tissue for extracting supporting cells from inner ear, the suction method through round window in comparison to the microdissection method.

### Methods:

This study was done at AIIMS, New Delhi from Jan 2022-December 2023 in the Department of Otorhinolaryngology, Head and Neck Surgery in collaboration with the Department of Biochemistry, and Forensic Medicine. Sample was collected from 5 cadavers at medicological autopsy after informed consent within 24 hours of death. The samples were transported to the temporal dissection lab and under microscope, the right sided inner ear sample underwent microdissection method of cell isolation and the left side sample underwent cell isolation by micro-suction. Both samples were analysed later by cell count using Trypan blue exclusion assay and gene expression analysis by RTPCR. Mann-Whitney U test was performed to compare the results with p value fixed at 0.05.

### Results

The mean number of cells extracted by microdissection method were 92986.33 (21059.6 SD) and median 81595 (75289-120945 min-max). The mean number of cells extracted by micro-suction method were 6925.5 (4219.547 SD) and median 6768 (754 min-12463max). The p value obtained was 0.0022 which was found to be statistically significant.

### Conclusion:

The dissection method of supporting cell isolation from human inner ear cadavers were found to be a superior method than micro-suction method. However, more studies are required to establish definitive evidence.

**POST TONSILLECTOMY ± ADENOIDECTOMY HEMORRHAGE: A NOVEL GRADING SYSTEM**

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*Introduction:* The robust vascular supply of the adenoids/tonsils make haemorrhage the primary risk of Tonsillectomy± Adenoidectomy with its potential lethal outcome. This prompted Clinicians to constantly devise several operative techniques in order to curtail lethal bleeds.

*This study was designed to examine certain inherent risks of the procedure and propose a grading system for operative blood loss to serve as early warning signs of impending cardiovascular decompensation to initiate prompt resuscitation.*

*Materials and Method:* Participants who met the criteria for Tonsillectomy ± Adenoidectomy at the Jos University Teaching Hospital, in North Central Nigeria, between August, 2017 to July, 2019 were enrolled consecutively and studied.

*Results:* Ninety-Six participants ( Male :Female of 1.7:1) were analyzed. Their ages ranged from 9months-51years, Median-3.0years while 83(86.5%) were ≤ 18yrs. Clinical features at presentation include; Snoring- 83(86.5%), Nasal obstruction-71(74.0%), Noisy breathing -23 (24.0%) and Mouth breathing-18(18.8%) mainly. Seventy-Eight (81.2%) were Brodsky's grade III/IV while 28(29.2%) had abnormal INR. Blood loss ranged between 10ml-250ml, Mean=52.7ml ±46.9ml. Bleeding post-operatively of ≥150ml in adults and ≥50ml in the paediatric age occurred in 5(5.2%). Blood loss was found to have a positive correlation to tonsil volume (mass) with a Correlation coefficient ('r') at 99% CI (two-tailed) (r)=.265, (p=.009).

*Conclusion:* The surgeon should acquaint himself with the risks associated with the procedure to minimize blood loss as well as this hybrid blood loss grading system for prompt resuscitation. These seven-pronged blood loss grading system post Tonsillectomy ± Adenoidectomy-the first described in medical literature, is comprehensive. It would alert the physician with early warning signs during surgery for prompt intervention.

**ARE WE TAKING ADEQUATE SURGICAL MARGINS IN ORAL SQUAMOUS CELL CARCINOMA**

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*Introduction:* Globally, oral squamous cell carcinoma (OSCC) incidence is 2.7 in 100000 populations. In south- central Asia, the incidence of OSCC cases was highest that is 40.9% of all incident cases of SCC and often associated poor prognosis due to high morbidity and mortality rate. In the oral cavity, adequate resection of tumor is an arduous task to accomplish because the three dimensionally complex and compact anatomy does not lend itself well to achieve liberal margins as in other anatomical regions . To further encumber, the pathological margins are reported to be much smaller than the pre-resection margins. This is largely attributed to the margin shrinkage following resection and less commonly to the presence of microscopic neoplastic foci beyond the palpable and visual margins. The main question here is, how much tissue should be resected to achieve a clear surgical margin? Excised skin is known to shrink when removed, in relation with its retractile properties, and it is commonly accepted that formalin fixation itself induces retraction of the samples. It may result in unnecessary surgery, either a wider re-excision for margins that are incorrectly classified as “positive” or “close”.

*Materials & Methods:* We assessed margin shrinkage in OSCC patients by measuring margins before excision, half hour after excision, after formalin fixation and on histopathological assessment.

*Results:* 40 patients of OSCC were enrolled in the study, Significant margin shrinkage was noted in all subsites of Oral cavity but maximum in buccal mucosa.

*Conclusion:* Margins of OSCC are bound to undergo significant shrinkage and this factor shall always be considered before excision of OSCC.

# A SYSTEMATIC REVIEW AND META-ANALYSIS ON THE SURGICAL VERSUS ENDOVASCULAR TREATMENT FOR RUPTURED INTRACRANIAL ANEURYSMS FROM A GEOGRAPHICAL PERSPECTIVE: HIGH-INCOME COUNTRIES (HICS) AND LOW-AND-MIDDLE INCOME COUNTRIES (LMICS)

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## Introduction

Ruptured Intracranial Aneurysm is managed surgically or endovascularly worldwide. It remains is a mystery whether economic-geographical situation affects the outcomes of each procedure.

## Aims

This systematic review and meta-analysis (SRM) assessed the 1-year outcomes of mortality, functional dependency, rebleeding, vasospasm, hydrocephalus, and seizures after surgical versus endovascular treatment of ruptured intracranial aneurysm (RIA) across high-income countries (HICs) and low- and middle-income countries (LMICs) to enhance efforts towards global neurosurgical equity.

## Methods

Using a multivariate logistic regression in RevMan 5.4.1 with a 95% confidence interval, 112 identified articles (21 and 91 articles from LMICs and HICs respectively) of surgical versus endovascular treatment selected from Google Scholar, EMBASE, PubMed, Cochrane, and Web of Science, were analysed.

## Results

Worldwide amongst 97,202 patients from 112 articles, 9,532 deaths (13.1%) were recorded. Although 1-year mortality was lower in the surgical cohort than in the endovascular group (13.5% vs 15.1%, I<sup>2</sup> 88%,  $P < 0.00001$ ), neurosurgical approach did not significantly increase mortality risk in HICs (Peto OR 0.99 [0.94, 1.04];  $p < 0.05$ , I<sup>2</sup> = 90%). In LMICs, endovascular repair was protective against postoperative death (Peto OR 1.57 [1.20, 2.06];  $p < 0.001$ , I<sup>2</sup> = 0%).

Permanent disability, vasospasm, seizures, and hydrocephalus risk improves with endovascular treatment globally.

Surgery reduces the risk of rebleeding in LMIC patients.

## Conclusion

Neurosurgical treatment had an insignificant effect on the risk of mortality irrespective of a country's gross national income (GNI). Endovascular therapy comparatively improved post-operative risks.

**A RARE CASE OF MESENTERIC VENOUS THROMBOSIS WITH BOWEL ISCHAEMIA POST VAGINAL DELIVERY***Hii Chan Xuan<sup>1</sup>; Ng Zer Liang<sup>2</sup>*<sup>1</sup>*Hospital Queen Elizabeth*<sup>2</sup>*Hospital Queen Elizabeth*

*Pregnancy induces hypercoagulable state as a physiological adaptive mechanism in order to prevent excessive bleeding during postpartum. Hence, puerperium itself being a hypercoagulable state, when combined with an additional underlying hypercoagulable state, will causes exponential increaaase of thromboembolism risk. Acute venous thrombosis causing bowel ischaemia post normal vaginal delivery is a rare condition with an unfavourable prognosis. Herein, we report a case of a 32 years old female presented with acute onset of abdominal pain three weeks after an uneventful normal vaginal delivery at home. Among the numerous causes of acute abdomen, bowel ischaemia with venous thrombosis secondary to puerperal sepsis are most likely as the causes in this case. Urgent CT Abdomen revealed extensive venous thrombosis and long segment jejunal ischaemia. Lifesaving operation was performed. Acute venous thromnosis causing bowel ischaemia is a rare surgical emergency during postpartum period, which is associated with high mortality and morbidity. Hence, early prompt diagnosis and intervention are important.*



**ANTI-CANCER ACTIVITY OF VOLATILE COMPONENTS OF ESSENTIAL OILS FOR BREAST CANCER**

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*Objective: Cancer therapy using plant-derived essential oils is attracting attention as one of the promising methods. We have been studying the antitumor effects of aroma oil volatiles on breast cancer cells and have identified four promising essential oils and volatiles with antitumor activity.*

*Methods: Breast cancer cells were cultured in a 96-well plate, and essential oil was added dropwise only to the central well. By incubating the plate at 37 degrees for 48 hours, the effect of the volatile components of the essential oil on the surrounding breast cancer cell growth ability was examined using the MTT assay and fluorescence microscope. In addition, using gas chromatography, we investigated the concentration of transpiration components that may affect cancer cells.*

*Results: Forty kinds of essential oils were tested, and the essential oils of Lemongrass, Lemon Myrtle, Litsea, and Melissa were found to have strong antitumor effects. Even when these essential oils were diluted more than 500-fold, they could inhibit the growth of breast cancer cells around the essential oils. Among these four essential oils, the transpiration component of Lemon Myrtle essential oil showed the strongest ability. On the other hand, Lemon Myrtle was the least cytotoxic to normal breast cells and peripheral blood cells. The components contained in these essential oils were compared and examined. As a result, all these essential oils contained a large amount of Citral. The IC50 against breast cancer cells of Citral volatilized from each essential oil was 1.4ul/ml. Volatilized Citral alone showed strong anti-proliferation and infiltration-inhibiting effects.*

*Conclusion: The transpiration components of Lemongrass, Lemon Myrtle, Litsea, and Melissa are thought to induce inhibition of breast cancer cell proliferation by Citral.*

### COMPARATIVE ANALYSIS OF TISSUE LEVEL OF MMP-2 & MMP-9 WITH BLOOD LEVEL OF VEGF IN CHRONIC WOUNDS

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#### *Introduction:*

Chronic wounds are difficult to manage due to unpredictable outcome in terms of healing. Comparative analysis of tissue level of MMP-2 & MMP-9 with blood level of VEGF in chronic wounds was carried out and followed up.

#### *Methods:*

A total number of 52 patients were recruited to compare the analysis of tissue levels of MMP-2 & MMP-9 with blood level of VEGF in chronic wounds. Pressure sores grade 2 to grade 4 and wounds present for > 6 weeks were included in the study

#### *Results:*

VEGF expression of the chronic wound revealed that expression of VEGF was significantly increased with a p-value of ( $p < 0.001$ ). Mean VEGF at first visit was  $648.55 \pm 497.03$  pg/ml and after 6 weeks mean VEGF was  $965.69 \pm 461.51$  pg/ml.

In this study, MMP 2 and 9 were expressed on immunohistochemistry, and these were seen on keratinocytes, fibroblasts, inflammatory cells, and endothelial cells respectively on the first visit and 6 weeks follow-up.

MMP was significantly increased after 6 weeks ( $p < 0.001$ ) in keratinocytes, fibroblasts, inflammatory cells, and endothelial cells. MMP 9 was also significantly increased after 6 weeks ( $p < 0.001$ ).

#### *Conclusion:*

VEGF is one of the most vital and potent angiogenesis stimulating growth factors, it functions as an endothelial cell mitogen, a chemotactic agent, and an inducer of both vascular and skin permeability and it increases significantly with healing of wounds. MMP 2 and MMP 9 expression increases significantly with healing of wounds.

**POSSIBILITIES AND PROSPECTS OF PRESERVING PERITONEAL DIALYSIS IN CKD PATIENTS REQUIRING SURGICAL INTERVENTIONS ON ABDOMINAL ORGANS**

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*Introduction:* Laparoscopic minimally invasive surgery is increasingly used for various comorbidities, including chronic kidney disease (CKD) patients on peritoneal dialysis (PD). It was necessary to complete PD in CKD patients and transit them to program hemodialysis before colorectal cancer surgery.

*Materials and Methods:* We present two cases of programmed peritoneal dialysis preservation in end stage renal disease (ESRD) patients after laparoscopic left hemicolectomy with D2 lymph dissection for colorectal cancer. 2 patients with stage 5 CKD, who need dialysis, were admitted to our hospital with intestinal bleeding in 2022.

*Results:* The procedures were performed with the 4-trocar technique. The 10-mm trocar, usually placed in the right iliac fossa, was placed more medially to avoid the Tenckhoff catheter. At peritoneal examination, the catheter was still correctly placed in the lower pelvis. The surgery ended with abdominal drainage with the catheter retained for PD.

*Conclusion:* Compared with open surgery, laparoscopy is more progressive and innovative method for the various surgical and oncological diseases treatment. It is observed by lower peritoneal membrane stress and better preservation of peritoneum integrity, less adhesions formation, which affect the residual abdominal function in patients with dialysis peritonitis, and allows recovering peritoneal lavage in the shortest period. Our clinical observations demonstrate that laparoscopic left hemicolectomy can be performed safely, providing the patients with the benefits of a minimally invasive approach and keeping them on PD. A multidisciplinary approach combining modern laparoscopic surgeries, adherence to oncological principles and balanced nephrological tactics may represent a reasonable and safe strategy for surgical treatment of operable colorectal cancer with the possibility of preserving PD in the postoperative period.

## ELECTROPHYSIOLOGICAL AND HISTOLOGICAL EVIDENCE FOR THE GASTROINTESTINAL ABERRANT PATHWAY- HIGH-RESOLUTION GASTROINTESTINAL ELECTRICAL MAPPING OF SURGICAL RECOVERY IN PIGS

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### Introduction

Gastric dysfunction is common after surgery. Emerging evidence implicates gastrointestinal electrophysiological abnormalities as a contributing cause in patients who have had a formation of a gastrointestinal anastomosis. Gastrointestinal electrophysiology and motility is normally coordinated by underlying gastric and intestinal electrical slow wave activity, generated by bioelectrically active cells termed the interstitial cells of Cajal (ICC). A new syndrome, the 'Gastrointestinal Aberrant Pathway' (GAP), has recently been identified in patients with persistent post-surgical symptoms, where intestinal electrical activity propagates retrograde through the anastomotic scar into the stomach. Changes in the ICC network have concurrently been observed. This animal study assessed the electrophysiological and ICC changes across a gastrointestinal anastomosis.

### Materials and Methods

6 weaner pigs underwent formation of a gastrojejunal anastomosis and a 2 week recovery period. High-resolution serosal mapping (32-256 electrodes; 4-7.6mm spacing) was performed at baseline and after recovery, with anastomotic tissues collected and stained using ANO1 immunohistochemistry for ICC. Gastric and intestinal slow wave direction, frequency, amplitude and velocity were compared.

### Results

Consistent antegrade gastric slow wave propagation was observed in the baseline period, while jejunum showed both antegrade and retrograde propagation. In the post-recovery recordings, 3/6 cases were found to have retrograde slow wave propagation from jejunum into stomach. Gastric frequency and amplitude were reduced and velocity increased compared to the baseline data ( $p < 0.05$ ). In the jejunum, only amplitude was reduced compared to baseline ( $p < 0.0001$ ). Histology confirmed the presence of ICC within anastomotic scar in all subjects.

### Conclusions

ICC regrowth occurs in anastomotic scar after gastrojejunal anastomoses, which may allow retrograde slow wave activity to pass from the small intestine into the stomach. This study provides electrophysiological and histological confirmation of the 'GAP Syndrome', and may provide a mechanism for post-surgical gastric dysmotility.

## A PROSPECTIVE STUDY ON PERI-OPERATIVE USE OF TRANEXAMIC ACID IN REDUCING SEROMA FORMATION IN 570 THYROIDECTOMY CASES

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### Introduction

Tranexamic acid(TXA) an antifibrinolytic agent is widely used in Breast and cosmetic surgery to reduce seroma collection. We have tried TXA usage in Total Thyroidectomy(TT) to know its impact in reducing seroma formation thereby promoting early drain removal and discharge.

### Patients and Methods:

This Prospective study was done in a tertiary care institute in south-India over a period of three years. A total of 570 TT cases out of 654 thyroidectomy procedures were included in the study. Remaining 84 cases like elderly patients(>65 years), Hemithyroidectomy, Neck-dissection and Re-operative procedures were excluded.

All cases were serially randomized into two groups [(Peri-operative Intravenous Tranexamic acid was used in TXA Group(285 cases) and avoided in Control Group(285 cases)]. Goitres were sub-classified into large(>75 cc) and small(≤75 cc) based on volume of both lobes. All cases were operated by a single Endocrine surgeon using Standard surgical techniques. A 10F suction drain(DT) was used, DT removal was done when output levels was less than 50 ml.

### Results:

Both groups were Age and sex matched. Preoperative and intra-operative findings were comparable between two groups. The mean Drain output in TXA group was 33.8ml and in control group was 44.2 ml. The mean drain output in small glands were comparable between two groups(TXA-31.9 ml and control-34.2 ml), Whereas among large goitres, drain output was significantly lower in TXA group(37.2 ml) compared to control group(62.2 ml)( $p < 0.05$ )

The mean Post-surgical hospital stay was significantly lesser in TXA group(1.18 days) compared to control group(1.42 days). Although the mean hospital stay among both groups were comparable among small goitres( TXA-1.14 days Vs Control-1.21 days), Among large goitres, Hospital stay was significantly lesser in TXA(1.25 days) compared to control group(1.81 days).(P<0.05)

### Conclusion

Perioperative administration of TXA significantly reduces seroma formation and hospital stay in Large goitres(>75CC) whereas it has less impact in small goitres.

## FEASIBILITY OF DEFORMABLE SELF-ASSEMBLING MAGNETIC ANASTOMOSIS RING FOR GASTROENTEROSTOMY IN A BEAGLE MODEL

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*Introduction:* Magnamosis is a third type of anastomosis different from suture anastomosis and stapled anastomosis. For use in magnamosis, a deformable self-assembling magnetic anastomosis ring (DSAMAR) was specially designed. In this study, the feasibility of DSAMAR in gastroenterostomy was investigated in a Beagle model.

*Materials and Methods:* Eighteen beagles were randomly assigned to three groups, in which the DSAMAR, conventional magnetic ring (CMR), and hand-sewn suturing (n=6 per group, half male and half female) were used for gastroenterostomy. The operation time, survival rate, and incidence of postoperative complications were compared among the three groups. Anastomotic specimens were obtained 1 month after operation, and the gross and histological specimens were analyzed.

*Results:* The operation times for anastomosis were similar between the DSAMAR group (4.83±1.03 min) and CMR group (4.58±0.74 min), and both times were lower than that in hand-sewn group (15.25±1.41 min). All dogs survived except one in the hand-sewn group that died of a severe abdominal infection caused by anastomotic leakage. The average times to magnetic ring release were 9.83±2.64 days in the DSAMAR group and 10.50±2.88 days in the CMR group. In gross specimens, the anastomotic stomas of the DSAMAR group and CMR group were significantly smoother than those of the hand-sewn group, and residual sutures were observed in the hand-sewn group.

*Histological analysis* showed that the mucosa of anastomosis was smooth in both magnetic anastomosis groups.

*Conclusion:* DSAMAR is feasible in gastroenterostomy in Beagle. The anastomotic effect achieved with the DSAMAR was similar to that observed with the CMR and superior to that of manual suturing.

**EVALUATION OF HEPATIC RESECTION IN ADOLESCENT AND YOUNG ADULT PATIENTS WITH HEPATOCELLULAR CARCINOMA**

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**Background:** In Japan, primary hepatocellular carcinoma (HCC) often develops against a background of chronic hepatitis, such as persistent hepatitis B virus (HBV) or hepatitis C virus (HCV) infection. Patients with HCC are commonly in their 50s or 60s. It is extremely rare to find HCC patients in their 40s or younger. In Japan, such cases are reported to constitute only 0.23% of all cases. The adolescent and young adult (AYA) population refers to people aged 15-39 years. Patients with cancer in the AYA population may present special clinical features and biologic characteristics. In this study, we evaluated hepatic resection of AYA hepatocellular carcinoma at our facility.

**Materials and Methods:** We analyzed 978 patients who underwent hepatectomy at our institute between 1994 and 2022. We categorized the patients into two groups: the AYA group and the non-AYA group. Patient demographics, operative details, perioperative outcomes, pathologic details, clinicopathological findings, overall survival (OS) and recurrence-free survival (RFS) were compared.

**Results:** Eight patients—five males and three females—were less than 40 years old. The incidence of AYA hepatocellular carcinoma was 0.8%. Six patients had a history of hepatitis B. Four patients had a history of liver cirrhosis. Two patients experienced recurrent HCC. One patient died a year and a half after surgery. The percentage of HBV-positive patients was significantly greater in the AYA group than in the non-AYA group, and the tumor diameter was significantly greater in the AYA group. There were no significant differences in tumor marker levels, vascular invasion, differentiation, overall survival rate, or recurrence-free survival rate between the AYA group and the non-AYA group. **Conclusion:** The outcome of resection for AYA HCC is good. Detection of AYA HCC in the early stage and hepatectomy are recommended.

### **GLOBAL EVALUATION AND OUTCOMES OF CHOLECYSTECTOMY: MULTICENTRE, PROSPECTIVE COHORT STUDY (GLOBALSURG 4) FROM 110 COUNTRIES**

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*Purpose:* Cholecystectomy is one of the most common operations globally, with laparoscopic surgery the “gold standard” approach. However, there is a paucity of global evidence for the variations of safe provision of cholecystectomy, including low- and middle-income countries. This international collaborative study will allow contemporaneous data collection on the quality of cholecystectomies using measures covering infrastructure, care processes and outcomes.

*Methodology:* GECKO is a prospective, international, multicentre, observational cohort study delivered by the GlobalSurg Collaborative. Consecutive patients undergoing cholecystectomy between 31st July 2023 to 19th November 2023 were recruited, with follow-up at 30-days and one-year postoperatively. The study was undertaken at any hospital providing emergency or elective surgical services for biliary disease. The primary endpoint of this study is compliance with pre-, intra-, and post-operative audit standards. Secondary outcomes include rates of 30-day complications, achievement of critical view of safety and rates of gallbladder cancer.

*Results:* The study has recruited 54,506 patients from 1260 centres across 110 countries. Centre-level data have also been collected from >1400 centres globally. Results from this international cohort study will be presented during the meeting.

*Conclusion:* This study collected routinely available data on a global scale and will inform future clinical practice.



**FEASIBILITY AND SAFETY OF UTILISING EPIDURAL ANAESTHESIA WITHOUT ENDOTRACHEAL INTUBATION FOR PANCREATICODUODENECTOMY IN A HIGH-INCOME DEVELOPING NATION**

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*Background: There is some evidence that general anaesthesia can impact cancer surgery outcomes. This study compares clinico-oncological outcomes of pancreatic cancer patients who had pyloric preserved pancreaticoduodenectomy (PPPD) under epidural anaesthesia without endotracheal intubation (EA) and those who received general anaesthesia (GA). Methods: A retrospective cohort investigation of a prospective maintained data base comparing pancreatic cancer patients with PPPD under GA and EA. The procedure's feasibility and 30-day clinical-pathological outcomes were evaluated between groups. Results: The ratio of males to females was 16:5. The mean age was 51 years (range 27–74 years). The median hospital stay was 12 days (range 7–60). In the GA group, 12 patients had PPPD, and one patient received total pancreatectomy with splenectomy (TPS). On the other hand, in the EA group, six patients received PPPD, and two patients underwent TPS. The two groups had similar preoperative demographics, including ASA classification. Seven EA patients underwent successful surgery without GA conversion. Due to respiratory acidosis, one TPS patient was converted to GA before abdominal closure. Neither group had mortality or major cardio-pulmonary issues, with the exception of one case in the GA group who acquired COVID-19 while hospitalised and was ventilated for 10 days until completely recovering. Surgical complications occurred as follows: Two GA patients had pancreatic fistula type B, and one EA patient had a biliary leak, all treated conservatively. One GA patient needed a revision laparoscopy after an iatrogenic bowel Perforation during IR-drain insertion for chylous ascites on postoperative day 30. All cases had an R0 resection. The histological tumour stage and the quantity of lymph nodes removed were similar in both groups. Conclusions: Pancreaticoduodenectomy under EA without endotracheal intubation is feasible in selected patients. It may reduce postoperative complications without compromising oncological results. Further studies are required to understand its benefits.*

**PROGNOSTIC SIGNIFICANCE OF LYMPH NODE METASTASIS IN PANCREATIC TAIL CANCER: A MULTICENTER RETROSPECTIVE STUDY**

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**Background:** Distal pancreatectomy (DP) with lymph node (LN) dissection is the standard procedure for pancreatic ductal adenocarcinoma of the tail (Pt-PDAC). However, the optimal surgery including extent of LN dissection is still being debated. The present study investigated the incidence and prognostic impact of LN metastasis on patients suffering from Pt-PDAC.

**Patients and Method:** This multicenter, retrospective study involved 163 patients who underwent DP for resectable Pt-PDAC at 12 institutions between 2013 and 2017. The frequency of LN metastasis and the effect of LN dissection on Pt-PDAC prognosis were investigated.

**Results:** There were high incidences of metastases to the LNs along the splenic artery in the patients with Pt-PDAC (39%). The rate of metastases in the LNs along the common hepatic, left gastric, and celiac arteries were low, and the therapeutic index for these LNs was zero. In pancreatic tail cancer located more distally, there were no metastases to the LNs along the common hepatic artery. Multivariate analysis revealed that tumor size was the only independent factor related to recurrence-free survival (HR = 2.01, 95% CI = 1.33–3.05,  $P = 0.001$ ). The level of pancreas division and LN dissection along the common hepatic artery did not affect the site of tumor recurrence or recurrence-free survival.

**Conclusions:** LN dissection along the hepatic artery for Pt-PDAC has little significance. Distal pancreatic transection may be acceptable in terms of oncological safety, but further examination of short-term outcomes and preservation of pancreatic function is required.

## COMPARISON OF SURGICAL OUTCOMES OF LAPAROSCOPIC APPENDECTOMY WITH OPEN APPENDICECTOMY IN PERFORATED APPENDIX IN ER

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### ABSTRACT

**Introduction:** Laparoscopic appendectomy has gained in popularity in recent years specially while considering as an option for obese & elderly patients; however, the utility and benefits of laparoscopic appendectomy versus open surgery are yet not established in perforated appendix..

**Objectives:** To compare the frequency of surgical site infection between laparoscopic versus open appendectomy for perforated appendix is primary study outcome.

**Study design:** Randomized controlled trial.

**Settings** Department of General Surgery, Allied Hospital, Faisalabad.

**Study duration:** 31st October 2021 to 30th April 2022

**Materials & Methods:** A total of 230 patients undergoing appendectomy for perforated appendix of age 15-50 years of either gender were included. Patients with negative appendectomy or non-perforated appendix on operation, pregnant females, immunocompromized and DM were excluded.

**Results:** The mean age of patients in group A(LA) was  $34.60 \pm 7.77$  years and in group B(OA) was  $35.61 \pm 8.17$  years. 127 (55.22%) were between 15 to 35 years of age. Out of 230 patients 153 (66.52%) were males and 77 (33.48%) were females with male to female ratio of 2:1. In my study, surgical site infection in Group A (LA) was in 05 (4.35%) while in Group B (OA) was in 13 (11.30%) patients ( $p$ -value=0.049) which is significant. Mean operative time were longer in the LA( $74 \pm 15$ )min than OA( $50.9 \pm 15$ )with  $p$  value=0.0001. Duration of hospital stay was shorter for the LA group with mean( $2.4 \pm 0.6$  vs  $3.7 \pm 2.5$  days)with  $p$  value=0.03. A highly significant difference existed between 2 groups in time taken to return to normal routine activities, less in LA group with means( $14.4 \pm 3.1$  vs  $18.1 \pm 3.3$  days)with  $p$  value=0.0001.

**Conclusion:** This study concluded that frequency of surgical site infections is less in patients undergoing laparoscopic appendectomy with shorter hospital stay and early return to work as compared to open appendectomy for perforated appendix.

**Keywords:** Appendicitis, laparoscopic appendectomy, surgical site infections.

## MAGNETIC ANCHOR TECHNIQUE-ASSISTED ENDOSCOPIC SUBMUCOSAL DISSECTION FOR TREATMENT OF EARLY-STAGE COLORECTAL CANCER

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*Introduction: Endoscopic submucosal dissection (ESD) is used to treat early-stage cancer. However, ESD has a more difficult procedure. The present study aimed to determine the feasibility of magnetic anchor technique (MAT) assisted ESD for the treatment of early-stage colorectal cancer.*

*Materials and Methods: This was an ex vivo experiment with 12 isolated colorectal samples. We designed and manufactured a magnetic anchor device. The soft-tissue clip was extended proximally from the operating port of the colonoscope and out of the distal end of the colonoscope. A silk thread was passed through the small hole at the end of the TM and connected to the soft-tissue clip. The colonoscopy, soft-tissue clip, and TM were delivered from the anus into the diseased mucosa. The soft tissue clip was fixed on the diseased mucosa. The AM was located exterior to the colorectal sample to pull the TM.*

*Results: MAT-assisted ESD was successfully completed in all 12 isolated colorectal samples. Before the surgery, the obtained isolated colorectal samples were confirmed to be anatomically complete. The ligature did not fall off; the mucosa appeared smooth and intact under the colonoscope; and the range of the mucosal lesion was successfully marked. The TM and soft-tissue clip were tightly connected, and the TM did not affect the opening and closing of the soft-tissue clip. During the operation, the soft tissue clip was clamped tightly on the lesioned mucosa without falling off and there were no instances of mucosal tears. The interaction between the magnets provided sufficient mucosal tissue tension and a clear mucosal dissection surface, which greatly changed the ESD experience. Finally, the mucosa was completely peeled off without perforation.*

*Conclusion: MAT-assisted ESD is a feasible procedure for the treatment of early-stage colorectal cancer and has great potential for clinical application.*

### INNATE AND ADAPTIVE ANTI-TUMOUR IMMUNE RESPONSE TO A NOVEL ARMED NANOCELL DRUG CONJUGATE (EDV) IN HUMAN MEDULLARY THYROID CANCER AND MOUSE NEUROENDOCRINE CANCER XENOGRAFT MODELS

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#### Introduction

We previously described a novel armed nanocell drug-conjugate (EDV; EnGeneIC Dream Vector) that caused marked tumour regression in a human MTC xenograft mouse model. We aim to further explore the innate and adaptive immune response to EDV treatment contributing to its anti-tumour efficacy.

#### Materials and Methods

Using the TT cell line in nu/nu Balb/c mice and the RP-116 mouse neuroendocrine cell line in C57/BL6 mice, we established xenografts and initiated treatment at 21 days post-inoculation with PNU-loaded antibody-targeted EDVs and compared this with saline and selipercatinib treatment control groups. Following 1-2 weeks of treatment, the immune cell profile of the spleens and tumours were analysed.

#### Results

EDV treatment resulted in a significant increase in the M1 macrophage (CD86+CD206-) population in the both the spleen (9.74vs0.82, p=0.002) and the tumour microenvironment (TME) (21.6vs9.7, p=0.007) compared to control groups in the TT xenograft model. The population of strongly positive CD11b+ granulocytes in the TME was also significantly increased (5.05vs1.66, p<0.0001). In contrast the M2 macrophage population (CD86-CD206+) was similar between groups. Cytotoxic natural killer (NK) cells (CD27+NK46+) in the spleens of treated mice were also significantly upregulated (2.54vs1.08, p=0.04) with no difference between control and selipercatinib treatment groups. When isolated, NK cells remained toxic to TT cells in culture. In the syngeneic RP-116 xenograft model, EDV treatment promoted increased activated T-cells (CD3+CD44+) and invariant natural killer T (iNKT) cells (CD3+NK1.1+) in the TME (0.42vs0.16, p=0.011).

#### Conclusion

EDV treatment triggers an innate and adaptive anti-tumour immune response that is mediated by M1 macrophages, NK cells, activated T-cells and iNKT cells.

# APPLICATION AND THERAPEUTIC MECHANISM OF MULTI ENZYME ACTIVE NANOPARTICLES RESPONSIVE TO DUAL LASER AND TUMOR MICROENVIRONMENT IN ANAPLASTIC THYROID CARCINOMA

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**Introduction:** The characteristic of anaplastic thyroid carcinoma ( ATC ) is tumor cell infiltration into adjacent thyroid and other tissues, as well as invasion of lymphatic vessels and blood vessels, with high distant metastasis, making it a highly destructive thyroid cancer. At present, approved treatment methods still cannot completely cure ATC and can only prolong the progression free survival of patients. Compared with traditional cancer treatments such as surgery, chemotherapy, and radiation therapy, photothermal therapy ( PTT ) can achieve targeted treatment of tumors locally and reduce adverse reactions. In recent years, PTT has attracted widespread attention due to its ability to induce cell apoptosis and increase tumor cell sensitivity to chemotherapy.

**Materials and Methods:** Polydopamine, as a widely used photothermal agent, has advantages such as high photothermal conversion efficiency, easy preparation, excellent drug loading ability, and good biocompatibility. Copper, as an essential metal element in the body, has milder requirements for the tumor microenvironment that produces Fenton reaction to achieve therapeutic effects compared to other transition metals, and higher efficiency in generating reactive oxygen species. This study skillfully designed and synthesized a multifunctional nanoparticles ( named Cu-PDA-Ce6 NPs ) that combines imaging and therapeutic effects.

**Result:** It has triple nanoenzyme activity of glutathione peroxidase reductase, catalase, and peroxidase. Integrating four treatment modes of photothermal therapy, chemotherapy, photodynamic therapy, and chemodynamic therapy, fluorescence imaging and photothermal imaging dual imaging modes are used for imaging and treatment of ATC. Multiple treatment modes promote each other and form a good cascade cycle, demonstrating excellent therapeutic effects in ATC cells and animal models. In addition, the mechanism of its anti-tumor effect was further studied, mainly including iron death, copper death, and immunogenic death.

**Conclusion:** This study provides a reliable option for the treatment of ATC and opens up new research ideas.

**3-DIMENSIONAL MULTICELLULAR SPATIAL ORGANIZATION DICTATES FERROPTOSIS RESPONSE IN BIOMIMETIC IN VITRO MODELS OF PAPILLARY THYROID CARCINOMA**

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*Introduction:* Nearly half of papillary thyroid carcinomas (PTC) overexpress glutathione peroxidase 4 (GPX4), which is associated with decreased overall patient survival. We demonstrated that inhibition of GPX4 in vitro results in effective induction of ferroptosis, an iron-dependent cell death pathway, in PTC cell lines in 2-dimensional (2D) monolayer. However, influence of 3-dimensional (3D) in vitro cellular organization of PTC on therapeutic response is unclear. We engineered and examined biomimetic 3D PTC in vitro models of ferroptosis for potential response differences and preclinical screening of ferroptosis inducers.

*Materials & Methods:* We generated several biomimetic 3D in vitro models of PTC - 2D and 3D PTC spheroid models, a 3D PTC-thyroid fibroblast co-culture model, and a 3D patient tumor-derived organoid (PDO) model. The biomimetic 3D models were assessed for induction of ferroptosis with RSL3, cell death, oxidative stress, lipid peroxidation, glutathione (GSH) depletion, protein and mRNA expression, cellular ultrastructural analysis in concentration- and time-dependent manner.

*Results:* We observed differential response across all biomimetic 3D PTC models of ferroptosis in vitro during ferroptosis when compared to 2D monolayer. 3D models exhibited a higher baseline expression of GPX4 and therefore, slightly reduced sensitivity to treatment at lower concentrations of RSL3 compared to 2D monolayer, but at higher concentration, all models performed similarly. Ultrastructural analysis did not reveal significant differences between 2D and 3D PTC models, suggesting that ferroptosis-induced ultrastructural changes are unaffected by the 3D spatial organization.

*Conclusion:* 3D multicellular spatial organization of PTC tumor cells imparts higher basal GPX4 overexpression and dictates sensitivity to induction of ferroptosis. Understanding crucial differences between 2D and 3D biomimetic PTC models of ferroptosis in preclinical screening of ferroptosis inducers and creating optimal in vitro conditions closely recapitulating PTC affirm their relevance as preclinical models for future translational and clinical applications in patients with PTC.

**LOSS OF MGMT PROTEIN EXPRESSION BY IMMUNOHISTOCHEMISTRY IS ASSOCIATED WITH RESPONSE TO CAPECITABINE/TEMOZOLOMIDE IN NEUROENDOCRINE TUMORS (NETS)**

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**Background:**

A recent prospective phase II study (ECOG-ACRIN E2211) demonstrated that MGMT deficiency was associated with a significant response to capecitabine/Temozolomide (CAPTEM) in pancreatic neuroendocrine tumors (NETs), routine MGMT analysis in NETs was not recommended. Our study sought to demonstrate whether loss of MGMT protein expression, by immunohistochemistry (IHC), is associated with improved overall survival (OS) in patients receiving CAPTEM for NETs from various tumor sites.

**Methods:**

Paraffin-embedded tumor samples were evaluated by IHC using an MGMT monoclonal antibody (Invitrogen MT23.2, Waltham, MA). Intact MGMT protein expression (i.e., IHC positivity) was defined as any staining intensity (>1+) in >35% of neoplastic cells according to an internal validation study. In a subset of tumors, pyrosequencing analysis of MGMT promoter methylation was performed with the QIAGEN PyroMark system (Germantown, MD). Real-world OS was extrapolated from insurance claims data with Kaplan-Meier estimates from the date of first CAPTEM administration to the last date of contact.

**Results:**

The study cohort included 80 patients (42 men, 38 women, median age: 57 years [range: 19-89]) with various NETs (33 pancreatic, 16 intestinal, 7 pulmonary, 8 other, and 16 of unknown origin). The median OS for the 48 patients with MGMT negative tumors was 31 months compared to 17.5 months for the 32 patients whose tumors were MGMT positive by IHC (HR: 1.61 [95% CI: 0.979-2.65],  $p=0.059$ ). For a subset of cases for which MGMT promoter methylation was determined, there was limited concordance with IHC. MGMT promoter hypermethylation by pyrosequencing was identified in only 14.3% of MGMT IHC negative tumors.

**Conclusions:**

MGMT promoter status by IHC may be a clinically useful indicator that predicts improved OS for NETs treated with CAPTEM but does not reliably correlate with the findings of MGMT promoter methylation by pyrosequencing.



# TITLE: COMPARISON OF TWO DIFFERENT HEMOSTATICS AGENTS IN THE PROCEDURE OF OPEN THYROIDECTOMY PERFORMED IN A TERTIARY REFERRAL INSTITUTE

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*Title: Comparison of two different hemostatics agents in the procedure of open thyroidectomy performed in a tertiary referral institute.*

*Introduction:*

Hemostatic agents are used in various surgical procedures and in thyroidectomy for a safe surgery is placed in the thyroid bed with or without drain. Surgicel is an oxidized cellulose polymer and surgicel fibrillar is oxidized regenerated cellulose which has faster hemostasis and also conforms to the site for optimal adherence. We compared the use of surgical Vs surgicel fibrillar in patients undergoing Total thyroidectomy for benign cytology.

*Materials & Methods:*

Between January 2018 to November 2023 from prospectively collected data a patient in surgicel group was compared to surgicel fibrillar group. All patient had drain placed in the thyroid bed. All patient had benign cytology. The patient in surgical fibrillar group was operated by a single endocrine surgeon drain was remove when the output was less than 20 ml.

*Results:*

The groups were comparable in terms of age, weight of goiter and size. Mean drain in surgical fibrillar was 18.75±9.89ml. Mean drain in surgicel was 32.89±12.16 ml ( $p<0.000$ ). The Mean days for discharge was 1.45±.6 vs 2.00±.8 ( $p=0.0129$ )

*Hypocalcaemia*

	Biochemical	symptomatic	
	Surgical fibrillar	6/100	7/100
Surgicel	5/100	9/100	
RLN Paralysis	1/100	1/100	

The Surgical team noted clearing of drain in fibrillar group in less than 4 hours and more than 12 hours in surgicel group

*Conclusion:*

Surgical fibrillar is better which compared to surgical as a hemostatic agent but the productive cost and large numbers are needed.

*Disclosure of interest none declared*

*Keywords: Hemostatic agent, Thyroidectomy, Drain, Safe thyroid surgery*

**OUTCOME OF ERAS IN ELECTIVE COLORECTAL CANCER SURGERY: 1-YEAR EXPERIENCE IN A GENERAL SURGICAL UNIT**

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*Enhanced Recovery After Surgery (ERAS) in colorectal cancer surgery is a well-known concept in reducing perioperative complications. We aim to describe and audit our 1-year experience of local ERAS protocol in terms of compliance and postoperative outcomes for colorectal cancer surgeries in a general surgical unit.*

*A multidisciplinary team consists of various specialty was formed to develop a local ERAS protocol. The protocol was applied to all elective colorectal cancer surgeries from June 2022 to May 2023 in the general surgical unit of Hospital Sultan Ismail, Johor Bahru. Data was analysed prospectively on the postoperative outcomes and compliance to the 24 perioperative items. The data was then compared with the cohort of patients prior to the establishment of the protocol. 60 patients were operated over a 1-year period and there were 35 males and 25 females with the median age of 64 years old. Complications by Clavien Dindo grade III-V was 10% in the ERAS group compared to 17.9% in non-ERAS group ( $p=0.006$ ). Median length of stay was 5 days and 8 days in ERAS and non-ERAS group respectively ( $p<0.001$ ). Readmission rate was 11.7% in ERAS group and 17.9 % in non-ERAS group ( $p=0.184$ ). ERAS group had mortality rate of 1.7% compared to 7.1% in non-ERAS group ( $p=0.195$ ). From the 24 ERAS items that was audited, 13 items recorded 100% compliance rate whereas only 6 showed compliance rate below 80%.*

*The introduction of ERAS protocol in our general surgical unit has shown to reduce the complication rate, length of stay, readmission rate and mortality. Further effort needs to be placed to improve adherence to the protocol and sustaining it to ensure optimal long lasting clinical outcomes.*

**USEFULNESS OF ERAS IN PREOPERATIVE PATIENTS WITH COLORECTAL CANCER**YOKO HASHIMOTO<sup>1</sup>; Toshiyuki Enomoto<sup>2</sup>; Takuyu Nagata<sup>3</sup>; Manabu Watanabe<sup>4</sup>; Yoshihisa Saida<sup>5</sup><sup>1</sup>Department of Surgery, Toho University Ohashi Medical Center<sup>2</sup>Department of Surgery, Toho University Ohashi Medical Center<sup>3</sup>Department of Surgery, Toho University Ohashi Medical Center<sup>4</sup>Department of Surgery, Toho University Ohashi Medical Center<sup>5</sup>Department of Surgery, Toho University Ohashi Medical Center**Background:**

The concept of Enhanced Recovery After Surgery (ERAS) is now gaining popularity, and perioperative management based on this concept is being implemented. ERAS recommends shortening the preoperative fasting period and avoiding mechanical bowel preparation. In this study, we compared the perioperative results of different bowel preparation methods for colorectal cancer at our hospital.

**Method:**

146 patients undergoing scheduled colorectal cancer surgery at our hospital between January 2020 and November 2022 were included in the study. Patients who had no dietary restrictions until the day before operation and received only salt laxatives were classified as the ERAS group, while those who had a fasting period or underwent mechanical bowel preparation were classified as the non-ERAS group.

**Result:**

There were no differences between the two groups in age, gender, BMI, ASA-PS, preoperative nutritional status, tumor marker values, tumor location, surgical technique, and anastomosis method.

There were no significant differences between the two groups in operative time (184 min vs. 166 min;  $p=0.054$ ) or blood loss (89 ml vs. 68 ml). There was no significant difference in early postoperative complications (33.8% vs. 22.2%;  $p=0.118$ ), including SSI (12.3% vs. 8.6%;  $p=0.468$ ) and suture failure (4.7% vs. 4.8%;  $p=0.856$ ). There was also no significant difference in length of hospital stay (13.3 days vs. 13.5 days;  $p=0.916$ ). In the ERAS group, no dry mouth or hunger was observed before surgery.

**Conclusion:**

There was no significant difference in perioperative results due to differences in bowel preparation for colorectal cancer. Furthermore, in the ERAS group, it was found to be effective in alleviating preoperative pain such as dry mouth and hunger. From the viewpoint of ERAS, we believe that it is desirable to select a method that places less burden on the patient.

### CURRENT STATUS AND PROBLEMS OF ERAS IN THORACIC ESOPHAGEAL CANCER SURGERY

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#### *(Introduction)*

Thoracic esophageal cancer surgery is a highly invasive procedure with many co-morbidities, and many elderly patients are involved. The program is intended to clarify the current status and problems of this program in thoracic esophageal cancer surgery. The purpose of this study is to clarify the current status and problems of this program in thoracic esophageal cancer surgery.

#### *(Methods)*

The following studies were conducted retrospectively. Oral care and pulmonary rehabilitation were introduced preoperatively. The endotracheal tube was removed in the operating room on the day of surgery. Enteral feeding and ambulation were started on the first postoperative day (POD1), with the goal of oral intake on the sixth postoperative day. The patient was discharged from the hospital on the 14th postoperative day. 230 patients who used this program were included. The mean initial postoperative bed release, duration of postoperative hospital stay, postoperative complications (CD category II or higher), presence of postoperative pneumonia, and readmission within 30 days after surgery were evaluated.

*(Results)* The mean initial postoperative bed release was 1.4 days. The mean length of postoperative hospital stay was 22.8 days. Postoperative complications were 48%. Postoperative pneumonia 10.%. Suture failure 12%. Vocal cord paralysis 22%. Re-hospitalization within 30 days after surgery: 2.0%.

#### *(Conclusion)*

Outcomes are difficult to improve because they are affected by complications of the surgery itself, which are not related to the protocol. Outpatient rehabilitation that enables continuous rehabilitation, and individualized operation and rehabilitation for the elderly and high-risk patients need to be considered.

**PICS: POST INTENSIVE CARE SYNDROME**Shigeaki Inoue<sup>1</sup>; Joji Kotani<sup>2</sup><sup>1</sup>Dept of Emergency and Critical Care Medicine, Wakayama Medical University, Japan<sup>2</sup>Dept of Disaster and Emergency Medicine, Kobe University, Japan

*Background: Post-intensive care syndrome (PICS) is a physical, mental, and cognitive disorder that occurs after critical illness, and is an urgent problem to be solved in the field of emergency intensive care. Although appropriate nutritional therapy in ICU is crucial in the long-term outcome of critically ill patients, the relationship between PICS and nutritional intake in the acute and subacute phase has not been fully investigated. Methods: Patients with sepsis who were admitted to our ICU/HCU and diagnosed with SEPSIS3. Patient background, clinical information from the time of admission, and nutritional intake (protein and calorie intake/day) and mode of intake (parental, enteral, and oral) from day 1 to day 21 of ICU admission were collected from electronic medical records. The presence or absence of PICS at 3 months after the onset of sepsis was also collected from telephone interviews with patients and family members. The patients were dichotomized into PICS and non-PICS groups, and their nutritional intake status and intake patterns were compared. Results: 131 patients, mean age 73 years, 62% male, SOFA score 9.0 on admission, PICS frequency at 3 months was 68%, and physical dysfunction was the most frequent occurrence. A significant decrease in 2-year survival in PICS group was observed compared to non-PICS group (60% vs 85%;  $p<0.05$ ). In PICS group, caloric and protein intake via enteral and oral on Day5 were decreased compared to non-PICS group ( $p<0.05$ ). Conclusion: Insufficient caloric and protein intake via enteral and oral in acute phase is associated with PICS occurrence after sepsis.*

**BACTEREMIA AND FUNGEMIA IN PEDIATRIC BURN PATIENTS: DOES PARENTERAL NUTRITION MAKE A DIFFERENCE?**

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*Introduction:* Children have high metabolic requirements, especially in the setting of burn injury which induces a hypermetabolic state and can quickly lead to nutritional deficits. The enteral route is preferred for nutrition, though may not always be feasible in critical care settings. Parenteral nutrition (PN) can be implemented when requirements cannot be met via the enteral route, though is not commonly utilized due to concerns for infection. We seek to analyze the incidence of bacteremia and fungemia related to the use of PN in pediatric burn patients.

*Methods:* Using a large database, a retrospective analysis was performed of pediatric patients (ages 0-17 at presentation) who were given any burn diagnosis during the years 2010-2023. Cohorts were defined by whether the patient had received any PN, propensity-matched for prevalent comorbid diagnoses, and then analyzed for any incidence of bacteremia or fungemia within 3 months from the time of burn injury.

*Results:* A total of 2,374 patients were analyzed with similar demographic characteristics among the cohorts after matching. Bacteremia was noted in 10 patients who did not receive any PN (0.84%; RR = 21.0, p = 0.035) compared to 0 cases in the PN cohort. Survivability was decreased in the non-PN group associated with bacteremia patients, but this failed to reach significance. No cases of fungemia were diagnosed in either cohort.

*Conclusion:* Bacteremia and fungemia are rare outcomes, even in critically ill burn patients. Though there is hesitancy to use parenteral nutrition for fear of infectious complications, our data suggests that support with parenteral nutrition is associated with a lower occurrence of bacteremia and potentially better outcomes in pediatric burn patients. Additional analysis is necessary to determine the role that TPN plays in the prevention of bacteremia and to determine what factors are associated with development of fungemia in this population.

### **EFFECT OF RESECTION DISTANCE FROM THE PYLORIC SPHINCTER ON SURGICAL OUTCOMES IN LAPAROSCOPIC SLEEVE GASTRECTOMY(LSG)**

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#### *Purpose*

*To study the influence of the distance from the pyloric sphincter during surgery on the results of LSG.*

#### *Material and methods*

*The study included 945 (915 women) patients with a body mass index of 34.5-69.6 kg/m<sup>2</sup> aged 18-65 years. Patients were randomized into 2 groups depending on the type of laparoscopic surgery:*

*1 (n=463), a 36-40 Fr calibration probe was used, and the distance from the pyloric sphincter was 4-6 cm;*

*2 (n=482) a 32 Fr calibration probe was used, the distance from the pyloric sphincter was 2-3 cm.*

*The main comparison criterion is the percentage of weight loss in the first 6 and 12 months, and an additional comparison criterion is the postoperative course of concomitant diseases and the presence of complications.*

#### *Results*

*A comparative analysis showed that the first group lost 59±3% of its initial weight in the first 6 months, and 71±4% after 12 months; in the second group, respectively, 73±3% and 87±3% of the initial weight. The difference in the 6th and 12th month indicators between the groups was statistically significant ( $p < 0.05$ ). Concomitant diseases in group 1 decreased by 70-80% by the 6th month after surgery and by 85-96% by the 12th month. In the 2nd group, a similar remission and improvement in the 6th month was 84-94%, and in the 12th month, the indicators remained at the same level.*

#### *Conclusion*

*The results of this randomized trial show that when using a calibration probe of 32 Fr and a distance of 2-3 cm from the pyloric sphincter during LSG, compared with using a calibration probe of 36-40 Fr or more at a distance of 4-6 cm from the pyloric sphincter, there is an increase in faster and more effective weight loss, earlier remission of concomitant diseases, and complications do not increase.*

## THE ASSOCIATION OF POSTOPERATIVE NUTRITIONAL STATUS WITH LONG-TERM SURVIVAL OUTCOME IN CT1N0M0 ESOPHAGEAL CANCER

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### [Introduction]

Surgical resection or chemoradiotherapy are established treatments for cT1bN0M0 esophageal cancer. Surgery for esophageal cancer is highly invasive, potentially impacting prognosis through its effect on nutritional status. This study examines the correlation between postoperative nutritional status and survival outcome in patients with surgically resected cT1N0M0 esophageal cancer.

### [Materials]

We included 51 patients with cT1N0M0 esophageal squamous cell carcinoma who underwent surgery at our hospital from January 2015 to December 2019.

### [Methods]

We retrospectively observed the survival outcome. The prognostic relevance of nutritional parameters such as total lymphocyte count, monocyte, albumin, total cholesterol, prealbumin, PNI, NLR, PLR, and LMR were evaluated before and after surgery.

### [Results]

The median observation period was 60 months (0-97). Long-term survival outcomes were as follows: 3-year overall survival (%) = 82.2 and 5-year overall survival (%) = 65.2. There were many deaths after 3 years postoperatively, but none were due to recurrence of esophageal cancer, and all were due to other causes. Characteristics of deaths after 3 years include nutritional evaluation at 3 years postoperatively with low total lymphocyte count ( $<1128/\mu\text{L}$ ) ( $p<0.001$ ), high monocyte ( $\geq 402.6/\mu\text{L}$ ) ( $p=0.017$ ), low albumin ( $<3.90\text{ g/dL}$ ) ( $p<0.001$ ), low total cholesterol ( $<171\text{ mg/dL}$ ) ( $p=0.001$ ), low PNI ( $<43.655$ ) ( $p<0.001$ ), low NLR ( $<4.005$ ) ( $p<0.001$ ), low PLR ( $<0.0209$ ) ( $p<0.001$ ), and low LMR ( $<5.1625$ ) ( $p=0.003$ ), significantly worsening the long-term outcome.

### [Conclusion]

Characteristics associated with a poor long-term outcome in surgical cases included low postoperative total lymphocyte count, albumin, total cholesterol, PNI, NLR, PLR, and LMR, along with high monocyte, reaffirming the significance of postoperative nutritional management to enhance long-term outcome.



**"DECELLULARIZED LIVER HYDROGEL" ; PROMISING SCAFFOLD MATERIAL THAT ENHANCES CELL ENGRAFTMENT IN ORTHOTOPIC HEPATOCYTE TRANSPLANTATION**

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**[Background]**

Hepatocyte transplantation (HCT) is a potential bridging therapy or an alternative to liver transplantation. HCT has been performed in over 100 patients with the liver disease globally, with intraportal single-cell injection being the standard procedure. However, this strategy has yet to overcome poor cell engraftment and function. Recently, biological scaffolds have piqued the interest of researchers because of their biocompatibility and bioactivity. Here, we developed a liver-derived extracellular matrix (L-ECM) gel that functions as a scaffold material and investigated the orthotopic HCT in a fibrotic liver model to contribute to the survival of transplanted hepatocytes and the expression of their inherent functions.

**[Method]**

A solution of L-ECM-gel was prepared by the optimized protocol of decellularization and solubilization of porcine livers. For in vitro assay, human hepatocytes were introduced into the hydrogel solution, and immediately gelled in 37 °C incubator. For in vivo assay, hepatocyte was encapsulated in L-ECM-gel as an implantable graft. The grafts were transplanted between the rat's liver lobes. Tacrolimus and Prednisolone were administered for immune-suppression.

**[Result]**

In vitro, the hepatocytes formed cell aggregates by cell-cell interactions, shown by the expression of E-cadherin, in the L-ECM-gel during cultivation in hepatocyte medium for 3 days. Quantitative analysis showed production of human albumin (hALB) from the cultured grafts. In vivo, the grafts localized stably between liver lobes and contained human hepatocytes were well-engrafted. Moreover, hALB was detected from the rat serum examination, which indicated that the transplanted hepatocytes in the graft demonstrated sufficient function in vivo. Furthermore, the hepatocyte function was confirmed in another in vivo model, administering Thioacetamide to induce liver fibrosis.

**[Conclusion]**

In this study, L-ECM-gel might have provided a favorable environment for hepatocytes engraftment and function.

## COMPREHENSIVE MICRORNA EXPRESSION PROFILING UTILIZING SURGICAL SPECIMENS OF COLORECTAL CANCER AND ELUCIDATING MOLECULAR MECHANISM REGULATING CANCER STEM CELL FUNCTIONS

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**Introduction:** MicroRNAs (miRNAs) play an important role in the regulation of cancer stem cells (CSCs). However, little is known about the miRNA expression profile of human colorectal CSCs because of the technical difficulties to isolate them from surgical specimens.

**Materials & Methods:** Expression levels of the 754 miRNAs were analyzed by quantitative PCR using the paired samples of EpCAM+/CD44+ cancer cells (enriched in CSCs) and EpCAM+/CD44neg cancer cells (non-tumorigenic cancer cells (NTCs)) directly isolated from the colon cancer surgical specimens and compared that of normal colon epithelium. Organoid and xenotransplantation assays were performed using the cancer cells infected with miRNA expressing lentivirus.

**Results:** Comparison of the expression levels of 754 miRNAs in the CSCs and NTCs resulted in the identification of 10 miRNAs upregulated (miR-221, miR-218, miR-500 and miR-195) or downregulated (miR-185, miR-19a, miR-337, miR-10a, miR-21 and miR-24) in CSCs compared to NTCs. Among them, miR-221 was most highly expressed in CSCs and its expression level was much lower in NTCs and normal colon epithelial cells (n=6, p<0.05). Constitutive overexpression of miR-221 enhanced organoid-forming capacity of both conventional colorectal cancer cell lines and patient-derived xenografts (PDX) and substantially enhanced the tumorigenic capacity of PDX lines in vivo. The estimated 5-year overall survival rate for miR-221high patients (n=177) was significantly lower than miR-221low ones (n=116) in TCGA dataset (54.6% vs. 73.6%; p<0.001). The TNM stages at diagnosis were not significantly associated with the expression level of miR-221. In a multivariate analysis, miR-221 expressions were significantly associated with overall survival (p=0.009).

**Conclusions:** Because miR-221 was preferentially and highly upregulated in human colorectal CSCs, but not in normal stem/progenitor cells, miR-221 can be a novel biomarker that reflects amount and/or activity of CSCs in colorectal cancers and an attractive therapeutic target to attach colorectal CSCs by avoiding damages on their normal counterparts.

**A PRACTICAL CADAVERIC DEMONSTRATION FOR TEACHING UNDERGRADUATE SURGICAL ANATOMY**

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**Introduction:**

A short course using fresh pre-dissected cadaveric demonstration was conducted to improve the clinically relevant anatomy knowledge of the abdomen. The demonstration was combined with pre- and post-session assessments for learning (AFL) with clinical cases. We investigated the effectiveness of this teaching method.

**Material/Methods:**

Six anatomy-demonstration sessions were undertaken by surgeons with teacher-students ratio 1:5 running for 20 minutes each. Twenty multiple-choice-questions (MCQ) were set based on Bloom's Taxonomy III (Apply) using common surgical case scenarios related to gastrointestinal(8), abdominal wall(5), hepatopancreaticobiliary(4) and vascular(3) surgery. Students were scored one-mark for every correct answer (max.20). The MCQ was deployed immediately before and after the session.

Knowledge level was quantified using scores before (PRE-score) and after (POST-score) the session. MCQ as an AFL tool was cross validated by comparing score difference between home university (A) and other universities (B). The value of anatomy-demonstration was evaluated by score difference between scenarios which had been demonstrated (D, n=14) versus not demonstrated (ND, n=6).

Scores were reported as medians (ranges). Comparison used Wilcoxon signed rank-test and Mann-Whitney U-test for related and independent samples respectively.

**Results:**

Twenty-eight medical students in MBBS (Years 2-4) from institution A (n=14) and B (n=14) were included. There was improvement from PRE-score 7.0 (2-13) to POST-score 15.5 (8-20) ( $P<0.0005$ ). Validation of MCQ: PRE-score vs. POST-score in A (8.5 vs. 18.5,  $P=0.001$ ) and B (7.0 vs. 14.5,  $P=0.001$ ) were comparable in the extent of improvements (9.0 vs. 8.0,  $P=0.401$ ).

POST-scores were better than PRE-score in both D (26.0 vs. 9.0,  $P=0.001$ ) and ND (21.0 vs. 9.0,  $P=0.028$ ); a trend towards greater improvement was shown in D vs. ND (15.5 vs. 10.0  $P=0.062$ ).

**Conclusion:**

A 20-minute anatomy-demonstration using fresh cadaver combined with AFL is efficient and effective in improving knowledge on surgical anatomy. Anatomy-demonstration continues to have a role in surgical education.

**OUTCOMES AFTER REVASCLARIZATION FOR ACUTE LOWER LIMB ISCHAEMIA IN PATIENTS WITH AND WITHOUT DIABETES: A NATIONWIDE REGISTRY STUDY**

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**Introduction**

Acute lower limb ischaemia (ALI) is a life and limb threatening event, with a high proportion of patients having diabetes mellitus (DM). Acute compartment syndrome (ACS) is a feared complication after revascularization for ALI. Little is known how DM affects the risk of adverse outcomes after revascularization for ALI and this study aimed to investigate if there are differences in major amputation, mortality, or major adverse cardiovascular events (MACE) between patients with and without DM. A secondary aim is to investigate if there are differences in the odds of undergoing fasciotomy as a treatment, or prophylaxis, for post-revascularization ACS between patients with and without DM.

**Materials and Methods**

Between 2010 and 2014, 615 patients underwent revascularization for ALI in Sweden, and were included in the Swedish vascular registry (SWEDVASC). Patients with DM (n=245) were identified using the national diabetes registry (NDR). Directed acyclic graphs were used to create a model for the multivariate analysis to adjust for confounding. The following factors were included in the final model: age, sex, smoking and socioeconomic factors (education level, income, country of origin and marital status). Uni- and multivariate Cox- or logistic-regression analyses were performed to evaluate differences in mortality, major amputation, MACE and fasciotomy between those with versus without DM.

**Results**

The hazard ratio (HR) for DM patients of mortality for the first year was 0.92 (95% Confidence Interval [CI] 0.61-1.39), major amputation HR 1.45 (0.99-2.11), combined major amputation/mortality HR 1.27 (0.94-1.72), and MACE HR 1.24 (0.92-1.67). The odds of fasciotomy was lower in the DM-group in the multivariate logistic regression analysis; OR 0.1 (95% CI 0.01-0.51).

**Conclusion**

DM was not shown to be associated with higher rates of mortality, major amputation, or MACE, after revascularization for ALI, compared to patients without DM. Patients with DM had, however, significantly lower odds of fasciotomy.

**FEASIBILITY AND SAFETY OF SINGLE-SITE PLUS-2 PORTS ROBOTIC PANCREATODUODENECTOMY: A SINGLE SURGEON'S EXPERIENCE IN TWO COUNTRIES**

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*Introduction:* Robotic pancreaticoduodenectomy (RPD) is globally accepted, however, only a limited number of facilities have adopted a reduced-port technique for RPD. Our previous review in 2022 identified only seven published studies that discussed reduced-port robotic pancreatectomy, with only one of them reporting pancreaticoduodenectomy. In this presentation, we showcase the feasibility and safety of a unique approach—Reduced-Port Robotic Pancreaticoduodenectomy (RPRPD)—utilizing a single-site plus-two ports technique (SP2), along with several tips for a successful procedure.

*Materials & Methods:* The present enrolled patients who underwent RPRPD between October 2020 and December 2023 in Taiwan and Japan. Our RPRPD approach employed a single-port platform attached to a 5-cm incision. The robotic arms (arm1, arm2, arm3, and arm4) were installed for the procedure with the arm2 and arm3 and the assistant trocar placed on the single-port platform. And the arm1 and arm4 were positioned on either side of the abdomen. Coordinated movement between the Arm2 and Arm3 prevented instrument collisions. A traction technique named as 'gooseneck traction' was principally used to prop up the specimen rather than grasp with a single hand. Furthermore, a right lateral approach to the superior mesenteric artery, as previously reported by us, proved suitable for reduced-port technique. Drain tubes were inserted through the wounds at the am1 and arm4.

*Results:* Fifty-two patients underwent RPRPD using the SP2 with no technical issues during surgery. The median operative time was 352 minutes (250-488), and the median estimated blood loss was 92 mL (5-875). Clavien-Dindo grade  $\geq$  IIIa of complications were observed in 6 (11.5%) patients and median postoperative hospital stay was 12 days (7-67).

*Conclusion:* RPRPD with the single-site plus-two ports method is safe and feasible, utilizing gooseneck traction and a right lateral approach for optimized surgical procedures. This technique offers a valuable option for achieving safe and efficient RPRPD.

## DEVELOPMENT OF A MODEL TO PREOPERATIVELY PREDICT THE RISK OF MICROVASCULAR INVASION FOR HEPATOCELLULAR CARCINOMA PATIENTS UNDERGOING LIVER TRANSPLANTATION

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### Abstract

**Introduction:** Microvascular invasion (MVI) represents a relevant prognostic factor in the setting of hepatocellular carcinoma (HCC). A recent study by Endo et al. proposed a model in the setting of liver resection. A refined model to predict MVI based on preoperative variables in the setting of liver transplantation (LT) is proposed in the present study. **Materials & Methods:** Patients undergoing LT for HCC between 2000 and 2018 were identified using a multi-institutional database. A total of 2,170 patients were split in a Training (70%) and a Validation Set (30%). Therefore, a preoperative predictive model for MVI was built and externally validated.

**Results:** Among the entire cohort, MVI was observed in 586 patients (27.0%). On multivariable logistic regression analysis in the Training Set, three preoperative parameters associated with MVI were identified:  $\alpha$ -fetoprotein (lnAFP; odds ratio [OR]=1.19; 95% confidence interval [CI]=1.13-1.27), imaging tumor burden score (lnTBS; OR=1.66; 95%CI=1.39-1.99) and living donor LT (LDLT; OR=1.99; 95%CI=1.56-2.53). The c-index of the Validation Set was 0.74 vs. 0.69 observed for the score by Endo (Brier Skill Score +13%). The new score presented a relevant net reclassification index (NRI), with 34.4% of correct reclassification rate for the events and 26.6% for non-events (overall NRI=0.61). Stratifying the Validation Set in three risk strata (0-50th, 51st-75th, >75th centile of the score), a very good stratification was observed in terms of disease-free (5-year: 89.3, 75.5, and 50.7%, respectively) and overall survival rates (5-year: 79.5, 72.6, and 53.7%, respectively).

**Conclusion:** Preoperative assessment of MVI using the present model showed very good accuracy to predict MVI after LT.

**PERIOPERATIVE OUTCOME OF RETROPERITONEAL TUMOR IN A GENERAL SURGERY CENTRE: A SINGLE SURGEON CASE SERIES IN ONE INSTITUTION**

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**Introduction**

Retroperitoneal tumors are known to be large and often involve other surrounding structures. Recurrence is common, and complete resection is possible in very few patients. It is usually operated by multidisciplinary subspecialty teams to achieve successful resection, which is crucial for the patient's survival.

**Method**

A total of 19 cases that underwent surgical intervention in Hospital Sultan Ismail, Johor Bahru, between August 2017 and November 2023 were identified. The purpose of this study was to analyse the outcome of surgery by a single surgeon. A retrospective chart review was performed. Demographic data, surgical method, and perioperative complications were recorded.

**Result**

There were 12 males (63.2%) and 7 females (36.8%), with a median age of 57 years (range 25–73). The main complaint was abdominal pain associated with distention in 11 patients (57.9). Computed tomography was performed on all patients. The mean tumor size was 9.65 cm (range, 2 to 25cm) with mean hospital stay 7.7 days (range, 4 to 14 days). There were 4 benign tumors (21.1%) and 15 malignant tumors (78.9%). Liposarcoma (7 cases, 36.8%) and leiomyosarcoma (3 cases, 5.2%) were the more frequent histologic types. Among them, 13 (68.4%) complete resection, 4 (21.1%) had incomplete resection, and 2 (10.5%) biopsies. Eleven (57.9%) underwent tumor excision with multiple organ resections. Intra-operative complications such as bleeding more than 500 ml (9, 47%) with one patient having an IVC tear, a transected ureter (1, 5.3%), and a stroke (1, 5.3%). No perioperative death was recorded.

**Conclusion**

The best treatment option for retroperitoneal tumors is wide resection margins. Surgery is possible with proper preoperative planning and optimization. Tumors with great vessel involvement must be identified to prevent the risk of mortality.

## BEYOND BOUNDARIES: FLAP-BASED RECONSTRUCTION FOR EXTENSIVE PELVIC, ABDOMINAL, AND CHEST WALL DEFECTS

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### Introduction

Extensive pelvic, abdominal, and chest wall resection and reconstruction are a challenging procedure that requires a multidisciplinary approach. Trunk pathologies are associated with high surgical morbidity and result in full-thickness defects hard to reconstruct. Through an exploration of case studies, and advancements in flap design, this study seeks to showcase the capacity of flap-based reconstruction to redefine the limits of what is surgically achievable in the intricate landscape of pelvic, abdominal, and chest wall defects

### Methods and Materials

A retrospective study was conducted at Hospital Kuala Lumpur comprised from January 2017 to December 2023. All patients who underwent reconstruction surgery for trunk defects were included.

### Results

A total of 59 patients were identified over a period of 7 years where 32 (54.2%) were males and 27 (45.8%) were females with mean age of 49.2 ( $\pm 16.4$ ) years. The most common cause of soft tissue defect is oncological resection 55 (93.2%). The majority of defects that were reconstructed were chest wall 39 (66.1%) followed by abdominal wall defects 11 (18.6%). 32 free flaps were used in this study for reconstruction. Anterolateral thigh flaps were used in 30 cases of which 23 for chest wall reconstruction. The overall flap survival was 94.9% with three cases of failure. There was 3 donor site complications. Closure was primary in 35 patients and skin graft in 23 patients.

### Conclusions

Flap-based reconstruction using pedicle myocutaneous flaps or free flaps can be used in the reconstruction of large, complex pelvic, abdominal and chest wall defects after skeletal stability is established.



## THE SMALLER THE BETTER: SMALLER LAPAROSCOPIC INCISIONS MAY REDUCE PATIENTS' LENGTH OF STAY IN HOSPITAL

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### Introduction

Advancement in laparoscopic devices has been instrumental in providing better visualisation of the operating field during laparoscopic procedures and allowing the use of smaller laparoscopic scopes and ports. The aim of this study is to analyse the effects of smaller ports in patients undergoing emergency laparoscopic appendicectomy.

### Materials and methods

Data from a prospectively collected database involving 515 patients undergoing laparoscopic appendicectomy in a multi-centre study was analysed. Data on patient demographics, total incision size, hospital length of stay (LOS) and post operative complications were further analysed. 54 patients requiring prolonged LOS for reasons other than pain or complications related to the choice of ports were excluded.

### Results

Of the 515 patients, 326 patients' operation were performed with total port incision size of over 15mm and 135 patients' total port incision size are 15mm or less. The total LOS were significantly shorter in patients with total port size of less than 15mm (1.14 vs 1.3,  $p = 0.0047$ ). In the larger port size group, 3 patients had LOS of over 3 days due to pain issues vs 0 in the smaller port size group. There were no complications related to the selection of port size.

### Conclusion

Larger port size is associated with prolonged the length of stay in patients undergoing emergency laparoscopic appendicectomy. With more advanced technology in laparoscopy such as high-definition laparoscopic cameras, the aim should be to perform laparoscopic procedures with smaller ports to reduce the LOS and achieve better patient outcomes.

**A STUDY TO DETERMINE THE THERAPEUTIC VALUE OF GASTROGRAFFIN IN THE MANAGEMENT OF ADHESIVE SMALL BOWEL OBSTRUCTION - A RANDOMIZED CONTROLLED TRIAL**

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**ABSTRACT**

**BACKGROUND-:** Adhesive small bowel obstruction is one of the most common surgical causes of admission to the emergency department. Surgical treatment is comparatively high risk. So, non-operative management should always be tried in patients with adhesive small bowel obstruction unless there are signs of peritonitis, strangulation, or bowel ischemia. Gastrografin study has been found useful in the non-operative management of adhesive small bowel obstruction (ASBO).

**AIMS AND OBJECTIVES-**The aim of our study is to evaluate the therapeutic value of gastrografin in non-operative management of ASBO in comparison to patients managed conventional.

**MATERIAL AND METHOD-:** A Hospital-based study of patients admitted to the emergency department with ASBO. Patients were divided into two groups, group A (test group) and group B (control group). The test group was given single dose of 100 ml Gastrografin which was administered through nasogastric tube while the patients of control group were managed with conventional conservative management.

**RESULT-:** A total of 48 patients were studied, 24 in each group, and the results were noted in both groups. It has been seen that in the test group, 16.67% of patients needed operative management against 45.83% in the control group.

**CONCLUSION-:** In light of the above study, we infer that the administration of Gastrografin significantly decreases the need for surgery in adhesive small bowel obstruction, in comparison to conventional management. Our study shows that it is more beneficial to start management with Gastrografin in adhesive small bowel obstruction than conventional management.

## THE BLUE CELL CHRONICLES: UNVEILING STORIES OF RESILIENCE IN RARE TUMOUR CASE

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### Introduction :

Small round blue cell tumours represent a rare and formidable category of malignancies characterized by the presence of small, round, and relatively undifferentiated cells. Notable examples include Ewing sarcoma and rhabdomyosarcoma, both known for their aggressive nature, extensive organ dissemination, and high mortality rates. Case 1: 23-years-old lady presented with bilateral lower limb oedema since Jan 2023. Serial investigations showed extensive peritoneal nodules and mass ? origin. HPE of right perineum lesion showed high grade blue cell tumour which in favour of rhabdomyosarcoma. Unfortunately, she developed multiorgan failure and succumbed to death 2 weeks after.

Case 2: 62-years-old lady presented with 6 months history of huge fungating right breast lesion with HPE showed poorly differentiated tumour with round blue cell tumour. CECT TAP staging showed huge right breast lesion with axillary LN involvement. She was treated as poorly differentiated breast carcinoma; neoadjuvant chemotherapy is initiated after oncology consultation.

Case 3: 62-years-old Malay gentleman presented with sudden onset breathlessness, CT scan showed superior mediastinal mass with local infiltration to thyroid gland and significant mass effect to the intrathoracic trachea. HPE showed small round blue cell tumour with neuroendocrine feature. Airway stenting was performed and chemotherapy is initiated.

### Discussion:

Small round blue cell tumours are notorious for their aggressive behaviour, with over 40% of patients presenting with distant metastasis at diagnosis. While multimodal treatment remains the primary approach, survival rates, even after intensive therapy, remain low. Studies indicate a 3-year overall survival of 44% and a 5-year survival rate around 15%.

### Conclusion:

Small round blue cell tumours pose a formidable challenge with high tumour burden, poor performance scores, and unfavourable outcomes, even with aggressive multimodal interventions. Early detection and diagnosis are crucial to enhance patient quality of life in the face of this lethal disease.

**THE HKL EXPERIENCE: VERSATILE APPLICATIONS OF THE ANTEROLATERAL THIGH FLAP IN SOFT TISSUE RECONSTRUCTION**

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**Introduction**

The anterolateral thigh free flap (ALT) is a versatile soft tissue reconstruction technique for various pathologies, including head and neck, limbs, and trunk reconstructions. It has gained widespread recognition and acceptance for addressing coverage defects in various anatomical locations. This study aims to review the center's experience with utilizing the ALT free flap and evaluate its versatility in a group of patients with coverage defects originating from diverse causes and to evaluate the versatility of the ALT free flap in various cases and provide a better understanding of its use.

**Method and Materials**

A retrospective study was carried out over 7 years from January 2017 to December 2023.

**Results**

A total of 105 patients were identified with 65 (61.9%) being males. The most common cause of soft tissue defect was caused by oncologic resection (82 cases) followed by trauma (15 cases) and vascular (7 cases). Regarding defect site, the head and neck region was the most frequent site of reconstruction with 45 cases (42.8%) of which 22 (20.9%) cases were scalp reconstruction. The donor site closed with split-thickness skin graft in 74 (70.5%) cases, closed primarily in 28 (26.7%) cases, and required negative pressure wound therapy in 3 (2.9%) cases. The overall flap survival rate was 96 (91.4%). Of the 9 (8.6%) failed flaps, trauma seemed to have a higher failure rate as 2(30%) of 15 such flaps as opposed to oncologic where only 6 (7%) out of 82 flaps failed.

**Conclusion**

In conclusion, the ALT flap is a valuable option for reconstructive surgery in various anatomical regions. Its versatility, reliable vascular supply, and adequate tissue volume make it an attractive choice for skilled surgeons addressing complex head, neck, craniofacial area, limbs, and trunk defects.

## THE ROLE OF PREOPERATIVE BIOCHEMICAL VARIABLES IN DIFFERENTIATING SIMPLE VS STRANGULATED SMALL BOWEL OBSTRUCTION

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### Introduction:

Small bowel obstruction (SBO) poses a considerable challenge in emergency surgical procedures, comprising 20% of cases with 300,000 annual hospitalizations and an 8-12% mortality rate. The absence of a reliable tool to differentiate between simple and strangulated SBO prompted the investigation of preoperative biochemical parameters. This paper introduces a novel approach aiming for early identification of obstruction types, revolutionizing decision-making in SBO management. The study's innovative perspective, seeks to enhance patient outcomes by providing a simple yet groundbreaking method for timely and appropriate interventions, potentially reducing morbidity and mortality associated with SBO.

### Materials and Methods:

A study of prospectively maintained database of all the patients presenting with small bowel obstruction (SBO). Preoperative variables recorded and their values compared in both the groups. Statistically significant variables with significant correlation identified and Cutoffs identified using ROC curves. Multivariate logistic regression used to identify significant correlations.

### Results:

In our study 54 patients were included, mean age was  $44 \pm 14$  Years, 46.3 % were female. 34.6 % populations showed strangulated bowel obstruction. Neutrophil percentage, Prothrombin time, INR, CRP, Fibrinogen, and Procalcitonin were able to predict strangulation with AUC 0.7 to 0.8. Base deficit and base excess, lymphocyte percentage, were able to predict non strangulated bowel with AUC 0.65 - 0.78. D-dimer emerged as the primary parameter of significance in multivariate regression, presenting an odds ratio of 1.67.

### Conclusion:

Preoperative Neutrophil percentage, PT, INR, Fibrinogen, CRP and D-dimer demonstrate a good performance in predicting strangulations and are indicative of intestinal necrosis and ischemia. The combination of these parameters with Base deficit and excess holds potential for better discrimination between strangulated and simple intestinal obstruction. Early identification of simple or strangulated small bowel obstruction will help in decision making and directing adequate and time appropriate care.

**SIDE-TO-SIDE MAGNETIC DUODENO-ILEOSTOMY IN ADULTS WITH SEVERE OBESITY WITH OR WITHOUT TYPE 2 DIABETES**

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*Introduction:* Regular digestive surgical anastomosis techniques with sutures and or staples may lead to severe adverse events (AEs), including leaks and mortality.

*Objectives:* The aims were to evaluate the safety, feasibility, and effectiveness of primary and revisional side-to-side duodenal-ileostomy (MAGDI) bipartition using a linear magnetic compression anastomosis device (Magnet Anastomosis System [MS]), made of Neodymium, encased in Titanium.

*Patients and Methods:* Multi-center study comprising of private practices and university hospitals, selected patients with body mass index [BMI, kg/m<sup>2</sup>]  $\geq 35.0$ – $\leq 50.0$  with/without T2D [HbA1C  $> 6.5\%$ ]. Using a pair of linear MS magnets delivered endoscopically to the first duodenum and ileum at 250 cm from the ileocecal valve, with laparoscopic assistance and aligned, it initiated magnet compression/necrosis and gradual healing. The MAGDI post-SG group had undergone prior sleeve gastrectomy (SG); the MAGDI+SG group underwent concurrent SG. AEs were evaluated according to the Clavien-Dindo Classification (CDC).

*Results:* Over two years, 69 patients have been operated. The first 43 patients (88.0% female, mean age  $43.7 \pm 1.3$  years) followed for 6-12 months showed 100% magnet device placement, creation of patent anastomoses confirmed radiologically, and magnet passage. There were 64 AEs, most were CDC grade I and II, significantly fewer in the MAGDI post-SG group ( $p < 0.001$ ). No device-related anastomotic leaks, bleeding, obstruction, infection, or death occurred. The MAGDI post-SG group experienced a 6-month mean weight loss of  $8.0 \pm 2.5$  kg ( $p < 0.01$ ),  $17.4 \pm 5.0\%$  EWL. The MAGDI+SG group had significantly greater weight loss ( $34.2 \pm 1.6$  kg,  $p < 0.001$ ),  $66.2 \pm 3.4\%$  EWL. All patients with T2D improved, with the majority in complete remission.

*Conclusions:* Preliminary results of a multi-center international study, showed patent incisionless, sutureless Magnetic anastomosis, complication-free in side-to-side Duodeno-ileostomy post-SG or with concurrent SG.

**NARROW BAND IMAGING: IMPORTANT TOOL FOR EARLY DIAGNOSIS, MANAGEMENT AND IMPROVED OUTCOMES IN GASTROINTESTINAL LESIONS**

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*Introduction: magnification endoscopy- narrow band imaging (NBI) is a form of advanced endoscopic imaging technique which uses optical image enhancement over white light endoscopy as a reliable method for identifying Gastrointestinal lesions and predicting it's histology in real time as well as the depth of involvement.*

*Materials and methods: upper and lower GI endoscopy performed in 1742 patients who presented with Gastrointestinal symptoms at this tertiary center over a span of 5 years.*

*HR Olympus evisxera III CLV-190 HD endoscope with magnifying narrow band imaging (NBI-MBE) was used. Real time endoscopic assessment of lesions using NBI-ME classification systems for both upper and lower GI endoscopy was done. Targeted biopsies were taken in each case for comparative analysis.*

*Results: Out of total 1742 patients, 807 underwent upper GI endoscopy and 935 underwent lower GI endoscopy. Overall sensitivity ,specificity, PPV, NOV and accuracy of NBI-ME for upper GI for non neoplastic lesions was 96.8,91.1,96.8,91.1 &95.3 % respectively and for neoplastic lesions was 90,99.2, 96.4, 97.6 & 97.4% respectively. For lower GI endoscopy, Japanese NBI expert team (JNET) classification was applicable in 106 polypoidal lesions. As per lower GI NBI endoscopy performed, the sensitivity, specificity, PPV, NPV and accuracy for detecting neoplastic lesions was 92.3, 98.2, 94.7, 97.3 & 96.6 % respectively. Overall, the sensitivity, specificity, PPV, NPV and accuracy parameters of NBI endoscopy for both neoplastic and non neoplastic lesions of upper GIT and for JNET-NBI type 1 and type 3 lesions is high. NBI has higher yield in early diagnosis of Gastrointestinal tract lesions with early management improved patient outcome.*

*Conclusion: Targeted biopsies from suspicious areas using Narrow band imaging endoscopy had higher yield in detecting various GI lesions.*

**DEVELOPMENT OF AN INTRAOPERATIVE ARTIFICIAL INTELLIGENCE SYSTEM FOR THE DETECTION OF SCARRING AREAS IN LAPAROSCOPIC CHOLECYSTECTOMY**

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**Background**

Laparoscopic cholecystectomy (LC) is a common surgical procedure for cholecystitis. The difficulty of LC varies depending on the degree of fibrotic changes and scarring caused by inflammation. Scarring makes it difficult to perform LC safely and increases the risk of bile duct injury (BDI). Therefore, it is crucial to understand the surgical difficulty based on intraoperative findings to prevent BDI. This study aimed to develop an artificial intelligence system that can intraoperatively detect scarring during LC.

**Method**

This study collected video data of LC for cholecystitis performed at our hospital between January 2010 and December 2023. For each case, 100 still images were extracted from surgical videos and annotated by surgeons to indicate areas of scarring, creating the training dataset. An AI software was developed using Hyperseg, a deep learning-based algorithm for semantic segmentation, to detect scarring area intraoperatively. The model was applied to LC videos that were not used for training to evaluate the accuracy of detection of the scarring area and the accuracy was evaluated by Dice coefficient.

**Results**

The training datasets comprised around 1500 intraoperative images of the gallbladder region, including the Calot's triangle area, obtained from 15 patients who underwent LC. The learning model accurately identified scarring areas in LC videos that were not used for training. The evaluation using still images resulted in a Dice coefficient value of 0.731 for the areas of scarring.

**Conclusions**

The study demonstrated the potential of utilizing AI to detect scarring areas during LC. Collecting sufficient data and optimizing AI training techniques would be useful for improving detection accuracy.



**CHANGES IN GASTRIC ELECTROPHYSIOLOGY AND EFFECT ON QUALITY OF LIFE FOLLOWING LAPAROSCOPIC SLEEVE GASTRECTOMY**

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**Introduction**

Laparoscopic sleeve gastrectomy is an effective bariatric procedure. While most patients experience excellent outcomes, 30% of patients may develop persistent gastric symptoms without a mechanical cause. Gastric motility is normally coordinated by a gastric pacemaker located at the greater curvature. The pacemaker is resected in a laparoscopic sleeve gastrectomy, with electrophysiological consequences still undefined. This study assessed the impact of sleeve gastrectomy on gastric electrophysiology and its associations with symptoms and quality of life (QoL), using a novel non-invasive body surface gastric mapping (BSGM) technique.

**Materials and Methods**

Patients with previous sleeve gastrectomy underwent BSGM (Gastric Alimetry, New Zealand), comprising 30-minute fasting baseline and 4-hour post-prandial recordings. Analysis encompassed gastric frequency, BMI-adjusted amplitude, Gastric Alimetry Rhythm Index (GA-RI; measure of gastric rhythm stability), compared with matched controls. Symptoms and QoL were evaluated using the validated Gastric Alimetry app and questionnaires.

**Results**

38 patients (median 36 months post-surgery; range 6-119 months) and 38 controls were recruited. 37/38 patients had at least 1 abnormal gastric electrophysiology parameter, including reduced frequencies ( $2.4 \pm 0.22$  vs  $3.09 \pm 0.21$  cycles per minute;  $p < 0.001$ ) and amplitudes ( $28.2 \pm 7.1$  vs  $38.8 \pm 15.3$   $\mu$ V;  $p < 0.001$ ). Patients showed higher symptom burdens and substantially reduced QoL compared to matched controls (PAGI-SYM 20 vs 7, PAGI-QOL 27 vs 136, EQ-5D-5L 0.86 vs 0.96;  $p < 0.001$ ). Worse symptom burdens and QoL were correlated with lower gastric frequency, GA-RI and amplitude ( $p < 0.05$ ).

**Conclusion**

Laparoscopic sleeve gastrectomy modifies gastric electrophysiology due to resection of the gastric pacemaker. Consistent reduction in gastric frequency and rhythm instability correlated with worse symptoms and poorer QoL. Gastric mapping now reveals a mechanism for symptoms following sleeve gastrectomy.

**UTILITY OF VIRTUAL ANNOTATED IMAGES TO RECOGNIZE ANATOMICAL LANDMARKS BY AI IN BLEEDING SCENES DURING LAPAROSCOPIC GASTRECTOMY.**

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**[Introduction]**

We have developed an AI system indicating anatomical landmarks to prevent complications during laparoscopic gastrectomy for gastric cancer. However, the concern was that landmark identification decreased due to insufficient data on the bleeding scene. Therefore, this study aimed to improve an AI system's landmark recognition in the bleeding scene.

**[Materials & Methods]**

We used these AI systems, CycleGan (CG), a style conversion AI that generated virtual bleeding images, and ShelfNet (SN), which indicated anatomical landmarks. First, we generated virtual bleeding images using CG. Then, these data were trained to SN. The SN training data of 45 cases (2422 images) were performed laparoscopic gastrectomy for gastric cancer in Oita University Hospital. Similarly, the CG training data were 71 cases (510 images). We compared the utility of the recognition of anatomical landmarks between the AI that learned intraoperative images (SN\_BASE) and the AI that learned by adding data created with CG to normal images (SN\_CG). In addition, the Dice coefficients of the pancreas were calculated and evaluated for landmark identification.

**[Results]** The average Dice coefficients in the bleeding scene were SN\_CG: 0.68, SN\_BASE: 0.60. In the non-bleeding scene, the Dice coefficients were SN\_CG: 0.81, SN\_BASE: 0.83. The score of SN\_CG was higher than that of SN-BASE in the bleeding scene. On the other hand, the score of SN\_CG was equivalent to that of SN-BASE in the non-bleeding scene.

**[Conclusion]** These data suggest the utility of virtual annotated images to recognize anatomical landmarks by AI in bleeding scenes during laparoscopic gastrectomy.

**PROGNOSTIC FACTORS OF PATIENT ON RE-HEPATECTOMY FOR HCC RECURRENCE**

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*Background:* Multidisciplinary therapy, including hepatectomy, liver transplantation, RFA, TACE, chemotherapy and molecular targeting drug, is necessary for patients with HCC recurrence.

*Aim:* We investigated prognostic factors of patients who underwent re-hepatectomy and proposed indications of liver transplantation for HCC recurrence.

*Patients and methods:* Seventy-five patients who underwent second hepatectomy from 2000 to 2022 in our hospital were enrolled. We evaluated the correlation between overall survival (OS) and the preoperative factors of second hepatectomy, including interval of first and second hepatectomy (Int), tumor number (Num), maximal tumor size (Size), AFP (AFP), and Child-Pugh classification (CP) at second hepatectomy.

*Results:* Int >3 years ( $P=0.03$ ) and Num =1 ( $P=0.04$ ) were statistically good prognostic factors of OS. Size <2cm ( $P=0.12$ ), AFP <20ng/ml ( $P=0.11$ ) and CP =A ( $P=0.43$ ) were not statistically significant factors. Multivariate analysis of Cox proportional hazard model revealed that Int and Num were independent prognostic factors of OS after second hepatectomy.

We focused on the four factors of Int >3 years, Num =1, Size <2cm and AFP <20ng/ml, and classified the patients by number of unmatched factors named ReH score; 0-1: Group A, 2-3: Group B, 4: Group C. OS of each group was clearly separated ( $P=0.0001$ ) and Group C had extremely poor survival.

Only 3 out of 75 patients met the Japanese criteria of liver transplantation for HCC, that was Num <5, Size <5cm, AFP <500ng/ml, CP >B and age <70 years old. Those 3 patients were categorized in Group A or B by ReH score.

*Discussion:* The prognosis of patients after second hepatectomy for HCC was successfully predicted by ReH score.

Multidisciplinary treatment for HCC recurrence without deterioration of liver function would be necessary. The treatment with molecular targeting drugs would advance in near future. Restricted patients should be considered for salvage liver transplantation for HCC recurrence.

## IS INCIDENTAL GALL BLADDER CANCER IN ENDEMIC REGION TRULY INCIDENTAL? LONG-TERM ONCOLOGICAL OUTCOMES OF INCIDENTAL GALL BLADDER CANCER PATIENTS FOLLOWING CURATIVE RESECTION

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### Background

*Incidental gall bladder cancer (IGBC) is more common than the de novo gall bladder cancer (DGBC) in endemic regions. IGBC in endemic region is truly incidental or is it a missed diagnosis, needs to be evaluated. Due to its rarity among all cancers, the long-term outcomes of IGBC in a large surgical series is unknown.*

### Materials & methods:

*prospectively maintained database of the operated GBC patients at a north Indian tertiary care centre between 2001-2019 was analysed. Out of 427 operated GBC patients, 233 patients diagnosed as IGBC were included.*

### Results:

*Out of 427 operated patients, 233 (54.6%) were IGBC patients. Curative resection was performed in 159 patients with the curative resection rate (CRR) of 68.24%. The final histopath staging in the curative resection group was found to be I-20.86%, II-27.94%, III-36.69% and IV-15.1% according to AJCC 8th and 38(27.94%) of the pts had LN positive disease with the mean LN yield of 6.17(0-17). Among the curative resection, 4.29% received neo-adjuvant chemotherapy, 43.88% received adjuvant chemoradiation and 25.89% received adjuvant chemotherapy alone. Recurrence developed in 49(18%) patients and the majority of recurrences were systemic. The overall 2,3 and 5 year DFS and OS were 74.6%, 63.7%, 57.3% and 78.3%, 69.9%, 57.6% respectively. Five-year stage specific survival was I- 85.6%, II-68.4%, III- 47.9%, and IV- 10.7%. 5 yr survival of LN positive patients was 17.6% against 71.6% with node negative patients.*

### Conclusion:

*IGBC presents in early ages in endemic region. Low threshold for CECT in patients with suspicious wall thickening in USG would be helpful in excluding the patients who are not really IGBC. More than 1/3 of pts present with stage 3, raises the possibility of some proportion of patients in IGBC is because of missed diagnosis rather than truly Incidental. Protocol based multimodality management and radical curative resection result in good overall survival.*

**A RANDOMIZED CONTROLLED TRIAL TO COMPARE LAPAROSCOPIC SURGERY WITH OPEN SURGERY FOR SYMPTOMATIC, NON-CURABLE STAGE IV COLORECTAL CANCER (JCOG1107): AN OPEN-LABEL, NON-INFERIORITY, RANDOMISED, A PHASE 3, MULTICENTRE TRIAL**

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*Background* Benefits of laparoscopic surgery (LAP) compared with open surgery (OP) have been suggested; however, long-term survival following LAP for symptomatic, non-curable colorectal cancer (CRC) remains unclear. *Methods* We did an open-label, multicentre, randomised controlled trial to confirm the non-inferiority of LAP to OP in terms of progression-free survival (PFS) in only accredited surgeons from 42 Japanese institutions participated. *Eligibility criteria* included pathologically proven adenocarcinoma or adenosquamous carcinoma; primary tumour located at the cecum, ascending, transverse, descending, sigmoid, and rectosigmoid colon; primary tumour with bowel stenosis and/or bleeding; and having at least one to three non-curable factors. Patients received mFOLFOX6 plus bevacizumab or CapeOX plus bevacizumab postoperatively. The sample size was 194 with a power of 70%, one-sided alpha of 5%, and non-inferiority margin of the hazard ratio (HR) of 1.38. The trial is registered with UMIN-CTR, number UMIN000009715. *Findings* In total, 195 patients were randomised (OP 95, LAP 100) between January 2013 and January 2021. OP was performed in 92 and LAP in 98 patients. Postoperative chemotherapy was administered in 82 OP and 86 LAP patients. Median PFS was 9.7 months (95% CI: 8.7-11.3) for OP and 10.4 months (9.1-12.4) for LAP. The non-inferiority of LAP was confirmed (HR: 1.02, 91.4% CI: 0.79-1.32 [ $<1.38$ ],  $p$  for non-inferiority = 0.021). Median overall survival was 23.9 months (95% CI: 18.6-29.4) for OP and 25.4 months (19.4-29.0) for LAP (HR: 0.99, 95% CI 0.72-1.36). In-hospital mortality was 1.1% for OP and 0% for LAP. Postoperative complications (Grade 2-4) included ileus (OP 12.0%, LAP 5.1%), wound infection (OP 2.2%, LAP 2.0%), and anastomotic leakage (OP 0%, LAP 2.0%). *Interpretation* LAP is acceptable as a standard treatment for symptomatic, non-curable stage IV CRC.

### ROBOT ESOPHAGECTOMY WITH EXTENDED MEDIASTINAL LYMPH NODE DISSECTION

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Radical surgical resection may play role in prognosis improvement of the esophageal squamous cell carcinoma (ESCC) patients. Because esophagectomy with radical lymphadenectomy is highly invasive, we introduced robot esophagectomy (RMIE) using daVinci Xi system in June 2018. The da Vinci Xi system provides surgeons a three-dimensional magnified view and offers fully wristed dexterity with more degree of freedom through its articulating surgical instruments with tremor filtration. As a result, the robotic system facilitates precise dissection especial for upper mediastinal lymph node dissection. We show safety introduction and technical pitfalls of robot-assisted esophagectomy with extended LN dissection. The patient is fixed on prone position. We insert 4 daVinci ports at A: the 4th ICS of midaxillary line, B the 6th ICS of posterior axillary line, C the 8th ICS of midaxillary line, D the 10th ICS of scapular line and 1 AirSeal port for assistant surgeon at E the 8th ICS of anterior axillary line. We use Monopolar curved scissors for superficial layer, the double-bipolar method for dissection with Maryland bipolar forceps for deeper layer around Aorta and trachea, and Sharp dissection with Potts scissors around recurrent laryngeal nerves. After esophageal mobilization and mediastinal lymphadenectomy were completed, bilateral recurrent laryngeal nerve, bilateral subclavian artery, trachea, bilateral bronchus, aorta, left pulmonary artery and vein, left pleura, pericardium and hiatus are all skeletonized. We could standardize surgical procedure in first 20 cases. Average operation time in the thoracic procedure is 215min, median blood loss is 0ml and vocal cord palsy was occurred only 5 case in last 60 cases. Robot assisted esophagectomy with extended LN dissection was safely introduced in our facility and it is feasible and beneficial for the lymph node dissection especially for lymph node dissection around the recurrent laryngeal nerve.

**TREATMENT OF REFRACTORY ESOPHAGEAL STENOSIS AFTER ENDOSCOPIC SUBMUCOSAL DISSECTION WITH MAGNETIC COMPRESSION ANASTOMOSIS**

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*Introduction:* There have been no reports of magnetic compression anastomosis (MCA) being used for the treatment of esophageal stricture after endoscopic submucosal dissection (ESD) in adults. This case describes the use of MCA in the treatment of post-ESD esophageal stenosis

*Materials and Methods:* A 73-year-old male underwent ESD treatment for early esophageal cancer and experienced dysphagia one month after the procedure. Gastroscopy revealed esophageal stenosis, for which he received three sessions of balloon dilation and one session of esophageal stent placement. Unfortunately, the esophageal stenosis continued to worsen, as confirmed by esophagography and gastroscopy. The patient declined esophagectomy for stenosis, therefore the MCA was recommended. Following anesthesia, the patient underwent laparoscopic gastrostomy, and the proximal end of esophageal stenosis was reached through oral endoscopy. The zebra guide wire was attempted multiple times to pass through the stenosis and enter the stomach. The guide wire was pulled out of the abdominal cavity through the stomach. Then, the parent magnet (PM) and the gastric tube fixed on the PM were inserted into the guide wire and sent to the stomach. The gastric tube was pulled out orally through the narrow segment. The daughter magnet (DM) was inserted through the head of the tube and pushed by the gastroscope towards the proximal end of the esophageal stenosis. The DM and the PM were attracted together.

*Results:* The magnets were removed endoscopically and an esophageal stent was inserted 11 days after the surgery. The esophageal stent was removed after three months. The patient has been followed up for 8 months, and has not received any further endoscopic treatment. The patient is now able to eat normally.

*Conclusion:* MCA is a potential treatment option for esophageal strictures that do not improve with repeated balloon dilations.

### ROBOTIC HELLER MYOTOMY

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*Introduction: Traditionally, laparoscopic Heller myotomy with partial fundoplication has been the gold standard for treating achalasia. However, the robotic approach is gaining popularity for foregut operations. The robotic system facilitates an extended esophageal mediastinal dissection further up into the chest. It also offers excellent visualization of the esophageal layers, resulting in a smoother and safer myotomy.*

*The addition of a partial fundoplication, whether anterior or posterior, to Heller myotomy significantly reduces the risk of esophageal reflux. This risk decreases from approximately 50% without a fundoplication to less than 10% with a partial fundoplication. The robotic technique, with its enhanced precision and visualization, represents a promising advancement in the management of achalasia.*

*Case Report: This case is on a 32-year-old male patient presented with a three-year history of progressive dysphagia, accompanied by noticeable weight loss. Initial high-resolution esophageal manometry revealed ineffective esophageal dysmotility in 100% of swallows. A subsequent examination conducted two years later confirmed the diagnosis of achalasia. Contrasted X-ray imaging of the esophagus, stomach, and duodenum unveiled an incipient megaesophagus. Despite undergoing unsuccessful clinical treatment, the patient has been advised to undergo a robotic Heller myotomy, employing the da Vinci XI robot for the procedure. A partial 180-degree anterior Dor fundoplication is the preferred option, and upon completion of the myotomy, the fundus of the stomach is meticulously inspected to ensure an adequate number of short gastric arteries are taken for a tension-free anterior fundoplication. The patient was discharged from the hospital 18 hours after the procedure.*

*In conclusion, in the hands of experienced surgeons, the robotic platform may be safer than the standard laparoscopic approach for treating achalasia, with several research studies pointing to a decrease in perforations and the question of cost-effectiveness remains an important issue.*



### SHORT TERM RESULTS OF GASTRECTOMY BY JAPANESE DOMESTIC SURGICAL ROBOTIC SYSTEM 'HINOTORI'

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*Introduction:* Various surgical robotic systems have been developed and received regulatory approval worldwide. As a first domestically developed surgical robotic system, hinotori was introduced in Japan. Hinoroti consists of the Surgeon Cockpit, Operation Unit, and Vision Unit. Operation unit has 4 arms including camera. Since it doesn't require docking, laparoscopic ports can be placed on the surface of the abdominal wall. As a generator has both bipolar cut and coagulation modes on one hand, we can select either of them by foot switch. Following the regulatory approval of gastrectomy on October 2022, gastrectomy was started on June 2023.

*Materials & Methods:* The gastric cancer patients who underwent gastrectomy using hinotori were retrospectively reviewed. Patients background, clinicopathological factors, and surgical outcomes were investigated. The surgical procedures were summarized in video. Briefly, distance between trocars was approximately 5.5 to 6cm. Assistant trocar was placed in right upper quadrant between 1st and 2nd arm. Double bipolar method was adopted as a standard procedure. Since there is no available energy devise, advanced bipolar was used from assistant trocar.

*Results:* Between June 2023 and December 2023, 11 patients underwent gastrectomy using hinotori. Of them, distal gastrectomy (RDG) was performed in 7 patients, total gastrectomy in 2 patients. Two other patients underwent surgery for remnant stomach cancer. Surgical variables were further reviewed in 7 patients who underwent RDG. Mean operative time was 286.6min, and mean blood loss was 44.3g. There was no conversion to open laparotomy. There was no obvious postoperative complication, including anastomotic leakage, pancreatic fistula, and intraabdominal infectious complication. No mortality was observed in all patients who underwent gastrectomy using hinotori.

*Conclusion:* Robotic gastrectomy using hinotori was safely performed. Accumulating serial cases will encourage the standardization of robotic gastrectomy.

### **MAGGI: MAGNETIC GASTRO-ILEOSTOMY**

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*Several technical steps are shown in a recent laparoscopic/endoscopic Magnetic Gastro-Ileostomy (MAGGI). A 46 y.o. male had a laparoscopic Sleeve Gastrectomy in March 2021*

*for a BMI of 62 kg/m<sup>2</sup>, as the first stage. He now presents a BMI of 39 kg/m<sup>2</sup> and the proposal for a second stage procedure is planned: Laparoscopic/endoscopic MAGNETIC side-to-side Gastro-Ileostomy*

*A new tripartite longitudinal magnet was delivered by gastroduodenoscopy attached to a flexible endoscopic catheter in the first and second parts of the duodenum under sedation. Three hours later, radiological confirmation was obtained to establish a jejunum position.*

*At laparoscopy, with 4 trocars at the umbilical level, using a non-magnetic liver retractor, a magnetic positioning device moved the endoluminal jejunal magnet to 250 cm proximal to the ileocecal valve, previously marked with four titanium clips on the small bowel mesentery.*

*Posterior gastric adhesions were cleared to support a slightly posterior anastomosis, behind the greater curvature avoiding metal clips and previous titanium stapled line. A second tripartite magnet was positioned by gastroscopy in the posterior gastric antrum; the segments containing the magnets were approximated to initiate gradual compression anastomosis over several weeks. Enterotomies were avoided. Petersen's large defect was closed with a running non-absorbable suture on the left side.*

*Laparoscopic maneuvers were mandatory to obtain exact bowel measurements, separate adhesions, avoid tissue interposition, and close mesenteric defects. Follow-up radiological studies demonstrated magnet movements after 3 weeks, and gastroscopy 1 month later, confirmed a wide and patent posterior gastro-ileostomy, free of ulcerations and inflammation. MAGGI can be used as a bipartition, bringing an ileal loop with the gastric antrum, it also permits duodenal absorption of micronutrients, access for biliary pathologies, and can be reversed with laparoscopic stapling.*

**ROBOTIC BARIATRIC SURGERY IN A SUPER OBESE PATIENT**

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*Female patient, 38 years old, morbidly obese with severe high blood pressure and venous insufficiency in the lower limbs.*

*Robotic bariatric surgery was indicated and a vertical gastrectomy was chosen due to severe retractable mesenteritis. The procedure occurred without complications and the patient was discharged on the second day of the postoperative period with a fractionated liquid.*

*Even with surgeons in their initial period of the learning curve, the robotic bariatric surgery is a safe and reproducible technical option in the surgical treatment of morbid obesity, since a well-structured training model is respected.*

**REVISION LAPAROSCOPIC MINI- GASTRIC BYPASS AND REMOVAL OF GASTRIC BAND**

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*Bariatric procedures are proven to be effective treatments for morbid obesity. Options include restrictive procedures such as laparoscopic gastric banding. However, there are many complications associated with it.*

*Revisional surgery after laparoscopic gastric banding was the highest among all bariatric procedures that require revision, with a percentage of 26%. One of the options available is laparoscopic mini-gastric bypass.*

*Here we present a case of a patient who has a history of laparoscopic gastric banding in 2008 with poorly controlled diabetes requiring revisional surgery. We demonstrate the laparoscopic removal of the gastric band and mini gastric bypass.*

## LAPAROSCOPIC COMMON BILE DUCT EXPLORATION AND CHOLEDOCHO-DUODENOSTOMY IN A COMPLEX MULTI-OPERATED PATIENT

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### Introduction

Common bile duct (CBD) stones are frequent and a serious condition associated with cholelithiasis, to avoid serious complications that can occur, these stones should be removed. In this case we planned a complex CBD exploration in a patient with multiple open previous surgeries such as Antrectomy and a cholecystectomy and CBD exploration.

### Materials and Methods

We present the case of a 75 years-old woman who was admitted with cholangitis with previous records of a Cholecystectomy with choledochotomy for CBD calculi and antrectomy with Billroth II reconstruction because of a peptic disease. MRCP showed multiple CBD stones with retrograde biliary dilatation. Our first management was to propose an ERCP to achieve CBD stone retrieval with no success due to the Billroth II. We decided to perform a laparoscopic approach with the aim to clear the CBD and a Biliary diversion surgery.

### Results

Five ports were used, 3 of 11mm and 2 of 5mm. After extensive adhesiolysis and complete anatomical exposure we proceeded through a choledochotomy to a complete clearance of the CBD, a intraoperative Cholangioscopy was performed to assure clearance. We performed a complete mobilisation of the duodenal stump with an extensive Kocher manoeuvre. We performed a Choledocho-duodenostomy with V-loc 3/0 sutures and a suction drain was left in place. The surgical procedure lasted 150min. Patient was discharged uneventfully with no complication on day five after surgery

### Conclusions

Laparoscopic CBD exploration and minimally invasive complex biliary surgical procedures has been proved to be an excellent resource in the biliary tree surgical treatment, feasible even in complex multi-operated patients.

**MAGNETIC COMPRESSION ANASTOMOSIS FOR COMPLEX BILIARY TRACT OBSTRUCTION AFTER ABDOMINAL TRAUMA**

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*Introduction:* The combination of magnetic compression anastomosis (MCA) and endoscopy has been used to treat complex biliary obstruction, but never after major abdominal trauma. The main advantages include creating a secure, sutureless anastomosis without surgical morbidity. This report describes the successful treatment of biliary obstruction resulting from major abdominal trauma by MCA.

*Materials and Methods:* A 23-year-old male involved in a car accident underwent repair of liver rupture, partial colon resection, and ileostomy. He developed abdominal infection, biliary leakage, and intestinal fistula. Contrast agent injected via the drainage tube visualized the upper, but not the lower segments of the common bile duct. MRCP showed dilation of the intrahepatic and extrahepatic bile ducts, but again failed to delineate the lower bile duct segments. It was also impossible to pass a guide wire upward into the common bile duct via ERCP. Because the patient refused further surgery, MCA was proposed as a possible alternative. Risks were discussed, and written informed consent was obtained. The parent magnet was guided into the duodenum using a gastroscope under fluoroscopy. The daughter magnet was inserted into the lower part of the common bile duct through the abdominal sinus. The daughter and parent magnets were mated, and an external biliary drainage tube was introduced via the abdominal sinus.

*Results:* Three days after the operation, the parent and daughter magnets were eliminated through the ileostomy. A bile duct duodenal stent was inserted through the MCA channel via ERCP. The external biliary drainage tube was removed after three days, and internal biliary drainage was permanently established.

*Conclusion:* MCA is a potential treatment option for complicated biliary tract obstruction after abdominal trauma.

### LAPAROSCOPIC MAGNETIC DUODENO-ILEOSTOMY

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*A side-to-side duodenal-ileostomy is accomplished using linear magnets covered by titanium, delivered both trans-orally by flexible endoscopy, sequentially, while laparoscopic assistance provides adequate ileum measurements with markings at 250 cm from the ileocecal valve. 43 y.o. male with previous Sleeve Gastrectomy And BMI= 75 kg/m<sup>2</sup>, plateaued at 42.5 kg/m<sup>2</sup> and was Proposed for a second stage procedure: Laparoscopic MAGNETIC side-to-side Duodeno-ileostomy The delayed compression anastomosis may decrease risks of bleeding and leak, as after 2-4 weeks magnets will pass.*

*Advantages are the reversibility, partial passage in the natural duodenum for possible ERCP if needed due to the bipartition, greater absorption of minerals and vitamins, fewer side effects and possible future conversion to full SADI (Single Anastomosis Duodeno-Ileostomy) or Duodenal Switch.*

*The completed procedure is normally achieved in 30-60 minutes under general anesthesia, and patients are discharged after a stay of less than 24 hours.*

*This film demonstrates some technical aspects like an initial laparoscopy, to determine if the duodenum and ileum have to be freed from adhesions and be mobile for this anastomosis, which needs to be tension-free. Also, laparoscopy permits adequate measurements of the ileum which is key, with reproducible methods (an umbilical tape of 50 cm, repeated 5 times), and medium-large titanium clips are used to mark both mesenteric sides. After dragging the lower magnet from the jejunum to its proper position of 250cm, laparoscopy helps to dock with the upper duodenal magnet. Afterwards, the bowel is inspected in a retrograde fashion towards the ligament of Treitz, to eliminate serosal tear and twists. Finally, closing Petersen's defect is best achieved on the left side, viewing the mesenteries of the transverse colon and distal ileum.*

## LAPAROSCOPIC FULL MEDIAL APPROACH RIGHT HEMICOLECTOMY WITH COMBINED SUGARBAKER PARA-ESTOMAL HERNIA REPAIR IN A COMPLEX MULTI OPERATED PATIENT

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### Introduction

Laparoscopic Surgery is the gold standard of care in colorectal surgery, Multi-operated patient are challenging in order to provide them a safe and effective full treatment with the benefits of a minimally invasive surgery.

### Materials and Methods

We present the case of a 74 years-old woman with a surgical background of an abdomino-perineal resection for a Low Rectal Adenocarcinoma ypT3ypN0R0. On the cancer screening follow-up she presented a symptomatic voluminous para-stomal hernia and on colonoscopy a 3 cm. Tubulo-villous adenoma with high grade dysplasia was found. We planned a combined surgery consisting in a full medial laparoscopic Hemicolectomy and a Sugarbaker paraestomal repair.

### Results

Five ports were used, we performed initially the reduction of of the parastomal hernia, thereafter we proceeded to isolate the right ileo-colic vessel and perform a full medial dissection, we isolated the middle colic vessels and transected the transverse colon, after we sectioned the ileum and completed the dissection of the told fascia. Performed a intra-corporal latero-lateral stapled anastomosis with a 3/0 V-LOC™ 180 running suture to close the bowel gap and mesenteric gap. We closed the fascia defect with Endoclose™ stitches and placed a Titanium coated TiO2 Mesh™ (BioCer, GmbH, Germany) fixed with absorbable tacks. Surgery was performed in 220 min, patient recovered uneventfully and discharged at 6th day. After 12 month of follow up she is disease free and without recurrences. Pathology reported a 28mm. tubulo-villous adenoma with high grade dysplasia.

### Conclusion

Combined mayor surgical laparoscopic treatment are safe and effective in a dedicated and well trained surgical team, offering the patient all the advantages of a minimally invasive treatment in one surgical procedure.



**COMPLETE MESENTERIC EXCISION FOR COLON CANCER ON SPLENIC FLEXURE BASED ON THE VASCULAR ANATOMY**

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*Introduction:* To perform a thorough lymph node dissection, it is important to perform en bloc resection from the root of blood vessels and mesenteric attachment site. The extent of lymph node dissection and surgical procedures for colorectal cancer with splenic flexure have not yet been standardized. To better perform surgery at this point, it is necessary to have a sufficient understanding of the vascular anatomy. We have analyzed the vascular bifurcation morphology using 3D CT images of 600 cases of colorectal cancer taken before surgery and applied this information to our surgery.

*Methods:* The vascular branching pattern was documented from 3DCT images of 600 cases performed prior to colorectal cancer surgery. Our surgical procedure was as follows. The inferior mesenteric vein (IMV) is traced, the superior mesenteric vein (SMV) or splenic vein inflow area is exposed to define the superior border of lymph node dissection based on the vascular anatomy. aMCA, if present, can be easily identified and is safely ligated and dissected.

*Results:* Intraoperative complications associated with this technique have not been experienced so far. Postoperative pancreatic fistula was observed in one case. aMCA was observed in 244 (41%) cases, and aMCA diverged from the celiac artery system in 17 cases, which complicates the surgical procedure. 275 (46%) cases of IMV flowed into the SMV, 325 (54%) into the splenic vein, and the majority of cases into the splenic vein. In the presence of aMCA, the IMV often flowed into the SMV (58%). In some cases, the splenic flexure vein flowed directly into the SMV or splenic vein.

*Conclusion:* By understanding the vascular anatomy with preoperative 3DCT and performing this procedure, safe and reliable lymph node dissection can be performed even for colorectal cancer in the splenic flexure, which is considered to have a complicated anatomy.

**TOTAL EXTRAPERITONEAL REPAIR FOR BILATERAL OBTURATOR HERNIA: HOW I DO IT**

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*Introduction*

*A 76-year-old woman with a virgin abdomen presented to us with bilateral groin pain for six months. Physical examination was unremarkable with no obvious groin swelling or cough impulse demonstrated. Computed tomography showed bilateral obturator hernia sacs located between pectineus and obturator externus muscles. Both sacs contained fluid densities without bowel herniation.*

*Methods*

*This is a video presentation demonstrating minimally-invasive surgical technique for repair of bilateral obturator hernias. Key steps in Total Extraperitoneal approach (TEP) and important anatomical landmarks were depicted.*

*Results*

*Elective TEP repair was offered in view of persistent symptom. Intra-operatively, apart from bilateral obturator hernias, multiple occult groin hernias were identified including bilateral femoral, left pantaloon and right indirect inguinal hernias. The left obturator hernia sac contained a loop of small bowel while the other sacs contained pre-peritoneal fat. Vital structures including obturator nerve and vessels were identified and protected. After reduction of hernia sacs, the critical view of myopectineal orifice was ascertained. Monofilament light-weighted polypropylene mesh were placed bilaterally and fixed with glue injection. Post-operative recovery was uneventful and the patient was discharged on post-operative day one. Follow-up visit at three months after the operation showed no evidence of hernia recurrence.*

*Conclusion*

*This video highlighted the advantage of TEP approach in repair of multiple and bilateral groin hernias. It is a safe and effective technique especially for multiple occult groin hernias with excellent clinical outcome.*

**APPLICATION OF MINIMAL INVASIVE PROCEDURE FOR PELVIC ORGAN PROLAPSE IN VARIOUS SURGICAL ENVIRONMENTS***Han Deok Kwak<sup>1</sup>*<sup>1</sup>*Chonnam National University Hospital*

*Rectal prolapse is a disease that has been known for a long time, with the first description dating back to Eber's Papyrus of ancient Egypt in 1500 BC. Diverse surgical methods have been applied for its treatment. The goal of surgery to correct anatomically and to improve functions that can occur secondarily. Surgical treatment should result in non-recurrence; thus, careful patient selection and thorough patient counseling are important in deciding surgical methods*

*To determine the surgical method, effective approach should be determined considering the degree of prolapse, patient's age, sex, and underlying diseases. In general, the degree of prolapse can be divided into mucosal and complete layer prolapses, and the surgical approach can be largely divided into transanal and abdominal. Since both approaches have their advantages and disadvantages, a complementary relationship may be maintained when reoperation is required.*

*In general, laparoscopic surgery is known to be recommended for young and healthy individuals; however, recent reports including the presenter's studies showed that it is possible to perform it regardless of age and underlying diseases, ASA score, and BMI. In the case of bladder or uterine/vaginal prolapse, this procedure has an advantage that pelvic organs can be corrected simultaneously.*

*In this video, the presenter will introduce laparoscopic rectopexy in various environments, including multiple organ prolapse, a patient who have previously undergone transanal surgery such as Altemeier's procedure, a case accompanied by diverticulitis of the sigmoid colon, and a case with adhesion due to previous surgical history. The presenter will also show the procedure of mesh removal when there was complication with it. In addition, this presentation would like to induce discussions in relation to mesh.*

## 115.15

### ROBOTIC LOW ANTERIOR RESECTION POST NACRT IN A CASE OF CA-RECTUM

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*36 year old male presented with adenoca of rectum 9cm from anal verge , he underwent NACRT and was assessed after and posted for Robotic LAR with diversing ileostomy. Post-op recovery was uneventful.*

**BEYOND APPENDECTOMY: PREDICTIVE FACTORS FOR MAJOR RESECTIONS IN ADULT PATIENTS WITH ACUTE APPENDICITIS**

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*Introduction:* Certain patients with acute appendicitis require more extensive resections due to an extensive inflammatory process. We aimed to identify predictive factors for major resections (MR) in patients undergoing laparoscopic appendectomy (LA) and determine its surgical outcomes.

*Materials & Methods:* We performed a retrospective analysis of a consecutive series of adult patients (>16 years) undergoing LA from 2006 to 2023. The cohort was divided into two groups: LA patients and MR (i.e., partial cecectomy, ileocecectomy or right colectomy) patients. Demographics, perioperative variables and postoperative outcomes were compared. Independent risk factors for MR were determined by multivariable logistic regression analysis.

*Results:* A total of 2,319 patients were included for analysis; 2,279 (98.3%) underwent LA and 40 (1.7%) MR. Patients undergoing MR were significantly older (mean age 50.1 versus 36.2 years) ( $p<0.0001$ ). Obesity prevalence was higher in MR patients (17.5% vs 7.0%,  $p=0.02$ ). The median interval time from symptom onset to medical consultation was also significantly higher in MR patients (99.4 vs 40.7 hours,  $p<0.0001$ ).

The presence of pneumoperitoneum, free abdominal fluid, and cecal wall thickening in CT scan were significantly more frequent in MR patients ( $p<0.0001$ ). Conversion to open surgery was more common in MR patients (27.5% vs 2.2%,  $p<0.0001$ ). Overall morbidity (45.0% vs 13.6%,  $p<0.0001$ ), Clavien III-IV complications (22.5% vs 3.9%,  $p<0.0001$ ) and median length of stay (1.6 vs 6.6 days,  $p<0.0001$ ) were significantly higher in the MR group. Age (OR 1.02 95% CI 1.01-1.04), free abdominal fluid in CT scan (OR 4.9 95% CI 2.1-11.1), pneumoperitoneum in CT scan (OR 7.2 95% CI 1.6-31.9) and cecal wall thickening in CT scan (OR 6.2 95% CI 2.2-17.1) were identified as independent risk factors for MR.

*Conclusions:* Clinical and imaging predictors of major resections can help improving surgical planning and informing patients about the higher risks of the operation.

**VARIATIONS OF THE MESOAPPENDIX POSITION IN LAPAROSCOPIC APPENDICECTOMY; NEW ANATOMICAL CLASSIFICATION TO GUIDE SURGICAL STRATEGY**

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*Introduction: Laparoscopic appendicectomies is the most common laparoscopic procedure performed in the world. The dissection of the mesoappendix is a key step this procedure. We propose a new classification of the mesoappendix position based upon surgical anatomical views and evaluate the differences for each position with operative difficulty and surgical approach.*

*Methods: Mesoappendix position classified retrospectively in patients undergoing laparoscopic appendicectomy. Classification was based upon the direction of the mesoappendix in relation to the laparoscopic camera position; M1 mesoappendix faces towards the camera, M2 mesoappendix directed towards the pelvis, M3 mesoappendix faces away from the camera and M4 mesoappendix is directed towards the liver. The following outcomes are evaluated for each position: operative time, placement of additional laparoscopic ports, use of special equipment and deviation from standard operative approach.*

*Results: 50 laparoscopic appendicectomies were classified with 18 (36%) classified as M1, 12 (24%) as M2, 13 (26%) as M3 and 7 (14%) as M4. The mean operative time was significantly longer for M3 mesoappendix position compared to the others (68.85mins vs 37.5mins;  $p > 0.001$ ). There were more cases requiring deviation from standard operative approaches for M3 mesoappendix position with 1 requiring usage of an energy device, 2 undergoing caeectomies and 2 requiring a retrograde dissection approach. 3 patients in this group required additional working ports.*

*Conclusions: This study validates the classification of the mesoappendix position in laparoscopic appendicectomies. The M3 mesoappendix is more likely to be difficult and require differing surgical approaches. This classification can serve as a valuable tool for surgeons in predicting the need for additional ports or specialised equipment. Additionally, it can proactively identify cases suitable for trainee surgeons and their skillset. Our classification system provides a new framework in approaching laparoscopic appendicectomies and can guide intra-operative surgical decisions.*

**COMPARISON OF SCORING SYSTEMS OF APPENDICITIS WITH RESPECT TO DIAGNOSIS OF PATIENTS: A PROSPECTIVE OBSERVATIONAL STUDY**

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*Introduction:* Acute appendicitis is a common surgical emergency all the world. Early identification and quick surgical intervention is proven to improve the outcome of the condition. There are various scoring systems available to aid in the diagnosis of appendicitis encompassing clinical, biochemical and occasionally radiological parameters each having its own sensitivities, specificities and predictive values. Early and accurate diagnosis of acute appendicitis is required to avoid negative laparotomies. *Aim:* To compare the 9 different scoring systems of acute appendicitis with respect to its specificities, sensitivities, predictive values and its diagnostic accuracies with either histopathologically proven acute appendicitis in operated cases or CT grading in non-operative cases. The scoring system used were Alvarado score, RIPASA, Appendicitis inflammatory response score, Tzanakis score, Ohmann score, Eskelinen score, Karaman score, Lintula score, Fenyo- Lindberg score and CT severity score. Minimum sample size calculated was 68. *Inclusive criteria:* Patient with clinical diagnosis of acute appendicitis >18 years were included which was confirmed by histopathological examination in operated cases or CT grading in non-operative cases. *Exclusion criteria:* Patients with acute appendicitis with age <18 years or with pregnancy were excluded from the study. This prospective, single blinded observational study was conducted from July 2021 to June 2023 at Department of General Surgery at AIIMS Bhubaneswar, Odisha, India. *Result and Conclusion:* 111 patients were included in the study and were analysed statistically. RIPASA score had a better sensitivity, specificity and positive predictive value amongst the 9 different scoring system, Fenyo- Lindberg score had the highest correlation with both intraoperative grading and CT grading, indicating a strong positive relationship which aligns well with assessments made with intraoperative evaluation and CT scans.

### IS DRAINAGE ALWAYS MANDATORY FOR THE TREATMENT OF LOCALIZED ABSCESS FORMING APPENDICITIS?

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*Introduction: The first choice for localized abscess-forming appendicitis (LAA) is percutaneous drainage (PCD). However, there are cases where PCD is challenging, such as when the intestines intervene between the abdominal wall and the cavity or when the abscess is located deep in the pelvic region. In such situations, guidelines recommend surgical drainage. Nevertheless, there are instances of LAA where improvement is achieved through medical treatment without drainage. This study aimed to investigate whether drainage is mandatory for the treatment of LAA. Materials and methods: From October 2015 to August 2023, we classified all cases of localized abscess-forming appendicitis that were hospitalized in our institution into two groups based on the initial approach: the PCD group and the non-drainage group (ND group). We compared patient backgrounds (age, sex, and ASA-PS), duration from onset to hospitalization, abscess cavity size, failure rate of initial treatment, and length of hospital stay between the two groups.*

*Results: There were 46 cases (PCD/ND=8/38). There were no significant differences in gender between the two groups ( $p=0.45$ ), but age and ASA-PS were higher in the PCD group ( $p=0.0053/0.36$ ). The duration until hospitalization (PCD/ND=10/6 days  $p=0.71$ ) and the initial treatment failure rate (PCD/ND=13/10.5%  $p=0.89$ ) showed no significant differences between both groups. However, the size of the abscess cavity was larger in the PCD group (PCD/ND=52.5/40 mm  $p=0.00061$ ), and the length of hospital stay was longer in the PCD group (PCD/ND=10/6 days  $p=0.0095$ ).*

*Conclusion: Considering that 89.5% achieved healing without requiring additional treatment, non-drainage therapy is feasible. In cases where a percutaneous approach is challenging, surgery may not be first choice.*



**PREDICTORS OF ACUTE APPENDICITIS IN ADULTS**

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**Background:** Factors associated with complicated appendicitis are very important to prevent morbidity in the hospital. Especially, if we can find these factors at the initial presentation. Our objectives is to identify prehospital and in-hospital factors that associated with complicated appendicitis.

**Methods:** We retrospectively reviewed of all adult patients with appendicitis treated with appendectomy or diagnosed by abdominal computed tomography from 2019-2022 was performed. The main outcome measure was intraoperative of gangrenous or perforated appendicitis. The main predictor of interest were symptom duration, leukocytosis, serum bilirubin and time from admission to appendectomy.

**Results:** Of 147 patients, 52 (34%) had complicated appendicitis at the time of operation. Univariate analysis demonstrated that patients with complicated appendicitis were older, and higher serum total bilirubin. Multivariate analysis confirmed that older age (OR=1.03, 95%CI=1.01-1.05, p=0.003) and higher serum total bilirubin (OR=3.91, 95%CI=1.49-10.24, p=0.005) were independent factors for complicated appendicitis. Time from admission to appendectomy (OR=1.00, 95%CI=0.96-1.05, p=0.947) and serum white blood cells count (OR=0.99, 95%CI=0.99-1.00, p=0.547) were not a predictor for complicated appendicitis.

**Conclusion:** Serum total bilirubin can predict complicated appendicitis in adults who suspected acute appendicitis. This information may help surgeon to manage the timing of appendectomy or non-operative management of appendicitis in adults.

## COMPARISON OF LAPAROSCOPIC GUIDED AND ULTRASOUND GUIDED TAP BLOCK FOR POSTOPERATIVE PAIN CONTROL IN TAPP HERNIOPLASTY: A RANDOMIZED CONTROL TRIAL

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### ABSTRACT

*Introduction:* Regional blocks are an important component of analgesia to enhance post-operative recovery.

*Transversus abdominis plane (TAP) block* is a regional anesthesia technique which provides effective analgesia to the parietal peritoneum as well as to the skin and muscles of the anterior abdominal wall. TAP block is delivered in the fascial plane between the internal oblique and transversus abdominis muscles targeting the somatic nerves T6–L1 which run in this plane.

*Objectives:* To compare of laparoscopic and ultrasound guided TAP block in terms of mean post-operative pain in TAPP hernioplasty.

*Study design:* Randomized controlled trial

*Setting:* Department of Surgery, Allied hospital Faisalabad.

*Study duration:* 30th May 2023 to 29th November 2023.

*Materials & Methods:* A total of 150 patients (75 in each group) having age range between 18-80 years are included.

Patients with coagulopathies, renal insufficiency or congestive heart failure, allergy to bupivacaine; chronic opioid dependence, drug addictions were excluded. Group A underwent laparoscopic guided while group B underwent ultrasound guided TAP block. pain assessed by VAS score in recovery area (PACU) as soon they became conscious and then 2 hourly for next 8 hours and then 4 hourly up to 24 hours in wards.

*Results:* The mean age of patients in group A was  $44.29 \pm 12.56$  years and in group B was  $43.15 \pm 13.10$  years. 143 patients (95.33%) were male and 7 (4.67%) were females with male to female ratio of 20:1. In my study, VAS score was  $3.71 \pm 1.29$  in the group A (laparoscopic TAP block) compared with  $1.45 \pm 0.83$  in group B (ultrasound guided TAP block) with p-value of 0.0001 which is statistically significant.

*Conclusion:* This study concluded that the postoperative pain score is less after ultrasound guided TAP block in TAPP hernioplasty as compared to laparoscopic TAP block.

*Keywords:* TAPP hernioplasty, transversus abdominis plane block, post-operative pain.

**SUSTAINED IMPROVEMENT OUTCOMES IN RISK ASSESSED EMERGENCY LAPAROTOMY PATIENTS**

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*Introduction:* Emergency laparotomy is a high-risk procedure with compromised outcomes. Identified by the World Health Organization (WHO) as a Bellwether Procedure, improvements in emergency laparotomy outcomes results in a spillover effect on other emergency procedures. A multidisciplinary clinical group (the “hard clinical core”) reviewed existing evidence of effective interventions, augmented by quality improvement (QI) executives (the “soft clinical periphery”) to deliver a prospective implementation on a pre/post intervention.

*Materials & Method(s):*

A perioperative surgical care pathway was readapted to improve standard of care to achieve the best possible outcome. Using an evidence-based bundle consisting of 8 interventions anticipated to reduce mortality, in-hospitalization bill, 30 days (30D) average length of stay (ALOS) and an improvement in patient outcomes. Post operative complication(s) as defined by the American College of Surgeons, Nation Surgical Quality Improvement Program (ACS NSQIP). This involves a multidisciplinary team from Emergency Department (ED), anesthesia, Intensive Care Unit (ICU), General Surgery (GS) and hospital administration. A QI framework is utilized to standardize and sustain practices adopted. The National Emergency Laparotomy Audit (NELA) guidelines are used for inclusion and exclusion criteria.

*Result(s):* The intervention bundle led to improvements in patient outcomes on the reduction of in-hospitalization bill, reduced 30D ALOS and an overall reduction in 30D mortality sustained over 2 years.

*Conclusion:* A synergistic effect of a “hard clinical core” and “soft QI periphery” to deliver interventions in conjunction with a QI framework amplifies the success rate of implementation with sustainable outcomes.

**IMPACT OF TUMOR SIZE ON SURVIVAL OUTCOME IN ESOPHAGEAL SQUAMOUS CELL CARCINOMA AFTER ESOPHAGECTOMY FOLLOWING NEOADJUVANT CHEMOTHERAPY**

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*Background:* Large tumor size is a prognostic factor in esophageal squamous cell carcinoma (ESCC). However, the effect of tumor size on outcomes following neoadjuvant chemotherapy (NAC) has not been evaluated. This study aimed to assess the influence of tumor size on prognosis of patients undergoing esophagectomy after NAC.

*Methods:* This study comprised 272 patients underwent esophagectomy after NAC at Kobe University Hospital. We evaluated the pathological tumor size and determined the cutoff level for tumor size using receiver operating characteristics analysis to the survival status. Cox proportional hazards regression analyses were performed to identify prognostic factors.

*Results:* The patients were categorized into two groups: patients with tumor sizes  $\geq 36$  mm and  $< 36$  mm. Deep pathological tumor invasion and worse histological response to NAC were associated with tumor size  $\geq 36$  mm. In patients with pT0-1, pT2, and pT4 ESCC, no significant differences in overall survival (OS) rates were observed between two groups. In patients with pT3, OS of the tumor size  $\geq 36$  mm group was significantly worse than that of the tumor size  $< 36$  mm group ( $p < 0.0001$ ). Multivariate analysis in pT3 patients revealed tumor size  $\geq 36$  mm was an independent risk factor for OS. The 5-year OS rate was 10% in patients with tumor size  $\geq 36$  mm pT3 ESCC with pathological lymph node metastasis ( $p < 0.0001$ ).

*Conclusions:* Tumor size  $\geq 36$  mm is an independent risk factor for poorer survival in pT3 patients. Furthermore, tumor size  $\geq 36$  mm with pathological lymph node metastasis in pT3 patients was associated with very poor survival.

**ESOPHAGEAL INVOLVEMENT WITH COMPLICATED BARRETT'S ESOPHAGUS IN PATIENTS WITH SCLERODERMA: MEDICAL OR SURGICAL TREATMENT?**

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*Systemic sclerosis (SSc) is a rare autoimmune disease presenting fibrosis of small arteries, anomalous deposition of collagen in the skin, lungs, and gastrointestinal tract. The esophagus is frequently involved (up to 90% of patients). Esophagitis is highly prevalent (32 to 77%), Barrett's esophagus has been reported from 6.8% to 44%.*

*Seventeen patients with SSc and severe esophagitis defined by the presence of esophageal stenosis or ulcerations were studied. Diagnosis was made with radiologic, endoscopic, manometric, 24hr pH monitoring and gastric emptying studies. Heartburn was present in 14 patients (82,3%), dysphagia was present in 13 patients (76,5%) and pain in 9 patients (52.9%). Esophageal ulcer and stricture with Barrett's esophagus were confirmed in 14 patients (82,4%). All patients have a hypotensive and shorter lower esophageal sphincter and severe dysmotility.*

*All patients were initially treated with anti-reflux medication, endoscopic dilatation in case of stricture. After medical treatment failure was observed with persistence of esophageal damage. Then, they were submitted to surgical treatment with Toupet antireflux technique combined with distal gastrectomy with Roux -en -Y gastrojejunostomy as acid suppression bile diversion procedure. After this procedure, healing ulcer was observed, without recurrence esophageal stricture after dilatation. At long term follow up Visick I-II was confirmed in all patients.*

*Combination of a Toupet fundoplication and acid suppression bile diversion procedure presents feasible and safe results. Current evidence is scarce while a definitive indication about the most appropriate surgical treatment is lacking.*

**DELAYING OPERATION INCREASES HOSPITAL MORTALITY IN EMERGENCY GENERAL SURGERY: A 10-YEAR STUDY OF 6,805,380 PATIENTS**

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*Introduction:* The goal of the current study was to assess the role of time to operation on hospital mortality in emergency general surgery (GS) admissions.

*Methods:* Data were obtained from the National Inpatient Sample (NIS), 2005-2014 with emergency GS diagnoses as defined by Shafi et al. (2013), Multivariable logistic regression models (MLRM) with backward elimination were employed and adjusted for age, sex, race, income quartile, health care insurance, hospital location, and modified frailty index.

*Results:* 6,805,380 patients were studied. 54% were females. 115,528 patients (1.7%) died during the study period of which 60,649 were female (52.5% of total deaths). The mean (SD) MFI in survived vs. deceased patients out of 5 was 1.66 (1.09) vs. 1.88 (1.17) in elderly (>65 years) and, 0.84 (1.00) vs. 1.52 (1.10) in adults (18-65 years), respectively ( $p < 0.0001$ ). 33% of elderly and 43% of adults underwent an operation. The mean time to operation was 2 days in elderly and 1.34 days in adults. 95% of patients were operated within the first 8 and 7 days after admission in elderly and adults, respectively with a mortality of 4.2% in elderly and 0.7% in adults. A MLRM on operated patients revealed time to operation as a significant predictor of mortality with an OR of 1.046 in elderly and 1.058 in adults (Table 1). 148,284 elderly and 1,046,711 adults had no recorded comorbidity of which 39% and 59% had operation, respectively. The MLRM on this subgroup of patients showed every additional day delayed operation, increased the odds of mortality by 9.3% in elderly and 13.5% in adults. (Table 1).

*Conclusion:* Delaying the operation for GS patients admitted emergently increased the odds of mortality by about 4.6% in elderly and 5.8% in adult patients, per each day.

**ANTIBIOTIC STEWARDSHIP PROGRAM IN PANCREATIC SURGERY: A MULTICENTER, BEFORE-AFTER ANALYSIS**

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**Background:** Antibiotic stewardship programs (ASPs) can help optimize the use of antimicrobials and antibiotic prophylaxis, reducing the rate of surgical site infections (SSI). We created a novel ASP in pancreatic surgery, including a bundle of interventions and tailored antibiotic prophylaxis, and verified its clinical efficacy in reducing the incidence of SSI within 30 days of surgery.

**Methods:** A multicenter, before-after, propensity score weighting prospective study was conducted. The prospective momentum (intervention cohort, IC) went from January 2020 to December 2023; the historical cohort (HC) went from January 2015 to December 2019. The ASP was shared among three national high-volume centers of pancreatic surgery. The antibiotic prophylaxis was tailored based on the results of a rectal swab aimed at detecting multi-drug resistant microbes.

**Findings:** The study population encompassed 2,997 patients, categorized into 1,094 in the IC and 1,838 in the HC. After implementing the ASP and tailored antibiotic prophylaxis, the SSI rate significantly decreased from 31% to 22% ( $p<0.001$ ). Notably, a statistically significant reduction was observed in superficial (5.4% vs. 2.7%,  $p<0.001$ ), organ/space SSIs (28% vs. 21%,  $p<0.001$ ), and SSI-related septic events (13% vs. 9.1%,  $p<0.001$ ). After propensity score weighting, the estimated average treatment effect (ATE) on the treated was 0.94 (CI 0.9-0.97,  $p<0.001$ ) for overall SSI, 0.86 for superficial SSI (CI 0.78-0.93,  $p<0.001$ ), and 0.94 for organ/space SSI (CI 0.9-0.98,  $p=0.005$ ). Additionally, a substantial reduction in all major complications was recorded in the IC ( $p<0.05$ ).

**Interpretation:** A novel ASP in pancreatic surgery significantly reduced SSI and other clinically relevant complications. The infectious risk stratification based on the preoperative rectal swab proved effective. Its use should be implemented to promote the judicious use of antibiotics and optimize their efficacy.

**RISK FACTORS AND OUTCOMES OF INTUSSUSCEPTION IN ADULT AND ELDERLY PATIENTS**

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*Introduction:* Intussusception in adult and elderly patients is a rare but potentially life-threatening condition that requires a high index of suspicion for prompt diagnosis and management. The aim of this study is to identify risk factors in adult and elderly patients with intussusception to improve management protocols and increase awareness among clinicians.

**Methods**

*Data on patients with intussusception between 2005-2014 from the National Inpatient Sample(NIS) were used. Logistic regressions were conducted to investigate the relationships between mortality and a variety of other patient characteristics.*

**Results**

*Our study included 4,432 patients, of which 3,647 (82.3%) were adults and 785 (17.7%) were elderly. Of the adult and elderly patients, there were 2,084 (57.1%) and 503 (64.1%) females, respectfully. Elderly patients had a mortality rates of 2.8% relative to the adult mortality rate of 0.1%. Varying comorbidities were associated with increased mortality in each group. In non-operatively managed elderly patients, hospital length of stay and age increased mortality odds by 5.7% ( $P=0.120$ ) and 24.8% ( $P=0.080$ ). Operatively managed elderly patients with higher modified frailty index scores had a mortality odds by 34.0% ( $P=0.160$ ). In contrast, female sex amongst surgically treated elderly patients was a protective factor reducing mortality odds by 69.8%. In operatively managed adults, every one-day delay in operative intervention increased mortality odds by 26.7% and every additional year of age increased mortality odds by 21.0% ( $P=0.053$ ).*

**Conclusion**

*Among operatively managed adult patients, prolonged hospital length of stay and advanced age is associated with increased mortality risk. Amongst surgically managed elderly patients, frailty is associated with elevated mortality risk while female sex is associated with reduced mortality risk. Lastly, non-operatively managed elderly patients with prolonged hospital length of stay and advanced age had increased mortality risk.*



**THE TEXTBOOK ONCOLOGICAL OUTCOME IS USEFUL IN THE SELECTION OF PATIENTS WHO REQUIRE AND POSTOPERATIVE ADJUVANT CHEMOTHERAPY IN PSTAGE II/III COLON CANCER**

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*"Background: Textbook oncological outcome (TOO) is one of the quality indicators of achieving ideal surgical and postoperative outcomes. Although postoperative adjuvant chemotherapy (adj) is important to improve patient prognosis in pStage II/ III colorectal cancer patients, the association between TOO and adj still remains unclear. The aim of this study is to clarify the impact of TOO on patient selection of adj in patients with pStage II/III colon cancer (CC).*

*Methods: Patients after curative surgery for CC between January 2012 and December 2020. TOO included five separate parameters: surgery within 6 weeks, radical resection, Lymph node (LN) yield  $\geq 12$ , no stoma, and no complications of Clavien-Dindo classification (CD)  $\geq IIIa$ . When all 5 short-term quality of care parameters were realized, TOO was achieved (TO). If any one of the 5 parameters was not met, the treatment was not considered TOO (nTO). Statistical analysis was performed using the 5-year OS as the primary endpoint.*

*Results: TOO was realized in 330 patients (68.6 %). nTO groups had significantly poorer 5-year OS than the TO group [TO 68.6% vs. nTO 31.4%,  $p < 0.01$ ]. 269 patients received adj. In patients in the TO group, there was no significant difference in 5-year OS between patients with and without adj. However, in those in nTO groups, a significant difference was observed [64.9% in the adj group vs. 35.1% in the non-adj group,  $p < 0.01$ ], suggesting that the absence of adj was an independent worse prognostic factor in 5-year OS (HR, 0.321; 95%CI, 0.144-0.717;  $p < 0.01$ ).*

*Conclusion: TOO can be a useful prognostic predictor after curative surgery for CC. Also, nTO should be proactively introduced to adj. "*

## COMPARISON OF SURGICAL OUTCOME OF FISTULECTOMY WITH MUCOSAL ADVANCEMENT FLAP: A RANDOMIZED CONTROLLED TRIAL

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### ABSTRACT

#### INTRODUCTION:

*Fistula in ano is a common condition associated with appreciable morbidity to the patient. The ultimate goal of complex fistula surgery are to control sepsis, to eradicate it without disturbing the anal sphincter mechanism, complete healing and prevent recurrence. The rectal advancement flap achieves healing, while avoiding any sphincter division and therefore low rate of incontinence.*

*The objective of the study was to compare the fistulectomy with MAF in treatment of perianal fistula in terms of mean hospital stay, frequency of anal incontinence and wound healing time*

*Material and method: A Randomized control trial, conducted on 120 (60 in each group) patients with fistula in ano presenting in surgical OPD, Allied hospital Faisalabad, from 1st march 2019 to 28 feb. 2020. Sampling technique was Non probability consecutive. Age ranges from 20-55 years of either gender having low lying perianal fistula with single external opening are included. Patients having perianal abscess, Inflammatory bowel disease or tuberculosis, HIV disease, Complex high lying fistulas with multiple external openings are excluded.*

*RESULTS: About 56.67%(n=34) in Group-A(fistulectomy) and 50%(n=30) in Group-B(MAF) were between 20-40 years of age while 43.33%(n=26) in Group-A and 50%(n=30) in Group-B were between 41-55 years of age. 86.67%(n=52) in Group-A and 78.33%(n=47) in Group-B were male while 13.33%(n=8) in Group-A and 21.67%(n=13) in Group-B were females, mean hospital stay was 93.93±4.56 hours in Group-A and 107.95±4.66 hours in Group-B, p value was 0.0001(significant difference). 13.33%(n=8) in Group-A and 23.33%(n=14) in Group-B had anal incontinence, p value was 0.15. At one month postoperative 4 patient(6.7%) in group A and 28 patients(46.6%) in group B showed complete wound healing, p value was 0.00167 (significant difference).*

*CONCLUSION: The hospital stay was significantly decreased with fistulectomy while there was no significant difference regarding anal incontinence, however, there is significant difference with high early wound healing rate in MAF. so, MAF is superior then fistulectomy in this regard.*

#### KEYWORDS:

*anal incontinence, early wound healing*

**DEEP LEARNING AND RANDOM FOREST ANALYSIS OF THORACIC AORTA DIAMETER IN TRAUMATIC MASSIVE HEMORRHAGE**

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*Introduction:* Adequate assessment of thoracic aorta diameter (TAD) is crucial for managing hypovolemic shock patients and timely intervention. However, conventional methods for estimating TAD predominantly rely on body surface area (BSA), which cannot account for the dynamic pathophysiological changes under shock conditions. We aimed to determine the most significant clinical factors associated with the variations in TAD in traumatic massive hemorrhage patients.

*Materials & Methods:* We retrospectively collected CT and clinical information from a total of 300 anonymized hemorrhagic trauma patients admitted to a level I trauma center. We then used 2D UNet, a deep learning network, to automatically segment the aorta in CT images and obtain diaphragm-level TAD values. After excluding 16 segmentation failures and 12 missing data, 272 were included. Through decision tree design, we employed a Random Forest model to incorporate comprehensive clinical variables, including vital signs, initial laboratory results, transfusion volume, trauma-related scores, etc. 80% of the sample was used as training data, and 20% as test data.

*Results:* Age showed the highest variable importance value, indicating its most significant impact on TAD. The linear regression results showed that four variables (age, mean arterial pressure, hemoglobin, and BSA) were associated with the TAD, and the TAD increased by 0.15 units for each additional year of age.

*Conclusion:* This study identified critical clinical factors influencing aortic diameter during massive hemorrhage. These factors may provide a more accurate and dynamic evaluation of the aortic diameter than traditional methods. These findings could pave the way for enhanced predictive models, facilitating better clinical decision-making and potentially improving the prognosis for patients experiencing hypovolemic shock.

**PROTOCOLIZED MULTIDISCIPLINARY ENHANCED RECOVERY AFTER TRAUMA SURGERY: DEMYSTIFYING ERAS IN TRAUMA – PRELIMINARY RESULTS IN A LOW-MIDDLE INCOME REGION LEVEL I TRAUMA CENTRE**

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**Introduction:**

There is emerging evidence on the benefit of Enhanced Recovery After Surgery (ERAS) for emergency surgery but paucity of data remains for trauma, due to its complexity and heterogeneity. This study investigates the feasibility and outcome of multidisciplinary Enhanced Recovery after Trauma Surgery (ERATS) protocol.

**Materials & Methods:**

The ERATS protocol developed using existing trauma management protocol, intensive care, and ERAS guidelines was institutionally applied to all trauma laparotomy patients from May to December 2023. Patients' clinical data and outcomes were prospectively reviewed and compared with the retrospective cohort (2021-2023) before the development of ERATS protocol.

**Results:**

Of 208 subjects included, with 68 subjects applied with ERATS protocol and 140 from the non-ERATS group. Most patients sustained polytrauma (88.5%) and of blunt mechanism (85.6%). ERATS cohort trended more severe injuries compared to non-ERATS group (Median ISS, 24 vs 20) with more requiring intensive care (47.8% vs 39.3%). Mortality was lower in the ERATS group (7.8%) than the non-ERATS group (12.1%). Among those who do not require post-op mechanical ventilation, there was no mortality among the ERATS group but 5.9% in the non-ERATS group. Of those with minor injury (ISS <15), length of hospital stay was marginally shorter (mean hospital stay, 6.8 days) compared to the non-ERATS group (mean hospital stay, 7.1 days). Acquired non-trauma complications among the minor injury cohort were also lower in the ERATS group (16.7%) than the non-ERATS group (31.3%).

**Conclusion:**

A multidisciplinary ERATS protocol is feasible, potentially improve outcome in mortality, length of stay, and complications rate, especially among those with non-major trauma. Challenges exist in standardizing protocol given the heterogeneity. Further study is warranted to investigate the long-term outcome of a protocolized recovery.

**PREHOSPITAL TRIAGE OF TRAUMA PATIENTS USING ARTIFICIAL INTELLIGENCE**

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**Introduction**

Matching the necessary resources and facilities to attend the needs of trauma patients is usually performed manually by clinicians using criteria-directed triage protocols. We hypothesize that an artificial Intelligence (AI) model would be able to predict the need for major surgery based on data available within the initial 5-10 minutes of prehospital provider arrival at the scene.

**Materials & Methods**

Pre and in-hospital electronic health record (EHR) data was available for 4555 patients. Data points included both static data points (age or sex), scorings (Glasgow Coma Score, ABCD-score) and a sequential input of vital signs (heart rate, blood pressure, SpO<sub>2</sub>), of which the data from the first 10 minutes of prehospital contact was used for predicting the need surgery after hospital arrival. Surgeries were stratified into all major surgical procedures, as well as specialty specific procedures (abdominal, neuro and vascular surgery)

The dataset was split into training (70%), validation (20%) and test (10%) datasets. We trained a deep learning and Transformer-encoder fusion model architecture suitable for tabular and multivariate time-series data for multi-label classification and evaluated performance on the test-dataset by the area under receiver operator characteristics curve (denoted as ROC-AUC).

**Results**

We achieved 0.8 ROC-AUC for predicting the need for major surgery. Major neurosurgical needs had excellent performance with ROC-AUC of 0.89, predicting vascular surgical needs scored 0.85 and predicting major abdominal surgeries scored 0.74 ROC-AUC.

**Conclusion**

Utilizing artificial intelligence early in the prehospital phase of a trauma patient trajectory can predict specialized surgical needs with great performance. There is thus a potential to use this approach to aid in the triage of trauma patients.

**LONG-TERM FUNCTIONAL AND ANATOMICAL OUTCOMES OF GRADE 3 AND ABOVE KIDNEY TRAUMA PATIENTS: A PILOT STUDY**

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*Introduction:* Renal trauma, comprising 1% of all trauma cases, presents a substantial impact; however, there is a notable absence of research exploring the long-term consequences on renal function following trauma. The AAST classification of renal injuries is the most widely accepted and was utilized in the study. In response to this gap, our study endeavors to elucidate the long-term outcomes of Grade 3 and above renal injuries.

*Materials and Methods:* Patients with Grade 3 and above renal trauma, who sustained injuries a minimum of 6 months back were included in the study. Patients who had undergone nephrectomy or had co-morbidities like diabetes or hypertension were excluded from the study. Serum urea and creatinine, DMSA (Diethylenetriamine penta-acetate), and DTPA (dimercaptosuccinic acid) scans were performed for all the patients.

*Results:* A total of 36 (n) patients (27 male, and 9 female) were enrolled in the study. The mean age of patients was  $20.50 \pm 12.08$  years. There were 9 patients each from grades 3, 4, and 5 (AAST). The split kidney function of the affected kidney was  $31.83 \pm 12.69\%$ , and the dye uptake for the affected side was  $35.71 \pm 13.40\%$ . In multivariate analysis, time at follow-up ( $p = 0.024^*$  and  $0.001^*$ ), and female gender, ( $p = 0.003^*$  and  $0.004^*$ ) were associated with higher differential-GFR and higher dye uptake by the affected kidney respectively, while Grade 5 ( $p = 0.0003^*$  and  $0.005^*$ ) was associated with lower differential-GFR and lower dye uptake by the affected kidney respectively.

*Conclusion:* A notable decline in kidney function was observed in Grade 5 injuries, contrasting with Grade 4 injuries, which indicates an irreversible loss of renal function in Grade 5 injuries. Furthermore, the duration of follow-up demonstrated a positive correlation with elevated kidney function levels, indicating an improvement in kidney function over time.

## A RANDOMISED CONTROL TRIAL TO COMPARE TOPICAL USE OF ANTIBIOTIC VERSUS CONVENTIONAL MANAGEMENT OF OPEN FRACTURES

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### *Introduction:*

*The evidence is building that adding topical antibiotic to standard systemic antibiotic in management of open fractures is lowering the infection rate and complications, however, there is a scarcity of studies in low resource settings. This study aims to evaluate the effect of topical antibiotic on infection rate in open fractures managed in limited-resource settings.*

### *Methods:*

*This is a prospective randomised controlled trial comparing topical antibiotic (aqueous gentamycin) and non-topical antibiotic groups. A total of 200 patients with open long bone fractures were admitted, of which 120 patients gave consent and were randomly allocated into the study groups. Eighty patients were excluded from the study. The primary outcome measures were acute infection rate while the secondary outcome measures included the length of hospital stay, number of surgical procedures and rate of non-union.*

### *Results:*

*The mean time of injury to the time of first debridement was 6 days and the delays were observed in all stages due to poor access to surgical care. We recorded a significant reduction of infection rate in the 2nd ( $p = 0.015$ ) and 6th ( $p = 0.045$ ) weeks, but non-significant reduction at 6th month ( $p = 0.3$ ) in the topical group compared to the non-topical group. As compared to the non-topical group, for the topical group we recorded a reduced number of procedures ( $p = 0.004$ ), reduced length of hospital stay ( $p = 0.006$ ), the rate of non-unions at 6-month follow-up ( $p = 0.01$ ).*

### *Conclusion:*

*This study shows that in the management of open long bone fractures in low-resource settings, the use of local aqueous gentamycin administration as an adjunct to conventional management is effective in lowering the infection rates, reducing the number of operations, reducing length of hospital stay and non-union rates. Despite some methodological limitations, the authors hope the study contributes to the body of evidence for the use of topical antibiotics in the management of open fractures.*

**OUTCOMES OF VASCULAR BYPASS SURGERY FOR TRAUMATIC EXTREMITY VASCULAR INJURIES FROM A LEVEL 1 TRAUMA CENTRE IN CENTRAL MALAYSIA FROM 2018-2023**

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**Introduction**

Traumatic extremity vascular injury is one of the common emergencies in surgery, characterized by damage to arteries and veins. It has become a major challenge especially in third world countries. These injuries happen mostly due to poor traffic laws, street crimes and firearms and blast-associated injuries. Management delay may result in disabilities or even death, which can have grave repercussions for the surgeons.

**Materials & Methods**

We conducted a cross-sectional study of all patients with traumatic extremity vascular injury admitted to the Trauma Surgery Unit between 1st January 2018 to 31st December 2023 and underwent vascular bypass surgery.

Demographics, mechanism of injury, hospitalisation length, limb viability, surgical site infection (SSI), and mortality were analysed.

**Results**

Data from 27 patients (mean age: 37 years) with traumatic extremity vascular injuries who underwent bypass surgery were analysed. The majority of patients were male (25/27, 93%). Road traffic crashes were the most common mechanism of injury (74%) followed by falls (15%) and others (11%). Of all the bypass surgery cases, lower limb vascular injuries particularly popliteal artery injury was the most performed (37%). Mean hospitalisation duration was 21 days. Post operatively showed 100% limb viability with 0% mortality. The rate of post operative surgical site infection was 3%.

**Conclusion**

Traumatic extremity vascular injury largely happens to men and is mainly caused by road traffic crashes. Prompt diagnosis, patient selection and early surgical intervention within the golden hours ensure successful bypass revascularization surgery with good outcomes.



**MULTIDISCIPLINARY APPROACH TO THE MANAGEMENT OF PATIENTS WITH PRIMARY IMMUNE THROMBOCYTOPENIA**

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*Introduction:* Primary immune thrombocytopenia (ITP) is a diagnosis of exclusion determined by a comprehensive evaluation. Its incidence worldwide is 1.6 to 3.9 cases/100,000 patients per year. Treatment of ITP is primarily aimed at achieving a platelet count sufficient to prevent bleeding.

*Materials and methods:* Since 2020, we have performed splenectomy in 12 patients in our center. Patients presented with spontaneous nosebleed (7 cases, 58%), petechiae (5 cases, 42%), gingival bleeding (8 cases, 67%), metrorrhagia (3 cases, 25%), gastrointestinal bleeding (2 cases, 17%), and hematuria (1 case, 8%). All patients underwent preoperative abdominal CT with IV contrast, with two cases of accessory spleen detected and further confirmed during surgery. Laparotomy was performed in 4 of 12 cases. Preoperative splenic artery embolization was performed in 4 patients with severe splenomegaly.

*Results:* Intraoperative bleeding ranged from minimal to 300 ml, with the lowest volume in patients who underwent splenic artery embolization. In 11 cases, the platelet count increased on day 2 after splenectomy and remained stable above  $100.0 \times 10^9/L$  in the long-term postoperative period. Post-splenectomy thrombocytopenia persisted in 1 case and required further evaluation and treatment by hematologists. None of the patients had hemorrhagic symptoms in the long-term period.

*Conclusion:* Laparoscopic splenectomy is a highly effective minimally invasive surgical procedure for the treatment of ITP. It removes sites of phagocytosis and autoantibody synthesis. Preoperative splenic artery embolization can significantly reduce the risk of intraoperative bleeding, lead to a reduction in spleen volume, and expedite the procedure. Preoperative abdominal CT with IV contrast is necessary to identify accessory spleen in patients with ITP.

**THE EXPERIENCE OF USING TRANSCATHETER ARTERIAL EMBOLIZATION IN ULCERATIVE GASTRODUODENAL BLEEDING IN ELDERLY PATIENTS**

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Outcome analysis of treatment of 30 patients with UGB who had TAE to stop the ongoing and prevent the recurrence of hemorrhage was conducted in I.I.Dzhaneldze Institute in 2018-2021. The main group included patients with an average age of  $62.7 \pm 14.8$ , with high comorbidity and blood loss of more than 30% of the circulating blood volume. The severity of the condition on the APACHE II scale was 26 points or more in 24 patients and 20-25 points in 6 patients. Callus nature of the ulcerous defect with a size of 2 cm or more was observed in 12 patients. The control group consisted of 30 patients with gastroduodenal bleeding, similar in age and severity of concomitant pathology, in which TAE was not performed.

The technical success of TAE was observed in 29 (97%) observations. Embolization performance in one patient was not possible due to anatomical features: there was stenosis of the proximal segment of the gastro-splenic trunk by 60%. The clinical efficacy of TAE in the form of stopping ongoing bleeding and the absence of relapse was subsequently achieved in 29 cases. An unfavorable outcome was noted in 5 cases (17%) due to decompensation of severe somatic diseases competing with UGB. Relapse of bleeding and complications of TAE were not observed in all cases. In the control group, 7 patients died (23.3%). Recurrent bleeding occurred in 4 (13%) patients. Two patients were performed repeated endoscopic hemostasis with a favorable

Thus, in the group of elderly and senile patients with severe somatic pathology and gastroduodenal bleeding, the use of TAE allows to perform hemostasis and prevent the occurrence of recurrent bleeding. The obtained results determine the need for further research in order to optimize the indications and methods of performing TAE in emergency surgery of gastroduodenal bleeding.

**ACCURACY OF SWAB TECHNIQUE VERSUS WOUND TISSUE BIOPSY CULTURE IN THE DIAGNOSIS OF SURGICAL SITE INFECTIONS IN A TERTIARY GOVERNMENT HOSPITAL**

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*Introduction:* Surgical site infection (SSI) develops at the site of a surgical procedure. SSIs are relatively morbid, accounting for one-third of postoperative deaths. In the Philippines, SSIs account for 38% of all nosocomial infections. WHO stated that there is no single, objective gold standard test for surgical site infection. Currently, Davao Regional Medical Center is using the wound swab technique for wound discharge. This study aims to determine the accuracy of wound swab versus wound tissue biopsy culture in diagnosing surgical site infections.

*Materials and Methods:* An analytical cross-sectional method was used in this study. Data were collected from 104 patients with known surgical site infections. The swab culture and wound tissue biopsy culture were evaluated based on the presence of bacterial growth. Descriptive statistics was used to determine the demographic profile of the subjects. Chi-square method was utilized for comparative analysis, with a level of significance of  $\alpha = 0.05$ . The study also performed Receiver Operating Characteristics (ROC) curve analysis to determine the accuracy of both techniques.

*Results:* Data revealed that out of 104 participants, the mean age is  $46.83 \pm 17.53$  years old, with seventy-seven (74%) male, and twenty-seven (26%) female. The average hospital stay is  $16.65 \pm 10$  days. Fifty-six percent (56%) of the infections were in the extremities. Culture results indicated that *E. coli* was the most prevalent pathogen, which was detected in 37% of cases. Chi-square analysis showed a *p*-value of 0.584, which suggests that there is no significant difference between wound tissue biopsy and wound swab technique. ROC curve analysis showed that the wound swab approach offers greater overall accuracy for diagnosing surgical site infections.

*Conclusion:* Results of the study indicate that the wound swab technique is comparable to wound tissue culture biopsy in diagnosing surgical site infections.

**A NOVEL MAGNETIC COMPRESSION TECHNIQUE FOR CIRCUMCISION**

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*Introduction:* Traditional circumcision is associated with considerable intraoperative blood loss and a prolonged postoperative healing course. This study investigated the feasibility of the magnetic compression technique (MCT) for circumcision in beagle dogs.

*Materials and Methods:* A set of magnetic rings including a daughter magnetic ring (DMR) and a parent magnetic ring (PMR) were designed for circumcision. In eight beagle dogs as the animal model, the DMR was placed between the penis and the foreskin through the glans, and then the PMR was placed outside the penis. The DMR and PMR automatically attracted together to compress the foreskin. The necrosis of the prepuce of the anterior penis was observed daily. The operation time and time to magnetic ring shedding were recorded. Healing of the foreskin stump was visually observed.

*Results:* The magnetic rings were successfully installed in all eight dogs, and the operation process was without complication. The average operation time was  $3.13 \pm 0.92$  min (range, 2–4.5 min). Postoperative X-rays showed good attraction of the magnetic rings. Daily post-operative observation showed progressive ischemic necrosis of the anterior foreskin and mild edema of the proximal foreskin. The dogs were generally in good condition and urinated freely. The magnetic rings fell off spontaneously 8–12 days after the operation, and the stump of the foreskin healed well.

*Conclusion:* The MCT is a feasible approach for circumcision in a canine model, which suggests its potential for use in humans.

**HISTOPATHOLOGICAL ANALYSIS OF FISTULA IN MALE PATIENTS WITH ANO-RECTAL MALFORMATIONS: A PROSPECTIVE STUDY FROM NORTHERN INDIA**

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*Introduction:* Anorectal Malformations (ARM) represent a fistulous connection between the gastro-intestinal tract (anal canal) and urinary tract (bladder or urethra). Diverse views regarding the histopathology of the fistula (presence of normal anal histology and internal sphincter) reflects the controversy whether it can be preserved or not, for creation of the neoanus.

*Materials & Methods:* Male patients of ARM with fistula, who underwent a posterior-sagittal anorectoplasty, in a Northern Indian tertiary care centre, over a period of 18 months were included. The tissue specimens consisting of 0.5–2.0 cm of the most distal part of the rectal pouch and the proximal portion of the recto-vesical or recto-urethral connection, were taken post-surgery and were cut into transverse and longitudinal sections and haematoxylin and eosin-stained paraffin sections were prepared for light microscopy. Histological features around the proximal end of the fistula were evaluated.

*Results:* 24 patients (n) were included in our study. Internal sphincter wasn't found in any sample. Transitional epithelium was seen in 41.67% samples, anal glands were seen in 91.67% samples, anal crypts were seen in 16.67% samples, and ganglion cells were seen in 25.00% samples. Histopathological changes like subepithelial fibrosis were seen in 91.67% samples and thickened nerve trunks were seen in 16.67% samples. Other findings included hemorrhagic necrosis, mixed lining (base made of transitional; and upper layer consisting of columnar cells), edema, mucosal denudation, and lymphoid aggregates.

*Conclusions:* This study shows that anal morphology was distorted in the fistula samples (all normal anal histological features couldn't be found together in a fistula), and no evidence of internal anal sphincter muscles could be found in any sample. Presence of histopathological findings like subepithelial fibrosis and thickened nerve trunks further suggest against the preservation and possible use of the fistulous tissue for reconstructive purposes.

**PAEDIATRIC VASCULAR TRAUMA IN SOUTH AFRICA: A DECADE OF STRATEGIES AND OUTCOMES**

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*Introduction:* Vascular injuries resulting from non-iatrogenic trauma in children are rare but serious conditions that demand prompt diagnosis and management. However, timely identification of the injury is challenging and paediatric management is not standardized. Our 10-year study at Red Cross War Memorial Children's Hospital in South Africa aimed to assess the injury characteristics, associated morbidities, management strategies and short-term outcomes of this condition.

*Materials and methods:* A retrospective review was conducted for patients aged 13 years or younger who presented with major vascular injuries due to trauma to either the neck, torso or limbs between January 2013 and December 2022. Data on demographics, injury characteristics, treatment modalities and clinical outcomes were extracted and analyzed.

*Results:* 30 patients with 48 vessel injuries were included. 77.8% of patients were male, with a median age of 9 years and 2 months. Firearms were the predominant mechanism of injury at 44.4%. Associated injuries were present in 83.3% of patients. The survival rate was 90%, with 51.9% of patients presenting with shock. Surgery was performed in 82.8% of arterial injuries and 94.7% of venous injuries. Autologous saphenous vein bypass graft was the most performed procedure for arterial injuries (31.6%), while ligation dominated in venous injuries (64.3%). Fasciotomies were performed in half of the patients with arterial injuries and in 27.3% of patients with venous injuries. The mechanism of injury, haemoglobin level and the presence of shock on arrival were not predictors of mortality. There was no correlation between mortality and the anatomical location of injury ( $p=0.70$ ).

*Conclusion:* Our study emphasizes the significance of prompt diagnosis and timely intervention in managing vascular injuries and associated morbidities. We demonstrated a favourable survival rate with no clear predictors of mortality identified.

**OPTIMIZING SURGICAL CORRECTION OF CHEST WALL DEFORMITIES IN CHILDREN: INTEGRATING ULTRASOUND-GUIDED DRY NEEDLING**

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*Background:* Chest wall deformities, such as pectus excavatum or pectus carinatum in children, often require surgical intervention for correction. However, comprehensive preoperative and postoperative strategies are essential to achieve optimal outcomes.

*Methods:* This article presents a novel algorithm for designing personalized universal stabilizers used in the surgical treatment of chest wall deformities in children. The stabilizers are tailored to individual patients, incorporating anthropometric characteristics. The study outlines the stages of the implementation plan, from patient qualification based on anthropometrics to clinical assessment of stabilizer suitability.

*Results:* In this approach, patients undergo a preoperative phase that includes ultrasound-guided dry needling (DN-US). DN-US targets muscle imbalances, enhances mobility, and reduces pain, laying the groundwork for surgical correction. Post-surgery, DN-US continues to play a crucial role in pain management and rehabilitation, ensuring a smoother recovery process. The integrated strategy results in improved postural alignment and overall patient comfort.

*Conclusions:* The combination of personalized universal stabilizers and DN-US presents an innovative approach to the surgical correction of chest wall deformities in children. This multidisciplinary method addresses both structural and musculoskeletal aspects of the condition. By incorporating DN-US into the preoperative and postoperative phases, this approach promotes better long-term outcomes and patient well-being. It exemplifies the potential of personalized, integrated healthcare in managing complex conditions in pediatric patients.

**PEDIATRIC SECONDARY PERITONITIS; OUR EXPERIENCE OF 2018 AND 2019 FROM HERAT REGIONAL HOSPITAL, AFGHANISTAN**

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*Background:* Secondary peritonitis is one of the most common surgical emergencies which requires urgent surgical management. Despite dramatic growth in surgical diagnostic and management techniques in developed countries, diagnosis and management of peritonitis are still challenging to surgeons in developing nations. This research aims to share our experience and findings from Herat Regional Hospital, Afghanistan.

*Methods:* A retrospective study from a tertiary referral hospital of all patients below 18 years of age presenting with secondary peritonitis between January 2018 and December 2019. One hundred and ninety-nine patients underwent surgery, and all data were collected from patients' files. Data were analyzed using SPSS 24.

*Results:* 54% of patients were males, and 46% were females. 67% of patients were aged 10 or more. In 82% of patients, the presentation was delayed by more than 24 hours (higher in females 61%:39%). Presenting symptoms were most commonly abdominal pain (100%), nausea and vomiting (93%), and anorexia (63%). Approximately half of the patients (47%) required more than seven days of admission. 35% of patients had leukocyte count between 10000-15000, 30% between 15001-20000, and 17% more than 20000 (normal range 6000-11000).

The most common causes of peritonitis were appendicitis (79%), small bowel perforation (14%), and intestinal tuberculosis (2.5%).

*Conclusion:* Peritonitis secondary to appendicitis is still common in the Western region of Afghanistan. Without easy access to diagnostic modalities such as ultrasound or CT, patient symptoms, physical examination and leukocytosis remain the best indicators for the diagnosis of peritonitis in low-resource settings. Most patients present late, aged 10 years or higher, and have prolonged hospital stays due to lack of transportation, shortage of health facilities, delayed referral, and cultural issues. Further work is needed to address these issues.



**CONSENSUS-DEFINED SARCOPENIA PREDICTS ADVERSE OUTCOMES AFTER ELECTIVE ABDOMINAL SURGERY: META-ANALYSIS**

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*Background:* Sarcopenia refers to the progressive age- or pathology-associated loss of skeletal muscle. When measured radiologically as reduced muscle mass, sarcopenia has been shown to independently predict morbidity and mortality after elective abdominal surgery.

*However,* the European Working Group on Sarcopenia in Older People (EWGSOP) recently updated their sarcopenia definition, emphasizing both low muscle 'strength' and 'mass'. The aim of this systematic review and meta-analysis was to determine the prognostic impact of this updated consensus definition of sarcopenia after elective abdominal surgery.

*Methods:* MEDLINE, Embase, Scopus, and Cochrane Central Register of Controlled Trials (CENTRAL) databases were systematically searched for studies comparing prognostic outcomes between sarcopenic versus non-sarcopenic adults after elective abdominal surgery from inception to 15 June 2022. The primary outcomes were postoperative morbidity and mortality. Sensitivity analyses adjusting for confounding patient factors were also performed.

*Methodological quality assessment of studies was performed independently by two authors using the Quality in Prognosis Studies (QUIPS) tool.*

*Results:* Twenty articles with 5421 patients (1059 sarcopenic and 4362 non-sarcopenic) were included. Sarcopenic patients were at significantly greater risk of incurring postoperative complications, despite adjusted multivariate analysis (adjusted OR 1.56, 95 per cent c.i. 1.39 to 1.76). Sarcopenic patients also had significantly higher rates of in-hospital (OR 7.62, 95 per cent c.i. 2.86 to 20.34), 30-day (OR 3.84, 95 per cent c.i. 1.27 to 11.64), and 90-day (OR 3.73, 95 per cent c.i. 1.19 to 11.70) mortality. Sarcopenia was an independent risk factor for poorer overall survival in multivariate Cox regression analysis (adjusted HR 1.28, 95 per cent c.i. 1.13 to 1.44).

*Conclusion:* Consensus-defined sarcopenia provides important prognostic information after elective abdominal surgery and can be appropriately measured in the preoperative setting. Development of targeted exercise-based interventions that minimize sarcopenia may improve outcomes for patients who are undergoing elective abdominal surgery.

**TOTALLY EXTRAPERITONEAL (TEP) LAPAROSCOPIC APPROACH FOR THE REPAIR OF INGUINAL HERNIAS IN PATIENTS WITH PRIOR LOWER ABDOMINAL SURGERIES: IS IT SAFE AND FEASIBLE?**

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*Background:* The safety and efficacy of the totally extraperitoneal (TEP) laparoscopic approach for the repair of inguinal hernias in patients with a history of lower abdominal surgery is subject to debate. Concerns arise due to the risk of adhesions, bowel and/or bladder involvement, and obliteration of the extraperitoneal plane, which could complicate surgery and increase complications. An open approach is often favoured.

*Methods:* We conducted a retrospective analysis of patients who underwent TEP repair of inguinal hernias at our rural centre between 2018 and 2023 by a single surgeon. Patients with previous lower abdominal operations were selected. Outcomes measured includes conversion to open or transabdominal pre-peritoneal repair (TAPP), serious adverse events, prolonged post-operative pain, hernia recurrences and hospital length of stay.

*Results:* 37 patients were identified. 1 patient experienced bladder injury requiring prolonged catheterisation but no surgical intervention. No cases required conversion to open repair but 3 (10%) of cases were converted to TAPP. 5 (16.7%) experienced prolonged post-operative pain after 6 months and 1 patient experienced hernia recurrence. The mean operative time was 77 minutes and hospital length of stay was 0.9 days.

*Conclusion:* Our rural centre's experience suggests TEP repair of inguinal hernias in patients with prior lower abdominal surgery is a feasible, safe, and effective approach. This data adds to the evolving body of evidence supporting a minimally invasive approach for inguinal hernia regardless of previous surgery.

**HIVEC WITH MITOMYCIN C VS INTRAVESICAL BCG FOLLOWING TURBT IN SUPERFICIAL URINARY BLADDER CANCER: A PROSPECTIVE RANDOMIZED STUDY FROM NORTHERN INDIA**

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**Introduction:** Transurethral resection of bladder tumor (TURBT) is the standard treatment for non-muscle invasive bladder cancer (NMIBC). TURBT alone is associated with higher recurrence rate. To reduce this, intravesical therapy is recommended, especially *Bacillus Calmette–Guérin* (BCG). Mitomycin C has emerged as an alternative therapy. **Materials & Methods:** 200 patients (n) of histologically confirmed NMIBC-Transitional cell carcinoma (with ECOG performance status <2), admitted to a tertiary-care North-Indian hospital over a period of 2 years, were randomized in two equal groups (100) after TURBT. Group A was given hyperthermic intravesical chemotherapy (HIVEC) with mitomycin C and Group B was given intravesical BCG after 2-4 weeks of TURBT. Both the groups were followed up till 6 months and compared for side effects during therapy, and follow-up, and recurrence.

**Results:** Age, gender distribution, urine cytology, Bladder Tumor Antigen status, and grades of tumor were comparable in both the groups. Burning micturition ( $p < 0.001$ ), bladder spasm ( $p < 0.014$ ), urinary tract pain ( $p = 0.012$ ), and cystitis ( $p = 0.005$ ), as adverse effects during procedure, were seen in significantly larger number of patients in Group B, whereas burning sensation in abdomen was seen in significantly more patients in Group A ( $p = 0.003$ ). The same parameters also showed significant difference in terms of severity according to CTCAE 5.0 Scale. Incidence of hematuria, urethral structure, urgency, urticaria, dry skin, and fever as adverse effects were comparable in both the groups. On follow-up, only burning sensation in abdomen was found in significantly higher number of patients in group B, whereas rest were comparable in both groups. On 6-months follow-up, no patient showed recurrence in either group on neither urine cytology nor USG nor cystoscopy.

**Conclusions:** HIVEC with Mitomycin C has significantly lesser side-effects as compared to the standard treatment by BCG, in spite of having recurrence rate similar to BCG, which was zero in our case.

**FEASIBILITY OF INGUINAL HERNIA REPAIR IN VERY ELDERLY PATIENTS AGED 90 OR OLDER**

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*Introduction:* Elderly patients often have comorbidities, and the eligibility for inguinal hernia repair as a benign disease may be restricted. We usually perform hernia repair under local anesthesia, and the criteria for surgery have not been altered even for the very elderly patients.

*Subjects and Methods:* The subjects were 10 patients aged 90 or older who underwent surgery for groin hernia in our department from January 2013 to December 2020.

*Results:* The mean age  $\pm$  SD was  $93.2 \pm 2.0$ , with the oldest patient being 96 years old. The male:female ratio was 5:5, and the BMI was  $21.3 \pm 2.6$ . Antithrombotic therapy was performed in 4 cases, and it was continued orally during the perioperative period. Lichtenstein's method was performed under local anesthesia for 6 cases of unilateral hernia, and TEP method for 4 cases of bilateral hernia. The surgical time was  $107 \pm 19$  minutes for unilateral cases and  $135 \pm 12$  minutes for bilateral cases. Femoral hernia was observed in 3 cases. Except for one case (discharged on the 2nd postoperative day), all patients were discharged on the day after surgery. Local anesthesia was administered with 0.5% lidocaine with epinephrine in all cases, with volumes of  $22.5 \pm 5.0$  mL for unilateral cases and  $24.9 \pm 3.5$  mL for bilateral cases. Small seromas were observed in 3 cases but spontaneously resolved without intervention. No postoperative complications were observed.

*Discussion:* Our department has consistently performed surgery on very elderly patients, and although this study is a retrospective analysis of a small number of cases from a single institution, it is believed to demonstrate the safety of such procedures. Cases with a high risk of incarceration, such as femoral hernias, were frequently observed in very elderly population, and the significance of providing minimally invasive surgery may be feasible.

**ENHANCING QUALITY OF LIFE: SURGICAL MANAGEMENT OF MASSIVE SCROTAL FILARIASIS IN A 65-YEAR-OLD MALE**

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**Introduction :**

Giant scrotal lymphoedema is often a neglected condition. It is usually linked to lymphatic obstruction, presents a unique surgical challenge, particularly when associated with filariasis. This is a case involving a 65-year-old male, without comorbidities, grappling with an enormous scrotal filariasis weighing over 20 kg. The intricate nature of the condition necessitated extensive surgical intervention, including debulking, scrotoplasty, and reconstruction, all aimed at improving the patient's quality of life.

**Materials & Methods :**

The patient, a 65-year-old male with a 30 year long history of a chronic filarial infection, presented with a massive scrotal enlargement, resulting in non-palpable testes and a deeply buried penis. A one-stage surgical approach was undertaken, involving meticulous debulking surgery to preserve vital structures, scrotoplasty for scrotal anatomy restoration, and the application of a split-thickness skin graft for penile reconstruction. To mitigate the risk of surgical site infections, bilateral lower lateral incisions were strategically employed, and careful dissection techniques were applied to minimize blood loss.

**Results :**

The successful surgical intervention included the excision of a 20 kg filarial tumor, leading to the retrieval of the concealed penis and the restoration of scrotal aesthetics. Postoperative outcomes were excellent, marked by favorable wound healing and a substantial improvement in the patient's overall quality of life. This case exemplifies the effectiveness of a comprehensive, multidisciplinary approach in addressing complex scrotal filariasis cases.

**Conclusion:**

In conclusion, this rare and challenging case underscores the pivotal role of surgery in enhancing the quality of life for patients grappling with giant scrotal lymphoedema linked to filariasis. The successful debulking surgery, scrotoplasty, and penile reconstruction highlight the efficacy of a multidisciplinary approach in addressing the complexities of neglected filarial conditions.

**EVALUATION OF TESTICULAR VOLUME AND PERFUSION FOLLOWING POLYPROPYLENE MESH REPAIR OF INGUINAL HERNIA**

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**Introduction:** Mesh repair of inguinal hernia has become the standard of care in many parts of the world. This owes to the low recurrence rate associated with it. There are, however some concerns about mesh-induced fibrosis being a potential cause of infertility due to vascular or vasal obstruction. This study evaluated the effect of mesh repair of inguinal hernia on testicular volume and perfusion.

**Methods:** Fifty-four patients with primary unilateral hernia scheduled for mesh repair had Doppler assessment of their testicular volumes and resistivity index of their testicular arteries pre-operatively and at two weeks and three months post-operatively. These measurements were compared.

**Results:** At baseline, the testicular volume on the side of the hernia was significantly higher than the contralateral normal side in patients with inguinoscrotal hernia ( $13.91 \pm 4.84\text{ml}$  vs.  $11.55 \pm 3.83\text{ml}$ ,  $p=0.04$ ) but comparable in those with inguinal hernias. There was however no significant difference in the pre- and post-operative mean testicular volumes overall or in any of the hernia categories ( $12.34 \pm 3.31\text{ml}$  vs.  $12.51 \pm 3.60\text{ml}$ ,  $p=0.71$ ). Similarly, the testicular artery RI measured at the subcapsular and intratesticular levels were significantly higher on the hernia side pre-operatively. Although a downward trend was observed post-operatively, this was not significantly different from pre-operative values.

**Conclusion:** This study demonstrated preoperatively higher testicular volume and RI on the hernia side, particularly in patients with inguinoscrotal hernias. Mesh repair did not result in the worsening of these parameters, rather a downward trend towards normal values was observed after repair.

## LAPAROSCOPIC MANAGEMENT OF RECURRENT AND RE-RECURRENT GROIN HERNIA: EXPERIENCE FROM A UNIVERSITY HOSPITAL IN NORTHERN INDIA

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### Introduction

Groin hernia repair is one of the most commonly performed surgeries worldwide annually. Recurrences are likely approximately 1-5% irrespective of the technique being practised. Although posterior approaches recurrences are managed by anterior and vice versa, there are reports of endoscopic recurrences being managed by laparoscopically again. Thus, we present our experience of laparoscopic management of re recurrent and recurrent endoscopic groin hernia from our institute.

### Material and Methods

N=15 patients {n=5 (post open), n=4 (post mesh explantation for discharging sinus through trans-inguinal region following TEP), n=6 (post-TEP recurrences)} were operated on from 2019 to 2022. N=10 patients were managed by standard TAPP technique using polypropylene mesh (15\*15 cm) and N=5 by TAPE (transabdominal partially extra-peritoneal) using composite mesh. Mesh fixation with endo-tacks was done in all cases. Mesh explantation was done in 05 cases after adhesiolysis before placing the new mesh.

### Results

No intraoperative complication was reported except injury to an inferior epigastric artery in a singular case. Operative time ranged from 94-138 mins. Postoperative pain was moderate on a numerical scale. N=3 patients developed seroma, and n=2 complained of thigh numbness which was managed conservatively. No recurrences have been reported on follow-up of a minimum of 12 months with a return to normal routine work within two weeks.

### Conclusion

Re-laparoscopic management of re-recurrent and recurrent post-endoscopic groin hernia is feasible and safe. Surgical techniques in the form of size of mesh fixation, and proper preperitoneal dissection seem important factors for the incidence of recurrence besides hernia and patient characteristics.

**MYOFASCIAL SURGICAL ANATOMY OF ANTERIOR ABDOMINAL WALL INTER-RECTUS DISTANCE AND RECTUS WIDTH IN POST-BARIATRIC PATIENTS**

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*Introduction:* Pregnancy and obesity may give rise to expansion of the inter-rectus distance (IRD). Following delivery, not all pregnant ladies develop divarication recti due to the ability of the anterior abdominal wall myofascial compartment to regenerate. However, we are uncertain if the same regeneration occurs in obese patients who had lost significant body weight following bariatric surgery. Plication of the rectus muscle is not routinely performed during abdominoplasty in asymptomatic patients. The study aims to determine the IRD and rectus muscle width (RW) in obese patient post-bariatric surgery who require abdominoplasty. *Methodology:* This cross-sectional study included patients who had bariatric surgery with stable weight loss (BMI within  $\pm 2$  kg/m<sup>2</sup> of the last measured BMI). The RW and IRD were measured at 5 different levels (subxiphoid, epigastric, umbilicus, infraumbilical, suprapubic) using pre-operative contrast-enhanced abdominal CT scan. The DICOM images were analyzed using the HOROS software. *Results:* Forty-seven patients were included in this study. The mean IRD at the subxiphoid level was 2.93cm (SD 0.93), epigastric level was 3.45cm (SD1.33), umbilicus level was 3.83cm (SD 1.16), infraumbilical level was 2.68cm (SD1.04) and the suprapubic level was 1.68cm (SD 0.59). The greatest distance of the rectus muscle was found at the level of umbilicus followed by epigastric, subxiphoid, infraumbilical and suprapubic regions. The umbilicus region showed a significant widening of IRD ( $p < 0.05$ ) while the suprapubic region showed significantly less stretching of IRD ( $p < 0.05$ ). *Conclusion:* This study shows a distinct pattern of muscle separation at different levels of the abdomen emphasizing the need for region specific additional intervention. The dataset may offer valuable information to surgeons in making informed decisions to consider concurrent rectus plication during abdominoplasty in selected patients for optimal outcome.



## SENTINEL LYMPH NODE BIOPSY AFTER NEOADJUVANT CHEMOTHERAPY IN BREAST CANCER PATIENTS WITH POSITIVE NODES USING LOW-COST DUAL DYE TECHNIQUE: IDENTIFYING FACTORS ASSOCIATED WITH ADEQUATE FNR THRESHOLD

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### Introduction:

Among women with cN1-3 breast cancer receiving neoadjuvant chemotherapy (NACT) who become ycN0, SLNB is associated with high (12-20%) false negative rate (FNR). Given the FNR threshold of 10%, changes in approach and patient selection that result in greater sensitivity would be necessary to recommend SLNB in these patients. In this study, we evaluated feasibility of SLN identification (SLN-IR) of fluorescein-guided (FG) SLNB in combination with methylene blue dye (MBD) and factors which can lead to FNR threshold of 10%.

### Materials and Methods:

This was a prospective cross-sectional non-randomized validation study in patients with post NACT clinically node negative axilla who were node positive prior to start of NACT. Patients underwent validation SLNB using fluorescein (and blue LED light) and MBD. Axillary dissection was performed irrespective of SLNB histology. SLN-IR and False Negative Rate (FNR) were assessed and compared with various molecular subtypes.

### Results:

Overall 120 female breast cancer patients were included in the study. Mean age was 51.3 +/- 10.3 years. All had infiltrating duct carcinoma except one patient with duct carcinoma in situ.

The SLNs were identified in 102 (85%) patients. The median number of sentinel lymph nodes identified was 2 (range 1-3). The SLN-IR using MBD was 85%, FD was 82.5%, and combined MBD FD was 85%. All patients underwent completion axillary lymph node dissection. The median lymph nodes dissected were 9 (range 7-16). 52 of the excised SLNs were positive for malignancy (TP) and 10 patients had metastasis in ALND specimen (FN). Overall false negative rate (FNR) was 16.13%.

### Subgroup analysis:

1. Number of excised lymph nodes and FNR: In 30 patients only one SLN could be identified and excised. In remaining 72 patients 2 or more than 2 SLNs

2. Molecular profile and FNR: Luminal A+B patients had a FNR of 26.7% if only one SLN was excised and FNR improved to 11% if two or more than two SLNs could be excised. For Her 2 neu enriched tumor type, FNR was 20% in case only one SLN was found and it was 7.7% if two or more than two SLNs were excised. For the TNBC group, FNR was 25% in single SLN excision group and 0% in two or more than two SLN excision group.

**DETERMINING THE OPTIMAL KI-67 CUTOFF POINT IN MALAYSIAN PATIENTS WITH BREAST CANCER**

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*Introduction:* Ki-67 is a prognostic biomarker for breast cancer. The optimal cutoff to differentiate low Ki-67 from high Ki-67 in clinical decision making is unclear. We investigated the optimal cutoff value for dichotomising Ki-67.

*Methods:* Data from a hospital-based breast cancer registry in Malaysia was used, where women newly-diagnosed with stage I to stage III breast cancer between 2014 and 2016 were included. Patients were divided into low Ki-67 vs. high Ki-67 groups using different Ki-67 cut-off values (10%, 15%, 20%, 25%, 30%). All-cause mortality between the groups were compared using Cox regression, including age, tumor size, number of positive lymph nodes, estrogen receptor expression and human epidermal growth factor receptor 2 expression. Univariable ROC curve analysis and Youden's Index were used to determine the optimal cutoff value in predicting mortality within five years.

*Results:* We included 912 patients. Median age was 51 years, and a vast majority of patients were Chinese (87.5%). Patients most commonly presented with stage I disease (39.7%), followed by stage II disease (36.1%). Over a median follow-up of 86 months, 88 deaths were observed. The median Ki-67 was 10%. Patients with higher Ki-67 had worse survival; hazard ratios ranged from 1.69 (95% CI: 1.01 – 2.82) at a cutoff of 10%, to 1.96 (95% CI: 1.16 – 3.29) at cutoff of 30%. ROC curve analysis, Youden's Index indicated that a Ki-67 value of 16.5% was optimum. The corresponding hazard ratio was 1.72 (95% CI: 1.06 – 2.78).

*Conclusion:* In this cohort of multiethnic Asian patients, Ki67 appeared to be an independent prognostic factor of poorer survival. The cutoff point derived from the present analysis (16.5%) supports the use of 15% as the optimal cut-off value for Ki67 in Asian populations.

## IMPLEMENTATION OF A SURGICAL SITE INFECTION (SSI) PREVENTION BUNDLE IN REDUCING THE INCIDENCE OF POST-MASTECTOMY SSI AMONG BREAST CANCER PATIENTS IN MALAYSIA

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**Introduction:** Surgical site infections (SSI) pose a significant challenge in healthcare, with post-mastectomy incidence ranging from 1 to 30%, surpassing the expected 2% for clean surgeries. This study evaluates the efficacy of an SSI prevention bundle, assesses associated costs, and identifies risk factors in breast cancer patients undergoing mastectomy at an academic medical center.

**Method:** A prospective cohort study at the University Malaya Medical Centre (UMMC) between July 2017 and September 2018 employed a quality implementation framework for the SSI prevention bundle. Baseline retrospective SSI rates (July 2015–June 2016) and post-implementation rates (July 2017–September 2018) were collected. The bundle, derived from WHO guidelines, encompassed preoperative, intraoperative, and postoperative evidence-based measures.

**Results:** The SSI rate dropped by 70% after implementing the SSI prevention bundle. Only 6.9% (11/159 cases) developed SSI after the implementation of the SSI prevention bundle, compared to 23.1% (27/117 cases) before the SSI prevention bundle was implemented. The mean cost per patient treated for SSI in the outpatient clinic setting was RM904 + 991 ( $n = 29$ ), while for those treated within the inpatient setting, with or without outpatient clinic follow-up at the study institution after discharge, the mean cost per patient was RM13,059 + 5,475 ( $n = 9$ ). Multivariate logistic regression analysis revealed that patients undergoing surgery before the implementation of the SSI prevention bundle (OR: 5.28, 95% CI: 1.76–15.82,  $p$  value = 0.003) and obesity (OR: 6.34, 95% CI: 1.44–30.00,  $p$  value = 0.02) were significant risk factors for SSI.

**Conclusion:** The SSI prevention bundle significantly reduced SSI incidence in mastectomy patients, offering not only enhanced patient outcomes but also cost-saving benefits. Continuous monitoring within departmental quality key performance indicators and hospital infection control programmes will ensure sustained outcomes in the prevention of SSI.

**LESS IS MORE: OPTIMIZING BREAST CONSERVATION STRATEGIES FOR IPSILATERAL BREAST TUMOR RECURRENCE**

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**Introduction:**

*Ipsilateral breast tumor recurrence (IBTR) poses a significant challenge, affecting 8–20% of women a decade after undergoing breast-conserving surgery (BCS) with a substantial proportion being amenable to surgery. Despite salvage mastectomy (SM) being the standard for IBTR, patients express a preference for repeat lumpectomy. Importantly, opting for mastectomy does not guarantee the eradication of subsequent risks, encompassing both local relapse and metastasis. This study seeks to comprehensively review existing literature, evaluating the prognostic impact of BCS and SM for IBTR while assessing the feasibility of favoring BCS over SM.*

**Materials & Methods:**

*Conforming to PRISMA guidelines, a systematic review encompassing MEDLINE, Embase and Scopus employing targeted search strategies was conducted. Primary outcome was Overall Survival (OS) following repeat BCS and SM for IBTR, with secondary outcomes; locoregional recurrence, distant metastasis, Distant Disease-Free Survival (DDFS) and Breast Cancer-Specific Survival (BCSS).*

**Results:**

*2433 patients across nine studies (1970–2019), including three propensity score-matched analyses were analyzed. Rates of repeat BCS varied from 20.5% to 73.1%. No significant disparities in primary tumor characteristics emerged between two groups. The median post-surgery follow-up was 71 months. Seven studies revealed no significant differences in OS between repeat BCS and SM, one study suggested superior DDFS, OS and BCSS with repeat BCS, while another reported inferior OS in the BCS group. Locoregional recurrence averaged 17.28% in BCS versus 9.9% in SM, and distant metastases occurred among 12.84% in BCS compared to 29.42% in SM.*

**Conclusions:**

*BCS stands as a feasible alternative for IBTR patients. Mastectomy, while effective in reducing the risk of locoregional relapse, does not entirely eliminate subsequent metastatic potential. Nevertheless, ongoing research is imperative to elucidate optimal criteria guiding the selection of candidates for subsequent BCS interventions.*

**DEVELOPMENT OF A DEEP-LEARNING SYSTEM FOR CLINICAL DIAGNOSIS OF BI-RADS4A AND HIGHER CLASSIFICATIONS IN BREAST ULTRASOUND IMAGIN**

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*The widespread implementation of the Breast Imaging Reporting and Data System (BI-RADS) for ultrasound categorization faces challenges due to notable inter-observer variability. Addressing this, our team has pioneered an artificial intelligence (AI) system adept at discerning BI-RADS3 or lower from BI-RADS4a or higher in static breast ultrasound images. This distinction is crucial for determining appropriate medical interventions for patients with ultrasound-detected breast abnormalities. Our AI model's development and validation involved training on 4028 images with 5014 lesions and testing on 3166 images encompassing 3656 lesions, all meticulously annotated. We refined the AI's internal parameters to optimize the balance between sensitivity and specificity, ultimately achieving an area under the curve (AUC) of 0.95%, with 91.2% sensitivity and 90.7% specificity. In a comparative analysis using 30 images from the test set, the AI's diagnostic accuracy was evaluated against that of 20 medical professionals. The AI demonstrated significant superiority (McNemar test,  $p < 0.001$ ). While numerous studies have explored deep-learning for differentiating benign and malignant tumors in breast ultrasound, ours is the first to successfully create an AI system for classifying BI-RADS categories, with significant implications for clinical decision-making. These findings indicate our AI system's readiness for further clinical application trials.*

## IMPLEMENTATION AND INITIAL RESULTS OF PATIENT RELATED OUTCOME IN THE SWEDISH NATIONAL QUALITY REGISTRY FOR BREAST CANCER

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*Background:* The Swedish National Quality Registry for Breast Cancer, in function since 2008 assembles patient related outcome data (PRO) since 2020. Validated PRO and HRQoL instruments associated to the type of surgery are linked to registry data. Patients receive baseline forms at diagnosis and at 6, 12 and 36 months.

*Material and methods:* Swedish data were collected for OECD international benchmarking. Pre- and posttreatment data were collected electronically and in aggregated form. Totally 1072 patients (15%) were ever smokers, 1072 (15%), 893 (12%) had a BMI>30, 5185 (70%) received postoperative radiotherapy. Of 12657 patients, 1485 (24%) responded to baseline and 7452 (59%) responded to 12-month PROs. Response rates varied by type of surgery (breast conserving surgery 62%, mastectomy 50%, immediate reconstruction 55%). Answers were presented in descriptive statistics and transformed to a 1-100 scale (100 = highest degree of satisfaction/wellbeing).

*Results:* Postoperative satisfaction with the breast was higher after breast conservation than after mastectomy and immediate reconstruction, postoperative body image was impaired regardless of surgical procedure, but somewhat worse after mastectomy + - immediate reconstruction. Social function and global health were perceived worse in women with mastectomy only. Younger women (<50) versus women >50 had a worse postoperative satisfaction with the breast, worse emotional and social function, worse global health, and substantially higher degree of impaired body image.

*Conclusion:* Implementation of National PRO has been slower than expected as shown in low baseline compliance. However, at 12 months response rates were much increased. Type of surgery affects satisfaction, body image, social function, and global health but not emotional function. Younger women scored lower in all measured items. Its use in real time for clinical practice is warranted.

**PROFOUND THERAPEUTIC HYPOTHERMIA FOR RESUSCITATION OF COMBAT CASUALTIES WITH TRAUMATIC CARDIAC ARREST: AN EXPERIMENTAL STUDY ON SWINE AND MONKEYS**

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*Introduction.* Resuscitation of patients with severe exsanguinating trauma and traumatic cardiac arrest (TCA) is rarely successful. A concept of emergency preservation and resuscitation (EPR) was developed to prevent vital organs from damage and buy time for surgical hemostasis. We evaluated efficiency of our modified endovascular EPR technique in experiments utilizing non-human primates.

*Materials and methods.* Five male *Papio hamadryas* weighing 19.6–27.0 kg were enrolled into the study. Right axillary vessels were exposed for ECMO cannulation. Femoral vessels were cannulated for aortic and inferior vena cava balloon placement. 50% of circulated blood volume was withdrawn to achieve TCA. In a minute of total arrest, closed CPR was initiated for 3 minutes followed by aortic and venous balloon occlusion and rapid brain and heart intravascular cooling (2°C saline infusion). After brain cooling to 10°C, the balloons were deflated and the whole body was cooled to 10°C. ECMO was stopped for 60 minutes. To simulate damage control scenario, laparotomy and splenectomy was performed followed by temporary abdominal wall closure. Animals were then slowly rewarmed to 35°C. This study was funded by a grant of RSFN№23-25-00310.

*Results.* In all experiments, both brain and body were successfully cooled that took 30 and 45 minutes, respectively. In 4/5 animals, return of spontaneous circulation happened during rewarming. At the temperature of 26-30°C in 3/5 animals severe coagulopathy and bleeding from access cutdowns developed that necessitated hemostatic intervention. One animal was decannulated and extubated 16h after initiation of experiment, but died on day 3rd due to brain swelling. Four of five animals died after 14,5-18,5h of rewarming due to coagulopathy, multiorgan failure and brain swelling.

*Conclusion.* EPR allows temporary vital organ protection during TCA, but requires appropriate resuscitative care, close vital signs monitoring and intervention to improve final outcome. Coagulopathy during rewarming represents the most significant challenge.

## ARTIFICIAL INTELLIGENCE IN TRAUMA CARE - HYPE OR HOPE ? IMPLICATIONS FOR ARMED FORCES IN LMIC

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*Introduction :* With the increasing use of Artificial intelligence (AI) in many fields across the globe , attempts are being made to explore its role in healthcare. Various Studies and research papers have highlighted the importance and the potential of AI to improve health outcomes. The applicability of AI in operating rooms & emergency settings & its role in improving clinical practice by a good quality, reliable , consistent decision making has been seen in various aspects of clinical practice.

*Materials & methods* A review of various articles & trials published between 2019 - 2023 was done to analyse the shift in the technology and the reliability in the performance of AI in the various claimed fields of support to assess the long term impact of AI on clinical practice esp from armed forces perspective .

*Results :* A total of 26 papers were analysed which highlighted the various applications of AI in clinical practice. The technology has shown a shift from Machine learning to deep learning subtypes which has already shown good results in initial trials in the fields of Radiology and Burn care. In terms of training of surgeons, AI is showing good promise in terms of enhanced multi modular training of the trainees thereby reducing the time required.

*Conclusion :* From the armed forces perspective , The technology holds good promise especially considering its ability to support the clinical decision making process which would be of immense support to clinicians working in manpower austere environment.



**TEMPORARY EXTRACORPOREAL SHUNTING – A NEW ALTERNATIVE TECHNIQUE FOR MAINTAINING LIMB VIABILITY IN CASE OF ARTERIAL INJURY (AN EXPERIMENTAL STUDY)**

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*Introduction.* In limb-threatened limb ischemia, "non-operative" methods of extracorporeal perfusion of the limb, such as passive arterio-arterial shunting (PassS) and active veno-arterial shunting using extracorporeal membrane oxygenation technology (ActS), potentially can reduce the number of complications and poor outcomes for such patients. The aim of the study is to investigate the effectiveness of modern methods of temporary extracorporeal restoration of limb perfusion in an animal experiment.

*Materials and methods.* Twenty two sheep weighing 36.6 (34.0–44.0) kg were enrolled into the study. Acute arterial obstruction was modeled by endovascular balloon occlusion of the distal aorta for 30 minutes. After that, the animals were randomized into 3 groups: the control group (CG, n=7), the PassS group (n=8), and the ActS group (n=7). During the following 6-h the CG animals were monitored without intervention; PassS group animals underwent extracorporeal carotid-femoral shunting via a connecting line; ActS group animals underwent an extracorporeal shunting from the inferior vena cava via a centrifuge pump and an oxygenator to the femoral artery (flow rate 0.5–0.7 l/min). All animals were administered identical anticoagulant therapy. The total experimental time was 24 hours.

*Results.* Passive shunting led to a significant increase of blood flow to 15.5 (8.2–19.5) cm/s ( $p=0.036$  compared to CG), and active shunting led to an increase to 26.5 (12.5–62.5) cm/s ( $p=0.014$  compared to CG). During ActS, the values of tissue oximetry increased significantly (above 40%), and non-significantly – in the PassS group (at the level of 40%). Survival rate was lower in the ActS group (due to venous "stealing" from systemic circulation): 29%, compared to 57% in the CG group (57%), and 88% in the PassS group ( $p=0.041$ ).

*Conclusion.* Extracorporeal limb perfusion, both passive and active, is an effective tool in temporary restoration of blood flow into the injured limb.

**SURGICAL NEEDS FROM ASYMMETRIC WARFARE: RESULTS FROM A FRONTLINE HOSPITAL, IRAQ 2017**

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**Introduction**

The 2016-17 Mosul Offensive against Islamic State of Iraq and Syria (ISIS) saw extensive use of asymmetric warfare tactics. The surgical requirements generated by conflict-related injuries from this type of warfare are not well documented. This study aimed to compare how surgical and anaesthetic needs in a frontline field hospital varied with mechanism of injury.

**Materials and methods**

During the offensive, a field hospital was set up close to the frontline. This retrospective study used routinely collected data on all surgeries performed between February and July 2017. Data analysis was carried out using SPSS 26. Categorical variables were compared using the Chi-square test.

**Results**

A total of 667 surgical sessions were included. Males constituted 68.8% and the mean age was 24 years. In-hospital mortality was 1%. Most surgical sessions (62.2%) were due to explosives-related trauma (ERT), and this mechanism accounted for >50% of all surgeries across all age groups under 54 years. Comparing gunshot-related trauma (GRT) and ERT the former generated greater needs for visceral (36.5% vs 20.5%,  $p<0.05$ ), and specialized surgery (10.4% vs 3.9%,  $p<0.05$ ) than the latter. Minor surgery was more common in ERT than GRT (7.8% vs 22.4%,  $p<0.05$ ). A greater proportion of surgeries due to GRT required a theatre time >60mins compared to ERT (45.2% vs 26.3%,  $p<0.05$ ). The proportion of surgeries requiring general anaesthesia was also higher in GRT than ERT (52.2% vs 32.8%,  $p<0.05$ ).

**Conclusions**

ERT produced most of the surgical requirements while GRT appeared to create more resource-intense surgical needs. The low in-hospital mortality indicates that critically injured, but potentially salvageable patients may not reach hospital within the surgical "golden hour".

**COMBAT SURGICAL CARE IN EXTREME COLD CLIMATE - LESSONS FROM RECENT PAST**

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*Introduction : Providing medical care in harsh environments is an arduous task owing the care givers being at an equal risk from the climatic conditions . This job gets even harder when surgical care also has to be provided in the backdrop of combat environment*

*Materials & Methods : This study was a progressive analysis of the experience of a surgical team deployed at an extreme high altitude in the winter months. An analysis of the surgical & medical cases managed was done and the factors affecting the quality of care being provided were analysed .*

*Results : A total 589 patients were attended to by the team over 50 days of deployments. A mix of surgical and medical patients was noticed . 4 patients required emergency evacuation via air/ land owing to hemodynamic instability . Temperature maintenance in OT & wards owing to the harsh climatic conditions was the biggest challenge. With limited power back up , the team conducted 10 major surgeries including reimplantation of an amputated finger.*

*Conclusions : Providing surgical care at high altitudes comes with its own set of challenges but with improving technology and availability of light weight warming systems and other newer equipments , these challenges can be mitigated to some extent .*

**ECMO AND EXTRACORPOREAL PERFUSION TECHNIQUES IN COMBAT TRAUMA**

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*Introduction.* Extracorporeal membrane oxygenation (ECMO) is a life-saving technique that has potential for treatment of combat casualties. The aim of the study is to analyse retrospectively clinical experience of utilization of ECMO techniques in combat environments.

*Materials and methods.* During a 3-month period of deployment, ECMO was utilized 9 times: 5 times – for extracorporeal cardio-pulmonary resuscitation (ECPR) to treat patients with traumatic cardiac arrest (TCA), 4 times – ECMO of injured limbs (1 – for an upper extremity, 3 – for lower extremities). ECMO circuit included the Ex-Stream portable perfusion machine (Transbiotech, Russia), an oxygenator, lines and cannulas. For ECPR, femoral vein and artery were cannulated, and the REBOA catheter was inserted for zone 1 occlusion to initiate selective aortic arch perfusion (SAAP). For limb perfusion, different circuits were prepared: 1) from a femoral vein to a brachial artery, 2) from a femoral vein into a posterior tibial artery, 3) from a femoral vein into a femoral artery, 4) from a femoral artery into a posterior tibial artery. 15-17 Fr venous and 8-10 Fr arterial cannulas were utilized.

*Results.* Four out of 5 patients with TCA, a return of spontaneous circulation was achieved. One casualty survived for 5 hours, but then died. One out of 3 casualties with multiple injuries and who underwent SAAP, survived and was discharged and returned to active duty. The second survived for 4 hours and then died. The third was temporarily stabilized by means of ECMO, transported 2 hours into a next echelon of care, where he died. Among casualties with their limbs perfused, all survived, and no amputation was performed.

*Conclusion.* Extracorporeal perfusion techniques are effective in both life- and limb-savings in combat environments.

## URETHRAL SCAR TISSUE AND COMPROMISED INTEGRITY: A CASE REPORT OF URINARY CONSEQUENCES FOLLOWING GUNSHOT WOUND TO THE PELVIC AREA

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### *Introduction & Objectives:*

*Pelvic gunshot wounds can lead to severe injuries, impacting various systems, including the urinary system. This case report aims to present the medical condition of a 48-year-old male with a pelvic gunshot wound, emphasizing the importance of monitoring and addressing urinary complications. We describe initial surgical interventions, imaging findings, and the disease's subsequent course.*

### *Materials & Methods:*

*A retrospective analysis of a 48-year-old male with a pelvic gunshot wound was conducted. Medical records, imaging reports, and surgical notes were reviewed. Imaging modalities included spleen examination, CT scan, and transperineal examination, documenting radiological findings related to the urinary system, pelvic bones, and surrounding tissues.*

### *Results:*

*The patient underwent initial surgery involving urethral repair, urinary bladder revision, and left retroperitoneal drainage. Subsequent surgery focused on left hip and pelvic bone osteosynthesis. Ultrasound revealed spleen parenchyma moderate echogenicity, normal-sized kidneys with slightly increased cortex echogenicity, and preserved vascular architecture. The urinary bladder exhibited increased thickness with an irregular contour, and the prostate gland displayed moderate echogenicity with fibrotic changes. Transperineal examination revealed scar tissue around the membranous urethra without evidence of disruption.*

*CT examination uncovered gas, metallic fragments, and bone fragments in presacral adipose tissue and muscles. Bullet fragments were present in the right paracolic gutter adipose tissue. Complex pelvic fractures, a gunshot fracture of the left femoral neck with femoral shaft displacement, and femoral head positioning within the acetabular cavity were identified.*

### *Conclusions:*

*This case report underscores the need for vigilance regarding urinary consequences in pelvic gunshot injuries. Observed scar tissue and changes in the bladder and prostate highlight potential compromised urinary integrity. Comprehensive monitoring and tailored treatment strategies are crucial for addressing complex injuries effectively. A multidisciplinary approach ensures optimal patient care and outcomes in challenging scenarios.*

## ESTABLISHING A GLOBAL SURGERY TRAINING PROGRAM IN AN ACADEMIC SURGICAL RESIDENCY: CHALLENGES AND OPPORTUNITIES

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### Introduction

*Despite a growing interest in global surgery among trainees, meaningful opportunities are lacking in surgical residencies across the United States. Some institutions offer international electives or research year experiences. We developed and implemented a longitudinal global surgery program in an academic residency.*

### Methods

*Over the 2022-23 academic year, monthly global surgery sessions were integrated into the US didactic research and education curriculum, including guest lectures, skills labs, and journal clubs, while building a relationship with a surgery department in Moshi, Tanzania. All didactics were hybrid. Zoom links were shared with our Moshi partners. Bi-directional clinical rotations are offered for senior trainees. Anonymized pre- and post-surveys assessing perspectives and knowledge were conducted among US trainees.*

### Results:

*There was 50% (pre) and 34% (post) survey response rate. Twenty-five U.S residents completed the pre-survey and 17 completed the post-survey, majority female, median age 29 (IQR 28-30.25). Median Global Surgery Knowledge was 2 (pre: IQR 2-3, post: IQR 1-3,  $p=0.705$ ). Median Global Surgery Interest was 4 (pre: IQR 3-5, post: IQR 1.5-5,  $p=0.988$ ). Median Global Surgery Importance was 3 (IQR 2-4) pre-curriculum and 2 (IQR 1-3) post-curriculum ( $p=0.546$ ). No significant difference in global surgery career interest (pre: 45.83%, post: 50%) ( $p=0.796$ ). In annual internal residency evaluations, concerns were expressed about the volume and mandatory nature of the curriculum among US trainees. Moshi trainees inconsistently joined the Zoom sessions due to time differences, network availability, and scheduling conflicts. The program was restructured into a focused track for trainees with specific interests in global surgery beginning in summer 2023.*

### Conclusion:

*The longitudinal integrated global surgery program had less than expected resident engagement and impact. It was then redesigned as a longitudinal dedicated track as an opportunity for highly engaged residents. This shift highlights the need for targeted, interest-based training in global surgery within surgical residency.*

**PRIORITIZATION OF SURGICAL, OBSTETRIC, TRAUMA, AND ANAESTHESIA (SOTA) CARE IN NATIONAL HEALTH STRATEGIC PLANS IN SOUTH AND SOUTHEAST ASIA**

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*Introduction:* The Lancet Commission on Global Surgery (LCoGS) estimated that over 98% South Asians lacked surgical care access. Lack of prioritization of surgery, obstetrics, trauma, and anesthesia (SOTA) care in health policy and planning could be potentially responsible for this. We aimed to assess attention to SOTA care in National Health Strategic Plans (NHSPs) that are considered the apex health policy documents.

*Materials & Methods:* A descriptive document analysis was conducted to quantify prioritization in NHSPs of: Afghanistan, Bhutan, Democratic People's Republic of Korea (DPK), India, Indonesia, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand and Timor Leste. Bangladesh could not be included due to lack of English translated documents. Twelve NHSPs were electronically searched for a predetermined set of 52 SOTA and 7 non-SOTA (control) keywords. The number of mentions per keyword (MPK) in these two groups were used as a normalized metric to estimate prioritization. SOTA care mentions were further divided across five LCoGS domains: infrastructure, workforce, service delivery, financing, and information management.

*Results:* Across 12 NHSPs, SOTA care had 54.09 mentions per keyword compared to 202.86 for non-SOTA care group. Democratic People's Republic of Korea had the highest MPK of 8.6 while Timor Leste had the lowest value (1). Eight (India, Pakistan, Maldives, Sri Lanka, Nepal, Democratic People's Republic of Korea, Indonesia, and Timor Leste) NHSPs (66.66%) analyzed showed lesser SOTA care prioritization. Four (33.33%) NHSPs had no mentions related to SOTA care financing.

*Conclusion:* SOTA care prioritization across existing national health plans in South and Southeast Asian countries is limited. This necessitates the initiation and implementation of national SOTA care plans. Special emphasis needs to be given to adequate financing towards building robust surgical systems.

**AUTOLOGOUS PLATELET RICH FIBRIN : A WORTHY COMPANION IN CHRONIC WOUND MANAGEMENT IN LOW RESOURCE SETTINGS**

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*"Introduction: Chronic wounds and non healing ulcers are a challenge posing a burden on medical resources and loss of man hours cost. Concentrated platelets and fibrin adhesives have shown promising results in microvascular surgical procedures. The present study aims to understand the role of PRF as an adjunct in management of Chronic nonhealing wounds.*

*Methods: 45 patients with 50 non healing ulcers i.e. an ulcer which has not improved in last 4 weeks, either neuropathic and post burn ulcers were covered with PRF dressings every 5thday. Changes were analysed in terms of formation of healthy granulation tissue and reduction in maximum diameter. Ulcers less than 5 cm were treated with only PRF whereas those larger were covered with skin grafts eventually*

*Results: Mean age of the patients was 43.4 years with 28 male patients. All ulcers less than 5cm size healed with mean of 3 PRF dressings. Larger ulcers underwent mean of 4 PRF dressings till the formation of healthy granulation tissue and a mean reduction in maximum diameter by 2.3 cm was noted following which they underwent SSG. One ulcer failed to improve. There was no secondary infection and patient scores of pain became better.*

*Conclusion: Autologous PRF matrix has emerged as a new therapeutic modality. This technique of healing, by modified secondary intention, is inexpensive, associated with good patient acceptability, forming an important part of surgeons armamentarium in complex wounds management especially in low resource settings as it obviates the need for extensive surgical procedures*



**PREOPERATIVE SHORT-COURSE RADIATION THERAPY VERSUS LONG-COURSE CHEMORADIATION IN 350 RECTAL CANCER PATIENTS: AUDIT OF EXPERIENCE FROM AN INDIAN TERTIARY CARE CANCER CENTER**

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**Introduction:**

Multimodality therapy is the standard of care for locally advanced rectal cancer. Although various types of neoadjuvant treatments are used for tumor regression, sphincter preservation and to improve survival, the best form of neoadjuvant approach is debatable. We evaluated and compared the outcomes of preoperative short-course radiation therapy (SCRT) and long-course chemoradiation therapy (LCCRT) in the management of locally advanced rectal cancer.

**Methods:**

A retrospective analysis of prospectively maintained rectal cancer database was performed on patients with locally advanced (Stage II-III) rectal adenocarcinoma and undergoing either preoperative SCRT (25Gy/5 fractions) or LCCRT (45Gy/25 fractions with concurrent 5-fluorouracil/capecitabine based chemotherapy). Between 1994 and 2019, a total of 195 patients received preoperative SCRT and 155 patients received LCCRT. A comparative analysis of demographic data, clinical profile, treatment details, and outcomes was performed between two groups.

**Results:**

The mean age was 46 years in the SCRT arm and 42 years in the LCCRT arm. 67.7% and 60.6% patients were males in SCRT and LCCRT arms, respectively. The lower rectum was involved in 111 (56.9%) patients in SCRT arm and 109 (70.3%) patients in LCCRT arm. The curative surgery rates were 79.5% and 65.8% in the SCRT and LCCRT arms, respectively. Overall sphincter salvage rate was 18.6% in the SCRT arm and 20.9% in the LCCRT arm. The pathological complete response rate in SCRT and LCCRT arms were 3.6% and 8.4%, respectively. Relapse occurred in 18.5% of SCRT and 16.8% of LCCRT patients. Overall 5-year survival rates were 84.2% and 92.03% ( $p=0.46$ ), respectively in SCRT and LCCRT arms.

**Conclusion:**

Our study showed a higher curative surgery rate and comparable sphincter salvage and relapse rates with SCRT. Overall survival was better among curatively treated patients with LCCRT. The major advantage of SCRT is shorter duration of therapy which is beneficial in low-resource settings.

**INDEXING HEALTHCARE ACCESS AND QUALITY FOR SURGICALLY-TREATABLE CONDITIONS ACROSS 204 COUNTRIES AND TERRITORIES FROM 1990 TO 2019**

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*Introduction:* Building on past frameworks, our aim was to systematically analyze the healthcare access and quality (HAQ) index for surgically treatable conditions, its progress over time, and the gap compared to non-surgical HAQ across 204 countries and territories from 1990 to 2019.

*Materials & Methods:* Data was obtained from the Global Burden of Disease 2019 study. Of the 32 conditions with preventable mortality included in the HAQ index, 14 were considered surgically treatable following an existing framework. We used mortality-to-incidence ratios and risk-standardized death rates. An easily interpretable, computable, and partially compensatory composite index ranging from 0 (worst) to 100 (best) was constructed using the adjusted Mazziotta Pareto index methodology. The indicators were scaled by min-max scaling, aggregated using arithmetic mean, and the aggregate was penalized for imbalance using a variance term. Similarly, a non-surgical HAQ index was calculated including the 18 remaining conditions. To track progress over time, relative change was calculated as the ratio of surgical HAQ in 2019 to that in 1990. Further, the relative gap in 2019 was calculated as the ratio surgical to non-surgical HAQ ratios. Ratio values >1 depicted improvement over time or better performing surgical systems.

*Results:* In 2019, surgical HAQ varied from 18.00 for the Central African Republic to 98.25 for Canada. The surgical HAQ showed the greatest relative change for Ethiopia (2019:1990 ratio=3.88), while Zimbabwe saw a slight worsening (ratio=0.92). In 2019, Mauritius had the largest surgical-to-non-surgical HAQ ratio of 1.16, while the surgical HAQ lagged behind its non-surgical HAQ for the Central African Republic (ratio=0.44). *Conclusion:* The presented index and comprehensive global analysis is valuable for global assessments, policymaking, and advocacy for investing in surgical systems.

**ESTIMATING SURGICAL, ANESTHESIA, AND OBSTETRIC WORKFORCE DENSITY ACROSS 194 COUNTRIES AND TERRITORIES FOR 2019**

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*Introduction:* Given the paucity of collected data, we devised and validated a simple approach to project surgical, anesthesia, and obstetric (SAO) specialist densities for 194 countries and territories to 2019.

*Methods:* The Lancet Commission on Global Surgery (LCoGS) provided country-wise data for S, A, O, and overall SAO per 100,000 people (194 countries; 1999-2014) while the World Federation of Society of Anesthesiologists (WFSA) Survey (153 countries; 2015-16) provided data on anesthetists. Mean and 95% uncertainty interval estimates for physician density (per 10,000 people) obtained from the Institute for Health Metrics and Evaluation (204 countries; 1990-2019) were adjusted to have the same denominator. Year-specific ratios of specialist to physician densities (S/P, A/P, O/P, and SAO/P) were calculated from LCoGS and WFSA datasets. We estimated country-wise 2019 SAO specialist densities by multiplying the ratios with the mean and 95%UI values of the 2019 physician density estimates. Non-parametric Spearman rank correlations were used for validation against the 2019 data collected by Bouchard and colleagues for 21 countries.

*Results:* Among LCoGS-based projections, the 2019 SAO density varied from 0.21 (95%UI: 0.15, 0.29) in Democratic Republic of the Congo to 216.22 (150.03, 314.41) in Niue while the surgeon density varied from 0.11(0.07, 0.15) in Democratic Republic of the Congo to 108.23 (78.33, 146.90) in Monaco. In validation, statistically significant strong correlations ( $\rho$ :0.90-0.97,  $p<0.001$ ) were observed for surgeon, OBGYN, anesthetist, and SAO densities across different datasets.

*Conclusion:* The proposed projection approach for SAO workforce density is simple and valid. Projected values can be used by global health researchers and policymakers for national surgical planning and health workforce scale up policies. Future studies should test our approach for subnational workforce data.

## AN EPIDEMIOLOGICAL STUDY OF LOWER LIMB LYMPHATIC FILARIASIS IN NORTHERN INDIAN POPULATION

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*An epidemiological study of lower limb lymphatic filariasis in northern Indian population*

### **Abstract**

**Introduction:** Lymphatic filariasis was a neglected tropical disease that could cause permanent disability through disruption of the lymphatic system. Filarial infection is most common secondary cause of lower limb lymphoedema.

**Methods:** This cross-sectional study was conducted on 154 patients. Patients of age 15-75 years, lower limb lymphatic filariasis with Grade I, II, III lymphoedema and a clinical diagnosis of lymphatic filariasis were included in the study.

Particulars of patient like age, sex, residential address, economic status, occupation and nature of work were noted.

History of lower limb infection, diabetes, trauma, previous radiation therapy, metastatic disease, any previous lower limb surgery was noted to rule out any secondary cause of lymphoedema other than lymphatic filariasis.

**Results:** About one fourth of patients were between 41-50 years (23.4%). More than half of patients were males (63.6%) and belonged to rural area (63.6%). Left lower limb swelling (clinical diagnosis) was among more than half of patients (55.2%). More than one third of patients had grade II disease (39.6%). History of fever with chills was most common presentation (69.5%). The duration of disease was  $\geq 10$  years among 88.7% of rural patients. There was significant ( $p < 0.01$ ) association of various socio demographic characteristics of the patients with disease duration. There was significant ( $p < 0.05$ ) association of grade, limb volume, history of previous surgery and history of diabetes with duration of diabetes.

**Conclusion:** Increased awareness about the disease and basic limb care practices and proper medications was required and should be instituted at the early stage of the disease to prevent the progression of the disease.

**Key words:** Epidemiology, Lymphatic filariasis (LF), Lymphoedema.

### OUTCOMES AFTER HYBRID ILIO-FEMORAL REVASCULARIZATION FOR CHRONIC LOWER LIMB ISCHEMIA: A TEN-YEAR PROSPECTIVE STUDY

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*Introduction:* Reports of large series of hybrid ilio-femoral revascularization for chronic lower limb ischemia are scarce. The aims of this study were to evaluate outcomes for staged and non-staged procedures, and to evaluate risk factors for outcomes at 90 days.

*Materials and methods:* Patients were consecutively included between 2013 and 2023. Surgical site infection (SSI) was defined by the ASEPSIS criteria and major adverse limb events (MALE) as onset of acute, or continuing or worsening chronic limb ischemia, or major amputation. Factors associated with outcomes were tested in a multivariable logistic regression analysis, and expressed in Odds ratios (OR) with 95% confidence intervals (CI).

*Results:* Patients undergoing non-staged procedures (n=124) had higher TASC class (anatomic occlusive complexity), more often through-and-through femoral guidewire access, more endoprosthesis, more covered stents, longer procedure time with open groin wounds, and less contralateral femoral access, than those undergoing staged procedures (n=31).

The median time interval between the staged procedures was one day, and iliac stenting was done first in 77%. The median in-hospital stay was non-significantly longer in staged procedure (8 versus 6 days, p=0.053). The overall SSI and MALE rates were 25.8% and 20.0%, respectively, no differences between groups. Diabetes mellitus (OR 3.7, 95% CI 1.2 – 7.2]) and presence of a foot ulcer (OR 3.7, 95% CI [1.5 – 9.4]) were independently associated with MALE at 90 days. Postoperative hyperglycemia was non-significantly associated with SSI (OR 2.1 [95% CI 1.0 – 4.5], p=0.066) at multivariable analysis.

*Conclusion:* The risk of SSI and MALE after elective hybrid iliaco-femoral revascularization were high. There appears to be no benefit in performing staged as opposed to non-staged procedures. The extent of iliaco-femoral occlusive disease according to the TASC classification had little influence on outcomes whereas diabetes mellitus and presence of a foot ulcer had greater impact on MALE.

**USEFUL CLINICAL AND LABORATORY DATA IN ACUTE SUPERIOR MESENTERIC ARTERY OCCLUSION: A PROSPECTIVE INTERNATIONAL MULTICENTER STUDY (INSIGHTS FROM THE AMESI STUDY)**

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**Introduction** Acute mesenteric ischemia (AMI) is a life-threatening condition with high mortality. Acute occlusion of the superior mesenteric artery (SMA) is the most common reason for AMI. There are no current clinical or laboratory markers that can help differentiate acute SMA occlusion from suspected but not confirmed not AMI. The aim of this study was to find differences in clinical and laboratory markers between acute SMA occlusion and suspected but confirmed non-AMI.

**Methods** International multicenter prospective case-control study from 32 sites collected data on patients with suspected acute mesenteric ischemia during a 10-month period. Independent factors associated with acute SMA occlusion were evaluated in a multivariable logistic regression analysis expressed in odds ratios (OR) with 95% confidence intervals (CI).

**Results** The total number of patients with verified acute SMA occlusion was 231, and the total number of patients with suspected but confirmed non-AMI was 281, of which 128 were mechanical bowel obstruction. The etiologies of acute SMA occlusion were thrombotic (n=104), embolic (n=61) and indeterminate (n=66). Current smoking (OR 2.6, 95% CI 1.3-5.0), arterial hypertension (OR 2.1, 95% CI 1.1-4.0), elevated white blood cell count (OR 1.5/one standard deviation (SD) increment, 95% CI 1.1-2.1) and bowel emptying (diarrhea and/or vomiting) (OR 3.2, 95% CI 1.6-6.6) were independently associated with acute SMA occlusion compared the non-AMI group. Atrial fibrillation (OR 4.6, 95% CI 2.1-10.0) was found to be an independent factor associated with acute embolic SMA occlusion.

**Conclusion** The clinical and laboratory data found to be associated with acute SMA occlusion could potentially be used for screening at the emergency department, guiding clinicians on whom to further investigate with computed tomography angiography for an accurate diagnosis.

**TREATMENT STRATEGIES FOR VISCERAL ARTERY ANEURYSMS FROM A JAPANESE SINGLE-CENTER EXPERIENCE**

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**【Introduction】**

Visceral artery aneurysms (VAAs) are rare, and the natural history of VAAs is not well understood as they are often asymptomatic and found incidentally. But VAAs are important as they have a significant potential for rupture, resulting in high mortality rates. Therefore, appropriate treatment strategies are required. In this study, we reviewed the current status of treatment for VAAs in our department.

**【Methods】**

One hundred fourteen patients with VAAs (excluding renal aneurysms) treated at our institution between January 1997 and December 2023 were included in this study, excluding those with traumatic or iatrogenic. Patient background, imaging findings, treatment modalities, and outcomes were retrospectively reviewed.

**【Results】**

One hundred thirty VAAs were treated in 114 patients (66 males) with median age of 59 years old (range, 21-90), and average observation period is 54 months. The VAAs located in splenic (n=61), pancreaticoduodenal (n=27), gastroepiploic (n=8), superior mesenteric (n=7), hepatic (n=7), gastric (n=5), celiac (n=4), colic (n=4), gastroduodenal (n=4), celiomesenteric trunk (n=3). Fifteen of the 114 cases (13%) were ruptured. Endovascular therapy (EVT) was performed in 84 cases (74%), open surgery (OS) in 24 cases (21%), and hybrid approach (OS with EVT) in 6 cases (5%). Three patients (2.6%) experienced perioperative complications due to duodenal stenosis after coil embolization for a ruptured pancreaticoduodenal aneurysm. Also, one patient (0.9%) developed a pancreatic fistula after splenectomy, and all cases were successfully cured with conservative treatment. There were no cases of aneurysm reperfusion or enlargement observed during follow-up period.

**【Conclusion】**

We have obtained good outcomes in managing VAAs through the effective utilization of EVT, OS, and a hybrid approach. It is crucial to develop a minimally invasive and appropriate treatment strategy by combining EVT as the mainstay with OS when necessary, preserving end-organ perfusion.

**TRANSAXILLARY FIRST RIB RESECTION IN ADOLESCENT PATIENTS WITH THORACIC OUTLET SYNDROME**

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**Introduction:** Thoracic Outlet Syndrome (TOS), though rarer in adolescents, can significantly impact their quality of life. While surgical management in the adult population is well reported, data on TOS surgery, specifically transaxillary first rib resection (TFRR), in the adolescent population is scarce. This study aims to assess the outcomes of TFRR in adolescent patients with TOS.

**Methods:** This is a retrospective review of patients aged 18 or younger who underwent TFRR for TOS at a single institution between 2012 to 2023.

**Results:** 88 patients underwent 102 TFRR (14 had bilateral surgeries, 66.7% females, 85.3% Caucasians): 42 neurogenic (nTOS), 51 venous (vTOS), 3 arterial (aTOS), and 6 mixed TOS. The median age was 17 years, where the youngest patient was 12-year-old. The median symptom duration was 770 days for nTOS and 52 days for vTOS. The median follow-up duration is 12 ± 11 months. All but two nTOS patients were managed with physical therapy and scalene injections before TFRR; two patients who had upfront surgery had cervical ribs and longstanding symptoms. 93.6% of nTOS patients reported symptomatic improvement post-TFRR. Among the vTOS patients, 88.2% (n=45) presented with effort thrombosis, and 14.3% (n=8) were diagnosed with hypercoagulable disorders. All vTOS patients had a venogram 2-4 weeks following surgery. 63.2% (n=36) of vTOS patients underwent successful venoplasty for stenosed axillo-subclavian veins, while 14% (n=8) were completely occluded and 21.0% (n=12) were widely patent without the need for venoplasty. 84.2% (n=48) of vTOS patients had patent axillo-subclavian veins after a median follow-up of 12 months and 94.7% (n=57) reported symptomatic improvement post-TFRR. All three aTOS patients had cervical ribs with symptomatic resolution post-TFRR.

**Conclusion:** Unlike adults, vTOS is the most common type of TOS among adolescents. This large series of TFRR demonstrates excellent clinical outcomes in adolescent patients with TOS.



**1-YEAR POSTINTERVENTION PATENCY OF SCORING BALLOON ANGIOPLASTY VERSUS HIGH PRESSURE BALLOON ANGIOPLASTY IN ARTERIOVENOUS FISTULA STENOSIS: A RANDOMIZED CONTROLLED TRIAL**

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*As the prevalence of End Stage Renal Failure (ESRF) in Malaysia increases, it is paramount to preserve and prolong patency rate of arteriovenous fistula (AVF). Arteriovenous fistula failure is commonly associated with stenosis which are usually treated with High-Pressure Balloon (HPB) angioplasty. Scoring Balloon (SB) is a novel approach in the treatment of AVF stenosis. The objective of our study is to compare 1 year postintervention primary patency rate, technical success and complication rate between scoring balloon angioplasty and high pressure balloon angioplasty. This is a prospective randomized controlled trial conducted at the University Malaya Medical Centre, Kuala Lumpur. Inclusion criteria for this study include end stage renal failure patients (ESRF) with native arteriovenous fistula. Patients who were excluded are those with thrombosed fistula and target lesion within inflow artery or central venous system. Patients were randomized to receive SB or HPB after fistulogram was performed. Patency rates were analyzed using Kaplan-Meier test.*

*Eighty one patients consented to participate in the study from February 2022 to January 2024. After fistulogram performed, forty patients were recruited into the study and randomized. In the High Pressure Balloon (HPB) group, 20 (11 men, 9 women; mean age, 63.2 years) achieved clinical success. In the Scoring Balloon (SB) group, 20 patients (8 men, 12 women; mean age, 59.8 years) achieved clinical success. Postintervention Primary patency rate in SB group were 75% while in HPB group were 70% ( $p = 0.285$ ). In respect to technical success, SB group achieved 90% while HPB group achieved 95% ( $p=0.314$ ). Complication rate were lower in SB group as compared to HPB group (5% vs 15%;  $p = 0.259$ ). Scoring Ballon Angioplasty is a safe alternative to conventional High Pressure Balloon Angioplasty for fistulaplasty in stenoses of native arteriovenous fistula.*

## DIFFERENCES IN MICRONUTRIENT SUPPLEMENTATION IN THE ACUTE PHASE OF ADULT BURN PATIENTS: AN OBSERVATIONAL STUDY

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### Introduction:

Micronutrients impact the treatment of burn patients and have significant effect on metabolic regulation, wound healing, and immune function. However, standardized guidelines for dosing, modality, and timing of administration are lacking, considering burn severity, comorbidities, and medications. This study investigates different treatment pathways of micronutrient supplementation in an adult burn patient population.

### Materials & Methods:

A retrospective analysis of burn patients was performed using real-world evidence data. Burn patients were stratified into 3 cohorts based on the percentage of total body surface area burned (%TBSA). Treatment with 20 micronutrients, including vitamins and minerals, was observed within 3 months post-burn and treatment pathways were identified.

### Results:

A total of 222,849 patients were stratified into cohort 1 (<20% TBSA, n=48,387), cohort 2 (20-39% TBSA, n=2,614) and cohort 3 (≥40% TBSA, n=1,877). The most administered supplements were the vitamins B, C and a combination of vitamin D and zinc. Treatment pathways differed between the cohorts regarding order and duration of administration. For cohort 1, vitamin B was the first line (mean  $2.58 \pm 10.32$  days) and vitamin D the second line ( $4.88 \pm 14.32$  days) treatment. In cohort 2, first line treatment was vitamin C ( $1.25 \pm 6.56$  days), followed by zinc + vitamin C in combination ( $0.85 \pm 1.82$  days) as second line treatment. For cohort 3, vitamin B ( $2.44 \pm 11.16$  days) and vitamin C ( $0.74 \pm 4.49$  days) were first line and second line treatments, respectively.

### Conclusion:

This comprehensive study affirms the varied applications of micronutrients based on the severity of burns. The findings reveal a distinct pattern in using supplements such as vitamins B, C, D, and zinc. Notably, the study highlights the importance of standardized guidelines for micronutrient therapy in burns, recognizing that the type, duration, and order of administration significantly vary across different burn severities.

### **CLOSING THE GAP: HEALING ACUTE COMPLEX WOUNDS USING AN ACELLULAR DERMAL SUBSTITUTE**

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#### *Introduction*

*To close a full-thickness defect, the gold standard is to use a split skin graft (SSG) when primary closure is not possible. Downsides to these SSGs are that they shrink, provide rigid scars and do not grow on nerves or tendons. Therefore, a dermal substitute can be placed underneath an SSG.*

#### *Material & Methods*

*In this prospective case series, 28 adult patients with acute complex deep soft tissue defects resulting from different etiologies will be treated with Glyaderm, a human-derived acellular dermal substitute. It is applied in either a one- or two-stage procedure with an SSG for epidermal coverage. Primary outcomes will be graft take in percentage of the total covered wound area and time to complete wound closure.*

#### *Preliminary results*

*Currently, 17 patients have been included and 16 completed the follow-up period. The mean age of the included population is 55.3 years (20-83). Etiologies of the acute complex wounds consist of defects after: debridement of infection (29.4%), oncological surgery (23.5%), trauma (23.5%), donor sites (11.8%), and dehiscences after free flap reconstruction (11.8%). Mean affected TBSA is 2.3% (0.2-12%).*

*5-7 days after application of the dermal substitute and SSG, a mean take rate of 89.3% (0-100) was observed. Mean time for the wounds to close was 34.4 days (6-84 days). In 87.5% of the included cases, no complications have been observed. In one case, a loss of graft occurred. In one case, a wound infection of the graft occurred.*

#### *Conclusion*

*This acellular dermal substitute may prove to be a valid and easy to use reconstructive option for defects not suitable for immediate skin grafting.*

**EVALUATING THE SAFETY OF OVINE TENDON COLLAGEN TYPE I SCAFFOLD (OTC-IS) IN THE MANAGEMENT OF HUMAN FULL THICKNESS WOUND: A PILOT STUDY**

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**Background/Aims**

*There is an increasing agreement on the use of bioengineered skin substitutes for reconstructing tissue loss in challenging cases where the demand for autologous skin grafts surpasses the available donor sites. Centre of Tissue Engineering Research and Regenerative Medicine (CTERM), UKM has developed an innovative single-layer permanent dermal regeneration template known as the Ovine Tendon Collagen Type I Scaffold (OTC-IS), which serves as an effective solution for both temporary and permanent coverage of open skin wounds. The objective of this study is to evaluate the safety of OTC-IS in treating full-thickness wounds. Unlike bovine and porcine alternatives, goat and ovine (sheep) collagens are widely embraced by diverse religious communities and cultures.*

**Methods**

*This prospective pilot study was conducted at the University Kebangsaan Malaysia, utilizing a cohort design. Eight patients with full-thickness wounds were enrolled in the study, undergoing a two-stage reconstruction process involving the replacement of soft tissue defects with the dermal regenerative template, followed by split skin grafting (SSG). All patients were monitored for a duration of six months. The primary aim was to assess the safety of Ovine Tendon Collagen Type I Scaffold (OTC-IS) in the management of full-thickness wounds. Secondary objectives included evaluating adverse reactions, the percentage of graft uptake of OTC-IS, and the percentage of SSG success.*

**Results**

*The utilization of Ovine Tendon Collagen Type I Scaffold (OTC-IS) is completely safe in all our patients. None of the individuals experienced immediate or delayed side effects, including allergies, infections, hematomas, or detachment of OTC-IS. According to the Modified Vancouver Scale Score (MDVSS) observed during the 1, 3, and 6 months of follow-up, the outcomes were successful in reducing contractures and achieving closure of full-thickness wounds.*

**Conclusion**

*OTC-IS demonstrates safety and may be considered as a viable option for the management of full-thickness wounds.*

## PAEDIATRIC BURN INJURIES IN A REGIONAL BURN CENTRE IN NIGERIA

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*Introduction: Burn injuries remain a significant cause of morbidity and mortality in low- and middle-income countries (LMIC). Weak surgical systems compounded by out of pocket payments contribute significantly to lack of comparable outcomes with high income countries. Despite ongoing burn prevention initiatives, pediatric burns remain a public health concern. The aim of this report is to quantify the current burden of pediatric burns and identify potential areas for locally contextualized and sustainable interventions targeted at reducing incidence and improving outcomes in low resource settings.*

*Method: This is a retrospective review of the records of patients aged 15 years and below, admitted into the Burn Ward from 2017 to 2022. Data was analysed using IBM SPSS version 22 and results presented as texts, charts and tables.*

*Results: One hundred and seventy-five children (25.4% of all burns admissions) aged between 2 days and 15years were treated for burn injuries. There was a male preponderance with males accounting for 58.9% and females 41.1%. Flame burns occurred in 111 (63.4%) and scald burns in 61 (34.9%). The most common mechanism of injury (37.8%) involved refilling of kerosene cooking stoves. The mortality rate was 31.4%. Burn severity, late presentation and out-of-pocket payment contributed significantly to poor outcomes.*

*Conclusion: The commonest burn mechanism identified and late presentation indicates a need for increased public health interventions towards increasing awareness, prevention and treatment. Innovative healthcare funding mechanisms in LMIC should specifically include burns treatment to improve access to care and overall outcome.*

*Keywords: Burn injury, Paediatric burn, burn prevention*

**EFFECTS OF INTRAVENOUS TRANEXAMIC ACID ON BLEEDING DURING BURN SURGERY: A DOUBLE-BLINDED RANDOMIZED CLINICAL TRIAL**

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*Introduction:* Blood loss during burn surgeries significantly contributes to morbidity and mortality. Tranexamic Acid (TXA), an antifibrinolytic agent, is hypothesized to reduce intraoperative bleeding.

*Material and Methods:* This double-blinded, randomized clinical trial aimed to assess the efficacy of systemic TXA in severe burn patients (total body surface area [TBSA] >20%) undergoing surgery. The study evaluated the impact of TXA on surgical bleeding, operating room (OR) time, intravenous (IV) fluid requirements, and overall patient outcomes.

*Results:* A total of 94 patients, with equal distribution in age, sex, and TBSA, were randomly assigned into two groups (47 each). TXA was administered as a 10mg/kg loading dose followed by a 1mg/kg/h infusion during surgery. Results demonstrated significant reductions in blood loss (P-value: 0.043), total IV fluid volume (P-value: 0.021), OR time (P-value: 0.002), and transfusion necessity (P-value: 0.024) in the TXA group. Notably, women and patients without inhalation injuries exhibited better responses to TXA treatment.

*Conclusion:* The study concludes that IV TXA administration during burn surgeries can effectively reduce bleeding, minimize IV fluid and blood transfusion needs, and shorten surgery duration, enhancing overall surgical outcomes.

**AARS2 AS A NOVEL BIOMARKER FOR PROGNOSIS AND ITS MOLECULAR CHARACTERIZATION IN PAN-CANCER**

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*Introduction:* The mitochondrial alanyl-tRNA synthetase 2 (AARS2) as one of aminoacyl-tRNA synthetases (ARSs) performs amino acid transportation and involves protein synthesis. However, its role in cancer remains largely unexplored.

*Materials & Methods:* In this study, more than 10,000 samples were enrolled to explore genomic alterations, biological function, prognosis, and clinical treatment based on AARS2 across pan-cancer. The molecular characterization of AARS2 was confirmed in hepatocellular carcinoma (HCC) using proteomics analysis, quantitative real-time PCR, western blotting, immunohistochemical staining, and cell experiments.

*Results:* For genomic landscape, the AARS2 was dramatically upregulated in multiple cancers, which might be mainly caused by copy number alteration rather than mutation and methylation. The abnormal expression of AARS2 was prominently associated with activity of cancer pathways and performed oncogenic roles in most cancers. Systematic experiments in vitro substantiated the elevated expression of AARS2, and the deficiency of it inhibited cell proliferation and cell migration in HCC. Meanwhile, our findings suggested that AARS2 could serve as a novel promising and stable biomarker for assessing prognosis and immunotherapy. Moreover, a variety of therapeutic drugs and targeted pathways were proposed for cancer treatment, which might enhance clinical efficacy.

*Conclusion:* The AARS2 could serve as a new oncogenic gene that promotes cell proliferation and migration in HCC. The comprehensive investigations increased the understanding of AARS2 across human cancers and generated beginning insights of AARS2 in genomic landscape, molecular biological function, prognosis, and clinical treatment.

**IMPACT OF THE ONGOING RUSSIA-UKRAINE WAR ON SCOPUS INDEXED SURGERY-RELATED PUBLICATIONS OF UKRAINE-AFFILIATED AUTHORS: A BIBLIOMETRIC ANALYSIS**

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*Introduction : Armed conflicts, such as the Russia-Ukraine war, have profound implications on a country's scientific and healthcare landscape, influencing research productivity due to several factors. With the surgical system being one of the most burdened during this period, it's important to understand how this affects the research productivity in this specialty. This study aims to assess the impact of the ongoing Russia-Ukraine war on surgery-related publications by authors affiliated with Ukrainian institutions.*

*Materials & Methods: A scoping review of surgery-related publications of Ukraine-affiliated authors published twenty months before and after the onset of the war using the scopus database was performed. Bibliometric data were then extracted and analyzed.*

*Results : Of the 175 articles identified, 63.4% were published during the war. Articles before the war included 92.2% original studies, and 7.8% traditional reviews while those during the war included 77.5% original studies, 12.6% traditional reviews, 5.4% editorials, and 4.5% systematic reviews. 79.7% of articles published before the war were in English while 92.8% of studies published during the war were in English. Additionally, 85.9% of published papers pre-war had their first author and 82.8% had their last author affiliated to an Ukrainian institution, with 20.3% having collaborative authors from institutions in other countries whereas 72.1% of those published since the beginning of the war had their first author and 66.7% had their last author affiliated to an Ukrainian institution, with 46.0% having collaborative authors from institutions in other countries.*

*Conclusion : Our study showed an increase in surgery-related publications since the beginning of the war, with an increase in English publications, more collaboration with authors from institutions in other countries, and a slight decrease in first and last authorship.*



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**EXPLORING SYNERGIES: IFMSA EXCHANGE PROGRAM AND ITS IMPACT ON SURGICAL EDUCATION AND GLOBAL HEALTHCARE COLLABORATION**

Lucía Pérez Gómez<sup>1</sup>

<sup>1</sup>International Federation of Medical Students Associations (IFMSA)

*The concept of global citizen revolves around thinking across borders and inculcating a sense of belongingness with not just one's own country but the whole world. They actively participate in their community and work to make our planet more peaceful, sustainable, and fair. Shaping Future doctors as the next generation of Global Citizens is an asset the International Federation of Medical Students Association (IFMSA) has been contributing to, alongside measuring and amplifying the impact on surgical education through this process.*

*The Professional or Research Exchange Program comprises a 4-week internship in a different country. In the last 72 years, more than 100.000 students from 131 National Members Organizations, 129 countries have gone for an exchange. Students attend rotations in a specific department with assigned tutors, training guidelines, and Evaluation forms, which helps IFMSA assess the impact of the exchange and ensure academic quality.*

*During the season 2023/2024, 1412 students experienced an exchange on general surgery. Upon Assessment of the Evaluation Forms, more than two-thirds have reported an increased understanding of Global Health issues, knowledge of social, economic and environmental determinants affecting access to health services in their host country and being 80% more comfortable in dealing with patients from a different socio-cultural background. During the exchange, activities such as Basic Surgical Education are conducted and students are capacitated on various aspects such as Global Surgery and the importance of Universal Access to Safe Surgery and Anesthesia. IFMSA has been committed to enhancing students' global awareness of intercultural learning and competencies in healthcare using innovative ideas and contributing to students' surgical education through student mobility. One of the objectives of IFMSA is to have exchanges recognised. Medical faculties should recognise and support IFMSA Exchanges to sustain its work toward producing globally-oriented physicians.*

## PW 1.01

### DO PERIOPERATIVE PROBIOTICS/SYNBIOTICS REDUCE POSTOPERATIVE INFECTION RATES FOLLOWING ELECTIVE COLORECTAL SURGERY? A SYSTEMATIC REVIEW AND META-ANALYSIS.

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*Introduction:* Postoperative infections are common in elective colorectal surgery (CRS). Perioperative probiotics/synbiotics have been investigated as a strategy to optimise the intestinal microbiota and reduce postoperative infections. The aim of this study was to conduct a systematic review and meta-analysis on the efficacy of perioperative probiotics/synbiotics on postoperative infection rates in elective CRS.

*Methods:* Six databases were searched on 7th February 2023. Randomised controlled trials (RCTs) involving perioperative administration of probiotics/synbiotics among patients undergoing elective CRS for malignant and benign disease were included. The primary outcome was total postoperative infection rates within 30 days of surgery.

*Results:* Twenty-eight RCTs, involving 2686 participants, demonstrated a reduction in total postoperative infections (RR 0.55, 95% CI 0.14 to 0.74,  $p < 0.0001$ ), pneumonia (RR 0.43, 95% CI 0.29 to 0.66,  $p = 0.0001$ ), UTIs (RR 0.54, 95% CI 0.32 to 0.94,  $p = 0.03$ ), wound infections (RR 0.64, 95% CI 0.51 to 0.81,  $p = 0.0002$ ) and line infections (RR 0.34, 95% CI 0.15 to 0.74,  $p = 0.007$ ).

*Conclusion:* Perioperative probiotics/synbiotics are associated with a reduction in total postoperative infection rates. Conclusions are limited by heterogeneity within the patient cohort and variability in intervention. Further investigation into optimal regimens is essential before clinical practice implementation.

## PW 1.02

### APPLICATION OF Y-Z DEFORMABLE MAGNETIC RING FOR RECANALIZATION OF TRANSANAL SINGLE-ACCESS RECTAL STRICTURE

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*Introduction:* Magnetic compression anastomosis has been reported to have remarkable clinical outcomes. Here, we tested the applicability of a Y-Z deformable magnetic ring (DMR) for non-surgical manipulation of rectal stenosis (RS) in a beagle dog model under a transanal single-access condition.

*Materials and Methods:* RS was modeled in 8 beagle dogs using partial ligation with silk thread. Under X-ray guidance, the Y-Z DMR was positioned at the proximal and distal ends of the RS, and the magnetic ring was bent into an "O" shape, such that the two rings were magnetically attracted. Operation time, complications during or after operation, and discharge time of the magnetic rings were recorded. The anastomosis bursting pressure was measured two weeks after removing the rings, and its formation was assessed through gross and histological examination.

*Results:* Partial ligation with a silk thread successfully established the canine RS model. After Y-Z DMA installation, the magnetic ring was successfully reconfigured from an "S" to an "O" shape. Strong attraction existed between the rings. The operation time was 9–15 min (average:  $11.75 \pm 1.98$  min). No rectal bleeding or perforation occurred during or after operation. The ring was naturally expelled 7–10 days after surgery. A pressure of >300 mmHg was recorded at the point of anastomosis rupture. The rectal anastomosis appeared to have healed properly on the surface, which was confirmed histologically, signifying the success of this procedure.

*Conclusions:* A Y-Z DMR facilitated the successful recanalization of transanal single-channel RS without needing surgery in an animal model.

## PW 1.03

### INFLUENCE OF DIFFERENT MAGNETIC FORCES ON THE EFFECT OF COLONIC ANASTOMOSIS IN RATS

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*Introduction:* Although several studies have been conducted on magnetic compression anastomosis (MCA) in the digestive tract, there are no reports on the influence of magnetic force on the anastomosis effect. To investigate the effect of different magnetic force magnets on magnetic compression anastomosis of the digestive tract.

*Materials and Methods:* Two groups of magnets with the same size but different magnetic forces were designed and produced. A total of 24 SD rats were randomly categorized into two groups. Two types of magnets were used to complete the colonic side-to-side anastomosis of the rats. The operation time and magnet discharge time were recorded. The anastomotic specimens were obtained 4 weeks after the operation, the burst pressure and diameter of the anastomosis were measured, and the anastomosis was observed via the naked eye and subjected to histological examination.

*Results:* The magnetic forces of the powerful and common magnet groups at zero distance were 8.26 N and 4.10 N, respectively. The colonic side-to-side anastomosis was completed in all 24 rats, and the operation success rate and postoperative survival rate were 100%. There was no significant difference in the operation time between the two groups. The magnet discharge time of the powerful magnet group was slightly longer than that of the common magnet group, but the difference was not statistically significant ( $P = 0.513$ ). Furthermore, there was no statistical difference in the burst pressure ( $P = 0.266$ ) or diameter of magnetic anastomosis ( $P = 0.095$ ) between the two groups. The gross specimens of the two groups showed good anastomotic healing, and histological observation indicated good mucosal continuity.

*Conclusion:* In the rat colonic side-to-side magnetic compression anastomosis model, both the powerful magnet with 8.26 N and the common magnet with 4.10 N had no significant impact on the anastomosis establishment process or its effect.



## PW 1.04

### EVALUATION OF THE POSTOPERATIVE COURSE OF COLORECTAL CANCER IN PATIENTS WITH SEVERE RENAL FAILURE USING A MULTICENTRE DATABASE

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**Aim:** Colorectal cancer (CRC) surgery is now being performed in patients with many comorbidities. We aimed to clarify the postoperative course of CRC in patients with severe renal failure (SRF) using a multicentre database.

**Method:** A total of 3653 CRC patients with stage I-III disease who underwent surgery at 7 hospitals were included in the study. The eGFR classification was used for renal failure, and patients with an eGFR <30 were included in the SRF group. Competing risk analysis was used to estimate the cumulative incidence of cancer and noncancer deaths.

**Results:** There were 128 patients in the SRF group. The median age of the patients was 77 (63-78) years in the SRF group and 71 (70-81) years in the control group ( $p<0.001$ ). Twenty-two patients (17%) in the SRF group underwent preoperative dialysis, and 10 patients (8%) newly started dialysis after surgery, of whom 4 patients (3%) started dialysis within one year after surgery. Clavien–Dindo class IV or higher complications were observed in 6 (4.7%) patients in the SRF group and 27 (0.8%) patients in the control group [ $p<0.001$ ]. The cumulative 5-year cancer death rates were 9.3% (95% CI, 4.3-16.5%) in the SRF group and 11.0% (95% CI, 9.7-12.4%) in the control group. The cumulative 5-year non-cancer death rates were 24.7% (95% CI, 15.8-34.6%) in the SRF group and 5.7% (95% CI, 3.9-5.6%) in the control group.

**Conclusion:** Only a few SRF patients newly started dialysis after CRC surgery. Severe perioperative complications were more common, and noncancer deaths were more common than cancer deaths in all postoperative periods in the SRF group.

## PW 1.05

### DOES THE TRANSANAL APPROACH REDUCE SURGEON WORKING TIME COMPARED TO ROBOTIC SURGERY IN RECTAL CANCER RESECTION?

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**Purpose:** Unrestricted long working time by medical doctors is becoming a major problem in Japan, and overtime work will be restricted from April 2024. The purpose of this study is to determine whether robotic surgery or TaTME utilizing a transanal approach is more useful in reducing surgeons' working time in next-generation minimally invasive surgery for rectal cancer.

**Methods:** Patients who underwent low anterior resection for rectal cancers at our institution between May 2017 and October 2023 who underwent robotic-assisted surgery (Robotic group, n=52) and surgery utilizing a transanal approach (TaTME group, n=73) were included. The time each patient stays in the operating room, operating time, and short-term outcomes were compared between the Robotic group (n=41) and the TaTME group (n=41), adjusted for background factors (gender, BMI $\geq$ 25, anesthesia method, and extent of lateral lymph node dissection) using propensity scores. Overtime work was defined as the time a patient stayed in the operating room for more than 525 minutes.

**Results:** The median time each patient stays in the operating room (robotic group: 441 min vs. TaTME group: 344 min,  $P=0.001$ ), the median anesthesia time (422 min vs. 335 min,  $P=0.001$ ), and the median operation time (356 min vs. 253 min,  $P=0.001$ ) were significantly shorter in the TaTME group. On the other hand, blood loss was significantly less in the Robotic group (0 g vs. 0 g,  $P=0.003$ ). Overtime work was observed in six cases (14.6%) in the Robotic group and one case (2.4%) in the TaTME group ( $P=0.048$ ).

**Conclusion:** The transanal approach for rectal cancer resection was found to be useful in terms of reducing the surgeon's working time.

### CLINICAL OUTCOMES OF TRANSANAL TOTAL MESORECTAL EXCISION COMBINED WITH THE ABDOMINAL ROBOTIC APPROACH FOR LOW RECTAL CANCER

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**Background:** We have experienced more than 200 cases of transanal total mesorectal excision (TaTME) since its first introduction in September 2016. TaTME is currently the first-line surgical procedure for low rectal cancer at our department. Since June 2020, we have performed TaTME combined with the abdominal robotic approach (hybrid TaTME) for a safer, less invasive surgery. However, the feasibility and safety of this technique are unclear. Therefore, this study evaluated the feasibility and safety of hybrid TaTME compared with conventional TaTME for low rectal cancer.

**Methods:** We retrospectively reviewed 187 TaTME cases performed in our department from September 2016 to December 2022. Among them, 106 cases of conventional TaTME and 37 of hybrid TaTME were eligible. We used propensity score matching analysis (PSM) to adjust for patients' characteristics and compared the short- and mid-term outcomes between the two treatment groups.

**Results:** Thirty-one cases in each group were extracted using PSM. The operation time in hybrid TaTME was comparable to that in conventional TaTME. The median blood loss in hybrid TaTME was significantly less than in conventional TaTME ( $P=0.046$ ). The median postoperative hospital stay in the hybrid group was also shorter than that in the conventional ( $P=0.042$ ). Other intra- and postoperative outcomes were comparable between the two groups. Furthermore, no significant differences were observed between the two groups in the curative resection and recurrence rates.

**Conclusion:** Hybrid TaTME for low rectal cancer was superior to conventional TaTME in terms of blood loss and postoperative hospital stay. Further studies on a larger scale are needed for more definitive conclusions.

## PW 1.07

### TREATMENT OF SPLENIC FLEXURE CARCINOMAS: SEGMENTAL LEFT COLECTOMY VS EXTENDED RESECTIONS - THE HONG KONG EXPERIENCE

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*Introduction* The optimal surgical management of splenic flexure carcinoma (SFC) remains controversial. This study aimed to investigate the short-term and long-term outcomes of segmental left colectomy.

*Materials & Methods* This retrospective study explored the surgical and oncological outcomes of consecutive patients who underwent curative-intent colectomy for splenic flexure tumour between 2013 and 2015 in Queen Mary Hospital and Kwong Wah Hospital. Short-term outcomes (operative time, length of hospital stay and pathology specimen findings) and long-term outcomes (overall survival and recurrence) were compared between patients who received segmental left colectomy (SLC) versus more extensive resections (ER) (extended right hemicolectomy or extended left hemicolectomy). Correlation and survival analyses were performed using the Chi-square and Kaplan-Meier tests.

*Results* 67 SFC patients, (53.7% male, median age 72 years old) were enrolled. 39 (58.2%) had SLC and 28 (41.8%) underwent ER. Overall, 58% were laparoscopic surgeries. A significantly shorter operative time (median 160 vs 197 minutes,  $p < 0.001$ ) and a trend of shorter hospital stay (median 7 vs 16 days,  $p = 0.346$ ) were observed in the SLC group. The median number of lymph nodes harvested (16 vs 17,  $p = 0.500$ ) and percentage with negative margins achieved (97.4% vs 96.4%,  $p = 0.99$ ) were comparable in both groups. Regarding the long-term outcome, with a median follow-up of 59 months, 18 patients died and 18 patients had recurrence. 5-year overall survival was similar in SLC and ER groups (76.2% vs 81.0%,  $p = 0.190$ ); there was no significant difference in 5-year disease-free survival – 70.2% and 77.1% respectively ( $p = 0.461$ ).

*Conclusion* The present study shows splenic flexure cancer resection by segmental left colectomy is non-inferior to more extensive resection.

### COMPARISON OF SINGLE-PORT AND MULTI-PORT ROBOTIC TRANSANAL MINIMALLY INVASIVE SURGERY

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**Introduction:** Single-port robotic transanal minimally invasive surgery (SPR-TAMIS) offers improved docking and more flexibility within the rectum with the addition of a third arm, flexible camera, and double-jointed instrumentation. These benefits allow for improved access to more proximal lesions as compared to the conventional multi-port (MP-)R-TAMIS. SPR-TAMIS also has limitations with restricted movements within the first 10 cm of deployment making lower rectal lesions more challenging. While prior studies have shown SPR-TAMIS to be safe and feasible, there is a lack of literature comparing the two approaches. This study aimed to compare the surgical outcomes between SPR-TAMIS and MPR-TAMIS.

**Methods:** All patients who underwent R-TAMIS for endoscopically unresectable benign rectal polyps and early-stage rectal cancers between January 2019 and December 2023 at a single institution were retrospectively reviewed.

Patients' demographics, tumor characteristics, operative data, and surgical outcomes were analyzed for SPR-TAMIS and MPR-TAMIS.

**Results:** Sixty-eight patients (mean age 62±12, 63.2% males, 54.4% ASA class 1/2) underwent R-TAMIS: 31 SPR-TAMIS and 37 MPR-TAMIS. There were no differences in baseline demographics or tumor characteristics. On average, patients who underwent SPR-TAMIS had more proximal lesions (SP:9.0cm vs. MP:6.0cm). All tumors in SPR-TAMIS were in the high- and mid-rectum whereas 46.9% of the tumors in MPR-TAMIS were in the low-rectum. SPR-TAMIS had shorter operative times, though not statistically significant (SP:95±67mins vs. MP:134±92mins, p=0.052). The other surgical outcomes were comparable. Overall, 16.2% of patients experienced complications, with rectal bleeding being the most common. Most patients (85.3%) were discharged on the same day, with a readmission rate of 7.4%. Only one patient had a positive surgical margin. The median follow-up was 12 months, and the local recurrence rate was 7.7%.

**Conclusion:** SPR-TAMIS and MPR-TAMIS show comparable results with low rates of margin positivity, local recurrence, and surgical morbidity. Patients with more complex proximal lesions likely benefit from SPR-TAMIS.

### PREDICTORS OF NONHEALING OF ANAL FISTULA FOLLOWING LIGATION OF INTERSPHINCTERIC FISTULA TRACT PROCEDURE

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*Introduction:* Fistula in ano, is a challenging condition often managed by the Ligation of Intersphincteric Fistula Tract (LIFT) procedure. Despite advancements, factors influencing nonhealing outcomes remain insufficiently explored. Existing literature outlines diverse risk factors associated with recurrence, highlighting the need for an in-depth investigation. This study fills a critical gap by examining predictors of nonhealing and recurrence in primary, recurrent, simple, and complex anal fistulas treated with LIFT.

*Materials & Methods:* This record-based longitudinal study, conducted between July 2021 and July 2022, examines the outcomes of LIFT procedures in anal fistula management. The primary objective is to identify the factors of non-healing. Analyzing data from 63 patients, the study focused on demographic details, comorbidities, imaging findings, intraoperative specifics, postoperative complications, healing timelines, and quality of life assessments.

*Results:* Analysis revealed significant associations between non-healing and BMI and length of hospital stay. Odds ratios for these associations were calculated, with BMI displaying an odds ratio of 1.1 (95% CI: 1.01-1.3), duration of hospital stay OR of 1.32 (95% CI 1.02-1.77). Smoking and previous fistula operations were identified as risk factors for recurrence. Similar failure rates were observed among simple and complex fistulas, with 33.3% and 35.1%, respectively. These findings align with existing literature, consolidating the understanding of factors influencing LIFT procedure outcomes in a more focused patient cohort.

*Conclusion:* This study, based on a cohort of 63 patients from July 2021 to July 2022, provides crucial insights into predicting non-healing in anal fistulas treated with LIFT procedures. The results highlight the significance of patient-related factors and procedure-specific variables, enhancing patient selection and optimizing LIFT procedure success in managing anal fistulas.

## PW 1.10

### THE NEED FOR UP FRONT DEFUNCTIONING STOMA IN LOCALLY ADVANCED RECTAL CANCER PATIENTS RECEIVING NEO- ADJUVANT RADIOTHERAPY

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#### *Introduction*

Neoadjuvant radiotherapy has been the standard approach for treatment of locally advanced rectal cancer patients. There has been real concern among clinicians over the development of intestinal obstruction during radiotherapy. Consequently, clinicians would resort to up front defunctioning ileostomy or colostomy due to this complication.

#### *Objectives*

We studied the incidence and factors that are associated with the development of intestinal obstruction in patients undergoing neoadjuvant radiotherapy in locally advanced rectal cancer cases.

#### *Methodology*

This is a single-center cross-sectional study from January 2013 till December 2023, involving 165 stage II and III mid and low rectal cancer patients who required neo-adjuvant SCRT or CCRT. Comparisons are made between obstructed and non-obstructed patients to evaluate the factors related to the phenomena. Endoscopic and radiological assessment of tumor obstruction were performed before the neoadjuvant treatment. Intestinal obstruction was analyzed during and after neoadjuvant therapy and analysis was done using chi-square test, fisher exact test, and multivariate analysis.

#### *Results*

Factors that contribute to the likelihood of tumor obstruction ( $p$ -value  $<0.05$ ) were pre-treatment endoscopic and radiological obstruction features, tumor length  $> 6$ cm, pre-therapy CEA levels  $>5$  while distance from anal verge, tumor grading and histology did not show significant relationship.

Only 13 patients (18.5%) developed stoma complications, of which only 2 resulted in delay of initiation of pre-operative radiotherapy. There is no difference in time of initiation of radiotherapy between the obstructed and non-obstructed group ( $p$ -value  $<0.665$ ).

#### *Conclusion*

In general, up front stoma creation may not be needed in locally advanced rectal cancer patients undergoing neoadjuvant radiotherapy. However, the presence of endoscopic and radiological obstruction, tumor length  $> 6$ cm, pre-therapy CEA levels  $>5$  are the factors that may guide clinicians to the use of stoma prior to neoadjuvant radiotherapy.

## PW 1.11

### STUDY OF CLINICOPATHOLOGIC AND PROGNOSTIC SIGNIFICANCE OF TUMOR BUDDING, TUMOR INFILTRATING PATTERN IN COLORECTAL CANCER

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#### BACKGROUND-

pTNM stage currently represents the most important prognostic factor of colorectal carcinoma. Tumor budding (TB) is emerging as a promising independent prognostic biomarker in colorectal cancer (CRC). At present there are many prognostic factors described but a handful are only significant. The use of adjuvant therapy in the treatment of Stage II is still under debate and NCCN guidelines say that only patients with Stage II CRC showing High risk features to undergo subsequent chemotherapy. In search of the high risk features and easily identifiable and significant factors we take this study. The correlation among TB categories, clinicopathological features, and prognosis in stage II-III CRC

#### AIM OF THE STUDY:-

To assess and Correlate effect of Tumor budding(TB), TIP in prognosis of colorectal carcinoma and in predicting lymphnode metastasis.

#### METHODS

The clinical data of 36 CRC patients were collected for this retrospective study. Infiltration at the front edge of the tumor buds was counted according to the 2016 International Tumor Budding Consensus Conference guidelines.

#### RESULTS-

The tumor infiltrating pattern was higher in Bd 2-3 than in Bd 1, both in the tumor stroma and its invasive margin. The tumour buds Bd 2,3 i.e intermediate and high score were more commonly noted to have N1, N2 disease than seen with Bd 1. Out of 36 cases, 14 cases with Bd 1(14/20) had N0 stage in final histopathology report. Out of 16 cases with Bd 2,3 (15/16) had N1.N2 stage in final histopathology report.

#### CONCLUSION

TB has an independent predictive prognostic value in patients with stage II-III CRC. It is recommended to complete the TB reporting of all CRC cases in the standardized pathological report to further refine the risk stratification.

Key Words: Tumor budding, Tumor infiltrating lymphocytes, Colorectal cancer, Prognosis.



## PW 1.12

### ENDOSCOPIC COIL EMBOLIZATION OF POST-TRAUMATIC BILIARY FISTULA

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*Bile leaks are not uncommon following cholecystectomy or blunt liver trauma. Although 80-90% are successfully treated with ERCP and biliary stenting, refractory bile leak can be difficult to manage as it carries significant morbidity and complications. Data are scarce on the effective method of managing persistent bile leak.*

*We present a case of a 22-year-old young gentleman who sustained a grade V liver injury following severe blunt abdominal trauma, in which an emergency laparotomy was undertaken. Intraoperatively, there were multiple liver lacerations involving segment 5,7 and 8, which were primarily repaired with monofilament absorbable sutures. Postoperatively, he had gone through eventful recovery requiring multiple surgical explorations for abdominal compartment syndrome secondary to infected biloma with prolonged ICU admission and ventilation. An ERCP was performed which confirmed a bile leak from the anterior sectoral duct draining the segment 8 liver. Initial attempts of sphincterotomy and plastic biliary stent placement failed to control the bile leak. After multidisciplinary discussion with the interventional radiologist, his refractory bile leak was successfully managed with endoscopic coil embolisation to the segment 8 intrahepatic duct. A repeat CT imaging 2 weeks post embolisation showed complete resolution of the biloma collection.*

*Our paper discusses on various methods to manage persistent bile leak or biliary fistula including ERCP with sphincterotomy and biliary stenting, percutaneous transhepatic biliary drainage and the most recent technique which is endoscopic coil embolisation.*

### CLINICAL FEASIBILITY OF LAPAROSCOPIC LEFT LATERAL SEGMENT LIVER RESECTION WITH MAGNETIC ANCHOR TECHNIQUE: A PRELIMINARY CLINICAL STUDY

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**Introduction:** Magnetic anchor technique (MAT) has been applied in laparoscopic cholecystectomy and laparoscopic appendectomy, but has not been reported in laparoscopic partial hepatectomy. In this study, we evaluated the feasibility of the MAT in laparoscopic left lateral segment liver resection.

**Materials and Methods:** A retrospective analysis was conducted on the clinical data of eight patients who underwent laparoscopic left lateral segment liver resection assisted by MAT in our department from July 2020 to October 2021. Two patients were female and six were male, aged between 23 to 75 years, with a median age of 49.5 years, three of whom had hepatic hemangioma, one had primary liver cancer, two had primary liver cancer complicated with gallstones, one had a single metastatic lesion in the liver, and one had focal hepatic steatosis. The magnetic anchor device was independently designed and developed by the author of this paper, which consists of the anchor magnet and magnetic grasping apparatus. Surgical time, intraoperative blood loss, intraoperative accidents, operator experience, postoperative incision pain score, postoperative complications, and other indicators were evaluated and analyzed.

**Results:** All eight patients underwent a MAT-assisted laparoscopic left lateral segment liver resection, including three patients undertaking conventional 5-port and five patients having a transumbilical single-port operation. The mean operation time was  $138 \pm 34.32$  min (range 95–185 min) and the mean intraoperative blood loss was  $123 \pm 88.60$  mL (range 20–300 mL). No adverse events occurred during the operation. The magnetic anchor device showed good workability and maneuverability in both tissue and organ exposure. In particular, the operators did not experience either a “chopstick” or “sword-fight” effect in the single-port laparoscopic operation.

**Conclusion:** The MAT is safe and feasible for laparoscopic left lateral segment liver resection, especially, exhibits its unique abettance for transumbilical single-port laparoscopic left lateral segment liver resection.

## PW 1.14

### **DISTAL SPLENORENAL SHUNT SURGERY IN THE MANAGEMENT OF PORTAL VEIN THROMBOSIS (PVT) SECONDARY TO CAVERNOUS TRANSFORMATION OF PORTAL VEIN (CTPV) IN THE PEDIATRIC POPULATION: EXPERIENCES FROM VICENTE SOTTO MEMORIAL MEDICAL CENTER, CEBU CITY**

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*In the pediatric population, the cavernous transformation of the portal vein (CTPV) is a sequela of extrahepatic portal vein thrombosis which is the most common cause of portal hypertension. This was a case series of four patients with symptoms of upper gastrointestinal bleeding exhibited as hematemesis and melena, with evidence of thrombocytopenia. Workup revealed that the etiology of cavernous transformation of the portal vein (CTPV) is as follows: two of the patients had a history of umbilical vein catheterization at birth, and one had a history of extrapulmonary tuberculosis, and another one had a history of multiple lymphadenopathy at the periportal area. CT Scan revealed a cavernous transformation of the portal vein and splenomegaly. One of them was managed with rubber band ligation (RBL), however, patient was still symptomatic. Three of these cases were managed with distal splenorenal shunting using Warren's technique, and one with meso-rex shunting. Postoperatively, these patient's symptoms and condition improved, and they were instructed to come back to the out-patient department for surveillance. Portal hypertension secondary to extrahepatic portal vein thrombosis can lead to the cavernous transformation of the portal vein. There is a lack of experience in the diagnosis and treatment of CTPV unless managed in tertiary high-volume institutions. Management includes endoscopic therapy for temporary hemostasis in acute variceal bleeding, but cannot reduce portal hypertension, hence, surgery is indicated in selected cases. This case series highlighted our experiences in managing pediatric patients with splenorenal shunt surgery at Vicente Sotto Memorial Medical Center.*

## PW 1.15

### **SURGICAL OUTCOMES OF PERCUTANEOUS TRANSHEPATIC GALLBLADDER DRAINAGE FOR HIGH-RISK PATIENTS WITH MODERATE AND SEVERE ACUTE CHOLECYSTITIS: AN EXPERIENCE AT A TERTIARY CENTRE**

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*Introduction.* Acute cholecystitis (AC) poses a life-threatening challenge for patients with serious comorbidities. We aimed to evaluate the effectiveness of percutaneous transhepatic gallbladder drainage (PTHGD) treatment for moderate and severe AC in high-risk patients and compare the benefits between early (EC) and delayed cholecystectomy (DC) after PTHGD.

*Materials.* A retrospective analysis included 117 patients with grade II and grade III AC, and who had an ASA grading of  $\geq 3$ , undergoing PTHGD at Riga East Clinical University Hospital between January 2020 and May 2023. Patients who received surgical treatment after PTHGD within one week following the admission were assigned to the early group, while the patients who were operated after one week or admitted in the second visit were assigned to the delayed group.

*Results.* The median age of the patients was 81 (IQR 74-86) years. According to the Tokyo guidelines, 90 (76.9%) patients were presented with grade II, while 27 (23.1%) presented with grade III AC. Furthermore, 27 (23.1%) patients met criteria for sepsis, and 16 of them had severe sepsis. Among entire cohort, 10 (8.5%) patients developed catheter-related complications, of them 4 patients required surgery. 72 (61.5%) patients had PTHGD as definitive intervention, while 20 (17.1%) had EC and 25 (21.4%) had DC following PTHGD for AC. The differences in rate of readmissions and reinterventions between drainage and cholecystectomy groups were not statistically significant (29.2% vs 20.0%,  $p=0.28$ , and 16.7% vs 11.1%,  $p=0.59$ ). No significant differences in operative time, conversion rate, postoperative complications, or length of stay between EC and DC were observed ( $p>0.05$ ). Open surgery was the preferred option in DC group,  $p=0.04$ .

*Conclusion.* PTHGD could be an effective alternative treatment for high-risk patients with moderate and severe AC. EC after PTHGD is feasible for patients upon improvement of their physical condition without significant postoperative events.

## PW 1.16

### PANCREATICODUODENECTOMY INDICATIONS, INTRAOPERATIVE DIFFICULTIES AND EARLY POSTOPERATIVE COMPLICATIONS IN LIMITED RESOURCES: A PROSPECTIVE STUDY IN YEMEN

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#### Introduction

Pancreaticoduodenectomy (PD) is highly complex surgical procedure and it is the standard surgical management for the neoplasm of the pancreatic head, distal bile duct, ampulla and duodenum. In high volume centers with improvement of the surgical technique mortality rate has been reduced to be less than 5% while the morbidity remains high reaching up to 40%. However there is a limited data about (PD) in Yemen and all cases were operated by general surgeons. The aim of this study is to describe the PD different indications, the intraoperative difficulties and early postoperative complications in limited resources of Yemen

#### Method

This is a prospective study of 86 patients who underwent elective or emergency PD in Al-Thawra Modern General Hospital in Sana'a, Yemen, between January 2016 to August 2023. The patients were between 16 and 75 years, and they were followed up to 90 days. Eighty six patients were involved, 49 male and 37 female.

#### Results

Four PD (5%) were emergency, 2 trauma, 1 for corrosive ingestion and 1 for duodenal GIST bleeding. eighty two PD (95%) were elective mostly for tumors. Amongst these 49 PD (57%) for pancreatic head cancer, 11 PD (13%) for common bile duct cancer, 10 PD (12%) for ampullary cancer, 6 PD (7%) for duodenal cancer, 5 PD (6%) for pancreatic solid pseudopapillary tumor, 2 PD (2%) for chronic pancreatitis and 1 PD (1%) for choledochal cyst. the most common operative difficulties were seen the normal diameter of biliary tree in 15 PD (17%), aberrant right hepatic artery in 6 PD (7%) and operative field adhesion due to previous biliary surgery in 5 PD (6%).

Pancreatic reconstruction was pancreaticojejunostomy in 83 PD (97%) and pancreaticogastrostomy for the others. The most common postoperative complications were wound infection in 54 PD (63%), pancreatic fistula type B and C in 14% and 6% respectively, bile leak in 6 PD (7%) and delayed gastric emptying in 14 PD (16%), mortality rate in 8 PD (9%) half of them due to pancreatic fistula and the others due to cardiac problems. The overall post operative stay between 7 to 14 days.

#### Conclusion

Pancreaticoduodenectomy in Yemen has wide variety of indications and it can be done with good overall result by experienced general surgeon.

## PW 1.17

### PROGNOSTIC VALUE OF DIFFERENT TOOLS FOR ASSESSING THE RISK OF ACUTE PANCREATITIS FOR VARIOUS ETIOLOGIES

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*Introduction.* Despite the existence of many scales for predicting the course of acute pancreatitis (AP), it is not always possible to predict an unfavorable outcome. The main causes of acute pancreatitis are: biliary etiology and alcohol-nutritional factor, the pathogenesis of which is different and the question of the prognostic value of available risk assessment methods for various etiologies of AP is of interest.

*Material and methods.* A data from 517 patients who received treatment for AP at Regional Hospital №2 is presented. The reported study was funded by Russian Science Foundation, research Project №24-25-00164. Results. Overall mortality in the study cohort was 10.4%.

*Mortality in subgroups by etiology differed - the highest rate of deaths was observed with biliary pancreatitis - 15.3% (with alcohol pancreatitis - 8.1% ( $p = 0.01$ )).*

*In case of alcoholic etiology of AP, the qSOFA has the greatest prognostic value for an unfavorable outcome (AUC 0.874, CI95% 0.831-0.909;  $p < 0.0001$ ), the SIRS (AUC 0.842, CI95% 0.796 - 0.88;  $p < 0.0001$ ), BISAP (AUC 0.829, CI95% 0.783 - 0.869;  $p < 0.0001$ ) and CRP (AUC 0.785, CI95% 0.735-0.830;  $p < 0.0001$ ) have less value.*

*The SIRS worked better for predicting an unfavorable outcome in the group of biliary pancreatitis (AUC 0.858, CI95% 0.796 – 0.905;  $p < 0.0001$ ), for BISAP and qSOFA AUC 0.707 (95% CI 0.632-0.772;  $p < 0.0001$ ) and 0.706 (95% CI 0.633-0.772;  $p < 0.0001$ ), respectively. For traumatic etiology, only the SIRS had statistical significance (AUC 0.700, CI95% 0.494 – 0.860;  $p = 0.0143$ ). Conclusion. Risk assessment tools have varying value across different etiologies of acute pancreatitis, which must be taken into account when predicting risk.*

## PW 1.18

### OUTCOME OF PATIENTS UNDERGOING LARGE PARA-OESOPHAGEAL HERNIAS LAPAROSCOPIC REPAIR WITH SELECTIVE BIOLOGICAL MESH PLACEMENT

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#### Abstract

*La Introduction: Laparoscopic Para-oesophageal hernia repair (LPEHr) is associated with high recurrence rate; mesh usage in para-esophageal hernia repair (PEH) has been controversial.*

*Materials and Methods: We prospectively studied 77 patients with type III and Type IV PEH who underwent LPEHr in the last 7 years. Decision to reinforce with a BM (Permacol<sup>tm</sup>-Medtronic) was made with our internal criteria.*

*Recurrence was defined as the presence of >2cm. intrathoracic stomach on post-operative follow up.*

*Results: 77 PEHr were performed, 39 Type III and 38 type IV; we placed 43 BM 56%, 16% on type III and 40% in type IV. Median follow-up was 34.7 months (1 to 86 months). There was 14% morbidity and 3% required surgery. Overall recurrence rate was 29%, 9% with BM and 20% without BM  $p=0.01$ . Median time of recurrence was 22 months; patients with BM presented a significant delayed recurrence 32 months compared with patients without BM 16 months  $p=0.059$ . We indicated more BMs in patients Type IV than in patients type III  $p<0.01$ . Contradictorily, median recurrence time was shorter in type III than in type IV repairs 14 vs 29 months  $p=0.057$ . 5% of our recurrences needed redo repair and Mortality was 3%*

#### Conclusions:

*Biologic mesh was used in 56% of our patients mainly Type IV PEH. In type III PEHr we indicated less BM placement procuring an unexpected earlier recurrence rate compared with type IV PEHr despite of being a more severe disease, we assume that biologic mesh decrease and delay recurrences.*

### OPEN AND ENDOSCOPIC PROCEDURE COOPERATIVE SURGERY (OECS) FOR LARGE SIZED GASTRIC SUBMUCOSAL TUMORS

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#### Introduction

Laparoscopic endoscopic cooperative surgery (LECS), as applied to gastrointestinal stromal tumors (GIST), allows precise local resection with endoscopic observation from both inside and outside the stomach. However, for tumors larger than 8 cm, open surgery is often employed due to the risk of tumor disruption. We have applied Open and Endoscopic Procedure Cooperative Surgery (OECS), employing the LECS technique for open local resection, to achieve accurate R0 resection even in larger cases.

#### materials & Methods

Patient background, surgical outcomes, and recurrence rates were retrospectively reviewed for 9 cases from July 2019 to July 2023. The OECS technique consists of 1) confirming tumor localization from inside and outside the stomach, 2) performing an ESD mucosal incision, 3) lifting the stomach wall in the ventral direction with circumferential sutures at the outer edge of the mucosal incision line, 4) performing an endoscopic full-layer incision, and 5) closing the defect with sutures in the short or oblique axis.

#### Results

Age 67.6±11 years, 6 males/3 females, localization, U:L 8:1, tumor diameter, 83±31 mm, operative time 231 min., estimated blood loss, 158 ml. Complication, delayed gastric emptying (n=1). Pathological diagnosis, GIST (n=8), Schwannoma (n=1), pR0(n=9). Postoperative hospital stay: 8 days (6-15). Median follow-up: 642 days. Mortality (n=0), local recurrence (n=1).

#### Conclusion

The OECS for large sized gastric submucosal tumors is a safe and accurate technique, allowing R0 resection and also excessive gastrectomy can be avoided.



## PW 1.20

### INCIDENTAL FINDINGS OF GASTROINTESTINAL STROMAL TUMOURS DURING LAPAROSCOPIC SLEEVE GASTRECTOMY

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#### *Introduction*

*Gastrointestinal Stromal Tumour (GIST) is the most common mesenchymal tumour of the gastrointestinal tract. 50-60% of all GIST are found in the stomach. The aim of this study is to evaluate the incidence, characteristics and management of incidental gastric GIST during bariatric surgery.*

#### *Materials and Methods*

*A review of all gastric GIST identified in a prospectively collected database of 3120 patients undergoing laparoscopic sleeve gastrectomy (LSG) over the past 15 years was performed. Patient demographics, histopathology and management of all these patients were evaluated.*

#### *Results*

*Of the 3120 patients 6 were found to have incidental GIST. All of these patients were female. Average age was 42 (38-45). None of the patients had pre-operative symptoms suggestive of gastric pathology. Four of the GIST lesions were noted intra-operatively. Post-operative histopathology showed low mitotic index on all GISTs complete excision. The sizes range from 6 to 18mm. Five were located on the serosal surface of the body of the stomach and one on the fundus of the stomach. All GISTs were resected as part of the sleeve gastrectomy operations. All patients were disease free at 18 months follow up.*

#### *Conclusion*

*There is a low overall incidence of incidental GIST in our series. Pre-operative imaging is not routinely performed before LSG. To achieve complete resection for curative intent, the surgeon needs to be vigilant intra-operatively for incidental GIST. Failure to detect incidental GISTs intra-operatively could lead to incomplete margins and potentially necessitate further operations.*

## PW 1.21

### **CANDY CANE SYNDROME WITH OR WITHOUT CONCOMITANT HIATAL HERNIA AFTER ROUX-EN-Y GASTRIC BYPASS: A HIDDEN ENEMY PROMOVING POSTOPERATIVE SYMPTOMS**

Deycies Gaete Letelier<sup>1</sup>; Ítalo Braghetto Miranda<sup>2</sup>; Owen Korn Bruzzzone<sup>3</sup>; Ana María Burgos<sup>4</sup>; Manuel Figueroa Giralt<sup>5</sup>; Ramón Sanz<sup>6</sup>

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*Introduction:* Candy Cane Syndrome (CCS) is a rare complication of Laparoscopic Roux-en-Y gastric bypass (LRYGB). It occurs due to redundancy in the blind loop at the gastro-jejunal anastomosis. The study aims to describe CCS with or without concomitant hiatal hernia (HH).

*Material and methods:* A case series study was conducted in a center between 2010-2022 and included patients with esophagogastric symptoms after LRYGB, specifically related to the long blind jejunal end loop. To diagnose it, clinical questionnaires, radiological evaluations, esophagogastroduodenoscopy, manometric studies, and 24-hour pH monitoring are used.

*Results:* Twenty-one patients were included, mostly female with a mean of  $49 \pm 11$  years. Nineteen patients underwent primary LRYGB, and two were converted to this technique after gastric sleeve surgery. The mean time from LRYGB to symptom onset was 7.4 years. Pain, reflux symptoms (regurgitation and heartburn), and vomiting were the most frequent with no differences between patients with or without HH ( $p < 0.05$ ). Gastrointestinal endoscopy revealed HH (47.6%), Barrett's esophagus (14.3%), esophagitis (33.3%), and anastomotic ulcer (4.8%). Radiological studies showed a large blind jejunal loop ( $\geq 5\text{cm}$ ) in 71.43% and a large gastric pouch ( $> 5\text{cm}$ ) in 57.14%. Patients with the largest blind jejunal loops experienced persistent vomiting, and one had blind jejunal loop torsion causing persistent vomiting and dysphagia. No significant relationship was found between gastric pouch size and symptoms. Medical treatment failed in all patients to control symptoms, leading to revisional surgery, which involved resection of the elongated blind jejunal loop, removal of the redundant gastric pouch, and hiatal hernia repair resulting in symptom resolution in most patients.

*Conclusion:* The CCS can be the cause of gastrointestinal symptoms after LRYGB, so it should be considered when studying these patients. The combination of CCS and HH has a similar clinical presentation. Radiological and endoscopic studies are essential for diagnosis and choosing surgical treatment.

## PW 1.22

### **ANALYSIS OF OUTCOMES IN PATIENTS POST NON ONCOLOGICAL DISTAL GASTRECTOMY AS DEFINITIVE TREATMENT OF GASTRIC OUTLET OBSTRUCTION POST PERFORATED PEPTIC ULCER REPAIR IN SINGLE CENTRE, MALAYSIA**

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#### *Introduction*

*Perforated peptic ulcer is one of the commonest emergency surgeries. Gastric outlet obstruction post perforated peptic ulcer repair was one of delayed complications encountered. However, this complication was not been properly reported in the literature. Hence our aim is to describe the prevalence of gastric outlet obstruction post-surgery namely Cellan-Jones repair for perforated peptic ulcer disease and its associations.*

#### *Methods*

*All adult patients operated for perforated peptic ulcer from year 2018-2022 were included in this cross-sectional study of single center study. The demographics, clinical presentation, pre-operative laboratory parameters, operative findings, operation done, and the outcomes were collected. Mortality and morbidity were assessed and factors were assessed using standard statistical test of significance with  $p < .05$ .*

#### *Result*

*The prevalence of gastric outlet obstruction post perforated peptic ulcer surgical repair is 22 out of 100 cases (22%) reported. Out of 22 cases majority of them are male and foreigners with mean age of 42 years old. From our data, patient's comorbidities, nutritional status, prehabilitative status, intra-operative events, and rehabilitation affect patient outcomes of surgery. Out of 22 patients, 20 of them survived the definitive surgery of definitive distal gastrectomy. Only 18.2% of them had 90 days major complication such as 2 deaths (AMI, VAP), 1 duodenal stump leak, 1 perforated caecum (lymphoma) left with 4.5% had minor complication within 30 days post operation. It is found that recuperation period of less than 1 year is significantly associated with 90-days complications ( $p = .011$ ).*

#### *Conclusion*

*From this data, we found that the prevalence of gastric outlet obstruction post Cellan-Jones repair is high and had been overlooked. There were significant difference between mortality and 90 days complication post definitive surgery of gastric outlet obstruction.*

## PW 1.23

### DECIPHERING HYPOXIA'S ALLY IN ESOPHAGEAL CANCER: AXIN1 LACTYLATION AS A GATEWAY TO GLYCOLYTIC MASTERY AND TUMOR CONTROL

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**Background:** This study investigates the effect of Axin1 protein lactylation on glycolysis in esophageal carcinoma cells under hypoxic conditions.

**Methods:** Esophageal carcinoma cell lines TE1 and EC109 were cultured under hypoxia, and Axin1 lactylation and ubiquitination were analyzed using Western blotting. Extracellular acidification rate (ECAR) was measured by Seahorse analysis, while glucose consumption and lactate production were assessed using commercial kits.

**Predictions of Axin1 lactylation sites** were made using the DeepKla online database, followed by the construction of Axin1 mutations. Glycolysis was manipulated in vitro using 2-deoxy-D-glucose (2-DG) and extracellular lactate, and in vivo through tumor xenografts in nude mice with Axin1 or lactate dehydrogenase A (LDHA) overexpression.

**Results:** Hypoxia increased pan lysine lactylation (pan-kla) in TE1 and EC109 cells, as well as upregulated ECAR, glucose consumption, and lactate production. Hypoxia treatment elevated sphere formation rates and enhanced the expression of embryonic stem cell transcription factors NANOG and SOX2. Overexpression of Axin1 partially reversed the effects of hypoxia. Lactylation at K147 promoted Axin1 ubiquitination, enhancing glycolysis and cell stemness.

Mutant Axin1 inhibited ECAR, glucose uptake, lactate secretion, and cell stemness under normal and hypoxic conditions. In vivo, Axin1 overexpression inhibited tumor growth and suppressed glycolysis.

**Conclusions:** Hypoxia promotes glycolysis and cell stemness in esophageal carcinoma cells, increasing Axin1 lactylation. Axin1 overexpression acts as a glycolysis inhibitor, counteracting hypoxia effects in vitro and impeding tumor growth in vivo. This study reveals Axin1 lactylation's role in regulating glycolysis in esophageal carcinoma, offering new therapeutic targets.

## PW 1.24

### A CASE OF MASSIVE SPLENOMEGALY SUCCESSFULLY TREATED WITH PREOPERATIVE SPLENIC ARTERY EMBOLIZATION

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#### *Background.*

*In recent years, splenectomy has shifted from open surgery to laparoscopic surgery, and the number of indications for splenectomy has increased. Splenomegaly is associated with increased splenic function, risk of variceal bleeding due to development of collateral blood vessels, and difficulty in securing the surgical field. In this report, we describe our experience with a case in which a laparoscopic splenectomy was performed safely after splenic artery embolization.*

#### *Case presentation*

*A 51-year-old woman admitted to our hospital with left-sided abdominal pain. Imaging examination revealed splenic vein obstruction of unknown cause, gastric varices, and a giant splenomegaly with a maximum diameter of 23 mm. Blood examination showed no liver dysfunction or coagulation abnormality. In this case, we decided to perform splenic artery embolization prior to laparoscopic splenectomy on the day before the procedure in order to control intraoperative bleeding. The coil embolization was performed at the root of the superior and inferior polar of the splenic artery. After confirming that the embolization was inhibition by CT scan on the following day, laparoscopic splenectomy was performed.*

#### *Discussion.*

*Splenic artery embolization for splenomegaly has been reported to be successful in controlling intraoperative bleeding and reducing the rate of blood transfusion. On the other hand, there are no clear recommendations on where to place the embolization site, in addition to complications such as fever and pancreatitis caused by embolization. It is important to identify the site for embolization preoperatively.*

#### *Conclusion.*

*Laparoscopic splenectomy for massive splenomegaly has many advantages, such as reducing bleeding by preceding splenic artery embolization.*

## PW 1.25

### RESULTS OF TRANSCATHETER ARTERIAL EMBOLIZATION (TAE) FOR BLEEDING PEPTIC ULCERS

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*Introduction:* peptic ulcer bleeding (PUB) remains an urgent problem with a probable mortality rate of more than 20%. The Transcatheter Arterial Embolization (TAE) has become a widespread practice. The TAE in most cases could avoid open surgery, especially in the group of comorbid patients of the senior age, but there are some limitations. *Material and methods:* a retrospective, single-center study from 2021 to 2023, enrolled 89 patients with confirmed PUB: 65 male (73%), 24 female (27%), an average age  $67.9 \pm 14.4$ . Distribution of patients according to Forrest et al.: Fl a 10(11.2%), Fl b 20(22.5%), Fl I a 30(33.7%), Fl I b 25(28.1%), Fl I c 4(4.5%). Endoscopic signs of a deep ulcer detected in 34 (38.2%) cases, and ulcer's size >20 mm in 40 (44.9%), the location of peptic ulcer along the small curvature of stomach and on posterior wall of duodenum in 33 (37.1%) patients. *Results:* TAE performed for 78(87.6%) patients. Rebleeding after TAE detected in 17 (21.8%) patients and open surgery performed for 8(10.3%) patients. Total mortality rate was 24(27%), the mortality after TAE – 19(24.3%), and mortality after rebleeding - 5(6.4%). The occlusion of the Gastroduodenal Artery (GDA) performed in 60 (76.9%) patients, the Left Gastric Artery (LGA) – 17(21.8%), the Common Hepatic Artery (CHA) – 1(1.3%). Embolization with coils performed in 59 (75.6%) cases, microspheres - in 19(24.4%). Complications after TAE noted in 8(10.2%) patients: 4 patients, after TAE with coils had an acute renal failure, which required hemodiafiltration, and 4 patients after TAE with microspheres underwent emergency thrombectomy from artery of access. *Conclusion:* TAE was feasible in most of cases - 87.6%, with rebleeding rate 21.8%, frequency of complications - 8.9%.

### **FEASIBILITY EXPERIMENT OF A NOVEL DEFORMABLE SELF-ASSEMBLED MAGNETIC ANASTOMOSIS RING (DSAMAR) FOR GASTROINTESTINAL ANASTOMOSIS THROUGH NATURAL ORIFICE**

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*Introduction:* Although the application of magnetic compression anastomosis is becoming increasingly widespread, the magnets used in previous studies were mostly in the shape of a whole ring. Hence, a deformable self-assembled magnetic anastomosis ring (DSAMAR) was designed in this study for gastrointestinal anastomosis. Furthermore, its feasibility was examined using a beagle model.

*Materials and Methods:* The designed DSAMAR comprised 10 trapezoidal magnetic units. Twelve beagles were used as animal models, and DSAMARs were inserted into the stomach and colon through the mouth and anus, respectively, via endoscopy to achieve gastrocolic anastomosis. Surgical time, number of failed deformations, survival rate of the animals, and the time of magnet discharge were documented. One month later, specimens of the anastomosis were obtained and observed with the naked eye as well as microscopically.

*Results:* In gastrocolic anastomosis in 12 beagles, the procedure took 65–120 min. Although a deformation failure occurred during the operation in one of the beagles, it was successful after repositioning. The anastomosis was formed after the magnet fell off 12–18 d after the operation. Naked eye and microscopic observations revealed that the anastomotic specimens obtained 1 month later were well formed, smooth, and flat.

*Conclusion:* DSAMAR is feasible for gastrointestinal anastomosis under full endoscopy via the natural orifice.

## PW 1.27

### LAPAROSCOPIC-ENDOSCOPIC COOPERATIVE SURGERY (LECS) METHODS IN PEUTZ-JEGHERS SYNDROME (PJS) TREATMENT

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*Background. PJS is well-described inherited syndrome, characterized by the development of gastrointestinal polyps. Until the small bowel (SB) endoscopy the PJS patients treatment was solely based on intestinal resection sometimes - it leading to short bowel syndrome. The treatment strategy for SB polyps is not well established and usually combines the surgical and endoscopic approaches.*

*The incidence of PJS is estimated to be between one in 50,000 to 200,000 live births. - in Lithuania we can expect only a case in one or two years.*

*Methods & Results (case report). Here we present a case of 22-year female patient with 12 years of PJS diagnosis. She was operated for SB obstruction and no other evaluations later performed. Two years ago she was examine due the anemia and suspecting malignancy. The barium meal X-ray and abdominal CT-scan showed five SB polyps which we remove in two stages: with laparoscopic – assistance perform maximally the SBE removing three hamartomous polyps using the colonoscope, and after the 6 weeks we examine the SB retrogradely as well as the removal of other two large polyps in it.*

*On follow up magnetic resonance enterography showed 4cm in diameter polyp in the middle of small bowel. It was confirmed by capsule endoscopy. Laparoscopic SB resection was performed due to SB intussusception. The postoperative course was uneventful and the patient was discharged after two days. The pathology confirmed hamartomous polyp (PJS).*

*Conclusions. Frequent complications in patients with PJS include bleeding, obstruction, and intussusception.*

*Combined endoscopic polypectomy are successful in the management of PJS polyposis.*

*Regular gastroduodenal endoscopic and radiological examinations are recommended.*



## PW 2.01

### ATTACKING ATTRITION: IMPACT OF NEOADJUVANT-INTENT CHEMOTHERAPY ON RECEIPT OF GUIDELINE-CONCORDANT TREATMENT

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*Introduction:* Receipt of guideline-concordant treatment (GCT) is associated with improved prognosis in multiple cancers. In recent years, neoadjuvant chemotherapy has been increasingly utilized in the treatment of both pancreatic and gastric cancer for early treatment of potential micrometastases, higher rates of R0 resection, and improved patient selection. This study examined the impact of neoadjuvant-intent chemotherapy (NAIC) on receipt of GCT in patients with resectable gastric and pancreatic cancer.

*Materials & Methods:* A single-institution retrospective review of patients with resectable pancreatic or gastric cancer from 2018-2022 was performed. GCT was defined based on National Comprehensive Cancer Network guidelines, as receipt of multimodal therapy (chemotherapy and surgery in any sequence) unless precluded by patient comorbidities, or progression on systemic chemotherapy.

*Results:* Of the 237 patients in the study period, 116 (49%) received NAIC. 55% of patients who received NAIC (N=64) received GCT. NAIC did not affect receipt of GCT (72% vs 61%,  $p = 0.196$ ). On multivariable analyses, factors independently associated with decreased receipt of GCT included age  $\geq 75$  years [OR 0.21 (95% CI 0.18-0.87)], residence in area of high deprivation [0.30 (0.10 – 0.80)], and 3 or more ED visits [0.11 (0.03 – 0.39)]. Reasons for non-GCT in patients who received NAIC included deconditioning through NAIC that subsequently made them non-surgical candidates (N=24, 46%), loss to follow-up (N=20, 38%), and complications, or delay in treatment of procedural complications, that prevented completion of subsequent therapy (N=8, 15%).

*Conclusion:* NAIC did not affect receipt of GCT. Reasons for non-GCT in patients receiving NAIC include deconditioning during chemotherapy, loss to follow up, and complications of treatment. This study emphasizes the importance of structured prehabilitation programs and close follow-up during NAIC. Developing and implementing programs to prevent drop out for non-tumor biology related failure of completion of therapy is necessary to providing optimal cancer care.

## PW 2.02

### RETROPERITONEAL LAPAROSCOPIC MEDIAN ARCUATE LIGAMENT DECOMPRESSION

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*Introduction: The celiac artery (CA) associated with median arcuate ligament compression syndrome can result in aneurysms at the pancreaticoduodenal arcade. If the aneurysm ruptures, treatment with interventional radiology (IVR) is recommended. Subsequently, the median arcuate ligament (MAL) should be incised to prevent the recurrence of the aneurysm. Method: We performed 4 cases of laparoscopic retroperitoneal MAL incision. And one case was the operation with intraoperative IVR to find the location of celiac artery and simultaneous dilatation of stricture. All the cases showed no complications and increased celiac artery blood flow. Discussion: Conventional laparoscopic intraabdominal approach to MAL has technical difficulty. It is because MAL usually exist behind the pancreas. Instead of that retroperitoneal approach to MAL is easier way to access because of no obstructive organ exist on the way of it. However, there is few surgical landmark for retroperitoneal MAL incision. Therefor IVR during MAL incision is feasible. Additionally, the retroperitoneal laparoscopic approach reduces the risk of adhesive bowel obstruction. Conclusion: Retroperitoneal laparoscopic MAL incision is better than conventional intraabdominal approach. And the operation with IVR methodology is more efficient to detect MAL.*

## PW 2.03

### DELORME SURGERY COMBINED WITH NOTARAS TECHNIQUE FOR RECTAL PROLAPSE WITH FECAL INCONTINENCE: A CASE REPORT

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*Introduction: Total rectal prolapse, or rectal procidentia, is a condition characterized by the protrusion of all layers of the rectum through the anal opening, leading to fecal incontinence. Surgical treatment options include abdominal, perineal, or combined approaches, chosen based on the patient's clinical condition, as long-term outcomes are similar. Short-term improvement in prolapse is common, but varying degrees of fecal incontinence often persist, justifying combined procedures.*

*Objective: This case report aims to describe the perineal Delorme technique combined with the Notaras technique for treating total rectal prolapse associated with fecal incontinence.*

*Case Report: This concerns a 72-year-old woman with diabetes, hypertension, and coronary artery disease who presented with rectal prolapse and fecal incontinence for one year. Proctologic examination revealed a partially open anus, dynamic inspection showed total rectal prolapse, and digital examination revealed hypotonic sphincters.*

*Anorectal manometry demonstrated severe hypotonia of the internal and external sphincters. Colonoscopy revealed normal rectal morphology and mucosa with edema and erythema in the distal region. Defecography identified signs of circumferential loss of the internal sphincter, diffuse thinning of the iliococcygeal muscles, particularly on the right, with concavity loss, moderate enlargement of the elevator hiatus with slight pelvic descent at rest, which increased during defecation. Multicompartmental pelvic descent.*

*Conclusions: Due to the patient's comorbidities, a Delorme operation was chosen to reduce prolapse, combined with the Notaras technique to decrease anal canal diameter, increase its length, and improve incontinence. The patient reported no postoperative complaints and is currently undergoing outpatient follow-up, with symptomatic improvement*

## PW 2.04

### CASE REPORT ON ALPHA-FETO PROTEIN POSITIVE COLORECTAL CANCER

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#### Background

Alpha-fetoprotein (AFP) is commonly produced by hepatocellular carcinoma and yolk sac tumours whilst AFP in colorectal cancer is a rare association. We report a case of a patient with primary AFP-producing colorectal cancer which was successfully treated with surgery and adjuvant chemotherapy. This case highlighted the importance of recognizing a case of AFP-producing colorectal cancer.

#### Case presentation

This case report discussed a 59 year old gentleman who has a history of hepatitis B infection, with two months occurrence of intermittent fresh per rectal bleeding. Previous burden of hepatitis B infection and a high serum AFP level on admission (212.6ng/mL), raised the suspicion of a possible hepatocellular carcinoma. Hence, a triphasic computed tomography liver was performed but showed an incidental hepatic flexure colonic lesion with no liver disease. Subsequent colonoscopy revealed a large friable tumour obstructing the whole lumen of the proximal transverse colon. He then underwent an emergency extended right hemicolectomy. Histopathological examination showed a Duke C mucinous adenocarcinoma (T3N2b), with satisfactory resection margin. Immunohistochemical analysis showed that the tumour is mismatched repair protein proficient (MLH1/MSH2/MSH6/PMS2 positive), HER2 positive and interestingly, stained AFP positive as well. The postoperative period was uneventful and serum AFP level normalised. The patient completed 8 cycles (4 months) of adjuvant chemotherapy with capecitabine and oxaliplatin (CAPOX) regimen. A follow-up AFP level, CT scan and colonoscopy one year later showed no evidence of local or distant recurrence.

#### Conclusion

Alpha-feto protein may be useful to detect hepatocellular carcinoma and also colorectal cancer. In particular, this case report has fully demonstrated the unexpected incidence and importance to recognize early and treat accordingly, or the diagnosis of colorectal cancer could have been missed.

## PW 2.05

### EFFECT OF A CIRCULAR POWERED STAPLER ON REDUCING THE RISK OF ANASTOMOTIC LEAKAGE IN PATIENTS WITH LEFT-SIDED COLORECTAL CANCER

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**Background:** The powered circular stapler, which was developed with the aim of providing reliable and reproducible anastomosis, provides complete anastomosis, resulting in a reduced risk of anastomotic leakage. The aim of this study was to compare the incidence of anastomotic leakage between a conventional manual circular stapler (MCS) and the ECHELON CIRCULAR™ Powered Stapler (ECPS) in patients with left-sided colorectal cancer who underwent anastomosis with the double stapling technique.

**Methods:** A total of 187 patients with left-sided colorectal cancer who underwent anastomosis with the double stapling technique with a conventional MCS or the ECPS during surgery at Osaka City University Hospital between January 2016 and July 2022 were enrolled in this study. An expert in colorectal surgery participated in all surgeries. There was no operator bias in the use of circular staplers.

**Results:** The MCS was used in 119 cases (MCS group), and the ECPS was used in 68 cases (ECPS group). The incidence of anastomotic leakage in the ECPS group was significantly lower than that in the MCS group (4.4% versus 14.3%,  $p=0.048$ ). The reoperation rate in the ECPS group was lower than that in the MCS group (1.5% versus 2.5%), although the difference did not reach statistical significance due to the extremely small number of events.

Furthermore, even after propensity score matching using the three covariates of Body Mass Index, tumor location, and smoking, which have been reported to affect anastomotic leakage and which showed significant differences in patient backgrounds, the ECPS remained associated with a reduced incidence of anastomotic leakage.

**Conclusion:** The ECPS has the potential to help reduce the rate of anastomotic leakage in left-sided colorectal surgery.

### PROGNOSTIC MARKERS FOR THE PRECISION DIAGNOSIS OF COMPLICATED ACUTE DIVERTICULITIS: SYSTEMATIC REVIEW

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*Background:* Complicated acute diverticulitis is associated with the formation of an abscess, a fistula, bowel obstruction, or a perforation. It is characterised by a critical condition, several complications, and high mortality. Complicated diverticulitis is more common in elderly patients. Appropriate selection of diagnostic markers and precise distinction between simple and complicated diverticulitis are essential to determine the best treatment strategy.

*Methods:* A systematic search in PUBMED, MEDLINE on colonic diverticulitis was performed. Diagnostic tools, randomised controlled trials, nonrandomised comparative studies, observational epidemiological studies, national and international guidelines, reviews of observational studies on the emergency surgical treatment of complicated diverticulitis, and studies of prognostic significance were reviewed. The criteria for eligibility for the studies were diagnosis and classification, emergency surgery, and predictive factors. The search was limited to articles published in the last decade. The last database search was performed on 31 December 2023.

*Results:* A total of 124 publications were selected for comprehensive review. Our study visually summarises prognostic markers related to the diagnosis of complicated diverticulitis. We divided them into four groups: single markers, blood count-related markers, imaging-related indexes, and scoring systems.

*Discussion:* The heterogeneity of patients with acute diverticulitis means that treatment should be tailored on an individual basis. Research on relevant markers for diagnosing complicated diverticulitis is gradually increasing.

*Conclusions* There are several nonroutine markers for diagnostics; therefore, it is essential to verify their significance, and they can be routine tests for complicated diverticulitis. Research on some biomarkers is still in progress, with a focus on defining reference values, diagnostic accuracy, and clinical applications. Based on the overall consideration, we recommend combining biomarkers and scoring systems. Although the retrospective setting does not allow definitive recommendations, these results are of utmost importance for the design of future prospective, randomised controlled trials.

## PW 2.07

### SIGNIFICANCE OF ADJUVANT CHEMOTHERAPY FOR ELDERLY PATIENTS OVER 80 YEARS OF AGE IN COLORECTAL CANCER

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**Introduction:** The treatment of colorectal cancer offered to elderly patients aged  $\geq 80$  years is less likely to adhere to the standard approach including radical resection followed by adjuvant chemotherapy (AC) because there are few studies of efficacy and safety of AC for such older patients. We herein report the significance of AC for patients aged  $\geq 80$  years in colorectal cancer.

**Materials & Methods:** Of 188 radical resection patients of colorectal cancer performed at our department from April 2017 to December 2022, 98 patients who met our AC criteria, such as (1) PS1 or less, (2) no severe comorbidities, and (3) pStage II with high-risk feature, or pStage III, or pStage IV after R0 resection (R0pStageIV), were included. We retrospectively analyzed comparisons between the patients aged  $\geq 80$  years group and aged  $\leq 79$  years group.

**Results:** There were 65 patients in aged  $\leq 79$  years group and 33 patients in aged  $\geq 80$  years group. Rate of AC was significantly lower in aged  $\geq 80$  years group (52%) than aged  $\leq 79$  years group (77%) ( $p=0.011$ ). While completion rate of AC was comparable, indication rate of double-agent chemotherapy was significantly lower in aged  $\geq 80$  years group ( $p=0.017$ ). In pStageII patients 5-year OS was comparable, however, in pStage III + R0pStage IV (III+IV) patients was significantly worse in aged  $\geq 80$  years group (30.9%) than aged  $\leq 79$  years group (93.6%) ( $p=0.009$ ). In aged  $\geq 80$  years group with III+IV, OS curves of nonAC and double-agent AC group were comparable, but single-agent AC group was better and 5-years OS rate was 68%.

**Conclusion:** Elderly patients aged  $\geq 80$  years with colorectal cancer in pStageIII + R0pStageIV had poorer prognosis compared to patients aged  $\leq 79$  years. In patients aged  $\geq 80$  years with pStageIII + R0pStageIV colorectal cancer, our study suggested that completion of AC with single-agent is important for prognosis.

## **PW 2.08 Presented as Poster Exhibition (PE 345)**

**EXCISION OF TAILGUT CYST BY KRASKE APPROACH**



## PW 2.09

### **SUCCESS OF CONSERVATIVE TREATMENT OF ACUTE APPENDICITIS WITH RETAINED FAECOLITH: ASYSTEMIC REVIEW**

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*Introduction: Surgical removal is standard treatment of appendicitis, however conservative treatment has much fewer complications. Yet it has increased number of relapses that needs conversion to surgery. Appendicitis established by fecalith in 13- 16% of cases. Management remains controversial in presence of fecalith and is considered a reason for failure of conservative treatment. This systemic review is to study success of conservative treatment in appendicitis with fecalith. Methods: PICO framework was used. Population: acute appendicitis with fecalith at any age or genders (Excluding complicated appendicitis, cases with comorbidities & appendicitis without fecalith). Intervention: conservative treatment with antibiotics. Comparison: Surgical appendectomy were compared to conservative management. Outcome: Complications need intervention or surgery within one month is considered failure. Results: Search through (PubMed, BMJ, research gate, Elsevier, and google scholar) collected 65 records. Records after duplicates removal were 58. Screened against title & abstracts were 58. Excluded after screening against title & abstract were 49 (No appendicitis in 2. No fecalith in 27. Complicated in 8). Guidelines (No patient data) in 11. Others (Case report) in 1. Articles assessed for eligibility were 9. Final texts included in systemic review were 9. Total patients were 2336. Patients included were 731. Data of 86 patients were not complete (excluded). Conservative treatment was in 381. Success in 221 (58%). Failure in 123 (32.28%). Lost to follow 37 (9.7%). Surgical treatment was in 264. Success in 242 (91.66%). Failure in 22 (8.3%) Conclusion: Surgical treatment of fecalith*

**PW 2.10**

**CANCELLED**

## PW 2.11

### **ATRAUMATIC GAS GANGRENE IN SYNCHRONOUS COLONIC MALIGNANCY BY CLOSTRIDIUM SEPTICUM: A RARE CASE REPORT**

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#### **CASE PRESENTATION**

A 44 years old male patient came with complaints of pain in abdomen for 3 months and passage of black coloured stools for a week. On palpation, an ill-defined, firm lump was palpable at the right iliac region. After 20 days of admission, the patient developed spontaneous sudden onset right lower limb gas gangrene.

#### **MANAGEMENT**

Contrast Enhanced Computerized Tomography (CECT) abdomen and colonoscopy suggested two separate lesions at ascending colon and sigmoid colon. Histopathological examination confirmed the diagnosis of adenocarcinoma.

An emergency right below knee amputation was performed. Bilateral aortoiliac plasty and stenting was performed for the same. Later, the patient underwent a total colectomy with ileo-rectal anastomosis.

#### **DISCUSSION**

*Clostridium septicum* was the causative agent of the atraumatic myonecrotic gas gangrene, unlike other similar cases where *Clostridium perfringens* is commonly the causative organism. Spontaneous clostridial myonecrosis was associated with colorectal cancerous outgrowths.

Piperacillin/ Tazobactam or Meropenem and Clindamycin are currently recommended antibiotics. Investigation with a CT should be undertaken. Repeated surgical debridements are necessary to achieve source control.

#### **CONCLUSION**

Infection with *C. septicum*, although rare, can lead to fatal outcomes and a poor prognosis, owing to its highly virulent and aggressive nature. This warrants early identification and initiation of treatment with an aim to decrease mortality. Patients, who present with an underlying colonic cancer and signs of infection / sepsis, should have a high degree of suspicion that they might have a *C. septicum* infection.

#### **KEYWORDS**

*Clostridium septicum*; Gas gangrene; Myonecrosis; Colorectal cancer, Surgery

## PW 2.12

### BEHIND CLOSED DOORS: A UNIQUE CASE OF RECTAL FOREIGN BODY RETRIEVAL

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#### INTRODUCTION

Rectal foreign bodies (RFB) present the surgeon with a difficult management dilemma, as the type of object, host anatomy, time from insertion, associated injuries and amount of local contamination may vary widely. Reluctance to seek medical help and to provide details about the incident often makes the diagnosis difficult. Management of these patients may be challenging, as presentation is usually delayed after multiple attempts at removal by the patients themselves have proven unsuccessful.

#### CASE PRESENTATION

In this article we report the case of a male who presented with a faucet wedged into his rectum. On digital rectal examination, the lower metal edge of the foreign body was felt about 5 cm from the anal verge. As we were unable to extract the object with routine transanal approach, we performed a laparotomy and colostomy that allowed transanal extraction.

#### DISCUSSION

We review currently available literature on RFB and propose an evaluation and management of patients that present with RFB. A wide variety of objects have been noted in the literature, including bottles, vibrators, fruits and vegetables, tools, and miscellaneous items such as light bulbs, candles, balls, and flashlights.

#### CONCLUSION

Management of patients with rectal foreign bodies can be challenging and a systematic approach should be employed. The majority of cases can be successfully managed conservatively, but occasional surgical intervention is warranted. If large objects, tightly wedged in the pelvis cannot be removed with laparotomy, pubic symphysiotomy should be considered.

#### KEY WORDS

Foreign bodies; Rectum; Anorectal trauma; Transanal approach; Laparotomy

## PW 2.13

### MECKEL'S BAND, A RARE CAUSE OF INTESTINAL OBSTRUCTION

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#### *Introduction :*

Meckel's diverticulum is a congenital anomaly of the gastrointestinal tract with prevalence 1-3%. It results from incomplete obliteration of the vitelline duct leading to the formation of a true diverticulum of the small intestine. The risk of the complication is 4-6%. Intestinal obstruction is one of the common presentation in adult. Mesodiverticular band, as presented in this case report is a rare cause of small bowel obstruction in Meckel's diverticulum.

*Objective :* We examined the clinical course of a patient with intestinal obstruction symptoms secondary to internal herniation secondary to mesodiverticular band of Meckel's diverticulum.

*Material & method :* Patient demography, clinical presentations and imaging were documented.

#### *Case report:*

63 years old man, presented with sudden severe abdominal pain and distension, vomiting, and no bowel output for 2 days. CT scan shows long segment small bowel thickening at the proximal jejunum and distal ileum. Patient underwent exploratory laparotomy found grossly dilated small bowel from DJ till terminal ileum with Meckel's diverticulum band at the tip of diverticulum adhere to terminal ileum serosa and mesentery (5cm from ICV). Noted internal herniation of terminal ileum underneath the Meckel's diverticulum causing small bowel obstruction and 2mm perforation at the base of diverticulum.

#### *Discussion :*

Meckel's diverticulum, an omphalomesenteric duct remnant, present 1-3% among population and only 4% may become symptomatic due to the complication. Complications include hemorrhage, intestinal obstruction, diverticulitis, perforation and peritonitis. Meckel's diverticulum is complicated by mesodiverticular band is rarely seen, Majority are asymptomatic and the diagnosis is very difficult to confirm preoperatively.

#### *Conclusion :*

Although Meckel's diverticulum is the most prevalent congenital abnormality in gastrointestinal tract, the incidence of the internal herniation cause by mesodiverticular band is rare. Its complication should be taken into account in the differential diagnosis of intestinal obstruction though in adult patient.

## PW 2.14

### LAPAROSCOPIC REVERSAL OF HARTMANN'S PROCEDURE

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**Introduction :** Hartmann's reversal surgery after Hartmann's procedure is related with high perioperative complications. There are few reports and no consensus of laparoscopic approach for Hartmann's reversal surgery. In our department, laparoscopic surgery is the first choice of Hartmann's reversal, and good results have been obtained.

**Operative procedure :** The colostomy is circumferentially dissected off the skin and the fascial edges. The anvil of the circular stapler is placed in the oral side of the colon. The single port device with three trocar ports (12mm-5mm-5mm) is placed through the ostomy site. Dissection commences to identify the rectal stump, and adhesions are lysed between the rectum and surrounding structures, such as small bowel, uterus, ovaries and peritoneum. If adhesions are severe, an additional port was added. The rectum can be mobilized posteriorly in the bloodless total mesorectal excision plane to facilitate reach and advancement of the EEA stapler. Typically, the anastomosis is created using an EEA stapler. The anvil can be mated to the EEA stapler passed through the anorectum.

**Results:** 14 laparoscopic Hartmann's reversals were performed in our department from 2000 to 2022. All patients had a previous history of emergent laparoscopic Hartmann's surgery for sigmoid diverticulum perforation. Mean aged was  $61 \pm 18.9$ . Median duration between the initial surgery and Hartmann's reversals was 9.2 months (range; 5 to 14 months). All surgeries were completed laparoscopically. SPS (single port surgery) was applied in two cases. The average surgical time was  $163 \pm 54$  minutes, and the average blood loss was  $29 \pm 18$  ml. The average length of hospital stay was  $13 \pm 2.4$  days. In all cases surgery was completed without conversion to open procedure. There were no complications during or after surgery.

**Conclusion:** Laparoscopic Hartmann's reversal is a safe and minimally invasive procedure.

## PW 2.15

### DOES MULTIVISCERAL RESECTION OF ADVANCED COLON AND RECTAL CANCER HAVE AN IMPACT ONTO EARLY POSTOPERATIVE AND LONG-TERM ONCOSURGICAL OUTCOME - DATA OBTAINED IN A PROSPECTIVE MULTICENTER OBSERVATIONAL STUDY INCLUDING PROPENSITY SCORE ANALYSIS

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*Aim: To analyze possible differences between non-multivisceral resection (nMVR) & MVR in terms of early postop. (not shown) & long-term oncological treatment outcomes.*

*Methods: Data of 25.321 patients from 364 hospitals who had undergone surgery for CRC (UICC stages I–III) during a defined period of time were registered in a computer-based data file & evaluated.*

*Results: From 2008-2015, the MVR rates were 9.9% (n=1,551) for colon cancer (colon CA) & 10.6% (n=1,027) for rectal cancer (rectal CA). CRC was more common in men (colon/rectal CA: 53.4/62.0%) than in women; all MVR groups had high proportions of women (53.6 vs. 55.2%; pairs of values in previously mentioned order). Resection of another organ frequently occurred (75.6 vs. 63.7%).*

*The 5-yr-overall survival rates were 53.9% (nMVR: 69.5%;  $p < 0.001$ ) in the colon CA group & 56.8% (nMVR: 69.4%;  $p < 0.001$ ) in the rectal CA group. Comparison of individual T stages (MVR vs. nMVR) showed no significant differences in the survival outcomes ( $p < 0.05$ ); however, according to the MPA, a significant difference was observed in the survival outcomes of those with pT4 colon CA (40.6 vs. 50.2%;  $p = 0.017$ ). By contrast, the 5-yr-local recurrence rates after MVR were not significantly different (7.0 vs. 5.8%; both  $p > 0.05$ ). The risk factors common to both tumor types were advanced age ( $> 79$  yr), pT stage, sex & morbidity (each hazard ratio:  $> 1$ ;  $p < 0.05$ ).*

*Conclusion: MVR allows curative R0 resection with adequate long-term survival. For colon or rectal CA, MVR tended to be associated with reduced 5-yr-overall survival rates (significant only for pT4 colon CA based on the MPA results), as well as, with a significant increase in morbidity rates in both tumor entities. In the overall data, MVR was associated with significant increases in hospital mortality rates, as indicated by the MPA (significant only for rectal CA).*

## PW 2.16

### POSSIBLE IMPACT OF ANASTOMOSIS ONTO SURGICAL AND ONCOLOGICAL OUTCOME IN RESECTION OF PRIMARY COLON CANCER (CA): DATA OBTAINED FROM A PROSPECTIVE MULTICENTER OBSERVATIONAL STUDY

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*Aim: To investigate the influence of surgical technique, the possible creation of intestinal anastomosis, & surgical urgency on the early postop. (not shown) & long-term outcome of patients w/ primary colon CA*

*Material & methods: Through a 7-years time period, all consecutive patients w/ histologically diagnosed primary colon CA were registered.*

*Results: - Basic data: From 2010–2016, data from 14,466 patients were documented (mean age, 72.8 [range, 22–96] years; sex ratio, m:f=7,696:6,770); 717 patients (4.96%) were included in a matched-pair analysis. The majority of these patients underwent elective surgery (n=12,620 patients; 87.2%) regardless of whether a bowel anastomosis or a "stoma" was created. In emergency surgery, a bowel anastomosis was possible in a large proportion (n=1,332 patients [72.1%]). In contrast, in 514 patients (27.9%) who had undergone emergency surgery, a stoma was created. Interestingly, stoma had to be created even less frequently in patients who had undergone planned surgery (n=366 [2.5%]).*

*- Long-term outcome: Early postop. mortality had major impact onto survival. The most important factors influencing long-term survival were age, resection status & tumor stage (according to TNM/UICC). The more advanced tumor stage was classified, the lower the long-term survival. Kaplan-Meier curves for surgical technique & urgency showed significant differences in survival time in the matched-pair analysis. Patients categorized with the same tumor stage, age & risk factors had a better chance of survival, if they had been operated electively & w/ intestinal anastomosis. Interestingly, the multivariable analysis showed that older patients & such w/ distant metastasis benefit from a discontinuity resection.*

*Conclusion: The association of intraop. & postop. complications w/ increased postop. mortality as well as preexisting risk factors & periop. complications is in line w/ findings of current studies. Furthermore, current studies also agree that older patients & such w/ reduced general condition benefit from discontinuity resection.*



## PW 2.17

### CAECAL BASCULE: UNRAVELING THE TWIST

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*Cecal bascule, marked by abnormal cecal folding or displacement, poses a risk of bowel obstruction. Unlike cecal volvulus, it entails a distinctive cecal folding or tilting, necessitating urgent surgical intervention.*

*Here, we present the case of a 65-year-old Malay lady, with a history of multiple caesarean sections and a recent left neck of femur fracture. Her symptoms indicated intestinal obstruction, confirmed by abdominal X-ray showing dilated bowels. CT Abdomen revealed a dilated cecum with abnormal orientation, prompting suspicion of caecal bascule. An emergency laparotomy, caecopexy, bowel decompression, and appendectomy were performed. Postoperatively, she experienced ileus, which resolved, leading to her discharge on day 9 post-op.*

*Surgical intervention stands as the primary recourse for Caecal bascule, with cecopexy and resection with anastomosis emerging as preferred approaches. However, the scarcity of data comparing the efficacy of cecopexy versus resection and anastomosis necessitates further research in this domain. This underscores the need for ongoing studies to elucidate the optimal surgical strategies for addressing this rare condition.*

## PW 2.18

### DOES DIABETES MELLITUS CAUSE AN IMPACT ON THE SURGICAL AND ONCOLOGIC OUTCOME IN SURGICAL THERAPY OF COLON CANCER(CA)

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**Introduction:** Less is known about the impact of diabetes mellitus (DM) on the postop. outcome in surgical therapy of colon cancer (Ca).

**Material & methods:** Prospective multicenter observational study (62 items) over 3 years (2009-2011)

**Results:** In total, 9,167 patients (pats) were enrolled in the study who were subclassified into 20.5% diabetic pats (37.8% of them insulin-dependent) & 79.5% non-diabetic pats (median age of DM/non-DM pats, 73.7 vs. 70.6 [range, 34-97/18-98] yr. –  $p<0.001$ ; sex ratio [male/female]: 52.9/47.1 vs. 56.2/43.8% –  $p<0.001$ ). At the time of Ca diagnosis-finding, diabetic pats already had a sign. higher level of tumor infiltration & therefore a higher UICC level. In addition, DM pats had a significant higher ASA scoring than non-DM pats ( $p<0.001$ ). In particular, insulin-dependent pats showed higher ASA scorings, such as III-IV. In an overall morbidity of 35.8%, sign. more general complications were documented in DM pats ( $p<0.001$ ). Specific complications were also higher in DM pats but only by trend. Considering the total hospital lethality of 4.2%, DM pats had a sign. higher rate. In detail, insulin-dependent pats (5.8%) were found with a sign. higher hospital lethality compared with non-insulin-dependent pats (5.0%,  $p<0.001$ ). In comparison to non-diabetic pats, diabetic pats had a significantly lower 5-yr-overall survival (OAS) (59.7% vs. 49.8%,  $p<0.001$ ). Especially, insulin-dependent DM pats showed a sign. lower 5-yr-OAS of 44.9 % compared to 52.7% (w/ no need for insulin;  $p<0.001$ ). In summary, multivariable analysis identified DM, in particular, insulin-dependent DM, as an independent risk factor of a worse 5-y-OAS (HR=1.24 [95-CI: 1.10-1.38];  $p<0.001$ ) and 5-yr-disease-free survival (DFS) (HR=1.23 [95-CI: 1.07-1.41];  $p=0.004$ ).

**Conclusion:** A higher postop. complication rate as well as a lower 5-yr-OAS and 5-yr-DFS were found in diabetic pats. Insulin-dependent diabetics & the higher risk potential of DM pats may have the potential for a disfavorable long-term outcome.

## PW 2.19

### ENTEROCUTANEOUS FISTULA AND COMPLEX HERNIA: SIMULTANEOUS SURGICAL CORRECTION – A FEASIBLE CHALLENGE

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#### Introduction

The correction of complex abdominal wall hernias (CAWH) using different techniques has rapidly developed in recent years, with the use of synthetic meshes in contaminated surgeries remaining a topic of debate. The presence of an enterocutaneous fistula (ECF) increases the risk of surgical wound complications and hernia recurrence, making its correction a surgical challenge.

#### Material and Methods

We present the clinical case of a 48-year-old woman with morbid obesity (BMI = 45 kg/m<sup>2</sup>) who had urgent surgical history of umbilical herniorrhaphy in 2014 and retromuscular incisional hernioplasty in 2015, with both corrections recurring. In early 2021, she underwent urgent exploratory laparotomy for strangulated incisional hernia, involving ileal segment enterectomy and primary anastomosis. The postoperative period was complicated by abdominal wall abscesses, evisceration, and a high-flow enteric fistula. Upon re-intervention, a laceration of the small bowel loop by the aponeurosis suture thread was observed, classifying the abdomen as stage IV according to Bjork's classification. Fistula management was performed with the creation of a mini-laparostomy and negative pressure dressing. With successful control of the enterocutaneous fistula using an intestinal rehabilitation protocol, she was discharged and referred to a complex abdominal wall unit for elective correction of the ventral hernia, which took place 1 year after the initial surgery. In a single surgical procedure, intestinal transit reconstruction was performed with segmental enterectomy, and incisional hernia correction was carried out using the posterior component separation technique with bilateral release of the transverse muscle and placement of a macroporous polypropylene mesh in the retromuscular position.

#### Result

The postoperative period occurred without complications, and she was discharged on the 6th postoperative day. A 4-month follow-up showed no complaints and no evidence of recurrence.

#### Conclusion

Despite the lack of consensus on the simultaneous approach to CAWH and ECF, it has proven advantageous, with an acceptably low morbidity and appreciable results.

### **BOWEL INJURY WITH AN UNEXPECTED TWIST. A CASE REPORT WITH REVIEW OF THE LITERATURE**

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#### *Introduction*

Glandular cell tumour (GCT) of caecum is a common tumour in rare sites. GCT known as Abrikossoff's tumor is a benign neoplasm that is usually seen in the fourth to sixth decades of life.

#### *Presentation of case*

45-year-old, male who alleged motor vehicle accident. He complained of severe abdominal pain. Primary survey, noted free fluid at Morrison's pouch. CT scan revealed features suggestive of mesenteric and small bowel wall injuries at the right lower abdomen with moderate hemoperitoneum. Patient underwent exploratory laparotomy.

Intraoperatively noted Morel Lavallee at lower anterior abdominal wall with multiple transected bridging veins and hemoperitoneum. There was a three segment buckle handle injury at small bowel with active bleeding from mesenteric tear site and caecum appeared dusky. Right hemicolectomy was done along with small bowel resection and double barrel stoma. HPE revealed small bowel ischemia with changes of serositis and submucosa nodular lesion composed of a fairly circumscribed non encapsulated lesion which represents granular cell tumour.

#### *Discussion*

There are case reports of GCT in stomach, appendix, colon and rectum. Patients were generally asymptomatic. The most common symptoms were hematochezia and abdominal pain. Male/female ratio was 7:4; age range was 40-67 years. We report a case of GCT involving cecum. The cell of origin in GCT is controversial. The details of which have been discussed with a review of the literature.

#### *Conclusion*

GCT is an intriguing neoplasm are rare, primarily occur in the right colon and typically follow a benign course.

## PW 2.21

### SAFETY AND FEASIBILITY OF PRE-OPERATIVE ADMINISTRATION OF SILDENAFIL FOR ERECTILE DYSFUNCTION IN RECTAL CARCINOMA PATIENTS: A PILOT STUDY

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**Introduction & objectives:** This study explores the safety and feasibility of administering sildenafil as a preventive measure for post-operative erectile dysfunction (ED) in male patients undergoing rectal surgery for rectal carcinoma. By addressing ED proactively, the study aims to enhance the overall quality of life for these patients and potentially improve surgical outcomes.

**Materials & methods:** A multi-centre, non-randomized, single-arm pilot study was conducted at four different medical facilities. A convenient sampling method was employed and a total of 10 patients from four participating centres were recruited. The patients received oral sildenafil at a dosage of 50mg daily for two weeks before surgery and the medication were stopped 24 hours before the surgery. Safety assessment was assessed by monitoring the vital signs, ECGs, renal and liver function tests, and patients' documented side effects in monitoring diaries. The erectile function of the patients was assessed based on the International Index of Erectile Function (IIEF) score.

**Results:** All 10 patients had adenocarcinoma tumours and exhibited 100% drug compliance. The IIEF scores showed a significant decrease post-treatment ( $p = 0.005$ ) compared to baseline ( $24.800 \pm 2.251$  before,  $18.900 \pm 6.839$  after). There were no significant associations found between blood pressure, pulse rate, ethnicity, age, height, weight, BMI, complications, and post-treatment IIEF scores. Furthermore, clinical characteristics did not significantly impact post-treatment IIEF scores.

**Conclusion:** Pre-operative sildenafil administration before rectal carcinoma surgery is safe and feasible, with no significant fluctuations in blood pressure, heart rate, or serious side effects. However, it did not result in a significant improvement in erectile function within the short follow-up period. It is recommended to conduct further research with a longer follow-up period to evaluate the effectiveness of this approach in enhancing erectile function in patients with ED.

### COLONIC OBSTRUCTION SECONDARY TO INTESTINAL SUBMUCOSAL SCHISTOSOMIASIS

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Neglected tropical diseases (NTDs) such as schistosomiasis (SCH) are diseases of poverty commonly found in tropical and subtropical regions. NTDs are included as targets for global action in the United Nations Sustainable Development Goal 3.3, which aims “to end epidemics caused by NTDs” by 2030 to “ensure healthy lives and promote well-being for all at all ages”. Schistosomiasis (SCH) is a chronic infection caused by trematodes, which develop in the human host after exposure to fresh water snail larvae. Schistosomiasis affects 200 million people globally and is endemic to 70 countries, where it accounts for approximately 300,000 – 500,000 deaths annually. Schistosomiasis remains a public health problem in endemic areas like in the Philippines with approximately 12 million people residing in 28 endemic provinces located across 12 different geographical zones. Schistosomiasis inducing obstruction with stenosis is exceedingly rare even in endemic regions. In this report we present a case of a Filipino who presented with complete large bowel obstruction secondary to schistosomiasis induced stricture and fibrosis, with only 9 similar reported cases in the world. To date, there are no concrete guidelines for this cases due to its rarity. Hence, we are reporting this case in the hopes that by adding this to the literature, a concrete guidelines for the management of this case will commence.

## PW 2.23

### KEYSTONE FLAP FOR PILONIDAL SINUS DISEASE

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*The treatment of Pilonidal sinus (PS) usually depends on the clinical presentation. While successful treatment can be achieved by conservative approach but complex and recurrent cases may require wide excision with extensive reconstructive flap procedures. The success of the surgical treatment is based on a short operation time and duration of hospitalization, early return to work, low recurrence rate and few complications. However, most surgical procedures fail to meet all these goals together. The important excisional surgery are Limberg flap, Bascom Flap, Karydakís flaps etc. The basic principles of these operations are flattening the deeper natal cleft and avoiding mid line closure to prevent the recurrence of the disease. Key stone flap (KF) is relatively a newer flap which also serves the same principle with the advantage of shorter operating time and good healing and acceptable cosmesis. This flap is especially useful in cases where there are multiple pits in the mid line and just paramedian area. The keystone flap is a curvilinear trapezoidal shaped flap, representing the architectural shape of the keystone in Roman arches, relying on randomly fasciocutaneous or musculocutaneous perforators. It representing two opposing V-Y flaps joined together, with a flap width at a 1:1 ratio to an elliptical defect. Its length is determined by the size of the wound. An elliptical incision, including the pilonidal sinus, is made and a keystone flap is designed adjacent to the wound. The flap paddle is elevated and advanced to cover the defect. The donor site is closed primarily. The KF is safe, and cost-effective with better results when compared with other reconstructive procedures. This flap has been used in five patients with recurrent pilonidal sinus with effective results with effective results with good healing with out any recurrence.*

## PW 2.24

### TATME SAFETY OF THE NEW SURGICAL TECHNIQUE IN THE CENTER

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*The aim of this study was to analyse perioperative and postoperative complications in patients with low rectal tumors after surgical procedures performed using laparoscopic TaTME and TaTME- open surgery assisted in abdominal access.*

#### *Material and methods*

*87 patients diagnosed with low rectal cancer who were surgically treated at the DCOPIH between May 2016 and March 2020 were analysed. Patients were divided into two groups, i.e., the group treated surgically with TaTME supported entirely by laparoscopic surgery and the group treated with TaTME with open surgery. Complications were assessed according to the Clavien-Dindo classification. Statistical methods were used to compare surgical techniques. Short-term oncological outcomes were analysed for the significance of intergroup differences. The efficacy of both TaTME techniques was analysed by examining changes in selected morphological and biochemical parameters using a series of analyses of variance. Logistic regression and multivariate analyses were used to identify significant predictors of technique use.*

#### *Results*

*The analyses showed that both methods (TaTME+laparoscopy vs TaTME+open) had a comparable levels of safety in terms of complications rates and severity. There was no significant association between the technique of TaTME and the number of complications according to the Clavien-Dindo classification. Logistic regression analysis showed that the type of colo-anal anastomosis used (stapler vs manual) was the predictor of the Clavien-Dindo complications. For the laparoscopy-assisted TaTME technique, the operation time was longer, with a shorter duration of patient hospitalisation. Patients operated on with the lapTaTME technique have greater proximal margin. Significant predictors for treatment with the laparoscopic-assisted TaTME technique were the patient age, lower WHO performance class, lower ASA group, and the greater tumor distance from the anal sphincter as assessed by preoperative imaging. Analysis of the relationship between the*



## PW 2.25

### INDOCYANINE-GREEN IN FACILITATING SURGEON'S DECISION FOR BOWEL ANASTOMOSIS IN COLORECTAL SURGERY

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*This case report highlights the application of Indocyanine Green (ICG) compound in a laparoscopic colorectal surgery for colon cancer. We also discuss the role of ICG in the procedure, its potential benefits and safety. This case highlights the importance of intraoperative decision and factors contributing to anastomotic leak.*

*A middle-aged man presented with painless per rectal bleeding with significant weight loss. Colonoscopy revealed a rectosigmoid colon tumour and biopsy confirmed to be adenocarcinoma. CT scan staging revealed no distant metastasis. He subsequently underwent a laparoscopic surgery to remove the tumour. In this case we have adopted the usage of indocyanine-green to aid in assessment of bowel perfusion prior to anastomosis.*

*Indocyanine-green is a safe and effective compound to aid surgeon in decision making. It provide adjuncts to bowel perfusion assessment before anastomosis and may prevent unwarranted, debilitating anastomotic leak complications in bowel surgery.*

## PW 2.26

### FLAVONOIDS AND POST HAEMORRHOIDECTOMY RECOVERY: A SYSTEMATIC REVIEW AND META-ANALYSIS

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*Introduction:* Haemorrhoidectomy is the gold standard for definitive treatment of high-grade symptomatic haemorrhoids but is often associated with substantial pain. This systematic review aims to explore the potential of flavonoids in alleviating the postoperative symptom burden, primarily pain, following excisional haemorrhoidectomy. *Materials/Methods:* A systematic review of randomised control trials on the effect of flavonoids after excisional haemorrhoidectomy, published across the databases of PubMed, MEDLINE via Ovid, and Embase via Ovid from their inception up until December 2023. Data extraction was separated into primary and secondary outcomes to assess postoperative symptom burden. A meta-analysis was performed to synthesize data extracted on postoperative pain. *Results:* Ten articles were identified as part of this systematic review. The meta-analysis identified statistically significant decreases in pain at 7 of the 9 postoperative checkpoints in patients given flavonoids, with the most significant degree of pain relief achieved at postoperative days 7 ( $p=0.0002$ ) and 14 ( $p<0.0001$ ). Four, four and three articles respectively identified reductions in postoperative bleeding, pruritus, and tenesmus. Two studies reported an associated reduced length of stay, as well as reduced analgesic consumption with flavonoid use. *Conclusion:* Flavonoids show promise as a means of reducing pain, bleeding, pruritus, and tenesmus associated with excisional haemorrhoidectomy. Topical formulations of flavonoids are of particular interest given the context of the wounds treated and issues with bioavailability with oral dosing.

## PW 2.27

### COMPARATIVE STUDY ON THE ESTABLISHMENT EFFICACY OF FOUR TYPES OF ANIMAL MODELS OF RECTOVAGINAL FISTULA IN RABBITS

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*Introduction:* Various surgical methods have so far been developed for treating rectovaginal fistula (RVF), each with its own advantages and disadvantages. The lack of standardized animal models of RVF is a major reason for the failure to establish a unified and effective surgical method for the treatment of RVF. To explore the feasibility of an RVF animal model by magnetic compression and compare it with the traditional modeling method.

*Materials and Methods:* Thirty-two female Japanese white rabbits were randomly divided into four groups: A, B, C, and D, based on how the rectovaginal septum was treated. The operation time, intraoperative blood loss and model success rate of each group were counted. The experimental animals were euthanized 2 wk after the operation. Their rectovaginal septum specimens were obtained. RVF was observed by the naked eye. The fistula size was measured. Histological changes of fistula were observed by hematoxylin and eosin and Masson staining.

*Results:* All rabbits completed the RVF model and survived 2 wk after the operation. Groups A and B had no bleeding, while groups C and D had <0.5 mL of bleeding. The magnet detached in 4–6 days in group A, while it remained in place for 2 wk after surgery in group B. Only one group-D rabbit had a plastic hose for 2 wk after surgery. The RVFs of groups A and C healed by themselves. In group B, the fistula was well formed. In group D, fistula healing was observed in three animals. The diameter of fistulas was only 2.82–4.64 mm in the other four animals. Groups B and D had scar on the inner surface of fistulas.

*Conclusion:* The magnetic compression technique based on the T-shaped magnet is highly conducive to establishing a continuous and stable RVF model in rabbits.

## PW 3.01

### UNRAVELING FALLS: A COMPREHENSIVE ANALYSIS OF INJURY PATTERNS AND OUTCOMES IN SOUTHERN MALAYSIA

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#### Introduction:

The comprehensive exploration of injuries resulting from falls and their associated outcomes remains underexplored in Malaysia. This study aims to bridge this knowledge gap by investigating the interplay between the sociodemographic status of fall patients, their trauma characteristics, and the utilization of hospital resources.

#### Methods:

This retrospective study meticulously examines 525 patients from January 2018 to December 2022 who presented to our unit following a fall. Stratifying these patients into two age groups, namely 15-64 years (Working-age) and ≥65 years (Elderly), the study employs Chi-square and t-test analyses to discern divergent injury patterns and outcomes across these cohorts.

#### Results:

Among the 525 patients, 50.7% within the working age group exhibited a higher propensity for falls in the workplace, while 79.9% of the elderly predominantly experienced falls at home ( $p < 0.001$ ). Falls from non-level surfaces ( $>2$  meters) were more prevalent in the working age group ( $p < 0.001$ ). Despite this, an overwhelming 86.5% of the working-age group and 94.2% of the elderly presented to the emergency department with a Glasgow Coma Scale (GCS) score above 9 ( $p < 0.012$ ). Additionally, 46.3% of the working-age group and 26.1% of the elderly cohort had a New Injury Severity Score (NISS) of  $\geq 15$  ( $p < 0.001$ ). The study found no significant correlation between fall patterns and mortality ( $p > 0.736$ ) or prolonged intensive care ( $p > 0.475$ ). The mean hospital stay duration was less than a week ( $6.2 \pm 6.4$ ,  $p < 0.034$ ), with fewer severe complications ( $p < 0.029$ ). Importantly, the majority of patients (85.5%) were discharged home ( $p < 0.041$ ).

#### Conclusion:

The findings underscore that fall patients in southern Malaysia generally maintain hemodynamic stability and experience less severe complications. This study contributes valuable insights to the understanding of fall-related incidents, emphasizing the need for targeted interventions to mitigate the risk of falls and optimize healthcare resource allocation.

## PW 3.02

### FUNCTIONAL RECOVERY AND RE-EMPLOYMENT PATTERNS AMONG TRAUMA PATIENTS POST DISCHARGE FROM A LEVEL I MALAYSIA TRAUMA CENTER IN THE EARLY POST PANDEMIC PERIOD

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#### Introduction

*In contrast to trauma trends in developed nations, Malaysia experiences notable trauma among its young workforce, affecting the economy especially in the post pandemic period. This study aims to evaluate functional recovery and re-employment patterns among discharged trauma patients, addressing limited existing data.*

#### Methodology

*This is a retrospective observational study. Patients admitted to trauma surgery unit from January-July 2022 were surveyed and contacted post-discharge. Patients' demographics, injury mechanism, patterns and severity, functional recovery, quality of life (QoL) and re-employment status at 1-year post-discharge were examined. Glasgow Outcome Scale-Extended (GOSE) and Barthel Index score (BIS) were used for assessment of functional recovery.*

#### Result

*Among 600 patients admitted during the study period, 515 survived and discharged home. Most (90.5%) patients aged <65 years old (median, 36 years, IQR 26) while almost half (46.5%) had major trauma (ISS>15). Of the 102 study subjects, 51 patients (50%) reported good recovery (GOSE ≥7) and 46 patients (45.1%) reported moderate-to-severe disability (GOSE <7) a year post-discharge with 5 patients (4.9%) died within 6-months post-discharge. Older age (p,0.023), female gender (p,0.040), presence of comorbidities (p,0.003), injury requiring operative management (p,0.022) and prolonged hospitalization (p,0.004) were associated with dependency for daily activities post-discharge when assessed with BIS. Severity of injury, injury requiring intensive care, operative management and long hospital stay correlates with the change of occupation and employment status, as well as duration before re-employment. The overall median duration before re-employment post injury was 12 weeks (IQR,16), longest among those who sustained head injury (median, 16 weeks), facial bone injury (median, 20 weeks) and extremities injury (median, 15 weeks).*

#### Conclusion

*While most patients discharged had favorable outcomes, prolonged recovery observed before re-employment highlights the need for trauma rehabilitation beyond survival. This data will inform practice and assist in the future development of post-trauma rehabilitation programs.*

## PW 3.03

### PREHOSPITAL ARREST PATTERNS IN TRAUMA PATIENTS BEFORE AND AFTER COVID-19: A 6-YEAR ANALYSIS AT A LEVEL 1 TRAUMA CENTER IN HOUSTON.

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*Introduction:* The implementation of public health measures aimed at curbing COVID-19 altered trauma injury patterns across the US. We investigated the rate and nature of prehospital arrest patterns in trauma patients and associated mortality before and after the pandemic at a safety-net Level 1 Trauma Center in Houston, TX.

*Methods:* A retrospective analysis of trauma registry data was conducted to compare injury patterns, patient demographics, injury severity, and outcomes between the pre-COVID-19 (January 2017 to February 2020) and post-COVID-19 (March 2020 to December 2022) periods. Descriptive statistics, chi-square, fisher's exact and student t-tests were employed to assess differences and associations.

*Results:* The study included a total of 354 participants who had prehospital arrest. The cohort was divided into pre-COVID-19 (n = 153) and post-COVID-19 (n = 201) groups. Notably, a statistically significant increase in prehospital arrest due to penetrating trauma incidents was observed in the post-COVID-19 period (69% vs. 54%, p=0.008), accompanied by a significant decrease in prehospital arrest rate in blunt trauma cases (29% vs. 48%, p=0.021).

Fewer patients were admitted to the hospital post-COVID-19 (23 % vs 33%, p=0.046), with higher mortality in the post-COVID-19 prehospital arrest group (92% vss. 86%, p=0.158).

*Conclusion:* There is a noteworthy shift in post-COVID-19 trauma patterns characterized by increased prehospital arrest in patients with penetrating trauma rates and associated higher mortality. These findings necessitate targeted public health interventions in order to improve trauma outcomes in the post-pandemic landscape.

## PW 3.04

### PARATHYROID HORMONE AS A MARKER FOR TRAUMA RESUSCITATION: A PROSPECTIVE EXPLORATORY STUDY

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*Background – Lactate and base deficit levels are being used as best available markers for trauma resuscitation response and intervention. Recently, Parathyroid hormone (PTH) showed better accuracy in predicting blood transfusion and mortality compared with lactate. This study compared utility of these three parameters in trauma resuscitation response assessment as well as outcome.*

*Methods- A prospective observational study was performed at a Level I trauma center in consecutive adult patients presenting with at least class III trauma haemorrhagic shock. PTH measurement was added in standard laboratory panel at various timelines during resuscitation.*

*The primary outcomes assessed were response with resuscitation, need of surgical measures for haemostasis and mortality.*

*Results: Eighty-Two patients were included. Median age was 34 years, 80.4% were men, majority suffered blunt trauma, and 28% died.*

*Patients who were non responder to initial resuscitation measures had significantly high median initial lactate levels compared with responders. (6.2 v/s 5.2; p value -0.09). Base excess and PTH level difference were not statistically significant. Initial median base excess levels were significantly high in deceased group compared with survivors (-9.7 v/s -8.2; p value – 0.07). There was no statistically significant difference in all three parameters between haemostatic surgery needy group in compared with non-surgery group.*

*CONCLUSION: Base excess and lactate level showed their utility in trauma resuscitation. PTH in isolation proved useless to monitor resuscitation in trauma haemorrhagic shock patients. Further large studies required to explore its utility as transfusion predictor as established in previous studies.*

## PW 3.05

### TIME OVER 8 HOURS FROM TRAUMA TO OPERATION INCREASES MORBIDITY AND MORTALITY AFTER BLUNT SMALL BOWEL AND MESENTERY INJURY : A RETROSPECTIVE SINGLE CENTER STUDY

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*Background: Blunt small bowels and mesentery injury (BSBMI) is uncommon and a timely diagnosis can be difficult. Delay of time to operation has been implicated as a risk factor for mortality and morbidity. The aim of this study is to assess the effect of the time, from trauma to surgery, on the outcome of BSBMI.*

*Methods: All blunt abdominal trauma to a Level I trauma center in Taiwan from January 2017 through December 2022 were retrospectively reviewed. Patients with a diagnosis of BSBMI were included. Patients who died within 24 hours were excluded. Data regarding patient clinical characteristics, time from injury until laparotomy, length of hospital stay, morbidity and mortality were recorded. A multivariate analysis to determine independent risk factors for morbidity and mortality were carried out. A  $p < 0.05$  was considered significant.*

*Results: Of 5498 blunt abdominal trauma, there were 76 BSBMI patients and all underwent laparotomy. The following characteristics (data expressed as mean  $\pm$  1 SD): mean age: 51 years  $\pm$  17 years, Injury Severity Score of  $13 \pm 11$ , time from injury to laparotomy of 17.3 hours  $\pm$  36.4 hours, operative blood loss of 970 ml  $\pm$  1757 ml, and length of hospital stay of 22 days  $\pm$  21 days. Twenty five percent presented with a systolic pressure  $< 90$  mmHg and 6% died.*

*Time from injury to laparotomy over 8 hours is an independent risk factor for mortality and morbidity (add ration [OR]= 2.5,  $p=0.017$ ). Patients who underwent laparotomy within 8 hours had a significant lower mortality rate (2.27% vs 12.50%), lower in-hospital complication ( 13.63% vs 43.75%), shorter hospital length of stay (15.9 vs 30.8 days).*

*Conclusion: In the management of BSBMI patients, delay time from trauma to operation over 8 hours is associated with an increased morbidity and mortality.*



## PW 3.06

### TREATMENT RESULTS OF BLUNT SUPRAHEPATIC VENA CAVA INJURIES AT A SINGLE TRAUMA CENTER, KOREA: A CASE SERIES

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#### Background

Among abdominal vascular injuries, inferior vena cava (IVC) injury has a high fatality rate, and among them, suprahepatic inferior vena cava (SHIVC) injury is known to have the highest fatality rate. The purpose of this study is to review previous studies reporting SHIVC injury, analyze cases treated at our institution, and utilize them for future treatment.

#### Methods

We retrospectively reviewed patients diagnosed with blunt SHIVC injury from March 2014 to September 2023.

#### Result

During the 10-year study period, there were 10 blunt SHIVC injuries (age  $47 \pm 17$  years; 40% mortality; injury severity score  $43 \pm 19$ ). 50% of patients had systolic blood pressure SBP  $< 90$  mmHg at the time of admission and Glasgow coma scale was  $7 \pm 5$ . The SBP ( $70 \pm 12$  vs  $115 \pm 34$ ,  $p = 0.05$ ), GCS ( $3 \pm 0$  vs  $9 \pm 5$ ,  $p = 0.02$ ), base excess ( $-20.1 \pm 5.8$  vs  $-7.8 \pm 7.1$ ) of non-survival patients ( $n = 4$ ) was statistically significantly lower than that of surviving patients ( $n = 6$ ). Surgical treatment was performed on 9 patients and non-surgical treatment was performed on 1 patient. The most common associate injury was the right atrium (70%), followed by liver injury ( $n = 5$ , 50%) and diaphragm injury ( $n = 3$ , 30%). Two patients who underwent intraoperative cardiopulmonary bypass (CPB) survived, and two patients who underwent extracorporeal membrane oxygenation died. Non-survival patients took less time to the operating room ( $38 \pm 18$  vs  $220 \pm 49$ ,  $p < 0.01$ ) and surgery time ( $56 [45-59]$  vs  $155 [80-195]$ ,  $p = 0.02$ ). However, there was no difference in intraoperative blood loss ( $4200 \pm 2072$  vs  $4040 \pm 2027$  ml).

#### Conclusions

SHIVC injuries, which have many associate injuries, require a multidisciplinary treatment approach. With recent developments in trauma treatment, trauma resuscitation, and diagnostic techniques, the survival rate of SHIVC injury is improving, and surgical treatment of suprahepatic inferior vena cava using CPB is an effective method.

## PW 3.07

### ASSESSING THE EFFICACY OF VIDEO-ASSISTED THORACOSCOPIC SURGERY IN THORACIC TRAUMA: A RETROSPECTIVE ANALYSIS AT A LEVEL 1 TRAUMA CENTRE IN CENTRAL MALAYSIA

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#### Introduction:

Thoracic injuries constitute 25% of trauma cases globally, ranking as the third leading cause of polytrauma mortality. Video-assisted thoracoscopic surgery (VATS) has emerged as a highly effective modality for managing thoracic trauma in both acute and chronic settings. This study aims to comprehensively analyze the outcomes and efficacy of VATS in patients with thoracic trauma.

#### Materials & Methods:

Conducting a retrospective analysis, we focused on thoracic trauma patients who underwent VATS between 2018 and 2023 at a Level 1 trauma center. Individual medical records were meticulously reviewed, considering injury types, New Injury Severity Score (NISS), Trauma Score, Injury Severity Score (TRISS), specific procedures performed, and post-operative outcomes.

#### Results:

Throughout the study period, 18 patients successfully underwent VATS without conversion to thoracotomy. The cohort, with a mean age of 43.1 years (range 19 to 78), predominantly experienced blunt trauma (88.9%), often resulting from motor vehicle accidents (66.7%). Notably, 17 patients (94.4%) suffered major trauma (NISS  $\geq$  15, range 10 to 50) with a mean NISS of 28.3. Predominant injuries included rib fractures, haemo-/pneumo-thorax, and pulmonary contusions. Furthermore, 14 patients (77.8%) experienced polytrauma with concomitant extra-thoracic injuries. Indications for VATS included retained haemothorax (72.2%), lung lacerations (22.2%), and cardiac lacerations (5.6%). Post-operatively, these patients required a mean thoracostomy drainage of 5.6 days, a mean post-op ICU admission of 8.4 days, and a mean total post-operative stay of 19.9 days. Of the cohort, 88.9% were discharged alive, while two patients succumbed to their injuries, resulting in a mean TRISS survivability of 83.3% in this cohort.

#### Conclusion:

Video-assisted thoracoscopic surgery proves to be a minimally invasive and effective method for assessing and managing intra-thoracic injuries. The outcomes of this study contribute valuable insights to the growing literature supporting the utilization of VATS in the context of thoracic trauma.

## PW 3.08

### UNPLANNED READMISSION FOLLOWING TRAUMATIC INJURIES IN THE SOUTH WEST REGION CAMEROON; ANALYSES OF THE PREVALENCE AND PATTERNS

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#### *Introduction:*

*Traumatic injury is a huge healthcare challenge worldwide, this is even greater in developing countries which have higher morbi-mortality rates. Unplanned readmissions are a reliable and largely used indicator of the quality of care of the injured.*

*Our objectives were to determine the prevalence rates and describe the patterns of unplanned readmissions following traumatic injuries in 2 level III hospitals in the South-West region of Cameroon.*

*Materials and methods: This was a 10-year retrospective descriptive review of hospital records from January 2013 to December 2022. The study population included records of injured patients who were readmitted to the Hospital, after an initial hospitalization due to an injury. Data was analyzed using the SPSS version 23. The 30-day, 3-month, 6-month 1-year readmission prevalence rates were calculated and patterns described.*

*Results: A total of 8089 admission records were reviewed, of which 2617 injury admissions (32.35%). We retained 54 unplanned injury readmissions records (2.60% of all injury admissions). Prevalence rates of unplanned readmissions following an injury were; 2.33%, 2.31%, 2.17%, and 1.68% at 30 days, 3 months, 6 months, and 1 year respectively. The main age group readmitted was 30-49 years (n=25, 46.30%). There were 40 males (74.07%) and 14 females. The most common causes of readmissions were Orthopedic complications and soft tissue infections.*

*Conclusion: Unplanned readmissions following injuries are common within 30 days. Fractures are the most common initial injuries in the readmitted population, with orthopedic complications and soft tissue infections being the most common causes of readmissions*

## PW 4.01

### LOW PREOPERATIVE HEART RATE INCREASES THE RISK OF POSTOPERATIVE ATRIAL FIBRILLATION (POAF) AFTER CARDIAC SURGERY

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*Postoperative Atrial fibrillation (POAF) is the most common arrhythmia to occur after cardiac surgery with an incidence of 20-50 %. It is associated with postoperative complications, including increased risk of stroke, prolonged hospital stay and increased costs.*

*Material & methods: This study is based on the baseline measurements of the ongoing trial “ Personalized intervention to increase physical Activity and reduce sedentary behavior in rehabilitation after cardiac surgery” (PACO). The data of this study was collected from May 2018 until June 2023. A total of 153 patients were scheduled for elective open-heart surgery procedures. Of those patients 32 was excluded a history of paroxysmal or chronic atrial fibrillation. For the baseline measurements a 6-minute walking test (6MWT) was performed after admission to the hospital on the first preoperative day. 6MWT was done using the protocol instructed by the American Thoracic Society (ATS). Blood pressure was measured at baseline, immediately after 6MWT and 3-minute recovery. Heart rate was recorded at baseline, during maximal heart rate, after 1-minute and 3-minute recovery. The walking distance was measured, and if the 6MWT was interrupted, the time of elapsed, distance walked and the reason why test was interrupted were recorded.*

*Results: Of remaining 122 patients 59 (48 %) experienced POAF. There was no statistical difference between the two groups in baseline blood pressure, baseline systolic blood pressure, baseline diastolic blood pressure, maximal systolic blood pressure, maximal diastolic blood pressure, walking distance or maximal VO2 max. Surprisingly, heart rate both in the resting state and at maximal level was significantly lower in the POAF group. This suggest, that lower heart rate might be a risk factor for POAF after cardiac surgery.*

*Conclusion: If a low heart rate a risk factor for POAF, it might be useful to recognize these patients before the surgery.*

## PW 4.02

### LITTRÉ'S HERNIA CHRONICLES: UNVEILING THE INTRICACIES OF A RARE INTRAOPERATIVE REVELATION

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*Littré's hernia (LH) is a rare clinical condition characterized by the presence of Meckel's diverticulum (MD) within a hernial sac. Meckel's diverticulum is itself a common congenital abnormality of the intestinal tract, though most cases are asymptomatic. It is a small pouch or outpouching in the wall of the small intestine, located near the ileocecal valve. Littré's hernia occurs in about 1% of all Meckel's diverticulum cases, making it a relatively uncommon complication. The condition may remain asymptomatic, but when complications arise, they can present as various gastrointestinal issues.*

*In the case described, the patient is a 30 year old man with an incarcerated Littré's hernia at the right inguinoscrotal region. The rarity of Littré's hernia and its symptomatic nature can make its preoperative diagnosis challenging. The clinical history of Littré's hernia may resemble those of other hernias involving the gut, further complicating the diagnostic process.*

*The treatment for an incarcerated Littré's hernia typically involves surgical intervention. In the described case, the approach involved wedge resection of the Meckel's diverticulum followed by hernia repair with a prolene mesh. The successful treatment suggests that prompt surgical intervention was effective in resolving the incarcerated Littré's hernia. It's worth noting that while Littré's hernia is a rare condition, awareness of its existence and its potential complications is crucial for timely diagnosis and appropriate management.*

## PW 4.03

### **NAVIGATING DIAGNOSTIC DILEMMAS AND SURGICAL CHALLENGES: THE LITTLE OLD LADY'S HERNIA**

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*Introduction: Obturator hernia, a rare pelvic hernia, often manifests with bowel obstruction, leading to elevated mortality and morbidity rates, particularly in the elderly. The diagnostic challenge lies in the absence of specific signs, and the complications associated with bowel obstruction, coupled with the patient's premorbid and old age, contribute to the difficulty in managing it.*

*Case Presentation: We report an 82-year-old female with no past medical or surgical history, presented with classic obstructive symptoms—abdominal distension, pain, and the inability to pass flatus or bowel movements. The lack of pertinent details in the patient's history prompted a diagnostic dilemma. A subsequent CT Abdomen revealed a right obturator hernia causing small bowel obstruction. The surgery was a success but unfortunately the patient succumbed to complications, including hospital-acquired pneumonia.*

*Discussion: Diagnosing obturator hernia, often dubbed 'the little old lady's hernia,' poses challenges due to the absence of characteristic signs. The choice between conservative and surgical intervention remains a subject of debate, especially in the absence of immediate CT imaging. Post-operative complications further complicate management, necessitating collaborative efforts from various medical disciplines. The discourse on the optimal approach, whether through laparotomy or minimally invasive surgery, is also an ongoing discussion in managing this condition.*

*Conclusion: In elderly females with intestinal obstruction and no history of abdominal surgery, heightened suspicion for obturator hernia is crucial to avoid missed management. Computed tomography emerges as a vital diagnostic tool, guiding the treatment decisions. A comprehensive, multidisciplinary approach is imperative for minimizing risks and optimizing patient recovery following surgical intervention.*

## PW 4.04

### HEPATIC HYDATID CYST: SINGLE-CENTER EXPERIENCE

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*Introduction: Hydatidosis is a serious parasitic disease (zoonosis) caused by Echinococcus granulosus. (Cestode). Endemic in our region. Liver disease is the most common, involving between 85 and 95% of cases in our statistics.*

*Material and Methods: A retrospective study was carried out in a hospital in an endemic region (Corrientes Province, Argentina). A total of 765 cases were evaluated from 2005 to 2022. Age, sex, mono or multicystic and locations were analyzed. Only liver cysts were preserved in this study. They were analysed and studied by images and the different surgical techniques used.*

*Results: 765 cases were analyzed, only liver cysts remained in this study. Of these, 35% had multiple cysts. Different surgical techniques were used. And 42% of them could be followed-up.*

*Discussion: Hepatic hydatidosis is a pathology that can be serious with a high morbidity rate. Hence the importance of early diagnosis and appropriate treatment.*

## PW 4.05

### IMPACT OF COVID-19 ON GENERAL SURGICAL EMERGENCIES IN A TERTIARY CARE PUBLIC HOSPITAL IN MALAYSIA

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**Introduction:** COVID-19 pandemic has made significant disruption in health delivery system. To ensure adequate and appropriate delivery of healthcare services, the Ministry of Health of Malaysia collaborated with the private sector. This study evaluated the impact of a nationwide lockdown in Malaysia on the incidence, severity and outcomes of general surgical emergencies in a tertiary care hospital in Malaysia.

**Method:** In this retrospective cohort study, the data of all adult patients who underwent emergency general surgical procedures for the period 1st January 2021 to 31st December 2021 were analysed and compared with patients operated from 1st January 2017 to 31st December 2017

**Results:** Emergency general surgical operations decreased during the COVID-19 pandemic period (n=889) compared to the pre-pandemic period (n=1720). Surgical procedures of biliary disorders increased by 7.4%, while that of complications due hernia increased by 5.46%. Operations for acute appendicitis and soft tissue infections presentations decreased by 11.39% and 7.61% respectively. Common diseases such as appendicitis and cholecystitis were less severe during the pandemic, and outcomes were comparable to pre-pandemic period. Total number of colorectal disorders increased 3.38%, with ICU admissions increased 16.84%. Overall length of stay increased by one day and critical care admissions increased by 4.38%. There was no increase in mortality rate.

**Conclusion:** The public-private collaboration in the healthcare services resulted in significant reduction in emergency general surgical operations during the COVID 19 pandemic in our hospital. The outcome of emergency procedures during the pandemic was not significantly different to procedures performed in the pre-pandemic era. It is proposed that the Ministry of Health, Malaysia explore the possibility of maintaining the partnership with the private sector for benefit of the public.

**Keywords:** Emergency surgery, COVID-19, Pandemic, Outcomes, private-public collaboration



## PW 4.06

### CECAL SEESAW, A RARE CASE OF CECAL VOLVULUS: A CASE REPORT

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#### Introduction

Cecal volvulus is rare, affecting 2–7 per million people per year. It is a life-threatening condition, as it will cause bowel strangulation. The rotation occurs in mesentericoaxial rotation, where the cecum folds on itself, which is an unusual form of volvulus, affecting 5-20% of all cecal volvulus cases.

#### Case Report

We present the case of a 65-year-old woman presented with abdominal distension associated with non-bilious vomiting for 4 days. She was bed-bound for one month due to a left neck femur fracture. She had no bowel opening for 4 days; however, there was no abdominal pain. Clinical examination demonstrated a grossly distended abdomen with hypokinetic bowel sounds on auscultation. Ryles tubes inserted noted 2 liters of gastric content. Abdominal x-rays showed dilated large and small bowels, with the cecum having the largest diameter of 9 cm. Computed tomography of the abdomen revealed jejunal dilatation with abrupt collapse at the ileum, the cecum is prominent, measuring 8.2cm. She underwent an emergency laparotomy after adequate resuscitation. Intraoperatively, the cecum was dilated to 11 cm with no torsion of the colon or twisted mesentery. Both the cecum and appendix were displaced superiorly and anteriorly over the ascending colon located beneath the umbilicus. Cecum was mobilized, and bowel content was decompressed through an appendectomy wound. A decision was made to perform cecopexy in view of the fact that there was no vascular compromise to the bowel. Postoperatively, recovery was uneventful, and she was discharged home after 10 days of surgery.

#### Conclusion

The cecal bascule must be considered as a differential diagnosis in cases of intestinal obstruction, especially in elderly and immobilized patients. A CT scan may not be a useful modality for achieving a diagnosis. Early diagnosis and prompt intervention will prevent morbid complications

## PW 4.07

### **A RANDOMISED COMPARITIVE STUDY ON THE POST OPERATIVE ANALGESIC EFFICACY BETWEEN ULTRASOUND GUIDED AND LAPAROSCOPY ASSISTED TRANSVERSE ABDOMINIS PLANE BLOCK IN LAPAROSCOPIC SURGERIES**

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#### **AIM:**

*The aim of this study was to compare the postoperative analgesic efficacy of and side effects of ultrasound guided-Transversus Abdominis Plane block (USG-TAPB) versus laparoscopy assisted Transversus Abdominis Plane block (LAP-TAPB) in patients undergoing laparoscopic surgeries.*

#### **METHODS:**

*The study included 100 patients, aged 18-65 years, in the I-III risk group according to the American Society of Anesthesiologists (ASA) classification, who underwent a laparoscopic operation.*

*The patients were randomly divided into 2 groups : Group USG-TAP (n=50) was applied with TAP block under USG guidance, and Group LAP-TAP (n=50) was applied with laparoscopic -guided TAP block. After the procedure was completed, the prepared local anesthetic solution was injected as 10 mL to each side of the right subcostal-midaxilla under simultaneous USG imaging.*

*Later, the VAS scores and potential side-effects (nausea and vomiting) and additional analgesia consumption were recorded at 0, 30th minutes then at 1st, 2nd, 6th, 12th, and 24th hours postoperatively by an independent observer. The concerns of the patients were managed and recorded appropriately.*

#### **RESULTS:**

*The changes in Visual Analog Scale (VAS) scores over time were statistically different in the groups ( $p=0.002$ ). The change over time was similar in the USG and LAP groups ( $p=0.221$ ). 47 patients in the laparoscopy group did not require any analgesia compared to 46 patients in the ultrasound group*

#### **CONCLUSION:**

*The analgesic efficacy of USG-guided and laparoscopic guided TAP blocks was found to be similar. Laparoscopy guided TAP block was found to be a simpler procedure compared to ultrasound guided TAP block. With a flatter learning curve and can be implemented by the surgeon himself without requirement of any special equipment or assistance.*

*Key words : transverse abdominis plane block, ultrasound guided, Laparoscopy assisted*

## PW 4.08

### VENTRAL PATCH REPAIR: AN EFFECTIVE WAY TO REPAIR SMALL VENTRAL HERNIAS

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#### Introduction

Various surgical procedures have been described in the treatment of small (<3cm) ventral hernias. Ventral Umbilical Patch repair is becoming popular because of its ease and quick procedure. The study aims at evaluating this technique as a safe method in terms of early resumption of patient's routine.

#### Methods

A retrospective cohort study of patients who underwent repair of ventral hernia <3cm diameter was conducted. Patient's demographics, body mass index, operation time, postoperative analgesic use, length of hospital stay, postoperative complications and recurrences were documented.

#### Results

112 patients underwent Ventral Patch repair (70 males, 42 females, mean age 54.5 years). Of these, 31.3% were obese (mean BMI 31 kg/m<sup>2</sup>). Median operative time was 33 minutes; 26.8% required general anesthesia, 58% spinal, and 15.2% regional anesthesia. Most (94.6%) were discharged within 48 hours, with 60.7% within 24 hours. Six patients (5.4%) had >48-hour stays. 56.3% resumed activities in 3 days. Post-op, all received 1 g Inj. Paracetamol; 64.3% needed no further analgesia, 35.7% required moderate analgesia. During 6-month follow-up, one seroma and two minor infections (0.9% and 1.8%, respectively) occurred, successfully treated with antibiotics, indicating a 0% recurrence rate.

#### Conclusion

Preliminary findings highlight Ventral Patch repair as a quick, reliable, and effective method, emphasizing minimal post-operative complications and reduced hospital stay, thus proving its potential for cost-effective utilization in low- and middle-income countries. The procedure's efficiency and the observed quick recovery also position it as a promising option for day-care surgery, catering to evolving healthcare needs.

## PW 4.09

### INTESTINAL METASTATIC MALIGNANT MELANOMA AS A LEAD POINT OF ILEO-ILEAL INTUSSUSCEPTION

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#### Introduction

Malignant melanoma has a predilection to metastasise to the gastrointestinal tract, especially the small bowels. Its tendency to behave as a lead point of intussusception has rarely been reported. Often, the clinical presentation is non specific or even asymptomatic, making diagnosis difficult.

#### Method

We reviewed a case of malignant melanoma with intestinal metastasis causing intussusception.

#### Results

A 54 years old lady with a history of mucosal malignant melanoma of the hard palate cT3N1M0, was initially referred to the surgical team from the oncology outpatient clinic for an incidental finding of a small bowel intussusception on a contrasted computed tomography (CT) reassessment scan post radiotherapy and immunotherapy. Upon further history, she has been having mild intermittent colicky periumbilical pain for the past month, associated with loose stools. She denied abdominal distension, fever, vomiting, or bleeding per rectum. Abdominal examination was unremarkable. Contrasted CT shows soft tissue thickening at the midline of the hard palate extending to upper alveolar gingiva and similar surrounding bone erosion but with no definite enhancement, representing residual tumor or post-radiation changes.

However,

there was an incidental finding of long segment small bowel intussusception with nodal lead point causing small bowel obstruction. Intraoperatively, there was an ileo-ileal intussusception of 15cm in length, 20cm from ileocecal valve, with extensive mesenteric lymphadenopathy. Segmental bowel resection with primary end-to-end anastomosis was performed. Bivalved specimen revealed two closely located intraluminal pigmented tumors as the lead point, which was subsequently confirmed on histopathological examination as metastatic melanoma. She was discharged well on postoperative day 5.

#### Conclusion

Surgery is considered the standard approach in adult cases of intussusception, however, the literature lacks the consensus on the treatment algorithm and definitive operative management. In this report, we demonstrate a rare case of intestinal metastatic melanoma causing intussusception despite receiving immunotherapy after radiotherapy.

## PW 4.10

### PRIMARY RETROPERITONEAL MUCINOUS CYSTADENOMA: A RARE ENTITY

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#### Introduction

Primary retroperitoneal tumours are a rarely encountered entity. While some may take a benign course, a vast majority of retroperitoneal tumours are of a malignant nature, hence the necessity for early diagnosis and treatment.

#### Case presentation

We report the case of a 15 year old female who presented with a progressively enlarging left sided abdominal mass over the course of six months. Upon palpation of the abdomen, there was well defined non ballotable mass measuring 15 x 12cm. Initial ultrasound of the abdomen was suspicious for an ovarian cyst. However, computed tomography revealed a large cystic mass at the left lumbar region measuring 7.8 x 10.3 x 12.1cm causing mass effect to surrounding organs, thought to be a mesenteric cyst. Blood investigations taken showed white blood cell count  $10.3 \times 10^9/L$ , Hemoglobin 134 g/L, platelet  $277 \times 10^9/L$  with normal liver and renal function tests. Left retrograde pyelogram showed no hydronephrosis or hydroureter and left ureteric stenting was performed. She subsequently underwent a laparotomy which revealed a single large retroperitoneal cyst measuring 10 x 12cm, other intraperitoneal and pelvic organs were normal. The cyst was removed as a whole and sent for histopathological analysis which concluded it to be a primary retroperitoneal mucinous cystadenoma. Patient had an uneventful recovery post surgery and has remained well since.

#### Conclusion

Primary retroperitoneal mucinous cystadenomas are a rarely encountered neoplasm of a benign nature. Treatment of choice is surgical excision with good prognosis and outcome.

## PW 4.11

### **CASE SERIES - A NOVEL APPROACH OF WOUND BED PREPARATION USING HYDROGEL DERMATIX WOUND CARE**

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*Introduction: A wound is defined as a break in the integrity of skin which may be due to injury, infection or surgery. There are numerous types of dressing materials in current use to promote wound healing. The need for a versatile wound care agent which serve the purpose to promote faster granulation, provide moisture to the wound and prevention of secondary infection is needed. A unique wound treatment using hydrogel (Dermatix Wound Care Ultra) aims to proved optimal and faster wound healing. This is a case series of involving the using of hydrogel in wound healing in seven patients.*

#### *Materials and Methods*

*All patients from treated at KPJ Bandar Dato Onn Specialist Hospital for wounds with Dermatix Wound Care Ultra from September 2023 till January 2024 were included in this study. All wounds were directly supervised by a single surgeon from the start of dressings till complete epithelization. To support the wound healing, a form of cleansing agent was used prior application of Dermatix wound care ultra topical hydrogel for wound bed preparation and promote granulation and epithelization.*

#### *Results*

*A total of 12 patients were treated with Dermatix wound care ultra through the study period. However only 7 patients were included as these patients had completed wound care treatment with complete epithelization of the wounds. The median age was 37 (IQR-31-45)years old, with an equal male to female distribution (4 males;3 females). All patients underwent form of surgery prior to start of wound dressings (incision and drainage of abscess; wound debridement; saucerization). Mean time from start of usage of Dermatix ultra to complete epithelization were 47 (IQR-41-53.5) days.*

#### *Conclusion*

*Dermatix Ultra wound care hydrogel is a safe and useful wound care in the preparation of wound bed for post debridement of dirty wounds, complex wound and surgical site infections.*

## PW 4.12

### SOFT TISSUE SARCOMAS- CASE SERIES OF THERAPEUTIC PERPLEXITY IN A TERTIARY CARE CENTER OF NORTH INDIA

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**Introduction-** Soft tissue sarcomas are a group of neoplastic tumor of mesenchymal origin comprising <1% of all adult malignancies and 10% of pediatric tumors. With >100 histologic subtypes, Complete surgical resection is the cornerstone of treatment with prognosis being dependent on tumor size, depth, histologic grade and anatomical site of the primary lesion. Multimodal therapy include chemotherapy, Targeted therapy and immunotherapy.

**Material & Methods:** A retrospective review of seven cases with varied anatomical location, TNM Classification based on AJCC, Histologic subtype, Resectability and multimodal therapy received in pre/post operative period are discussed to delineate the outcome of Surgical Resection in terms of local recurrence and margin status spanning different T stages.

**Case Profile:** 1. 60 year male with Left Supraclavicular Swelling

2. 62 year male with Anterior Abdominal Wall Lump

3. 55 year male with Left Shoulder mass.

4. 55 year female with Anterior Abdominal wall mass

5. 30 year male with lower abdominal lump

6. 70 year male with epigastric lump

7. 52 year male with Left thigh Mass

**Result:** Two out of seven cases had local recurrence within 6 months (28.5 %) despite en bloc excision with wide margins including 2mm of normal tissue. Histologically margin status was negative and they were diagnosed as Malignant Spindle cell Neoplasm ( subtype: Dermatofibro Sarcoma Protruberans and Leiomyosarcoma Respectively ). They were not subjected to Chemotherapy due to lack of consent.

Other three cases were well encapsulated intraoperatively and were histologically diagnosed as Benign Spindle cell neoplasm of Neural origin. Remaining two cases ( Gastrointestinal stromal tumor and retroperitoneal sarcoma respectively) haven't reported with recurrence on 6 months follow up.

**Conclusion:** Each Soft tissue Sarcoma requires multimodal and interdisciplinary approach. Early diagnosis and timely Surgical resection still spearheads the treatment plan to improve 5 year survival rate and quality of life.

## PW 4.13

### LAPAROSCOPIC VERSUS OPEN SURGICAL MANAGEMENT OF PATIENTS WITH SMALL BOWEL PERFORATION A CLINICAL OUTCOME BASED PROSPECTIVE STUDY

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#### Introduction

Small bowel perforation is one of the commonest life-threatening surgical emergency with high mortality and morbidity. Management of intestinal perforation is always surgical and may be done by laparotomy, laparoscopic. Advancement in minimal invasive surgical techniques, laparoscopy has emerged as preferred mode due to its diagnostic and therapeutic benefits and also better postoperative outcomes.

#### Materials And Methods:

63 patients with small bowel perforation were included in study. Out of 63 patients 45 (Group A) were managed by open while 18 (Group B) were operated by laparoscopic procedure. Loop or double barrel ileostomy was given depending on the site & size of perforation.

#### Results:

Patients of both group were comparable in demographic profile. Mannheim's Peritonitis Index was also similar in both groups. Duration of surgery (in minutes) was significantly higher in group B (138.89  $\pm$  16.50) as compared to group A (96.44  $\pm$  27.30),  $p$ -value <0.0001. Pain during first 3 days, ASEPIS score, POSAS score were significantly high in group A as compared to group B these were 4.96  $\pm$  1.53 vs 3.73  $\pm$  1.40, 27.36  $\pm$  16.32 vs 12.94  $\pm$  12.33 and 45.12  $\pm$  17.37 vs 14.18  $\pm$  4.22 in group A and group B with  $p$  values 0.004, 0.001 and <0.0001 consecutively. Duration of stay was comparable in both groups, Duration of hospital stay, pain after 3rd day, temperature were comparable in both groups.

#### Conclusion

Small bowel perforation is a surgical emergency with a high mortality & morbidity. Besides the control of sepsis, the primary treatment is surgery either by open laparotomy or laparoscopy. With the advancement in minimally invasive surgeries, laparoscopy in surgical emergencies has become an effective tool both as its diagnostic capabilities & therapeutic benefits. By avoiding laparotomies it reduces postoperative pain, improves recovery of gastrointestinal functions, reduces hospitalization, cuts health care costs, and improves cosmetic results.



## PW 4.14

### REVITALISING CANCER CARE: THE IMPACT OF A NEW ONLINE TRAINING PROGRAMME FOR HEALTHCARE PROFESSIONALS IN MALAYSIA

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#### Introduction

The Malaysian National Cancer Registry highlights an alarming surge in late-stage cancer presentations, necessitating innovative strategies. Addressing this, a 15-week online training initiative targeted community-based general practitioners (GPs), recognising their proximity to communities. Focused on Malaysia's top five prevalent cancers (breast, colorectal, lung, cervical, and prostate), the programme aimed to improve GP knowledge and practice in early cancer screening and diagnosis.

#### Objective

To evaluate the effectiveness of the online module on GPs' knowledge and intention to change practice for early cancer screening and diagnosis.

#### Material and methods

Conducted from March to June 2023 with 97 registered participants, the self-paced course incorporated live ECHO® Zoom sessions for introduction and closure. Pre- and post-module surveys gauged knowledge and hypothetical practice changes. Completion rates, determined by task and questionnaire fulfilment, provided insights into participant engagement and commitment.

#### Results

Of the total participants ( $n = 97$ ), 69 completed the course and earned 23 CPD points. Following completion of the online course, only 54 and 55 participants completed the pre- and post-course assessments, respectively, and the cancer knowledge median scores showed improvement from 8 (range 4–16) to 12 (range 5–16) out of the maximum points of 16. More than 90% of respondents will change their cancer and early diagnosis practises for all cancers, including psychosocial and navigation for early diagnosis. The completion rate was 71.1% (69/97).

#### Conclusion

The online course had a positive impact on cancer knowledge, leading to a high percentage of GPs reporting an intention to change their cancer and early diagnosis practices. The study also revealed a moderate completion rate among participants. It is recommended that further research be conducted to explore ways to increase participation and completion rates in online courses for healthcare professionals.

## PW 4.16

### OSTEOARTICULAR INFECTIONS IN CHILDREN IN THE LIMBE REGIONAL HOSPITAL, CAMEROON: A REPORT OF 21 CASES

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*Introduction: osteoarticular infections are diagnostic and therapeutic emergencies in pediatric surgery. These infections can lead to serious handicap and even dead if not managed promptly. Our objective was to describe the profile of children diagnosed with osteoarticular infections and managed in a resource limited setting.*

*Materials and Methods: we carried out a descriptive and retrospective study in the Limbe Regional Hospital over a period of 2 years from the 1st January 2022 to the 31 December 2023. We included the files of patients aged 0-15years treated for an osteoarticular infection in our Hospital. Our parameters were age, sex, definitive diagnosis, associated condition, anatomic location, germ isolated, treatment modalities and complications. The complications were classified using Clavien Dindo classification.*

*Results: Twenty-one files were registered with an average age of 9.6years(1-15years) and a female predominance with a sex ratio of 2.1. There were 11 cases of chronic osteomyelitis, 7 cases of septic arthritis and 3 cases of both. Sickle cell disease was the underlying condition in 7 cases. The lower limb was the most frequent location in septic arthritis: knee(5cases), hip and ankle joints (2cases) each. Chronic osteomyelitis mostly affected the femur (7cases), the humerus (4cases) and the tibia (3cases). Staphylococcus Aureus was isolated in 5 cases. The surgical treatment consisted of curettage with sequestrectomy on 15 segments of the limb and arthrotomy with irrigation on 12 joints. The complications were classified grade 3B(5cases) and grade 5(2cases).*

*Conclusion: Osteoarticular infections are common on the lower limb in school aged females with sickle cell disease. Staphylococcus is the main germ isolated and the post operatives' complications are often severe.*

## PW 4.17

### **SPLENIC TORSION WITH PARTIAL COLONIC OBSTRUCTION CAUSED BY A WANDERING SPLEEN IN A TEENAGER: A CASE REPORT**

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*Introduction – The wandering or ectopic spleen is a very rare condition that have only been reported in a few case reports and small case series in children. Its true incidence remains unknown. In wandering spleen, the spleen migrates from its normal anatomic location to another site of the abdomen due to laxity or underdeveloped supporting ligaments. The severity of clinical manifestation is due to the degree of splenic torsion. It has been documented that abdominal pain, nausea and vomiting are the common manifesting symptoms but may progress to an acute abdomen if there is a complete vascular occlusion due to splenic torsion. However, it is even a rarer manifestation of the disease that the splenic torsion causing also a closed loop bowel obstruction.*

*Materials & Methods – In this report, we present a case of a young teen with chronic abdominal pain with initial unremarkable work up. The diagnosis remained elusive for 2 years and symptoms persisted. However, due to a recent increase in severity of the abdominal pain and its associated changes in bowel habit that a whole abdomen computed tomography was requested and revealed wandering spleen located in the subhepatic area at the right lower quadrant. Patient underwent diagnostic laparoscopy converted to an exploratory laparotomy with splenic detorsion, splenopexy and colopexy. The post operative course was uneventful.*

*Results – A wandering spleen is difficult to diagnose clinically as the signs and symptoms are usually mild. This patient had initially sought consult to multiple physicians and even a sonography revealed unremarkable findings hence the diagnosis remained elusive for a long time. Torsion and infarction usually occurs if left untreated with high mortality rate.*

*Conclusion – Along with evolving diagnostic modalities, a high index suspicion is needed to establish the proper diagnosis. This report highlights the investigation and management of the case.*

## PW 4.18

### **MODIFIED PUESTOW PROCEDURE FOR THE MANAGEMENT OF PAEDIATRIC CHRONIC PANCREATITIS: A 10-YEAR EXPERIENCE FROM A TERTIARY PAEDIATRIC HEPATOBILIARY UNIT IN SINGAPORE**

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*Introduction:* Recurrent pancreatitis, though uncommon, can negatively impact childhood development and quality of life. We report the experience with modified Puestow procedure (lateral pancreaticojejunostomy) for symptomatic pancreatic duct dilatation in children with chronic pancreatitis.

*Materials/Methods:* Retrospective review of medical records of children who underwent modified Puestow procedure in a tertiary paediatric referral unit in a single institute between 2013-2022.

*Results:* Three patients underwent modified Puestow procedure for; case 1-recurrent pancreatitis due to pancreatic duct stricture following choledochal cyst excision, case 2-pancreatic duct stricture due to recurrent idiopathic pancreatitis and case 3-prior short pancreato-jejunal anastomosis for recurrent pancreatitis due to pancreas divisum. Endoscopic retrograde cholangiopancreatography (ERCP) was unsuccessful due to failed cannulation because of pancreatic head pseudocyst in case 1 and resistant strictures with recurrent stones in case 2. ERCP wasn't attempted in case 3 because of young age. Pancreatic duct was dilated in all cases (1-3; 3.7mm, 3.2mm and 10mm respectively). Time between onset of pain and surgery was 70, 52 and 18 months in cases 1, 2 and 3 respectively. Age at surgery was 7, 10 and 3 years in cases 1, 2 and 3 respectively. Hospital stay was 10, 8 and 11 days each in cases 1, 2 and 3 respectively. Follow up was 48, 29 and 36 months each in cases 1, 2 and 3 respectively.

*Postoperative complications* were pancreatic tail collection which resolved with percutaneous drainage (case 1) and recurrent abdominal pain on follow-up (case 3) which needed management with ERCP and sphincterotomy. As of last follow-up, all reported no abdominal pain and had no diabetes mellitus.

*Conclusion:* Lateral pancreaticojejunostomy may be offered as a safe and effective surgical intervention to children with chronic pancreatitis whose abdominal pain is refractory to less invasive treatment.

### **BEWARE THE OBSTRUCTED LOOP: A SURGICALLY TREATABLE CAUSE OF RECURRENT CHOLANGITIS FOLLOWING KASAI PORTOENTEROSTOMY FOR BILIARY ATRESIA**

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#### **Introduction**

Deficient bile drainage due to an obstructed bilioenteric conduit has rarely been reported as a cause of cholangitis following Kasai portoenterostomy (KPE) for biliary atresia (BA). We report 2 cases whereby surgical treatment for obstruction of the biliary limb of the roux loop resulted in lasting relief from cholangitis.

#### **Methods**

This is a retrospective medical records review of 2 children (29 and 24 months of age) (cases 1 and 2) who underwent surgery on their roux loop subsequent to KPE for BA. Our treatment of cholangitis consists of parenteral antibiotics (either culture-driven or empirical ampicillin-sulbactam if culture-negative) for 2-weeks or longer as per clinical and biochemical (liver function tests) response.

#### **Results**

Successful KPE for type 3 BA was performed for cases 1 and 2 at 33 and 54 days of life with postoperative jaundice clearance at 3-months (total bilirubin levels of 15 and 6  $\mu\text{mol/L}$ ) respectively. Liver biopsies were consistent with BA. Both children experienced recurrent cholangitis (5 episodes each) starting from 20 and 570 days after KPE respectively. Abdominal radiographs and ultrasonography were unremarkable. Hepatobiliary scintigraphy using Tc-99m mebrofenin revealed prompt uptake and excretion by the liver; with subsequent hold-up within the biliary limb of the roux loop at 6 hours in both children. Laparotomy was performed at 5 and 20 months of age respectively. It confirmed dense adhesions and bowel dilatation in the biliary limb in case 1 and at the T-junction of the enteroenterostomy for the roux loop in case 2. Adhesiolysis, resection of the obstructed bowel and enteroenterostomy resulted in normalisation of their liver function with no further cholangitis at a follow-up of 24 and 4 months respectively.

#### **Conclusions**

Recurrent and refractory cholangitis post-KPE should prompt investigation for an obstructed bilio-enteric conduit which is surgically treatable and provides durable relief.

## PW 4.20

### LIVER TRANSPLANTATION FOR POLYCYSTIC LIVER DISEASE: STILL A CHALLENGING INDICATION

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#### Introduction

Polycystic Liver disease (PCLD) is a rare disease, often associated with polycystic kidney disease (ADPKD). Liver transplantation (LT) remains the curative treatment for symptomatic PCLD. Most indications arise from disabling symptoms due to a mass effect. The objective of the study is to describe the perioperative and survival results of patients with liver transplantation for PCLD.

#### Material and methods

Retrospective study on PCLD patients undergoing LT at UC-Christus University Hospital between 1994-2022. All patients treated by LT from a deceased or living donor and those submitted to a simultaneous Liver-Kidney (SLK) transplantation were included. Short- and long-term clinical, surgical, and postoperative characteristics were reviewed. Survival analysis was performed with Kaplan Meier.

#### Results

Thirteen patients with PCLD received 16 (2,8%) liver grafts out of 580 LTs performed since 1994. The average age was 52 years, and 92.3% were female. The median waitlist was 19 months, with an operational MELD of 24. A liver graft treated seven patients; 6 underwent an SLK transplantation, and one received a living donor liver transplant (LDLT) partial graft. The average weight of the explanted liver was 6.1kg, with 11 patients weighing over 3.5kg. Five patients required early reoperation: 2 hemorrhagic complications and three arterial thrombosis (HAT). Two patients required three re-transplantations due to HAT and liver abscesses. Two patients had a biliary fistula treated endoscopically. Biliary anastomotic stricture (30.8%) was the most common late complication. The median overall survival was 57 months, with a one and 5-year survival of 84.6% and 66.5%, respectively.

#### Conclusion

LT in patients with symptomatic PCLD is a complex and challenging but feasible procedure. Late references may explain lower overall survival than other LT indications. A larger number of patients is required to establish significant differences.

## PW 4.21

### A RARE EVENT OF SPONTANEOUS INTERNAL JUGULAR VEIN RUPTURE: A CASE REPORT

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#### Introduction

Spontaneous internal jugular vein rupture has never been reported, based on the latest literature search. The presentation of this case was uncommon; therefore, the authors would like to report a case of spontaneous internal jugular vein rupture and its management in a hospital.

#### Case presentation

A 28-year-old lady with no medical illness was presented with an acute onset of right neck swelling. The swelling has become increasingly painful, and size has been static one (1) day before she was presented to the hospital. Physical examination revealed a right-sided neck swelling of 10 cm × 10 cm in size, that extended into the anterior midline. Contrast enhanced computed tomography (CECT) with complimentary carotid doppler show a large intramuscular mass sized 4.7 cm × 8.5 cm × 8.8 cm (AP × W × CC) at the right anterior neck causing tracheal deviation to the left. Additionally, contrast opacification was seen surrounding the hematoma, which is suggestive of IJV rupture and absence of communication of vessels between IJV and EJV.

Patient underwent right neck exploration and excision of right internal jugular vein. Proximal and distal control of vessels were achieved prior to the ligation of IJV. Intraoperative findings show rupture of IJV and hematoma collection posterior to SCM muscle.

The histopathology examination shows inflammatory cells (i.e., predominant neutrophils admixed with some lymphocytes and plasma cells) with reduced smooth muscle layer and markedly thickened intima suggestive of vascular malformation. Other differentials include vascular ectasia.

#### Conclusion

Spontaneous internal jugular vein rupture is a rare condition, which may occur despite the absence of any early signs and symptoms from the neck region. This study has demonstrated that excision and ligation of internal jugular vein are safe to perform in this case. Thus, this method can be used to treat spontaneous jugular vein rupture.

## PW 5.01

### THE RISK OF MALIGNANCY AND DIAGNOSTIC ACCURACY OF THYROID FINE NEEDLE ASPIRATION BIOPSY IN A LOW- AND MIDDLE-INCOME COUNTRY: PERFORMANCE OF THE BETHESDA CLASSIFICATION

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#### Background:

The 6 categories of the Bethesda System for Reporting Thyroid Cytology (TBSRTS) with associated risk of malignancy (ROM) provide evidence-based clinical management guidelines. This study aims to determine the ROM and accuracy of thyroid fine needle aspiration biopsy (FNAB) in South Africa (SA).

#### Methods:

Thyroid specimens registered between January 2015 and December 2019 at three laboratories were considered for inclusion. ROM was obtained per category by cytohistological correlation and dividing the total number of malignant histology by the total number of cases operated. Accuracy was calculated based on the Bethesda category and eventual malignant histology.

#### Results:

Seventeen thousand seven hundred seventy-three histology and 4 791 cytology cases were identified. Of the 4 791 cytology cases, 931 (19%) were submitted for surgery. More than a third (333) (35.8%) of the cases were confirmed as malignant following histological assessment, with 584 (62.7%) benign. The ROM for the non-diagnostic category was 24.3% and benign 20.5%. The highest ROM was for category VI (91.5%), followed by categories V (69.5%), IV (51.9%) and III (38.8%). Thyroid FNAB had a sensitivity of 73%, specificity of 74%, and overall accuracy of 74%.

#### Conclusion:

Bethesda categories II and IV have a relatively higher ROM in SA compared to other developed countries. The diagnostic accuracy of thyroid FNAB in SA and the high rate of non-diagnostic diagnoses (38%) require further investigation. A national thyroid registry could provide location-specific data to implement appropriate local policies and national guidelines for practicing thyroid surgeons.



## PW 5.02

### ESTIMATING THE CARBON EMISSIONS FROM A RESOURCE-LIMITED SURGICAL SUITE IN PAPUA NEW GUINEA: THE CLIMATE CHANGE POTENTIAL

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#### *Introduction*

*The upscale of surgical service delivery in low to middle income countries will increase health sector greenhouse gas emissions globally. Understanding surgical greenhouse gas emissions from surgical suite activities can direct decarbonization strategies and achieve local, and global climate change objectives.*

#### *Methodology*

*A prospective surgical suite carbon foot print study was conducted at the Alotau Provincial Hospital from the 28th March 2022 to the 28th of May 2022. Carbon emission accounting was conducted according to the Greenhouse gas protocol; which reported carbon emission in terms of three scopes.*

#### *Results*

*The total carbon emission for the surgical suite in APH over the study period was 2,665.8 kgCO<sub>2</sub>e. The average carbon emission per surgical case within the boundary of the surgical suite was 8.4 kgCO<sub>2</sub>e. Scope one emissions (anaesthetic gases) accounted for 44.7% (1171.3 kgCO<sub>2</sub>e) of all carbon emissions.*

#### *Conclusion*

*If no action is taken, carbon emissions in the western pacific region will continue to increase from surgical suites. Therefore, proactive efforts to reduce greenhouse gas emissions must be prioritized.*

## PW 5.03

### GLOBAL UTILIZATION OF LAPAROSCOPIC SURGERY ACROSS DIVERSE RESOURCE SETTINGS

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*Introduction.* Uptake of laparoscopy in low- and middle-income countries (LMICs) has several barriers. This study examined the complications and challenges of laparoscopy in different cultural and economic settings.

*Materials & Methods.* Surgeons from Japan, Singapore, Uganda, U.S., Cambodia, Vietnam, and Malaysia contributed to an online laparoscopic database detailing challenges, and descriptive statistics were generated. Qualitative analysis of free responses was performed by constant comparative method.

*Results.* 198 laparoscopic surgeries from 36 surgeons were included, 37% (n=74) in LMICs. Common cases included anti-reflux procedures, appendectomies, cholecystectomies, choledochal cysts, exploratory laparoscopies, inguinal hernia repairs, thoracic resections, and uterine surgeries. High-income country (HIC) patients tended to be evenly distributed across ages, while in LMICs, most patients were 18-to 50-year-olds ( $p<.001$ ). LMICs reported more comorbidities (n=31, 52%) than HICs (n=29, 48%) ( $p<.01$ ). The most common comorbidities in LMICs were hypertension (n=12, 16%) and obesity (n=8, 5%), while HICs had greater comorbidity diversity including cardiac history (n=7, 6%), diabetes (n=5, 4%), renal disease (n=3, 2%), and emphysema (n=2, 2%). Technical challenges included: lighting problems (n=3, 4% LMIC; n=5, 4% HIC,  $p=1.00$ ), image clarity (n=10, 14% LMIC; n=3, 2% HIC,  $p<.01$ ), insufflation problems (n=4, 5% LMIC; n=1, 1% HIC,  $p=.07$ ), lack of consumables (n=5, 7% LMIC; n=2, 2% HIC,  $p=.10$ ), and problems with instruments (n=11, 15% LMIC; n=3, 2% HIC,  $p<.01$ ). All laparoscopic converted to open procedures were from LMICs (n=6, 8%) ( $p<.01$ ). LMICs surgeons more commonly cited problems of access to technology and resources (n=6, 17% LMIC; n=6, 17% HIC) and maintenance of equipment (n=6, 17% LMIC; n=4, 11% HIC). Adhesions and intraoperative pathology were more frequently mentioned by LMICs (n=10, 29%; n=6, 17% LMICs; n=2, 6%; n=0, 0%, HICs).

*Conclusion.* Surgeons face similar challenges in laparoscopy, yet LMICs carry a burden of advanced pathology and shortages of mentors, which may lead to higher conversion rates.

## PW 5.04

### ECOLOGICAL ASSOCIATIONS BETWEEN SURGICAL RATES AND SURGEON DENSITIES ACROSS INDIA'S DISTRICT HOSPITALS

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*Introduction:* Based on the Lancet Commission's threshold of 5000 surgeries per 100,000 people, India has an unmet need of 49 million surgeries annually. Scaling up surgical volumes necessitates an adequate workforce. This is particularly important in the first-level public hospitals, i.e, district hospitals (DHs), that provide subsidized surgical care. We aimed to investigate the association between surgeon availability and surgeries conducted across district hospitals to estimate the workforce required for meeting surgical care needs.

*Materials & Methods:* A retrospective ecological analysis of publicly available data from the NITI Aayog report on key indicators for DHs (2018-19) was conducted. Main outcome was the major surgical rate (those requiring general or spinal anaesthesia) and main exposure was the surgeon density per 100,000 population in the district catchment population. Covariables included densities of general doctors, nurses, paramedics and beds per 100,000 population. We used a mixed effects generalised linear model with gamma distribution (log link) with random effects by hospital categories (small, medium, and large).

*Results:* 565 DHs were included in our study out of the original 707 after removing null data for outcome and exposure variables. The median (interquartile range) surgical rate and surgeon density across DHs were 44.93 (17.59, 118.18) and 0.38 (0.19, 0.76), respectively. Surgeon density was positively associated with major surgical rate [fixed effects coefficient beta (standard error)=0.44 (0.12),  $p<0.001$ ] after accounting for densities of general doctors, nurses, paramedics and beds. We found that the surgeon density of 10.09 was associated with the surgical rate of 5010.

*Conclusion:* This novel pan-India analysis found that surgical workforce scale-up is required at Indian district hospitals to achieve the Lancet Commission's target surgical operative rate. Future studies should estimate needed densities accounting for differences in hospital efficiencies.

### THE IMPACT OF SURGICAL TASK-SHARING IN SIERRA LEONE: A NATIONWIDE LONGITUDINAL STUDY ON SURGICAL CAPACITY AND ACTIVITY, 2012 TO 2023

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**Background:** This study examines changes in surgical indicators in Sierra Leone between 2012 and 2023, crucial for monitoring surgical system development and assessing the impact of surgical capacity-strengthening initiatives introduced.

**Material & Methods:** This longitudinal nationwide study, involving all health care facilities with an operating theater in Sierra Leone, analyzed changes in key surgical indicators collected in 2012, 2017 and 2023. Parameters of interest were volume and population rates of surgery, distribution of surgical resources and activity between urban and rural areas, between the private and the public sector and availability and contributions of the various surgical provider cadres.

**Results:** In 2023, 78 facilities performed surgeries, with 66.7% continuity from 2017. Surgical volume rates increased from 400 to 505.5 procedures per 100,000 population between 2012 and 2023. Public sector surgeries grew significantly, performing 60.5% of all operations in 2023, up from 39.6% in 2012. Rural surgeries increased by 55.4% over the decade, more than in urban areas. In rural areas, there was a transitioning from non-specialized physicians (46.2%) in 2012 to associate clinicians (54.9%) as the primary surgical providers in 2023. Cesarean section rates increased from 1.4% (2012) to 5.3% (2023). Cesarean sections were in 2023 mostly performed in public facilities (85.5%) by associate clinicians (57.7%).

**Conclusion:** Surgical volume and population rates increased in Sierra Leone the last decade. There was a transition from general to obstetric surgeries, from private to public institutions and from urban to rural areas. A financial risk protection scheme, the Free Health Care Initiative for pregnant women and a nationwide task-sharing surgical initiative to strengthen district governmental hospitals, both introduced in 2011 are likely major contributors to the transition in surgical resources and activity observed the last decade.

## PW 5.06

### **SURGICAL VOLUME IN SIERRA LEONE: A COMPARISON BETWEEN POPULATION AND FACILITY-BASED DATA COLLECTION**

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#### **Background**

Surgical volume obtained from health facility records is one of the six indicators proposed by the Lancet Commission on Global Surgery. An alternative approach to assess surgical volume is from household surveys, which might be more suitable for low-income settings. The aim of this study was to describe the annual surgical volume in Sierra Leone through a population-based approach and compare this with health facility data.

#### **Method**

This study is part of the PRESSCO 2020 (PREvalence Study on Surgical COnditions) study, a cross-sectional, countrywide descriptive study based on a randomly selected national representative sample. Data on surgeries performed annually including type and location was collected through interviews and compared with facility-based data.

#### **Results**

In total, 10 001 household members were included from 1854 households, who reported 152 major surgical procedures the year preceding the interview. Amounting an annual nation-wide surgical volume of 1520 (95%CI 1300-1780) per 100 000 population. The most common procedures were hernia repairs (30·9%), caesarean sections (23·7%) and appendicectomies (13·8%). The population-based data collection identified 4·1 times more procedures compared with 372 procedures in facility-based study from the same year.

#### **Discussion**

The substantial difference between population- and facility-based data reveals a likely underreporting in facilities and a possible overreporting in this household survey. Interpretation of facility-based surgical volume data should be done with caution and rigorous description of the method is essential for proper interpretation. Independent of the method of data collection, the surgical volume in Sierra Leone is far below the recommended global benchmark.

## PW 5.07

### PILOT IMPLEMENTATION PROJECTS IN LOW- AND MIDDLE-INCOME COUNTRIES TO GUIDE SURGICAL QUALITY IMPROVEMENT USING BEST PRACTICE RECOMMENDATIONS

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#### **Background:**

The G4 Alliance International Standards and Guidelines group established 11 BPRs regarding surgical infection, trauma, and maternal health to serve as a framework for implementation of surgical quality improvement and scale-up initiatives in LMICs.

#### **Methodology:**

Three LMIC healthcare centers in Laos, Nigeria, and Ethiopia were chosen to participate in the implementation pilots through existing cross-collaborative partnerships. Local teams were assembled to conduct needs assessment analyses prior to implementation study design. The projects are ongoing and preliminary results are presented using descriptive analysis.

#### **Results:**

The BPRs chosen for each site were: hand hygiene in Laos, antimicrobial stewardship in Nigeria, and trauma in Ethiopia. In Laos, we collected 328 observations using the World Health Organization hand hygiene tool and found that overall compliance was 43.9% with 56.1% missed opportunities. A pre-implementation perception survey showed that healthcare workers overestimated both their own and their co-workers' compliance. In Nigeria, a gap analysis was conducted to investigate antimicrobial stewardship in hospital surgical wards. Results showed that an average of 505 urine and wound swabs were collected from admitted patients monthly, with the most common organisms isolated being *Providencia A.* and *E Coli*. The indication for antibiotic prescription was prophylactic versus empiric in 81.2% of cases, with the most common antibiotics used being metronidazole and ceftriaxone. Lastly, in Ethiopia, the current emergency medical technician national curriculum as set by the Ministry of Health was reviewed by local experts and knowledge gaps were identified. A 15-module supplemental curriculum with learning objectives was developed to augment existing educational sessions, introducing topics such as managing large-scale events, transport of emergency patients, and advanced life support.

#### **Conclusion:**

Through international collaboration spearheaded by local stakeholders, these scalable pilot projects can be used as a framework to promote further optimization and standardization of safe and quality surgical care in LMICs.

## PW 5.08

### CAN MEDICAL DIPLOMACY MITIGATE SURGICAL DISPARITY IN POST-CONFLICT DEVELOPING COUNTRIES: THE REPUBLIC OF KOSOVA'S EXAMPLE

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*Introduction:* The Republic of Kosova (RKS) healthcare system was destroyed before and during the 1998/1999 war, and subsequently neglected for the last > two decades since the war ended. As a results, major portion of meager budget of RKS goes for treatment abroad, illustrating new form of medical neocolonialism. The objective of this paper is to present medical diplomacy (MD) and establishment of clinical centers of excellence(CCE) as strategy to mitigate medical and surgical disparity as well as neocolonialism.

*Methods:* Analyses of healthcare system was performed during December 1, 2021- September 31, 2022, and data from the States Insurance Fund of Kosova of treatment abroad for period 2019-August 2022 were reviewed.

*Results:* The following issues were identified: 1)The RKS has the lowest GDB budget in the Balkans and amongst the lowest in the world; 2) up to 40% of population have catastrophic expenses for treatment abroad; 3)the lack of clinical expertise and inadequate hospital infrastructure; and 3)corruption imbedded in all chains of public healthcare system. A multi-prong transformation strategy using primarily medical diplomacy was created involving: 1) modernizing the hospital infrastructure with help of donors; 2) establishing 12 advanced clinical centers of excellence (ACCOE), of which 9 are surgery related; and 3) 14 new advance clinical surgical fellowships (ACF).

*Conclusion:* We believe that establishing medical diplomacy, ACCOE, ACF, and improving hospital infrastructure can reduce long-term healthcare disparity in post-conflict countries by increasing surgical abilities and expertise. This in turn will reduce very costly treatment abroad, a new form of medical neocolonialism in post conflict countries.

## PW 5.09

### MINIMAL ACCESS SURGERY IN LOW RESOURCE SETTINGS : CHALLENGES AND SOLUTIONS

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*Introduction : With the reducing cost of the laparoscopy equipments , newer centers are coming up in remote areas. The aim of this paper is to highlight the challenges faced by the surgeon when starting a new centre for minimal access surgery in a low resource settings & how to navigate them.*

*Materials and Methods : The study was carried out over a period of One year in newly established Laparoscopic surgery centre. An analysis of the patient outcomes and various other factors influencing the quality of patient care, operative times and staff involvement was carried out.*

*Results : A total of 410 cases involving use of Minimal access surgery were done. 350 cases were general surgical procedures and 60 laparoscopic gynaecological cases. Major factors affecting the surgeons comforts and operative times were staff training and continuous stable electricity availability. Improved staff training led to reduction in operative times and fewer intra op mishaps. From patient perspective , there was lesser post op pain and early return to activity*

*Conclusions : Starting a minimal access surgery centre in a low resource settings requires a considerable commitment and dedication on the part of the surgeon to train themselves and the support staff to ensure good patient outcomes. In the end it is worth the effort owing to improved patient experience and early return to activity.*



## PW 5.10

### DISPARITY IN UPTAKE OF AND COSTS SPENT ON VASECTOMIES AND TUBECTOMIES AT PUBLIC HOSPITALS IN INDIA IN 2019-20

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*Introduction:* Qualitative data and small studies have noted that the burden of family planning disproportionately falls on the females in India. But quantitative analyses are limited. Our primary aim was to quantify the sex-based differences in uptake and costs spent on tubectomies and vasectomies in India. Additionally, we estimated the financial benefit of scaling up the rate of vasectomies to reduce the differences in uptake.

*Materials & Methods:* A retrospective analysis was conducted with data on the total number of tubectomies and vasectomies performed, failure and mortality postoperative counts due to these procedures obtained from the Health Management Information System (HMIS) for 2019-20. We calculated the vasectomy (tubectomy) operative rates per 10,000 males (females) of reproductive age (15-49 years). Female-to-male ratio of these rates proxied sex-based uptake disparities. State-specific procedure costs and compensations for failures and postoperative deaths at the public hospitals were extracted and aggregated by reviewing government data and research studies. To estimate the financial benefit of scaling up vasectomies, the cost of increasing the rate of vasectomy to 50% of the total sterilization rate was calculated. All costs were adjusted for inflation and presented in United States dollars.

*Results:* In 2019-20, the national tubectomy rate was 9, vasectomy rate was 1.3, and the resulting female-to-male ratio was 6.92. The cost per tubectomy procedure was 3.5 times that of vasectomy (\$89.06 vs. \$25.28). Keeping the overall operative rate constant, the benefits of scaling up vasectomies to at least 50% of the total operations (replacing excess tubectomies) would be \$2,728,736-\$24,369,595. This will potentially also result in post-op mortality rates by 62.4%.

*Conclusion:* Our pan-India analysis confirms that surgical methods of family planning are disproportionately higher among females. Scaling up vasectomies has public health and financial benefits.

## PW 5.11

### ADEQUACY OF ESSENTIAL OPIOID ANALGESIC CONSUMPTION FOR PAIN AND PERIOPERATIVE CARE ACROSS 137 COUNTRIES FROM 2017 TO 2021

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*Introduction:* The Adequacy of Opioid Consumption (AOC) Index uses the human development index (HDI) to benchmark pain management. This does not account for health system factors such as anesthesia workforce and can misrepresent high consumption as better. We improved the AOC index by adjusting it for physician anesthesia provider (PAP) density to provide a better indicator for pain management and perioperative care.

*Methods:* Country-level mean opioid consumption in milligrams per capita (mg/capita) for 2017-2021 (five-year arithmetic mean) was obtained from the International Narcotics Control Board Annual Report 2022. For parsimonious analysis, we included 11 opioids and analogues present in the WHO Model List of Essential Medicines 2023.

Projections for PAP density per 100,000 people for 2019 were based on the World Federation of Society of Anaesthesiologists Survey (2015-16) and physician density estimates (2015-2019) derived from Institute for Health Metrics and Evaluation. A generalized linear regression model for 137 countries was run with mean essential opioid analgesic consumption as the dependent variable and PAP density and HDI (2019) were independent variables to get PAP-adjusted consumption values. The arithmetic mean of PAP-adjusted consumption values of top 20 HDI countries was used as the adequacy threshold. PAP-adjusted AOC index was calculated as the ratio of country's adjusted essential opioid analgesic consumption to threshold multiplied by 100.

*Results:* PAP-adjusted AOC threshold was found to be 234.39 mg/capita. PAP-adjusted AOC index values ranged from 129.14 for Switzerland to 0.23 for Mali. The median PAP-adjusted AOC for high-income countries was 140 times higher than that of low-income countries.

*Conclusion:* In this comprehensive up-to-date global analysis, we find that most low- and lower-middle-income countries lack access to essential opioid analgesics. These point to the need for investing in anesthesia workforce and ensuring access to opioid analgesics in tandem.

## PW 5.12

### POSTOPERATIVE RESPIRATORY FAILURE PREDICTION IN ABDOMINAL SURGERY: OBSERVATIONAL STUDY

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*Postoperative respiratory failure (PRF) is a serious life-threatening complication and is strongly correlated with 30-day mortality and long-term outcome. Although the incidence of PRF is relatively low (1–3%), it not only carries serious health consequences, but also significantly increases the financial costs of the healthcare system as a whole.*

*Abdominal surgery have the highest risk of developing PRF. Several recent systematic reviews and meta-analyses have shown that preoperative physical therapy maneuvers, inspiratory muscle training, and exercise therapy can help reduce the incidence of PRF.*

*In this regard, identifying high-risk patients allows for targeted application of methods for preventing PRF and reducing the risk of its development.*

*The analysis included data from 8285 patients undergoing abdominal surgery with initial physical status of classes 1-3 according to the ASA classification. The study was approved by Local ethic committee, all patients were signed informed consent before inclusion in the study.*

*The logistic regression analysis showed that smoking (OR=2,3 (95%CI, 1,4 to 4,1), duration of surgery (OR=1,007 (95%CI, 1,005 to 1,008), use of bronchodilators (OR=6,8 (95%CI, 2,8 to 16,3) and iron supplements (OR=3,8 (95%CI, 1,8 to 8,1), physical class according to the ASA classification (OR=3,4 (95%CI, 1,8 to 6,3) and the need for vasopressors (OR=4,2 (95%CI, 2,4 to 7,6) significantly influence the risk for the developing of respiratory failure.*

*Area under the receiver operating characteristic curve for the model was 0,893 (95%CI, 0,886 to 0,900,  $p < 0,001$ ).*

*The resulting model allows for reliable stratification of patients at high risk of respiratory failure based on preoperative and intraoperative factors.*

## PW 5.13

### **MECHANISMS OF POSTOPERATIVE DEATH IN LOW- AND MIDDLE-INCOME COUNTRIES: A SECONDARY ANALYSIS OF AN INTERNATIONAL RANDOMISED CONTROLLED TRIAL**

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*Background:* Death after surgery is devastating for patients, families, and communities, but sadly remains common in low- and middle-income countries (LMICs). This study aimed to determine mechanisms of postoperative deaths for patients in LMICs.

*Methods:* This was a secondary analysis of the FALCON randomised trial (NCT03700749), which tested two interventions to reduce surgical site infection in 5788 adults and children undergoing major abdominal surgery in seven LMICs. The primary outcome measures were the mechanism and cause of death within 30-days of surgery, determined using a modified verbal autopsy strategy from Serious Adverse Event (SAE) reports and grouped into systems aligned to the Advanced Life Support (ALS) framework.

*Findings:* This analysis included 5,557 patients undergoing abdominal surgery, of which 3,704 (66.7%) were performed as an emergency. 306 (5.5%) patients died within 30 postoperative days. Three quarters of deaths were due to circulatory system failure (73.8%, n=226/306), which included 173 deaths from septic (56.5%) and 30 deaths from hypovolaemic shock including bleeding (9.8%). A further 15.4% of deaths were due to respiratory failure (47/306). One in five patients died without a clear cause of death (19.6%, 60/306); 45 patients died with sepsis of unknown origin and 15 patients with an unknown cause. Of patients that died, 46 (15.0%) did so within 24-hours, 111 (36.3%) between 24- and 72-hours, 57 (18.6%) between 72- and 168-hours and 92 (3.0%) more than one week after surgery. Whilst 81.0% patients (248/306) died in hospital, as many as 19.0% patients (58/306) died out of hospital. *Interpretation:* Circulatory failure leads to most deaths after surgery, sepsis accounting for two thirds. Variability in timing of death highlights opportunities to intervene throughout the perioperative pathway, including after discharge. A high proportion of patients without a clear cause of death reflects the need to improve capacity to rescue by strengthening perioperative systems.

## PW 5.14

### ONGOING DEVELOPMENT AND IMPLEMENTATION OF A GLOBAL DIGITAL OPERATIVE ENCOUNTER REGISTRY

Neil Wetzig on behalf of the G4 Alliance Operative Encounter Working Group<sup>1</sup>; Christopher Dodgion<sup>2</sup>; Natalie Sheneman<sup>3</sup>; Claudio Tanca<sup>4</sup>; Richard Henker<sup>5</sup>; Cheng Har Yip<sup>6</sup>

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*Introduction: The G4 Alliance for Surgery, Obstetrics, Trauma and Anaesthesia Operative Encounter Registry (OER) Working Group, partnering with the WHO Department for Integrated Health Services and others supported by World Health Assembly Resolution 76.2 (May 2023) has created a minimum surgical dataset through a global consensus process, to achieve a widely available digital platform to routinely prospectively collect operative encounters. This will enable audit, quality improvement, and over time build data-driven foundations for local, national, and global decision making and prioritization.*

*Methods: A 'Demonstration Project' was conducted across 9 geographical sites in Kenya, Pakistan and South America in 2023-4 using 'JotForm' to test the appropriateness and 'collectability' of 25 core and 13 extended variables. Collected data was analysed - and focus groups from participating centres were conducted to ensure that the variables built into the final DHIS-2 digital platform are relevant.*

*Results: The results of this 'Demonstration Project' will be presented. Most variables were adequately collected, including patient demographics, co-morbidity data (84% recorded ASA rating), use of monitoring and the surgical safety check list (82% use collected in one centre). The collection success varied from country to country. Two contentious variables (indications for surgery and type of surgical procedure) are still being assessed. Post-operative disposition of patient data was generally achieved but less so with disposition after 24 hours, a key to determining POMR24. In this presentation more data will be presented, including results of focus group assessment of participating centres.*

*Conclusion: A universally acceptable, routinely available, digital minimum dataset able to be used globally at different level health facilities is achievable. The demonstration project has highlighted the need for training and support of centres on completion of the final digital platform. De-identified global data will enhance advocacy for funding initiatives for operative health system strengthening.*

## PW 5.15

### MODELING MINIMUM THRESHOLDS FOR SURGERY, ANESTHESIA, AND OBSTETRICS SPECIALIST WORKFORCE DENSITIES FOR 2019

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*Introduction:* Previous studies noted a desired density of 20-40 surgery, anesthesia, and obstetric (SAO) specialists per 100,000 to reduce maternal mortality rates (MMR). However, MMR is neither specific to surgical systems nor does it account for wide-ranging diseases and population groups impacted by the SAO workforce. Further, cadre-specific density thresholds are missing. In this analysis, we provide cadre-specific SAO density thresholds based on an outcome that comprehensively captures surgical care.

*Methods:* Specialist densities were projected for 2019 using the SAO data from the Lancet Commission and physician density estimates from the Institute for Health Metrics and Evaluation. The outcome was surgical healthcare access and quality (HAQ) index, a scaled (0-100, with 100 being best) composite of fourteen surgically-treatable diseases with preventable mortality. The relationship between the four densities (S, A, O, and SAO) and surgical HAQ were inspected using scatter plots. Nonlinear least squares were used to estimate the best-fit three-parameter Michaelis-Menten equation curve for the relationship. Minimum thresholds were determined to be the workforce densities corresponding to the median surgical HAQ index (76.85).

*Results:* Using data from 194 countries, the minimum density thresholds for S, A, O and overall SAO required for achieving median surgical HAQ index were 9.59 (95%CI: 4.45, 14.73), 6.05 (3.48, 8.62), 6.54 (3.27, 9.80) and 24.55 (12.59, 36.51), respectively. 39.69% of countries crossed the minimum density threshold for surgeons, 32.47% for anesthetists, 41.24 for obstetricians, and 39.18% for overall SAO.

*Conclusion:* To our knowledge, this is the first global analysis presenting cadre-specific minimum thresholds for surgical specialist density. Majority countries fall below the thresholds. These findings are vital for national surgical planning and directing investments for scaling up adequate training capacity, especially in the Global South.

## PW 6.01

### COMPARING OUTCOMES OF INTRAMEDULLARY NAILING AND PLATE FIXATION IN ADULT FEMORAL SHAFT FRACTURES IN 2 REFERRAL HOSPITALS IN DOUALA-CAMEROON: A 10-YEAR RETROSPECTIVE STUDY

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*Introduction:* In high resource settings, intramedullary nailing (IMN) is the treatment of choice of closed adult femoral shaft fractures. But in many low- and middle-income countries, plate fixation (PF) is still being used with some measure of success, though with its attendant risks. *-Objectives:* To compare the two fixation methods in the treatment of adult closed femoral shaft fractures in a low-resource setting. *- Materials and Methods:* A 10-year retrospective hospital-based analysis of patients' files managed for closed femoral shaft fractures from March 2012 to March 2022 carried out at the Douala General Hospital and Laquintinie Hospital Douala. Data were analyzed using SPSS version 26. Statistical significance was set at a p-value <0.05, with a confidence interval at 95%. *- Results:* We included 151 medical files of patients. The mean age of our patients was 36.5±12.7 years, Males constituted 62.9%. There were 77 cases (51%) of plate fixation, and 74 cases (49%) of IMN. Outcome of PF vs IMN was postoperative osteomyelitis 8.6%:3.3%; malunion 5.9%:2.9%, nonunion 8.6%:6.6%, delayed union 6.6%:3.3%, re-operation 9.9%:5.3%, post fixation pain 3.3%:13.3%. Patients aged between 59 to 78 years were nine times more likely to have post-operative osteomyelitis (COR: 9.886, 95% C.I: 2.304, 42.431, p < 0.002). Patients managed with IMN were five times more likely to experience post fixation pain as compared to patients managed with plates and screws (AOR: 5.621, 95% C.I: 1.941, 16.275, p < 0.001). Female patients were twice as likely to experience post fixation pain as compared to male patients (AOR: 2.810, 95% C.I: 1.120, 7.046, p < 0.028). *- Conclusion:* Plate fixation and IMN had similar frequencies of use. Based on this comparative analysis, IMN and plating are both suitable methods of fixation in our setting, though IMN is a preferred method. *- Keywords:* Intramedullary nailing, plate fixation, femoral shaft fracture, outcome.

## PW 6.02

### EVALUATING PROFICIENCY IN TRAUMA SURGERY: A NATIONWIDE SURVEY OF TRAINEES AND SURGEONS

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#### *Introduction:*

*The limited exposure of Malaysian surgical trainees and junior general surgeons to trauma surgery poses multifaceted challenges within surgical education and healthcare delivery. With the nascent state of the Trauma Surgery subspecialty and a scarcity of trauma surgeons, addressing deficiencies in trauma surgery training is imperative. This study assesses the confidence levels of individuals in general emergency trauma surgery and gauges the interest of trainees and junior general surgeons in pursuing a career in trauma surgery.*

#### *Methods:*

*Data were collected through an online survey of surgical trainees and experienced surgeons. Data included demographics, training levels, and participation in trauma-related courses. Self-reported competencies were assessed using a 1-10 confidence rating scale.*

#### *Results:*

*Of the 400 surgical trainees and surgeons contacted, 169 (42.3%) responded. Only 32% of trainees and 63.9% of surgeons had experience with trauma thoracotomies. The comprehensive study evaluated 32 self-reported competencies in trauma surgery, revealing significant deficiencies across both trainees and experienced surgeons. While trainees displayed lower confidence levels, even experienced surgeons reported suboptimal scores, falling below 5, in several key competencies. Limited participation in trauma courses and a lack of access to specific courses were also observed.*

#### *Conclusion:*

*The study highlights the pressing need for comprehensive trauma surgery training in Malaysia, emphasizing the establishment of dedicated training pathways, curriculum enhancements, and increased engagement in trauma courses. The enthusiasm of trainees can be harnessed to cultivate competent trauma surgeons, and continuous professional development is crucial for sustaining and enhancing trauma surgery competencies.*



## PW 6.03

### NATION-WIDE TRAUMA SURGEON TRAINING WITH PORCINE MODEL: A PROSPECTIVE ANALYSIS

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#### Introduction

A nation-wide trauma surgeon training courses certified by the National Trauma Medicine Center were held in The University of Hong Kong - Shenzhen Hospital. These two-day courses composed of lectures, dry lab workshop and porcine model dissection sessions. This prospective study aims to analysis the impact of the training course from trainees'point of view by way of a structured questionnaire for analysis and feedback.

#### Materials & Methods

The theories lectures had trauma operation skill lectures, animal anatomy and animal ethics lessons. Workshops practice lifesaving technology like intubation, pelvic external fixation, REBOA and eFAST. The animal dissection sessions, trainees were supposed to practice the damage control surgery and treatment of specific organ injuries. All surgical procedures on a live porcine model under intubation general anesthesia. Debriefing meeting held after animal dissection sessions completion. All animal use and procedures were approved by the Institutional Animal Care and Used Committee (IACUC). Questionnaires were sent to all trainees after completions of the course.

#### Results:

We had successfully conducted 8 courses for a total of 230 trainees from all over the country. Of these trainees, 86.5% (n=199) had expressed that they were very satisfied with the training course. 80.4% (n=185) considered that the course contents were appropriated. The favorite workshops practice was REBOA (n=211, 91.7%). The most impressive animal dissection sessions were thoracotomy (n=221, 96.1%). Nearly all participants (223/230) considered that the debriefing meeting was necessary.

#### Conclusion

This prospective analysis shows that this nation-wide trauma surgeon training with porcine model was a successful course. Animal dissection sessions create a "real" scenario for participants to practice the damage control surgery with real instruments, with significantly increased trainees' ability to handle critically injured patients.

## PW 6.04

### DECADE-LONG EVALUATION OF TRAUMA CARE AT A LEVEL 1 TRAUMA CENTER IN SOUTHERN MALAYSIA

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#### *Introduction:*

Trauma presents a substantial global public health challenge, with a significant impact on healthcare systems, particularly in low- and middle-income countries. In Malaysia, road traffic accidents have been a leading cause of trauma-related fatalities, prompting the establishment of a dedicated trauma surgery unit in Southern Malaysia in 2011.

#### *Methods:*

This retrospective study spans two distinct periods, from January 2011 to December 2013 (Early Period) and January 2018 to December 2020 (Late Period). Data were collected from an electronic trauma database and case notes. We examined patient demographics, injury mechanisms, major trauma severity, clinical management, and outcomes. Mortality was examined for all patients and patients with severe injury (NISS>15) and compared between the two periods.

#### *Results:*

Over the study duration, 5,031 patients were included. The demographic profile revealed a predominance of male patients (86.2%), with an increasing proportion of female (11.4% to 15.7%) and elderly patients (6.3% to 8.1%). Blunt trauma, particularly road traffic crashes (85.6%), was the most common mechanism. Major trauma was observed in 51.1% of patients. The study demonstrated a decrease in overall mortality rates (10.8% to 7.2%), a substantial reduction in bleeding-related fatalities (20.1% to 2.5%), and improvements in clinical outcomes, particularly in major trauma mortality rates (21.9% in 2011 to 11.3% in 2020).

#### *Conclusion:*

The study underscores the impact of a well-structured trauma care system in a developing nation, providing a model for other low- and middle-income countries. It underscores the pivotal role of dedicated trauma surgeons and organized trauma teams in improving patient outcomes and community health, contributing to global efforts to mitigate the burden of traumatic injuries. This investigation adds to the limited data on trauma care systems in Southeast Asia.

## PW 6.05

### CHOICE OF TRAUMA INJURY SCORING DETERMINE THE OUTCOME OF TRAUMATIC PENETRATING INJURY IN REGIONAL HOSPITAL OF MALAYSIA FROM 2018-2023

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#### **Background:**

Penetrating abdominal trauma is a prevalent occurrence globally, including Malaysia. Various scoring systems, such as the Revised Trauma Score (RTS), Injury Severity Score (ISS), New Injury Severity Score (NISS), and Trauma-related Injury Severity Score (TRISS), are employed to assess the severity of traumatic injuries. This study aims to demonstrate the significance of these scoring systems and their correlation with morbidity and mortality in patients experiencing traumatic penetrating injuries.

#### **Methods:**

A retrospective analysis of the regional Malaysia Trauma Surgery Database was performed over a period of 5 years from January 2018 to Mid-August 2023 in trauma center Hospital Sultanah Aminah, Johor Bahru.

Data of interest were demography, races, mechanism of penetrating injuries, physiological parameters, GCS, RTS, ISS, NISS, TRISS and cause of mortality.

Trauma scoring system performance were compared by calculating area under the receiver operating characteristic (AUC) curve and Receiver operating characteristic (ROC)

#### **Results:**

In this 5years, total of 5474 trauma cases admitted, among which 261 were cases of penetrating trauma and with 6 deaths.

Analysis of trauma severity scoring systems revealed a statistically significant association across all measures.

Notably, the TRISS score exhibited superior predictive capabilities for severity compared to other scoring. The TRISS score demonstrated high sensitivity and specificity.

#### **Discussion:**

The data collected for this study holds significant implications for enhancing the safety, law enforcement, and treatment modalities within country. Identifying the most effective tool for predicting injury severity and mortality contributes to the improvement of local hospital setups.

#### **Conclusion:**

Although there are varieties of trauma severity scoring are available, TRISS is a scoring system in the most suitable modality to use in penetrating trauma injury. Surgeons and clinicians should consider the TRISS and NISS, in determining injury severity and the likelihood of mortality which can help physicians determine the best course of action in patient management.

## PW 6.06

### STRAIGHTENING OUT THE FACTS: NAVIGATING THE PATH TO PEDIATRIC CERVICAL SPINE EVALUATION

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#### Introduction

Evidence supports protocolization of cervical spine clearance in pediatric patients to hasten injury identification, limit radiation exposure and shorten time to cervical collar removal. Equally important is ensuring proper fit and function of the collar. Our trauma center noted improperly fitting collars and divergent practices of cervical spine evaluation among providers. A quality and patient safety was undertaken to protocolize pediatric cervical spine management and clearance. process.

#### Methods

This project occurred in an academic Level 1 pediatric and adult trauma program from 2021-2023. A multidisciplinary team of physicians and nurses contributed to the project. Published trauma protocols were reviewed to identify potential solutions for adoption. Protocols were vetted against local contextual elements for potential for success, failure, and cost. The proposed clearance algorithm was presented to a wider body of stakeholders and approved. Cervical collar features and fit were assessed leading to institutional change in the brand of collar used. Implementation efforts included education, simulation, use of a dedicated trauma website and new electronic medical record (EMR) documentation processes. Quantitative assessment of compliance occurs through chart review and qualitative review through user feedback.

#### Results

Nurses, physicians and physical therapists completed education and simulation proper cervical collar sizing, fit and application under the guidance of a trained group of "superusers." Mandatory EMR documentation upon patient admission prompts assessment of proper collar fit. The new clearance protocol was posted to a universally accessible trauma website. A standardized document for cervical spine clearance was implemented in the EMR to prompt compliance with this algorithm and ensure communication of cervical spine clearance status among team members.

#### Conclusions

A multifaceted c-spine pathway can provide a template for other institutions to successfully update, revise and implement safe pediatric management and clearance protocols.

## PW 6.07

### MEETING THE ANTIBIOTIC METRIC FOR OPEN FRACTURES: A RACE AGAINST TIME

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#### Introduction

*Patients with open fractures are at increased risk of wound infection. Current recommendations from the American College of Surgeons are to administer intravenous (IV) antibiotics within 60 minutes of arrival to a trauma center. Our medical center noted low compliance with this metric. The purpose of this study was to assess the factors related to delayed administration of antibiotics in pediatric open fractures.*

#### Methods

*The trauma registry at our Level 1 ACS Pediatric Trauma Center was utilized to identify patients with an open fracture who were not IV antibiotics within 60 minutes of arrival from October 2020 to May 2023. A retrospective chart review was performed on each patient to capture the type of injury, trauma activation status, time of placement and of the antibiotic order, and confounding factors contributing to delay.*

#### Results

*Delay of antibiotic administration greater than 60 minutes was identified in 17 patients. There were 10 long bone extremity fractures, 3 facial fractures, 2 hip fractures and 2 digit fractures. Nine of 10 patients with long bone extremity fractures with delayed antibiotics did not have a formal trauma activation. Among these, 4 had orders were placed in 60-minute window but a delay in administration. Other failures were secondary to delayed patient evaluation or recognition of the open fracture, sometimes due to overlying dressings applied preceding arrival. Of activated traumas, those with antibiotic delay were overwhelmingly less obvious on initial physical exam, including face, digit and hip fractures.*

#### Conclusion

*Trauma activation status plays a role in time to antibiotic administration in open fractures. Given limited resources, not all traumas can be activated. Quality programs focusing on prompt evaluation of suspected fractures with emphasis on open fractures, exposure of sites even dressed prior to arrival, and timely imaging will be crucial to improving this metric.*

## PW 8.01

### THE COMBINED USE OF VHI30+TLUS+PRAAT IMPROVES THE DIAGNOSTIC EFFICIENCY AND CLINICAL CHARACTERIZATION OF POSTOPERATIVE VOCAL CORD PARALYSIS IN THYROIDECTOMIZED PATIENTS

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#### Introduction:

Vocal cord paralysis (VCP) after thyroidectomy has a negative impact on patients' QoL. Instruments such as the 30-item Voice Handicap Index questionnaire (VHI-30) and trans-laryngeal US (TLUS) have been implemented to characterize this complication. Our aim was to investigate the individual and combined diagnostic efficiency of these instruments for VCP diagnosis, including an objective voice assessment (PRAAT®).

#### Patients & Methods:

A training cohort including 48 patients and validation phase of 25 patients with total thyroidectomy were assessed preop- and 2-weeks postoperatively. Assessment by means of VHI-30, PRAAT and TLUS were performed in all patients. Direct video-laryngoscopy (DVL) was our gold standard. Pre- and postop deltas in VHI-30 and PRAAT parameters were contrasted between cases and controls. Statistical diagnostic efficiency and ROC analysis were performed.

#### Results:

In only 4 (8.3%) and 3 (12%) patients early postoperative VCP was identified in the training and validation cohort, respectively. Postoperative VHI-30 scores, and VHI-30 score deltas resulted higher in the VCP group than controls (60 vs 7 pts,  $p=0.002$  and 33 vs 0 pts respectively,  $p=0.002$ ). A higher pitch decline occurred in VCP cases (135.7 vs 4.3 Hz,  $p=0.031$ ). After ROC analysis, a postoperative VHI-30 score of 37pts, a VHI-30 score delta of 24pts and a pitch delta of 30.8Hz displayed the higher diagnostic accuracy for VCP. In the validation cohort, TLUS + VHI-30 delta + pitch delta had the higher diagnostic accuracy (96%), with sensitivity 100%, specificity 95.4%, PPV 75% and NPV 100% for VCP. Only 1 (0.04%) was misclassified as VCP with this approach.

#### Conclusion:

This is the first time PRAAT has been considered alone and with TLUS and VHI-30 for assessing VCP in thyroidectomized patients. We found these tools reliable for early VCP identification and for patients who require further DVL. This combination has an additive value increasing the diagnostic accuracy among thyroidectomized patients.

## PW 8.02

### PROGNOSTIC SIGNIFICANCE OF SUBDIVISION OF N FACTOR AMONG PAPILLARY THYROID CANCER WITH N1

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**Introduction:** In the 9th edition Japanese Classification of Thyroid Carcinoma, the N factor was subdivided according to the maximum diameter of metastatic lymph node, the presence of extra-nodal extension, and the location of mediastinal lymph node. In this study, we investigated the relationship between the N factor and clinical outcome based on the 9th edition in N1 cases of papillary thyroid carcinoma (PTC).

**Materials and Methods:** A total of 703 patients with N1 PTC who underwent initial thyroidectomy at Yokohama City University Medical Center between January 2000 and October 2023 were included. N1a/1b-1 was defined as not belong to the N1a/1b-2 or N1a-3. N1a/1b-2 was defined as extra-nodal extension or clinical node metastasis > 3cm. N1a-3 was defined as the location of lymph node was under cranial end of innominate vein.

**Results:** Among the 703 patients with PTC, N1a-1, N1a-2, N1a-3, N1b-1, and N1b-2 were 382 (54%), 14 (2%), 0, 234 (33%), and 73 (10%), respectively. Univariate analysis identified age  $\geq 55$  years ( $p = 0.011$ ),  $\geq T3$  ( $p < 0.001$ ), N1b ( $p = 0.001$ ), N1a/1b-2 ( $p < 0.001$ ), and M1 ( $p < 0.001$ ) as significant negative prognostic factors for cause-specific survival (CSS). Multivariate analysis identified age  $\geq 55$  years (hazard ratio [HR], 11.150; 95% confidence interval [CI], 2.564–48.530,  $p = 0.001$ ),  $\geq T3$  (HR, 4.909; 95% CI, 1.894–12.720,  $p = 0.001$ ), N1a/1b-2 (HR, 2.973; 95% CI, 1.156–7.645,  $p = 0.024$ ), and M1 (HR, 2.560; 95% CI, 1.013–6.469,  $p = 0.047$ ) as independent negative prognostic factors for CSS.

**Conclusions:** Our study results indicated that the prognosis of PTC was predicted more accurately by subdividing the N factor.

## PW 8.03

### OUTCOMES OF MANAGEMENT OF THYROID NODULES DIAGNOSED AS FOLLICULAR NEOPLASM ON CYTOLOGY: INSIGHTS FROM A SPECIALIZED HOSPITAL FOR THYROID DISEASES

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*Introduction:* Managing thyroid tumors diagnosed as follicular neoplasms (FN) based on cytology has been challenging. This retrospective study explores strategies employed at a specialized thyroid hospital to identify effective treatment approaches.

*Patients & Methods:* We included 2,221 tumors from 2,148 patients who received a cytological diagnosis of FN according to Bethesda IV criteria between 2012 and 2018 at our hospital. Our investigation focused on understanding the management approaches and outcomes for these cases.

*Results:* Active surveillance (AS) was conducted for 964 tumors for a median of 56 months. The 5-year tumor enlargement rate (by  $\geq 5$  mm) was 22.8%. Factors independently predicting tumor enlargement in a multivariate analysis included tumor size  $>40$  mm ( $p=0.004$ ), age  $<55$  years ( $p=0.001$ ), and ultrasonographic findings of FN or carcinoma ( $p=0.007$ ). A total of 1,445 tumors were surgically removed either immediately post-diagnosis (1,246 tumors) or after 1 year of AS (199 tumors). Pathological analysis revealed 900 benign nodules, 253 low-grade neoplasms, and 292 thyroid carcinomas among the surgically removed tumors. On multivariate logistic analysis, ultrasonographic results of FN or carcinoma, tumor size  $>40$  mm, and the presence of cytological findings suspecting malignancy (proposed by one of the coauthors, M.H.), were identified as independent predictors of malignancy on pathology ( $p<0.001$ ). The incidence of malignancy was 8.0, 16.2, 25.2, and 50.0% for tumors exhibiting 0, 1, 2, and 3 of these factors, respectively. Tumor-enlargement activity during AS showed no variation among the three categories. To date, 20, 2, and 2 patients diagnosed with malignancy, low-grade neoplasm, and benign disease, respectively, exhibited recurrence to various organs (median postoperative period, 72 months); one patient diagnosed with malignancy died.

*Conclusion:* In the absence of molecular testing, thorough assessments of cytological specimens and ultrasonographic findings may aid the appropriate management of thyroid nodules diagnosed as FN on cytology, leading to favorable outcomes.



## PW 8.04

### EMERGING INEQUITIES IN THYROID RADIOFREQUENCY ABLATION

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#### Introduction

Radiofrequency ablation (RFA) offers distinct treatment advantages for thyroid nodules. However, as an emerging technique, its adoption and access has been variable across social sectors.

#### Methods

An internet-based survey was distributed to patients seeking or who had thyroid RFA through a RFA social media advocacy group from February to May 2023.

#### Results

Of the 75 participants, most were female (89.3%) and 40-59 years old (49.3%). 72.0% were non-Hispanic White, 9.3% Asian, 4.0% Black, 6.7% Hispanic, and 8.0% other/multiracial. Patients most frequently sought RFA for large (72.0%) or growing (36.0%) nodule(s). Patients most often learned about RFA through the internet (48%). Physicians were the second most common method patients heard about RFA (28%), but they rated non-RFA performing physicians across all specialties as having little to no knowledge about RFA. Of those who were knowledgeable, patients found surgeons (57.3%) most helpful in making their decision, followed by medical endocrinologists (40.0%) and radiologists (10.7%). Patients traveled long distances to see RFA-performing physicians (average distance was 273 miles domestically and 1,941 miles internationally). The perceived barriers to RFA on a 100-point scale included cost (54.1±33.7), physician accessibility (38.0 ± 30.8), and finding reliable information (38.2±27.5). Overall satisfaction was high (87.0±20.3), and participants would highly recommend it to others (94.5±10.6).

#### Conclusion

Access challenges are emerging as thyroid RFA is increasingly adopted across the United States. Deficiencies in physician awareness and knowledge, lack of access, and cost of RFA may lead to increasing treatment inequalities. Early recognition can facilitate multifaceted and multidisciplinary solutions. Surgeons are especially well-positioned to provide reliable knowledge and counseling, and potentially increase access to RFA.

## PW 8.05

### IMPACT OF SURGICAL PERMANENT HYPOPARATHYROIDISM ON QUALITY OF LIFE

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#### Introduction

Permanent hypoparathyroidism (pHypoPT) is the most common permanent complication of total thyroidectomy, yet there is limited data to describe its impact on quality of life (QoL). We aimed to explore the impact of surgical pHypoPT on QoL using a validated scoring system.

**Methods:** We included all patients with pHypoPT (calcitriol dependent, >12 months post-operatively) following total thyroidectomy performed between 2005 and 2021. We then identified a control group without pHypoPT, matched by age, sex and indication for surgery, with a ratio of 2:1. Patients were contacted by phone and completed the Short Form 36 Health Survey (SF-36) and the Hypoparathyroid Patient Questionnaire (HPQ28). Biochemical data were obtained with consent from participants' general practitioners. Data were presented descriptively, and the Mann-Whitney-U test was used to compare means between groups..

#### Results

51 patients met the inclusion criteria and consented to participate, including 15 patients with pHypoPT and 36 controls, with no significant difference in gender, age, comorbidity, or smoking status. pHypoPT was associated with lower mean SF-36 scores in the domains of physical function (72 vs 86,  $p=0.001$ ) and general health (56 vs 68,  $p=0.007$ ), and a trend to increased loss of vitality (54 vs 61,  $p=0.06$ ). These changes did not result in role limitation, or impact social function. On the HPQ28, pHypoPT patients described more cramps (1.03 vs 0.68,  $p=0.005$ ) and memory problems (1.27 vs 0.53,  $p=0.004$ ), with a trend to loss of vitality (1.56 vs 1.33,  $p=0.059$ ). Within the pHypoPT group, PTH levels did not correlate with severity of symptoms.

#### Conclusions

pHypoPT has a significant impact on QoL outcomes, particularly in the domains of general well-being, physical function and sense of vitality.

### ANALYSIS OF NEAR-INFRARED FLUORESCENCE IMAGING FOR DETECTION OF INADVERTENTLY RESECTED PARATHYROID GLANDS IN ENDOSCOPIC THYROIDECTOMY

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*Background:* Protecting parathyroid function during thyroid surgery, especially in bilateral thyroidectomy, presents a formidable challenge, with reported rates of accidental parathyroidectomy ranging from 7.2% to 22%. Real-time near-infrared autofluorescence (NIRAF) has demonstrated its utility in assisting surgeons in identifying parathyroid glands intraoperatively. However, there is a paucity of reports addressing the clinical applicability of NIRAF in the post-excision examination of specimens to facilitate the identification of inadvertently resected parathyroid tissue.

*Methods:* This study enrolled consecutive patients aged  $\geq 18$  undergoing endoscopic thyroid surgery. Surgeons visually identified and documented parathyroid glands during the surgical procedure. Specimens underwent visual inspection and autofluorescence imaging using PDE-Neo II. Surgeons marked fluorescent spots, and specimens were subjected to pathological examination, with microscopic analysis serving as the reference standard.

*Results:* Among 95 patients, 152 excised thyroid lobes were scrutinized. Overall, 12.5% of excised thyroid lobes exhibited autofluorescence spots. Of these, 7 out of 19 specimens displaying autofluorescence confirmed parathyroid tissue upon pathology examination, while others were identified as thyroid nodules, lymphatic tissue, or adipose tissue. The average fluorescence intensity for pathologically confirmed parathyroid and thyroid tissue was 1.88 and 1.38, respectively. NIRAF demonstrated 100% sensitivity and 36% specificity in predicting parathyroid tissue, with false-positive and false-negative rates of 63.2% and 0%, respectively.

*Conclusion:* NIRAF shows high sensitivity in confirming inadvertently resected parathyroid tissue during endoscopic thyroidectomy, contributing to preservation efforts. However, the likelihood of false positives remains substantial, underscoring the imperative for supplementary techniques to reconfirm parathyroid tissue in instances of autofluorescence positivity. Further refinement of imaging parameters holds the potential to enhance accuracy, reduce false positives, and ultimately elevate the clinical efficacy of NIRAF in thyroid surgery.

## PW 8.07

### DOES COMPLETION THYROID SURGERY POSE A HIGHER RISK OF COMPLICATIONS?

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#### Introduction:

The outcomes of completion thyroidectomy are not well-documented. We aimed to compare the risks of total thyroidectomy (TT), thyroid lobectomy (TL), and completion thyroidectomy (CT) using a large multi-institutional database.

#### Methods

Using the Collaborative Endocrine Surgery Quality Improvement Program (CESQIP), we identified all cases of thyroidectomy without lymphadenectomy (2014-2022). Reoperative thyroidectomies in the ipsilateral compartment were excluded. 30-day outcomes included hematoma requiring evacuation, vocal cord dysfunction documented by post-op laryngoscopy, and clinical concern for hypoparathyroidism based on excess calcium and vitamin D supplementation; ≥6-month outcomes excluded hematoma.

#### Results:

Among 33,154 cases, TT, TL, and CT were performed in 57%, 40% and 3%, respectively. Hematoma rates were overall low but were more common in TT (0.8%) than TL (0.5%) or CT (0.7%,  $p<0.01$ ). Vocal cord dysfunction was reported in 1.4%, 1.3%, and 1.0% for TT, TL, and CT, respectively ( $p=0.7$ ). Temporary hypoparathyroidism was more common after TT than CT (5.8% vs 2.3%,  $p<0.01$ ). Among 16,311 (49%) patients with reported ≥6-month outcomes, there were no differences in the rates of vocal cord paralysis by type of operation ( $p=0.4$ ). However permanent hypoparathyroidism was more likely after TT than CT (2.6% vs. 0.7%,  $p=0.01$ ).

#### Conclusion

In this multi-institutional endocrine surgery database, the long-term complication rate after completion thyroidectomy was the same as for initial thyroid lobectomy. However, the incidence of clinical hypoparathyroidism was 2.5-fold higher for total than for completion thyroidectomy at 30-days and remained 3.7-fold higher at 6-months. In some clinical scenarios where hypoparathyroidism may be difficult to treat, and total thyroidectomy is necessary, 2-stage thyroidectomy may be considered to decrease this risk.

**CENTRAL NECK DISECTION AND STRAP MUSCLES TRANSECTION COULD INTRODUCE SUBJECTIVE ALTERATIONS IN THE VHI-30 AMONG PATIENTS WITH TOTAL THYROIDECTOMY**

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*Background:* Nearly 90% of patients report voice changes after thyroidectomy even in the absence of vocal cord palsy (VCP). The aim of our study was to assess these changes with the Vocal Handicap Index (VHI-30) in patients with normal vocal cord function after total thyroidectomy. As a secondary aim, we assessed some previously reported intraoperative risk factors related to VHI-30 changes.

*Patients & Methods:* A pre-posttest quasiexperimental design study was performed including 92 thyroidectomized patients without VCP and 59 patients surgically treated of a non-neck intervention under general anesthesia were prospectively assessed with the VHI-30 questionnaire before and 2-weeks after surgery. Questionnaire data was analyzed and contrasted among groups. Demographic and Intraoperative variables were evaluated and stratified between groups. Statistical analysis was performed by IBM SPSS Statistics v21 considering a  $p < 0.05$  as significant for a two-tailed analysis.

*Results:* Patients after total thyroidectomy reported higher median levels of voice handicap when compared with controls, (3 [IQ 0-10] vs 0 [IQ 0-1] respectively;  $p < 0.01$ ) for functional domain, (6 [1-17] vs 1 [0-2];  $p < 0.01$ ) for physical, (0 [0-5] vs 0 [0-0];  $p < 0.01$ ) for the emotional and (9 [3-33] vs 1 [0-3];  $p < 0.01$ ) for the complete score. Same differences were statistically significant for total, physical, emotional and functional dimensions deltas between groups. Strap muscles transection was also significantly associated with higher median scores for physical (4 [0-16] vs 12 [3-23] respectively;  $p = 0.04$ ) and total score (7 [1-32] vs 16 [5-44];  $p = 0.03$ ). Similarly, central neck dissection (CNL) was also associated with higher physical dimension handicap deltas (0 [-4.2-5] vs -4 [-10-2] respectively;  $p = 0.04$ ).

*Conclusion:* In our study, thyroidectomy, CNL and strap muscle transection induced higher voice handicap scores between thyroidectomized patients vs. controls. Endocrine surgeons should be aware that some patients may report important subjective voice handicap even without objective VCP.

## PW 8.09

### A PROSPECTIVE COMPARATIVE STUDY ON RESPIRATORY FUNCTION IN HYPERTHYROID AND EUTHYROID PATIENTS UNDERGOING TOTAL THYROIDECTOMY AND ITS REVERSAL

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#### INTRODUCTION

Hyperthyroidism causes respiratory dysfunction which can be demonstrated by simple non invasive pulmonary function tests (PFT). The impact of hyperthyroidism on pulmonary function and its outcome after total thyroidectomy is not much studied. In present study we aim to evaluate the pulmonary function in patients with hyperthyroidism in comparison to euthyroid patients.

#### MATERIALS AND METHODS

Patients were divided into 2 groups of 20 each

##### GROUP A

All biochemical hyperthyroid patients were included

PFTs performed – At diagnosis, After attaining euthyroidism (day before surgery), 1 week post surgery, 1 month, 3 months and repeated at 6 months/more if needed

##### GROUP B

Biochemical euthyroid patients planned for surgery were included

PFT performed-Day before surgery and post surgery same as group A

**RESULTS :** In Group A with mean age  $35.1 \pm 10.4$  yrs 17/20 (85%) patients showed restrictive pattern on PFT at diagnosis, among which 15 (88.2%) patients had statistically significant increase in parameters 15 days after total thyroidectomy with mean difference in FVC of 1.1, FEV1 – 0.6, FEF(25-75) – 0.26, PEF – 1.08 and continued to improve and reached baseline in 95% of patients at 1 month post surgery. In Group B with mean age  $44.3 \pm 10.3$  yrs 3/20 (15%) had mild obstructive pattern, 4/20 (20%) had mixed pattern, 13/20 (65%) had normal PFT. All 7/20 pts showed improvement after 15 days with significant mean difference only in FEV1-0.4, FEV1/FVC -8.1. 18/20 (90%) reached baseline at 1 month post surgery. 1/20 and 2/20 patients in group A and group B showed persistent abnormal PFT even at 3 months post surgery and were on follow up.

**CONCLUSION :** Hyperthyroidism can cause unmanifested respiratory dysfunction in significant number of patients when compared to euthyroid patients which can be detected on PFTs and this dysfunction is improved after total thyroidectomy

## PW 8.10

### INVESTIGATING THE PAPILLARY THYROID CARCINOMA LOCATION AND ITS RECURRENCE: A RETROSPECTIVE STUDY OF 17,995 PATIENTS

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*Introduction:* The incidence of papillary thyroid cancer (PTC) has increased recently. Although PTC usually has a good prognosis, patients with advanced or localized metastases experience a high rate of recurrence. Therefore, many studies have investigated PTC recurrence; however, whether the location of PTC affects its recurrence remains unclear. We aim to determine whether the location of papillary thyroid carcinoma affects recurrence.

*Materials & Methods:* Data were obtained from a single thyroid surgery center with more than 6,000 surgical cases per year. A total of 23,754 patients with PTC were followed up between 2009 and 2022, and 17,995 patients were included in this study after screening. The localization of thyroid cancer foci was determined using ultrasound. The location of the cancerous foci in the thyroid gland was evaluated by taking each cancerous foci as a unit in two dimensions, which were divided into upper, middle, and lower parts in the coronal plane, and into anterior and dorsal parts in the sagittal plane. Kaplan-Meier analysis and Cox proportional hazards regression models were used to analyze recurrence and risk factors.

*Results:* Of the 17,995 patients, 121 had a recurrence, identified by ultrasound and pathology. In the comparison of the five parts mentioned in the Methods, the upper and dorsal parts had the most significantly associated with recurrence. In multifactorial Cox proportional hazards regression models, lymph node metastasis status, multifocal nature, tumor location at the upper part and dorsal aspect were significantly associated with PTC recurrence.

*Conclusions:* PTC location affects recurrence, and tumors in the upper and dorsal regions are strongly associated with recurrence and should receive more attention.

## PW 8.11

### LONGITUDINAL STUDY ON PATIENT-REPORTED OUTCOMES IN PATIENTS UNDER ACTIVE SURVEILLANCE FOR LOW-RISK PAPILLARY THYROID CARCINOMA: MITIGATING ANXIETY OVER TIME AND THROUGH PHYSICIAN EXPERTISE

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*Introduction:* Our previous cross-sectional study indicated that patients opting for active surveillance (AS) of low-risk papillary thyroid carcinoma (PTC) experienced lower anxiety than patients undergoing immediate surgery (IS). Furthermore, the longer the follow-up period, the lower the anxiety in AS patients. This longitudinal study aimed to compare patient-reported outcomes (PROs) between AS and IS patients and to explore factors influencing anxiety over time.

*Materials & Methods:* Fifty patients chose AS and 20 opted for IS. Anxiety levels were assessed using the State-Trait Anxiety Inventory at shared decision-making (SDM, 1st survey) and two years later (2nd survey). An original questionnaire determined the primary decision-maker at the 1st survey. Physician expertise in providing AS-related information was categorized into two groups:  $\geq 4$  years; or  $< 4$  years. Multiple linear regression analysis investigated the relationship between state anxiety and various variables in the AS group.

*Results:* Mean age was  $53.0 \pm 12.8$  years, with the AS group significantly older than the IS group. In both groups, nearly 80% identified themselves as the primary decision-maker in SDM. Compared to the IS group, the AS group exhibited lower state and trait anxiety at the 1st survey. However, both groups showed a significant reduction in state anxiety over time, rendering the initial difference non-significant. In multiple linear regression analysis of the AS group, lower trait anxiety and longer experience of the physician were significantly associated with reduced state anxiety at the 2nd survey.

*Conclusion:* The differing anxiety levels initially observed in AS and IS groups converged over time. Lower trait anxiety and increased physician expertise were linked to decreased state anxiety in AS patients, emphasizing the role of longitudinal care and physician experience in managing anxiety during AS.



## PW 8.12

### DOES THE PERCENTAGE OF POORLY DIFFERENTIATED AREAS IN THYROID CARCINOMA AFFECT CLINICAL OUTCOMES? A RETROSPECTIVE STUDY

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#### Introduction:

The implication of varying histopathological percentage of PDTC on clinical behaviour is not well established. We studied the impact on local recurrence, systemic metastasis, and overall survival.

#### Materials and methods:

Retrospective, single-institution, observational study among patients who underwent bilateral thyroid surgery with or without lateral cervical node dissection and whose histopathology was reported to be either PDTC or contained poorly differentiated areas (PDA) expressed as a percentage, between January 2006 and December 2021. The cohort was divided into three groupings for comparison: Group 1 – interval of 10%, Group 2 – 0-30%, 31-70% and 71-100%, Group 3 <10% and 11-100%. These groups were then compared and analysed for outcomes using SPSS software version 21.0.

#### Results:

94/4165(2.3%) thyroid carcinomas were reported to be either PDTC or contained PDA. Data on 55 were available for analysis. Systemic metastasis was seen in 28 (51%), local recurrence in six (10.9%), while five (9%) succumbed to their disease. At 5 and 10-year follow up, the local recurrence free survival was 79.4% and 60% and overall survival was 90% and 80%.

The analysis of percentage PDA groupings showed more aggressive features with increasing percentage; comparing <10% vs >10% in terms of tumour size (50% vs 79%), stages 3 and 4 disease (12.5% vs 32%), lymph node metastasis (12.5% vs 14.9%), distant metastasis (37.5% vs 53.2%), showing statistically significant difference in lympho-vascular invasion (12.5% vs 83%,  $p=0.001$ ), extrathyroidal extension (0 vs 34%,  $p=0.05$ ) and infiltration to adjacent structures (0 vs 36%,  $p=0.04$ ). In the other Groups 2 and 3, similar increasing aggressiveness with higher percentage PDA was noted.

#### Conclusion:

PDTC with higher percentage PDA tends to more aggressive behaviour with a significant change in invasiveness when >10%. However, this does not affect systemic metastasis, recurrence and survival parameters. Percentage PDA will therefore help guide therapeutic decision making.

## PW 8.13

### THERE IS NO CASE FOR DUAL CONSULTANT OPERATING IN BENIGN THYROID DISEASE

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**Background:** It is becoming fashionable for consultant surgeons to operate in pairs, especially in complex cases. Purported advantages include 'two eyes being better than one', good quality assistance and combined experience in perioperative decision making. During the pandemic, this dual-consultant operating became more common owing to limited access to theatre and the desire of surgeons to maintain their operative skills.

**Aim:** to determine if there are any advantages to the practice of dual-consultant operating in patients with benign thyroid disease.

**Method:** A retrospective study of prospectively collected data in our Unit's database. Patients undergoing total thyroidectomy for benign disease were included. Patients were divided into those undergoing dual-consultant or single-consultant operating for both Graves' disease and multinodular goitre (MNG). The duration of surgery, post-operative day 1 calcium and RLN injury were compared. Statistical analysis was undertaken using student-t test and significance was taken when  $P < 0.05$ .

**Results:** Between May 2014 and December 2023, dual consultant total thyroidectomy was performed in 36 patients with Graves' disease and 45 with MNG. Outcomes were compared with the same numbers of total thyroidectomies undertaken by a single consultant surgeon between September 2021 and December 2023. There was no difference in age or gender between the groups. The median duration of surgery was 10min shorter in both 'dual' groups compared with solo surgeons but this was not significant (Graves' 80min vs 90;  $P=0.1$ , MNG 80min vs 90;  $P=0.3$ ). There was no difference in day one calcium for Graves' (2.25mmol/l vs 2.25;  $P=0.27$ ) or MNG (2.2mmol/l vs 2.31;  $P=0.10$ ). There were no permanent RLN injuries in any patient.

**Conclusion:** There is no evidence to support dual-consultant operating for patients undergoing total thyroidectomy for Graves' disease or MNG. This will allow for better deployment of resources.

## PW 9.01

### DEVELOPMENT AND ALPHA-TESTING OF A PATIENT DECISION AID FOR LOW-RISK THYROID CANCER

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#### Introduction

Low-risk differentiated thyroid cancer (DTC) can be treated with partial or total thyroidectomy or active surveillance. Current practice may not fully consider patient preferences and exclude conservative options such as active surveillance. Shared decision making (SDM) contextualises evidence-based medicine surrounding a health decision, informed by patient values and preferences. Decision aids (DA) can support SDM via improved patient knowledge and reduced decisional conflict, but availability and implementation for low-risk DTC is lacking.

#### Methods

An iterative development process of a DA for initial treatment of low-risk DTC (active surveillance, hemithyroidectomy, total thyroidectomy) was performed in accordance with International Patient Decision Aid Standards. Phase 1 (multidisciplinary stakeholder feedback) formulated a paper and web-based DA. Phase 2 (iterative consumer testing) involved alpha testing in real clinical encounters, followed by mixed-methods feedback. A working group updated the DA iteratively through three cycles. Phase 3 (patient focus groups) and Phase 4 (clinician acceptability) further refined the DA.

#### Results

Phase 1 comprised 35 surgeons & 56 endocrinologists surveyed at Australian conferences. Although 8% of endocrinologists and 32% of surgeons used self-developed informational aids, 47% believed informational quality could be improved and 60% would use a DA. 65% requested both paper and web-based material. Phase 2 incorporated iterative feedback from successive cohorts of 5-8 patients, with adjustments to format, language and layout. Greater than 90% of patients reported that the DA-assisted decision making useful and 75% of patients reported low levels of decisional conflict. Data from Phase 3 and Phase 4 provided further refinement leading to a finalised paper and web DA which will be reviewed for real-world testing.

#### Conclusion

We present a robustly designed paper and web-based DA to maximise SDM and minimise decisional conflict regarding treatment of low-risk DTC. Field testing to assess feasibility is planned prior to its implementation within clinical practice.

## PW 9.02

### UNLOCKING THE COMPLEXITY: EXPLORING THE IMPACT OF INTRAOPERATIVE NEUROMONITORING AND HOSPITAL VOLUME ON VOCAL CORD PARALYSIS RATES IN FIRST-TIME THYROIDECTOMY FOR BENIGN DISEASE

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#### *Introduction:*

Recurrent laryngeal nerve palsy (RLNP), leading to vocal cord paralysis (VCP), is a potential complication of thyroidectomy. Studies on the effectiveness of intraoperative neuromonitoring (IONM) in reducing VCP risk remain inconclusive. This large-scale multicenter study investigated the impact of IONM and other factors on VCP rates in first-time thyroidectomy for benign thyroid disease.

#### *Materials and Methods:*

Data from the EUROCRINE® registry (May 2015-January 2019) were analyzed via a secondary source. Patients undergoing first-time thyroidectomy for benign disease with postoperative laryngoscopy were included (n=4598). VCP diagnosis, IONM use, hospital volume, and other potential risk factors were evaluated.

#### *Results:*

Postoperative laryngoscopy was not routinely used for VCP assessment across centers. IONM was implemented in 91% of operations and significantly reduced VCP rates compared to non-IONM cases (0.9% vs. 3.1%,  $p<0.001$ ). IONM facilitated intraoperative RLN damage detection (3.9% vs. 1.9% without IONM) and demonstrated association with both early and permanent VCP in theoretical models. However, limitations included incomplete information on specific IONM techniques and long-term VCP follow-up. Thyroiditis increased VCP risk, while higher hospital volume was associated with lower VCP rates.

#### *Conclusion:*

Despite non-uniform use of postoperative laryngoscopy, this study provides strong evidence that IONM is a common practice and significantly reduces VCP risk in first-time thyroidectomy for benign disease. Hospital volume also plays a crucial role in VCP rates. Further research is needed to explore long-term outcomes and the specific impact of different IONM techniques.

## PW 9.03

### USE OF SUB CAPSULAR SALINE INJECTION (SCASI) DURING THYROID SURGERY TO PRESERVE PARATHYROID FUNCTION AND REDUCE INCIDENCE OF POST-OPERATIVE TEMPORARY AND PERMANENT HYPOPARATHYROIDISM – A RANDOMISED CONTROLLED TRIAL.

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*Introduction: Thyroidectomy is one of the commonest operations performed worldwide. Post-thyroidectomy hypoparathyroidism continues to be a concern. Subcapsular Saline Injection (SCASI) has been reported as a simple method to reduce the incidence of post-thyroidectomy hypoparathyroidism.*

*Aim: Therefore, we conducted this study to evaluate the efficacy of SCASI during thyroid surgery to preserve parathyroid gland function and reduce rate of postoperative hypoparathyroidism.*

*Material and Methods: This study was conducted among 330 patients undergoing total thyroidectomy with or without lymph node dissection between March 2022 and February 2023 at a Quaternary care hospital, South India following IRB and CTRI approval. Patients were divided in two groups based on permuted block randomisation either into SCASI or Non SCASI. In the SCASI arm, 2-3 ml of normal saline was injected into the sub-capsular plane after ligation of superior pole on both sides. Patient in Non SCASI arm underwent standard thyroidectomy. Post-operative day one serum PTH, calcium, phosphate and albumin levels were checked. PTH value < 8pg/ml was considered as immediate post-operative hypoparathyroidism. PTH was repeated at 6 months for those who developed immediate postoperative hypoparathyroidism. Persistent serum PTH less than 8pg/ml at 6 months was defined as permanent hypoparathyroidism.*

*t-test was used for the analysis of continuous data with Normal distribution, Mann-Whitney U test for data with non-Normal distribution with groups and Chi-square test performed for categorical variables with groups (SCASI & Non-SCASI). All statistical analysis is done using SPSS 25.0 software.*

*Results: Immediate post-operative hypoparathyroidism was seen in 79 (24%). Among these patients 40 were in SCASI group and 39 were in Non SCASI group (p=0.96). Repeat PTH at 6 months was performed in 65/79 and permanent hypoparathyroidism was detected in four. Interestingly, three patients belonged to the Non SCASI group and one in SCASI group (p=0.3)*

## PW 9.04

### **MORE THAN JUST STUCK IN THE MIDDLE, PAPILLARY THYROID CANCER OF THE ISTHMUS PRESENTS WITH MORE AGGRESSIVE FEATURES**

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#### *Introduction*

Given the location and unclear lymphatic drainage of papillary thyroid cancer (PTC) in the thyroid isthmus, the extent of surgery has limited consensus guidelines. The aim of this study was to examine the surgical management and outcomes of patients with isthmus PTC.

#### *Methods*

A retrospective review was performed at 2 high-volume centers of 140 patients who underwent thyroidectomy between 2013-2021 and had PTC in an isthmus nodule on preoperative cytology and/or final pathology. Preoperative tumor characteristics, surgical pathology, and postoperative outcomes were compared.

#### *Results*

TT was most frequent (70.0%), followed by TL (17.1%) and TI (12.9%). Most patients with Bethesda V/VI nodules underwent TT (81.6%; TL: 58.3%; TI: 66.7%), patients with Bethesda III/IV nodules most often had TI (27.8%; TT: 1.0%; TL: 16.7%;  $p < 0.001$ ). Patients who underwent TT more frequently had lymph nodes on preoperative imaging (TT: 30.6%; TL/TI: 2.4%;  $p < 0.001$ ) and multiple nodules (TT: 73.5%; TL: 70.8%; TI: 16.7%;  $p < 0.001$ ). Of the 98 patients who underwent TT, 49% had central neck dissection and 20.2% had both CND and lateral neck dissection. Prophylactic CND was performed in 12.5% TL and 11.1% TI.

On final pathology, median tumor size (cm) was larger in patients who had TT (1.5; TL 1.1; TI 1.1;  $p = 0.008$ ). Variants of PTC were identified in 26.4% patients, with no difference by surgical approach. Completion thyroidectomy was performed in 4 patients (TL: 2, 8.3%; TI: 2, 11.1%;  $p = 0.41$ ). Metastatic lymph nodes were identified in 62 patients (TT: 69.1%; TL: 33.3%; TI: 33.3%;  $p = 0.02$ ). At last follow-up (median 26 months) 10 (7.1%) patients had persistent/recurrent disease (TT: 8, TI: 2, TL: 0). At one year, 10 patients required thyroid hormone (TL: 56%; TI: 10%;  $p = 0.018$ ).

#### *Conclusion*

Isthmus PTC presents with high-risk pathologic variants in  $>1/3$  and positive nodes in  $\sim 2/3$  of patients. TI may be appropriate in small tumors, with similar reoperation rates as TL and lower rates of thyroid hormone replacement.

## PW 9.05

### DIFFERENCES IN HEMITHYROIDECTOMY RATES AND RADIOACTIVE IODINE USE FOR PATIENTS WITH LOW-RISK PAPILLARY AND FOLLICULAR THYROID CANCERS: A BINATIONAL COHORT STUDY

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#### Introduction

The 2015 ATA guidelines state hemithyroidectomy alone can be performed for low-risk thyroid cancers under 4cm. It is unclear if cancer subtype, papillary thyroid cancer (PTC) or follicular thyroid cancer (FTC), influences clinical practice. Our study explored if patients with PTC and FTC are treated with hemithyroidectomy and radioactive iodine (RAI) at the same rate.

#### Materials & Methods

Adults with low grade PTC and FTC (<4cm) were recruited from the binational Australia & New Zealand Thyroid Cancer Registry (2017-2023). Patients with tumour sizes greater than 4cm, regional or distant metastasis were excluded. The rate of hemithyroidectomy, completion thyroidectomy, total thyroidectomy and RAI were compared between PTC and FTC groups. Multivariate analyses were used to determine the association between clinicopathological parameters and treatments.

#### Results

Of 2136 patients (74% Female; mean age 51 years; 90% PTC; 10% FTC), 630 (29%) received hemithyroidectomy alone, 1188 (56%) total thyroidectomy and 318 (15%) hemithyroidectomy then completion. The rate of initial hemithyroidectomies were similar between patients with FTC and PTC. Of these, FTC patients were 1.7x more likely to be recommended completion (adjusted relative risk [aRR] 1.69, 95% CI 1.29-2.21;  $p < 0.001$ ). For patients treated with total or completion thyroidectomy, patients with PTCs were more likely to receive RAI (aRR 1.13, 95% CI 1.04-1.22  $p = 0.002$ ). When given, the RAI dosages were similar between the groups. Higher RAI dose was associated with male sex ( $p < 0.001$ ), lympho-vascular invasion ( $p < 0.001$ ) and lymph-node metastasis ( $p < 0.001$ ).

#### Conclusion

Patients with FTC were more likely to undergo completion thyroidectomy than patients with PTC with similar sized primary tumours. However, the completion did not seem to be for the purpose of RAI, as patients with PTC were more likely to receive RAI ablation than FTC patients. Other factors, such as postoperative serum thyroglobulin or lymph-node metastasis may be contributing factors.

## PW 9.06

### STAT3 IS ASSOCIATED WITH RECURRENCE-FREE SURVIVAL IN PAPILLARY THYROID CARCINOMA

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**Introduction:** STAT3 (signal transducer and activator of transcription 3) is a signaling molecule that functions downstream of various cytokine and growth factor receptor signaling pathways. Constitutive activation of this pathway is relevant to cancer development and unfavorable prognosis in many types of malignancy. The relationship between STAT3 activity and prognosis in papillary thyroid carcinoma (PTC) using immunohistochemistry with an anti-STAT3 antibody was retrospectively examined.

**Materials & Methods:** Among PTC cases diagnosed between 1993 and 2012, pathologically evaluated 1132 cases with M0 were included. There were 248 males (20.5%) with a median age of 54 (15-89) years. The median tumor size was 20 (11-120) mm. Extrathyroidal extension positive was 656 (54.2%) cases, N1 was 458 (37.8%) cases. H-score (0-300 points) was adopted to evaluate staining in nuclei. The relationship between STAT3 staining intensity and recurrence-free survival (RFS) was examined.

**Results:** The median staining intensity of nuclear STAT3 was 105 (0-280) points. RFS was compared between the two groups by the Kaplan-Meier method at a cutoff of 70 points (AUC=0.60), calculated from the ROC curve based on the presence or absence of recurrence. Ten year- and 20y- RFS were 87.5% and 83.1% in high STAT3 group (n=764) and 77.7% and 72.6% in low STAT3 group (n=371), respectively. The high STAT3 group had significantly better RFS (p<0.0001).

Age(≥55 y.o), tumor size(≥4cm), ETE, maximum size of lymph node(≥30mm), and STAT3(low) were related to unfavorable RFS in uni/multivariate analyses.

**Conclusions:** In PTC, nuclear STAT3 staining intensity was associated with a better prognosis as measured by RFS. Nuclear STAT3 reflects activated forms of STAT3. Future studies are needed to investigate how STAT3 contributes to the favorable prognosis of thyroid cancer.



## PW 9.07

### **HALF OF THE PATIENTS WITH CLINICALLY UNIFOCAL T1B/SMALL T2 NODE NEGATIVE PAPILLARY THYROID CARCINOMA SCHEDULED FOR THYROID LOBECTOMY MAY REQUIRE COMPLETION THYROIDECTOMY IF THE NODAL STATUS IS EVALUATED**

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**Background.** Thyroid lobectomy (TL) should be preferred over total thyroidectomy (TT) for small unifocal, papillary thyroid carcinoma (PTC), in the absence of aggressive features. Despite prophylactic central neck dissection is not usually recommended, occult, non-microscopic (>2 mm), nodal metastases (ONM) may occur in clinically node-negative (cN0) PTC, increasing the risk of recurrence.

**Materials & Methods.** Among 4216 patients operated for thyroid malignancies (January 2014–November 2023), 110 (2.6%) with unifocal cT1b/small cT2 (<3 cm) cN0 PTCs were scheduled for TL plus ipsilateral central neck dissection (I-CND). Completion thyroidectomy (CT) was accomplished during the same procedure when frozen section examination (FSE) of removed nodes showed ONM and within 6 months in case of aggressive pathologic features at final pathology.

**Results.** There were 102 (92.7%) cT1b and 8 (7.3%) cT2 PTC. FSE was positive for ONM in 33 (30%) cases, requiring immediate CT. Median number of removed and metastatic nodes at definitive pathology were 12 and 5, respectively. Multifocality was present in 25 (75.7%) cases, angioinvasion in 25 (75.7%), aggressive variants in 9 (27.3%) and extracapsular extension in 1 (3.0%). Among the remaining 77 patients, 24 (31.2%) were subsequently scheduled for CT, due to ONM/aggressive histopathological features. Overall, 57 (51.8%) patients underwent immediate or delayed CT.

**Conclusion.** Half of unifocal cT1b/small cT2 (1–3 cm) cN0 PTC scheduled for TL required CT because of ONM/aggressive features. I-CND and FSE evaluation of the removed nodes allow to intraoperatively modulate the extension of resection, ensuring accurate staging and reducing the risk of recurrence and the need for reoperation.

## PW 9.08

### INCIDENTAL THYROID CANCER IN PATIENTS WITH GRAVES' DISEASE: NOT AS RARE AS WE PREVIOUSLY BELIEVED

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**BACKGROUND:** The incidence of thyroid cancer in patients with Graves' disease remains unclear, with previous studies including small patient cohorts from single institutions. We used a multi-institutional data source to better understand thyroid cancer incidence in patients with Graves' disease. Our objective was to determine the rate of incidentally discovered thyroid cancer amongst patients treated surgically for Graves' disease using the National Surgical Quality Improvement Program's Procedure Targeted Thyroidectomy (NSQIP-Tx) dataset.

**METHODS:** We identified patients who underwent total thyroidectomy for the primary indication of Graves' disease in the NSQIP-Tx between 2013 and 2021. We reviewed surgical pathology reports to identify coexisting thyroid cancer. Reports with occult or micro-confined cancers were excluded. Demographics and postoperative outcomes were compared in patients with and without incidental thyroid cancer.

**RESULTS:** We identified 3,193 patients with Graves' disease who underwent total thyroidectomy; 406 patients (12.7%) had incidental thyroid cancer on final pathology. Of those with cancer, 387 patients (95.3%) were papillary thyroid carcinoma (PTC), 14 (3.4%) follicular cancer, and 1.3% Hurthle cell cancer or metastasis. On pathology, 343 (84.5%) had T1 disease, 23 (5.7%) T2, and 16 (3.9%) T3, and 26 patients (6.4%) had N1 disease. Most cancers were solitary and unilateral (61.6%), however 51 patients (12.6%) had multifocal unilateral disease, and 78 patients (19.2%) had multifocal bilateral disease. Graves' patients with cancer were older (mean age 47.1  $\pm$  13.7 vs 42.7  $\pm$  14.2,  $p < 0.01$ ) and had a higher body mass index (BMI) (mean BMI 30.3  $\pm$  7.7 vs 28.8  $\pm$  6.8,  $p < 0.01$ ) at the time of surgery compared to those without. There were no differences in postoperative outcomes.

**CONCLUSIONS:** Thyroid cancer was incidentally found in 12.7% of patients undergoing surgical intervention for Graves' disease. Incidental thyroid cancer should be considered when counseling patients on definitive management for Graves' disease.

## PW 9.09

### **MET-RECEPTOR TARGETED FLUORESCENT IMAGING AND SPECTROSCOPY TO DETECT MULTIFOCAL PAPILLARY THYROID CANCER**

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*Background: Multifocal disease in PTC is associated with an increased recurrence rate. Multifocal disease (MD) is underdiagnosed with the current gold standard of pre-operative ultrasound staging. Here, we evaluate the use of EMI-137 targeted molecular fluorescence-guided imaging (MFGI) and spectroscopy as a tool for the intra-operative detection of uni- and multifocal papillary thyroid cancer (PTC) aiming to improve disease staging and treatment selection.*

*Methods: A phase-1 study (NCT03470259) with EMI-137 was conducted to evaluate the possibility of detecting PTC using MFGI and quantitative fiber-optic spectroscopy.*

*Results: Fourteen patients underwent hemi- or total thyroidectomy (TTX) after administration of 0.09 mg/kg (n = 1), 0.13 mg/kg (n = 8), or 0.18 mg/kg (n = 5) EMI-137. Both MFGI and spectroscopy could differentiate PTC from healthy thyroid tissue after administration of EMI-137, which binds selectively to MET in PTC. 0.13 mg/kg was the lowest dosage EMI-137 that allowed for differentiation between PTC and healthy thyroid tissue. The smallest PTC focus detected by MFGI was 1.4 mm. MFGI restaged 80% of patients from unifocal to multifocal PTC compared to ultrasound.*

*Conclusion: EMI-137-guided MFGI and spectroscopy can be used to detect multifocal PTC. This may improve disease staging and treatment selection between hemi- and total thyroidectomy by better differentiation between unifocal and multifocal disease.*

## PW 9.10

### ASSOCIATION OF PD-1 AND PD-L1 EXPRESSION WITH CLINICOPATHOLOGICAL VARIABLES IN PAPILLARY THYROID CANCER

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**Introduction:** 10-30% of patients with Papillary thyroid cancer (PTC) present with recurrence post total thyroidectomy (TT) and may eventually become de-differentiated. The interaction between Programmed cell death protein (PD-1) and its ligand (PD-L1) has been found to have an important role in oncology. This study aims to identify the association of these checkpoint inhibitors with clinicopathological variables in PTC.

**Methodology:** 29 patients who underwent total thyroidectomy for PTC between April 2016 to March 2017 were included in this study. PD-1 and PD-L1 immunohistochemistry were done on the surgical specimens.

**Results:** PD-L1 expression in the tumor was seen in 62% of the TT, of which it was strongly positive in 21%. PD-1 expression was negative in all tumor specimens. In tumor-infiltrating lymphocytes (TILs), PD-L1 hotspots were seen in 24% of the cases with 17.2% being in the range of 26-40%. 62% of the samples with a classical variant of PTC were either moderately or strongly positive for PD-L1 expression and 30.8% had positive PD-1 TIL hotspots ( $p < 0.05$ ).

Hobnail, cribriform morular, and tall cell variants were negative for PD-L1 expression and PD-1 hotspots in TIL ( $p < 0.05$ ). PD-L1 expression was seen in 60% of the cases with extrathyroidal extension (ETE) and all cases with lymphovascular invasion and perinodal extension ( $p < 0.05$ ). No association was found between the strength of PD-L1 expression and ETE. 80% of cases with ETE were negative for PD-1 hotspots in TILs. The percentage of PD-1 TIL hotspots did not correlate with any of these clinical parameters.

**Conclusion:** This study highlights the association of PD-1 and PD-L1 expression with the aggressive behavior of PTC and underscores their potential as its prognostic marker. This knowledge may pave the way for more personalized and effective therapeutic strategies in the management of PTC

### **LABEL-FREE PROFILING OF EXOSOMES IN PLASMA FOR ACCURATE DIAGNOSIS OF THYROID CANCER USING A COMBINATION OF SURFACE-ENHANCED RAMAN SPECTROSCOPY ON MXENE-COATED GOLD@SILVER CORE@SHELL NANOPARTICLE FUNCTIONALIZED SUBSTRATE AND DEEP LEARNING**

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*Introduction:* Exosomes (EVs), serving as optimal subjects for liquid biopsies, have seen broad applications in diagnosing various diseases, including cancers.

*Materials and Methods:* In this paper, an efficient method has been proposed for label-free profiling of exosomes in biological samples (e.g., plasma) by combination of Surface-Enhanced Raman Spectroscopy (SERS) on MXene-coated gold@silver core@shell nanoparticle (Au@Ag NP) functionalized substrate and deep learning.

*Result:* Due to the contributions of electromagnetic enhancement (EM) and chemical enhancement (CM) of MXene-coated Au@Ag NP substrate, the as-proposed SERS sensing platform exhibits a dynamic range of  $0.5 \times 10^{10}$  to  $2.0 \times 10^{11}$  EVs mL<sup>-1</sup> with a limit of detection (LOD) as low as  $1.7 \times 10^9$  EVs mL<sup>-1</sup> (three times standard deviation ( $3\sigma$ ) of blank sample). Subsequently, a deep-learning classification algorithm has been developed for extracting the features of EVs from complex Raman spectra by residual neural networks.

*Conclusion:* As a proof of principle, the preliminary validation of our approach is demonstrated by discrimination of thyroid cancer patients from healthy controls with diagnostic accuracy of 96.0%, and staging of the cancer patients with accuracy of 86.6%, respectively.

## PW 9.12

### CRISPR/CAS9 MEDIATED BRAF MUTATION AND ITS INFLUENCING FACTORS IN PAPILLARY THYROID CARCINOMA CELLS

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*Introduction: BRAF mutation is the most common and important mutation in thyroid carcinoma. Many studies have focused on the biological behavior of thyroid carcinoma after BRAF mutation, but how this mutation happened was still poorly defined. Our study aims to observe whether the BRAF mutation could be induced by CRISPR/Cas9, also to find the factors which might affect the BRAF mutation.*

*Materials and method: CRISPR/Cas9 plasmid was constructed, it expressed Cas9 protein and BRAF g-RNAs which targeting at the upstream and downstream of the BRAF 15th exon V600 position. After transfection into the TPC cell line and enrichment with puromycin screening, the BRAF mutation rate was calculated. Besides, the changes of mutation rates were further observed after giving Potassium iodide, TSH, Thyroxine, Estradiol, Lactic acid, H<sub>2</sub>O<sub>2</sub> and hypoxia.*

*Results: the BRAF mutations including mismatch, insertion and deletion could be observed in the targeting region of the 15th exon. The mutation rates were 16.7%. Besides, it also could be up regulated by TSH, Estradiol, Lactic acid and hypoxia with the mutation rates of 41.7%, 53.8%, 21.7%, 53.8% respectively, but only the differences in Estradiol and hypoxia groups have statistical significances. ( $\chi^2=5.58$ ,  $p=0.018$ ;  $\chi^2=6.55$ ,  $p=0.011$ , respectively).*

*Conclusion: BRAF mutation could be induced by CRISPR/Cas9 in papillary thyroid carcinoma cells, it also could be up regulated by hypoxia and Estradiol.*

## PW 9.13

### THE EVOLUTIONARY HISTORY OF METASTATIC ADRENOCORTICAL CARCINOMA

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#### Introduction

Adrenocortical carcinoma (ACC) is a rare and aggressive cancer with a prevalence of 1-2 per million individuals and a 5-year survival of 40%. Intratumoral heterogeneity is part of most cancers' evolution towards a metastatic state and evasion of systemic treatment. In this study, we evaluated tumor evolution and heterogeneity using multi-omic analyses in a cohort of metastatic ACC.

#### Materials & Methods

A total of 29 tumor samples from 9 patients were eligible for inclusion. All had matched primary and relapse samples (four with recurrent, eleven with metastatic). Four patients had multiple primary and metastatic tissues included. All tumors were subjected to whole-genome sequencing to a minimum of 60X, RNA sequencing, and methylation array.

#### Results

We could confirm previously described drivers in ACC. These mutations were clonal in 56% and heterogeneous between tumor sites in 44%. Large chromosomal aberrations (CNV) were common. Most underwent a large loss of heterozygosity (LOH) followed by whole-genome doubling (WGD), causing copyneutral LOH. We determined that this occurred early in the evolution of the tumor. Mutations occurring prior to WGD often involve cancer driver genes. Applying this, we noted mutations in *FLCN*, *MGA*, *BAP1*, and *RNF43* to be potential new drivers in ACC. Chromosomal rearrangements were common and often shared between different tumor sites. Some were associated with areas of hypermutation (Kataegis). To further characterize the evolution, we performed inference of subclones using PyClone-VI. We noticed a high degree of variability in clonal populations between primary tumors and metastasis.

#### Conclusion

In this study, we evaluated tumor heterogeneity and evolution of metastatic ACC. We noted a high degree of heterogeneity between different tumor samples from the same patient. We conclude that large CNVs are common and occur early in the evolution of the tumors.

## PW 10.01

### ROLE OF UNILATERAL-CANNULATING ADRENAL VENOUS SAMPLING FOR IDENTIFYING UNILATERAL PRIMARY ALDOSTERONISM: EXPERIENCE AT A LOW VOLUME CENTER

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#### Introduction:

Adrenal venous sampling (AVS) is guideline-recommended for subtyping primary aldosteronism (PA). However, failure of bilateral cannulation is common especially at low volume centers. The role of unilateral-cannulating AVS in selecting patients for unilateral adrenalectomy is uncertain.

#### Methods:

50 consecutive patients underwent AVS between 2009-2023 at a low volume center and 33(66%) undergone unilateral adrenalectomy. Gold standard for unilateral PA was defined by the cure of hyperaldosteronism (normalization of aldosterone-renin-ratio) following unilateral adrenalectomy. The effectiveness of unilateral-cannulating AVS in identifying unilateral PA were examined.

#### Results:

The left, right, and both adrenal veins were successfully cannulated in 88%, 50%, and 48% of patients respectively (selectivity index >3 under cosyntropin stimulation). No AVS related adverse events were documented.

Amongst patients with bilateral successful cannulation, a lateralization index (LI) >4 had a sensitivity of 100% and positive predictive value (PPV) of 86.7% for unilateral PA. Thresholds for contralateral suppression index (CSI) and relative aldosterone secretion index (RASI) were determined from this subgroup of patients. Cutoffs of CSI <0.5 and RASI >2.4 effectively excluded all patients with LI <4 suggestive of bilateral aldosterone secretion.

Applying these cutoffs to the entire cohort, CSI <0.5 had a sensitivity of 76.5% and PPV of 92.9%, while RASI >2.4 had a sensitivity of 85.0% and PPV of 94.4% for unilateral PA. These were higher than the corresponding PPV of CT and iodocholesterol scintigraphy (86.2% and 62.5% respectively). However, 5.6% and 4.5% of patients will undergo surgery without being cured based on CSI <0.5 and RASI >2.4 respectively.

#### Conclusion:

Unilateral-cannulating AVS is useful to identify unilateral PA. Unilateral adrenalectomy based on CSI or RASI may be considered as alternative to repeating AVS.



## PW 10.02

### CLINICAL OUTCOMES AFTER OMITTING THE ESCALATING DOSAGE OF PREOPERATIVE ALPHA-ADRENERGIC BLOCKADE BEFORE PHEOCHROMOCYTOMA RESECTION: IMPLEMENTATION OF A TREATMENT STRATEGY IN DISCORDANCE WITH CURRENT GUIDELINES

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#### Introduction:

The decline of mortality and morbidity associated with pheochromocytoma resection is frequently attributed to the introduction of preoperative  $\alpha$ -blockade, although correlating evidence is lacking. Despite this, current guidelines advocate this preoperative strategy. Recent retrospective data suggest equal perioperative safety regardless of preoperative  $\alpha$ -blockade escalation. Our institution revised its preoperative protocol in 2019, aiming to reduce postoperative hypotension and shorten hospitalisation by omitting  $\alpha$ -blockade dose-escalation. This allowed us to explore the effectiveness of preoperative  $\alpha$ -blockade in an unselected patient group.

#### Materials&Methods:

Single-institution evaluation of protocol implementation, including patients who underwent adrenalectomy for pheochromocytoma from 2015 to 2022. Intraoperative hemodynamic control was regulated by active adjustment of blood pressure using vasoactive agents. Primary outcome was intraoperative hemodynamic instability, defined as duration of systolic blood pressure above 200mmHg and mean arterial pressure under 60mmHg in minutes. Secondary outcomes included complication rates, postoperative blood pressure support requirement, and hospital stay duration.

#### Results:

Of the 84 pheochromocytoma patients that underwent adrenalectomy, 66 patients were included; 36 with de-escalated preoperative  $\alpha$ -adrenergic protocol and 30 with preoperative  $\alpha$ -blockade dose-escalation. Median [IQR] duration of systolic blood pressure above 200mmHg was 2 minutes [0-4.8] versus 0 minutes [0-1] ( $p=0.007$ ), respectively. Median duration of mean arterial pressure under 60mmHg was 62.5 minutes [26.3-96.0] versus 10 minutes [3.5-32.8] ( $p<0.001$ ). The incidence of symptomatic postoperative hypotension was 3 patients (8.3%) versus 10 patients (33.3%) ( $p=0.014$ ). Median duration of postoperative continuous noradrenaline administration was 1.3 hrs [0-10.1] versus 5.1 hrs [0-18.7] ( $p=0.233$ ). Median postoperative admission was 2.1 days [1.3-3.1] versus 3.1 days [2.1-5.2] ( $p=0.012$ ). Median length of stay was 2.8 days [2.1-4.5] versus 6.9 days [5.9-8.5] ( $p<0.001$ ). No significant differences in complication rates were observed.

#### Conclusion:

Data suggest that adrenalectomy for pheochromocytoma with de-escalated preoperative  $\alpha$ -blockade protocol in an unselected patient group is safe and reduces postoperative hypotension and hospital stays.

## PW 10.03

### **“PAINFUL HEART” & PHEOCHROMOCYTOMA/PARAGANGLIOMA (PPGL) – SERIES OF PPGL INDUCED TAKOTSUBO CARDIOMYOPATHY**

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*Pheochromocytoma and paraganglioma (PPGL) can present with Takotsubo cardiomyopathy which has a presentation like acute coronary syndrome and cardiogenic shock. We present a local series of PPGL induced Takotsubo cardiomyopathy and the challenges associated with the condition.*

*Retrospective cohort review of patients who presented with PPGL associated cardiomyopathy over the last 3 years treated at 2 institutions. Details pertaining to demographics, clinical presentation, biochemical and radiological investigations, pathology, treatments provided, and outcomes (complications & mortality if any) are presented.*

*Results: 6 patients (3F:3M) with a mean age of 56 years (range 30-73) were diagnosed with PPGL induced Takotsubo cardiomyopathy. 5 of 6 (83%) patients presented with angina type symptoms and hypertensive crisis, and 1 (17%) patient was admitted hypotensive shock. All the patients were admitted to cardiac intensive care unit, with 1 needing veno-venous ECMO to support the patient. All patients except one had a normal troponin level and Transthoracic echocardiography showed regional wall abnormalities in all patients with ejection fraction ranging between 28 – 60%. Coronary angiogram was performed in all patients and reported to be normal in 4 of 6 (67%).*

*Serum and urine catecholamines were more than 4 fold higher than normal in all patients). Structural imaging showed extra-adrenal paraganglioma (1 mediastinum; 1 paraaortic in abdomen), 1 bilateral pheochromocytoma and 3 unilateral adrenal disease. All patients were alpha blocked before surgery and approach was open in 3/6, laparoscopic anterior in 3/6 patients. Mean size of the tumour was 6.8 cm (range 3.4 – 9.9cm). Genetic assessment showed the presence of mutations as follows: SDHB in 3/6, 1 MEN 2A-634, and 1 VUS). After a mean follow up of 27 months (range 3 – 96), metastasis developed in 2 patients but there was no mortality.*

*PPGL presenting with Takotsubo cardiomyopathy can be life threatening if not detected early.*

## PW 10.04

### OPEN TRANSPERITONEAL, LAPAROSCOPIC TRANSPERITONEAL OR RETROPERITONEOSCOPIC ADRENALECTOMY? COMPARATIVE STUDY

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#### Background:

In the last decade, the surgical management in adrenal tumour has made substantial progress. The objective of this study was to assess the effectiveness and safety of the open (OTA) and laparoscopic transperitoneal (LTA), and retroperitoneoscopic adrenalectomies (RPA).

#### Methods:

All patients with adrenal tumour who underwent adrenalectomies from January 1, 2011, to December 31st, 2023 were reviewed in this single-institution study.

#### Results:

In total, data from 223 patients was analysed. The mean age of patient was  $51.9 \pm 15.0$  years (range age from 12- to 87-year-old). Overall, 25.6% patients underwent OTA, 5.4% underwent LTA and 69.1% RPA. Majority of adrenal tumours were aldosterone producing adenoma (41.7%), followed by pheochromocytoma (24.2%), non-functioning adenoma (16.6%), Cushing syndrome (9.4%), adrenocortical carcinoma (5.4%), metastases (1.8%) and others (0.9%). The mean tumour size for RPA was  $3.0 \pm 2.3$  cm in compared to LTA was  $9.2 \pm 5.4$  cm and OTA was  $10.0 \pm 5.8$  cm ( $p < 0.001$ ). The median blood loss from OTA was 1055ml (IQR 100,2000), and from LTA and RPA was minimal ( $p < 0.001$ ). The hospital stays were shorter in RPA patients ( $5.9 \text{ days} \pm 3.4$ ) in compared to LTA ( $7.7 \text{ days} \pm 3.7$ ) and OTA ( $9.4 \text{ days} \pm 8.0$ ) ( $p < 0.001$ ). The duration of surgery for patients underwent LTA was ( $161.7 \text{ mins} \pm 85.7$ ), RPA patients ( $164.6 \text{ mins} \pm 93.1$ ) and OTA ( $222.6 \text{ mins} \pm 131.1$ ) ( $p = 0.221$ ). The conversion rate of LTA to OTA was 16.7% and RPA to OTA was 18.8%. The overall morbidity was 6.7% and 0.5% overall mortality.

#### Conclusion:

For small tumors, RPA offers advantages over the transabdominal method (OTA and LTA). However, for large tumors present, LTA is preferred over RPA. The limited space and anatomical orientation pose challenges in the retroperitoneal approach. Besides that, we can easily convert from RPA or LTA to OTA if complication arises.

## PW 10.05

### PREOPERATIVE TATTOO LOCALIZATION OF RECURRED DIFFERENTIATED THYROID CARCINOMA UTILIZING CHARCOAL AND INDIGOCARMINE

#### *Introduction*

*The surgical removal of locally recurrent differentiated thyroid cancer is effective in preventing further recurrence. However, the previous neck dissection can lead to anatomical distortions, making it challenging to detect any remaining or recurrent masses. To reduce surgical complications, preoperative localization has been achieved using ultrasound-guided tattooing with charcoal and indigocarmine. This study aims to compare the outcomes of localizing recurrent differentiated thyroid cancer using charcoal and indigocarmine tattooing.*

#### *Materials & Methods*

*In a retrospective analysis, we examined patients who had undergone revision surgery, employing preoperative tattoo localization with either charcoal or indigocarmine. This review encompassed the period from December 2012 to May 2021, during which a total of 95 operations were performed, utilizing tattoo localization techniques in 87 patients. We assessed each case for the clinical profiles of the patients and the surgical outcomes.*

#### *Results:*

*Between December 2012 and November 2018, 62 cases of recurrent differentiated thyroid cancer (DTC) underwent localization with charcoal tattooing, while from January 2019 to May 2021, 33 revision surgeries utilized indigocarmine tattooing. The median patient age was 52 years for charcoal tattooing and 48 years for indigocarmine tattooing groups, with a majority in both groups having previously undergone modified radical neck dissection. Charcoal tattooing marked 108 localized masses, and indigocarmine marked 56 recurrent lesions; notably, there were no significant differences in the size of the recurrent masses. Post-operative imaging revealed residual lesions in 6 out of 62 cases with charcoal tattooing, and in the 3 cases using indigocarmine, 6 remnant tissues were identified, yielding a positive predictive value of 89.3%, which was not statistically inferior compared to the 94.4% positive predictive value observed with charcoal tattooing.*

#### *Conclusion:*

*Both modalities of tattooing effective methods for localizing non-palpable small recurred lesions.*

## PW 10.06

### INTRA-OPERATIVE AUTOFLUORESCENCE FOR PARATHYROID IDENTIFICATION: A COST-BENEFIT ANALYSIS

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#### Introduction

Hypocalcaemia remains the most common complication post thyroidectomy and requires prolonged hospital stay, biochemical tests, calcium/vitamin D supplementation. Long-term consequences include chronic renal disease, abnormal bone metabolism, impaired quality of life and increased mortality. Hence, intra-operative identification and preservation of well vascularised parathyroid glands is of immense importance. This has traditionally been based on visual inspection, however several adjuncts have been introduced, including autofluorescence imaging. Multiple commercial systems have been developed, but its use requires significant outlay and ongoing costs. This cost-benefit study aims to analyse the economic feasibility of the use of intra-operative autofluorescence for thyroidectomies, for the prevention of post-operative hypoparathyroidism.

#### Materials & Methods

A probe based autofluorescence detection system was selected, with outlay cost \$20,000, and \$500 per operation for a disposable probe. The cost of managing hypoparathyroidism per patient per year equated to \$1137.75. Arbitrary permanent hypoparathyroidism rates of 1% and 15% were chosen. Costs were calculated based on 100 thyroidectomies performed annually.

#### Results

Excluding initial outlay, the use of the autofluorescence system equates to \$50,000 per year. Assuming an average post-operative life expectancy of 15 years, the cost of managing hypoparathyroidism equates to \$17,055 per patient. This technology would need to prevent 2.93 instances of permanent hypoparathyroidism per year to be cost effective. Assuming a surgical unit has a permanent hypoparathyroidism rate of 15%, this technology would need to achieve a 20% reduction in the number of patients who develop permanent hypoparathyroidism to demonstrate cost effectiveness. For a 1% permanent hypoparathyroidism rate, this technology would need to provide a reduction in permanent hypoparathyroidism cases by 293%.

#### Conclusion

This is the first economic feasibility study analysing the cost-effectiveness of the use of autofluorescence technology for the prevention of hypoparathyroidism post thyroidectomy. For an institution, economic feasibility will be determined by number of thyroidectomies performed and hypoparathyroidism rates experienced.

## PW 10.07

### EXTRA-ADRENAL PARAGANGLIOMAS WITH SDHB MUTATIONS ARE ASSOCIATED WITH INCREASED RISK OF METASTASIS BUT NOT ON SURVIVAL

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**Introduction:** Extra-adrenal paragangliomas (PGL) are rare tumours arising from the sympathetic or parasympathetic nervous system, commonly seen in the para-aortic area. SDHB associated PGLs are associated with increased risk of metastatic disease. The study aimed to assess prognostic factors of survival in patients with SDHB associated PGL. **Materials & Methods:** Retrospective cohort review of PGL's treated at 2 tertiary centers between 2010-2023. Patients were divided into 2 groups based on SDHB mutation. Differences on the clinicopathological parameters were evaluated using log-rank test and Cox-proportional hazard model. P-value < 0.05 was considered significant. Clinical and laboratory data was obtained from online records.

**Results:** 31(15F:16M) patients with a mean age of 45.03 ( $\pm$  SD17.45) were diagnosed with extra-adrenal PGL. All except 1 patient underwent surgery with open approach (26/30; 87%) and laparoscopic approach in 4 (13%). The mean tumour size was 4.9cm ( $\pm$  SD 2.8), located in the abdomen (84%), thorax (10%) and pelvis in 6%. Majority of tumours were functional (24/31; 77%) and presented with hypertension in 22 (71%) patients. SDHB mutations were seen in 15 of 31 (48%) patients, VUS in 2(7%), SDHC in 2 (7%), none in 11 (36%) patients. After a mean follow-up of 4.9 years disease-specific mortality was seen in 1 (3%) patient who died from the disease. Metastasis was present following surgery in 6 (19%), with majority in the skeletal system and lungs after a mean time of 18 (range 6-39 months). SDHB mutation was seen in 5 of 6 (83%) with metastasis who underwent treatment with RT, 131I-MIBG and chemotherapy. SDH mutation did not correlate with any clinicopathological parameters studied. **Conclusion:** SDHB mutation in PGL confers an increased risk of metastasis but not adversely on survival.

## PW 10.08

### TRAINEE AND TEACHER ENTRUSTABILITY CONCORDANCE IN ENDOCRINE SURGERY EPAS

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#### Introduction

The American Association of Endocrine Surgeons (AAES) drafted Entrustable Professional Activities (EPAs) for Endocrine Surgery (ES) to assess trainees in core topics. Here, we examine trainee and supervisor concordance of entrustability ratings to explore accuracy of self-assessment.

#### Methods

Fourteen EPAs were defined (10 “core” –6 with pre-, intra-, and post-operative phases, and four single-phase). Ten institutions collected 3-item microassessments (MAs) of trainee EPA performance using a web-based platform, where entrustment was based on observable behaviors and measured on a 5-point scale. Trainees assigned a self-assessment rating, while supervisors separately assigned ratings for the same activities. Spearman rank correlation tests were applied to ratings for EPAs.

#### Results

698 MAs were submitted between 7/2022-9/2023. Programs submitted between 3 and 468 MAs. Among 3-phase core EPAs, the intraoperative phase was most commonly assessed (n=496), followed by pre- and post-operative phases (n=108 and 55, respectively). Thirty-nine single-phase EPAs were submitted. Trainee and supervisor ratings were equivalent in 31.7% of pre-operative EPAs, 52.7% of intra-operative EPAs, 29% of post-operative EPAs, and in 64% of single phase of care EPAs. Spearman rank correlation between supervisor and trainee ratings for all phases of care combined was 0.668. Correlation was highest for the intra-operative phase (0.73), followed by single-phase (0.66), pre-operative phase (0.27), and post-operative phase (0.21). Surprisingly, rating concordance did not differ when high and low scores were examined independently.

#### Conclusions

Scores were most strongly correlated in the intraoperative phase, as these may involve greater trainee observation. Scores correlated poorly for pre- and postoperative phases, which may prompt an educational opportunity for trainees.

## PW 10.09

### CAN AI LARGE LANGUAGE MODELS (LLMS) PROVIDE ACCURATE INFORMATION FOR THE DIAGNOSIS AND MANAGEMENT OF THYROID DISEASE?

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#### Background

Large language models (LLMs) are becoming first-line sources of decision-guidance in the diagnosis and management of thyroid disease. The accuracy, quality, and reliability of the recommendations remains undetermined.

#### Method

This cross-sectional study compared diagnostic and treatment recommendations supplied by ChatGPT-4 regarding thyroid cancer and disease. For diagnosis, 33 randomly selected patient-questions were sourced from Reddit/askdocs. All questions had responses provided by site-verified physicians and responses generated using ChatGPT-4. For treatment recommendations, thyroid cancer diagnoses were submitted using standard prompt. Responses were anonymized and graded for accuracy and quality using a 4-point Likert scale by blinded healthcare providers, and cross-checked against current guidelines. Results were analyzed using single-factor ANOVA for diagnostic responses and t-test for treatment responses.

#### Results

Diagnostic responses received average accuracy rating of 3.12/4 (SD 1.01) and 3.73/4 (SD 0.53) for physician and ChatGPT-4 responses, respectively ( $p < 0.01$ ), where 4 was: "completely true information," and 3: "greater than 50% true information." Quality was rated 2.45/4 (SD 0.70) and 3.26/4 (0.67) for physician and ChatGPT-4 responses respectively ( $p < 0.01$ ); a response rated 4: "provided information beyond what was asked," 3: "completely answers the question," and 2: "partially answers the question." Treatment recommendations generated by ChatGPT-4 received average accuracy rating of 3.39/4 (SD 0.58) and quality rating of 3.10/4 (SD 0.73), ( $p < 0.01$ ). Physician diagnostic responses contained "dangerous and false information" 11% of the time, compared to 1% of ChatGPT-4 diagnostic responses and 0% of ChatGPT-4 treatment responses.



## PW 10.10

### IMPROVEMENT OF MOOD AND SLEEP QUALITY IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM AFTER PARATHYROIDECTOMY. A CASE-CONTROL STUDY

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#### Introduction

Patients with primary hyperparathyroidism (PHPT) may experience disruptions in their mood and sleep quality. There is controversy between authors and the most recent guidelines outlined in the PHPT surgical consensus do not currently encompass these neuropsychological symptoms. This study seeks to evaluate the adverse impacts on mood and sleep in PHPT patients and to analyze the improvement of these effects following surgical intervention.

#### Method

A prospective case-control study with PHPT patients. The study utilizes Beck and Pittsburgh questionnaires for assessment. The control group (CG) consists of healthy individuals matched based on age and gender. The analysis involves comparing preoperative results with outcomes at three and twelve months post-surgery, as well as comparing these results with those of the CG.

#### Results

Analysis was conducted on 49 patients who underwent parathyroidectomy. In terms of depression, notable differences were noted between preoperative and three-month post-surgery results, demonstrating a significant decrease in depression scores ( $16.80 \pm 9.98$  vs.  $13.08 \pm 10.76$ ;  $p=0.001$ ). This improvement persisted at the one-year mark ( $p<0.001$ ). Regarding sleep quality, no significant differences were observed at three months post-intervention, but distinctions emerged at twelve months ( $9.48 \pm 4.76$  vs.  $8.27 \pm 4.38$ ;  $p=0.032$ ). The dimensions of the Pittsburgh questionnaire were scrutinized, revealing significant differences only in daytime dysfunction at both three months and twelve months after surgery ( $1.02 \pm 0.99$  vs.  $0.69 \pm 0.82$ ;  $p=0.01$  and  $1.04 \pm 0.98$  vs.  $0.60 \pm 0.76$ ;  $p=0.004$ ).

#### Conclusion

The enhancement of mood and sleep quality is observed following PHPT surgery, albeit at varying postoperative intervals, with a more noticeable improvement in mood. This evaluation should be considered in the preoperative counseling of patients with PHPT.

## PW 10.11

### REEVALUATING SURGICAL INDICATIONS FOR ASYMPTOMATIC PRIMARY HYPERPARATHYROIDISM: HYPERCALCIURIA IS NOT A URINARY STONE RISK

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#### Background

The latest guideline for asymptomatic primary hyperparathyroidism (PHPT) recommends surgery for female patients with 24-h urinary calcium >250mg/day and male patients with >300mg/day, based on the presumed risk for urinary stones (US).

#### Materials and Methods

This study retrospectively analyzed data from 746 PHPT patients to assess the validity of these criteria and identify other risk factors for US.

#### Results

Among the findings, 41 patients had asymptomatic US, and 239 had symptomatic US. Patients with symptomatic US were predominantly male (39.7% vs 20.6%,  $p<0.001$ ), younger (median (IQR): 55 (21) vs 61 (17) years,  $p<0.001$ ), exhibited lower serum phosphorus (2.5 (0.6) vs 2.6 (0.6) mg/dL,  $p<0.05$ ), higher serum creatinine (0.71 (0.25) vs 0.64 (0.25) mg/dL,  $p<0.001$ ), and elevated urinary phosphorus (660 (270) vs 590 (255) mg/day,  $p<0.001$ ) and creatinine (910 (460) vs 795 (370) mg/day,  $p<0.001$ ) levels compared to those without US. Patients with symptomatic US were significantly younger compared to those with asymptomatic US (55 (21) vs 60 (20),  $p<0.05$ ). No significant difference in urinary calcium was observed among the three groups. Multivariable analysis identified male gender and age <52 as risk factors for US (Odds ratio (95%CI): 1.72 (1.18-2.51),  $p<0.01$  and 1.98 (1.41-2.79),  $p<0.001$ , respectively). Sensitivity and specificity for asymptomatic US using the thresholds in the guidelines were 39.2% and 58.4% for females, and 15.4 % and 64.6% for males. The best cutoff values determined through ROC analysis for detecting asymptomatic US were >180 mg/day (AUC: 0.54, sensitivity: 78.6% and specificity: 42.7%) for females and >160 mg/day (AUC: 0.58, sensitivity: 53.8% and specificity: 20.8%) for males.

#### Conclusion

Hypercalciuria should not be considered a reliable criterion for surgery in asymptomatic PHPT cases, as it was not found to be a significant risk factor for US. Instead, male sex and younger age were identified as risk factors for US.

### INFORMATION ON PRE-TRANSPLANT CALCIMIMETIC TREATMENT IMPROVES PREDICTION ACCURACY OF TERTIARY HYPERPARATHYROIDISM AFTER KIDNEY TRANSPLANTATION

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#### Background:

Tertiary hyperparathyroidism (THPT) is characterized by abnormally elevated parathyroid hormone and serum calcium levels, even after successful kidney transplantation (KTx). Recently, pre-transplant calcimimetic treatment has been reported as a predictor of THPT. We aimed to ascertain whether pre-transplant calcimimetic use and dose information improved THPT prediction accuracy.

#### Methods:

This retrospective cohort study enrolled patients who underwent KTx between 2010 and 2022. The primary outcome was the development of clinically relevant THPT. Logistic regression analysis was performed to evaluate pre-transplant calcimimetic use as a determinant of THPT development. The pre-transplant calcimimetic information was used to categorize participants into four groups according to cinacalcet dose per unit of body weight, developing two THPT prediction models (with or without calcimimetic information). Then, the continuous net reclassification improvement (CNRI) and integrated discrimination improvement (IDI) were calculated to assess the ability to reclassify the degree of THPT risk by adding the information on pre-transplant calcimimetics.

#### Results:

Of the 554 patients who underwent KTx, 139 (25.1%) received pre-transplant-calcimimetics, and 87 (15.7%) developed THPT. Multivariate logistic regression analysis revealed pre-transplant calcimimetic use was significantly associated with THPT development (odds ratio: 7.16, 95% confidence interval [CI]: 3.57–14.30,  $P < 0.001$ ). Inclusion of the pre-transplant calcimimetic information significantly improved the accuracy of the predicted probability of THPT (the CNRI and IDI were 0.91 [95% CI: 0.70–1.13,  $P < 0.001$ ], and 0.09 [95% CI: 0.05–0.13,  $P < 0.001$ ], respectively).

#### Conclusion:

Pre-transplant calcimimetic use and dose information improved the accuracy of the prediction of THPT.

## PW 10.13

### QUANTIFICATION OF INDOCYANINE GREEN FLUORESCENCE OF PARATHYROID GLAND POST THYROIDECTOMY FOR PREDICTING HYPOCALCEMIA

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*Introduction:* Hypoparathyroidism is the commonest complication post thyroidectomy (TT) and its early identification aids safe and early discharge. Invasive techniques for parathyroid gland identification entail risk of disrupting their blood supply, thus not routinely preferred. Parathyroid gland perfusion (PGP) studies to predict parathyroid function have largely been subjective. This study aims to objectively quantify PGP and predict its function using QP score on SPYPHI ICG system.

*Aim:* To study the correlation between intraoperative quantitative assessment of PGP using ICG with post TT hypocalcemia.

*Methods:* This is an interim analysis of an ongoing prospective interventional study in the Endocrine Surgery Department, KGMU, India. Two ml of ICG dye is injected into a peripheral vein and PGP is objectively assessed using a Stryker Spy-phi machine. The QP value of the PG is compared to post-operative Parathyroid hormone (PTH) levels on Day 0/ 1 and serial calcium values (Day1-5) and signs/ symptoms of hypocalcemia.

*Results:* Sixty patients (9 male, 51 female) ranging from 19-76 years underwent TT (52) or TT with LN dissection (8) for benign (49) and malignant (11) aetiology. Of these 11 patients required oral and IV calcium supplementation and 5 required oral supplementation. Correlation of QP score with post-op PTH and calcium value was statistically significant ( $P = <0.01$ ). The ROC curve analysis showed, QP cut off value of 55 for AUC of 0.78, had a sensitivity of 80% and specificity of 74%. In hyperthyroid states, QP value was not corroborative with post-op PTH value in 4/6 patients.

*Conclusion:* ICG is an useful adjunct for quantitative assessment of PGP for predicting post TT hypocalcemia. QP score of >55% in at least 1 PG after TT reliably rules out of post-operative hypocalcemia.

## PW 10.14

### **BROWN TUMOURS ASSOCIATED WITH PRIMARY HYPERPARATHYROIDISM**

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#### *Introduction:*

*Brown tumours are abnormal lesions of bone caused due to persistently high parathyroid hormone secretion. They are rare and may present as local swellings, painful bony lesions or as a pathological fracture. The available literature is sparse and hence they are poorly understood.*

*Materials and Methods: A retrospective review included 468 patients undergoing parathyroid surgery from 2006 to 2023. Patients with brown tumour were identified. Their clinical, biochemical, radiological, and surgical details were analysed. They were followed-up for assessment of outcomes of Brown tumour and parathyroid adenoma.*

*Results: We identified 40 patients with histologically confirmed Brown tumour, exhibiting similar histology to central giant cell granulomas. There was a female predilection (68.9%), and the mean levels of iPTH and alkaline phosphatase were 907.35pg/ml and 836.72mg/dl, respectively. The maxilla-mandibular was the most commonly affected site, with an average size of 3.5cm. Associated symptoms included neurological (13%), gastrointestinal (10%), muscle weakness (41%), renal involvement (17%), and bone related (93%). Focused parathyroidectomy was performed in 90% of cases, while 10% required neck exploration. The median size of the glands was 2.5cm and mean weight 3.2gm. Notably, 90% of patients experienced spontaneous resolution of the mandibular lesion, while 10% required surgical intervention such as curettage or resection.*

#### *Conclusion:*

*Brown tumours range from clinically asymptomatic to cosmetically disfiguring and functional deformity. They represent a severe and chronic disease state of primary hyperparathyroidism. These tumours exhibit a tendency for spontaneous resolution following parathyroid surgery. Our study contributes valuable insights facilitating improved understanding of this uncommon condition.*

**ASSOCIATION OF ANKLE BRACHIAL INDEX (ABI) WITH HEMODYNAMIC PARAMETERS AMONG PATIENTS UNDERGOING VARIOUS CARDIOVASCULAR SURGERIES IN SOUTH INDIA**

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*Background:* Peripheral artery disease (PAD), the third most common clinical manifestation of atherosclerosis, is a significant global concern among patients with cardiovascular disease. Ankle-brachial index (ABI) is a non-invasive, inexpensive clinical tool for screening lower limb PAD. However, its association with hemodynamic parameters among Asian Indians undergoing cardiovascular surgeries is understudied.

*Methods:* In this cross-sectional study, we recruited 375 patients aged 18–80 years undergoing common cardiovascular surgeries. The four limbs' resting blood pressure (BP) were measured using a BP monitor and handheld vascular Doppler to calculate ABI (normal ranging between 0.9–1.4).

*Results:* Abnormal ABI incidence increases with age, but high proportions were found in age groups: 21–30 years (32%), 51–60 years (31.4%), and 41–50 years (26.5%). Occurrence of abnormally low ABI ( $n=90$ , 24%) is more common than abnormally high values ( $n=8$ , 2.13%); more commonly in vascular surgery patients (59.1%), followed by valvular heart disease patients (24.5%) and coronary artery disease patients (15.6%). Bilateral presentation (55.1%) of abnormal ABI is more common than unilateral presentation (44.9%). On comparing patients with normal and abnormal ABI, significant differences were noted in ankle Systolic Blood Pressure (SBP), Pulse Pressure (PP), and Mean Arterial Pressure (MAP). We observed positive correlation of ABI with ankle MAP, and PP, and negative correlation with arm MAP, PP, and Rate Pressure Product (RPP). ABI was significantly associated with gender and comorbidities among the various surgical groups. Multiple linear regression analysis showed that Mean SBP (0.003 (0.002, 0.005);  $p<0.001$ ), RPP (-0.031 (-0.039, -0.023);  $p<0.001$ ) were significant parameters affecting ABI.

*Conclusion:* Asymptomatic peripheral vascular changes are common in CVD patients. We observed ABI to be associated with indicators of organ perfusion and myocardial oxygen consumption (MAP and RPP). ABI monitoring should be considered in all patients undergoing cardiovascular operations to ensure better perioperative outcomes.

**CONGENITAL PULMONARY ARTERIOVENOUS FISTULA DIAGNOSED IN TRAUMA: DILEMMA IN MANAGEMENT**

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*This case highlights the challenges in diagnosing and managing a congenital pulmonary arterio-venous malformation in a trauma setting. A 32 years old lady was involved in a road accident in which she fell from a stationary motorbike. She is an active vape user with a BMI of 38. She arrive to the emergency department with no respiratory symptoms but pulse oximetry was 92% on high flow mask. Chest radiograph showed bilateral ground glass opacities and arterial blood gas had persistent type 1 respiratory failure.*

*She was subsequently intubated and required high ventilator setting. Multiple lung recruitment strategies were used including muscle relaxation with rocuronium and prone position. This caused a delay in performing a diagnostic computed tomography of the thorax which showed right middle lobe arteriovenous malformation with bilateral ground glass opacities. She underwent an emergency right thoracotomy and middle lobectomy. Intraoperative findings revealed large dark bluish lakes of AVM occupying 50% of the middle lobe.*

*Her oxygen saturation was 51% pre lobectomy and 91% post lobectomy. Histopathology examination demonstrated scattered enlarged vessels in abnormal distribution within the lung parenchymal tissue measuring up to 10mm in widest diameter. The dilated veins, including vascular margin shows various degrees of mural thickening. Lung parenchymal tissue shows congestion, extensive haemorrhage in alveolar spaces, reactive pneumocytes, hyperplasia, patchy areas of acute on chronic inflammation, occasional interstitial fibrosis and peribronchiolar metaplasia. There was no vasculitis or thrombosis.*

*In the setting of trauma, there are multiple differential diagnoses for respiratory failure such as pulmonary haemorrhage, acute respiratory distress syndrome or pulmonary contusion. Patient's trauma led to the incidental diagnosis of a pulmonary arteriovenous malformation however, she succumbed five days postoperatively from confounding ARDS.*

**THYMIC METASTASES FROM LUNG ADENOCARCINOMA FOUND INCIDENTALLY DURING CORONARY ARTERY BYPASS GRAFT SURGERY: A RARE CASE**

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*Introduction*

The thymus gland is located in the midline and generally lies in the anterior superior mediastinum. It is the primary lymphoid organ for T lymphocyte development and maturation. Lung cancer is the leading cause of cancer-related death with smoking remaining the predominant risk factor for lung cancer. Lung cancers are categorized as small cell carcinoma or non-small cell carcinoma and forty percent of patients diagnosed with lung cancer initially present with signs and symptoms of intrathoracic extension. We report a rare case of metastatic lung adenocarcinoma to the thymus which was incidentally found during coronary artery bypass graft surgery for severe three-vessel disease.

*Case Report*

A 74-year-old gentleman, ex-smoker with underlying hypertension, hyperlipidemia, and benign prostatic hyperplasia, presented initially for non-ST-elevation myocardial infarction and completed treatment. Further workup was done, and a coronary angiogram revealed three-vessel diseases. The patient was then optimized perioperatively and scheduled for elective coronary artery bypass grafts. Intra-operatively there were incidental findings of three thymic mass and were excised. HPE result of the thymus gland was reported as metastatic adenocarcinoma, likely primarily from the lung. A contrast-enhanced computed tomography of the thorax, abdomen, and pelvis done, reported a heterogenous enhancing mass at the posterior and lateral segment of the right lower lobe measuring 5.9 x 7.0 x 7.9 cm (AP x W X CC) with mediastinal nodes suggestive of metastasis.

*Conclusion*

Thymic tumors generally are thymomas and thymic carcinomas. A malignant tumor is generally believed to be very unlikely to metastasize to the thymus. In our case, it was an incidental finding of thymic mass during coronary artery bypass grafting surgery which was later reported as metastatic lung adenocarcinoma and is the second case reported to date.



## INSPIRATORY MUSCLE TRAINING (IMT) PAVING THE WAY FOR THE FUTURE OF POST CARDIAC SURGERY PULMONARY REHABILITATION

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*Introduction: Enhanced Recovery After Surgery (ERAS) protocol for cardiac surgery advocates preoperative cardiac rehabilitation to improve outcome after operation. There is a 30% reduction in the diaphragmatic thickness (DT) after cardiac surgery, which has a significant impact on morbidity, but it is preventable to a certain extent. The purpose of this study is to explore the benefits of preoperative inspiratory muscle training (IMT) to improve the DT, which would influence the recovery (shorter cardiothoracic intensive care unit stay, length of hospital admission and early mobilisation) of the patients undergoing elective Coronary Artery Bypass Graft (CABG) in our centre.*

*Methodology: We conducted a quasi-experimental pilot study with data that have been collected in a period of 15 months. The study compared the DT in patients undergoing IMT and conventional incentive spirometry, which is the usual standard of care for cardiac surgery. The number of the study population was 22. The patients were recruited during outpatient cardiothoracic surgery clinic combined with a rehabilitation team and were taught the usage of IMT and incentive spirometry respectively. The DT was measured using ultrasound before and after training. The patients were monitored and followed up regularly to assess their progress for a period of 6–8 weeks.*

*Results: 22 patients met our inclusion criteria, which 11 belong to the IMT group and another 11 belong to the spirometry group. The baseline characteristics between both arms showed no significant differences. The primary outcome has shown statistically significant difference with  $p$  value  $< 0.05$  in the DT on the right side during inspiratory phase and the left side during expiratory phase.*

*Conclusion: IMT shows significant improvement as compared to spirometry. Therefore there are promising prospects on the horizon as we move forward to continue this study to explore the benefits of IMT in elective cardiac surgery.*

## THE ONCOLOGICAL ROLE OF PRE-OPERATIVE CARDIAC FUNCTION IN POST-OPERATIVE STAGE I LUNG ADENOCARCINOMA METASTASIS

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*Introduction:* Postoperative metastasis (POM) for resectable stage I lung adenocarcinoma is clinically infrequent and associated risk factor is not easily predictable before the operation. According to the animal models for cancer metastasis, cardiac function probably plays important role for the results. Aims of this study is to identify predictable factors for POM that is associated with cardiac function and parameters.

*Materials and Methods:* From January 2014 to December 2021, four hundred fifty-one consecutive patients, who underwent resection for stage I lung adenocarcinoma without any adjuvant therapy or induction therapy in Kaohsiung Medical University Hospital, were included. Patients' clinical and pathological characteristics, including age, gender, surgical types, preoperative echocardiogram, pathologic tumor stage, size, location, and subtype of adenocarcinoma, were analyzed.

*Results:* A total of 27 cases had metastasis during follow-up (6.6%). Preoperatively, Tumor size adjust by mitral valve peak A velocity (MVpeakA), one of parameters for left ventricular diastolic function ( $\leq 1.23$ , sensitivity: 100%, specificity: 58.4%) can validly predict POM (area under receiver operating characteristic curve (AUC ROC): 0.824). Regarding surgical/pathological characteristics, those with solid component ( $>20\%$ ), T1c, and T2a were increased risk to have POM (odds ratio ((OR)): 1.05, 3.36, and 2.93, respectively,  $p < 0.05$ ). Based on the multivariate regression analysis, POM is associated with choosing sublobar excision for those with left side lesion, and MVpeakA  $> 0.74$  (OR: 5.115,  $p < 0.05$ ).

*Conclusion:* For surgical plan, sublobar excision might increase the chance of POM when the patients' stage I lung adenocarcinoma was left-sided with MVpeakA is up to 0.74. We recommend the adjuvant therapy should be provided for those with high solid component, T1c, and T2a lesion. Moreover, preoperative tumor size adjusts by MVpeakA up to 1.23 might be a potential predictive factor of POM and more data is warranted to draw a firm conclusion.

## POST-LIPOSUCTION PARASPINAL DESMOID FIBROMATOSIS: FIRST CASE REPORT AND LITERATURE REVIEW

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*Desmoid fibromatosis is a rare, slowly growing, locally aggressive mesenchymal tumor. It primarily affects young adult females with a female-to-male ratio of 2:1. It rarely affects children and elderly patients. Most desmoid fibromatoses arise in extra-abdominal locations, mainly, the extremities. We report the case of a 39-year-old female patient who presented with a lower back post-liposuction paraspinal desmoid fibromatosis. Lumbar spine magnetic resonance imaging (MRI) revealed a mass in the right paramedian area opposite to the level of L2, not infiltrating the underlying structures, with normal overlying subcutaneous tissue. Wide local excision with free margins was performed. Literature review revealed 97 cases of paraspinal desmoid fibromatosis. We extensively analyzed the clinical, radiological, and pathological features of these cases. Fibromatosis is a non-metastasizing, but locally aggressive slowly growing tumor currently classified by the World Health Organization (WHO) as a mesenchymal tumor of intermediate (borderline) malignancy. The exact cause of desmoid fibromatosis is not clear. It has been narratively linked to genetic abnormalities, trauma, steroid sex hormones, and bone malformations. The diagnosis of fibromatosis is challenging due to its ambiguous and pathological features. To the best of our knowledge, this is the first report of a post-liposuction paraspinal desmoid fibromatosis, and is the first report of a paraspinal desmoid fibromatosis in the Arabian Gulf region. Universal guidelines for the management of desmoid fibromatosis are still lacking.*

**REDUCTION IN GENERAL SURGERY SPECIALIST OUTPATIENT CLINIC APPOINTMENT FOR SURGICALLY TREATED ABSCESS PATIENTS**

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*Abscess drainage is one of the most common surgical procedures, and the existing practice at our institution was to routinely provide an outpatient clinic appointments for all patients undergoing this procedure. We found that a substantial proportion of these patients did not require further followup, or did not show up for their appointment. We aimed to reduce wastage of these appointment slots while taking into account potential safety issues and patient concerns.*

*A multidisciplinary team was formed including staff from the clinic, nursing and surgical teams. After performing a root cause analysis and interviewing patients as per the Clinical Pathway Improvement Project methodology, we were able to demonstrate a satisfactory reduction in the rate of patients receiving appointments from 100% to 20%.*

*In this work, we show how these principles can be applied to other clinical problems to optimise care delivery and improve patient outcomes.*

**PE 008**

**PRESENTATION CANCELLED**

**A RARE CASE OF PORT SITE HERNIA FOLLOWING LAPAROSCOPIC PYELOPLASTY**

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**Introduction:**

Port site hernia following laparoscopic pyeloplasty is a very rare occurrence. Early recognition can be challenging and requires a high index of clinical suspicion. The most important factors related to the formation of port site hernia are older age, midline ports, larger trocar size, wound infection, and most importantly, improper closure of the fascia at the port site (1). Surgical repair of the hernia is essential to avoid serious complications such as bowel obstruction, strangulation, and perforation.

**Case report:**

A 67-year-old female presented to the outpatient surgical clinic complaining of swelling at the left flank with mild pain for more than 10 years. The swelling started months after she underwent laparoscopic pyeloplasty for the left ureter. On abdominal examination, scars of previous transperitoneal laparoscopic pyeloplasty were noticed. A 5 cm reducible swelling was seen at the anterior axillary line port site scar. Ultrasound scan revealed a 1.5 cm defect on the middle of the left flank region at the site of previous incisional scar, with herniation of the omental fat. CT scan of the abdomen showed a hernia protruding through the left-side abdominal wall defect. The patient refused surgical repair of the hernia and was managed nonoperatively.

**Conclusion:**

Port site hernia following laparoscopic pyeloplasty is rare. To our knowledge this is the first case reported in literature. Early recognition will require a high index of clinical suspicion to avoid serious complications.

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### **GIANT EVENTRATIONS: USE OF PNEUMOPERITONEUM(PPN) PLUS BOTULINUM TOXIN, VALID OPTION**

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*Introduction: Giant Eventrations with loss of domicile are always a difficulty for surgical resolution. Thorough surgical planning should be performed prior to surgery. The combination of PPN (preoperative pneumoperitoneum) plus Botulinum Toxin is a valid option in our experience.*

*Material and Method: 7 cases were analyzed in a period from 2020 to 2022 in a study in 2 health centers. Patients with Giant Eventrations with great loss of domicile, where PPN plus Botulinum Toxin was performed with good results. Patients with high morbidity.*

*Results: Combined use has given good results in patients, facilitating the reconstruction of the abdominal wall. Of the 7 cases analyzed, 1 patient presented skin dehiscence that culminated in a closure for the second time.*

*Discussion: Neoadjuvant with PPN and Botulinum Toxin type A are useful in the preparation of patients with giant eventrations with loss of domicile. They are enhanced to obtain a better preparation and thus favor the plasty plus the use of tension-free mesh.*

### **SPLENIC CYSTS: MONOCENTRIC EXPERIENCE**

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*Introduction: Splenic cysts are uncommon pathologies. They are classified into primary and secondary. Among the primary, the most common are parasitic (hydatidosis) and among the secondary, the postrammatic.*

*Material and Method: A retrospective study was conducted from 2018 to 2022 analyzing 19 cases at the Irastorza Hospital. Analyzing age, sex, origin of the cyst, treatment and evolution. Some findings have been detected by complement studies in hydatidosis.*

*Results: A total of 19 cases were analyzed, with 15 patients with primary hydatid cysts and 3 cases secondary to trauma and 1 case with no history.*

*Discussion: Splenic cysts are rare pathologies, imaging studies such as ultrasound and CT play a fundamental role in their diagnosis. Surgical treatment in symptomatic and asymptomatic patients larger than 5 cm.*



### JEJUNAL DIVERTICULOSIS: RESECT OR NOT TO RESECT?

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*Jejunal diverticulosis is a rare condition with annual incident of 0.3-2.3%. Majority are asymptomatic and incidental findings on imaging or surgery. Symptomatic jejunal diverticulosis is non-specific which may mimic other intra-abdominal organs disease. Diagnosis remains challenging and there is limited literature on standard management of small bowel diverticulosis.*

*We report a case of middle age obese man presented with left sided abdominal pain, fever, and raise septic parameters. Computed tomography showed features suggestive of small bowel sealed perforation. He underwent exploratory laparotomy and abdominal washout. Intra-operatively, there were multiple proximal jejunum diverticula (about 100cm in length) with an area of congested and thickened mesentery. No bowel or diverticulum perforation demonstrated during surgery. There was no bowel resection and patient discharged well after completion of one week antibiotic.*

### ASSOCIATION BETWEEN FRAILTY, LONG-TERM MORTALITY AND OTHER FUNCTIONAL OUTCOMES FOR OLDER ADULTS UNDERGOING EMERGENCY LAPAROTOMY

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*Background: An increasing number of older patients are undergoing emergency laparotomy (EL). Frailty is thought to contribute to adverse outcomes in this group. The best method to assess frailty - and impacts on long-term mortality and other important functional outcomes for older EL patients have not been fully explored.*

*Methods: A prospective multicentre study of older EL patients was conducted across four hospital sites in New Zealand from August 2017 - September 2022. The Clinical Frailty Scale (CFS) was used to measure frailty - defined as a CFS of  $\geq 5$ . Primary outcomes were thirty-day and one-year mortality. Secondary outcomes were post-operative morbidity, admission for rehabilitation, and increased care level on discharge. A multivariate logistic regression*

*analysis was conducted, adjusting for age, sex and ethnicity.*

*Results: 629 participants were included. Frailty prevalence was 14.6%. Frail participants demonstrated higher thirty-day and one-year mortality— 20.7% and 39.1%. Following adjustment, frailty was directly associated with a significantly increased risk of short- and long-term mortality (30-day aRR 2.6, 95% CI 1.5, 4.3,  $p < 0.001$ , 1-year aRR 2.0, 95% CI 1.5, 2.8,  $p < 0.001$ ). Frailty was correlated with a 2-fold increased risk of admission for rehabilitation and propensity of being discharged to an increased level of care, complications and readmission within 30 days.*

*Conclusion: Frailty was associated with increased risk of post-operative mortality up to one-year and other functional outcomes for older patients undergoing EL. Identification of frailty in older EL patients aids in patient centred decision-making which may lead to improvement in outcomes.*

### **TYPHOID MASQUERADE: UNVEILING A SURGICAL EMERGENCY**

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*Typhoid fever is prevalent in Malaysia, averaging an annual incidence rate of 0.76 per 100,000 people in recent years (2014-2019). Gastrointestinal symptoms often accompany this illness. Acute abdominal pain is a severe abdominal pain, if accompanied by guarding and muscular rigidity, essentially describes the clinical picture of peritonitis and usually calls for an emergency operation. The general rule is that any pain which is persistent for a period of more than 6 days is usually caused by a disease of surgical significance. This led to the common misconception that the acute abdomen is synonymous with the surgical abdomen. However, not all cases of acute abdomen are best treated with surgery. We documented multiple cases where acute abdominal pain initially led to the presumption of a surgical emergency. However, subsequent diagnoses revealed these cases to be instances of typhoid fever. Unusual presentations and unexpected symptoms can create diagnostic challenges, even within common illnesses like typhoid.*

**PE 015**

**PRESENTATION CANCELLED**

### VARIOUS USES OF PECTORALIS MAJOR MYOCUTANEOUS FLAP (PMMF) IN BREAST AND ENDOCRINE SURGERY

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*Pectoralis major myocutaneous flap (PMMF) is a rotational advancement flap which is a reliable and versatile flap mainly used in head and neck surgery. It is usually used to cover large defects left behind by radical resection done for malignancy whereby primary closure is not possible. The muscular part helps to cover and protect the underlying vital structures especially in patients who must undergo radiation therapy. Here we describe a case series of various situations the flap has been utilized with good outcomes in our practice and discussion with regards to the flap. The PMMF flap can safely be used for patients needing salvage reconstruction and who are at a higher risk for free flaps.*

**STRATEGIES FOR CLOSING THE POSTERIOR RECTUS SHEATH DURING ENHANCED-VIEW TOTALLY EXTRAPERITONEAL RIVES-STOPPA REPAIR (ETEP-RS)**

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**Background**

*The popularity of endolaparoscopic extraperitoneal repairs has been on the rise due to advantages such as sublay mesh placement and early return to daily activities. However, the procedure requires overcoming a learning curve, and with increased adoption, new complications have emerged. One significant complication is the rupture of the posterior rectus sheath (PRS). In this paper, we present our modifications of the technique to reduce tension during PRS closure.*

**Patients and Methods**

*The study included 105 patients who underwent endolaparoscopic extraperitoneal repairs for ventral hernias using two different techniques. Group A (n=68) underwent the original technique, while Group B (n=37) underwent the modified technique. The modifications in Group B included preserving the peritoneal bridge between the two PRS and the hernia sac, conducting a complete dissection of the space of Bogros, and adopting a transverse or oblique closure of PRS along the lines of least tension. To assess the efficacy of these modifications in preventing PRS rupture, we compared the results of both groups.*

**Results**

*Our findings indicate that following all the technical steps of the modified technique resulted in a reduced need for transversus abdominis release (TAR) for PRS closure and a lower incidence of PRS rupture in the postoperative period. However, to further validate the effectiveness of these modifications, a larger follow-up period and a bigger sample size are required.*

**Conclusions**

*The adoption of the modified technique can help achieve a tension free PRS closure.*

### CHEST WALL LIPOSARCOMA MIMICKING ITS BENIGN COUNTERPART

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#### BACKGROUND

*An elderly male patient presented with swelling under the left shoulder blade since 3-4 months, which gradually increased in size. It was painless and not associated with any other complaints. Patient had a strong smoking history. Swelling was localized under the left scapula, smooth surface, non-pulsatile, soft in consistency, non-fluctuant.*

#### OBJECTIVES

- 1) *To portray the importance of clinical examination and surgical decision making.*
- 2) *To emphasize that the investigations and histopathological examinations assist in confirming and deciding the line of management, not replacing surgical judgment.*

#### METHODS

*Radiological imaging was done following examination. MRI of the left scapular area revealed a large encapsulated hetero-intense formation of size 18x8x15cm. The surrounding chest wall, left lung and the mediastinum did not show any pathological changes on imaging, so it was suspected to be a benign mesenchymal tumor. Surgical excision was done.*

#### RESULTS

*Initial clinical examination and radiological imaging pointed it towards a benign tumor. During surgical excision, the consistency and feel of the tumor was suggestive of it being liposarcoma, the malignant counterpart; which was later confirmed by histopathological examination and accordingly further management was done.*

#### DISCUSSION & CONCLUSION

*Liposarcoma, although being a very common soft tissue sarcoma, is seen rarely in the chest wall. Well differentiated liposarcoma is the most common type of liposarcoma, usually seen in the sixth and seventh decades of life. Studies suggest complete surgical resection as the preferred first-line treatment, because neither lipoma, nor liposarcoma are responsive to chemotherapy or radiotherapy.*

*It has a high tendency of being misdiagnosed as a benign formation, owing to the absence of its invasion to the adjacent structures. In this report we have emphasized the role of surgical decision making from adequate diagnosis to the management based on it.*

#### KEYWORDS

*Liposarcoma, Chest wall, Lipoma, Well differentiated*

### CHALLENGES IN DESMOID TUMOR IN POST PREGNANCY: A CASE SERIES

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*Desmoid tumours (DT), constituting only 0.3% of neoplasms, presents a unique challenge due to their aggressive local behaviour. While histologically benign, they lack metastatic potential but pose a threat to nearby structures, complicating marginal clearance and also increasing mortality. Only 17% of DT cases are reported post-pregnancy. Case 1 involved a 25-year-old lady with a rapidly enlarging abdominal mass post-caesarean section. Despite wide surgical resection and a 20x15cm excised tumour, achieving margin clearance proved challenging. The patient faced postoperative complications, leading to readmission but treated conservatively and subsequent radiotherapy. In Case 2, a late 30s lady with post caesarean section history presented with a heterogenous mass within the right rectus abdominis muscle. Wide surgical resection with component separation and primary closure of the anterior abdominis muscle was done. Mass size 5x2.5x2.5cm was resected, ensuring margin clearance and a smooth recovery.*

*Case 3 featured a woman in her 40s with a painless abdominal mass, ten year's post caesarean section. Wide surgical excision revealed a 5x6cm mass with achieved margin clearance, eliminating the need for radiation therapy. In conclusion, pregnancy-associated DT, often abdominally located, present a surgical challenge for achieving marginal clearance in larger masses. Despite difficulties, radiotherapy emerges as a crucial treatment for cases with compromised surgical margins, contributing to favourable outcomes.*



## GASTRIC ARTERIOVENOUS MALFORMATION: AN UNUSUAL CAUSE OF RECURRENT GASTROINTESTINAL BLEEDING

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### Introduction:

Upper gastrointestinal (GI) bleeding caused by arteriovenous malformation (AVM) has been rarely described in the literature and usually presents as massive hematemesis or chronic iron deficiency anemia.

### Materials & Methods: Case Report

We present the case of an 80-year-old gentleman without any medical illness, who suffered from upper GI bleeding. OGDS done revealed submucosal haemorrhage at the gastric fundus and colonoscopy was normal. The bleeding source was a gastric arteriovenous malformation emerging from the left gastric artery identified by computed tomography angiography (CTA) scan. Selective embolization of the arterial branches was performed with ethylene vinyl alcohol (EVOH). Nevertheless, only half of the AVM was successfully embolized. A follow-up OGDS two months later revealed an onyx cast protruding into the fundus while the rest of the examination appeared normal. The patient remained well without any recurrence of bleeding.

### Results: Discussion:

AVM is a congenital anomaly characterized by abnormal connections between veins and arteries due to embryonic vascular development failure. Clinical manifestations vary, including abdominal pain, chronic anemia, and gastrointestinal bleeding. Initial diagnosis involves upper GI endoscopy, while CTA and angiography are used in challenging cases due to diverse endoscopic findings. Treatment options, such as surgery and interventional embolization, favor the latter for its minimal risk, lower mortality rates, and cost-effectiveness. Superselective embolization, targeting the bleeding arterial branch, is a common technique. Long-term monitoring is crucial due to postoperative bleeding risks (5-37%), attributed to incomplete resection and metachronous AVMs (11%). Even with incomplete embolization, progressive AVM regression and symptom-free periods are reported, as observed in our case.

### Conclusion:

The diagnosis of gastric AVM through endoscopy poses challenges due to the diverse range of possible presentations. In cases of persistent GI bleeding despite OGDS attempts, percutaneous embolization serves as a less invasive treatment alternative.

### A CASE REPORT : SUCCESSFUL CONSERVATIVE MANAGEMENT OF PHLEGMASIA CERULEA DOLENS IN NON-VASCULAR CENTER

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*Phlegmasia cerulea dolens is a rare clinical condition caused by diffuse venous thrombosis that is characterized by sudden pain, swelling, purple ecchymosis due to arterial ischemia with loss of peripheral distal pulses. We encountered a case of 37 years old male with a background of uncontrolled hypertension, diabetes mellitus and active smoker presented to our center with a sudden severe left lower limb pain of four hours duration, associated with swelling and redness. On examination, there was cold bluish discolouration of left lower limb up to mid thigh with delayed peripheral circulation. Motor examination of left lower limb was 2/5 and the sensation was intact. Doppler examination showed biphasic signal on all peripheral lower limb distal pulses. Computed tomography angiography of bilateral lower limb had no evidence of acute thrombosis of bilateral lower limb arteries. However, ultrasonography doppler of left lower limb revealed long segment left leg deep venous thrombosis, extending from left popliteal vein until left external iliac vein. Successful revascularization of left lower limb was achieved after 48 hours heparin infusion. Therefore, Phlegmasia cerulea dolens is a rare condition that if misdiagnosed or mistreated would result in limb threatening condition. Hence, it is crucial to promptly identify this condition for early intervention and management, as for better outcomes for the patient.*

**DIVERGENT TESTICULAR PATHOLOGIES: UNRAVELLING THE CLINICAL COMPLEXITY OF TESTICULAR LYMPHOMA IN DISTINCTION FROM CARCINOMA**

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**Introduction:**

Diffuse Large B-cell Lymphoma (DLBCL), representing 30-58% of non-Hodgkin lymphomas, is an escalating diagnosed aggressive B-cell malignancy. Testicular DLBCL, a rare subtype at 1-2% of NHLs, predominantly afflicts elderly men (median age 60-70). Standard treatments demonstrate curative efficacy in 50-90% of DLBCL cases contingent upon clinical and biological risk factors.

**Case Report:**

A 47-year-old Malay male presented with a one-year history of painless right testicular hardening, unaccompanied by urinary tract infection (UTI) or constitutional symptoms. Clinical examination revealed hard, right testicular enlargement without thickening of the spermatic cord. Despite normal peripheral blood film (PBF), tumour markers (LDH, AFP,  $\beta$ HCG), ultrasound detected a lobulated hypoechoic solid lesion with vascularity in the right testis, highly suggestive of malignancy. High ligation right orchidectomy was performed, revealing DLBCL, NOS. The patient was subsequently referred to the Haematology team for further therapeutic intervention.

**Discussion:**

Testicular DLBCL is a rare and aggressive B-cell lymphoma, presenting with unilateral or bilateral testicular swelling, with or without constitutional symptoms. Elevated LDH levels may be observed, while typical testicular tumour markers remain normal. Ultrasound reveals hypoechoic lesions and increased vascularity, raising suspicion of malignancy. Unfortunately, prognosis is generally poor. Multimodal therapy, including orchidectomy, chemotherapy, and scrotal radiotherapy, is employed to enhance survival rates and minimize relapse. Timely recognition, accurate diagnosis, and comprehensive treatment strategies are pivotal in addressing this challenging manifestation of lymphoma.

**Conclusion:**

Clinical diagnosis of testicular lymphoma in chronic testicular swelling is challenging, and often missed as it resembles chronic orchitis or testicular carcinoma. High index of suspicion, investigation, and surgical intervention aid diagnosis confirmation. Multimodal therapy is the primary treatment, but its aggressive nature leads to high relapse rates. Vigilance and prompt intervention are crucial for managing this challenging condition.

### **DOUBLE TROUBLE: DISTAL ILEAL VOLVULUS WITH INTERNAL HERNIATION CAUSED BY MECKEL'S DIVERTICULUM AND MESODIVERTICULAR BAND**

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*Introduction: Meckel's diverticulum is the common congenital anomaly in gastrointestinal tract, but it is the uncommon cause of volvulus in adult population. It is more unusual for Meckel's diverticulum complicated by mesodiverticular band, which is the remnant of the vitelline artery results in volvulus with internal herniation leading to small bowel gangrene.*

*Presentation of case: We present a case of 45 years old gentleman presented with acute onset of generalised abdominal pain and persistent vomiting because of volvulus resulted from meckel's diverticulum with mesodiverticular band.*

*Discussion: Meckel's diverticulum is a diverticulum caused by incomplete obliteration of vitelline(omphalomesenteric) duct. It affects about 1-3% of the population and majority of them are asymptomatic and incidentally discovered intraoperatively. Yet, Meckel's diverticulum is known to cause various complications including gastrointestinal haemorrhage, diverticulitis, perforation and bowel obstruction particularly in adult population. The case described above is presented acutely which vaguely suggestive of intestinal obstruction caused by volvulus but ct scan findings showed transitional point which lead to the decision for surgery and it was later discovered it was due to volvulus and internal herniation secondary to meckel's diverticulum with mesodiverticular band.*

*Conclusion: Meckel's diverticulum and its related complication should be considered in cases followed with the diagnosis of acute abdomen. The failure to recognize at early stage might ends in more catastrophe ie high mortality rate.*

**APPENDICULAR ABSCESS WITH UNCOMMON EXTENSION INTO THE ANTERIOR ABDOMINAL WALL AND ASSOCIATED NECROTIZING FASCIITIS: A CASE REPORT**

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*This case report the uncommon phenomenon of appendicular abscess extending into anterior abdominal wall and complicated with necrotizing fasciitis. We highlight the limited number of documented cases with direct extension into abdominal wall compared to the more prevalent retroperitoneal perforation. We present a case of 62-years-old lady who initially presented with right iliac fossa pain and swelling for 3 weeks. On abdominal CT scan she was diagnosed with appendicular abscess extending into right anterior abdominal wall. Initial management involved intravenous antibiotics and percutaneous drainage due to the patient high surgical risk following percutaneous coronary stenting 4 months ago. However despite treatment, her condition progressed to necrotizing fasciitis manifested by spreading cellulitis and crepitus over the anterior abdominal wall. The patient underwent open right hemicolectomy and anterior abdominal wall wound debridement, followed by postoperative negative pressure wound therapy for the anterior abdominal wall. Our case provides valuable insights into the clinical challenges posed by appendicular abscess extension into the anterior abdominal wall particularly when complicated by necrotizing fasciitis. This case contributes to the understanding of this rare presentation, the importance of early recognition and intervention to optimize patient outcomes.*

**DOUBLE PEPTIC ULCER PERFORATION: REPORT OF A RARE CASE**

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*Peptic ulcer disease (PUD) affects a large number of people around the world. Complications can occur in 10-20% of PUD patients. Perforation is one of complication where it 2-14% of the cases. Main contributing factor are Helicobacter pylori infection and chronic non-steroidal anti-inflammatory drugs (NSAID) usage. Others risk factor are steroid abuse, post-surgery stress, burns and Zollinger-Ellison syndrome. Mainly perforation is single and occur in pyloric of stomach or in first part of duodenum. Double perforation is a rare occurrence with fewer reported cases. Here we present a rare case of double PUD perforations due to prolonged steroid usage. A sixty-one years old male present with peritonitis to our centre and we performed laparotomy with distal gastrectomy and roux en Y anastomosis. Unfortunately, patient succumbed to death on day 19th postoperatively, due to septic shock secondary to hospital acquired pneumonia with multiorgan failure. Perforation is one of the most fatal complication of PUD apart from bleeding PUD. There are various surgical interventions that can offered for perforated PUD depends on the cases in order to enhance the recovery. Other contributing factors that affect the outcome are age, comorbid conditions (American Society of Anaesthesiologists, ASA status), and time of surgery.*

**UNCOMMON PRESENTATION OF ACUTE ABDOMEN IN PREGNANCY - APPENDICULAR DECIDUOSIS: A CASE REPORT**

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*We present a rare case of appendicular deciduosis in a pregnant lady. Deciduosis may develop during pregnancy in the appendix resulting in occlusion of the appendicular lumen by extrinsic compression either due to expansion of endometrial tissue or decidua polyp formation. We report a 33-years-old lady at 33 weeks of gestation presented with sudden onset of right sided pain for 2 days. Clinically patient had tenderness at right lumbar region with positive rebound tenderness. The diagnosis of acute appendicitis was suspected and after successful laparoscopic appendicectomy and histopathological examination of specimen revealed a diagnosis for appendicular deciduosis was established. This case underscores the importance of considering unique pathological entities in the differential diagnosis of acute abdomen during pregnancy.*

**XANTHOGRANULOMATOUS INFLAMMATION (XGI) OF THE TERMINAL ILEUM, CAECUM, AND APPENDIX MIMICKED AS APPENDICULAR MASS: A CASE REPORT AND LITERATURE REVIEW**

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**Introduction**

Xanthogranulomatous inflammation (XGI) is a rare process involving an accumulation of inflammatory cells, commonly lipid-laden macrophages. Involvement of small bowel is rare. To our knowledge, there are only 5 cases reported, and with the best of our knowledge this is the first reported case of XGI of the terminal ileum, appendix, and caecum resulting in fistulation to the anterior abdominal wall.

**Case Report**

77-year-old male with underlying Type II Diabetes Mellitus, hypertension and right reducible inguinal hernia presented with abdominal pain which localized to right iliac fossa. The patient denied any symptoms of fever and had no change in bowel habits. On clinical examination, there was a right iliac fossa mass and right inguinal scrotal swelling. Contrast enhanced computer tomography (CECT) showed a large multiloculated collection seen at the right lower the anterior abdomen measuring approximately 11.6(W) x 6.2(AP) x 8.8(CC) cm. Ultrasound guided drainage of the right abdominal wall intermuscular collection performed and put on an intravenous antibiotics for 2 weeks.

Right hemicolectomy was performed with side to side stapler anastomosis, incision and drainage of right anterior abdominal wall and right inguinal hernia repair. Intra operative findings revealed a sealed perforated appendix causing inflammatory phlegmon, densely adhered causing fistulation into the right anterior abdominal wall. Histopathology revealed caecum shows inflammation infiltrates in the muscularis propria, serosal and the surrounding pericaecal fat at the base of appendix. Xanthogranulomatous inflammation is also seen within the serosal and muscularis propria of the adjacent terminal ileum. The patient was doing well and was discharged from hospital on postoperative day 4.

**Conclusion**

This report aimed to emphasize ileal, appendix and ileal involvement of XGI, although rare, as one of the differential diagnoses of mass lesions in the small bowel mimicking malignant neoplasms.



### BLUNT SCROTAL TRAUMA CAUSING TESTICULAR RUPTURE: A CASE REPORT

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#### *Introduction*

*Injuries to the scrotum have been reported to be rare, accounting for less than 1% of injuries among patients presenting with injuries associated with trauma. Blunt trauma to the scrotum may cause injuries such as testicular rupture, testicular fracture, haematoma formation, haematocoele, testicular torsion, and spermatic cord injuries. We report a case of testicular rupture following blunt scrotal trauma.*

#### *Case report*

*A 19-year-old gentleman presented to our centre post trauma. He was riding a motorcycle when he fell and impacted his scrotum over part of the motorcycle. Post trauma, he complained of pain over the left hemi-scrotum. Examination revealed a swollen and tender left hemi-scrotum. An ultrasonography of the scrotum showed irregular and thickened tunica albuginea and absence of internal vascularity of the left testis. Scrotal exploration was done, which revealed a ruptured left testis.*

#### *Discussion*

*Testicular rupture is defined as the rupture of the tunica albuginea, with extrusion of the contents. Patients with testicular rupture often present with complaints of pain and swelling over the scrotum, with examination findings typically include swelling, tenderness, abrasion, ecchymosis, and skin haematoma over the affected hemi-scrotum. Ultrasonography is the first-line imaging following scrotal trauma, and magnetic resonance imaging (MRI) may be used when ultrasonography is inconclusive. Once a diagnosis of testicular rupture has been made, early surgical exploration within 72 hours and repair is warranted to increase the salvage rate of the testis.*

#### *Conclusion*

*Scrotal injuries are rare, nonetheless, serious injuries such as testicular rupture may occur following blunt scrotal trauma. History, physical examination, followed by scrotal ultrasonography to assess and aid in diagnosis. Testicular rupture should prompt surgical exploration to increase salvageability of the testis.*

### TRAUMATIC DIAPHRAGMATIC HERNIA: A CASE REPORT

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#### *Introduction*

*Diaphragmatic hernias are defects of the diaphragm, allowing an organ, or part of an organ, to pass into the thoracic cavity. Diaphragmatic hernias are rare, and can be classified into congenital and acquired or traumatic. Traumatic diaphragmatic hernias may result from blunt trauma or penetrating injuries. We present a case of a traumatic diaphragmatic hernia which was successfully repaired via a laparoscopic approach.*

#### *Case report*

*A 49-year-old lady presented post trauma, where the vehicle she was in was hit by a car from the side. Post trauma, she complained of shortness of breath and left sided abdominal pain. She was tachypnoeic on arrival with reduced breath sounds over left lower zone. A chest x-ray done showed elevated left hemidiaphragm. An urgent computed tomography scan was arranged which showed a diaphragmatic defect with herniation of stomach into the thoracic cavity.*

*She was posted for emergency surgery. A laparoscopic approach was taken, the herniated stomach was reduced, and the diaphragmatic defect was repaired. Post operatively, she recovered well, and was discharged home few days post operatively.*

#### *Discussion*

*Traumatic diaphragmatic hernias have been reported to be rare, occurring in about 0.8% to 6% of cases of blunt trauma, but occur at a higher incidence in cases of penetrating trauma to the thorax and abdomen. Patients may be asymptomatic, or present with dyspnoea and chest pain.*

*Chest x-ray should be performed as the first line investigation. Computed tomography scanning is sensitive and specific for the diagnosis of diaphragmatic injuries. Once detected, diaphragmatic injuries should be repaired.*

#### *Conclusion*

*Early diagnosis and prompt treatment of diaphragmatic hernias are vital to prevent complications such as incarceration, strangulation and perforation of herniated viscera.*

### PERITONEAL FLAP HERNIOPLASTY FOR LARGE VENTRAL HERNIA: A CASE REPORT

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#### *Introduction*

*Incisional hernias can be defined as any gap in the abdominal wall in the area of a postoperative scar, with or without a bulge, which may be perceptible or palpable upon examination or imaging. These hernias can be repaired through open or laparoscopic methods. We present a case of incisional hernia who successfully underwent peritoneal flap hernioplasty.*

#### *Case report*

*A 46 years old lady with co-morbidities of hypertension and diabetes underwent a laparotomy, distal pancreatectomy and splenectomy for distal pancreatic carcinoma. She developed incisional hernia few months post surgery.*

*A computed tomography scan was arranged, which revealed a large defect at the midline of the anterior abdominal wall with herniation of small and large bowel loops. She was counselled for repair, and underwent peritoneal flap hernioplasty.*

#### *Discussion*

*Incisional hernias are common complications of abdominal surgery. Repair of incisional hernias can be done laparoscopically or through open surgery. However, the laparoscopic method of repair may not be feasible in all patients, especially in those with large hernias. Closure may be challenging in patients who have defects which are too large for primary fascial closure.*

*Nielson et al described a method for reconstruction of large abdominal wall defects by the peritoneal flap technique, which uses the hernia sac to bridge the fascial defect. Studies on the use of peritoneal flap hernioplasty for large hernias have shown promising results, with low recurrence rates.*

#### *Conclusion*

*Incisional hernias can develop as complications post abdominal surgery. Repair of large hernias may prove to be difficult, especially where primary fascial closure cannot be obtained. In such cases, peritoneal flap technique can be used, and studies thus far have shown promising results with the use of this technique.*

**CHROMOPHOBE RENAL CELL CARCINOMA: REPORT OF A RARE CASE OF RENAL CANCER**

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*The incidence of renal cancer is 1.9 per 100,000 in the Malaysian population. Chromophobe renal cell carcinoma (ChRCC) is a rare subtype of renal cell carcinoma (RCC) that accounts for 4-6% of all RCC cases worldwide. Generally, ChRCC affects both genders equally in their middle age with more favorable prognosis in comparison to other RCC subtypes. This report details 2 ChRCC cases among 57 RCC diagnosed in our center from 2013 until 2023. Both cases, females aged between 40 to 60 years old, diagnosed in 2021 and 2022 who were presented with a huge abdominal mass. One patient was arranged for proper imaging modalities prior to operation and another case was found incidentally during gynecologic operation. Nephrectomy for both cases unveiled low pathological staging of RCC; pT3 and pT2, similar pattern of tumor growth and immunochemistry findings. Computed tomography and Positron Emission Tomography were performed for both, neither case exhibited local recurrence or distant metastasis. A case was planned for targeted therapy but the treatment forsaken due to financial constraints. Currently both cases are still under surveillance in our center. This report highlights that ChRCC is a relatively rare subtype of RCC that carries an excellent prognosis despite absence of targeted therapy, which may be explained in terms of the high rate of low-stage and low-grade tumors.*

### CASE REPORTS: INTESTINAL PNEUMATOSIS AND PORTOMESENTERIC VENOUS GAS - RARE SIGNS OF GRAVE OUTCOME

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*Introduction. Intestinal pneumatosis (IP) and portomesenteric venous gas (PMVG) can be found on contrast enhanced computed tomography (CT) of patients with different abdominal emergencies and also benign conditions. When IP is present in conjunction with PMVG in patients with acute mesenteric ischemia (AMI), it predicts transmural bowel wall necrosis and often is associated with increased mortality.*

*Material and methods. A 66 years old male presented to the emergency department with four day history of severe abdominal pain. Atrial fibrillation of unknown duration was noted on electrocardiogram. Contrast enhanced abdominal CT showed extensive small bowel and ascending colon IP with PMVG, superior mesenteric artery embolism. Signs of peritonitis and sepsis were observed on admission. Patient refused surgery after learning his diagnosis, treatment needed and potential outcomes and received medical therapy.*

*Second patient, a 88 years old female, was admitted to surgical department with similar complaints of severe abdominal pain for approximately 24 hours. Contrast enhanced CT was significant for superior mesenteric artery atherosclerosis with secondary thrombosis and partial small bowel IP, as well as PMVG. This patient underwent resection of necrotic small bowel and aortomesenteric shunting with synthetic prosthesis.*

*Results. Male patient died of sepsis, septic shock within a couple of days after hospitalization. Female patient died on third postoperative day.*

*Conclusion. Intestinal pneumatosis and portomesenteric venous gas in case of acute mesenteric ischemia is a sign of longer duration of bowel ischemia, patients present to the emergency department in worse general condition due to bowel necrosis, peritonitis and sepsis and have high mortality.*

### CASE SERIES OF PSEUDOMYXOMA PERITONEI (PMP) IN A COLORECTAL CENTER HTJS

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#### INTRODUCTION

*Pseudomyxoma peritonei (PMP) is a rare clinical condition characterized by disseminating mucinous ascites produced by mucinous implants on peritoneal surfaces. It is classically originating from a ruptured low grade mucinous neoplasm of the appendix. Symptoms from large volume PMP is often debilitating and the optimal treatment is with cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (HIPEC) with good survival outcomes.*

#### CASE PRESENTATION

*We present our experience in managing four PMP cases originating from low grade mucinous neoplasm of appendix (LAMN) treated with cytoreductive surgery and HIPEC at our center from 2022 to 2023. All patients underwent cytoreductive surgery followed by hyperthermic intraperitoneal chemotherapy with Mitomycin C. Their age ranges from 46 to 64 years old with peritoneal carcinomatosis index (PCI) score ranging from 14 to 31. The operative time ranging from 560 to 820 minutes with mean blood loss of 3200 mls. Total hospital stay is between 14 to 19 days with mean ICU stay of 3.7 days. There were no severe post-operative complications (CTCAE 3-5) observed and patients are currently under close surveillance follow up.*

#### DISCUSSION

*Pseudomyxoma peritonei from low grade mucinous neoplasm of appendix treated with cytoreductive surgery and HIPEC by trained multidisciplinary team in well supported center is associated with low morbidity.*

#### CONCLUSION

*Pseudomyxoma peritonei is an uncommon disease. Timely intervention with CRS-HIPEC confers better survival benefit in patients with PMP.*

**ATYPICAL GRANULAR CELL TUMOR OF THE ABDOMINAL WALL: A RARE TYPE**

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**INTRODUCTION:** Granular cell tumors (GCTs) are rare mesenchymal soft tissue tumors which derived from Schwann cells of the peripheral nerve fibers. They may occur anywhere in the body; mostly reported in the skin, oral cavity, subcutaneous tissue and digestive tract. However, they are rarely located in the abdominal wall. These tumors are mainly benign, but 1-2% of these lesions may exhibit malignant behavior. Moreover, atypical GCTs are much rarer; hence appropriate treatment with subsequent close monitoring of malignant behavior is required.

**CASE REPORT:** We report a case of 44-year-old lady with a right upper abdominal mass for 3 months. CT showed right rectus abdominis intramuscular lesion measuring 55mm, consistent with desmoid tumor. A wide local excision with mesh repair of the abdominal wall defect was performed. Histopathological examination showed poorly circumscribed tumor composing of neoplastic cells infiltration arranged in nest and cord, which strongly stained with S100 and weakly with CD68. It also composed of large polygonal cells with vesicular nuclei and nucleoli, making it an atypical GCT according to the Fanburg-Smith criteria.

**CONCLUSIONS:** GCTs are extremely rare in abdominal wall, and often misdiagnosed as desmoid tumor. Surgical excision with negative margins is the mainstay treatment. In this case, abdominal wall repair was done with mesh in view of large abdominal wall defect. Ultrasonography follow-up is recommended to identify tumor recurrence, particularly in large GCTs (more than 4cm), as well as atypical and malignant tumors. Chemotherapy or radiotherapy effectiveness remains unproven in atypical GCTs.

### WHEN BLOOD BECOMES THE BARRIER: A RARE CASE OF SMA SYNDROME

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#### *Background*

*Superior Mesenteric Artery Syndrome (SMAS) is a rare gastrointestinal disorder characterized by the compression of the third part of the duodenum between the abdominal aorta and the superior mesenteric artery. Weight loss, postprandial vomiting, and abdominal pain are some of the symptoms brought on by this compression. Diagnosis involves clinical evaluation and imaging like plain Computed Tomography (CT) Scans or CT Angiography.*

*Conservative methods of initial management include dietary assistance and lifestyle adjustments. If conservative measures prove ineffective, surgical procedures like duodenojejunostomy may be considered. Despite its rarity, awareness of SMAS is essential among healthcare professionals to facilitate prompt recognition and effective management of this challenging condition.*

#### *Case presentation*

*We report that a 27-year-old female presented with symptoms of abdominal pain, postprandial vomiting, loose stool, and abdominal distension for a week. The esophagogastroduodenoscopy done was normal despite the symptoms. The patient was treated for gastritis and discharged the next day. The patient came back with the same symptoms but was dehydrated with severe lactic acidosis. After adequate fluid resuscitation, nutritional support, and medication, Computed Tomography (CT) was arranged and showed abrupt tapering of the duodenum at the D2 level. After proper optimization, this patient underwent jejunojunctionostomy. Subsequently, this patient was safely discharged after three weeks of hospitalization.*

#### *Conclusion*

*In conclusion, a multidisciplinary approach is necessary to diagnose and treat Superior Mesenteric Artery Syndrome accurately and in the best way possible. The diagnosis requires prompt symptom diagnosis, imaging tests, and relevant management to improve the patient's quality of life.*



### **CARBUNCLE MANAGEMENT: SKIN SPARING SAUCERIZATION FOLLOW BY DELAY PRIMARY SUTURING IS NEW TREATMENT MODALITY**

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#### *Introduction*

*Carbuncle are defined as pus filled with bumps forming a connected area of infection under the skin. Conventional treatments of carbuncle include aggressive surgical debridement and antibiotics. While these treatments are effective, the process of wound healing is long and tendency for drug resistance development is high. Saucerization includes excision of necrotic centre and it surrounding cellulitis.*

#### *Case description*

*We present to you case series of two patients that underwent this new skin sparing saucerization follow by delay primary closure technique. Both of the patient with underlying diabetes presented with 2 weeks history of swelling with multiple punctum and pus discharge. Swelling over right back and right inguinal measuring 4x4 cm and 6 x 4 cm. Blood investigation was normal and patient covered with cloxacillin 1g dose, then proceed with skin sparing saucerization. Intraoperatively, a longitudinal elliptical incision was made over the area of inflammation to open the carbuncle. The necrotic and infected tissue contained within the carbuncle was completely excised by undermining technique leaving behind healthy looking edges and base. The cavity was packed with a povidone soaked ribbon gauze. Regular dressings done three time daily and patient discharged home on next day and given follow up in clinic in 1 week time. The wound was noted to be clean with no slough and no residual pus or lateral cavitation. The wound base and lateral edges were noted to be granulating well. The induration had resolved on second week post saucerization and was proceed with delayed primary suturing using interrupted non absorbable suture. After 4 weeks post delay primary closure on subsequent follow up noted wound completely healed and STO was done. In conclusion , this technique shortened the duration of wound healing, dressing ,hospital stay and patient able return to work early and improve quality of life*

### CHALLENGE IN MANAGING ASYMPTOMATIC LARGE BILATERAL INGUINO-SCROTAL HERNIA

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#### **Background:**

Inguinal hernia is a common surgical disease. However, large inguino-scrotal hernia is a rare clinical condition. Its impose morbidity to patient such as intestinal obstruction and scrotal ulceration. Its also creates significant challenge in surgical management with main concern of hernia reduction to abdominal cavity is development of abdominal compartment syndrome (ACS). However diagnosis of large inguino-scrotal hernia is straight forward on clinical examination. The case that will be discussed is large bilateral inguino-scrotal hernia.

#### **Case presentation:**

We report a case of 74-year-old male with bilateral large inguino-scrotal hernia for almost 15 years. He presented to our outpatient clinic with pain due to fall from motorbike. He is also have lower urinary tract obstruction symptoms and constipation.. On examination, theres large inguino-scrotal hernia with measurement left side scrotal size of 25cm and right side 15cm. On Digital rectam examinations, theres a large firm prostate of measurement volume 150cm<sup>3</sup>. Findings was confirmed with CT scan that revealed bilateral large inguino-scrotal hernias with small bowel content and omentum and prostomegaly (BPH;benign features) He underwent bowel reduction, left omentectomy with bilateral mesh repair. Post operative patient had mild- moderate abdominal pain but controlled with adequate analgesia. No significant complication occurred in perioperative postoperative period. He was then refered to urologist for Transurethral resection of the prostate (TURP).

#### **Conclusion:**

Bilateral large inguinal-scrotal hernia can be treated safely with simple hernioplasty. However, patient should be monitored vigilantly for features of bowel complications during the postoperative period. Pre-operative CT scan assessment is very important to improve visualization of the hernia defect, accurate assessment of size and content and to rule out any bowel-related complications.

**Keyword:** Large inguino-scrotal hernia, bowel-complications, hernioplasty

## SAFE INTRODUCTION OF ENHANCED VIEW TOTAL EXTRAPERITONEAL TECHNIQUE FOR VENTRAL AND INCISIONAL HERNIA AT A GENERAL HOSPITAL

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### Introduction

*In recent years, enhanced view total extraperitoneal technique (eTEP) has gained attention because of its physiologic advantages such as less impact on intra-abdominal organs, lower recurrence rate, and less postoperative pain. However, compared to intraperitoneal onlay mesh, the workspace for eTEP within the abdominal wall requires careful port insertion, visualization, and deployment, which may increase operative time. In this study, we review the initial three cases of eTEP at our institution and discuss points to note.*

### Patient

*The three initial cases of eTEP introduced at our institution have been described below:*

*(Case 1) 84-year-old female, umbilical hernia, 4 cm hernia orifice.*

*(Case 2) 70-year-old man, porthole hernia following appendicectomy, 2 cm hernia orifice.*

*(Case 3) 55-year-old woman, uterine fibroid, ovarian cyst surgery, cesarean section, scar hernia in the lower abdominal wall, 20 cm hernia orifice.*

### Results

*(Case 1) The procedure was performed with 3 ports and the operative time was 135 minutes. Postoperative hospitalization was 6 days. No postoperative complications.*

*(Case 2) The patient underwent a 3-port procedure, and the operation time was 240 minutes. Postoperative hospitalization was 3 days. No postoperative complications.*

*(Case 3) Three ports were used, and an additional three ports were used for transverse abdominoplasty. Operative time was 395 minutes, blood loss was 30 ml, and postoperative hospitalization was 8 days. Complication was seroma.*

### Discussion and Conclusion

*Accurate initial port placement, prevention of peritoneal injury early in the procedure, and appropriate placement of additional ports as the procedure progresses are the keys features for eTEP safety, which should be prioritized when this technique is introduced.*

*Future improvements in technique and continuous refinement should reduce the operative time.*

### A CASE SERIES OF EXTRAMAMMARY PAGET'S DISEASE

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*Extramammary Paget disease (EMPD) is a rare malignant neoplasm arising from apocrine gland-rich skin. The prevalence rate of EMPD is as low as 0.12 per 100 000 populations. EMPD primarily involves epidermis but occasionally extends into the underlying dermis. EMPD typically affects individuals aged after 5th decade with four times greater in males. It's clinical features vary and easily misdiagnosed, hence appropriate management may be delayed.*

*Case 1: 58 years old Chinese gentleman who presented with pruritic right scrotum lesion for 3 months associated with right inguinal lymphadenopathy. Biopsies were taken for both and histopathological examination showed EMPD of the scrotal lesion and right inguinal lymph node was metastatic adenocarcinoma. Patient was planned for systemic chemotherapy.*

*Case 2: 60 years old Chinese gentleman presented with per rectal bleeding and perianal pruritis for 3 years with no altered bowel habit or family history of malignancy. Clinical examination revealed Grade III hemorrhoids with perianal excoriation at the 3 o'clock position measuring 2.5cm diameter. Patient underwent examination under anaesthesia (EUA) with stapled haemorrhoidopexy and biopsy of perianal skin lesion. Histopathology proved to be Paget's disease of the perineum. Patient was planned for wide local excision and reconstruction.*

*Though commonly EMPD is an incidental finding, clinical presentation depends on location, size and extend of the disease. Strong cytoplasmic staining for Periodic Acid Schiff (PAS), Muccarmine and Alcian blue indicates presence of Paget's cell of EMPD. Positron-emission tomography (PET) / Magnetic Resonance Imaging (MRI) has high specificity in assessing regional lymph nodes and locating distant disease. Wide local excision with reconstruction remains the mainstay treatment, topical chemotherapy and radiotherapy.*

### PRIMARY AORTOENTERIC FISTULA; REVIEWING SURGICAL OPTIONS FOR DUODENAL REPAIR

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*Primary aorto-enteric fistula (PAEF) is a rare, life-threatening condition which carries high morbidity and mortality rates. For aorto-duodenal fistulas, the third part of duodenum is the most vulnerable to vascular impingement as it is fixed retroperitoneally and in close proximity to the descending aorta. Ischaemia and subsequent necrosis of the intestinal wall occur following repetitive traumatic pulsations of an adjacent aortic aneurysm. Subsequent rupture of an expanding aneurysm or perforation of the aorta leads to communication of the gastrointestinal (GI) tract with the aorta. We reported a case of a 63year old male presented with classical symptoms of upper GI bleeding, abdominal pain and a pulsatile abdominal mass. Computerized Tomography Angiography (CTA) Abdominal Aorta showed presence of a large abdominal aortic aneurysm from infrarenal artery extending to left common iliac artery which is in close proximity with the third and fourth part of duodenum. Emergency laparotomy was done and aorto-duodenal fistula involving the D4 was diagnosed intraoperatively. The aneurysm was repaired using Dacron graft and primary closure of duodenum was done. A week after, he underwent another laparotomy for duodenal leak despite successful aortic graft repair.*

*AEFs remains a diagnostic and therapeutic challenge. It should raise a high degree of suspicion in patients with GI bleeding and underlying abdominal aortic aneurysm and prompt surgical management is necessary. In this case, exact diagnosis was made intraoperatively and operation was done at an acceptable time period. However, he developed complication of duodenal leak following primary closure of duodenum. Often times, the duration for abdominal aortic repair is lengthy therefore to reduce morbidity and mortality to patients, the choice for duodenal repair may be suboptimal. Hence, although primary repair of duodenum is the most practiced and deemed adequate, other surgical options should be considered in this case.*

### GOSSYPIBOMA: A SURGEON'S EPHIALTES AND AN INADVERTENT SOUVENIR FOR THE PATIENT.

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*Introduction:* Gossypiboma, a retained surgical sponge in the abdominal cavity, is an uncommon but a grave surgical complication that has repercussions for both patient as well the surgeon. High degree of Under reporting has been attributed to the fear of litigations. We are adding series of three cases of gossypiboma.

*Material & Methods:* Cases- A 55 year- old female was referred with four months history of mass right upper quadrant. She had surgical history of open cholecystectomy five months back. On laparotomy removal of sponge with primary repair of transected gastroduodenal junction was made (Billroth 1 procedure). A 42 year old lady was referred with colicky pain abdomen and bleeding per rectum of 3 weeks duration. She had an open abdomen hysterectomy six months prior. Exploration revealed a walled off necrotic collection with sponge in the pelvis and blow out of the rectosigmoid junction. Rectosigmoidectomy with primary anastomosis and sponge removal was performed. A 43 year old woman presented with a history of open cholecystectomy with pain in right upper abdomen and decreased appetite. Computed tomography confirmed the presence of gossypiboma. The patient underwent exploration with Billroth 1 procedure.

*Discussion:* Retained surgical mops cause two types of foreign body reactions- Exudative Inflammatory reaction with abscess formation or site disruption and aseptic fibrinous response with granuloma formation. The current reported rate of retained foreign body is 0.1% with 80% cases of Gossypiboma.

*Conclusion:* The risk that every surgical procedure carries is inherent but gossypiboma remains largely an easily preventable hazard. It can be avoided with strict adherence to the standard protocols of gauze count and better display of team work by everyone present in the operating room, after all an ounce of prevention is worth a pound of cure.

### LOW GRADE MUCINOUS APPENDICULAR NEOPLASM: INCIDENTAL FINDING POST APPENDICECTOMY

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*Low-grade appendiceal mucinous neoplasms (LAMNs) are rare, non-invasive epithelial tumors of the appendix that produces abundant mucin. Although by definition LAMNs do not invade, their expansile growth may push and thin the appendiceal wall until the appendix ruptures, and the resultant spillage of mucin may lead to pseudomyxoma peritonei.*

*We reported a case of a 21year old male who presented with short typical history of right iliac fossa pain and underwent laparoscopic appendicectomy for suspected acute appendicitis. Intraoperatively noted grossly inflamed appendix which was adhered to abdominal wall. He was well post operatively and was discharged home on subsequent day. Histopathological diagnosis of appendix turned out to be LAMN and he then underwent several other investigations. Colonoscopy showed multiple small sessile polyps over terminal which turned out to be lymphoid hyperplasia and tumor marker was normal. CT scan showed ileocaecal junction and distal ileum wall thickening. Recommended guidelines suggest that appendicectomy with removal of entire mesoappendix is adequate for LAMNs that are confined to appendix with negative resection margin, provided that the appendix was handled with care during the operation. In this case, appendicectomy was performed for presumed suppurative appendicitis with adhesions to surrounding structures. Hence, mesoappendix may not be completely removed and there is risk of spread of mucin during the handling of appendix during a laparoscopic procedure. In this case report we will discuss our management dilemma for this patient and the options of treatments and surveillance available.*

## PE 043

### A DROOLING INFANT: A CASE OF INFANTILE HYPERTROPHIC PYLORIC STENOSIS

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*Pyloric stenosis, also known as infantile hypertrophic pyloric stenosis (IHPS), is an uncommon condition in infants characterized by abnormal thickening of the pylorus muscles in the stomach leading to gastric outlet obstruction. We are presenting our experience in handling and managing such a case in our institution with excessive drooling as her primary chief complaint.*



**A CASE REPORT: DILEMMA IN DIAGNOSING AMYLOIDOSIS IN CHRONIC HAEMORRHAGIC GASTRITIS**

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*Introduction: The clinical manifestations of amyloidosis may vary depending on the organ involved. In the gastrointestinal system, it may present with bleeding, hepatomegaly, splenomegaly, or malabsorptive symptoms. Case Presentation: A 73-year-old woman with chronic anemia and atrial fibrillation presented with multiple episodes of upper gastrointestinal bleeding (UGIB) over a two-year duration. She underwent a series of esophagogastroduodenoscopy (OGDS) examinations and interventions that did not resolve the issue. OGDS biopsy results were negative for malignancy. However, due to the chronic nature of the illness and the involvement of the entire stomach, she underwent a total gastrectomy. Post-operative histopathology revealed the deposition of AL amyloidosis in the gastric, oesophageal, and duodenal tissues. Subsequently, due to the chronicity of her illness, she was investigated for multiple myeloma but, regrettably, succumbed to recurrent gastrointestinal bleeding. Conclusion: Although amyloidosis is a rare disease, a high index of suspicion should be maintained in patients with chronic gastrointestinal bleeding, particularly when there is involvement of other organs like the heart and kidney.*

**CASE SERIES OF SCROTAL EXTRAMAMMARY PAGET'S DISEASE (EMPD) : UNCERTAINTY IN MANAGING POSITIVE MARGIN POST RECONSTRUCTIVE SURGERY**

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*Introduction: Extramammary Paget's Disease is a rare form of malignant skin neoplasms. Originated from apocrine gland, it can be described as carcinoma in situ or can be an invasive disease. Because of the rarity, no algorithm available and limited literature in term of management and direction of care. There is also scanty experience worldwide in terms of post reconstruction of the local disease with positive surgical margins.*

*Cases and Discussion: We present two cases, based on our experience in treating inguinoscrotal and scroto-perineal Extramammary Paget's disease. Both Asian gentlemen presented late with pruritic and erythematous skin lesion surrounding the scrotum. Throughout times, 1st patient's lesion spreading one to the inguinal region and the 2nd patient to the perineum which they presented after years of keeping the lesion. No evidence of metastatic disease noted. Both patients underwent local excision with 1st patient proceeded with split skin graft and 2nd patient able to close with primary closure. Both underwent histopathology examination which revealed positive surgical margins. The dilemma of re-excision for both patients was questioned in view of positive margin which may lead to local recurrence or locoregional metastasis. However, 2nd patient continued with radiotherapy course which precipitated the wound went unhealed. Both patients then are managed with optimum wound management and wound is monitored closely with regular follow up. No local recurrence observed to this date. Hence there is a possibility of proper and optimum wound management for this disease without subjecting patient for re-excision procedure.*

*Conclusion: For Extramammary Paget's Disease, it is challenging in terms of non-specificity in establishment of diagnosis, late presentation, and direction of treatment. A long term follow up is needed if positive margins is not being re-excise to prevent missed locoregional recurrence or metastasis case.*

**THE ASSOCIATION BETWEEN INTERDIGITAL PILONIDAL SINUS AND ANIMAL GROOMERS IS A HISTORICAL NARRATIVE CORRELATION AND NOT A TRUE OCCUPATIONAL HAZARD**

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*A pilonidal sinus (PNS) is a small hole or 'tunnel' in the skin that frequently occurs in the sacrococcygeal region. Nevertheless, PNS can has been reported to occur elsewhere in the body, such as between the fingers (interdigital) in barbers, hairdressers, and animal groomers. The aim of this study was to estimate the prevalence of interdigital PNS among animal handlers in Bahrain and to treat any patients encountered. This is a cross-sectional study with convenience sampling from November 2020 to October 2021. The study participants were animal handlers from stables, veterinary, and pet shops in Bahrain. There were 43 males and 7 females with direct animal contact. 86% of the study population were handling horses, and 15% were handling different types of animals. No positive cases of interdigital PNS among participants were found, this might reflect the positive impact of good personal hygiene among our study population. Our study shows that groomers in Bahrain frequently wash their hands after handling animals, and 98% have a daily habit of bathing after work. It was also estimated that 60% of the participants use gloves to handle animals themselves or their waste. This could be the first study looking at the prevalence of interdigital PNS in animal groomers worldwide. However, the absence of any case report of interdigital PNS among hair animal groomers in the recent literature strengthens our assumption and might suggest that the association between interdigital PNS and hair grooming could be a narrative coincidence rather than a true occupational hazard. The present work may help in better understanding of occupation-disease association, and highlights the importance of mass screening of animal handlers for occupation-dependent health problems.*

**CASE REPORT OF LAPAROSCOPIC ADRENALECTOMY FOR A GIANT PHEOCHROMOCYTOMA**

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*Pheochromocytomas are rare catecholamine-producing tumors arising from chromaffin cells in the adrenal medulla. While the majority of pheochromocytomas are relatively small in size, ranging from a few millimeters to a few centimeters, a distinct subset of cases presents with an atypical feature: giant pheochromocytomas. These tumors, characterized by an unusually large size, pose unique diagnostic and therapeutic challenges due to their potential for causing extensive local invasion, compression of adjacent structures, and a heightened risk of catecholamine-related complications. Here we report a case of giant pheochromocytoma in a 56 year old gentleman which was found during an evaluation for lower urinary tract symptoms. He was started on alpha blocker and referred to us. After adequate blockade for pheochromocytoma, he underwent laparoscopic left adrenalectomy (95x60x40mm) and perioperative period was uneventful. Despite advancements in imaging techniques and surgical approaches, the surgical removal of giant pheochromocytomas remains a formidable task, often requiring intricate planning and multidisciplinary collaboration. The potential for intra-operative hemodynamic instability and the risk of perioperative catecholamine surges further underscore the need for tailored perioperative management protocols.*

### CASE SERIES: THE WILDLIFE RAMPAGE SURVIVAL

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*A human-wildlife conflict is uncommon in Malaysia. It usually leads to succumb due to internal organ injury. The most common part of the attack in human are abdomen and torso. There are two cases happened involving of two gentleman towards attack of Elephant and Hippotamus in Malacca. The first case is a 40 years old Thai gentleman who was working as a Zookeeper raged by Elephant and sustained penetrating wound with exposed of intraabdominal content. Intraoperative was uneventful, and he was discharged well after 2weeks post trauma. The second one is a Hippotamus attack over a 32 years old gentleman and sustained intraabdominal injury. He was then underwent exploratory laparotomy and also uneventful. He was discharged after a week post trauma. Intraabdominal injury due to wildlife animal rampage needs to be always in high index of suspicious upon presentation at Emergency Department. The most important part is the early referral to General Surgery for definitive management.*

**THE MISBEHAVING PLEOMORPHIC ADENOMA**

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**ABSTRACT**

**Background:**

*Pleomorphic adenoma (PA) is the commonest benign salivary gland tumor. It is painless slow growing tumor in nature. However, in the presence of rapid size progression, painful, skin involvement and facial nerve involvement, malignant transformation into carcinoma ex pleomorphic adenoma needs to be considered. The challenge in diagnosing and managing large PA is the potential for unrepresented tissue to cause malignant transformation.*

**Case presentation:**

*A 64-year-old lady initially presented with left submandibular swelling and cytological study reported as PA. She was scheduled for left submandibulectomy, however operation was postponed due to cardiac event.*

*Subsequently she defaulted follow up and presented again two years later due to sudden progression in size of the left submandibular swelling. The swelling has extended from submandibular area to the left parotid region within three months duration.*

*Physical examination showed there was a large, multilobulated mass measuring 40x30 cm, from the left submandibular region extending superiorly to the parotid and post auricular region. Subsequently she underwent total parotidectomy and submandibulectomy and intraoperatively facial nerve was sacrificed due to massive tumor bulk carried a weight of 2.9kg.*

**Conclusion**

*Preoperative plan is important to recognize patient expectation and postoperative outcomes. Despite the tumor showed benign features histologically and clinically, a surgeon should always take into consideration the purpose of surgery whether is functional or cosmetic as the complication could be fatal.*

**ADDRESSING A RARE ESCHERICHIA COLI SUBDURAL COLLECTION IN AN INFANT POST MENINGITIS: A CASE REPORT ON EFFECTIVE BURR HOLE AND DRAINAGE INTERVENTION**

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*Subdural collection post meningitis is a complication observed in infants affected by meningitis. This case report delves into the rare instance of an Escherichia coli subdural collection in a 3-month-old infant following bacterial meningitis, a complication commonly associated with streptococci and staphylococci. The infant initially manifested symptoms of fever and reduced oral intake, initially misdiagnosed as viral fever. However, on the second day of admission, the patient encountered status epilepticus, resulting in a generalized tonic-clonic seizure. Subsequent to the seizure, a computed tomography scan unveiled bilateral subdural effusions, notably more pronounced on the left side and devoid of hydrocephalus. Consequently, the child underwent left Burr hole and drainage, featuring a passive drain placement. Cultures from the drained subdural fluid exhibited Escherichia coli growth, while no growth was detected in blood and urine cultures. The infant underwent a 6-week course of intravenous Ceftriaxone. Following surgery and the completion of antibiotics, the child achieved a successful recovery, remaining fit-free. This case report offers valuable insights into the diagnosis, surgical intervention, postoperative care, and comprehensive management of Escherichia coli subdural collection post meningitis in an infant.*

**ETHANOL ABLATION OF NECK LYMPHATIC MALFORMATIONS WITH GOOD RESPONSE AND COSMESIS RESULTS: A SYSTEMATIC REVIEW AND CASE REPORT**

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**Background:**

Lymphatic malformations (LM) or lymphangiomas are one of the more commonly encountered cystic head-and-neck tumours. Treatment is often indicated in patients with cosmetic concerns, significant clinical symptoms, or superimposed infection. Surgical excision is the traditional treatment, however there are inherent peri-operative risk and cosmesis result. Alternative treatment of these cystic tumours using percutaneous sclerotherapy agents has been proposed, although there has been no major consensus on treatment approaches and sclerotherapy agent choices. This paper presents a systematic review of percutaneous ethanol ablation for neck lymphangioma and a case report of ethanol ablation in a patient with neck lymphangioma with good cosmesis results.

**Methods:**

Systematic review was conducted on PubMed using key words: "Ethanol" OR "Alcohol" AND "Ablation" OR "Sclerotherapy" OR "Sclerosing" AND "Lymphangioma" OR "Lymphatic Malformation" as per PRISMA guideline. A case of percutaneous ethanol ablation for a patient with neck macrocystic lymphangioma treatment was also described.

**Results:**

315 articles from initial PubMed search results were screened by titles and abstracts. Subsequently the full text of these articles was retrieved. Exclusion reasons include other types of lymphovascular malformations, recurrent lymphangiomas, lymphangioma in other body parts. Case reports and review articles were excluded as well. 3 studies were included in our pooled review. Overall, evidence quality is modest with marked heterogeneity. Total of 12 patients were treated with percutaneous ethanol ablation for neck lymphangioma with good disease response. Only 1 patient (8.3%) encountered peri-procedural complication. In our experience, ethanol ablation of the neck lymphangioma in our patient also had complete response and no complications.

**Conclusion:**

Ethanol ablation is an effective option for the primary treatment of neck lymphangiomas with good cosmesis results. Further prospective study with homogenous outcome measures, uniform follow-up duration and control group study will be beneficial to validate these findings.



### ADVANCING MEDICAL EDUCATION: A COMPREHENSIVE EXPLORATION OF STUDENTS' PERSPECTIVES ON ARTIFICIAL INTELLIGENCE USAGE, BENEFITS, AND ETHICAL CONSIDERATIONS

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#### *Introduction:*

Artificial Intelligence (AI), exemplified by advanced language models like ChatGPT, stands poised to revolutionize traditional learning paradigms. This study examines students' perceptions, advantages, and ethical considerations concerning the utilization of AI in medical education.

#### *Materials and Methods:*

This cross-sectional study was conducted between July 2023 to October 2023, surveyed 302 medical undergraduates in University Malaya, Malaysia, through a convenient sampling approach using an online, self-developed and validated questionnaire-based survey. The Likert scale was employed to analyse the respondents' attitudes. ChatGPT was used to assist in data analysis and manuscript refinement.

#### *Results:*

Among the 302 participants, 44% demonstrated a moderate familiarity with AI tools in medical education. Notably, 62.9% perceived AI ineffective in supplementing traditional medical education. However, ChatGPT emerged as the most utilized tool, with 59% of students leveraging its capabilities, primarily for "clarifying concepts and doubts" (61.3%). Other advantages uncovered include 81.5% enjoying the freedom of accessing information anytime, anywhere, and 69.5% acknowledging AI's instrumental role in grasping intricate medical concepts. Additionally, 58.6% cross-referenced AI-generated information with other sources. Potential ethical concerns were "increase in cheating or plagiarism risks" associated with AI (71.2%), while only 26.4% were willing to cite AI-sourced information. Another predominant concern was accuracy and reliability (75.5%), although 50.7% expressed satisfaction with the quality of AI responses.

#### *Conclusion:*

AI tools, particularly ChatGPT, has the potential in reshaping medical education. As ChatGPT gains popularity in personalizing learning experience, concerns related to accuracy, ethical awareness, and the responsible integration of AI need to be addressed. Recognizing and navigating AI's limitations are crucial, urging students to exercise vigilance by cross-checking AI-generated data. Optimizing the benefits alongside addressing concerns is pivotal for the impactful integration of AI in medical education.

**RECURRENT INCARCERATED INGUINAL HERNIA REVEALING AN AMYAND HERNIA IN AN INFANT: A CASE REPORT**

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*Introduction: An Amyand's hernia is a pathology wherein the content of the inguinal hernia sac is formed by the vermiform appendix. It is a rare condition representing 1% of all inguinal hernias and it was first described in 1736 by Claudius Amyand. He performed the first appendicectomy from the inguinal hernia sac of an eleven-year-old boy. Amyand's hernia is difficult to diagnosed clinically preoperatively. We report the case of a thirteen months old male diagnosed per operatively during a redo herniotomy indicated for an incarcerated right inguinal hernia.*

*Case presentation: A 13 months old boy with a history of right inguinoscrotal swelling since birth which was diagnosed as an incarcerated right inguinoscrotal hernia. The swelling was reduction under sedation with diazepam given intrarectal and the child benefited of a right inguinal herniotomy two days later. Four months later the mother realized the reoccurrence of an inguinal swelling on the same side. The diagnosis of a recurrent incarcerated right inguinal hernia was made using clinical elements as no ultrasound examination was requested. A non-inflamed appendix was found adherent to the hernia sac and appendectomy was done. The post-operative period was uneventful.*

*Conclusion: The rarity of this condition prompted us to share our experience so that we can have an Amyand's hernia in our mind as diagnosis in case of recurrent incarcerated inguinal hernia in an infant.*

### CASE REPORT OF A RARE ANOMALY: CONGENITAL PYLORIC ATRESIA ASSOCIATED WITH BART SYNDROME

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#### Background:

*Pyloric atresia is an extremely rare congenital anomaly (with an incidence of 1 in 100,000 live births). It carries a high mortality rate when associated with epidermolysis bullosa (EB), a genodermatoses characterized by skin fragility and trauma-induced blister formation, known to have many subtypes. Bart's syndrome is characterized by EB, aplasia cutis (AC), and nail abnormalities, considered to be a clinical sign in many forms of EB.*

#### Case report:

*We present a case of a term newborn, male, prenatal scans noted to have polyhydramnios and a dilated stomach bubble. Postnatally, baby had abdominal distension with copious non billious aspirates. Plain radiograph identified a single bubble with absence of gas distally. Correlation of pyloric atresia and EB was made when trivial trauma caused extensive skin erosions and eruption of blisters and confirmed with skin biopsy. A multidisciplinary team approach consisting of paediatric surgeon, neonatologist, paediatric dermatologist, pediatric anaesthesiologist and highly trained Neonatal Intensive Care Unit (NICU) and Operation Theater (OT) staff needed to manage this case. Intraoperatively, a pyloric atresia type 2 was repaired with a gastroduodenostomy and transanastomotic tube was inserted. Special care was taken to prevent further trauma to the skin during and after surgery. Postoperative care in NICU required specialized feeding methods, central venous line access, and dressing.*

#### Conclusion:

*Careful preoperative and postoperative measures combined with multidisciplinary approach is needed to ensure favorable outcome in a rare and fatal disease.*

### PAGE KIDNEY AS A RARE CAUSE OF HYPERTENSION: CASE REPORT AND REVIEW OF THE LITERATURE

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#### *Introduction:*

*Page kidney, first documented by Pages in 1939, denotes hypertension resulting from kidney compression, typically induced by subcapsular hematoma. This triggers the renin-angiotensin-aldosterone system, leading to arterial hypertension. Linked often with blunt renal trauma, it can manifest in healthy individuals, with management options ranging from anti-hypertensive drugs to surgical interventions, including nephrectomy in extreme cases.*

#### *Case Report:*

*This paper details a case of Page kidney syndrome in a 4-year-old boy with a pre-existing hydronephrotic left kidney due to congenital pelvic-ureteric junction obstruction. Post-blunt force trauma, the child exhibited elevated blood pressure, flank tenderness, and significant haematuria. Despite initial medical management, surgical intervention involving cystoscopy, Retrograde Pyelo-Gram (RPG), and DJ stenting led to rapid blood pressure normalization. Subsequent elective pyeloplasty revealed improved renal morphology, and the patient remains normotensive without medication.*

#### *Discussion:*

*The discussion underscores the historical context of Page kidney, its occurrence in young athletes, and diverse causes such as trauma, surgery, or medical interventions. Anatomical considerations in the retroperitoneal location contribute to Page kidney, with compression-induced ischemia as a central mechanism. Hypertension is a hallmark, and the pathophysiology hinges on subcapsular hematoma or fibrous capsule presence. Imaging modalities like CT and MRI aid diagnosis, and the therapeutic focus on hypertension control includes successful ACE inhibitor use. Recent reports suggest positive outcomes with less invasive procedures like percutaneous drainage and endoscopic interventions, contingent on the presence of a fibrous capsule.*

#### *Conclusion:*

*Page kidney necessitates individualized management for hypertension correction and renal function preservation. Clinicians must be vigilant in blunt trauma cases, considering various treatment options. Early intervention is crucial for preventing chronic hypertension and preserving kidney function, emphasizing the significance of recognizing and promptly addressing Page kidney's diverse presentations in clinical practice.*

**ADVANCED LAPAROSCOPIC PROCEDURES FOR ELBW INFANTS WITH A BODY WEIGHT OF 490 TO 930 GRAMS**

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**Introduction**

*To report results of a unique series of laparoscopic surgical procedures of advanced complexity in extremely low birth weight (ELBW) infants with a body weight of 490 to 930 grams at the time of surgery*

**Material and methods**

*Personal series of a single pediatric surgeon. Retrospective analysis of perioperative Data and postoperative course. The study included ELBW infants with a body weight of less than 1000 g at time of surgery undergoing microlaparoscopic complex procedures (including at least one intestinal suturing) without the need for conversion*

**Results**

*To the best of our knowledge, this report describes, for the first time in the literature, the accomplishment of advanced laparoscopic procedures in ELBW infants.*

*11 ELBW infants identified matching the study inclusion criteria in a single pediatric surgery department 2-mm instruments used for the laparoscopy in all cases, exclusively (microlaparoscopy) procedures:*

- Duodeno-duodenostomy for duodenal obstruction (n=4),*
- Intestinal suturing for intestinal perforation (n=6),*
- Repair of an iatrogenic rectum perforation (n=1)*

*There were no perioperative complications. All procedures completed successfully. There was no mortality related to the surgical interventions.*

**Conclusions**

*The present report indicates the possibility for improvement in minimally invasive pediatric surgery even for the very specific group of extremely low birth weight (ELBW) infants.*

*There is a need for further technical development and larger studies in this field.*

**3D PRINTING OF MINIPO RTS FOR MICROLAPAROSCOPIC SURGERY USED IN NEWBORNS AND PREMATURE INFANTS**

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**Introduction**

*The industrial scale production of consumable medical supplies such as mini-instruments designated for minimally invasive pediatric surgery (MIS), explicitly for use in neonates and premature infants, has been constantly discontinued due to high manufacturing costs and very low demand, most probably.*

*The aim of our technical investigation was to create "miniports" of 1.4 mm in diameter using 3D-printing technologies.*

**Material and methods**

*A technical pilot study was performed as a joint collaboration between the Department of Pediatric Surgery at the University Medical Centre and the Department of Manufacturing Technology with Focus Machining at the Otto-von-Guericke University of Magdeburg (Germany).*

*We evaluated the feasibility and effectiveness of 3D-printing technologies used for the production of mini-trocars and trocar valves, in particular, different 3D-printing techniques and 3D-print ingredients.*

**Results**

*Four locally available 3D-printing techniques were explored and evaluated for usability. As a next step, three different printing materials ("White V5", "Surgical Guide", "Elastic 50A") were considered for prototype production.*

*In three prototype models, the gradual reduction of trocar diameter from 4 to 1.4 mm was attained. Two of three substances showed a high rate of material breakage and instability of the prototypes. The first two valve prototypes were not suitable for appropriate use. The next two valve generation obtain the functionality level as required. There were ten different trocar prototypes produced. Eight trocar prototypes were not suitable for clinical use, two trocars' function was properly.*

**Conclusions**

*The production of miniports for microlaparoscopy using 3D-printing technologies is feasible. To obtain the optimum efficacy in terms of printing material, stability in very-small-diameter instruments and their technical practicality are subjects of further ongoing studies.*

**PREVALENCE, PATTERNS AND MANAGEMENT OUTCOMES OF PEDIATRIC SURGICAL PATHOLOGIES IN THREE HOSPITALS IN LOW AND MIDDLE INCOME COUNTRY, CASE OF CAMEROON**

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*Introduction:* Many surgical pathologies of childhood are amendable to simple cost-effective surgical interventions. If left untreated, delay in intervention, or improperly treated will lead to severe impairments, lifelong disabilities and increase in overall pediatric mortality. In Cameroon, little is currently known for the spectrum, caseload, public health challenge, and case specific mortality of surgically managed pediatric conditions. The objective of this study was to assess the prevalence, patterns and outcomes of pediatric surgical pathologies in three hospitals in Cameroon.

*Materials and Methods:* A hospital based retrospective descriptive analysis of children between 0 and 18 years admitted for surgical conditions in the selected hospitals from January 2019 to December 2021. Patient's files and Theatre registers were reviewed. A data extraction form was used to collect socio-demographic and clinical data. Data was analyzed using SPSS V25.

*Results:* During our study period, there were 1526 pediatric surgical admissions. This constituted 12.6% of all pediatric admissions. There was a male predominance of 63.5% giving a 1.7:1 M:F. Age group 6 to 12 was the most frequent. Neonates represented 7.3% of all surgical patients. Most patients 58% presented as an emergency. 23.2% were admitted as referrals, with close to 20% of referrals from secondary level hospitals. 36% of patients presented late with symptoms lasting more than 1 week to several months, with up to 14% having disease complication on admission. Pediatric injuries 39.8%, congenital malformations 25.6%, and gastrointestinal surgical pathologies 14.8%, were the most observed patterns of presentation. 4% of patients Left against medical advice mostly for financial constraints. 2% were referred for better management, there were complication of management in 6% of patients. The overall mortality rate was 4.3%. Mortality was highest in neonates, with mortality rate of 31.3%. Diagnosis with the leading mortality were; Gastrocshisis 91.7%, Head injuries 54.5%, Burns/omphalocele 36.4% and duodenal atresia 40%.

*Conclusion:* Surgical pathologies constitute a significant proportion of pediatric admissions. Injuries, congenital malformations and gastrointestinal surgical pathologies are most frequently observed. Operative and neonatal surgical mortality is extremely high.

*Keywords:* Pediatric Surgical Patterns, Prevalence, management Outcome, Cameroon

**COLOCOLIC INTUSSUSCEPTION IN CHILDREN: A CASE REPORT AND REVIEW OF THE LITERATURE**

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*Intussusception is an acquired invagination of a proximal segment of the bowel (intussusceptum) into the distal segment (intussusciens). Most cases are primary or idiopathic intussusception with no lead point. It is frequently found near the ileocecal junction and rarely only involves the colon. One type of intussusception uncommon in pediatric patients and might cause diagnostic issues is the colocolic intussusception. A three-year-old boy presented with intermittent abdominal pain and passing out blood-stained stools for 1-week duration. The abdomen is soft, non-tender and no sign of peritonism. There is a palpable mass at the left iliac fossa area measuring 2x3cm. The abdominal ultrasonography (USG) revealed a short segment of 'target or pseudokidney sign' at the left lumbar area measuring 2.7x3.4cm (AP x W) in keeping with colocolic intussusception. The child underwent laparotomy after failed USG-guided saline reduction. Intraoperatively, the intussusception was spontaneously reduced and there is a palpable intraluminal mass in the descending sigmoid junction. The descending colon was opened above the mass by longitudinal incision and a single pedunculated polyp measuring 3cm was found. The polyp was excised and the colotomy incision was closed. Postoperatively, the child recovered uneventfully and was allowed discharge on day 2 postoperative. Final HPE came back as juvenile polyp. In conclusion, colocolic intussusception is infrequent in the pediatric population and is normally associated with lead point. It tends to occur outside the typical range of 6 months to 3 years old. The aim of the treatment is reduction after proper clinical evaluation and resuscitation. Saline or enema reduction is feasible for the reduction of intussusception, but open surgery remains the primary treatment for the recurrence of failed reduction. The role of colonoscopy in selected cases, can be an alternative to open surgery and bowel resection.*



**HUGE TRACHEAL DIVERTICULUM MIMICKING TRACHEOESOPHAGEAL FISTULA IN PURE ESOPHAGEAL ATRESIA**

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**Introduction :**

The foreguts will differentiate into a ventral respiratory and dorsal esophageal part at 4 weeks of gestation. Incomplete separation causes esophageal atresia with or without tracheoesophageal fistula (EA/TEF). EA/TEF may have multiple associations of anomalies and can be of great clinical importance. However tracheal diverticulum in association with pure esophageal atresia masquerading the tracheoesophageal fistula is a rare clinical condition.

**Case report;**

6 months old boy born at 37 weeks of gestation with weight of 2.07kilogram, antenatally being diagnosed with esophageal atresia as evidence of absence of stomach bubbles. Post-delivery revealed coiling of ryles tube at T1 with gasless abdominal X-ray indicative of a pure EA. Proceeded with bronchoscopy and open gastrostomy at day 3 of life which showed a small pit at the proximal trachea, mimicking a proximal TOF. Gastrogram via gastrostomy was done showing reflux of contrast into the distal esophageal stump highest at T10 vertebrae, making it a long gap EA. At 2 months of age weighing 3.2 kilograms, repeated bronchoscopy was done with findings of blunt opening at mid trachea level. With radiological guidance, coiling of the ryles tube now seen at the level of T4, which was not typical of a fistula. Weighing 5.2kilograms at age of 6 months old, underwent definitive surgery; repeated bronchoscopy, gap assessment, cervical approach esophageal myotomy, right thoracotomy and delayed esophageal anastomosis. Intraoperatively, noticed tracheal diverticulum found intraoperatively in which was excised and repaired.

**Conclusion**

EA/TEF may have association with respiratory tree anomalies. Conditions such as tracheomalacia and subglottic stenosis are commonly discussed in the literature. Tracheal diverticulum however, is a rare association in which small numbers of cases are reported in the literature, mainly in older

**ASSESSING THE USEFULNESS OF A STRUCTURED PROGRAM FOR TEACHING PANCREATOJEJUNOSTOMY TO SURGICAL RESIDENTS AND FELLOWS OUTSIDE THE OPERATING ROOM**

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**Objectives**

*We assessed the usefulness of our structured program for teaching pancreatojejunostomy to surgical trainees outside the operating room.*

**Subjects and Methods**

*In total, 17 trainees, including 6 fellows (F group) and 11 residents (R group) were enrolled in the study. The educational program comprised two parts: prior self-study using a surgical technique manual and simulation training using an inanimate organ model with an instructor. Trainees were assessed subjectively using questionnaires and objectively by an instructor. Questionnaire evaluations, were conducted before and after the simulation training. The trainees self-evaluated their technical skills and confidence, as well as program usefulness. The supervising instructor used the OSATS evaluation chart to assess the simulation training. A 5-point Likert Scale was used. The results obtained were compared between the F and R groups.*

**Results**

*Both groups rated the program's usefulness to be higher than that before the training, and both groups improved their program evaluation after the training ( $p = 0.017$ ). The self-evaluation of technical skills demonstrated no significant improvement ( $p = 0.66$ ). Compared with the residents, the fellows exhibited higher self-evaluations of skills, both before and after the training. Self-evaluation of confidence demonstrated a significant improvement in confidence after the training ( $p = 0.00031$ ). The fellows demonstrated a significantly higher self-rated. The OSATS results revealed that fellows performed significantly better than residents in all items, except for operating time.*

**Conclusion**

*The trainees well-received our educational program. It was useful in improving confidence in practicing the procedure. Furthermore, this training program was suggested to be a useful indicator of the skill level of the trainees.*

**RENAL AUTO-TRANSPLANTATION FOR RENAL ARTERY STENOSIS IN A PAEDIATRIC ORGAN TRANSPLANT UNIT IN SINGAPORE: CASE REPORT**

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**Introduction**

A case report demonstrating renal autotransplantation for renovascular hypertension (HT) due to renal artery stenosis (RAS) resistant to management with pharmacological means and repeated angioplasty procedures.

**Materials and Methods**

A 19-year-old male diagnosed since the age of 5 years with HT secondary to bilateral RAS due to fibromuscular dysplasia underwent unsuccessful (n=3) bilateral balloon angioplasties between 6-8 years of age. The angioplasties caused renal artery spasm and acute right kidney injury. Nephrectomy at the age of 19 years for the right non-functioning kidney failed to improve the HT necessitating 6 different antihypertensives. Computerised tomography scan revealed focal stenosis (60%) along the proximal left main renal artery (LRA) 0.5cm from its ostium with downstream LRA being unaffected and good calibre (3.5mm). A renal auto-transplantation was performed with laparoscopic procurement of left kidney, back-bench perfusion with cold preservative solution, resection of RAS until normal appearing LRA (2.5 cm stump) and standard implantation into right iliac fossa. The spatulated LRA was anastomosed end-to-side to the right common iliac artery using 7/0 prolene.

**Results**

Postoperatively, the BP normalised on-table without the aid of any antihypertensives. The creatinine peaked to 430umol/L at 24 hours and downtrended rapidly thereafter. Rebound HT was managed with weaning doses of labetalol and nitroglycerin infusions. Post-operative ultrasound doppler of the transplanted kidney showed normalised resistive indices with resolution of tardus parvus waveforms.

**Conclusion**

Advances in organ preservation, transplant expertise and multidisciplinary management can allow for successful renal auto-transplantation as a last resort in highly selected patients of RAS resistant to primary management.

**PE 063**

**PRESENTATION CANCELLED**

### AUDIT OF NATIVE ARTERIO-VEIN FISTULA CREATION IN HOSPITAL TUANKU JAAFAR SEREMBAN, HTJS

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Arterio-Venous Fistula (AVF) is the preferred method of vascular access for patient's kidney failure. The aim of this study is to audit the creation of AVF performed and national KPI for AVF creation from January 2023-December 2023 at HTJS. Data was collected from clinic and operative records of patients who had native AVF creation. Data Extracted includes the following information such as types of AVF, AVF surgery cancellation rate, AVF surgery done within 60 days of referral and AVF failure rate. There are 3 Types of AVF done within the study period, this include , Brachio-Cephalic fistula (BCF) 41 cases (77.3%), Radio-Cephalic fistula (RCF) 9 cases (16.9%), Snuffbox Radio-Cephalic fistula (RCF) 3 cases (5.6%). Out of 66 case posted for AVF creation, 13 cases was cancelled (19.7%). A total of 30 cases (52.6%) successfully done within 60 days of referral from 57 new cases received with 2(3.6%) case listed as failed within 55 successful AVF done. Based on the data collected, it can be concluded that Hospital Tuanku Ja'afar successfully achieved yearly KPI in the year 2023

**BILATERAL CAROTID BODY TUMORS: A CASE REPORT FROM SURGEON'S PERSPECTIVE**

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**Introduction**

Extra-adrenal paragangliomas are tumour of the paraganglia which are located within the paravertebral sympathetic and parasympathetic chains. Commonly, germline mutations play a role in the development of paraganglioma such as RET, Von Hippel Lindau (VHL). Some of these paragangliomas may also be hereditary in nature or comprising part of genetic syndromes such as Multiple Endocrine Neoplasms Type 2 (MEN2).

In this report, we demonstrate a case of a patient with bilateral CBT in which, a two-staged CBT excision was employed.

**Case presentation**

A gentleman with type 2 diabetes mellitus, hypertension and a history of bilateral adrenalectomy for pheochromocytoma, presented with bilateral painless neck swelling that persisted for 2 years, with no other associated symptoms. There was a palpable firm, fixed, round shaped mass, measuring 3 x 3 cm, with regular borders medial to the left sternocleidomastoid muscles (SCM) while over the right neck.

A contrast-enhanced computerized tomography (CECT) of the neck showed bilateral enhancing mass at the both carotid bulbs, sandwiched between the external carotid artery (ECA) and the internal carotid artery (ICA) giving a positive Lyre sign. The CECT showed the left and the right mass measuring 3 x 2.5 cm and 2 x 1.2 cm respectively.

**Surgical perspective**

**Techniques**

The first surgery involved excision of the left carotid body tumour. Initially, the bifurcation site of common carotid artery to external and internal carotid artery was marked over the skin.

Both surgeries for this patient were uneventful. During follow-up at 3 months post-surgery, the patient recovered well.

**Discussion**

This case report discussed on the approach of CBT excision in a two-staged setting in the case of bilateral occurrence. Conservative treatment can be opted for asymptomatic patients; however, it requires close follow up as the majority of the patients may be symptomatic eventually.

**OPEN VENOUS ARTERIALIZATION TECHNIQUE FOR NO-OPTION FOOT SALVAGE: A LATINOAMERICAN COHORT IN HIGH VOLUME CLTI CENTER**

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**Introduction and objective:**

Deep or superficial venous arterialization (D/SVA) is a technique aimed at providing an option for chronic limb-threatening ischemia patients with no options except amputation. In patients with no outflow distal targets permitting bypass, D/SVA involves creating a connection between a proximal arterial inflow and a distal venous outflow in conjunction with disruption of the vein valves in the foot. This allows blood flow to reach the foot and potentially to resolve rest pain or to assist in healing of a chronic wound. The aim of this study was to show the experience with the open venous arterialization technique for no option foot salvage in high volume CLTI center.

**Methods:**

We performed a retrospective observational study from 2018 to 2022 with patients that underwent open D/SVA with a 12 months follow up and evaluate variables as technique, operative time, bleeding, complications, re intervention, graft patency, surgical site infection, length of hospital stay, intensive care unit, medical treatment, major and minor amputation and mortality.

**Results:**

During the study period we performed 5 open D/SVA procedures, mean age of 71 years old, the 60% of the patients were male, the 80% of the patients were diabetics, average operative time of 190 minutes, average bleeding of 150 cc, 94% of graft patency at one year follow up, no perioperative mortalities, 1 late mortality due to myocardial infarction, 90% of minor amputation and only 10% of major amputations.

**Conclusions:** Open D/SVA is a feasible and low cost technique in high volume centers for patients with favorable saphenous vein and no option foot salvage in fit for surgery patients with excellent limb salvage outcomes.

## THE POSTOPERATIVE CLINICAL COURSE OF PHEOCHROMOCYTOMA IN PATIENTS WITH MULTIPLE ENDOCRINE NEOPLASIA TYPE2 (MEN2)

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### Background & purpose

Proper management of hereditary pheochromocytoma is a challenging issue because the disease often happens in bilateral adrenal glands. Recent clinical practice guidelines recommend partial adrenalectomy (PA) for bilateral and hereditary pheochromocytoma. The purpose of this study was to describe the postoperative prognosis of pheochromocytoma patients with MEN2.

### Patients & Methods

Fifty-nine pheochromocytoma patients (male/female = 26/33) with MEN2 underwent initial surgery in our hospital from 1982 to 2023. A retrospective chart review examined tumor location, size, surgical management, pathological findings, and prognosis.

### Results

For the 59 patients with initial surgery, the median age was 34 (range 16 - 73) years old, the median tumor size was 4.5 (1.2 - 14.0) cm, and the median follow-up duration was 113 (0 - 427) months. Fifteen patients with unilateral pheochromocytoma underwent unilateral total adrenalectomy (TA), and two patients with unilateral pheochromocytoma received unilateral PA. Of 42 patients with bilateral pheochromocytomas, 16 underwent bilateral TA, while 10 had bilateral adrenalectomy with unilateral or bilateral PA. Other patients had unilateral adrenal disease and received unilateral adrenal surgery, so 15 underwent unilateral TA while 1 had unilateral PA. Four patients with unilateral disease who underwent unilateral TA had contralateral adrenal recurrence, three patients received TA, and one patient received PA. A total of 12 patients underwent synchronous or metachronous bilateral adrenal surgery with preserved a part of adrenal glands. The prevalence of cortical function preservation was 83.3 %. However, one patient (8.3 %) of underwent PA had a recurrence at preserved adrenal glands. Five (20.9 %) of 24 patients with bilateral TA experienced an Addisonian crisis.

### Conclusion

The preservation rate of adrenocortical function for PA was high, and the recurrence rate was low. The PA is an alternative to TA in selected patients with pheochromocytoma with MEN2.



**FACTORS RELATED TO THE SYMPTOMATOLOGY OF THE PATIENT WITH PHEOCHROMOCYTOMA. IS POSSIBLE STRATIFY THE RISK OF DEVELOP SYMPTOMS?**

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**Introduction**

Pheochromocytoma (PHEO) is sometimes diagnosed incidentally presenting asymptotically, at least apparently. However, this tumour can produce diverse symptoms, which can sometimes lead to certain complications which it would be advisable to avoid. Objective: to analyse the patient profile associated with symptomatology in patients with PHEO and to develop a predictive model of symptomatic PHEO.

**Material and Methods**

A retrospective study of patients with a diagnosis of PHEO operated on in a tertiary hospital [1984-2021] was carried out. Several variables were analysed. Descriptive, chi-square test and multivariate analysis. Predictive nomograms were developed and evaluated by calculating the area under the curve (AUC) of the receiver operating characteristic (ROC) curve.

**Results**

192 patients with PHEO were analysed. Sixty-four percent (n=123) presented with PHEO-related symptomatology. At the univariate analysis, a decreased likelihood of symptomatology for hereditary PHEO, adrenergic and normal biochemical profiles (OR= 0.10, OR=0.28 and OR=0.33, respectively). Intraoperative and postoperative complications are also higher in patients with symptomatology (OR= 2.46 and OR = 2.70, respectively). At the multivariate level, sex (female: OR 0.33), heredity (OR 0.14), noradrenergic profile (OR 10.78) and intraoperative complications (OR 3.33) maintained the effects of the univariate analysis.

**Conclusions**

There is a profile among patients with PHEO which may be indicative of the development of symptoms. A male patient with sporadic PHEO and a noradrenergic profile would have a 98% chance of developing symptoms. On the other hand, a female patient with a familial PHEO and no noradrenergic profile would only have a 31% chance of developing symptoms.

## PREDICTORS FOR PERIOPERATIVE HEMODYNAMIC INSTABILITY FOR PHAEOCHROMOCYTOMA AND PARAGANGLIOMA

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### Introduction:

Pheochromocytoma and paraganglioma (PPGL) are rare neuroendocrine tumours characterized by paroxysmal release of catecholamines. Surgical resection remains the gold standard curative treatment. However, perioperative hemodynamic instability (HI) is the major concern.

### Objective:

Our study aimed to evaluate the risk factors contributing to perioperative HI for PPGL.

### Materials & Methods:

This is a retrospective cohort study on consecutive patients undergoing surgical resection for PPGL in a single tertiary centre between 21st August 2012 and 10th October 2023. The primary outcome was perioperative HI which was defined as having  $\geq 1$  episode of systolic blood pressure  $>200$ mmHg or mean blood pressure  $<60$  mmHg perioperatively. Patient demographics, perioperative hemodynamic parameters, postoperative morbidity and mortality and tumour characteristics were evaluated. Binary logistical regression was used to identify factors which predict HI.

### Results:

Forty patients (mean age  $51.2 \pm 16.2$  years-old) with pathologically confirmed PPGL were identified. They include 33 (82.5%) cases of phaeochromocytomas, 6 (15%) cases of paragangliomas and one (2.5%) case with both. Seven (17.5%) patients were found to be associated with genetic mutations. Twenty-nine patients (72.5%) had laparoscopic resection and 11 patients (27.5%) underwent open resection. All patients received preoperative alpha blockade and 38 (95%) patients were also on beta-blocker. The median operation time is 139 minutes (IQR 105.0 - 184.6). 12 patients (30%) experienced perioperative HI but there was no post-operative cardiovascular morbidity or 30-day mortality. In multivariate analysis, age (OR 1.06; 95% CI 1.003 - 1.126) and duration of alpha blocker (OR 1.025; 95% CI 1.000 - 1.031) were associated with increased perioperative HI.

### Conclusion:

Older age and longer preoperative use of alpha blocker were significantly associated with perioperative HI for PPGL. Individualised approach is recommended to select patients who necessitate perioperative intensive management.

**PROSPECTIVE COMPARATIVE STUDY OF NORMOTENSIVE AND HYPERTENSIVE PHEOCHROMOCYTOMA & PARAGANGLIOMA**

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*Introduction:* Hypertension is hallmark of Pheochromocytoma & Paraganglioma (PPGL), but a certain proportion are normotensive. Normotensive (NP) and Hypertensive (HP) PPGL patients (n=94; 2019-2023; Male:Female::1:1) in the prospective PHEOCARD study (Clinicaltrials.gov NCT05082311) were compared to determine any differences.

*Methods:* Age, sex, presentation, family history, gene mutations, imaging and hormonal profile were studied. Patients underwent open or minimally invasive surgery after alpha blockade. Perioperative blood pressures, surgical approach, histopathology-PASS score, postoperative events were compared between NP and HP PPGL patients using appropriate statistical methods.

*Results:* Thirty-one percent (28% of Males, 34% of Females) were normotensive, with no current/past evidence of hypertension. NP and HP groups had comparable demographics (mean age 34yrs vs 32yrs, p=0.62; males 45% vs 52%, p=0.503). The classical triad- paroxysms of headache, sweating and palpitations was seen in 62% HP and 28% NP (p=0.002). Cardiac dysfunction was seen in both groups (31% NP, 55% HP; p=0.11). Mean preoperative urinary normetanephrines (NMN) were significantly higher in HP (p=0.03) however urinary metanephrines (UMN) were similar (p=0.5). On imaging, more NP had intralesional necrosis (66% NP vs 35% HP, p=0.007). Intraoperative hemodynamics was comparable in two groups. Histopathologically, all NP were benign, while 18.5% HP had malignant PPGL (p=0.016). In short-term follow-up, the two groups had no significant difference in postoperative UMN/NMN levels and recurrence.

*Conclusion:* In this cohort of PPGL patients, classical presentation triad, NMN levels, and malignancy rates were higher in HP. Greater proportion of NP had intralesional necrosis. Both groups were similar in their demography, cardiac complications, intraoperative hemodynamics, and outcomes. NP need to be managed similar to HP for safe and efficacious outcomes.

### A MALAYSIAN CENTRE'S EXPERIENCE WITH POSTERIOR RETROPERITONEOSCOPIC ADRENALECTOMY (PRA)

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*Introduction:* Minimally invasive surgery is widely practiced for adrenalectomy, particularly for benign adrenal tumours. Although posterior retroperitoneoscopic approach (PRA) carries a steeper learning curve because of the reduced workspace retroperitoneally, it has become the preferred approach over transperitoneal adrenalectomy (TPA). We described our experience with PRA.

*Materials and Methods:* The medical records of all patients who underwent PRA between 2012 and 2023 at an Endocrine Centre in East Coast Malaysia were analyzed. Tumours > 6cm, malignancy and pheochromocytoma were excluded. These patients were further divided into 2 groups based on the operation site. Operating time, conversion rates, complications and length of stay were analyzed.

*Results:* 22 patients underwent PRA with mean age of 40.4 years, 95% CI[34.1- 46.0] and the median tumour size was 2.2cm (Range 1.2 – 5.7). The median operating time was 93.5 minutes. The most common indication for surgery was for aldosterone-producing adenoma (72.7%). There was an equal distribution for the tumour site with 11 cases in both right and left PRA. Both groups were comparable in terms of patient's age, tumour size, patient's weight and BMI. There were no statistical differences in operation time and length of hospitalization stay between the right and left sided tumour group ( $p=0.895$  and  $p=0.676$ , respectively). Only one case required conversion to open. This was a left PRA in the early learning curve because of difficulty in finding the correct plane of dissection. Two patients had subcutaneous emphysema which was treated conservatively, and one patient had pneumothorax requiring chest tube insertion.

*Conclusion:* PRA is safe and is the preferred surgical approach for benign adrenal tumours at our institution with no difference in operating time between the right and left adrenal.

### THE VALUE OF GC-MS STEROID PROFILING IN DIAGNOSTICS OF ADRENOCORTICAL CANCER

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*Introduction.* Adrenocortical carcinoma (ACC) is an aggressive malignant tumor. Early and precise diagnosis and timely surgery significantly improve the prognosis and survival of patients with adrenocortical carcinoma.

*Materials and methods.* 28 patients with hormone-inactive adrenal tumors were included in the study: 17 – with adrenocortical adenomas and 11 – with ACC. 18 women and 10 men aged 24–57 years ( $38.2 \pm 9.6$ ). Adrenalectomy was performed in 26 patients, in 2 cases – intraoperation biopsy without surgical treatment (due to the widespread tumor process). Histology was evaluated according to the criteria of Weiss (2001), an immunohistochemical study was performed in all cases. The level of steroids in daily urine was assessed by gas chromatography-mass spectrometry (GC-MS) on a Shimadzu 2060 mass spectrometer prior to surgical treatment.

*Results.* According to the analysis, an increase in the levels of tetrahydro-11-deoxycortisol, dehydroepiandrosterone, pregnen-3 $\beta$ ,16 $\alpha$ ,20 $\alpha$ -triol, pregnen-3 $\alpha$ ,16 $\alpha$ ,20 $\alpha$ -triol, pregnanediol (P2), pregnantriol (P3) and pregnetriol (DR3) was revealed, as well as a change in the P2/P3 ratio, typical for ACC in postmenopausal women and men. In women of reproductive age, an increase in P2 and P3 may be due to the phase of the menstrual cycle, and therefore, in this category of patients, the assessment of these indicators is impractical. The sensitivity of the method for the cumulative assessment of steroidogenesis patterns in the study group was 54.5%, specificity was 70.6%.

*Conclusions.* In the studied cohort, the sensitivity of determining the steroid profile of urine by GC-MS turned out to be low. Thus, this method can't be a reliable criterion for preoperative diagnostic of ACC. Nevertheless, the method requires additional research in a larger cohort.

### DIAGNOSTIC CHALLENGES AND LITERATURE REVIEW: RECURRENT ADRENAL ADENOMA ON THE SAME SIDE

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*We present a compelling case of recurrent Cushing's syndrome in a 33-year-old woman, initially treated for a left adrenal cortical tumor, highlighting the diagnostic and therapeutic challenges faced in endocrine surgery. Initially diagnosed with Cushing's syndrome due to a left adrenal cortical tumor, the patient underwent a successful surgical excision of the tumor along with the surrounding adrenal gland. However, four years post-surgery, she experienced recurrent symptoms of Cushing's syndrome. Subsequent imaging six years after the initial operation revealed a new adrenal tumor. Interestingly, fourteen years after the first surgery, another left adrenal tumor was identified and removed, presumed to have arisen in ectopic adrenal tissue, leading to symptom relief. This case underscores the complexity of diagnosing and managing recurrent Cushing's syndrome, particularly when considering the possibility of ectopic adrenal tissue. The recurrence of symptoms several years after the initial surgery posed significant diagnostic challenges. The emergence of a new tumor on the same side as the previously removed gland suggested the presence of ectopic adrenal tissue, a rare but significant phenomenon in endocrine pathology. The clinical course of this patient raises critical questions about the origin and behavior of adrenocortical tumors. The possibility of tumor fragmentation or the presence of a tumor in ectopic adrenal tissue brings to light the need for thorough surgical techniques and careful long-term follow-up in similar cases. This seminar reviews the site and functional capacity of ectopic adrenal tissues, providing valuable insights into the management of complex cases of Cushing's syndrome. The findings emphasize the importance of considering ectopic adrenal tissue in recurrent cases, thereby guiding surgeons in achieving more effective and lasting surgical outcomes.*

**A COMPARATIVE ANALYSIS OF NURSE PRACTITIONER-ASSISTED VS. PHYSICIAN-ASSISTED PERIOPERATIVE OUTCOMES IN THYROIDECTOMIES AND PARATHYROIDECTOMIES AT A LEADING JAPANESE ENDOCRINOLOGY DEPARTMENT.**

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**Introduction**

A nurse practitioner is a nurse who has received advanced clinical education and training and shares many of the same duties as doctors. However, in Japan, the approved scope of treatment a nurse practitioner can provide is unclear, as there is no national certification or legal assurance, unlike in countries such as the United States. To establish the position of nurse practitioners in Japan going forward, nurse practitioners must demonstrate the same results as medical doctors in various medical procedures. We evaluated the perioperative outcomes of thyroidectomies and parathyroidectomies, in which a nurse practitioner intervened as an assistant in our institution.

**Materials & Methods**

In total, 89 thyroidectomies and parathyroidectomies were performed in our endocrinology department between September 1 and December 31, 2023. These were classified into group A (63 cases) and B (26 cases). Group A, in which no nurse practitioners participated as surgical assistants, and group B, in which the author participated as a nurse practitioner, were compared. Perioperative data of the groups were studied retrospectively.

**Results**

There were no significant differences in patient demographics (age, sex, body mass index, American Society of Anesthesiologists physical status classification system, organs, operative method) between the groups. Operating time (minutes) (A, 152.8±64.9; B, 176.9±93.1;  $p=0.235$ ), intraoperative blood loss (milliliters) (A, 45.6±49.8; B, 104.2±198.6;  $p=0.150$ ), and length of hospital stay (days) (A, 7.68±4.76; B, 6.96±1.45;  $p=0.281$ ) showed no significant differences. Regarding postoperative complications, there were three cases (A, 2; B, 1) of reoperation necessitated by postoperative bleeding.

**Conclusion**

When a Japanese nurse practitioner participated as a surgical assistant in neck operations in an endocrinology department, there were no significant differences between the surgical time, intraoperative blood loss, and length of hospital stay compared with doctors' outcomes.

### CORRELATION OF ULTRASOUND NECK (TIRADS 3&4) AND ULTRASOUND GUIDED FNAC WITH THE FINAL HISTOPATHOLOGICAL REPORT IN THYROID MALIGNANCIES

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#### ABSTRACT

##### BACKGROUND: -

Thyroid malignancies are the commonest endocrine malignancies. With increased use of thyroid USG, thyroid nodules are found in greater than 50% of the population. Surgery is an effective treatment for most of the thyroid cancers. So in this context if we have an effective tool from radiological and pathological department in the form of TIRADS and Bethesda classification correctly guiding us to the actual malignancies, most of the malignancies can be easily cured.

##### OBJECTIVES: -

###### Primary: -

1. To find out the sensitivity and specificity of TIRADS {3 &4} with final histopathology report.
2. To find out the sensitivity and specificity of USG guided FNAC with final histopathology report.
3. To find out the degree of agreement between TIRADS and BETHESDA classification

###### Secondary: -

1. To find the proportion of different types of thyroid malignancies in my loco-regional area.

##### MATERIALS AND METHODS: -

A hospital based diagnostic test evaluation study involving 111 patients was conducted in the Endocrine Surgery Department of Madras Medical College during May 2022-January 2024. We obtained the TIRADS score of the patient with USG thyroid and Bethesda score by USG guided FNAC and compared with the final histopathological reports to assess the percentage accuracy of these systems and their degree of agreement.

##### RESULTS: -

After evaluating the results of 111 people, we have arrived at a finding that there is high degree of correlation between TIRADS and final HPE reports. TIRADS has a high sensitivity 84.3%, a high predictive value 85.71%, low false negative rate 15.6% and a low false positive rate 62.03%. Hence it's a good good "RULE OUT" test. It was also found that FNAC was a good test for ruling out malignancy as evident by good sensitivity of 71.8%, specificity of 73.4%, and negative predictive value of 86.57%, in addition it had a low false positive and false negative rate at 26.5% and 28.135 respectively. But the overall percentage of agreement between both the systems were poor (45.9%) only.

##### CONCLUSION: -

Thyroid malignancies carries a better prognosis than most other endocrine tumours. Hence if timely medical attention is provided with clinical skills and USG and FNAC, most of the patients can be benefitted. Our study revealed that the diagnostic accuracy of TIRADS and BETHESDA is 51.35% and 72.97% respectively. With the advancement in ultrasound imaging, increasing thyroid nodules are found. Hence, ruling out malignancy is important for avoidance of unnecessary invasive tests. Initial screening of patients through TIRADS will help rule out malignancy and FNAC can be performed only among those patients whose reports are suggestive of malignancy in TIRADS. This in turn will reduce the burden on health care and invasive investigations of the patients.



### ATYPICAL PRESENTATIONS OF TUBERCULOSIS IN ENDOCRINE SURGERY

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*Tuberculosis infection caused by Mycobacterium Tuberculosis is one of the commonest infection dealt by most of the treating physicians, endocrine surgeons too are not left behind. Tuberculosis can affect thyroid, parathyroid, adrenal glands, pituitary glands as well as breast tissues. As these are very rare in their presentation it can pose a challenge to the treating physicians in proper diagnosis and delivery of treatment. The aim of this poster is to present a few atypical presentations of tuberculosis in the form of TB mimicking anaplastic carcinoma, acute abscess of thyroid gland, TB of the adrenal gland and tuberculosis involving breast tissues.*

*Case 1:-Tuberculosis of thyroid mimicking anaplastic carcinoma thyroid*

*Case 2:- Tuberculosis thyroid abscess*

*Case 3:- Tuberculosis of adrenal gland*

*Case 4:- Tuberculosis of breast mimicking carcinoma breast*

*Results :*

*All four cases were successfully treated with ATT. First case had complete resolution of neck mass and reversal of right VC palsy. Second patient had complete symptomatic cure and well as resolution of the abscess. Third patient had resolution of fever spikes, abdominal pain and lower limb weakness gradually. Finally fourth patient had a 75% reduction in size of lump after 4 months of ATT on follow up.*

*Conclusions :*

*TB can involve almost all endocrine glands as a primary disease causing destruction and loss of function. The treating doctors should have a degree of suspicion while dealing with atypical presentation of endocrine lesions. Fortunately most abnormalities if diagnosed early and started on treatment has a good prognosis and most patients attain complete cure.*

**PRESERVATION OF ENDOCRINE FUNCTION AFTER CENTRAL PANCREATECTOMY WITHOUT ANASTOMOSES FOR A MID GLAND PANCREATIC INSULINOMA: A CASE REPORT (DR. KARTHIKEYAN M, DR. PAUL MJ)**

KARTHIKEYAN M<sup>1</sup>; PAUL MJ<sup>2</sup>

<sup>1</sup>CMC VELLORE

<sup>2</sup>CMC VELLORE

*A 50/F patient with a mid-gland pancreatic insulinoma who underwent a central pancreatectomy (CP) without anastomoses. This approach in preserving endocrine function while effectively treating benign and low-grade malignant lesions of the pancreas.*

*Background and Introduction:*

*Traditional resections for mid-pancreatic lesions often lead to significant loss of normal parenchyma and potential pancreatic endocrine and exocrine insufficiency.*

*Central pancreatectomy (CP) is a parenchyma-sparing surgical option for lesions in the neck and proximal body of the pancreas, preserving distal pancreas, endocrine functions, and spleen.*

*Case Report:*

*A 50-year-old patient presented with recurrent hypoglycemic symptoms, transient neurological episodes, and weight gain.*

*Imaging revealed a well-defined neuroendocrine tumor in the mid-body of the pancreas.*

*Surgical intervention involved a bilateral subcostal incision, visualizing and dissecting the pancreas, identifying the lesion, and performing a central pancreatectomy.*

*The histopathology confirmed a well-differentiated neuroendocrine tumor (grade 1) without lymphovascular invasion.*

*Post-operative Period:*

*The patient's blood sugar levels returned to normal post-surgery.*

*2-year followup showed normal endocrine pancreatic function.*

*The patient recovered gradually, with the drain removed over subsequent weeks.*

*Literature Review of Post-operative Results:*

*A literature review summarizing outcomes and complications from various types of pancreatic anastomoses, highlighting varying fistula rates and complications associated with different surgical approaches.*

*Studies indicated the incidence of pancreatic fistulas and complications following different pancreatic anastomoses in surgeries involving the pancreas.*

*Discussion and Conclusion:*

*Central pancreatectomy (CP) is an effective approach for preserving pancreatic function, especially for lesions smaller than 2cm in the body of the pancreas.*

*Omitting a pancreatico-enteric anastomosis during CP might reduce complications like pancreatic fistulas and preserve exocrine function.*

*CP without anastomosis reduces morbidity and hospital stay compared to CP with anastomosis, showing efficacy in treating smaller lesions without long hospital stay*

**UTILITY OF PARATHYROID AUTOFLUORESCENCE IN DIFFERENTIATING PARATHYROID PATHOLOGY**

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**Introduction**

Near-infrared fluorescence (NIF) spectroscopy is an emerging adjunct for intraoperative parathyroid gland identification. However, its ability to differentiate between normal, hyperplastic, or adenomatous parathyroids remains unexplored. We hypothesize that parathyroid adenomas have lower NIF ratios (NIFRs) than normocellular parathyroids since the likely fluorophore is the calcium-sensing receptor (CaSR), which is downregulated in adenomas.

**Methods**

In vivo baseline and highest NIFRs for each identified parathyroid gland were recorded for patients undergoing thyroidectomy or parathyroidectomy from 08/2023-12/2023 at a single institution. Parathyroids were categorized as normocellular by visual inspection and hyperplastic or adenomatous by final histology.

**Results**

Of the 44 patients included (66% underwent parathyroidectomy and 34% underwent thyroidectomy), 137 parathyroids were identified intraoperatively with 66 resected and analyzed histologically. 71 (52%) parathyroids were normocellular, 45 (33%) were hyperplastic, and 21 (15%) were adenomatous. Among the resected parathyroids, there was moderate agreement (81%) between visual categorization and final histology for hyperplasia versus adenoma ( $\kappa=0.6$ ). Parathyroid adenomas had lower mean NIFR than normocellular (5.18 vs 8.13,  $p=0.002$ ) or hyperplastic (5.18 vs 8.81,  $p=0.008$ ) parathyroids. Mean NIFRs were not significantly different between normocellular and hyperplastic parathyroids ( $p=0.57$ ). Hyperplastic parathyroids had higher NIFR variance ( $\sigma^2=54.60$ ) than normocellular ( $\sigma^2=14.12$ ) or adenomatous ( $\sigma^2=11.57$ ) parathyroids.

**Conclusion**

Parathyroid adenomas tend to have lower NIFRs than hyperplastic or normocellular parathyroids. This is potentially due to CaSR downregulation in adenomas. The higher variance in NIFRs for hyperplastic parathyroids also supports this hypothesis as CaSR expression varies along the spectrum of hyperplasia, but further studies are needed to confirm the CaSR as the fluorophore. The differences in NIFRs are unlikely to be sufficient to distinguish between various parathyroid pathologies and may be more useful to detect normal parathyroid glands.

**SUBCUTANEOUS FOREARM INJECTION OF PARATHYROID TISSUE AFTER TOTAL PARATHYROIDECTOMY FOR SECONDARY HYPERPARATHYROIDISM**

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*Background:* Secondary hyperparathyroidism (SHPT) is prevalent in end-stage renal disease (ESRD) patients, and when medical management fails, operative intervention becomes necessary, with approximately 5–15% of these patients eventually requiring parathyroidectomy. Total parathyroidectomy with autotransplantation (AT) effectively reduces parathyroid hormone while preserving essential parathyroid tissue. Various surgical approaches and site selections for parathyroid AT exist. This study aims to report outcomes and analyze the effectiveness of injecting parathyroid tissue into the subcutaneous forearm area following total parathyroidectomy in refractory SHPT patients.

*Patients and Methods:* The prospective cross-sectional study included SHPT patients undergoing total parathyroidectomy with subcutaneous forearm injection between June 2018 and May 2023. Surgical techniques, postoperative management, and follow-up were detailed. Statistical analysis was conducted to assess patient characteristics and outcomes.

*Results:* The study comprised 247 patients (mean age:  $41.05 \pm 9.41$  years). Serum intact parathyroid hormone levels were monitored postoperatively. At 6 weeks, 45.2% had functional autotransplanted tissue, increasing to 52.4% at 10 weeks. PTH changes over time were significant, with a median PTH of 45 pg/ml at 10 weeks. Four patients with recurrence underwent autograftectomy successfully during follow-up. Comparisons were made to our database of intramuscular implantation techniques. There was no significant difference in clinical and biochemical characteristics. Kaplan–Meier plots showed no significant difference in the time to normalization and recurrence of i-PTH levels between the groups.

*Conclusion:* Subcutaneous injection of parathyroid tissue into the forearm following total parathyroidectomy for SHPT is a feasible and effective method. This technique offers simplicity, safety, and efficacy, allowing for easy control of graft function and potential autograft removal in case of recurrence.

**OUTPATIENT PARATHYROIDECTOMY: RISK FACTORS AND CHANGES IN ONE CENTER'S 21-YEAR EXPERIENCE**

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*Introduction: There has been a shift in recent years towards outpatient parathyroidectomies due to the decrease in mutual costs with few significant differences in postoperative morbidity or mortality. We sought to determine if preoperative patient risk factors were associated with a patient's likelihood of having a length of stay (LOS) <24 hours (h), or outpatient surgery, compared to LOS ≥24h, or inpatient surgery.*

*Materials and Methods: A prospective database of parathyroid operations from 2001-2022 (n=2948 patients) were reviewed. Patients were categorized as LOS <24h (outpatient) or LOS >24h (inpatient), risk factors for LOS were examined, and differences across practice patterns during the 21-year period were studied.*

*Results: Patients with LOS <24h were more likely to be Black and have history of alcohol use. Patients with LOS >24h were more likely to be White and use anticoagulation or antiplatelets. These findings persisted in multivariable analysis. Compared to 2001-2003, each period from 2004-2022 had a significantly increased proportion of patients whose LOS <24h. Compared to 2010-2012, there was a similar proportion of patients with LOS <24h from 2013-2015 and 2016-2018 although there was an increased proportion from 2019-2022.*

*Conclusion: Outpatient parathyroidectomies have been shown to be safe and has become the typical practice for high-volume parathyroid surgeons over the last decade. Complications such as postoperative hematoma or hypocalcemia were previously shown to be incompletely mitigated by increased LOS or inpatient surgery, although patient-level risk factors clinically and socially should be considered.*

### CAUGHT IN A HOLDING PATTERN: A NATIONWIDE DECISION ANALYSIS STUDY FOR PRIMARY HYPERPARATHYROIDISM

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#### Introduction

Primary hyperparathyroidism (PHPT) often presents asymptotically but poses significant risks to multiple organs. Surgical resection remains the primary treatment. However, the pathway to surgeon referral can be long and complex. This study examines the determinants in healthcare providers' referral decisions for PHPT surgery, aiming to enhance patient care management.

#### Materials & Methods

A web-based conjoint analysis survey was sent to 98 medical and surgical providers, including endocrinologists, general practitioners, endocrine surgeons, and otolaryngologists, across U.S. academic and community hospitals. Respondents evaluated patient scenarios involving classic PHPT or normohormonal PHPT with or without comorbidities (age < or >50 years, cardiac comorbidities, osteoporosis) and selected their preferred management approach including observation, medical (cinacalcet), imaging, or surgery. Data were analyzed using multinomial logistic regression, with observation as the reference choice, while independently adjusting for each patient or provider factor.

#### Results

The survey had a 66.3% response rate, comprising 36.9% surgical and 63.1% medical providers, with 84.6% affiliated with academic institutions. Significant factors preferring imaging to observation included younger patient age (OR=3.7), classic PHPT (OR=6.4), or had osteoporosis (OR=3.2) (all  $p<0.05$ ). Factors influencing respondents selecting medical management over observation included having a diagnosis of classic PHPT (OR=7.2), or osteoporosis (OR=3.2) (all  $p<0.05$ ). However, absence of cardiac issues influenced respondents to favor observation over medication (OR=0.4,  $p<0.05$ ). Evaluation by surgical provider (OR=13.0), younger patient (OR=7.5), diagnosis of classic PHPT (OR=11.8), or osteoporosis (OR=3.9) (all  $p<0.05$ ) predicted higher likelihood of respondents selecting surgical referral over observation. Gender, experience, and practice setting didn't affect choosing non-observation strategies.

#### Conclusion

These results indicate that certain patient characteristics, such as age, disease severity (classic versus normohormonal), and diagnosis of osteoporosis influence healthcare providers' decisions regarding PHPT management strategies. Understanding these determinants can enhance patient outcomes and facilitate informed decision-making, leading to improved care for individuals with PHPT.

**PREOPERATIVE CALCIMIMETIC ADMINISTRATION PREVENTS SERUM CREATININE ELEVATION AFTER PARATHYROIDECTOMY IN KIDNEY TRANSPLANT RECIPIENTS**

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*Background:* Hyperparathyroidism (HPT) often persist even after successful kidney transplantation (KTx). Although parathyroidectomy (PTx) is an effective treatment option for post-KTx HPT, which has been reported to be associated with postoperative elevation of serum creatinine. We hypothesized that pre-PTx calcimimetic administration could alleviate the post-PTx increase in serum creatinine, and conducted a retrospective study.

*Methods:* This retrospective cohort study enrolled KTx patients who underwent initial PTx between 2004 and 2023. Patient background, and laboratory data were investigated. Estimated glomerular filtration rate (eGFR) was calculated from serum creatinine values. The primary outcome was the change in eGFR 1 week after PTx. The cohort was divided into two groups based on the post-PTx eGFR change; a decrease in eGFR of 20% or more 1 week after PTx was defined as eGFR reduction. Multivariate linear regression analysis for percent eGFR 1 week after PTx was performed.

*Results:* Out of the 77 KTx patients, eGFR reduction was observed in 24 (decreased eGFR group), while eGFR was maintained in the others (stable eGFR group) after PTx. Compared to the stable eGFR group, the decreased eGFR group had a significantly lower rate of pre-PTx calcimimetics administration (12.5 vs. 47.2%,  $P = .004$ ), and a significantly greater post-PTx change in intact parathyroid hormone (256.5 vs. 153.0 pg/mL,  $P = .001$ ). Multivariate linear regression analysis showed a positive association between pre-PTx calcimimetic administration and percent eGFR (regression coefficient estimate, 11.0; 95% confidence interval, 5.0–17.0;  $P < 0.001$ ) 1 week after PTx.

*Conclusions:* Pre-PTx calcimimetics may prevent post-PTx elevation of serum creatinine in KTx patients.

### **INTRAOPERATIVE PARATHYROID HORMONE MONITORING DURING PARATHYROIDECTOMY FOR RENAL HYPERPARATHYROIDISM: COMPARISON OF VARIOUS CRITERIA**

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#### **Introduction**

Intraoperative parathyroid hormone monitoring (IPM) provides real-time assessment of parathyroid function. The result of focused exploration guided by IPM has been excellent for primary hyperparathyroidism. The role of IPM during surgery for renal hyperparathyroidism, which involves removing all affected parathyroid tissue, is not established. This study aims to identify the optimal criteria for IPM to determine the success of parathyroidectomy for renal hyperparathyroidism.

#### **Materials & Methods**

This is a prospective observational study. We enroll dialysis patients who require parathyroidectomy (PTX) into the inclusion criteria, as well as the patients who need redo-PTX. The surgery is total PTX with forearm autotransplantation. The timing we collect PTH level includes before surgery, incision, post-excision 0, 10, 15 minutes and postoperative day 1. The assay we chose is Liaison 1-84 PTH, the 3rd generation assay. Postoperative PTH level > 300ng/ml at any measurement between day 1 to day 30 is regarded as a failure. The IPM Criteria being assessed includes >50% drop from incision to 10-minutes post-excision, >90% drop from incision to 10-minutes post-excision, and >90% drop from incision to 15-minutes after excision.

#### **Results**

From September, 2022 to February, 2023, we enrolled 16 patients including 15 who underwent total PTX, and 1 underwent redo-PTX. 13 of whom revealed successful removal of all affected glands which the four removed glands were confirmed by pathology. And 3 cases declared failed removal of all affected glands. The sensitivity, specificity and accuracy of the criteria >90% drop from incision to 15 minutes after excision are all 100%, but not the other two.

#### **Conclusion**

The preliminary data shows a >90% ioPTH drop from incision to 15 minutes after excision of all affected glands could predict successful total parathyroidectomy in patients with renal hyperparathyroidism, which may help identify supernumerary hyperfunctioning parathyroid tissue and ectopic glands during the surgery.



**BALANCING THE SCALES: PARATHYROIDECTOMY IS SAFE AND EFFECTIVE IN CLASS IV AND V MORBID OBESITY**

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**Background**

Parathyroidectomy is the gold standard for primary hyperparathyroidism (pHPT) and successful parathyroidectomy is vital to kidney, bone, and cardiac health. The risks of surgery in general are significantly higher in patients with class IV/V obesity, although its impact in parathyroid surgery is unknown. In this study we investigated outcomes of patients with class IV (BMI >50) and V (BMI>60) morbid obesity and primary hyperparathyroidism (pHPT) undergoing parathyroidectomy.

**Methods**

All patients with pHPT and a BMI 50kg/m<sup>2</sup> or higher who underwent parathyroidectomy between January 2012 and March 2022 were included. BMI and other demographics, perioperative lab values and complications were measured. Eucalcemia was defined as a serum calcium level within the reference range (8.5 – 10.2 mg/dl) at 6 months or greater following parathyroidectomy.

**Results**

67 patients were identified to have class IV/V morbid obesity with mean BMI 57 ± 0.7 kg/m<sup>2</sup> (50-81kg/m<sup>2</sup>). The mean age was 56 ± 1 years and 82% (55/67) were female. Mean pre-operative iPTH was 148 ± 2pg/ml and Ca was 10 ± 0.2mg/dl. 61 patients (91%) had a greater than 50% decline in intraoperative iPTH. By 6 months post-operatively, 47 patients achieved eucalcemia (85%). 8 patients met criteria for potential persistent HPT (15%, n=55). 6-month data is still pending for 12 patients. 5 patients had postoperative complications: 2 patients had transient nerve injury or hoarseness, 1 patient had a wound complication, and 2 patients developed permanent hypocalcemia. Importantly, there were no readmission events or incidence of permanent nerve injury in either group.

**Conclusion**

In this study, patients with BMI ≥ 50kg/m<sup>2</sup> achieved curative parathyroidectomy with minimal complications. Large patient body habitus may require technical and ergonomic adaptations; however, parathyroidectomy can be safely performed for patients with class IV and V morbid obesity and hyperparathyroidism.

## PREOPERATIVE LOCALIZATION OF PARATHYROID DISEASE WITH 18F-CHOLINE PET IN COMBINATION WITH SECOND LOOK ULTRASOUND

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*Fluor-18 choline PET is the best imaging modality to localize parathyroid adenomas in patients with hyperparathyroidism (Lee et al. 2021). Low accessibility and high cost of the method have prevented implementation in many clinics, and scintigraphy with 99mTc-sestamibi in combination with ultrasound (US) is still common routine even though the sensitivity is modest.*

### **Material & Methods:**

*We retrospectively reviewed all patients with hyperparathyroidism that had a 18F-choline PET in our clinic in the period 2019-2022. The indication for PET was negative 99mTc-sestamibi scintigraphy or previous parathyroid surgery (redo surgery). A second look US was performed by an experienced radiologist on the same day as the PET, and preliminary findings from both modalities were available for the radiologist and nuclear physician. Successful treatment was defined as normalization of calcium levels in combination with parathyroid specimen on histology.*

### **Results:**

*Sixty-one patients were included, of which 47 had been operated at the time of analysis. Six were still waiting for surgery and eight were not operated due to co-morbidity, death, or mild disease. PET was positive in 57/61 patients, UL in 48/55 patients, and 99mTc-sestamibi scintigraphy in 16/51 patients. Forty-four of the 47 patients were biochemically cured after surgery, while three patients had a parathyroid adenoma excised without full normalization of calcium levels. Thirty-four patients had a single parathyroid gland removed, 13 had two or more glands removed. Of the four patients with negative 18F-choline PET, two had a US finding that matched later intraoperative finding of a parathyroid adenoma, and two patients are waiting for surgery.*

### **Conclusion:**

*18F-choline PET in combination with second look US successfully localizes parathyroid disease in almost all hyperparathyroidism patients where initial localization attempts have been negative and in patients that need redo surgery.*

**PATIENTS WITH PRIMARY HYPERPARATHYROIDISM WHO REQUIRED THREE OR MORE PARATHYROIDECTOMIES: COULD THIS BE PREVENTED?**

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**Introduction**

Parathyroidectomy is the definitive treatment for primary hyperparathyroidism. While most patients undergo a single parathyroidectomy with successful outcomes, a subset of individuals face challenges of persistent hyperparathyroidism, necessitating three or more operations. To determine if any of these re-operations could have been preventable, we analyzed our experience.

**Materials & Methods**

We performed a multi-institution retrospective analysis of patients with primary hyperparathyroidism who underwent three or more parathyroidectomies between 2002 and 2022. Patients were grouped into preventable or non-preventable cases. Preventable cases were defined as judgment or strategy errors by the surgeon that led to the need for more surgery, and unpreventable cases were defined as operations required due to natural disease progression.

**Results**

We analyzed 51 patients who underwent three or more parathyroidectomies, of which 36 (71%) cases were preventable and 15 (29%) were non-preventable. Thirty-seven (72%) were female, with a mean age of 57±13. Of the patients who had a preventable case, 26 (72%) were due to unrecognized hyperplasia, where three glands were removed at three operations, 7 (19%) were due to an unrecognized double adenoma, and 3 (9%) were due to a missed single adenoma twice. Non-preventable cases were due to recurrent hyperplasia after a subtotal/total parathyroidectomy (94%) and recurrent cancer (6%). The median time between the first and second operations was 609 days for the preventable group and 252 days for the non-preventable group ( $p=.386$ ). The median time between the second and third operations was 1034 days for the preventable group and 966 days for the non-preventable group ( $p=.641$ ).

**Conclusion**

A significant majority (71%) of patients requiring three or more parathyroidectomies could have avoided re-operation. Recognizing the underlying factors of these preventable cases will hopefully reduce the need for these repeat operations.

**PATIENT BENEFITS OF PARATHYROID ADENOMA LOCALISATION WITH 4DCT AFTER NON-CONCORDANT ULTRASOUND AND SESTAMIBI IMAGING**

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**BACKGROUND AND AIMS**

Parathyroid adenoma is the most common surgically curable cause of primary hyperparathyroidism (pHPT). Traditional preoperative localisation of parathyroid adenoma with ultrasound (US) or sestamibi (Mibi) imaging are inconclusive in up to 40%. This study aims to investigate the accuracy of preoperative localisation and postoperative outcomes of four-dimensional computer tomography (4DCT) in patients with discordant initial imaging.

**METHODS**

Patients with discordant US and Mibi findings, who had undergone surgery for pHPT, were retrospectively recruited from the Monash University Endocrine Surgery Database into "4DCT" or "non-4DCT" groups. Demographic, surgical and biochemical data was extracted from the database, with additional data manually collected from imaging reports and electronic medical records. We compared disease aetiology, biochemistry, preoperative localisation accuracy, duration of surgery, surgical technique, histopathology, and postoperative outcomes.

**RESULTS**

From 2012 to 2023, 370 patients with pHPT and discordant initial imaging underwent parathyroidectomy. Despite similar baseline biochemistry, the 4DCT group (n=99) had more re-operative patients (8.1% vs 2.2%, p=0.021) compared to the non-4DCT group (n=271). The positive predictive value of 4DCT for localisation was 89.4%. Although patients from the 4DCT group had a longer duration of surgery (106min vs 85min, p=0.017), they were more likely to have smaller parathyroid adenomas (median 0.39g vs 0.5g, p=0.04). Postoperatively, the rate of disease persistence or recurrence was higher in the non-4DCT group (11.6% vs 4.1%, p=0.032).

**CONCLUSION**

4DCT can benefit patients who require further surgery for persistent or recurrent disease and is associated with improved postoperative outcomes, especially when parathyroid adenomas are small. 4DCT should be considered for patients needing re-operation, or when they present with discordant US and Mibi findings.

**TOO MUCH OR TOO LITTLE: OUTCOMES AFTER SUBTOTAL PARATHYROIDECTOMY FOR PRIMARY HYPERPARATHYROIDISM**

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**Introduction:**

In primary hyperparathyroidism (PHP) due to 4-gland hyperplasia, subtotal parathyroidectomy (sPTX) is often the surgical management. However, limited data exist on risk factors for hypoparathyroidism and operative failure.

**Methods:**

Retrospective review of a prospective database (1997-2022) was performed to identify PHP patients with  $\geq 6$  months follow-up who had 4-gland hyperplasia at initial exploration using intraoperative PTH monitoring (IOPTH, normal 15-65 pg/mL) with the Dual Criteria. sPTX was defined as resection of  $>3$  parathyroid glands with preservation of a 30-50 mg in-situ remnant. Postoperative outcomes included permanent hypoparathyroidism (LowPTH, defined as hypocalcemia and inadequate PTH levels  $>6$  months), persistent/recurrent hyperparathyroidism (PRHPT; hypercalcemia with elevated PTH either immediately and/or  $>6$  mos postoperatively), and biochemical cure (normocalcemia  $>6$  mos).

**Results:**

Of 6076 patients with PHP, 193 (3%) had sPTX (all had  $\geq 6$  months follow-up). LowPTH occurred in 4 patients (2%), 14 (7%) had PRPTH, and 175 (91%) were cured. MEN1 was present in 1 patient with LowPTH (25%), 6 with PRHPT (42.9%), and 22 with cure (12.6%),  $p=0.01$ . There were no differences in median age, sex distribution, preoperative median calcium, median PTH, or median 24-hour urinary calcium ( $p>0.05$ ). Final post-excision IOPTH levels were stratified into  $\leq 40$  pg/mL and  $>40$ ; 75% with LowPTH had PTH  $\leq 40$ , while 58.3% with PRHPT had levels  $>40$ ,  $p=0.02$ . When excluding patients with MEN1, no preoperative variables were associated with PRHPT, however a post-excision PTH  $>40$  continued to be associated with recurrence ( $p<0.0001$ ).

**Conclusions:**

When sPTX is employed in 4-gland hyperplasia, rates of hypoparathyroidism are low (2%). Persistence/recurrence occurred in 7%, were expectedly higher in MEN1 patients, and were associated with a post-excision IOPTH  $>40$  pg/mL.

**CAN WE DO AWAY WITH INTRAOPERATIVE PARATHYROID HORMONE FOR PRIMARY HYPERPARATHYROIDISM PATIENTS WITH CONCORDANT PRE-OPERATIVE IMAGING?**

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*Background:* Parathyroidectomy with intraoperative parathyroid hormone (IoPTH) assay is often used to confirm operative success for parathyroidectomy. This allows for focused parathyroidectomy with high clinical success rates, but it also results in longer operative duration as well as high false negative rates.

*Aim and Objectives:* This is a retrospective study of operative cases of PHPT performed in our institution. The aim is to determine the turnover time and evaluate the feasibility of omitting routine IoPTH in selected cases of focused parathyroidectomy.

*Methods:* All patients from NTFGH who underwent parathyroidectomy for PHPT from August 2015 (Hospital opening) to February 2023 were included. All patients had routine IoPTH assessment. Patients were stratified into groups based on concordance of pre-operative imaging.

*Results:* A total of 45 patients were included in this study. 31 (68.9%) of the patients had concordant pre-operative imaging (US + MIBI/4D CT); 12.9% had inadequate IoPTH reduction in this group requiring neck exploration, but only 1 (2.22%) had dual parathyroid adenoma.

The remaining 14 (31.1%) patients had non-concordant imaging, of which 78.6% had adequate IoPTH reduction in this group with 2 cases (14.3%) of dual parathyroid adenoma. Patients with larger parathyroid adenoma ( $p=0.02$ ) and higher PTH levels ( $p=0.008$ ) are more likely to have concordant pre-op imaging. The average additional wait time for IoPTH turnover is 36 minutes.

*Conclusion:*

Despite our limited study population, we believe that is safe and more time effective to omit IoPTH for focused parathyroidectomy performed by experienced endocrine surgeons in cases with concordant pre-op imaging. This is based on having accurate intra-op assessment of the parathyroid adenoma, a low rate of true multiple adenomas and a relatively high false positive of IoPTH. However, IoPTH should still be recommended for patients with non-concordant imaging.

**INDOCYANINE GREEN NEAR-INFRARED FLUORESCENCE NOVEL SCORE PREDICTS POST-THYROIDECTOMY HYPOCALCEMIA**

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*Background: Autofluorescence may be used to identify the parathyroid glands during thyroid surgery and predict its function. This study evaluates a new scoring model that employs near-infrared indocyanine green technology (NiR-ICG) to predict parathyroid function after thyroid surgery. Methods: A comprehensive grading chart has been developed to predict the postoperative function of the parathyroid, taking into account the three modalities of the Stryker NIR system, namely green, black/white, and coloured. A new score for each parathyroid was recorded immediately after the lobectomy was completed, and a total score for all glands was recorded at the moment that the skin was closed. The new-score values were compared with the serum calcium and parathyroid hormone on the first postoperative day. Results: This prospective research included 100 consecutive patients who underwent thyroid surgery at Abu Dhabi's Burjeel Hospital between April 2023 and December 2022. The indications for surgical intervention were multinodular goitre (n = 42), thyroid cancer (n = 43), and Graves' disease (n = 12). The results indicate that a score values vary from 0, which represents not finding a parathyroid gland, to a maximum score of 7, which corresponds to the presence of a gland with the highest brightness. The maximum achievable score for a total thyroidectomy is 28, which is obtained when all four glands are identified with the highest brightness (fig.1&2). Nevertheless, the incidence of postoperative temporary hypothyroidism was found to be 15%, and this was observed to have a significant correlation with a low NiR-ICG-Score. A rapid restoration of parathormone levels within the first postoperative month was observed in 50% of the instances. Conclusion: The newly developed NIR\_ICG Score is capable of predicting the likelihood of postoperative hypoparathyroidism. Additionally, it may serve as a useful tool for assessing the need for parathyroid.*

**IMPACT OF NEAR-INFRARED PARATHYROID FLUORESCENCE (NIRAF) FOR TARGETED PARATHYROIDECTOMY. CHANGING THE PARADIGM FOR THE MANAGEMENT OF PRIMARY HYPERPARATHYROIDISM**

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**Introduction**

Patients presenting primary hyperparathyroidism (pHPT) may benefit from targeted surgical approach. However, after parathyroid adenoma resection, confirmation through frozen section (FS) and/or intraoperative parathyroid hormone (ioPTH) analysis is employed. This may lengthen the overall procedure resulting in increased cost per single surgery. Our study aims to assess the impact of NIRAF use in patients with pHPT, undergoing targeted surgery, to confirm both successful outcome of surgery and decrease operative time.

**Methods**

Eighty-five patients undergoing targeted parathyroidectomy for pHPT with both concordant ultrasound (US) and 99mTc-sestamibi Scintiscan localization between 2021 and 2023 were included in the study. Patients were divided into two groups: NIRAF (AF) or control group (CG). In AF, the autofluorescence pattern of the excised adenoma (heterogeneous compared to normal parathyroid tissue) combined with preoperative ultrasound size concordance was considered to conclude the procedure. In CG, after adenoma removal, ioPTH analysis and frozen section were performed, and the procedure was completed accordingly.

**Results**

Twenty-six patients underwent surgery in CG and 59 in AF, respectively. Median duration of surgery was 58 minutes in CG and 33 minutes in AF ( $p < 0.001$ ). No complications were reported in both groups. The pathological report confirmed the pathological nature of the excised lesions. In 57/59 cases, NIRAF detected the typical heterogeneous pattern, while in 2/59 glands, it was negative (hyperplasia).

**Conclusions**

The use of NIRAF in selected patients with pHPT undergoing targeted surgery with concordant preoperative localization imaging may represent a safe and reliable management to decrease overall cost of surgery, replacing ioPTH and frozen section.



**SINGLE-INCISION ROBOTIC AREOLAR APPROACH THYROIDECTOMY (SIRA): A CASE REPORT**

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**Introduction**

*The anterior cervical approach has been the standard procedure for thyroid surgery for over a century. However, in the past two decades, minimally invasive surgery techniques have advanced using endoscopes and robots, allowing precise surgery to be performed through small incisions.*

*To further improve these techniques, we have performed the world's first single-incision robotic thyroidectomy using the areola approach (SIRA). This revolutionary procedure suggests that single-incision robotic thyroid surgery may be the future of minimally invasive and precise thyroid surgery.*

**Materials and Method**

*There are various methods used in endoscopic and robotic thyroid surgery, including the transaxillary approach (TA), bilateral axillary breast approach (BABA), retroauricular approach (RA), and transoral vestibular approach. Among these, BABA is considered advantageous as it provides optimal visibility of important structures, allowing for complete thyroidectomy similar to open surgery. However, it has a drawback in that it is more invasive, requiring four skin incisions on the axilla and breast instead of just one on the neck.*

*In 2023, Yi et al. presented a new approach called single-port robotic areola-access thyroidectomy (SPRA) to overcome these drawbacks of BABA. Additionally, we developed the first single-incision robotic areola approach thyroidectomy (SIRA).*

**Results**

*In August 2023, a patient with suspected right thyroid cancer underwent a Single Incision Robotic Areolar Approach Thyroidectomy (SIRA) on their right thyroid lobe. Following the surgery, the patient experienced no complications and was discharged. The pathologic report showed that the thyroid cancer had nodular hyperplasias, was 1.1cm in size, and had clear margins. Additionally, no parathyroid tissue was removed and 0 out of 10 lymph nodes were found to have cancer.*

**Conclusion**

*Robotic thyroid surgery using a single port is expected to play a crucial role in the future of endocrine surgery.*

### FROM ROUTINE TO RESCUE: THYROIDECTOMY FOR LIFE-THREATENING THYROTOXICOSIS

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#### Introduction

Typically elective with same-day release, thyroidectomy studies rarely cover severely ill patients. This research aimed to evaluate the clinical trajectory and outcomes of such patients post-inpatient thyroidectomy.

#### Methods

A retrospective review of 1069 patients who underwent thyroidectomy for thyrotoxicosis at a tertiary medical center from February 2011 to March 2023 was conducted. Included were patients necessitating endocrine surgery consultations who received thyroidectomies within the same hospitalization. Analyses focused on patient demographics, comorbidities, hospital progression, and surgical results.

#### Results

Out of 1069, 35 patients qualified for the study. Predominantly female (65.7%) and black (62.9%), their average age was  $41 \pm 13$  years. Most (85.7%) had Graves' disease; 11.4% suffered from amiodarone-induced thyrotoxicosis. Cardiac disease (68.6%) was the most frequent comorbidity, with others including liver (14.3%), kidney (8.6%), and shock (8.6%). Dyspnea was reported by 60%, and neurological symptoms by 20% at admission. TSH was undetectable in 77.1%, and 8.6% were euthyroid before surgery. Surgery was primarily necessitated by life-threatening comorbidities (88.6%) or medical management failure. Heart failure was the most critical complication (45.6%). Median hospitalization lasted 12 days; ICU was needed for 51.4%. Neck hematoma required reoperation in 5.7%, and 14.3% had other surgeries during their stay. Postoperatively, 52.9% of atrial fibrillation patients showed resolution; 33.3% with HFrEF improved in ejection fraction. Emergency department visits within 30 days post-surgery were 17.6%, readmission was 11.8% (all for comorbidities), and mortality was 2.9% due to liver failure.

#### Conclusion

Patients who require an inpatient thyroidectomy often have life-threatening comorbidities, particularly cardiac disease. Performing thyroidectomy in these patients is safe and can potentially create clinical homeostasis for further management of their comorbidities.

### PERMANENT HYPOPARATHYROIDISM FOLLOWING TOTAL THYROIDECTOMY - INCIDENCE AND PREVENTATIVE STRATEGIES

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#### Introduction

Permanent hypoparathyroidism (pHypoPT) is the most common permanent complication of total thyroidectomy, with reported rates of 12.5-14.5% in registry studies. The risk of pHypoPT is significantly associated with surgeon volume and experience. We aim to describe the incidence and predictors of hypoparathyroidism following total thyroidectomy in a consecutive series of patients treated in a high-volume centre and define strategies to reduce the risk of pHypoPT.

#### Materials and Methods

We analysed the clinical and operative data of 740 patients who underwent total thyroidectomy between April 2018 and June 2021 and collected prospective follow-up data. Temporary hypoparathyroidism (tHypoPT) was defined as PTH <0.4pmol/L at 24 hours postoperatively, or clinical or biochemical evidence of hypocalcaemia. pHypoPT was defined as an ongoing need for calcitriol supplementation to maintain normocalcaemia at 12 months post-operatively.

#### Results

tHypoPT occurred in 91 (12%) patients, but only 11 (1.5%) were symptomatic and 4 (0.5%) required IV calcium replacement. The majority (n=57, 63%) of these patients recovered parathyroid function within two weeks. Among the 34 (4.6%) patients with persistent tHypoPT beyond two weeks post-op, parathyroid auto-transplantation (PA) was highly predictive of eventual recovery of parathyroid function (OR=209, p=0.0017), with 28/29 who underwent PA recovering by 3 months post-op, compared with 0/5 patients who did not have PA. pHypoPT occurred in 6 (0.8%) patients, including 2 with partial recovery of PTH levels but an ongoing supplementation requirement. On multivariate analysis, PA independently reduced the risk of pHypoPT (OR=0.021, p<0.001). Demographics, indication for surgery, therapeutic central neck dissection and the presence of parathyroid tissue in the pathological specimen were not predictive of pHypoPT.

#### Conclusion

The risk of permanent hypoparathyroidism after total thyroidectomy is <1% when performed by high-volume surgeons. PA represents an important technique in minimising the risk of pHypoPT and should be considered routinely as part of total thyroidectomy.

**DOES RECURRENT LARYNGEAL NERVE MONITORING EVEN THE PLAYING FIELD?**

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*Background: Recurrent laryngeal nerve (RLN) injury is a complication of thyroidectomy. RLN monitoring (RLNM) potentially mitigates this risk. No studies have assessed the effect of RLNM on reducing complications for junior surgeons. The aim of this study is to determine the effect of RLNM on complications between surgeons of varying experience. Methods: We included pediatric and adult thyroidectomy patients from a single endocrine surgery center between 2015-2023. Patients who had intraoperative RLNM (+RLNM) were compared to those who did not (-RLNM). We analyzed the rate of RLN injury, ED visits, readmissions, and major complications (reintubations, tracheostomy, surgical site infection, pulmonary embolism, stroke, deep vein thrombosis, cardiac arrest, acute renal failure). We used Chi-square test, Fisher's exact test, and Student's t-test to analyze the data. Results: 896 patients were included; 366 patients in the -RLNM group and 530 in the +RLNM group. There was no difference in demographics or pre-operative TSH ( $p=0.09$ ). 96.2% of the -RLNM cases were done by a senior surgeon with >15 years of experience, and 98.9% of the +RLNM were done by four junior surgeons. The rates of ED visits, readmissions, and major complications were <5% in both groups. There were 572 nerves at risk (NAR) in the -RLNM group and 852 NAR in the +RLNM group. The rate of RLN transection in both groups was <1% of the NAR ( $p=0.15$ ). Transient voice hoarseness occurred in 7.3% of the -RLNM NAR and 5.2% of the +RLNM NAR ( $p=0.09$ ). Conclusion: The rates of RLN transection, voice hoarseness, ED visits, readmissions, and major complications did not differ between the two groups. These findings suggest the use of RLNM during thyroidectomy allows junior surgeons to achieve similar outcomes as senior surgeons.*

**AUSTRALIAN MALES AND FEMALES HAVE SIMILAR RATES OF PRESENTATION FOR SYMPTOMATIC AND ADVANCED THYROID CANCER: RETROSPECTIVE ANALYSIS OF THE AUSTRALIAN NEW ZEALAND THYROID CANCER REGISTRY**

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**Introduction**

Thyroid cancer exhibits a higher incidence in females, a phenomenon challenged by Surveillance, Epidemiology, and End Results (SEER) data attributing the difference to overdiagnosis of small incidental cancers. However, SEER lacks symptomatic presentation information. This study employs the Australian & New Zealand Thyroid Cancer Registry (ANZTCR) to explore whether symptomatic presentation varies between sexes.

**Materials & Methods**

A retrospective analysis (2017-2022) utilized ANZTCR data, which prospectively collects information on thyroid cancer diagnosis, treatment, and outcomes. Symptomatic cases were defined as those with compression symptoms, toxic goitre, Graves' disease, or abnormal laryngoscopy, while incidental cases included asymptomatic goitre and surgeries for a thyroid nodule. Chi-square and Mann Whitney-U tests were used in data analysis.

**Results**

Among 1702 patients with differentiated thyroid cancer, 1082 had presentation information, with 398 (37%) symptomatic cases. The median age was 53, with males older than females (57 vs. 51,  $p < 0.001$ ). Sex distribution was similar in symptomatic cases (32% vs. 38%,  $p = 0.060$ ). The sex ratio varied by cancer size, equalizing for cancers over 4cm. More males had later-stage cancers (T3-4) (25% vs. 10%,  $p < 0.001$ ), while more females had low-risk relapse category cancers based on the American Thyroid Association (ATA) stratification (79% vs. 21%,  $p < 0.001$ ).

**Discussion**

Findings suggest higher female thyroid cancer diagnosis rates stem from smaller and earlier stage DTC, supporting increased diagnosis rather than inherent tumour biology. Females undergo more thyroid investigations, reflecting heightened healthcare utilization. However, similar rates of symptomatic detection in both sexes highlight the need for interventions to mitigate overdiagnosis and overtreatment. The retrospective design of this study introduces limitations, including missing data and potential selection bias.

**Conclusion**

Our study reveals similar rates of symptomatic detection within each sex. Understanding the causes of increased female diagnosis is crucial for enhancing thyroid cancer patient care patterns.

**IS IT POSSIBLE TO PREDICT HYPOTHYROIDISM AFTER HEMITHYROIDECTOMY? A NOVEL PREDICTIVE SCORE**

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*Introduction:* Hemi-thyroidectomy (HT) is a known strategy for the surgical treatment of some patients with limited thyroid or parathyroid cancer, to preserve functionality. Our aim was to investigate preoperative factors predicting hypothyroidism in these patients.

*Patients & Methods:* A case control study including 55 patients with hemithyroidectomy were finally included. Clinical and demographic variables were contrasted between patients with/out postoperative hypothyroidism. Previously described factors such as preop age (A), TSH > 2 mUI/L (T), thyroiditis by US (T), and anti-Tg antibodies (A) plus pop remanent volume (V) were evaluated as risk factors by uni-, bi- and multivariate analysis. A p value ≤ 0.05 was considered as statistically significant for a two-tailed hypothesis by means of IBM SPSS v20.

*Results:* 46/55 (83.6%) were female and 9 (16.4%) were males. Median (IIQ) age was 39 (18-77) years. Pop hypothyroidism was present in 15 (27.3%) and not in the remaining 40 (72.7%) patients. This took a median of 6 weeks (5-8) to be biochemically identified. Based on our results, at least 2 out of 5 items were able to predict hypothyroidism (VATTA model). This score was significantly higher in patients with hypothyroidism (20, 10-40 vs 50, 40-75 respectively; p=0.03). However, preop thyroiditis by US was the most important predictive variable for hypothyroidism (OR 6.12, CI95% 1.5–24.3; p=0.01).

*Conclusion:* Only 27.3% of our patients developed hypothyroidism after hemi-thyroidectomy with a median of 6 weeks (5-8). The presence of these 5 factors could guide endocrine surgeons to predict pop hormone replacement. Among these factors preop US thyroiditis displayed a greater OR. However, a prospective validation of this score is still necessary. This point theoretically supports limited surgery (lobectomies) in those patients with low-risk thyroid cancers.

**IS TOTAL THYROIDECTOMY FOR GRAVES' DISEASE DURING HYPERTHYROIDISM A RISK FOR THYROID STORM?**

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*Purpose:* This study aimed to evaluate the risk factors for thyroid storm in Graves' patients with poorly controlled thyroid hormones undergoing total thyroidectomy. The surgical procedure used hemostatic devices and neuromonitoring under intravenous anesthesia.

*Methods:* Thirty-eight patients undergoing total thyroidectomy for Graves' disease were included. Patients with elevated thyroid hormone levels on the day before surgery were classified into a hyperthyroid group (HT group: 17 patients), while others constituted the normal thyroid group (NT group: 21 patients), and risk factors for thyroid storm were compared.

*Results:* No significant differences were observed in age, sex ratio, operative time, blood loss, weight removed, serum thyroglobulin elevation, or postoperative complications between the two groups. Serum free T3 levels at 15 minutes post-thyroidectomy showed a significant decrease in both groups ( $8.21 \pm 4.51$  pg/mL to  $6.19 \pm 3.65$  pg/mL in the HT group, and  $2.78 \pm 0.47$  pg/mL to  $2.44 \pm 0.49$  pg/mL in the NT group), with no cases of elevation in the HT group.

Serum free T4 levels at 15 minutes post-thyroidectomy exhibited no significant difference in the HT group and a slight increase in the NT group. While preoperative cortisol levels were comparable between the groups (HT group:  $6.93 \pm 3.84$  pg/mL, NT group:  $8.32 \pm 2.73$  pg/mL), levels in the HT group were significantly lower than in the NT group at 15 minutes post-extraction (HT group:  $1.96 \pm 0.43$  µg/dL vs NT group:  $3.60 \pm 0.34$  µg/dL,  $p < 0.01$ ), although this difference was not significant the next morning (HT group:  $15.56 \pm 4.40$  µg/dL, NT group:  $11.94 \pm 6.43$  µg/dL).

*Conclusions:* The study found no increased intraoperative elevations in thyroid hormone and cortisol levels, recognized risk factors for thyroid storm, in patients with hyperthyroid Graves' disease. Therefore, total thyroidectomy appears to be a safe procedure in this population.

**DEVELOPMENT AND VALIDATION OF A PREOPERATIVE ULTRASONOGRAPHY-BASED NOMOGRAM TO PREDICT OCCULT CERVICAL LYMPH NODE METASTASIS IN MICROPAPILLARY THYROID CANCER**

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*Introduction* : Ultrasound is currently the most commonly used examination for evaluating thyroid tumors. However, it still has certain limitations in accurately diagnosing cervical lymph node metastasis (CLNM). The objective of this study was to predict occult CLNM of micropapillary thyroid cancer (MPTC) based on preoperative ultrasonographic characteristics of the tumor.

*Materials & Methods*: We retrospectively reviewed clinical data from 802 patients who suspected MPTC identified by preoperative ultrasonography and confirmed by postoperative pathology. None of these patients were reported to have CLNM on preoperative ultrasound, but all underwent prophylactic central lymph node dissection. Among them, a total of 284 patients were found to have occult CLNM. These patients were randomly divided into a training set and a validation set. We collected their basic clinical characteristics and ultrasonographic features and performed multivariate logistic regression analysis to develop an ultrasonographic nomogram. The performance of the nomogram was evaluated using receiver operating characteristic (ROC) curve analysis, decision curve analysis (DCA), and calibration curves on both the training and validation sets.

*RESULT*: The presence of punctate echogenic foci, taller than wider shape, multifocality, comorbid Hashimoto's thyroiditis, and tumor location were found to be significantly associated with occult CLNM in both cohorts ( $p < 0.05$ ). Furthermore, CLNM was more likely to occur when the tumor was located in the upper, lower, or dorsal regions. The developed nomogram demonstrated excellent discrimination and calibration in both the training and validation sets, yielding an area under the curve (AUC) of 76.4% and 81.1%. Decision-curve analysis indicated that this nomogram holds potential for clinical application.

*CONCLUSION*: Therefore, the developed nomogram exhibited excellent performance in preoperatively predicting occult CLNM of MPTC, which can effectively assist clinical decision-making and potentially enhance the long-term prognosis of patients.



## RESEARCH OF PREOPERATIVE LATERAL CERVICAL LYMPH NODE METASTASIS PREDICTION MODELS BASED ON CERVICAL CONTRAST ENHANCED CT RADIOMICS

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### Introduction:

Papillary thyroid carcinoma (PTC) accounts for the largest proportion of thyroid cancers and is prone to early lymph node metastasis. Radiomics technology is widely used in medical image recognition, which greatly improves the detection rate of malignant tumors. The aim of this study was to establish a radiomics model to evaluate lymph node status in patients with PTC before surgery.

### Materials & Methods:

Based on the CT images of PTC patients with lateral cervical lymph node metastasis (LCLNM) in the enrolled patient dataset, the target lymph nodes were delineated and the feature extraction and dimension reduction were carried out. The radiomics model and the clinical fusion model were established according to the final retained radiomics features (RFs). respectively. The area under ROC curves were used to evaluate the predictive power of the model. DCA was used to evaluate the clinical practicability of the models.

### Results:

14 RFs most associated with LCLNM were retained to construct the radiomics prediction model. The AUC of the train set was 0.958. The AUC of the test set = 0.905. After statistical analysis of clinical data, one clinical feature related to LCLNM was obtained, that is, gender. It was fused with 14 RFs to construct the clinical fusion model together. In the clinical fusion model, the AUC of the train set and the test set were 0.969 and 0.914, respectively. Finally, DCA was carried out on the 2 prediction models respectively, and the results showed that both models had good clinical practicability.

### Conclusions:

The radiomics model and clinical fusion model developed in this study based on neck contrast enhanced CT can predict the situation and improve non-invasive prediction and risk assessment of LCLN in patients with PTC before surgery.

### THE USE OF MAGSEED IN THE DETECTION OF RECURRENT LYMPH NODE METASTASIS OF PAPILLARY CANCER- A NOVEL MINOR INVASIVE DETECTION METHOD

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*Introduction:* Papillary thyroid cancer (PTC) has an excellent prognosis. However, it is associated with lymph node metastasis and tumor recurrence that need repeated surgery, hence resulting in fibrosis, tissue adhesion and changes in anatomical structures in the neck. Metastasis surgery in the cervical region entails technical challenges with an increased risk of complications. Tissue detection with Magseed is a feasible and safe technique that has been well-studied in breast cancer surgery. We present a series of patients where Magseed was used to detect lymph node metastasis and local recurrence of PTC.

*Material and Methods:* Magseed is a non-radioactive paramagnetic metal coil used for localising small, non-palpable lesions. The metal coil is injected as a seed into the target tissue under the guidance of ultrasonography.

*Intraoperatively,* the coil is detected with a handheld magnetometer probe, Sentimag®.

*Results:* Five patients with a newly discovered recurrence of PTC were operated with focused Magseed-guided localisation. All patients have had repeated surgery and radioiodine treatments. At the multidisciplinary conference, Magseed guidance was suggested. Four of the patients had lymph node metastasis hidden in the fibrosis and one patient had recurrent tumor tissue on the left side of the larynx. In all five patients, the probe could help identify the cancer tissue with high accuracy and the target lesion was removed and confirmed by histopathology examination. *Conclusion.* In selected PTC cases that have had recurrent disease and previously undergone repeated surgery, the use of Magseed to detect lymph node metastases or local recurrence can be safe, is user-friendly and well-tolerated by patients. To our knowledge, this case report is the first description of Magseed's use in metastatic thyroid cancer surgery. We suggest its use in selected cases with cervical metastases.

## THE EFFECT OF PARATHYROID GLAND REIMPLANTATION DURING THYROIDECTOMY ON POST-THYROIDECTOMY HYPOPARATHYROIDISM

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### Background

Parathyroid gland re-implantation during thyroidectomy has been proposed to be an effective technique to preserve parathyroid function. We conducted this study to assess the effect of parathyroid gland reimplantation during bilateral thyroid surgery on the rates of post-thyroidectomy temporary and permanent hypoparathyroidism.

### Methods

Data from consecutive patients who underwent bilateral thyroid surgery with or without cervical node dissection between January 2017 and June 2022 at a single centre was retrospectively collected following approval from the institutions office of research. Analysis was performed using the SPSS (Statistical Package for the Social Sciences) software (21.0).

### Results

Among the 192 patients recruited, 72 (37.5%) developed post-thyroidectomy hypoparathyroidism. Parathyroid gland re-implantation was performed in 141 (73.4%) patients, among whom, one gland was reimplanted in 69 (35.9%), two glands in 47 (24.5%), three glands in 24 (12.5%) and all four glands in one (0.5%) patient. Post-thyroidectomy hypoparathyroidism developed in 61 (43.3%). This was significantly higher ( $p=0.006$ ) than the rate of hypoparathyroidism among the cohort of patients in whom parathyroid glands were not reimplanted. In addition, as the number of reimplanted parathyroid glands increased, so did the risk of postoperative hypoparathyroidism ( $p<0.001$ ). The median time (interquartile range) to recovery of parathyroid function among the whole cohort was 18.5 (10,40) days. Two patients developed permanent hypoparathyroidism, both of whom did not undergo parathyroid gland re-implantation. None of the patients who underwent parathyroid gland re-implantation developed permanent hypoparathyroidism. Unfortunately, these two cohorts were not comparable due to the small numbers.

### Conclusion

We have shown a significantly increased rate of temporary hypoparathyroidism in patients who underwent re-implantation and the rate increased with the number of parathyroid glands reimplanted. Though parathyroid gland reimplantation seems to be protective for permanent hypoparathyroidism, its role remains uncertain from this study.

## THE DEFINITION OF RECURRENCE OF DIFFERENTIATED THYROID CANCER. A SYSTEMATIC REVIEW

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### Aim of the study

Currently, there is no universally accepted definition of recurrence for differentiated thyroid cancer (DTC). The primary aim of this systematic review was to assess the definition of recurrence of DTC.

### Methods

A systematic literature search in MEDLINE and EMBASE was performed for studies reporting on recurrence of DTC, published January 2018 to December 2023. Studies that did not provide a definition of recurrence were excluded. Primary outcome was definition of recurrence of DTC. Secondary outcomes were whether studies differentiated between recurrence and persistent disease, or between recurrence after lobectomy, total thyroidectomy and total thyroidectomy with radioiodine ablation (RAI). This study adhered to 2020 PRISMA statement for systematic reviews.

### Main results

Out of 1450 identified studies, 231 studies met inclusion criteria. The most prevalent definitions of recurrence were cytology/pathology-proven recurrence (22.5%) and the combination of imaging studies and cytology/pathology-proven recurrence (18.2%). Forty studies (17.3%) differentiated between recurrence and persistent disease, while one study (<1%) defined recurrence after lobectomy and total thyroidectomy with RAI, but omitted total thyroidectomy without RAI.

### Conclusions

Our main finding is that there is no universally accepted definition of recurrence of DTC and there is extensive heterogeneity among the definitions, emphasizing the need for a globally uniform definition. The findings of this study will serve as the basis of a future Delphi-based proposal for a novel and widely accepted definition of recurrence of DTC. A universally accepted definition could facilitate global discussion, enhance the assessment of treatment outcomes and improve the comparability of studies.

**BENEFITS OF APPLICATION OF “ENHANCED RECOVERY AFTER SURGERY” PROTOCOLS IN THYROID AND PARATHYROID SURGERY IN A LIMITED RESOURCES SETTING- PATHERAS STUDY**

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*Introduction:* Enhanced recovery after surgery protocols (ERASP) are evidence-based multidisciplinary perioperative programs aimed at improving recovery. Evidence of their effectiveness in thyroid and parathyroid surgery is sparse. Clinical benefits and cost-effectiveness of ERASP were evaluated in patients undergoing thyroidectomy for large goitres/cancers and parathyroidectomy for symptomatic hyperparathyroidism in non-day-care setting.

*Methods:* A prospective PaThERAS cohort of 45 ASA grades 1&2 patients (Jan-Dec2023; Males=19, Females=71) who underwent conventional or minimally invasive/robotic Total Thyroidectomy (+/- neck dissection, n=39) or Parathyroidectomy (less than sub-total Parathyroidectomy, n=6) using ERAS protocols were studied. Perioperative outcomes were compared with matched controls (n=45) managed using non-ERAS/conventional protocols. Outcome measures- postoperative hypocalcemia, postoperative hospital stay, in-hospital costs, postoperative events- hematoma/seroma, surgical site infection (SSI), nausea vomiting (PONV), pain/analgesia and unplanned readmissions were compared between groups using appropriate statistical methods.

*Results:* ERASP and control groups were comparable (age, sex, thyroid/parathyroid pathology, procedure and drains). ERASP utilization significantly reduced postoperative hypocalcemia and intravenous calcium requirements (p<0.002). In ERASP group, postoperative stay (3 vs 5 days, p=0.008) was significantly shorter, and in-hospital costs lower, though not significantly (p=0.07). With opioid sparing policy in both groups, there was significantly lower NSAID requirements (p<0.001) in ERAS group. There were no postoperative hematoma/seroma, SSI or unplanned readmissions in either group, and PONV rates similar.

*Conclusions:* ERASP result in significant benefits in perioperative outcomes in patients undergoing thyroidectomy and parathyroidectomy, even in a limited-resources setting, where lack of reliable out-of-hospital/domiciliary care prevents routine day-care surgery. Neck drains for large goitre/cancer and inpatient management till drain removal resulted in considerable postoperative hospitalization, attenuating some benefits of ERAS usage.

# **COST-EFFECTIVENESS OF DIAGNOSIS BY ULTRASOUND FOR ASYMPTOMATIC THYROID CANCER IN SOUTH KOREA**

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*Background :* Thyroid cancer can be detected in early stage using ultrasonography, but there are also questions about the necessity of screening tests due to its relatively high survival and low recurrence rate compared to other cancers. In this study, a cost-effectiveness analysis of thyroid cancer was conducted for better patient selection with cases diagnosed by ultrasound, as well as cases diagnosed through the presence of symptoms.

*Methods:* For the analysis, Markov decision chain model were used. The post-diagnosis process for patients followed the guidelines recommended by the Korean Thyroid Association. Recurrence rates and death rates were analyzed based on 25,000 patients from our institution. The cost calculations for diagnosis and treatment followed the regulations set by the South Korean Ministry of Health and Welfare. Deterministic and probabilistic sensitivity analyses were performed to account for uncertainty in the model's variables.

*Results:* The average cost of diagnosis and treatment for patients diagnosed with asymptomatic thyroid cancer using ultrasound was ₩2,730,997 for 5 years and ₩3,970,652 for 10 years after diagnosis. In the case of patients diagnosed based on symptoms, the average cost was ₩3,970,652 for 5 years and ₩5,116,628 for 10 years. In sensitivity analysis, the cost range for patients diagnosed using ultrasound was ₩2,661,955 to ₩2,758,116, while for patients diagnosed based on symptoms, it ranged from ₩3,785,588 to ₩3,877,687 for 5 years.

*Conclusion:* Diagnosis using ultrasound for asymptomatic thyroid cancer offers advantages in terms of cost-effectiveness when compared to symptom-based diagnosis in Korea. Cost-effectiveness can vary due to differences in the cost of diagnosis and treatment in each country, making it essential to establish an optimized thyroid screening strategy for a specific population.

## TRACT SITE SEEDING OF PAPILLARY THYROID CANCER AFTER TRANSORAL ENDOSCOPIC THYROIDECTOMY

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*The transoral endoscopic thyroidectomy vestibular approach (TOETVA) is an effective treatment for thyroid nodules and cancer. The excellent cosmetic outcomes compared to conventional and other types of endoscopic thyroidectomies make TOETVA a highly popular choice in selected patients. However, the limited working space and indirect thyroid manipulation can result in unexpected complications. Here, we describe a case of track site seeding in a 47-year-old woman who underwent left hemithyroidectomy via TOETVA. The pathological diagnosis changed from follicular adenoma to invasive encapsulated follicular variant papillary thyroid cancer after cancer recurrence.*

**LISTEN TO PATIENTS: QUALITY OF LIFE AND SYMPTOMS AFTER THYROIDECTOMY**

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*Introduction* Surgical decision-making for thyroid disease should incorporate patients' perspectives. However, our knowledge of patients' perioperative symptoms and postoperative quality of life(QoL) is still limited. We aimed to investigate the impact of thyroidectomy on QoL for patients with thyroid disease.

*Materials&Methods* A validated disease-specific questionnaire, the Thyroid-Related Patient-Reported Outcome(ThyPRO-39), was administered to patients who underwent thyroidectomy for all indications preoperatively and postoperatively every month for up to 12 months at a tertiary medical center(2021-2023). Scales of disease-related symptoms and composite scores of ThyPRO-39 were calculated, whereas higher scores indicate more severe symptoms. One-way within-subject ANOVA with Bonferroni correction was conducted to evaluate the changes in QoL and symptoms after thyroidectomy. Multivariable linear regression was performed to analyze factors affecting QoL improvement, taking the difference between preoperative and 12-month postoperative composite scores as outcome. *Results* Of the 102 patients, 85(81.0%) were female, 66(63.0%) were non-Hispanic White, and 35(33.3%) underwent thyroidectomy for hyperthyroidism. Most patients underwent total thyroidectomy( $n=67, 63.8\%$ ) and were discharged the same day( $n=102, 97.1\%$ ). Twenty-two patients(21.0%) developed composite postoperative complications, including transient hypocalcemia or voice hoarseness and emergency department visits. The composite scores significantly decreased after 12 months compared to scores before thyroidectomy( $16.9 \pm 9.0$  vs.  $32.9 \pm 17.5, p < 0.001$ ). Symptoms of goiter, hyperthyroidism, vision deficits, tiredness, cognition, anxiety, and emotional susceptibility all significantly improved postoperatively( $p < 0.05$ ). Symptoms of depression, impaired social/daily life, and appearance had no statistically significant changes post-thyroidectomy( $p > 0.05$ ). Multivariable linear regression showed that patients who were female( $\beta=10.2, p=0.17$ ) and had preoperative hyperthyroidism( $\beta=11.3, p=0.003$ ) were associated with larger postoperative QoL improvement, while Black patients( $\beta=-7.2, p=0.17$ ) were associated with smaller improvement. Preoperative Charlson Comorbidity Index, total thyroidectomy, postoperative complications, and cancer pathology were not independent factors associated with the degree of postoperative QoL improvement.

*Conclusion* Thyroidectomy improves the QoL for patients with thyroid disease, especially hyperthyroidism. Improvement of QoL should be incorporated as an important consideration when making surgical decisions.



## REAL-WORLD EFFICACY DATA OF LENVATINIB THERAPY BASED ON PATIENT TOLERABILITY IN UNRESECTABLE DIFFERENTIATED THYROID CANCER

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**Introduction:** Lenvatinib is considered the first-line therapy for treating unresectable differentiated thyroid cancer (DTC). Lenvatinib improved the prognosis compared with placebo in the phase 3 SELECT trial. However, the incidence of adverse events with lenvatinib treatment is high, and continuing to take the full dose is rarely achieved. We evaluated the effect of dose adjustment according to patients' tolerability and its effect on clinical outcomes. **Materials and Methods:** We retrospectively analyzed clinical outcomes in patients with unresectable DTC who were treated with lenvatinib at our institution.

**Results:** This study included 43 patients who were treated with lenvatinib for unresectable DTC between 2015 and 2023. At the time of initiating lenvatinib, the median age of patients was 70 years (25–92 years), and 88.4% of patients had an ECOG performance status of 0–1. The median progression-free survival was 40.2 months. The best overall response rate was 65.1% (1 complete response and 27 partial responses). Adverse events of any grade were observed in all patients, and grade 3 or higher adverse events occurred in 23 (67.6%) patients. The dose of lenvatinib was reduced to control adverse events, and the mean relative dose intensity to best overall response was 44.3% (10.6 mg/day). There was no correlation between the best overall response rate and the relative dose intensity ( $r = -0.012$ ,  $p = 0.937$ ), while the time to treatment failure was long, with a median time of 43.7 months. There was a strong correlation between the time to treatment failure and progression-free survival ( $r = 0.857$ ,  $p < 0.001$ ).

**Conclusion:** In patients with unresectable DTC, the mean relative dose intensity is low (< 50%). However, the long duration of the treatment, enabled by a low dose according to the patient's tolerability, is likely to contribute to a good clinical outcome.

**PAEDIATRIC THYROID CANCER: A REVIEW OF A SINGLE INSTITUTIONAL EXPERIENCE IN MALAYSIA**

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**Introduction:**

The clinical features and prognosis of children and adolescents with differentiated thyroid carcinoma (DTC) are different from that of adults. It is the most common endocrine cancer during childhood, and it carries a good prognosis.

**Objective:**

To describe and evaluate the clinical characteristics, treatment, and prognosis of thyroid cancer in children and adolescents that were managed at Hospital Putrajaya, Malaysia. Our secondary objective is to determine factors associated with persistent disease.

**Materials and Methods:**

We performed a retrospective analysis of clinical data of thyroid cancer in children and adolescents ( $\leq 18$  years of age) who were treated in Hospital Putrajaya from January 2012 to December 2021. Correlations between categorical variables were made using chi squared test.

**Results:**

Data on 20 patients were available for analysis. Females (55%) were predominant, and the median age of presentation was 13.0 years old. Nodal metastases were present in 40%; 25% had distant metastases, being either lung or bone. After surgery, 75% received radioactive iodine (100% on more than one occasion). With a median follow-up duration of 4 years, 11 patients showed no evidence of residual disease; 7 patients had biochemical and/or structural residual disease, and 2 patients were lost to f/up. There have been no reported deaths thus far. Our statistical analysis failed to reveal the significant effect of gender or age on presence of residual disease ( $P = 0.387$  and  $0.434$ ). There was also no significant correlation between gender and presence of nodal disease at presentation ( $P=0.168$ )

**Conclusion:**

Children and adolescents with thyroid carcinoma fortunately have a favourable outcome after appropriate treatment. Early recognition and appropriate surgical treatment can reduce the occurrence of distant disease and improve patient survival.

**ANAPLASTIC THYROID CARCINOMA: A 20-YEAR INSTITUTIONAL REVIEW**

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*Background.*

*Anaplastic thyroid cancers (ATC) are highly aggressive and lethal. Despite their low incidence, they account for a significant portion of thyroid cancer-related deaths. In this review, we will examine the clinical characteristics of ATC patients at our centre over the past 20 years and their prognosis.*

*Methods.*

*We retrospectively reviewed all ATC diagnosed at Hospital Raja Perempuan Zainab II, Kota Bharu, Malaysia from 2004 to 2023. Patients were identified from our lab database and their clinical details were obtained from their medical records.*

*Results.*

*There were 42 patients, with a female-to-male ratio of 1.6:1 and a median age of 62 years. Majority (92.6%) presented with goitre larger than 4cm and were female (61.9%). Only one patient had a history of differentiated thyroid cancer. Most patients (76.2%) presented with goitres lasting less than 10 years, while only 10 patients had a history lasting for more than 10 years. Hyperthyroidism was observed in only 9 cases, while the rest were euthyroid. Common presenting complaints included dysphagia (59.5%), dyspnoea (59.5%), and hoarseness of voice (57%). A large portion of the patients presented with advanced disease, with 26 patients showing distant metastasis, 28 patients exhibiting extrathyroidal extension, and 23 patients having lymph node involvement. The majority (66.7%) survive less than three months from the time of diagnosis.*

*Conclusion.*

*The management of ATC has evolved from palliative care to personalized therapies. However, prognosis still remains grim. Further research and clinical trials are needed to optimize treatment strategies, improve quality of life and overall survival.*

### ROLE OF SURGERY IN ANAPLASTIC THYROID CANCER: ARE WE STILL IN A DILEMMA?

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*Management of Anaplastic Thyroid Cancer (ATC) remains challenging due to its poor prognosis and rarity. The role of surgery depends on the extent of the disease, potential morbidity, prognosis, and individualised goal of care.*

*Guidelines recommend surgical resection in Stage IVA and IVB with an individualised decision. However, surgical management still varies among institutions and surgeons.*

*We analysed retrospectively our experience of ATC in a referral center for endocrine cancer at Hospital Raja Perempuan Zainab II (HRPZ II), Kelantan, Malaysia, from 2004 to 2023, looking into demographics, clinical-pathological profile, treatment, and survival. The Chi square X2 test was calculated for the association between stage of disease and survival.*

*A total of 42 cases of ATC were identified. The mean age of the patient was 62 years old (SD 3.8). There were 16 (38%) males and 26 (62%) females, and 9 (21%) patients had thyrotoxicosis. Most presented with advanced locoregional symptoms of dyspnoea, dysphagia, and hoarseness of voice: 25 (59%), 25 (59%), and 24 (57%), respectively. Pathological profiles showed 39 (93%) with tumour size greater than 4cm, 28 (66%) had extrathyroidal extension, and 26 (62%) had stage IVC.*

*All 42 patients were deemed unresectable, and one required palliative radiotherapy. Non-operative supportive care was given; however, no patient had tracheostomy, chemotherapy, or tyrosine kinase inhibitors. There were 35 (83%) who survived less than 3 months. Survival of less than 3 months was observed even in Stage IVA and IVB patients ( $p < 0.001$ ). Our case series, consistent with other studies where majority presented with advanced disease and a poor prognosis.*

*Surgery remains part of the multimodal treatment options for ATC; however, the surgical option, either therapeutic or palliative, should be limited to early locoregional disease with an individualised decision.*

## **BILATERALITY, NOT MULTIFOCALITY, IS AN INDEPENDENT RISK FACTOR FOR RECURRENCE IN T1-2N0 THYROID CANCER**

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*Introduction: The impact of multifocality and bilaterality on recurrence in patients with low-risk well differentiated thyroid cancer (T1-2N0) is relevant when considering patients for a de-escalated treatment strategy: Hemithyroidectomy (HT) instead of total thyroidectomy followed by radioactive iodine (TT+/- RAI). This study aims to analyse contralateral tumor probability in patients treated for low-risk thyroid cancer and assess multifocality and bilaterality as possible predictors for recurrence.*

*Methods: Patients with low-risk thyroid cancer (T1-2N0) treated with TT+/-RAI in the Netherlands between 2005 and 2015 were included in this study. Patients were identified from the Netherlands Comprehensive Cancer Organization (IKNL), and linked with the nationwide network and registry of Pathology in the Netherlands (PALGA). Contralateral tumor probability and recurrence were assessed*

*Results: Of 791 patients included, 41.8% (331/791) had multifocal disease, with 68.9% (228/331) of those cases being bilateral disease. The contralateral tumor probability after HT was 24.6% (150/610) for patients with unifocal disease and 43.1% (78/181) for patients with multifocal disease. We found a higher trend of recurrence in patients with bilateral disease, regardless of multifocality: In patients with contralateral disease after pre-completion diagnosed unifocal disease 7.3% (11/150) had recurrent disease, while patients without contralateral disease after pre-completion diagnosed multifocal disease, 1.9% (2/103) had recurrence. Cox regression analysis showed that bilaterality (HR= 3.621; 95%CI=1.548-8.471) was the sole significant risk factor for recurrence.*

*Conclusion: Low recurrence rates are found in patients with either multifocal or bilateral disease in patients with low-risk well differentiated thyroid cancer (T1-2N0). Bilaterality should be taken into account when considering these patients for de-escalated treatment strategy.*

**ACTIVE SURVEILLANCE IN A COHORT OF YOUNG CHINESE PTMC PATIENTS**

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*Introduction: Active surveillance (AS) is an alternative to immediate surgery for low risk PTMC patients, however, few studies focused on AS in younger patients.*

*Materials and Methods: FNA-proven PTMC patients under AS were followed by ultrasound every 6 to 12 months in a single center. The median age at diagnosis was 37 years old (21y-71y, 77% < 45y), the average tumor size was 6.4mm (3mm-11mm). Patients with tumor enlargement (>3mm) and/ or typical lymph node metastasis by ultrasound were recommended for surgery.*

*Results: 124 patients were followed for 52 months on average (13m-100m). 27 patients underwent surgical treatment, among them, 10 patients (8%) had clinical progression of disease, ( 7 tumor growing>3mm, 6 appearance of new metastatic lymph nodes, overlapped in some), 17 patients (15%) chose surgery during AS without any signs of tumor progression. Initial tumor size, thyroiditis, multifocal disease or close to thyroid capsule were not predict factor for tumor progression. Age < 30y was the only risk factor for tumor progression (p=0.0028).*

*Conclusion: AS appeared safe even in relative younger low risk PTMC patients, very young age is a risk factor for tumor progression.*

**IS TSH SUPPRESSION NEEDED IN PAPILLARY THYROID CANCER PATIENTS AFTER LOBECTOMY?**

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*Introduction:* More smaller papillary thyroid cancers were detected and more lobectomy was performed for such cancer patients since ATA 2015 edition published. However, few clinical data showed TSH target level at 0.5-2 mIU/L is effective for decreasing recurrence.

*Materials and Methods:* A prospective, single arm study was initiated since May 2015. TSH was measured 8 weeks post-lobectomy in patients with papillary thyroid cancer. If the TSH was in normal range (0.5-4.5mU/L), L-T4 was not prescribed. L-T4 was taken by patients only their TSH > 4.5mU/L and then their TSH target was 0.5-2.0 mU/L. Neck ultrasound was performed to detect recurrence and thyroid function was monitored every 6 months in the first 3 years and then yearly thereafter.

*Results:* 231 thyroid cancer patients with lobectomy were followed up for a median 41 months, 81% were low risk of recurrence according to ATA 2015 criteria. As of Dec 2023, 28% of thyroid lobectomy patients were not on L-T4 and their thyroid function were normal. Only 2 cases were diagnosed with recurrence and re-operated, one recurred in central compartment lymph nodes and the other in the contralateral lobe. Both of them were on L-T4.

*Conclusion:* this pilot prospective study showed TSH suppression appeared not necessary in low risk thyroid cancer patients with lobectomy if their thyroid function remained normal.

## THE IMPACT OF RURALITY ON THE INCIDENCE OF RARE THYROID CANCERS AND ITS EFFECTS ON DISEASE-SPECIFIC OUTCOMES

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### Introduction

The incidence of thyroid cancer has been on the rise, sparking debates about the disparities in occurrence between rural and urban regions. This study aims to shed light on these discrepancies, focusing particularly on anaplastic thyroid cancer (ATC) and poorly differentiated thyroid cancer (PDTC)—both rare and highly challenging tumor types with bleak prognoses. We sought to investigate the discrepancies in incidence and disease-specific survival (DSS) between the rural and urban cohorts.

### Materials & methods

An observational study was performed on ATC and PDTC patients using Surveillance Epidemiology and End Results data (2000-2020). Age-adjusted incidence rates and ratios for the rurality were extracted. Clinicopathologic features, DSS, and treatment outcomes were compared between groups.

### Results

A total of 1,787 patients with ATC and 2,292 patients with PDTC were enrolled in the study. A statistically significant lower incidence of PDTC was observed in rural areas compared to urban areas ( $p=0.04$ ), while there was no statistical difference in incidence between rural and urban areas for the ATC patients ( $p=0.7$ ). The utilization of multimodal treatment for ATC did not show a statistical difference between urban and rural areas. Similarly, there was no statistical difference in the use of multimodal treatment for PDTC between urban and rural areas. The 5-year survival rate for PDTC was 52.0% in urban groups compared to 46.1% in rural areas ( $p=0.07$ ). In the ATC group, the 1-year survival rate in urban groups was 17.6%, whereas in rural areas, it was 12.5% ( $p=0.06$ ). Across all groups, multimodal treatment significantly improved DSS ( $p<0.001$ ).

### Conclusion

Higher incidence for poorly differentiated thyroid cancer were noted in urban areas compared to rural areas. Overall survival was not different between urban and rural areas for both rare types of thyroid cancer. DSS improved significantly when patients were treated multimodally.



## CHARTING SURVIVAL TRAJECTORIES: COMPOSITE FTC/ATC TUMORS POSITIONED BETWEEN FOLLICULAR AND ANAPLASTIC THYROID CANCER SURVIVAL RATES

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### Introduction

A subset of follicular thyroid cancers (FTC) dedifferentiate and get features of anaplastic thyroid cancer (ATC), it is currently unknown what the effect on survival is. This study aimed to analyze the characteristics of these composite tumors and examine the disease-specific survival (DSS) of such tumors.

### Materials & methods

The Surveillance, Epidemiology, and End Results (SEER) database was used to identify FTC, composite FTC/ATC and ATC patients (2000-2020). Propensity score matching (PSM) was based on age, sex, race, and histological subtype. Clinicopathologic features, DSS, and treatment outcomes were analyzed by histologic type.

### Results

After PSM a total of 60 patients with composite FTC/ATC were included, matching this to a 180 FTC and 180 ATC patients. When compared to the FTC group, the composite group had more tumors >4 cm ( $p<0.001$ ), more extra-thyroidal extension (ETE) ( $p<0.001$ ), more positive lymph nodes ( $p<0.001$ ), more distant metastases ( $p=0.002$ ), received more EBRT ( $p<0.001$ ), and received more chemotherapy ( $<0.001$ ). Contrarily the composite group received less RAI ( $<0.001$ ). When compared to the ATC group, the composite group had less ETE ( $p=0.006$ ), less positive lymph nodes ( $p=0.011$ ), less chemotherapy ( $p=0.002$ ) but received more RAI ( $p=0.003$ ). The 5-year survival rate for Composite FTC/ATC was 33.3%, falling between the survival rates of FTC and ATC ( $p<0.001$ ). Advanced age [1.05 95%CI (1.02-1.08)] and less-than-total thyroidectomy [2.58 95%CI (1.20-5.56)] were associated with poorer survival in the composite FTC/ATC group. Adjuvant treatment did not influence DSS in the composite group ( $p=0.22$ ).

### Conclusion

Patients with composite FTC/ATC exhibit survival rates that fall between those of patients with FTC and ATC. The influence of adjuvant treatment appears not significant, prompting the question of its necessity. To gain a comprehensive understanding of these outcomes, further research is crucial to investigate how the percentage of composition within these tumors influences survival outcomes.

## THE SIMULTANEOUS OCCURRENCE OF PAPILLARY THYROID CANCER AND FOLLICULAR THYROID CANCER: A PROPENSITY-SCORE MATCHED ANALYSIS

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### Introduction

Multiple primary cancer (MPC) is a rare entity and is characterized by the presence of two or more distinct cancers within patients. Papillary thyroid cancer (PTC) and follicular thyroid cancer (FTC) are common types of thyroid cancer and typically have a good prognosis. However not much is known when both cancers occur simultaneously in the same patient. Our study aimed to explore disparities in tumor characteristics and assess differences in survival rates in such cases.

### Materials & Methods

The Surveillance, Epidemiology, and End Results (SEER) database was used to identify patients with concomitant PTC and FTC (2000-2020). Propensity score matching (PSM) was based on age, sex, race, and histological subtype. Clinicopathologic features, disease-specific survival (DSS), and treatment outcomes were analyzed by histologic type.

### Results

Of the 7,351,684 total cancer cases in the SEER database, 25 patients with concomitant PTC and FTC were extracted. Utilizing PSM, we included 75 patients with FTC and 75 patients with PTC. The histological types include papillary thyroid (micro)carcinoma, columnar cell, insular carcinoma, follicular carcinoma NOS, follicular carcinoma well differentiated and follicular carcinoma angio-invasive. No differences were seen in patient characteristics between cohorts. Patients with co-PTC/FTC had significant smaller tumor sizes as compared to the control PTC group ( $p < 0.03$ ), no differences were found to the control FTC group. Ten-year survival rates were 97.3% for FTC, 96.0% for co-PTC/FTC and 92% for PTC ( $p = 0.46$ ). Patients who underwent less-than-total thyroidectomy experienced poorer DSS ( $p = 0.03$ ). Contrarily, the administration of RAI did not impact survival rates ( $p = 0.06$ ).

### Conclusion

The simultaneous presence of both PTC and FTC is rare. However, the concurrent occurrence of these tumors does not appear to impact overall DSS. But the extent of surgery may affect survival. More research is warranted, emphasizing the need for careful consideration when determining the appropriate surgical approach for patients with concomitant PTC/FTC.

**PRACTICE VARIATIONS, TRENDS AND OUTCOMES OF DRAIN USE IN THYROIDECTOMY: A NSQIP STUDY**

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*Introduction:* Previous studies have reported no utility for the use of drains after thyroidectomy; however, practice patterns vary widely among surgeons. This study analyses a large national dataset to explore trends, practice variations, and outcomes associated with drain use after thyroid surgery.

*Methods:* A pooled sample of patients who underwent thyroidectomy and captured in the General user and Targeted-thyroidectomy files of the National Surgical Quality Improvement database between 2016 to 2019 was performed. Year-over-year trends, practice variations, and effect of drain use on postoperative neck hematoma (PNH) and length of stay (LOS) were evaluated using two modeling approaches: inverse-probability-weighted regression adjustment (IPWRA) and multivariable logistic regression (MLR) models.

*Results:* Of 24,370 patients who underwent thyroidectomy, 6,673(27.4%) received neck drain with mean LOS and PNH rate of 27.3hrs (SD+47.1) and 1.87% for the entire cohort, and 33.9hrs (SD+51.2) and 1.99 % after total thyroidectomy. Regardless of surgical sub-specialty, there was a significant downtrend in the year-over-year odds of drain use after thyroidectomy (OR=0.96, p=0.005), but more so after lobectomy (OR=0.95, p=0.037), than total thyroidectomy (OR=0.98, p=0.295). However, the odds of drain use increased year-over-year in general for patients who had concomitant neck dissection (OR=1.08, p=0.002), but only significantly after total thyroidectomy. In the multivariate adjusted models, ENT surgeons were significantly more likely to use drains than General surgeons (44.9% vs 14.7%, RR=3.06, 95% CI=2.91–3.22, p<0.001). Drain use was significantly associated with longer LOS (mean-difference:9.6hrs, CI=8.5–10.6hrs, p<0.001), with no significant effect on PNH (RR=0.96, CI=0.73–1.14, p=0.740). These findings remained robust regardless of the extent of thyroidectomy or subspecialty practice, across IPWRA and MLR models).

*Conclusion:* Drain use during thyroidectomy is associated with increased post-operative LOS with no significant effect on PNH. While there is an overall down-trend in the use of drains during thyroidectomy, practice variations across subspecialties.

### INCIDENTAL TALL CELL PAPILLARY THYROID MICROCARCINOMA IS NOT ASSOCIATED WITH AGGRESSIVE FEATURES

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*Introduction: Tall cell papillary thyroid carcinoma (PTC) is considered to be more aggressive than the classical variant of PTC, with greater incidence of recurrence and nodal metastasis. Papillary microcarcinoma (mPTC), defined as PTC  $\leq 1\text{cm}$  in diameter, is considered to be indolent in a majority of cases. The objective of this study was to determine if tall cell mPTC are of increased risk of recurrence or metastasis.*

*Materials and Methods: This multicentre, retrospective cohort study utilised data from a prospectively maintained Western Australian surgical database. Patients who underwent thyroidectomy with histologically confirmed mPTC were included. Data collected included histological subtype, patient age and gender, extrathyroidal extension, lymphovascular invasion, nodal metastasis, recurrence and whether the cancer was advanced (defined as stage III or IV). Outcomes were compared with student's t-test, chi squared test or Fisher's Exact test as appropriate.*

*Results: 144 patients were diagnosed with mPTC during the study period. 93 (64.6%) were classical subtype while 51 (35.4%) were tall cell. 41.8% of patients with classical mPTC had lymph node metastasis compared to 26.3% of tall cell mPTC, although this did not reach statistical significance. There was no recurrence in either group. There were no significant differences between groups in any of the outcomes analysed.*

*Conclusion: In contrast with larger PTC, tall cell subtype mPTC is not associated with higher risk histological features or an increased risk of metastasis. Incidentally diagnosed tall cell mPTC does not require a change in management strategy compared to classical variant.*

**CHRONIC LYMPHOCYTIC THYROIDITIS DOES NOT PORTEND POORER SURGICAL OUTCOMES IN PATIENTS WITH PAPILLARY THYROID CANCER: A SINGLE INSTITUTION ANALYSIS**

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**Background:** Chronic lymphocytic thyroiditis (CLT) is an autoimmune thyroid disorder that most commonly causes hypothyroidism in women. Studies suggest CLT may confer higher surgical risk for patients undergoing thyroidectomy for papillary thyroid carcinoma (PTC). This study examines the prevalence of CLT and tumor behavior of PTC in patients with and without CLT.

**Methods:** A retrospective review of prospectively collected data for 2,200 patients who underwent thyroidectomy from 2009-2020 at a tertiary institution was performed. Patients >18ys were subdivided into 2 groups: patients with CLT and PTC, and patients with PTC alone. Sociodemographic factors (age, gender, race), tumor characteristics, final pathology, thyroidectomy-specific outcomes, and postoperative course were evaluated. Chi-square tests were used for categorical variables and comparisons based on t-test.

**Results:** Of 1073 patients with PTC, most were women n=872 (81%), Caucasian n=933 (87%) with mean age of 48 ( $\pm 13$ ) years, mean tumor size of 1.8 cm ( $\pm 1.3$ cm), and low stage disease I/II n=1049 (98%). Of the PTC patients, 167(16%) had concurrent CLT. When comparing patients with PTC and CLT to PTC alone, there were no significant differences for age, race, tumor size, respectively. When comparing patients with PTC and CLT to PTC alone, there were no significant differences in thyroidectomy-specific outcomes including permanent recurrent laryngeal nerve injury [1.2%(n=2) vs. 0.2%(n=2)], bleeding and/or return to OR [0.6% (n=1) vs. 0.7% (n=6)], persistent hypocalcemia [0% (n=0) vs. 0.33% (n=3)], and wound infection [0.6% (n=1) vs. 0.4% (n=4)], radioactive iodine therapy [35.9%(n=60) vs. 31.2% (n=283)]. Rates of lymph node positivity [26.9%(n=45) vs. 30.1(n=273)], extrathyroidal extension 14.3%(n=24) vs 16.5%(n=150), and PTC recurrence [4.19%(n=7) vs. 4.75%(n=43)] were similar between groups, respectively.

**Conclusion:** Approximately 16% of patients undergoing thyroidectomy for PTC will have concurrent CLT. Underlying CLT is not associated with higher rates of surgery-specific complications or PTC recurrence when performed by high-volume thyroid surgeons.

### A PREDICTIVE MODEL FOR SELECTING THE OPTIMAL DOSE OF CARBIMAZOLE IN GRAVES' DISEASE

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#### *Introduction*

*The ideal dose of Carbimazole in Graves' disease is still unknown despite many years of use. The aim of this study was to design a predictive model for the optimal starting dose of Carbimazole, based on clinical and biochemical factors.*

#### *Material & Methods*

*This was a multi-centre retrospective study conducted at Universiti Kebangsaan Malaysia Medical Centre Hospital and Hospital Tengku Ampuan Rahimah, Malaysia. Data from 185 patient records were collected, including demographics, goitre size, presence or absence of Graves' eye signs, thyroxine (T4) and thyroid-stimulating hormone (TSH) levels upon diagnosis. The dose of Carbimazole given and response during follow up was recorded.*

#### *Results*

*Our analysis revealed that the T4 level at diagnosis and weight of patient were directly related to the dose of the Carbimazole required to render euthyroidism. Further analysis showed that selection of the correct dose will allow euthyroidism to be achieved rapidly within 4 to 6 weeks. An inverse relationship was found between patient age and time taken to normalize T4 levels, however this difference was minimal. Adverse effects were rare and minor.*

#### *Conclusion*

*In conclusion, we are able to predict the optimal starting dose of Carbimazole in Graves' disease for an individual patient based on their weight and initial T4 level at diagnosis.*

**MEDIAL CAROTID SHEATH COMPONENT SEPARATION COMBINED WITH LATERAL APPROACH TO LATERAL NECK DISSECTION FOR THYROID CARCINOMA**

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*Introduction:* Typically, lateral neck dissections are performed lateral to medial without fully isolating components of the carotid sheath, potentially leaving involved nodal groups deep to the sheath to be removed in piecemeal fashion. We hypothesize that medial component separation of the carotid sheath in lateral neck dissection allows for better exposure of thyroid cancer nodal disease and structures such as the thoracic duct and sympathetic plexus.

*Materials & Methods:* Neck dissection performed for thyroid carcinoma lateral neck metastasis from December 2018 to March 2023 were analyzed. After a lateral to medial dissection from level V or cervical roots is performed, nodal bearing tissue is circumferentially dissected away from the internal jugular vein (IJV) and over the carotid artery (CA). IJV is retracted medially to expose the medial extent of lateral neck tissue just lateral to the vagus nerve (VN), to be removed in continuity with laterally dissected nodal-bearing tissue. Nodal disease more medially and deep to the CA can be removed from the medial approach also by gentle retraction on the CA separately from the VN and IJV.

*Results:* Sixty-two patients with 75 lateral neck dissections were included. Average follow-up time was 12.2 months. There were no recurrences ipsilateral to the neck dissection in lateral neck fields. One patient with anaplastic carcinoma received palliative and hospice care. The majority of patients had thyroglobulin and thyroglobulin antibodies less than or equal to 1 (58.1% and 72.6% respectively) demonstrating successful control of disease surgically with or without radioactive iodine.

*Conclusion:* Medial component separation of the carotid sheath in lateral neck dissection aids in exposing nodal disease from thyroid cancer deep and medial at the carotid sheath and may decrease lateral neck recurrence in metastatic thyroid cancer as well as aid in improved visualization of the thoracic duct and sympathetic plexus.

**THE IMPACT OF POST-THYROIDECTOMY NECK EXERCISES AND WOUND MASSAGE ON NECK DISCOMFORT, NECK PAIN AND FLAP EDEMA IN THE POST OPERATIVE PERIOD: A QUASI EXPERIMENTAL STUDY**

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**INTRODUCTION :** The aim of the study was to evaluate the efficacy of neck exercises and wound massage in reducing neck pain, neck discomfort and flap edema in the post-thyroidectomy period.

**MATERIAL AND METHODS:** All Total/Hemithyroidectomy patients above 18 years operated during the period September 2022 to September 2023 were included in the study. Sample size is 72, with 36 patients allotted to each group (Intervention and control). Neck exercises and wound massage techniques were taught to the intervention group. Neck pain was assessed using Numeric Pain Rating Scale (NPRS), Neck discomfort using Copenhagen neck functional disability scale (CNFDS) and Neck flap edema by measuring the flap thickness. All the above 3 parameters were assessed preoperatively and on post operative day 5, day 14, 30 and 60.

**RESULTS:** NPRS scores (median) on comparing intervention and control groups were 4 vs 6 on POD 5 ( $p < 0.001$ ), 2 vs 3 on POD 14 ( $p < 0.001$ ), 1.0 vs 2 on POD 30 ( $p < 0.001$ ), 0 vs 0 on POD 60 (0.96). CNFDS scores (median) on comparing intervention and control groups were 8 vs 15 on POD 5 ( $p < 0.001$ ), 5.0 vs 10.0 on POD 14 ( $p < 0.001$ ), 2 vs 5 on POD 30 ( $p < 0.001$ ), 0 vs 1.0 on POD 60 ( $p = 0.117$ ). Both NPRS and CNFDS scores were significantly lower in the intervention group compared to the control group in the first post operative month. No significant difference was seen one month after surgery. There was no significant difference between the flap thickness of two groups in the post op period.

**CONCLUSION:** This study confirms that post operative neck exercise and wound massage helps in reducing the neck pain and discomfort in the first post operative month.



**RECURRANT LARYNGEAL NERVE INJURY IN COMPLICATED THYROIDECTOMY WITH IONM IN A SINGLE CENTRE FOR 1 YEAR**

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**INTRODUCTION :** *Recurrent laryngeal nerve injury during thyroidectomy is a potentially catastrophic complication. Permanent recurrent laryngeal nerve palsy account about 0.3-3% while transient palsy accounts about 5-8%. Risk factors for recurrent laryngeal nerve injury during surgery are huge retrosternal goiter, re-operation, cancer surgery, extent of resections in difficult thyroid or cancer, toxic goiter, left versus right side and surgeon experience in surgery and IONM usage.*

**OBJECTIVE :** *To identify factors contributing to nerve injury during surgery*

**METHOD :** *Data collected retrospectively from patients medical record, IONM signal values during surgery in OT and during follow up in clinics.*

**RESULTS:** *A total of 59 cases of thyroidectomies with IONM with 82 nerves over 1 year (2023). 7 out of 82 had recurrent laryngeal nerve injury and 2 out of 82 were permanent injury (2.4%) and 5 were transient injury ( 6.1%) in which recovered within 6 weeks postoperatively.*

*One of permanent recurrent laryngeal nerve injury was a case of huge multinodular goiter with intraoperative mechanical injury. Second case was unexplained as evidence by values of IONM reading both at vagus nerve and recurrent laryngeal nerve.*

*Among 5 cases of transient recurrent laryngeal nerve injury, only one case demonstrated loss of signal intraoperatively. Rest was diagnosed during routine postoperative vocal cord assessment.*

**CONCLUSION:** *Identifying the possible factors is paramount in avoiding similar outcome in handling difficult cases*

**A STUDY OF RISK FACTORS FOR LOSS OF SIGNAL DURING NEUROMONITORING OF THE RECURRENT LARYNGEAL NERVE IN THYROID SURGERY**

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*Introduction: Injuries of the recurrent laryngeal nerve (RLN) during thyroidectomy, although uncommon, can lead to major morbidity. Transection and permanent RLN injury are rare, however temporary neuropraxia and loss of signal (LOS) during intraoperative neuro-monitoring (IONM) are seen more frequently. The aims of this study were to identify factors associated with type I (segmental) and II (global) LOS of the RLN during thyroid surgery and to analyse time to recovery of vocal fold function.*

*Materials & Method: This retrospective cohort observational study included 3806 patients (2924 female, 76.8%; 882 male, 23.2%) who underwent hemi- or total thyroidectomy in a tertiary referral centre in the period Jan 2015 – March 2021. Intermittent IONM was used routinely in all thyroid procedures studied. Regression analyses were used to determine factors associated with loss of signal and subsequent time to recovery.*

*Results: RLN LOS occurred in 161 (4.5%) patients and 167 of (2.7%) of 5983 nerves at risk during surgery. The rate of Type I LOS and Type II LOS per nerve at risk was 1.4% and 1.3% respectively. Thyroid malignancy, retrosternal goitre and Graves disease were associated with a significantly higher rate of LOS ( $p < 0.01$ ). The time to recovery was reduced for those who had a Type II LOS (median 4 weeks) compared to those who had a Type I LOS (median 8 weeks;  $p = 0.04$ ). Female sex and increasing age were each independently associated with a longer duration to return of vocal fold function.*

*Conclusion: Thyroid malignancy, Graves disease and retrosternal goitre are associated with an increased risk of LOS in thyroid surgery. The time to recovery if RLN function is significantly reduced for patients who experience a Type II LOS.*

## INTRAOPERATIVE BLOOD LOSS IN TOTAL THYROIDECTOMY FOR GRAVES' DISEASE

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### Introduction

Thyroidectomy for Graves' disease can be highly challenging because of the risk of massive bleeding. Although the risk is particularly high in cases of high thyroid gland weight, massive bleeding can still occur even in cases of low thyroid weight. We investigated factors associated with intraoperative massive bleeding other than the weight of the thyroid gland.

### Materials & Methods

Among patients who underwent total thyroidectomy for Graves' disease at Fujita Health University Hospital from November 2015 to December 2023, 137 patients underwent measurement of the peak systolic velocity of the superior thyroid artery (STA-PSV) before surgery. Linear regression analysis was performed to determine whether age, sex, disease duration, free T3 value, thyrotropin receptor antibody (TRAb) value, thyroid weight, or STA-PSV (using the mean of left and right STA-PSV) were associated with the amount of intraoperative bleeding. Predictors of massive bleeding (defined as  $\geq 800$  mL) were analyzed by binomial logistic regression analysis, and cutoff values were obtained by receiver operating characteristic analysis.

### Results

Among the 137 patients (female: 110, male: 27), the mean (range) age, disease duration, free T3 value, TRAb value, thyroid weight, STA-PSV, and intraoperative bleeding were  $40.3 \pm 15.5$  (8–77) years,  $111.1 \pm 123.9$  (1–684) months,  $3.93 \pm 2.00$  (1.38–18.19) pg/mL,  $28.2 \pm 46.5$  (0.7–355.8) IU/L,  $102.0 \pm 98.2$  (10.0–565.0) mg,  $92.7 \pm 47.9$  (24.9–300.0) cm/s, and  $197.2 \pm 292.8$  (2–1991) mL, respectively. Multiple regression analysis showed a significant association between thyroid weight ( $p < 0.001$ ) or STA-PSV ( $p = 0.001$ ) and intraoperative bleeding. Binomial logistic regression analysis also indicated that these factors were significant predictors of massive bleeding. The cutoff values of weight and STA-PSV for prediction of massive bleeding were 180 mg and 148 cm/s, respectively.

### Conclusion

In addition to thyroid weight, STA-PSV was associated with intraoperative massive bleeding in thyroidectomy for Graves' disease. These factors must be considered preoperatively to anticipate the blood loss volume.

**AN ANALYSIS OF EARLY AND DELAYED TOTAL THYROIDECTOMY FOR GRAVES' DISEASE: A RETROSPECTIVE COHORT STUDY CONDUCTED AT SEOUL NATIONAL UNIVERSITY HOSPITAL**

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**Background**

Although surgery is a secondary treatment option for Graves' disease, there is limited information on surgical outcomes. This study aimed to investigate surgical indications and outcomes based on the timing of surgery.

**Method**

We conducted a retrospective review of medical records of patients who underwent surgical management for Graves' disease at Seoul National University Hospital from January 2018 to December 2022. Patients were divided into two groups: the early operation group ( $\leq 18$  months) and the delayed operation group ( $> 18$  months). We analyzed patient characteristics, biochemical findings (free T4, TSH, TSH receptor antibody), treatment indications, and surgical outcomes.

**Results** A total of 165 patients were included in the study, of which 43 (26.1%) were in the early operation group and 122 (73.8%) were in the delayed operation group. The most frequent indication for surgery was a thyroid nodule (39.5%) in the early operation group, whereas the highest prevalence was seen in cases resistant to antithyroid drugs (39/122, 32.0%) in the delayed operation group. There were no significant differences in free T4, TSH, and TSH receptor antibody levels between the two groups. The early operation group showed significantly smaller thyroid weight (67.2g vs. 108.4g,  $p=0.007$ ) compared to delayed operation group. No significant differences were found in both estimated blood loss (EBL) and operation time (90.0ml vs. 124.3ml,  $p=0.084$  and 118.3min vs. 128.3min,  $p=0.269$ ) as well as postoperative complications (30.2% vs. 36.9%,  $p=0.739$ ) between the two groups.

**Conclusion**

Although there were no significant differences in surgical outcomes according to the timing of surgery, the operation time and EBL were relatively low in early operation group compared to delayed operation group. Further studies will be needed to analyze clinical outcomes over

**VOICE ANALYSIS OF PATIENTS FOR ASSESSMENT OF VOCAL CORD FUNCTION FOLLOWING ENDOSCOPIC THYROIDECTOMY: A RANDOMIZED TRIAL**

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*Background:* Over the last decade, endoscopic thyroidectomy has come up as a safe and feasible procedure with better cosmetic outcomes. However, concerns over its safety in terms of nerve injury and postoperative voice changes remain. This prospective study assessed the vocal cord function using laryngeal examination and voice analysis of patients who underwent endoscopic hemithyroidectomy either by the trans-oral endoscopic thyroidectomy vestibular approach (TOETVA) or the bilateral axillo-breast approach (BABA).

*Methods:* 36 patients were prospectively allocated to the two arms of endoscopic hemithyroidectomy between January 2019 and January 2021 (17 in TOETVA and 19 in BABA group). Patients aged 18-65 years with benign or cytologically indeterminate lesions involving a single lobe of size  $\leq 5$ cm were included. Vocal cord function was assessed subjectively using the GRBAS scale and objectively by acoustic analysis of parameters like jitter, shimmer, mean frequency (F<sub>0</sub>), noise-to-harmonic ratio (NHR) and mean phonatory time (MPT) at baseline, postoperative day 10 and at 3 months following surgery.

*Results:* No significant differences were observed in mean GRBAS scores and values of mean frequency, jitter and shimmer between the 2 groups and at day 10 and 3 months of surgery, compared to baseline. The mean NHR and MPT recorded a significant decrease on day 10 post-surgery, however, at 3 months the readings were insignificant compared to baseline. The other operative parameters were comparable between the 2 groups, except for the shorter mean operative time in TOETVA group.

*Conclusion:* Perioperative quantitative voice analysis and laryngeal examination should be routinely used to assess and track voice changes in patients undergoing endoscopic thyroidectomy.

## USING PAPER SPRAY ION MOBILITY SPECTROMETRY-MASS SPECTROMETRY (PSI-MS) TO AID THE DIAGNOSIS OF THYROID CANCER

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*Thyroid ultrasound and fine-needle aspiration cytology are standard of care technique for preoperative diagnosis of imaging suspicious thyroid lesions. However, discrimination between malignant and benign thyroid nodules can be challenging. Those indeterminate cytology results mainly include atypia of undetermined significance and follicular neoplasm. The final malignancy rate is about 6-18% for AUS and 10-40% for FN. In those nodules with FNAC indeterminate results, a correct diagnosis can only be achieved by final surgical pathology. So, a quick, low cost and correct preoperative diagnostic method are compelling needed.*

*Mass spectrometry (MS) can obtain the chemical fingerprint of a biological tissue based on the mass-to-charge ( $m/z$ ) ratio of its constituent molecules. Paper spray ionization Mass spectrometry (PSI-MS), as only a small amount of sample and minimal pretreatment is required, diagnoses using Field asymmetry waveform ion mobility spectrometry (FAIMS) could greatly reduce the invasiveness and waiting time for patients.*

*In this study, we aim to test the feasibility of PSI-MSI in the diagnosis of thyroid tumors.*

### *Material and Method*

*Totally 263 thyroid tumors operated were included. Fresh tissue samples and ex vivo FNAC samples were collected from the same tumor in the operation. 121 benign and 142 malignant tumors included. The age, gender, preoperative thyroid function, size of tumors, results of FNAC and postoperative pathologic reports were collected from each participant. There were 50 benign tumors and 56 malignant tumors in Bethesda category III-V of the preoperative FNAC results.*

### *Result*

*The sensitivity of training set, testing set, and Bethesda III-V were 91.9%, 88.4% and 85.7% respectively. The specificity of training set, testing set, and Bethesda III-V were 82.4%, 83.3% and 88% respectively. Using paper spray ion mobility spectrometry-mass spectrometry (PSI-MS) can aid the diagnosis of thyroid cancer, especially for those nodules with indeterminate FNAC result.*

**GENOTYPE PHENOTYPE CORRELATION IN RET POSITIVE MEDULLARY THYROID CANCER: A SINGLE INSTITUTION EXPERIENCE**

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*Introduction:* Specific germline RET mutations in inherited Medullary thyroid cancer (MTC) are associated with the onset time of disease and tumor aggressiveness. In this study we identified the patients with RET positive mutation to analyse the described genotype phenotype correlation in our hospital setting.

*Methodology:* Retrospective analysis of all patients with diagnosis of MTC with RET mutation positive treated in our hospital was done from 2002 till December 2022. Variables analysed include demographics, presentation with basal calcitonin, post operative outcomes with calcitonin doubling time and nodal recurrence and systemic metastasis, mortality on follow up. The results were analysed using STATA IC/13.1.

*Results:* 234 (4.46%) out of 5246 patients with thyroid cancer were diagnosed and treated for MTC in the time period. 197 patients (84.2%) underwent RET testing and 70 (35.5%) were RET positive. 65.7% had 634 mutation, 5.7% had 618 mutation, 2.9% had 620 mutation, 17.1% had 804 mutation, 2.9% 790 mutation, 5.7% had 918 mutation. 27, 43, 16.5 years was median age of presentation for 634 and 804, 918 mutation. Nodal recurrence on follow up was 25% in 804 mutation vs 17.4% for 634 mutation ( $p=0.021$ ). Metastasis on presentation was seen in 17.4% and 8.6% on follow up in 634 mutation. The median preoperative calcitonin was 10,110 pg/ml for 918 mutation with doubling time of 23.8 months, 1969pg/ml for 634 mutation with doubling time of 24.9 months and 2000pg/ml for 804 mutation with doubling time of 30.4 months ( $p<0.05$ ). 25 out of 46 (54.3%) patients with 634 mutation had pheochromocytoma and 7 patients (15.2%) had hyperparathyroidism. 7 patients (11.6%) were screen detected and underwent prophylactic thyroidectomy.

*Conclusion:* RET mutation constitutes 35.5 % of all MTC patients with 634 as most common mutation. 634 mutation patients are at risk of pheochromocytoma and hyperparathyroidism. 804 mutation had higher incidence of nodal recurrence.

**REAPPRAISAL OF HEMITHYROIDECTOMY AND PROPHYLACTIC LATERAL NECK DISSECTION FOR GERMLINE RET MUTATION-NEGATIVE (SPORADIC) MEDULLARY THYROID CARCINOMAS**

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*Introduction:* Medullary thyroid carcinoma (MTC) has two types; sporadic and hereditary MTCs. We have routinely investigated the RET gene mutations, and for mutation-negative (sporadic) MTC, we have performed hemithyroidectomy, central node dissection, and prophylactic/therapeutic lateral node dissection as a standard surgical method. In this study, we validate the appropriateness of our therapeutic strategy.

*Patients & Methods:* We enrolled 163 sporadic MTC patients who underwent initial surgery between 1995 and 2022 in Kuma Hospital. Median postoperative follow-up period was 9.8 years (0.5-28.2 years).

*Results:* On preoperative imaging studies, only 3 patients (1.8%) showed multiple lesions, and all were located in one lobe. We generally performed hemithyroidectomy, but 51 patients (31.3%) underwent total thyroidectomy because of large tumor, coexisting thyroid autoimmune diseases and other lesions in contralateral lobe. None of these 51 were detected MTC lesions in contralateral lobe on postoperative pathological examination. Further, none of the 112 patients who underwent hemithyroidectomy, showed recurrence to the remnant thyroid to date. Of the 122 cN0 MTC, 120 (98.4%) underwent not only central node dissection but also prophylactic lateral node dissection (p-LND). The incidence of biochemical cure was very high, at 84.1% (101 patients). Twenty-nine patients (24.2%) were pathologically diagnosed as pN1b, and 21 of these (72.4%) were biochemically cured. To date, none of these 120 patients showed postoperative lymph node recurrence. The remaining 2 were microcarcinomas ( $\leq 10$ mm) and they were biochemically cured, although they did not undergo p-LND. The prognosis of our series was excellent; 5-year recurrence-free survival (RFS) and cause-specific survival (CSS) rates were 92.0% and 98.7%, respectively and 10-year RFS and CSS rates were 89.4% and 97.9%, respectively.

*Conclusions:* Our reappraisal suggests that hemithyroidectomy is appropriate for sporadic MTC confirmed as RET gene mutation-negative and that p-LND for cN0 MTCs  $>10$  mm should contribute to high incidence of biochemical cure.



**RETROSTERNAL GOITER: A DESCRIPTIVE ANALYTICAL STUDY FROM NORTHERN BORNEO; SABAH**

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*Retrosternal goiter (RSG) is a condition whereby 50% or more of the thyroid gland's volume extends below the clavicle and beyond the sternum into the thoracic inlet. Most are slow growing and are often benign in nature. The incidence of RSG are reported between 5-20% of total thyroidectomy patients. We would like to report our local experience here in our Breast and Endocrine Surgical department at Queen Elizabeth II Hospital in managing RSGs surgically in regards to clinical presentation, size, surgical approach, as well as surgical outcomes and recovery. This is a retrospective descriptive analysis included all patients whom underwent thyroidectomy from January to December 2023. Out of total of 147 patients identified (total and hemithyroidectomies), 8 cases (5.44%) were diagnosed as RSGs. The size of the RSGs operated at our center ranged between 5cm and 12cm. All 8 cases of RSGs were successfully operated via the cervical approach without need for midline sternotomy considering the huge size of our RSG cases. Of the 8 cases of RSGs, two (25%) patients exhibited clinical symptoms whereas the remaining six (75%) patients remained asymptomatic. Postoperative histopathology revealed Nodular hyperplasia (75%), Adenomatoid nodule (12.5%) and non-invasive follicular thyroid neoplasm with papillary nuclear features (NIFTP) (12.5%). From our limited experience, the majority of RSGs may successfully be resected via conventional cervical approach without the need for sternotomy. However, decision should be individualised for each patient.*

**COMPARING THE DIAGNOSTIC PERFORMANCE OF ACR-TIRADS AND BTA U-SCORE IN CLASSIFYING THYROID NODULES: A SINGLE CENTRE RETROSPECTIVE COHORT STUDY**

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**INTRODUCTION**

The American College of Radiology (ACR)-TIRADS and "British Thyroid Association (BTA)" U-Score are two ultrasound-based scoring systems which aid in stratifying risk of malignancy and selection of nodules for intervention. Prior studies comparing both these scoring systems resulted in heterogeneous outcomes. This study aims to compare the diagnostic performance of ACR-TIRADS and BTA U-score in the detection of malignant thyroid nodules.

**METHODOLOGY**

This retrospective study was conducted in University Malaya Medical Centre and included 255 eligible patients who underwent thyroid resection between 2015 and 2020. Two radiologists independently reviewed all ultrasound images and classified the nodules according to ACR-TIRADS and BTA U-score. Discrepancies were arbitrated by a consultant radiologist. The radiologists were blinded to the clinical presentation, previous ultrasound report and histopathology. USG scores were then correlated with histopathology to determine the diagnostic accuracy. Statistical analysis was done using IBM SPSS Version 26.0.

**RESULTS**

Malignancy was present in 63 (24.7%) nodules. PTC (n=36, 14.1%) was the most frequent histopathology followed by FTC (n=18, 7.1%). Similar values were seen in diagnostic accuracy of both scoring systems: sensitivity (BTA: 88.9% vs ACR: 84.1%), specificity: (BTA: 29.2% vs ACR: 26.0%), PPV: (55.7% vs 53.2%) and accuracy (BTA: 59% vs ACR: 55.1%). BTA showed higher NPV compared with ACR TIRADS (72.45 vs 62.1%) with statistical test showing significance (p value <0.05). Moderate interobserver agreement seen between the two radiologists (Cohen's K: ACR-TIRADS: 0.5 vs BTA U-score: 0.5 with a 95% CI).

**CONCLUSION**

Comparable diagnostic accuracy in the detection of malignant thyroid nodules was seen between ACR-TIRADS and BTA U-score. With the use of an USG scoring system, risk stratification and estimation of malignancy can guide clinical decision-making and avoid unnecessary procedures. In clinical practice however, ACR-TIRADS which is a point-based system is more practical and objective.

**OCCULT THYROID MALIGNANCY IN GRAVES DISEASE AND NODULAR GOITRE PATIENTS UNDERWENT TOTAL THYROIDECTOMY; A SINGLE CENTER STUDY AT AN ENDOCRINE SURGICAL UNIT IN SRI LANKA**

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*Introduction and Objectives:* Occurrence of thyroid carcinoma is multifactorial. Studies on incidence of occult thyroid malignancies in Grave's disease and other nodular goitres in Sri Lanka are lack. This study is to assess the incidence and occurrence of clinically occult thyroid malignancies in patients underwent total thyroidectomy for clinically benign conditions.

*Material and Methods:* A retrospective-descriptive study conducted among patients underwent total thyroidectomy for benign goitres and Graves' thyrotoxicosis over 6 months period from June to December 2023. Patient databases were analysed and appropriate diagnostic criteria for benign goitres and Grave's thyrotoxicosis considered for inclusion criteria and histological diagnostic criteria to establish diagnosis.

*Results:* 58 patients underwent total thyroidectomy were considered in this study. 91.3% (n=53) were females and 8.7% (n=5) were males. Mean age of females 46.9 years and 53.8 years for males. 27.5% (n=16) had Grave's thyrotoxicosis as the indication for surgery. 72.5% (n=42) had clinically benign goitres. Out of all 36.5% (n=16) had histologically proven thyroid malignancy. Majority (37.5%) had micro-papillary carcinoma with pathological stage pT1 18.7% (n=3) of patients clinically treated for Grave's disease had histologically proven thyroid carcinoma whilst majority of them too had micropapillary carcinoma.

*Conclusion:* Incidence of Thyroid malignancy in Graves disease is considerably high in this local study conducted in Sri Lanka compred to global rates. This study highlights the importance of Graves' disease patients be properly screened for coexisting thyroid malignancy.

**TITLE: UNVEILING THE UNCOMMON: BROAD LIGAMENT INTERNAL HERNIA - A DIAGNOSTIC CONUNDRUM**

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**Introduction:**

Internal hernias within the broad ligament are a rare clinical phenomenon, constituting merely 4% of all internal hernias. This rarity poses both diagnostic and therapeutic challenges. Understanding the nuances of such cases becomes crucial in clinical practice.

**Method:**

We present a compelling case of a 45-year-old woman admitted with acute upper abdominal pain accompanied by nausea, vomiting, and abdominal distension. Despite an unremarkable CT abdomen a week prior, her symptoms persisted. Her clinical examination revealed persisting abdominal distension and pain, which led to repeat CT imaging. The CT-Abdomen revealed small bowel obstruction with a single transition point at the pelvis adjacent to the uterus. Given her presentation with a virgin abdomen, the decision to have surgery was made.

**Results:**

Intraoperatively, we discovered the small bowel was distended proximally, culminating in strangulation within the left broad ligament. Attempts at laparoscopic reduction proved unsuccessful, necessitating a Pfannenstiel incision for the safe reduction and subsequent resection of non-viable small bowel. The defect within the broad ligament was meticulously suture repaired using a running 3.0 Prolene stitch.

**Conclusion:**

Broad ligament internal hernias present a diagnostic dilemma, often demanding quick and astute clinical judgment. Radiological imaging, while helpful, lacks specificity. In our case, the obstetric history strongly pointed towards a broad ligament tear as the causative factor. The surgical approach to repair such defects encompasses options like primary repair or marsupialization. This unique case sheds light on the importance of timely assessment and intervention. During the presentation, we will supplement our findings with operative and imaging visuals.

**DAMAGE CONTROL SURGERY WITH ANGIOEMBOLIZATION AND STAGED HEPATECTOMY IN A PATIENT WITH MASSIVE BLUNT HEPATIC TRAUMA**

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*Introduction*

*The liver is the most commonly injured organ in blunt abdominal trauma. Hepatic resection for trauma is an accepted and established option for definitive treatment, it is rarely performed because of the associated morbidity and mortality. Current operative management is packing, damage control, and early utilization of interventional radiology for angiography and embolization. The objective of this study was to show the role of anatomic and noanatomic hepatic resection accomplished by experienced trauma and liver surgeons in the management of complex liver injuries.*

*Materials & Methods*

*A 30-year-old male presented to our emergency department due to blunt abdominal trauma injury cause by car accident. The patient was in hypovolemic shock with the blood pressure of 90/60 mmHg, weak peripheral pulses at the rate of 110 per minute. Focused Assessment with Sonography for Trauma (FAST) was positive for free fluid in perihepatic area. Abdominal CT findings showed liver parenchymal laceration in multiple segments (Grade IV liver injury). Emergency operation was performed. Necrosectomy and hepatic bleeding control was performed with perihepatic packing and placed temporary abdominal closure dressing. Then Transcatheter arterial embolization (TAE) was conducted to stop bleeding from both hepatic artery branches. The second-look laparotomy performed 36 h after the first surgery. Lt hepatectomy and perihepatic packing was performed. Packing removal was performed 36 h after the second operation. The postoperative course was uneventful.*

*Results*

*Damage control surgery following angioembolization and staged hepatectomy is safely performed. This operative management is considerable option in a patient with massive blunt trauma.*

*Conclusion*

*In high grade liver injuries, Staged liver resection makes possible to effectively control bleeding, remove necrotic tissue and prevent complications as bile leak. Patient selection and decision making by operative findings should be carefully considered by experienced trauma and liver surgeons.*

## THE RELATIONSHIP BETWEEN INJURY SEVERITY AND FRACTURE OF THE FIRST AND/OR SECOND RIBS IN BLUNT CHEST TRAUMA

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*Introduction:* The anatomically well-protected first and second ribs require a high energy trauma to be fractured. This trauma can cause serious injuries to the chest and other extra-thoracic body regions. We aim to study fractures of the first and/or second ribs in blunt chest trauma (BCT) patients and their relation to injury severity and mortality.

*Patients and methods:* We retrospectively collected data of all patients who were admitted to Al Ain Hospital with blunt chest trauma from December 2014 through January 2017. The Injury details of all BCT patients were retrieved from Al Ain hospital trauma registry. Data included demography, mechanism of injury, vital signs, Glasgow Coma Score (GCS) on admission, injured body regions, management, Injury Severity Score (ISS), New Injury Severity Score (NISS), and outcome including length of hospital stay (LOS), and mortality. A comparison between BCT patients who sustained first and/or second ribs fracture and other patients without fracture was performed.

*Results:* During the study period, there were 4779 patients included in the Trauma Registry of Al-Ain Hospital, 669 (13.9%) patients had blunt chest trauma. Fractures of first and/or second ribs were present in 49 (7.3%) of blunt chest trauma patients. The group consisted of 42 (85.7%) males and 7 (14.3%) females; the majority were due to motor vehicle collisions in 36 (73.5%) patients. Injury severity parameters as ISS, NIS, and ICU admission were significantly higher in patients with first and/or second ribs fractures compared to other patients without fractures. One patient died with first and/or second ribs fractures (overall mortality 2%) compared with 14 (2.3%) patients without fractures which was not statistically significant ( $p=1.0$  Fishers exact test).

*Conclusions:* First and/or second ribs fractures in blunt chest trauma patients indicate high energy type of trauma. Meticulous evaluation should be paid to avoid missing other serious injuries.

**ANALYSIS OF THE OUTCOMES AND COMPLICATIONS OF PATIENTS WITH TRAUMATIC SPINAL FRACTURES TREATED WITH DIFFERENT TYPES OF SURGICAL INTERVENTIONS: A COMPARATIVE CASE STUDY**

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**BACKGROUND:** Severe fractures often require surgical intervention via procedures such as vertebroplasty, kyphoplasty, fusion, and nails and plates to repair the fracture.

**AIM:** To analyze the different surgical interventions for patients presenting with traumatic spinal fractures and their outcomes and complications.

**MATERIALS AND METHODS:** This observational study was conducted in Downtown Hospital and retrospective data was collected between 2020 and 2023. Observation, interviews, and document analysis are among the various data collection methods employed. Adult patients with traumatic spinal fractures who underwent treatment were identified and data was documented. The data was compiled and analyzed using Excel and Spss 25.0

**RESULTS:** A total of 21 patients underwent treatment for traumatic spinal fractures in the hospital between 2020-2023. 52% of patients were female and 48% were male. 4 patients had pre-existing osteoporosis, 4 had hypertension, 5 had Type 2 Diabetes, and 1 had hypothyroidism. 4 patients had traumatic fractures due to a road traffic accident whereas the other 17 patients had a fall from height. 2 patients presented with paraesthesia and 1 had bowel and bladder incontinence. A total of 2 patients underwent a kyphoplasty, 1 was treated with a vertebroplasty, 14 were managed conservatively and the remaining 4 underwent multiple procedures. Of the 4 patients undergoing multiple procedures 2 underwent fusion whereas the rest underwent discectomy with canal decompression. No patients had postoperative complications and evaluation after 4-6 weeks revealed no complications.

**CONCLUSION:** The majority of patients presenting opted to be managed conservatively despite advice for surgery. Conservative management has not led to any long-term complications or deformities. Kyphoplasty was not associated with a higher risk of adverse outcomes compared to vertebroplasty. Age and medical comorbidities are significant risk factors for traumatic spinal fractures. Type 2 diabetes was the prevalent comorbidity among the studied population.

**MECHANISM, OUTCOMES, AND MANAGEMENT OF SPLENIC TRAUMA: AN ANALYSIS OF 450 CASES IN A LEVEL 1 TRAUMA CENTRE**

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*Introduction:* Splenic trauma, with its diverse causes and treatment approaches, is a serious concern in emergency departments. This study looked at the mode of injury, management, and outcomes for a cohort of 450 patients with splenic injuries.

*Methods:* A retrospective study was done on 450 patients who had splenic trauma (384 men and 66 women) admitted to the department of Trauma surgery, King George's Medical University, Lucknow. The information was gathered and analysed regarding the mechanism of injuries (RTA, assaults, gunshots, falls, and others), the treatments received, and the results.

*Result:* RTA accounted for 310 cases of splenic trauma, with men accounting for 275 of those cases. Ninety incidents were falls from heights, affecting 22 females and 68 males. Fifteen cases—all male—were related to assaults, and thirteen cases—all male—were related to gunshot injuries (12). Males received conservative therapy in the majority of cases (230), while females had splenectomy and drain implantation (14). 354 patients were discharged from the hospital, 50 were transferred to different departments, 21 patients were departing against medical advice (LAMA), 1 patient absconded, and unfortunately, 24 people died.

*Discussion:* The study emphasises the prevalence of men in cases of splenic trauma, particularly those involving weapon injuries and traffic accidents, with differing approaches to treatment. The grading of splenic injuries was not well defined, necessitating a more uniform system. The study emphasises how crucial it is to keep an eye on cases of splenic trauma in order to enhance patient outcomes and management.



## REVIEW OF LAPAROSCOPY IN TRAUMA CASES IN A SINGAPOREAN TRAUMA CENTRE

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### *Introduction*

Laparoscopic surgery has made huge advances over the past few decades and gained success in the setting of elective surgery. However, the use of laparoscopy in the trauma setting as a diagnostic and therapeutic tool is still undergoing serious debate and there is insufficient data available to date. Potential advantages of the minimally invasive approach include high diagnostic accuracy and reduced rates of negative laparotomies, improved respiratory function, reduced rates of surgical site infection, reduced post operative pain and faster recovery. We describe our experience with trauma laparoscopy cases in this paper. The demographics, mechanism of injury, injury severity score and outcomes are described.

### *Materials, Methods and Results*

Tan Tock Seng Hospital is level one trauma centre situated in a region with high population density. A retrospective descriptive study of patients who were admitted for trauma-related injuries between the years of 2013-2022 and underwent trauma laparoscopy was reviewed and analysed. Data included are demographics (age, sex, injury severity scale), mechanism of injury, indication for trauma laparoscopy, procedures performed and intra-operative findings and outcome including length of hospital stay. Data was collated on Microsoft Excel. Given the expected heterogeneity, statistical analysis was not performed. A total of 15 laparoscopic cases were performed in the trauma setting. In terms of outcome, all patients survived.

### *Conclusion*

We have shown that laparoscopy has a role in carefully selected trauma patients. With increasing experience, we can expect the usage to grow which can potentially translate into patient's benefit via reduced pain and length of hospital stay. As our experience managing trauma patients matures, we hope to come up with a protocol for suitability of laparoscopy in the trauma setting to improve their outcomes.

**A RARE AND EASILY OVERLOOKED CASE: TRAUMATIC BILATERAL TESTICULAR DISLOCATION**

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**Abstract**

*Traumatic dislocation of testis is uncommon. It might be an independent event or is easily overlooked with the presence of other severe accompanying injuries in pelvic blunt trauma. Diagnostic tools include ultrasound (US), color-doppler US and computed tomography (CT). In most cases, an operation is needed for the prevention of malignant change or infertility. We represented a case of bilateral traumatic dislocation of the testis, unilateral testis rupture with pelvic fracture caused by motorcycle accident.*

**Case Presentation**

*The 21 year-old male patient presented to the emergency room after a motorcycle collision. On physical examination, bilateral testis missing was noticed. X ray revealed pelvic fracture and normal urethral pattern in Urethrogram. Abdominal CT reported pelvic ring fracture, pubic symphysis rupture and dislocation of bilateral testis at inguinal canal with left side testis rupture. The patient underwent emergent bilaterals orchiopexy with left side testis repair, open reduction of pelvic fracture with plate fixation. He recovered uneventfully and discharged on post operation day 10th. Follow up color Doppler US revealed bilateral normal testis blood flow.*

**Conclusion**

*Testicular trauma commonly results from sporting activity, straddle accident or a motor vehicle accident. However, traumatic dislocation of the testis is rare and is most treated with operative reduction. Scrotum examination in all trauma patients is suggested, particularly if a pelvic injury is suspected or in case of a high risk of a motorcycle collision, to avoid missing the diagnosis and prevent severe complications.*

### A SYSTEMATIC REVIEW : EMERGENCY DEPARTMENT THORACOTOMY

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*Background:* Trauma is the first cause of death and disability in young people. With the development of trauma system, the trauma death mortality has significantly reduced. Although with the development of emergency department thoracotomy (EDT), the mortality after EDT is reducing, the proper use of EDT after thoracic and abdominal trauma is controversial. The objective of this review is to understand the indication for EDT.

*Methods:* A systematic search using the PubMed, SCOPUS and ScienceDirect databases was performed related key words: emergency, emergency department thoracotomy, trauma, emergency treatment, thoracotomy. Patients were grouped by type of injury mechanism

(blunt versus penetrating). Outcomes assessed were survival rate.

*Result:* There were 139 studies involved 21,951 EDT cases showed that an overall survival rate of 7.98 percent (1,752 survivor ). The lower survival rate of the blunt injuries was 1.86 percent (5,768 thoracotomies with 107 survivors), compared with the penetrating injuries was 10.82 percent (10,896 thoracotomies with 1,179 survivors). When the location of major injury was the heart, the penetrating cardiac injury survival rate was 22.28 percent. The patients (both penetrating injury and blunt injury) who underwent EDT with signs of life had more favorable survival rate 15.7 percent (2,146 thoracotomies with 337 survivors). The patients who underwent EDT were limited with signs of life or without signs of life had dismal survival rate 3.94 percent (3,200 thoracotomies with 126 survivors).

*Conclusion:* The patients who suffering from penetrating injuries or the location of major injury is the heart with signs of life are strongly considered to EDT, and the patients who suffering from blunt injuries with signs of life are conditionally considered to EDT. However, the patients (both penetrating injury and blunt injury) who are limited with sings of life or without signs of life are not considered to EDT. Furthermore, the blunt injury patients with more than 10 minutes of prehospital CPR and penetrating injury patients with more than 15 minutes of CPR (both without signs of life) should not to be considered to EDT.

## PANCREATIC INJURIES IN SOUTHERN MALAYSIA: OUR 5 YEARS OF EXPERIENCE

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### INTRODUCTION

Traumatic pancreatic injury is a rare occurrence, constituting 0.2%-12% of total abdominal trauma cases, necessitating early detection to mitigate morbidity and mortality. The optimal management of such injuries remains a subject of debate. This retrospective observational study spans five years, focusing on our experiences in handling pancreatic injuries in southern Malaysia.

### METHODS

Patients aged over 13 with pancreatic injuries between January 2018 and December 2022 were included. Data encompassed demographics, trauma specifics, interventions (operative and non-operative), complications, and hospital courses, extracted from our surgical trauma registry and medical records.

### RESULTS

Among 43 reviewed patients, all sustained blunt abdominal trauma, predominantly due to road traffic crashes (95.3%). The decision for operative management (OM) vs non-operative management did not correlate with age, sex, mechanism of injury, NISS, or AAST grade of pancreatic injury ( $p>0.05$ ). Early operative management was primarily based on hemodynamic stability, with SBP ( $p=0.017$ ) and HR ( $p=0.042$ ) influencing decisions. High-grade III-V injuries were noted in 39.6% (17/43) of cases, with 12 undergoing surgery (11 early and 1 failed NOM). Among grade III and IV injuries, 5 were managed without any operation. The overall survival rate was 90.7%, with no mortality in the non-operative group. Mortality among the OM group ( $n=4$ ) was not solely attributed to pancreatic injury.

### CONCLUSION

Treatment options for pancreatic injuries vary based on institutional capabilities and patient status. While operative management is well-established, non-operative management demonstrates favorable outcomes for selected patients, highlighting the need for a nuanced approach in addressing traumatic pancreatic injuries.

### KEYWORDS

Pancreas, Pancreatic injuries, Abdominal injuries, Developing country, Malaysia.

**BILATERAL SCAPULAR FRACTURE IN BLUNT CHEST TRAUMA: TWO CASE REPORTS**

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*Introduction:* Bilateral scapular fracture is a rare injury. In the literature, electrical shock or epileptic seizures are typically linked to most of the reported cases.<sup>1</sup> We present two cases of bilateral scapular fractures following blunt chest trauma.

*Case 1* A 29-year-old male was involved in a rollover motor vehicle collision. On examination, the patient was dyspneic with a Glasgow Coma Score (GCS) of 9/15, pulse rate of 103 bpm, blood pressure 107/76 mmHg, and respiratory rate was 30 breath/min. Chest examination revealed bilateral chest contusion, decreased air entry on the right side, and right-sided surgical emphysema. Trauma CT scan revealed bilateral scapular fractures, bilateral lung contusions, multiple rib fractures, and right-side pneumothorax with surgical emphysema of the chest wall.

*Case 2* A 29-year-old man presented to Emergency Department after being struck by marble plates at his workplace. He was vitally stable, with a Glasgow Coma Score of 15. Clinical examination revealed multiple bruising and contusions on the chest and neck, along with diminished air entry on the right side. CT scan trauma revealed bilateral small pneumothorax, bilateral scapular fracture, multiple ribs fractures.

*Discussion:*

Bilateral scapular fractures are rare in blunt chest trauma.<sup>1</sup> CT scan play a crucial role in the diagnosis.

Conservative management is adapted for all extra-articular scapular fracture with analgesics, immobilization followed by early rehabilitation. Internal fixation is reserved for fractures involving the glenoid fossa or scapular neck.<sup>1</sup>

*Conclusion:*

Bilateral scapular fracture in blunt chest trauma is rare, with only a few cases reported in the literature. They generally do not necessitate surgery. Bilateral shoulder joint immobilization is the treatment of choice for non-surgical cases.

**ADVERSE OUTCOMES FOLLOWING THE MANAGEMENT OF TRAUMATIC INJURIES IN THE SOUTH WEST REGION CAMEROON**

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*Introduction: Traumatic injuries are a major cause of disability and mortality worldwide. Lack of appropriate prehospital care, limited material and human resources, and poorly organized health systems are well-known determinants of adverse outcomes following an injury.*

*Materials and methods: This was a one-year hospital-based retrospective study that was carried out in 2 regional hospitals of the southwest region of Cameroon from January 2022 to March 2023. information concerning patient demographics, background, clinical characteristics, and outcomes were obtained from hospital records. Data was analyzed using SPSS version 26.*

*RESULTS: A total of 269 files were included. Males were more affected (74.4%) and the most representative age group was 19 to 36 years old (43.5%). Road accident was the most common (59.6%), followed by falls (17.1%), assaults (12.1%) gunshots (6.7%), and burns (4.6%). A total of 99 (37.13%) patients had undesired outcomes including 13.02% cases of wound infection and 6.08% of death. Other complications included Disabilities (11.69%) amputations (2.51%), and depression (0.59%). The mean hospital stay was 12.15 ± 18.64 days and the overall mortality was 6.08%.*

*Conclusion: Limited material and human resources affect the quality of care of the injured*

**AN UNFORTUNATE CASE OF BLUNT TRAUMATIC LEFT TESTICULAR RUPTURE WITH NORMAL CLINICAL FINDINGS: A CASE REPORT**

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*Introduction*

*Blunt scrotal trauma which is results from a direct blow to the scrotum compressing against the pelvic bone which may cause testicular rupture, torsion, hematoma, or contusion. Testicular rupture is the rupture of the tunica albuginea and extrusion of the seminiferous tubules. Immediate diagnosis and treatment are important to preserve the testis. It is reported that 50% of direct blunt trauma to the scrotum will result in testicular rupture.*

*Case report*

*We report a case of a 21-year-old male who had involved in a motor vehicle accident was riding motorbike at a speed of 70 km/h. He was thrown forward, rolled over a car, and landed in sitting position. Post-trauma he was unable to ambulate due to right hip pain. He also complained of pain over the scrotum region. Upon arrival to the Emergency Department, primary and secondary survey was clear. Genitourinary examination revealed circumcised phallus with no penile swelling or urethral discharge. There was no swelling or hematoma over the scrotum however, minimal tenderness over the left testis upon palpation. Right testicle was normal in size and lay with no abnormalities on palpation.*

*Scrotal ultrasonography was performed showed scattered hypo-isoechoic foci within left testicular parenchyma which may represent hematoma with the inferior margin of tunica albuginea not well delineated. He underwent emergency left hemiscrotal exploration with the intraoperative findings of tear of the tunica albuginea at the lower pole and extrusion of the seminiferous tubules. Other part of the testes appears ischemic with no torsion of the spermatic cord. A left orchidectomy was performed. He was discharge well after 2 days postoperatively.*

*Conclusion*

*High index of suspicion is required in management of blunt scrotal injury. Mechanism of injury is important to evaluate the injuries further despite having a normal clinical examination.*

**CERVICAL SPINE INJURY ASSOCIATED WITH MAXILLOFACIAL TRAUMA: A 4-YEAR STUDY AT A TERTIARY CENTER IN PUNJAB, INDIA**

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*Association of Cervical Spine Injury with Maxillofacial trauma: A 4-year study at a Tertiary Center in Punjab, India*

*Background: Maxillofacial trauma occurs commonly in road side accidents, especially in rash driving regions.*

*Concomitant suspicion for Cervical Spine Injury is of great importance due to shared mechanisms involved.*

*Objective: To estimate the incidence of Cervical Spine Injury in Maxillofacial trauma (MF Trauma) and to understand their demographics and etiology*

*Methods: A retrospective study was conducted by the Department of Plastic surgery, along with the Department of Neurosurgery to calculate the incidence of Cervical Spine Injury (CS) in all patients admitted with Maxillofacial trauma during the period from Jan 2020 to December 2023*

*Results: A total number of 279 MF Trauma patients were included in this study where males outnumbered females.*

*Most common age group was 21-30 years. Most common etiology was Road Side Accident (RSA). It was found that 75.6% of RSA occurred when patient was on 2-wheeler vehicle in which Majority were driving themselves. Most commonly fractured bone was Maxilla. In this study 13 out of 279 patients had C.S. Injury, out of which 3 were symptomatic. None of the cases were operated for the same.*

*Conclusion: In countries like India where 2 wheelers are commonly driven, the occurrence of subtle but devastating CSI should always be ruled out before dealing with Maxillofacial trauma, especially in 2 wheeler drivers.*



**WHEELING THROUGH TRAUMA: SURGICAL NARRATIVE OF A BICYCLE MISHAP RESCUE**

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*Introduction: A 32-year-old male was admitted to the emergency department after a bicycle accident that resulted in a traumatic brain injury and a complex perineal laceration. Additionally, the patient sustained significant injuries to the left lower limb, including a Schatzker VI tibial plateau fracture, necessitating immediate and multidisciplinary medical attention.*

*Material/Methods: The patient reported wearing a helmet during the accident and complained of excruciating pain and restricted movement in the left lower limb. The clinical evaluation revealed a profound perineal laceration with extensive subcutaneous tissue loss, demanding prompt surgical intervention for effective management.*

*Urgent surgical exploration was performed to address the perineal laceration, involving meticulous repair of the external sphincter muscles, thorough cleansing of the wound, and implementation of a multitubular drain. The patient subsequently underwent transarticular knee osteosynthesis for the complex tibial plateau fracture, after ensuring adequate wound healing and stabilization of the perineal region.*

*Results: The patient demonstrated a successful recovery post-surgery, with restored lower limb functionality and no evidence of gastrointestinal or genitourinary complications. Long-term follow-up affirmed the effective healing of the perineal laceration without any adverse outcomes, emphasizing the success of the integrated approach in managing complex traumatic injuries.*

*This case highlights the critical role of timely and meticulous surgical intervention in addressing severe perineal lacerations alongside complex lower limb injuries, affirming the importance of comprehensive care and multidisciplinary collaboration in achieving favorable patient outcomes following traumatic accidents.*

**ISOLATED INTRA-PERITONEAL BLADDER RUPTURE SECONDARY TO BLUNT ABDOMINAL TRAUMA AT A PHILIPPINE PROVINCIAL HOSPITAL**

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*Urinary bladder rupture secondary to blunt abdominal trauma is uncommon and is usually associated with pelvic and other solid and hollow viscus injuries. The authors presented 10 cases of isolated intra-peritoneal bladder rupture secondary to Vehicular crash at a Tertiary Provincial Hospital in the Philippines from January – December 2022. All patients presented in this case report were males, with history of alcohol intoxication prior to injury. All patients sustained injury from self-accident secondary to vehicular crash. Of the 10 patients, 8 patients presented with acute surgical abdomen while 2 patients had equivocal abdominal findings on consultation and underwent ancillary procedures like for FAST and cystogram. All patients were managed using the EAST and the AUA guidelines for bladder injury. All patients underwent exploratory laparotomy with primary repair of bladder injury. Patients were all discharged with uneventful post-operative course. They were subjected to post-operative cystogram noting full closure of the repaired bladder. Low impact blunt abdominal injuries in intoxicated patients with blunt injury presenting at the emergency department is proposed to have a risk of having isolated bladder injury even in the absence of ancillary tests like FAST or CT scan. In this unique set of patients, intraperitoneal bladder injuries occurred without concomitant pelvic fractures, hollow viscous injuries and solid organ injuries. Three-layered cystorrhaphy remains the surgical treatment for intraperitoneal bladder injuries.*

### **BULLS THAT MAKE YOU GASP!**

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#### *Introduction:*

*Bull gore injuries are high velocity injuries caused by sharp goring by bull horns over human body. These injuries are common in animal contact sports like "Jallikattu" where one has to grab a speeding bull's hump till it comes to a halt. During the event's annual occurrence as part of the Pongal celebrations in southern Tamilnadu, we face varied presentations of bull gore injuries from scalp to extremities including the perineum.*

#### *Materials and methods:*

*This retrospective study highlights bull gore injuries to the neck in patients who were admitted in Government Rajaji hospital, Madurai between March 2022- January 2024. Standard trauma care protocols were followed and patients were evaluated and managed appropriately.*

#### *Results:*

*Of the 5 patients who suffered neck injuries, 2 patients had patterned abrasions, 2 had contusions and 1 had linear abrasion. 2 patients were found to have extensive subcutaneous emphysema upto base of skull with air pockets in retropharyngeal and prevertebral spaces and required subcutaneous emphysema drainage. 1 patient had subcutaneous emphysema to the neck with pneumomediastinum and recovered without further complications. 1 patient had subcutaneous emphysema of neck and chest wall with tension pneumothorax and required chest tube insertion. 1 patient had traumatic thyroid gland injury with pneumomediastinum and tension pneumothorax and required oxygen therapy, bilateral chest tube insertion and subcutaneous drainage of emphysema and required hospital stay for 2 weeks before getting discharged.*

#### *Conclusion:*

*All patients included in the study had respiratory illness of varying degree. Mean hospital stay was 5-7 days. Though the external injuries were minor and trivial looking, 2 patients required chest tube insertions and 1 patient required subcutaneous emphysema drainage and 4 patients required oxygen support for 2-3 days.*

*"Bulls may have a curved horn, but so is the suture needle of a surgeon"*

**PROSTHETIC LIMB BY CHOICE NOT BY FATE: AN EXPERIENCE FROM AMPUTATION CLINIC**

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*Introduction:* Lot number of patients continue to live a miserable life with scarred/diseased limb. Stigma attached to amputation defer their choice for prosthetic limb. Spina Bifida an uncommon reason for amputation; whereas chronic skin ulceration is the most common indication. Patient selection for limb salvage versus amputation remains subjective.

*Methods:* This study is a case series on non traumatic amputation which was done in the div. of trauma surgery and critical care at level-I trauma centre for the duration of 6 months from the date of amputation. Ethical clearance was obtained from the institute's ethics committee. Patients with known case of neurological and congenital disease were enrolled for amputation. Patients were counselled for early rehabilitation with immediate post operative prosthesis (IPOP) which was provided within 24 hours of amputation. Patients were followed up till 12 weeks of amputation. Lower extremity functional score was used to assess their functionality at pre amputation and compared at 6 and 12 weeks post amputation. *Results:* Three young adults (n=3), two females and one male, with mean age at the time of amputation 24.3 years underwent elective lower limb amputation. In total, two patients had below knee and one patient underwent above knee amputation with primary closure of stump. The cause of amputation was non healing trophic ulcer in two patients and post surgery scar/contracture in one patient. *Conclusion:* All the three patients were young and required amputation before the age of 35. Chronic skin ulceration, was the most common indication in patients who are young and medically complicated. Patients with non functional limb or who experience repeated foot ulcerations can have better outcome and quality of life with artificial limb. Amputation following PVD may not have similar results. Young educated patients took more informed choice to amputate rather than living with a scarred

### **A MAN WITH MULTIPLE SHOTGUN INJURIES\_ SHOULD THE BULLET BE REMOVED ?**

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#### *Introduction*

*Gunshot injuries are increasing in our population. The extent of injuries caused by gunshots to the abdomen can vary, ranging from minor wounds to extremely traumatic ones, depending on which anatomical structures the bullet penetrates and the kinetic energy of the bullet. Any patient with abdominal gunshot wounds exhibiting active bleeding, peritoneal hemorrhage, peritonitis, or worsening clinical symptoms must have a laparotomy performed immediately for diagnostic and therapeutic purposes. However, some cases can be treated conservatively. Despite its clarity, a variety of patients' presentations and conditions make decisions challenging.*

#### *Case Presentation*

*A 30-year-old man alleged multiple gunshot wounds after a friend accidentally shot him, mistaking him for a deer. At the time of arrival, the patient had a fluctuating Glasgow Coma Scale (GCS) of 14/15 and appeared confused. Although blood pressure was still within the normotensive range, the heart rate revealed tachycardia. Clinically, numerous gunshot wounds were visible across the body, over the neck, chest, abdomen, and upper limbs. CT findings showed numerous bullets in the intraperitoneal and retroperitoneal regions and solid organs such as the liver and pancreas. A decision was made for exploratory laparotomy, repair of the bowel injury, and removal of the visible bullet found in the naked eye. Laparotomy found multiple small bowel serosal tears, one through and through bowel perforation, and primary repair was done. There are four metal bullets found during laparotomy and removed. After the surgery, the patient spent three days in the intensive care unit before moving to the general ward. Following a week-long hospital stay, the patient was discharged well.*

#### *Conclusion*

*In conclusion, a prompt decision is crucial to prevent more intra-abdominal sepsis that might cause more morbidity and mortality. And continue to follow up to look for complications that might appear later due to the retained bullet.*

## LESION OF COMMON FEMORAL ARTERY AFTER PERTROCHANTERIC FRACTURE

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*Introduction:* Lesions of vascular arterial structures as a result of pertrochanteric fractures are very rare and occur in 0.2% of patients. The iatrogenic vascular injuries are caused by repositioning of bone fragments, poor retractor positioning or screw malpositioning. They manifest as acute bleeding immediately and, as subacute hematoma with possible formation of an arterial pseudoaneurysm, respectively.

*Materials&Methods:* A 82-years old male was admitted with a low-energy pertrochanteric fracture of the left hip. Intramedullary osteosynthesis with gamma nail followed the urgent preoperative treatment. Clinical findings showed no possible vascular injury, intraoperatively. The early postoperative course went without any noticeable vascular incident. Physical therapy started and the patient was verticalized. He was discharged on the seventh postoperative day with recommendations for further treatment. After three weeks, the patient was hospitalized in cardiology for verified deep vein thrombosis and angina pectoris. Then a hematoma of the left femoral region was found as an incidental ultrasound finding. The patient denied any repeated trauma to the left leg. He performed physical therapy in bed and walked with the walker device. He was transferred to department for surgical incision and evacuation. After three weeks, MSCT angiography was done due to spontaneous bleeding from a recurrent hematoma. A dislocated bone fragment was found ventral to the head of the femur and extensive hematoma along the ventral part of the proximal edge of the femur, respectively. Lesion of the common femoral artery was repaired with sutures, and the hematoma was evacuated.

*Conclusion:* Although, lesions of vascular arterial structures caused by pertrochanteric fractures are rare, surgeon has to think of it. Depending on the type of arterial lesion, necessary is to recognize and verify it with an adequate diagnostic method and treat it surgically.

### MANAGEMENT OF A POST TRAUMATIC COMPLEX DEGLOVING AXILLARY WOUND USING MODERN NEGATIVE PRESSURE DRESSING: A CASE REPORT

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#### *Introduction:*

*Degree of traumatic open wounds can vary from simple to large and complex open wounds. Treatment is often simple toilet and suture even for deep laceration wounds. This case entails the treatment of a polytrauma patient with open degloving wound of the left axilla with negative pressure dressings.*

#### *Case Report*

*A 28 year old male was involved in motor-vehicle accident sustaining, left shoulder dislocation, large left degloving wound of the axilla, left rib fractures and left lung contusion. Initial treatment was administered at a local tertiary government hospital with trauma surgery services. Supportive measures were administered and patient underwent a wound debridement with toilet and suturing of the wound on post trauma day 3. Due to personal reasons patient was transferred to private hospital for further treatment. On transfer, there was a large partially closed wound measuring 25x20cm from the axilla involving the lower lateral chest wall skin. The skin edges appeared unhealthy. A second debridement was performed after 2 days of admission and started on negative pressure suction dressing for 1 week. There were significant improvement of the wound with healthy granulation seen. The patient was discharge with portable wound suction with special size that fits the odd nature of the wound. After 2 weeks of dressing with the portable dressing, the wound bed was well prepared and subsequently commenced on normal dressing with antimicrobial cleansing agent. The wound was completely epithelised after 2months post trauma. Patient went back to work after 2 weeks of wound epithelization and remained well on 2 months follow-up.*

#### *Conclusion*

*Complex surgical wounds may require modern techniques that include negative pressure dressings to promote quick and optimal healing. With the use of modern dressings promotes faster wound healing allowing patient to return back to work.*

**CLOSING THE GAP: COMPOSIX L/P MESH-MEDIATED CONTINUOUS FASCIAL TRACTION IN OPEN ABDOMEN**

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*Introduction:* Open abdomen with temporary abdominal closure using negative-pressure wound therapy (NPWT) is now a standard procedure in the field of trauma. The key is to find additional ways to minimize fascial retraction to achieve a successful definitive fascial closure (DFC). Various guidelines recommend NPWT with continuous fascial traction (CFT) as a primary technique. In the absence of commercial products that can implement CFT, we devised a Composix L/P mesh-mediated CFT method.

*Materials & Methods:* After the damage control surgery (DCS), the visceral organs were covered with a sterile plastic bag to prevent the formation of an enteric fistula. On top of that, we placed the expanded polytetrafluoroethylene side of the mesh facing toward the abdominal cavity and the polypropylene side facing outward. Then, the fascia was pulled on either side and stitched to this threaded polypropylene mesh with some tension. The skin and soft tissues were approximated through the retention suture, and NPWT was applied as usual. DFC was ultimately achieved by repeating the surgery and gradually reducing the mesh size.

*Results:* Using this method, we successfully performed DFC of a 38 and 45-year-old male patient who underwent DCS for blunt abdominal injury. No abdominal complications occurred during the 9-month follow-up period.

*Conclusion:* NPWT with CFT via Composix L/P mesh can facilitate safe and durable abdominal closure after OA. Further studies are needed to determine its efficacy and long-term effects.



# INVESTIGATION AND ANALYSIS OF ORTHOPEDIC TRAUMA INPATIENTS IN PINGSHAN DISTRICT, SHENZHEN, CHINA FROM 2004 TO 2023

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*In this study, we retrospectively analyzed the inpatients of traumatic orthopedics in Pingshan District, Shenzhen, China from 2004 to 2023. [Objective] To understand the epidemiological characteristics of orthopedic trauma in this area and provide a reference for government decision-making. [ Methods ] A total of 22334 cases of traumatic orthopedics in two hospitals in the Pingshan District of Shenzhen from 2004 to 2023 were investigated and analyzed. [ Results ] The results showed that the patients with orthopedic trauma were mainly in the age group of 20-40 years old, 77.63% were male and 88.78% were from other provinces. The trauma occurred mainly in road and factory areas (53.50%), and the main occupation was production workers (55.96%). Among the causes of trauma, car accidents accounted for the highest proportion (42.45%), followed by injuries caused by production machinery (34.00%). The average hospitalization cost was 8020 yuan, and the average length of hospitalization was 13.94 days. From 2007 to 2012, the number of out-of-pocket cases reached 60.97%, and from 2012 to 2023, social insurance accounted for 60.08%. [Conclusion] Because the Pingshan District of Shenzhen is located in an industrial area, there are many factories and production workshops, and the traffic is busy and chaotic. Most of the traumatic orthopedic patients are young male migrant workers, and the main reasons are traffic accidents and work-related injuries. Thanks to industrial upgrading, the damage caused by production machinery is declining year by year. Thanks to the gradual improvement of the medical insurance mechanism, medical expenses have changed from self-funded to social insurance. The government should strengthen traffic safety education and improve population management, give priority to prevention, and actively take preventive measures.*

### UNDERGRADUATE MEDICAL STUDENT'S PERCEPTIONS AND EXPECTATIONS OF TRAUMATOLOGY

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<sup>1</sup>University of Cyberjaya

#### *Introduction*

*Trauma incidence has been rising in Malaysia, and Malaysia recorded a high road traffic accident rate almost annually. However, there is a general perception of trauma medicine education inadequacy for medical students in the undergraduate medical program. This disparity between the high incidence of trauma-related admission in the healthcare system and inadequate traumatology education in most medical institutions has led to criticism by various stakeholders. This study explored the medical student's perspective of trauma medicine education, which is often ignored.*

#### *Materials & Methods*

*This was a quantitative empirical study that used a set of questionnaires designed by the author based on the literature review, anecdotal experience, and standardised trauma management protocol. Data gathered from respondents who were final-year undergraduate medical students studying at a single medical institution was analysed using Statistical Package for the Social Sciences (SPSS).*

#### *Results*

*A total of 193 medical students participated in this study. All the students (100%) agreed that trauma medicine is a crucial undergraduate medical program segment. There was a significant overall negative Gap Score, or lower rating of the student's perception compared to their expectation across all educational domains.*

#### *Conclusion*

*The study has found a significant lack of trauma medicine education across all learning domains from the medical student's perspective. The disparity in students' expectations and perception of traumatology influences their clinical competency, learning experience, educational value, and motivation in trauma care and management. It's recommended that the undergraduate medical program's curriculum administrator review and improvise the trauma medicine teaching module guided by various stakeholders' perspectives.*

**REGIONAL MULTI-CENTER NETWORK TRAUMA RELATED DEATH AUDIT MEETING: SHENZHEN'S PLAN TO REDUCE TRAUMA RELATED PREVENTABLE MORTALITY**

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*Background: The trauma related death audit meeting is an effective method to improve the quality of trauma care. However, for a single trauma center, there are fewer trauma death cases, making it difficult to enhance trauma quality quickly through trauma death audit meeting. Establishing a regional multi-center network trauma related death audit meeting involving multiple trauma centers can address this issue.*

*Methods: Fourteen trauma centers in Shenzhen participated in 9 times online trauma related death audit meetings from Aug. 31, 2023 to Dec. 31, 2023. The expert group participating in these meetings consists of 8 to 10 specialties including general surgery, orthopedics, emergency medicine, neurosurgery, and intensive care units. Standardized form was used to document the patient's treatment process and details in every case during the meeting. The final determination of whether the deaths were preventable and the agreed-upon measures for improvement were documented with the consent and signatures of each member of the expert groups.*

*Results: A total of 18 death cases were audited, among which 14 were considered as non-preventable deaths, 2 were deemed preventable deaths, and 2 were identified as potentially preventable deaths. A total of 30 improvement measures were proposed, including 10 related to error/delay in intervention, 6 related to inadequate policy, 5 related to error/inappropriate in judgement/decision, 5 related to inadequate treatment protocol and 4 related to error/delay in examination.*

*Conclusion: Regional multi-center network trauma related death audit meetings can efficiently audit a large number of death cases in a short period and identify improvement measures. It is a highly effective approach for trauma quality improvement, contributing to the overall enhancement of regional trauma care and reducing preventable mortality.*

**IS A REGIONAL AIR AMBULANCE SYSTEM COST-EFFECTIVE?**

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*Introduction:* Air ambulance services are an integral part of modern trauma system and can help achieve “The right patient goes to the right hospital at the right time”. The Guangdong-Hong Kong-Macao Greater Bay Area (GD-HK-Macao GBA) is a national strategy for further development and low altitude opening has been recently approved. Therefore, it is worthy to explore the possibility to establish a regional air ambulance system in GD-HK-Macao GBA. *Materials & Methods:* Data from official website of air ambulance service in different countries and regions were collected. Population, area, number of air ambulance rescue and cost is indicator for analysis. Similar data from GD-HK-Macao GBA is also collected and analyzed with assistant by geospatial analysis technology. From the perspective of real world study, it is defined artificially that more than 3 times of air ambulance rescue per day is cost-effective for those countries or regions where are affordable. *Results:* Switzerland has a population of 8.6 million and a land area of 41,284 square kilometers. There are 16,273 air ambulance rescues in a financial year during 2020-2021, with an average of about 45 air ambulance rescues per day. The annual cost is nearly 160 million euros, and the average cost of each air ambulance rescue is nearly 10,000 euros. Germany has more than 24,000 air ambulance rescues, with an average of about 66 rescues per day. Norway has 20,000 air ambulance rescues, with an average of about 55 rescues per day. London has 1494 air ambulance rescues, with an average of about 4 rescues per day. Victoria in Australia has 7707 air ambulance rescues, with an average of about 21 rescues per day. Hong Kong has about 1500 air ambulance rescues, with an average of about 4 rescues per day (Table 1). Data from GD-HK-Macao GBA is shown in Figure 1.

**THE IMPORTANCE OF CLINICAL ASSESSMENT AND RADIOLOGY FINDINGS IN POSTOPERATIVE FOLLOW-UP IN A PATIENT WITH DESCENDING NECROTIZING MEDIASTITIS: A CASE REPORT**

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*Introduction: Descending necrotizing mediastinitis (DNM) is a rare life-threatening progressive infection usually caused by spreading odontogenic, pharyngeal, or deep neck infections to the mediastinum. Early and aggressive surgical treatment, alongside antibiotic and supportive therapy, is vitally important in treating DNM, especially in cases where anterior and posterior mediastinum are involved. Postoperative clinical assessment and radiological features could be beneficial in defining postoperative follow-up strategies.*

*Materials & Methods: A man in his 40s was referred to our hospital with signs and symptoms of deep neck infections seven days after a pharyngeal infection treated with oral antibiotics. CT scan revealed signs of gas and dense liquid collections in the neck, anterior, and posterior mediastinum below the tracheal carina. We performed neck incision, bilateral thoracotomy with mediastinal pleural incision, debridement, and drainage of abscesses in the neck, pleura, and mediastinum. An antibiogram confirmed polymicrobial bacterial infection.*

*Results: Alongside aggressive surgical treatment and supportive therapy, parenteral antibiotics were applied according to an antibiogram. There were signs of significant clinical improvement in the first several days after surgery. On repeated chest radiography there were signs of wide mediastinum disappearing. Repeated CT scans revealed remnant collections of serous liquid in both pleural cavities, which resolved spontaneously. The patient was discharged 24 days after admission with no clinical or laboratory signs of infection.*

*Conclusion: Although early and aggressive surgical, and parenteral antibiotic treatment of descending necrotizing mediastinitis are crucial in decreasing mortality rate, a careful follow-up, clinical assessment, and repeated radiology studies could bring us beneficial insight into whether the patient needs repeated operations or not.*

**OBSTRUCTED LEFT-SIDED MORGAGNI HERNIA: A CASE REPORT AND LITERATURE REVIEW**

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*Introduction: Morgagni hernia is a rare type of congenital diaphragmatic hernia and accounts for 2-3% of all diaphragmatic hernia. Incarceration or obstruction in Morgagni hernia are uncommon presentation of this condition. Case summary: A 40-year-old obese gentleman presented to us for a 2nd time in 2 days with worsening abdominal pain and symptoms of bowel obstruction associated with exertional dyspnoea. Investigation revealed an obstructed left Morgagni hernia for which he underwent an emergent surgery for reduction of the contents and repair of the hernia defect. Post-operatively he recovered well and was discharged on day 6. Discussion: Morgagni Foramen is a defect in the costosternal trigone that is usually small and asymptomatic but can potentially increase in size over time and lead to non-specific abdominal and respiratory symptoms. A high index of suspicion is required for early diagnosis to prevent complications such as bowel strangulation or perforation. Transabdominal is the preferred approach for surgery with a recent paradigm shift towards laparoscopic repair. However, laparotomy is still the preferred in patients who present with gross bowel dilatation and those who are unstable to tolerate pneumoperitoneum.*

**AN ONCOLYTIC ADENOVIRUS CARRYING GAS5 HAS ANTITUMOR EFFECTS ON COLON CANCER CELLS**

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*Background:* Gene therapy for the treatment of malignancies has made significant progress in recent years. However, gene therapy using replication-competent adenoviruses may have a broad perspective. The aim of this study is to investigate the antitumor effect of oncolytic adenovirus carrying GAS5 gene in colon cancer cells.

*Methods:* The recombinant virus ASZ-GAS5 was constructed by inserting the GAS5 gene into the dual-regulated pshuttle-survivin-ZD55 plasmid. The recombinant virus ASZ-GAS5 was verified by PCR assays. The oncolytic potency of ASZ-GAS5 was observed and complemented by MTT assays in human colon cancer cell line HCT-116 and normal liver cell line L-02. Cell migration, cell cycle and apoptosis assays were performed to investigate the biological functions of ASZ-GAS5 in HCT116 cells.

*Results:* We demonstrated that ASZ-GAS5 was correctly built and selectively replicated in HCT116 cells without showing tremendous toxicity to L-02 cells. ASZ-GAS5 significantly inhibited cell proliferation and migration. Moreover, ASZ-GAS5 was able to arrest G2/M phase and induce cell apoptosis in HCT116 cells.

*Conclusions:* The recombinant ASZ-GAS5 virus exhibits special antitumor effect and may serve as a candidate for colon cancer therapy in the future.

*Keywords:* colon cancer, oncolytic adenovirus, survivin, GAS5

**ABNORMALITIES OF SERUM MAGNESIUM LEVELS IN DIALYSIS PATIENTS UNDERGOING PARATHYROIDECTOMY**

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**Introduction:**

*In primary hyperparathyroidism, postoperative hypocalcemia can be exacerbated by magnesium deficiency. However, the significance of magnesium homeostasis in surgery for secondary hyperparathyroidism is unknown.*

**Materials & Methods:**

*Consecutive adult patients on renal replacement therapy who underwent parathyroidectomy for secondary hyperparathyroidism were included in this study.*

**Results:**

*Among 268 patients included in the analysis, about one fifth presented with hypomagnesemia (5.6%) or hypermagnesemia (14.6%). Hypomagnesemia was associated with lower calcium levels and longer postoperative hospital stays. Hypermagnesemia was associated with higher calcium-phosphorus products and lower parathyroid hormone levels. In multivariate analysis, patient age, alkaline phosphatase, and osteocalcin were the only independent predictors of prolonged stay after parathyroidectomy. Calcium-phosphorus products and serum magnesium levels were independently associated with pruritus.*

**Conclusion:**

*Magnesium abnormalities play a minor role in hungry bone syndrome after parathyroidectomy for secondary hyperparathyroidism. Patients with higher serum magnesium levels had greater severity of pruritus.*



**PE 166**

**PRESENTATION CANCELLED**

**BREAST CANCER SURGERY UNDER LOCAL ANAESTHESIA IN A SELECT COHORT OF PATIENTS WITH COMORBIDITIES**

Spandana Jagannath; Sabaretnam Mayilvaganan; Sarrah; Farheen Khan; Gyan Chand; Anjali Mishra; Gaurav Agarwal  
SGPGIMS

*Introduction:*

*Most of the surgeries for breast cancer patients are done under general anaesthesia, with time consideration for frozen section biopsy to be taken into account and with a recent study demonstrating the tumoricidal effect of local anaesthesia there is a renowned interest in surgery under local anaesthesia. The axillary clearance may be difficult especially the arm manipulations if sand bag is not placed under the shoulder. We report our experience of breast cancer surgeries under (LA).*

*Material and Methods:*

*We reviewed our prospectively maintained records of a single surgeon, of patients undergoing surgery for breast cancer from 2018 November 2023 under LA. We included and analysed the patients who underwent surgery under LA*

*Results:*

*10 out of 225 patients underwent surgery under local anaesthesia. one Patient underwent MRM and nine patients underwent BCS. In BCS , 3 patients had SLNB and 6 patients had ALNB. All patients had comorbidities which made general anaesthesia risky. Patient who underwent MRM had severe dermatomyositis. In BCS Group 4 patients had cardiac comorbidities (2 patients had HOCM, one with dilated cardiomyopathy and one patient atrial fibrillation ) and other 5 patients had other multiple comorbidities (4 restrictive lung disease , 3 interstitial lung disease, 2 with liver disease). Mean age was  $67 \pm 3.02$  years. All patients had T2 N1 M0 at presentation. No patient had previous surgery for breast disease. In BCS group one patient who had been planned for ALND had to undergo SLNB because of failure of LA. Post operatively all patients had invasive ductal carcinoma. One Patient had triple negative disease.*

*Conclusion:*

*Breast surgery under local anaesthesia needs expertise and can be undertaken safely with anaesthesia stand by especially in cardiac patients.*

**A NEW TECHNIQUE FOR NIPPLE-AREOLA COMPLEX RECONSTRUCTION DURING ONCOPLASTIC RESECTION OF PTOTIC BREASTS**

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*Introduction – In 20% of cases breast cancer is localized in the central part of the breast. Paget's disease and central localization of the tumor are not a contraindication for breast-conserving surgery. The previously introduced methods for reconstructing the nipple-areolar complex do not meet the criteria of proper aesthetics and long-term stability of the result.*

*Materials & Methods – The technique was developed for the simultaneous reconstruction of the nipple and areola by deepithelializing skin during oncoplastic resection, simulating mastopexy. What sets this method apart from existing techniques is the formation of the nipple and areola from different skin flaps: a crescent-shaped skin flap is formed along the upper edge of the future areola, on the upper feeding pedicle. The feeding pedicle of the crescent shaped skin flap is then deepithelialized, the flap is passed under the skin of the areola to its center, and the distal parts of the crescent-shaped flap are brought out into the hole in the center of the areola to form the nipple, which is then is fixed in the center of the areolas with sutures.*

*Results – 12 patients were operated: 5 had Paget's cancer and 7 had invasive breast cancer. The operation time increased by 15±5 minutes. The postoperative period and patient management haven't changed. The aesthetics of the new reconstruction option were evaluated by the department's doctors, colleagues and patients resulting in high satisfaction with the surgery outcomes.*

*Conclusion – The new method allows to restore NAC with high aesthetic results in the long term.*

**IS IT TIME TO SAY GOODBYE TO DRAINAGE AFTER AXILLARY LYMPH NODE DISSECTION IN BREAST CANCER? A RANDOMIZED CLINICAL TRIAL OF SYSTEMIC TRANEXAMIC ACID COMBINED WITH TOPICAL EPINEPHRINE+XYLOCAINE VERSUS CONVENTIONAL DRAINAGE**

SANJAY KUMAR YADAV<sup>1</sup>; DHANANJAYA SHARMA<sup>2</sup>; PAWAN AGRAWAL<sup>3</sup>; MOHAMMED IMRAN<sup>4</sup>

*Introduction:* Axillary lymph node dissection (ALND) is the work horse of axillary surgery for breast cancer. However, drainage after ALND is a major cause of morbidity, source of discomfort to patients and increases the hospital stay. The aim of this RCT was to compare the clinical outcomes between patients who received systemic Tranexamic Acid combined with topical Epinephrine+Xylocaine versus conventional axillary drainage.

**Methods:**

*This prospective randomized controlled trial compared outcomes of 2 parallel groups, namely topical epinephrine with xylocaine + Systemic Tranexamic Acid (EXT) and conventional drainage group (CD). All patients with breast cancer undergoing ALND were randomly assigned (1:1) to either EXT or CD groups. The primary endpoint was the rate of seroma development.*

**Results:**

*A total of 42 patients (21 in each group) were recruited based on our sample size calculation. The rates of symptomatic seroma requiring aspiration was 14.4% in the EXT group and 4.8% in the CD group (95% CI [10.56-30.38] P=0.3). Mean length of hospital stay was significantly less in EXT group as compared to CD group (3 + 1 vs 5 + 2.5 days, p=0.002).*

*Conclusion:* Use of systemic Tranexamic Acid combined with topical Epinephrine+Xylocaine resulted in reduced hospital stay with similar rates of seroma as conventional drainage after ALND.

## COMPARISON OF LONG-TIME PROGNOSIS FOR BREAST CANCER PATIENTS BETWEEN SENTINEL LYMPH NODE BIOPSY WITH BLUE DYE ALONE AND COMBINED METHOD

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*Introduction:* To identify sentinel lymph node (SNB), blue dyes (BD) and/or radioisotope (RI) tracers have been popularly used. It has already been showed that combined method has superiority in both identification rate and false-negative rate than the dye alone, however, long-time prognosis of SLNB by BD alone compared with combined method has not been enough examined yet. In this study, we re-evaluate the practice of performing sentinel lymph node biopsy with BD alone.

*Methods:* A retrospective analysis was conducted of 114 consecutive patients with breast cancer at the authors' institute between January 2014 and March 2015. Although SLNB was usually offered to all suitable patients with combined dye and isotope, however, we have been forced to perform SLNB with dye alone because of gamma probe failure between October 2014 and March 2015. All procedures were done by experienced surgeons for SLNB. We compared long-time prognosis between both group at nine years after operation.

*Results:* During the period, SLNB were performed in 66 patients with combined method, and in 48 patients with BD alone. A positive rate for SLN metastasis was 19.6% (13/66) and 12.5% (6/48), respectively. There was no difference between the groups in the operation time, time for SLN procedure, number of SLN, and postoperative recurrence. All the patients have survived, except only one patient who refused adjuvant chemotherapy in the combined method group and died at 40 months after operation. One patient with BD alone was confirmed liver metastases 6 years after operation.

*Conclusion:* Our results indicate that the long-time prognosis of SLNB with BD alone is comparable to the combined method. Therefore, SLNB with BD alone remains an option because of its technical simplicity and needless of any additional equipment or procedures.

## IS BREAST-CONSERVING SURGERY A FEASIBLE TREATMENT OPTION FOR BREAST CANCERS IN AUGMENTED BREASTS?

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### Introduction

*The study aims to evaluate the treatment choices and disease characteristics of breast cancers in patients with or without previous augmented mammoplasty. The treatment outcomes of patients who received breast conserving surgery in augmented breasts as compared to those who received mastectomy with implant reconstruction were studied.*

### Materials and Method

*A retrospective case-control study was performed of patients with prior breast augmentation undergoing breast cancer treatment by a surgeon at private practice between 2014 and 2021. Controls were propensity-score matched with age and BMI in a 1:1 ratio.*

### Results

*Twenty-five patients with previous augmentation mammoplasty who had breast cancer and twenty-five propensity-scored matched controls between 2014 and 2021 were recruited. There were no differences in choice of surgery to the breast (breast conserving surgery versus mastectomy) in both groups ( $p=0.778$ ). Tumour size was the only determining factor for choice of breast surgery in the augmented group ( $p=0.019$ ).*

*There were significantly more patients with previous breast augmentation who opted for reconstruction (84.6% versus 45.5%,  $p=0.036$ ) but no difference in the choice of reconstruction method.*

*In the augmented group, four (33.3%) of patients who received breast conserving surgery with adjuvant radiotherapy developed capsular contracture, which was already present in the contralateral breasts in three (75%) of the four patients. Two (25%) of patients who received mastectomy with implant reconstruction developed capsular contracture, which already occurred in the contralateral breasts before treatment in both patients.*

*There were no significant differences in the risk of capsular contracture between breast-conserving surgery with adjuvant radiotherapy and mastectomy with implant reconstruction ( $p=0.601$ ).*

### Conclusion

*History of augmentation mammoplasty did not affect the choice of treatment in breast cancer patients. Breast conserving surgery with adjuvant radiotherapy is non-inferior to mastectomy with implant reconstruction in terms of rate of capsular contracture.*

### PREDICTIVE FACTORS OF MALIGNANCY IN PET-CT OR CT DETECTED INCIDENTAL BREAST LESIONS

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#### *Purpose*

*In the era of readily available PET-CT and CT scans, patients being referred to breast surgeons for asymptomatic incidental findings of breast lesions is growing inevitably. The aim of this study is to identify which clinical parameters predict malignancy in this vast group of patients, with the goal of earlier detection and treatment of breast cancer.*

#### *Method*

*From January 2020 to December 2023, all new cases referred to our breast clinic were reviewed retrospectively. Patients referred for incidental finding of breast lesions on PET-CT or CT were included. Demographic data and radiological characteristics of lesions were recorded. All statistics including univariate analysis were performed with SPSSv29.*

#### *Results*

*A total of 235 patients were referred for incidental findings of breast lesion on either PET-CT or CT from January 2020 to December 2023. 32 patients who defaulted follow-up, refused workup or had missing data were excluded. Total of 223 patients were included in the study, 63 had PET-CT and 140 had CT done. For the PET-CT group, 43 (68.3%) had benign breast lesions while 20 (31.7%) had malignant lesions. Clinical parameters predicting malignancy were SUV>2 ( $p=0.048$ ) and lymph node involvement ( $p=0.000$ ). For the CT group, 110 (78.6%) had benign lesions while 30 (21.4%) had malignant breast lesions. The parameters predicting malignancy in the CT group were age > 45 years old ( $p=0.013$ ), lesion enhancement ( $p=0.009$ ) and size >1cm ( $p=0.008$ ).*

#### *Conclusion*

*In patients referred for incidental breast lesion on PET-CT, SUV>2 and presence of lymph node involvement were significant factors determining if the lesion was malignant. Meanwhile in the CT group, age>45 years old, size >1cm and lesion enhancement were positive predictors of malignancy. These parameters can help guide clinicians to better triage their patients and advise for earlier workup.*

**BREAST CONSERVING SURGERY IN LOCALLY ADVANCED BREAST CANCER PATIENTS WITH GOOD RESPONSE TO NEOADJUVANT CHEMOTHERAPY**

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*Background: The application of breast-conserving surgery (BCS) on patients with locally advanced breast cancer (LABC) with good response to neoadjuvant chemotherapy (NACT) still remains controversial. The objective in this study is to analyse the safety of BCS in the management of Locally advanced breast cancer LABC in patients with good response to NACT.*

*Methods: LABC was defined as stage III or inoperable breast cancer. All patients diagnosed with LABC with surgery after Neoadjuvant Chemotherapy was recruited from Jan 2018 to Dec 2023. Local recurrence (LR) and regional recurrence (RR) in patients with LABC receiving BCS or mastectomy (MT) was analysed.*

*Results: Total 143 LABC patients with NACT were recruited. With a median follow up of 40 months, there are 4 LR (2.8%) and 5 RR (3.5%). Among 23 patients received BCS, there are only 1 RR (4%).*

*Discussion: Though there is unavoidable selection bias in patients receiving BCS, our initial result showed that BCS is a safe option for patients with LABC with good response to NACT.*



**USE OF SENTINEL LYMPH NODE BIOPSY AND PRE-OPERATIVE IMAGING IN HIGH-RISK PATIENTS UNDERGOING PROPHYLACTIC RISK-REDUCING MASTECTOMIES; A RETROSPECTIVE COHORT STUDY**

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**Objective:** To investigate the likelihood of occult malignancy in high-risk patients undergoing risk-reducing prophylactic mastectomy (RRPM) to clarify the significance of performing sentinel lymph node biopsy (SLNB) and imaging pre-operatively.

**Methods:** We performed a retrospective cohort study focusing on high-risk patients, including those with pathogenic variants, a history of breast cancer, or a strong family history of breast cancer, who underwent RRPM at Sir Charles Gairdner Hospital from 2015 to 2022. The identification of an unexpected in situ or invasive malignancy in prophylactic mastectomy specimens through pathological examination is defined as occult breast malignancy.

**Results:** Of 118 patients, there were 114 women and 4 men patients who underwent RRPM. Nine pathogenic mutation carriers were identified including six patients with BRCA1, two patients with BRCA2, and one patient with TP53 mutation. The median age of the patients was 54 years (IQR 19, 45-64 years). Of the total, 15 (12.7%) and 103 (87.3%) underwent bilateral prophylactic mastectomies and contralateral prophylactic mastectomy respectively. Occult malignancy was found in 5 (3.85%) of the 130 (3 missing data) mastectomies performed (four patients with DCIS and one patient with invasive cancer). All five patients with occult malignancy did not have a pre-operative MRI. SLNB was performed in 9 (6.9%) patients and all were negative.

**Conclusion:** Occult malignancy was found in 3.85% of risk-reducing mastectomies in our institution in line with current standards. SLNB in the setting of risk-reducing prophylactic mastectomy may be safely omitted in patients with pre-operative normal breast MRI imaging.

**STATUS OF GENETIC TEST FOR HEREDITARY BREAST AND OVARIAN CANCER IN TOKYO WOMEN'S MEDICAL UNIVERSITY, ADACHI MEDICAL CENTER**

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*Introduction:* Hereditary breast and ovarian cancer (HBOC) are caused by pathogenic variant in a single gene of germline, which accounts for 4% of all breast cancer cases. In Japan, health insurance made it possible to have BRCA1/2 genetic test as companion diagnosis for PARP (poly ADP-ribose polymerase) inhibitors in 2018. Furthermore, in 2020, diagnosis of HBOC, surveillance and contralateral risk-reducing mastectomy were covered by health insurance. The number of patients undergoing the genetic test has been increasing steadily.

*Materials & Methods:* Breast cancer patients that underwent BRCA1/2 genetic test in our department between June 2018 and November 2023 were included for the study.

*Result:* A total of 96 patients were included, of which 73 (76%) underwent BRCA1/2 genetic test for HBOC diagnosis, median age 46 (range 28-80) years, and 23 (24%) had the test as companion diagnosis for PARP inhibitors, median age 57 (range 39-77) years. Ninety-four (97.9%) were females and 2 (2.1%) were males. Thirty-five (47.9%) underwent the test before resection, and 38 (52.1%) underwent the test after resection. Thirteen patients had BRCA1/2 pathogenic variants, of which 10 (76.9%) underwent the testing for HBOC diagnosis and 3 (23.1%) underwent the testing for companion diagnosis. Six (46.2%) had BRCA1 variant positive, of which 2 (33%) were Luminal type, 3 (50%) were triple negative type, and 1 (16.7%) had subtype unknown. Seven (53.8%) had BRCA2 variant positive, of which 5 (71.4%) were Luminal type and 2(28.6%) were triple negative type. Eight (80%) had total mastectomy, and 2 (20%) had partial mastectomy.

*Conclusion:* Once HBOC is confirmed, surveillance and contralateral risk-reducing mastectomy should be considered. It is important to prevent secondary cancers from HBOC.

**DECIPHERING TUMOR IDENTITY: DIFFERENTIATING PHYLLODES TUMOR FROM SPINDLE CELL METAPLASTIC BREAST CARCINOMA**

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*Our study addresses the diagnostic challenges in distinguishing between malignant phyllodes tumour (PT) and metaplastic breast carcinoma (MBC), particularly in rare cases of Spindle Cell Metaplastic Breast Carcinoma (SCMBC), of which only a dozen instances have been reported globally. Our research underscores the necessity for precise diagnosis as PT and MBC necessitate distinct treatment modalities.*

*We present a case report and literature review concerning a 40-year-old woman whose wide local excision biopsy exhibited characteristics of both PT and MBC, leading to a diagnosis of SCMBC. The study utilized a 16-gene mutation panel, which proved effective in identifying mutations specific to PT, thereby aiding in its differentiation from spindle cell MBC. This approach exemplifies the importance of a multidisciplinary team in resolving complex diagnostic challenges in breast cancer.*

*Our findings illuminate the utility of the genetic panel in enhancing diagnostic accuracy for breast cancer cases that are notoriously difficult to classify. This advancement holds significant implications, as it paves the way for more personalized and efficacious treatment strategies for patients with intricate breast neoplasms. The study advocates for further validation of this mutation panel in a broader patient cohort to solidify its role in clinical diagnostics.*

**A PROSPECTIVE STUDY TO COMPARE RESULTS OF PREOPERATIVE CORE NEEDLE BIOPSY AND EXCISION BIOPSY TO DETERMINE ACCURACY OF ER, PR, AND HER2 STATUS IN INVASIVE BREAST CARCINOMA IN RURAL TERTIARY CARE INSTITUTE.**

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**Abstract**

**Background:** Core needle biopsy is a minimally invasive, outpatient, and cost-effective diagnostic procedure. The agreement between the assessment of predictive factors ER, PR, and HER2 in core biopsies and excision specimens is still a topic of discussion. Hence, this study aims to compare the analysis of ER, PR, and HER2 neu status in the initial core needle biopsy (CNB) with the results obtained from the subsequent excision biopsy in breast carcinoma patients. The goal is to determine how well the findings from the CNB align with those from the excision biopsy at our rural tertiary care Institute.

**Aim:** To assess the level of agreement or disagreement in the status of ER, PR, and HER2 between the pre-operative core needle biopsy (CNB) and the subsequent excision biopsy (EB).

**Method:** We enrolled a total of 30 female patients who had been diagnosed with malignant breast lump based on "Triple Assessment". Their medical records were carefully examined to gather information regarding their clinical and histopathological findings. Pathological reports of core needle biopsy and Modified Radical Mastectomy specimens were analysed to determine the type of tumor, stage of tumor, histological grade, and the presence of axillary lymph node metastasis. The evaluation of the ER, PR, and HER2 biomarkers were conducted using established immunohistochemical techniques.

**Results:** The agreement between the Her2/Neu status accuracy in preoperative core needle biopsy and excision biopsy for invasive breast carcinoma was found to be 93 percent upon observation. After accounting for chance factors using Cohen's kappa statistics, the adjusted concordance was determined to be 87.2 percent, indicating an almost perfect level of agreement.

**Conclusion:** In this study, Core needle biopsy can confidently confirm tumour PR / Her-2 status and shows evidence supporting the accuracy of Core Needle Biopsy in determining the molecular profile of invasive breast cancer, particularly in evaluating the PR and HER2/neu

## RECURRENCE OF BREAST ANGIOSARCOMA IN AN IRRADIATED BREAST

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Breast conserving surgery has become a procedure of choice in an era of oncoplastic breast surgery nowadays for breast cancer. Therefore, the patient will require adjuvant radiotherapy to the breast to achieve comparable outcomes with mastectomy to reduce the local recurrence rate. However, there has been reported increased incidence of Radiation Associated Angiosarcoma (RAAS). Angiosarcomas of the breast are malignant tumors derived from the vascular endothelium and can be primary or secondary to radiotherapy. The incidence of RAAS is very rare about 0.2% but it is an important late complication of radiotherapy for breast cancer. The highest incidence occurs in the first 5 to 10 years after radiotherapy, while other types usually present more than 10 years afterward. Angiosarcomas are associated with a poor prognosis, thus early detection is vital. Even though no established standard treatment, wide surgical resection is still the mainstay of treatment with a negative margin for this type of tumours. We describe a rare case of an 82-year-old lady with a Radiation associated Angiosarcoma (RAAS) of the left breast. She had breast conserving surgery for High Grade Ductal Carcinoma In Situ followed by radiotherapy 10 years before the first presentation and developed recurrence 4 years later. During follow up on the recurrence episode, a nodular purplish lesion was noted on the previous surgical scar and core biopsy suggestive of Angiosarcoma. She underwent wide local excision and histopathology was confirmed as Radiation associated Angiosarcoma with a negative margin. Contrast-enhanced CT scan for staging showed no distant metastasis. As in this case, a skin biopsy is mandatory when a patient presents with a skin lesion after radiotherapy to exclude this condition. This case report serves as a cautionary example of the importance of considering breast RAAS in the differential diagnosis when investigating recurrent breast tumours.

**NAVIGATING BREAST CANCER IN PREGNANCY: A CASE SERIES IN MALAYSIA**

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*Introduction:* The incidence of breast cancer in pregnancy is increasing likely related to delayed child-bearing in developing countries. It is challenging to manage as treatment is a balance in trying to achieve good oncological outcome without jeopardizing the foetal well-being. We present our local experience with breast cancer in pregnancy in a developing country.

*Materials and Methods:* This is a retrospective case series of all patients who were diagnosed to have breast cancer during pregnancy in a single tertiary institution in East Coast Malaysia between 2012 to 2023. Data on patient's demographics, tumour features and treatment pattern were recorded.

*Results:* 10 patients were diagnosed with breast cancer during pregnancy with a mean age of 32.6 years, 95% CI[28.6-36.7]. All the patients had a breast lump as the presenting symptom with the median time duration from onset of symptoms to seeking medical attention was 6 months (range 1-12). 8 patients were diagnosed in the second trimester. Upon diagnosis, the mean clinical tumour size was 3.6 cm, 95% CI[2.1-5.0]. 4 out of 8 patients who had a CT staging post-delivery were found to have distant metastases. 9 patients had hormone receptor positive tumours. With regards to treatment received during pregnancy, 4 patients had surgery but 3 of them opted to delay adjuvant chemotherapy after delivery. 2 of the patients refused any forms of treatment during pregnancy and presented again only after delivery. Half of the patients had progression of disease after a median follow up of 19 months (range 1-94 months).

*Conclusion:* Most of our patients with breast cancer in pregnancy presented in advanced stage and refused to receive treatment antenatally, resulting in progression of disease. Further studies are required to determine the factors that influence their decision regarding acceptance of treatment.

### **A DOUBLE BLIND, RANDOMISED CONTROLLED TRIAL OF WOUND INFILTRATION USING DICLOFENAC VERSUS WOUND INFILTRATION USING BUPIVACAINE VERSUS PECS 2 BLOCK USING BUPIVACAINE FOR POST-OPERATIVE PAIN RELIEF IN MASTECTOMY SURGERY. (DWIBPECS STUDY)**

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#### *Introduction*

*Pain is a major concern among breast cancer (BC) patients undergoing mastectomy surgery. Reducing post-operative pain following BC surgery can achieve more rapid recovery and shorten the hospital stay. The primary objective of this study is to compare immediate post-operative pain scores at rest and dynamic post-operative pain with a visual analogue scale. The secondary objective is to measure total post-operative analgesic usage and costs.*

#### *Materials and methods*

*A double-blind, randomised, controlled trial was conducted in 144 patients who undergo mastectomy in UMMC, from July 2022 to December 2023. Block randomisation, and blinding of the patients and assessors were done. Kruskal Wallis test was performed to compare the three groups' pain score, total analgesic usage, and total analgesic cost.*

#### *Results*

*The characteristics of patients in the three groups were generally comparable ;  $p > 0.05$ .*

*In the resting state and during chest movement, the median and interquartile ranges (IQR) of post-operative pain score showed trends of lower pain scores in the diclofenac group compared to bupivacaine and PECS2 blocks, respectively; 12H post-operation during movement scores were 1 (1) vs 2 (2) vs 1.5 (2) (Median(IQR));  $p = 0.047$ . During chest movement at 24H post-operative the pain scores were 1 (1) vs 1 (1) vs 1 (2) (Median (IQR));  $p = 0.047$ . The total cost of analgesia used was significantly cheaper in the diclofenac group as compared to bupivacaine and PECS 2 group RM1.4 (0.04) vs RM7.4(0) vs RM7.4 (0);  $p < 0.001$*

#### *Conclusion*

*Wound infiltration using diclofenac provides comparable post-operative pain relief to wound infiltration with bupivacaine and PECS 2 block in mastectomy. Diclofenac WI provides five times cost-savings to make postoperative pain control accessible in the limited resource setting. Repurposing old and cheap drugs are useful in surgical practice.*

**ASSOCIATION OF THAILAND'S UNIVERSAL HEALTH COVERAGE SCHEMES ON STAGING AT PRESENTATION OF BREAST CANCER PATIENTS**

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*Introduction: Thailand healthcare coverage has main three schemes that affect early diagnosis and treatment of breast cancer. This study aimed to compare the disparity in the stage at presentation among breast cancer patients in the Civil Servant Medical Benefit Scheme (CSMBS), Social Security Scheme (SSS), and Universal Coverage Scheme (UCS).*

*Materials & Methods: Retrospective cohort study, we collected medical record data of breast cancer patients at Rajavithi Hospital from January 2014 to December 2022, including information such as age, gender, income, scheme, religion, living area, medical history, previous treatment, and subtype in breast cancer patients. The primary outcome is the correlation between the scheme and breast cancer staging at presentation, while the secondary outcome is the impact of other factors. We categorized including CSMBS, SSS, and UCS. All data were analyzed by using multiple logistic regression, with a significance p-value < 0.05.*

*Result: Among the 1,314 breast cancer patients, 96.6% were women. The proportion of patients under the three main schemes was as follows: CSMBS 54 (4.1), SSS 393 (29.9), UCS 760 (57.8). Breast cancer staging revealed the distribution across stages: Stage I (CSMBS 10 (18.5), SSS 56 (14.2), UCS 87 (17.4)), Stage II (CSMBS 21 (38.9), SSS 168 (42.7), UCS 257 (33.8)), Stage III (CSMBS 16 (29.6), SSS 111 (28.2), UCS 262 (34.5)), and Stage IV (CSMBS 7 (13.0), SSS 58 (14.8), UCS 154 (20.3)), with a statistically significant difference ( $p = 0.02$ ). Comparing the UCS, it was observed that there is a higher prevalence of late-stage breast cancer presentation (Odds ratio: 1.69, 95% CI: 1.02-2.81).*

*Conclusion: This study found that UCS is associated with a higher late presentation stage of breast cancer. The referral system influences treatment delays, leading to a poor prognosis for breast cancer patients. We suggest developing a medical*



**A COMPARISON STUDY BETWEEN BLAKE DRAINS AND JACKSON- PRATT DRAINS IN REDUCTION OF INCIDENCE OF PROLONGED SEROMA AMONG POST MASTECTOMY PATIENTS: AN OPEN LABELLED, SINGLE BLINDED, RANDOMIZED CONTROLLED TRIAL**

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**Introduction:**

Seroma formation is a frequent occurrence in patients following mastectomy, representing a common postoperative complication that results in considerable patient morbidity. The type of surgical drain used during surgery is one of the many factors that have been evaluated for its potential role in causing prolonged seroma.

**Materials and Methods:**

This was a single centre, randomized controlled trial aimed to compare the incidence of prolonged seroma among post mastectomy patients between the use of Blake drain and Jackson-Pratt drain. Between May 2022 and August 2023, patients undergoing modified radical mastectomy in University of Malaya Medical Centre (UMMC) were recruited. All patients were subjected to the same preoperative preparations and they were randomized to either the group using Blake drain or the group using Jackson-Pratt drain. Outcomes of interest included incidence of prolonged seroma, pain associated with the drain placement site and wound complications.

**Results:**

A total of eighty patients were randomized with 40 patients in the Blake drain group and 40 patients in the Jackson-Pratt drain group. Prolonged seroma was observed in 13 patients in the Blake drain group compared with 15 patients in the Jackson-Pratt drain group (32.5% and 37.5%, respectively;  $P=0.64$ ). The Blake drain group expressed significantly lower pain scores compared with Jackson-Pratt drain group on Day 3 post-operative ( $P=0.04$ ), before ( $P=0.003$ ) and during drain removal ( $P=0.003$ ). No significant differences were noted in characteristics of patients or in other complications.

**Conclusion:**

The study did not identify a significant difference in incidence of prolonged seroma among post mastectomy patients between the two groups. However, there was a notable disparity in pain scores, suggesting significant implications for patient's comfort in their journey of recovery.

**SURVEILLANCE IMAGING IN BREAST CANCER PATIENTS UNDERGOING BREAST CONSERVING SURGERY WITH CHEST WALL PERFORATOR FLAP RECONSTRUCTION AND THERAPEUTIC MAMMOPLASTY : THE NORTHERN HEALTH EXPERIENCE**

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*Breast conserving surgery (BCS) using chest wall perforator flaps (CWPFs) have increased in popularity over the past decade whilst therapeutic mammoplasty (TM) using Wise pattern reduction has entered the mainstay of level 2 oncoplastic BCS technique. There is paucity in literature regarding these oncoplastic techniques and its implication on breast cancer surveillance imaging.*

**Method**

*This is a retrospective analysis of consecutive patients who underwent either BCS with CWPF, TM and BCS only between August 2020 and April 2023 by breast oncoplastic surgeons in a tertiary referral centre. Qualitative analysis of postoperative mammogram and ultrasound were performed.*

**Results**

*Twenty patients undergoing CWPF and twenty patients undergoing TM were compared with 40 patients undergoing BCS only with median follow up of 1.4 years. The CWPF and TM groups were younger and had larger tumour size. Tumour pathological characteristics were similar in both groups.*

*When comparing oncoplastic BCS with standard WLE, both groups had similar incidence of benign reported features on imaging which include benign calcifications, fat necrosis, volume loss, and radiotherapy changes. There was no significant difference in the diagnostic biopsy between the two groups. Only two patients in the CWPF group were recalled with biopsies showing post-surgical changes. In the TM group, no patients required further tissue biopsy.*

**Conclusion**

*Patients who had BCS with CWPF and TM did not have greater rates of imaging abnormality compared to patient who had BCS only. We conclude that these oncoplastic techniques did not lead to greater rates of diagnostic procedures. We acknowledge that further studies with longer follow-up will be required.*

1. Hu J, et al . The Results of Surveillance Imaging After Breast Conservation Surgery and Partial Breast Reconstruction With Chest Wall Perforator Flaps; A Qualitative Analysis Compared With Standard Breast-Conserving Surgery for Breast Cancer. Clin Breast Cancer. 2019 Jun;19(3)

**ENHANCED RECOVERY AFTER SURGERY ( ERAS )PROTOCOL IN POSTMASTECTOMY PATIENTS IN A TERTIARY HOSPITAL IN MALAYSIA**

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**INTRODUCTION:**ERAS protocol are perioperative strategies which reduce postoperative(postop) pain,opioid usage,postoperative complications,postoperative nausea&vomitting, early mobilization and length of stay.We aim to control postoperative pain by intraoperative pectoral block (1&11) after removing mastectomy specimen in patients at Selayang Hospital.

**METHODS:**A cohort study of 66 patients who underwent unilateral modified radical mastectomy or simple mastectomy over 8 months at a single centre.Data collected include demography,type of surgery,intraoperative pectoral block,postoperative pain control,postoperative nausea&vomiting, complications and length of stay.Excluded were patients with diagnostic excision/margin clearance,bilateral mastectomy and patient refusal.Subanalysis of intraoperative Pectoral 1 and 11 block performed in 33 patients.Pectoral 1 block is direct infiltration of bupivacaine 0.25 % 2mg/kg between pectoralis major and minor muscle. Pectoral 11 block is infiltration of bupivacaine 0.25% 2mg/kg between pectoralis minor and serratus anterior.Data entered and analyse using SPSS statistics 29.Group comparision analyse using Chisquare and Mann – Whitney u test.

**RESULTS:**There were 66 patients with breast diseases who underwent mastectomy age ranging from 32 to 80 years old.33 patients were included in the prospective study of Intraoperative Pectoral block after removal of mastectomy specimen.Significant difference were found in pectoral block group in postop pain on day of surgery (  $p<0.005$ ),postop day 1( $p<0.005$ ). There is significant reduction in opiod usage postoperatively till discharge in pectoral block group( $p<0.005$ ).Early mobilization and return to full movement of limb on day of surgery (postop 12 hours) and postop day 1 in pectoral block group( $<0.005$ ). No significant difference in postoperative nausea&vomiting and complications.No differences in length of stay due to logistic reason

**CONCLUSION:**Our study concluded Pectoral block is very efficient in postoperative pain relief and early mobilization.It is the main component of ERAS protocol for breast surgery in our centre

**TREND OF EARLY BREAST CANCER SURGERY IN HOSPITAL SULTAN ISMAIL, JOHOR**

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*Introduction*

*Hospital Sultan Ismail breast and endocrine surgery subspecialty offers breast conserving surgery (BCS), mastectomy, and reconstruction surgery for patients with breast cancer according to patient's pathology and preference. Oncoplastic breast surgery started in the year 2019. This study is to assess the trend of type of surgery selected for early breast cancer in the center in year 2019, 2022 and 2023.*

*Methodology*

*All patients who were diagnosed with stage I-II breast cancer from year 2019, 2022 and 2023 in Hospital Sultan Ismail were identified and included. 2020 and 2021 were excluded as the surgery was affected by COVID outbreak for many reasons. The choices of surgery (BCS vs mastectomy) were identified, and their demographic data affect the choice of surgery were analyzed using simple two-way chi square test.*

*Result*

*There were total of 186 cases diagnosed with early breast cancer in the three years. Over the three years, there were reducing number of early breast cancer being diagnosed likelihood due to post COVID 19 effect, majority of the breast cancer presented at later stage after year 2021. There were slight increment of number of BCS selected with oncoplastic surgery offered in the center from 33% in year 2019, 41.5% in year 2022 and 38.7% in year 2023. Age and multicentricity of the pathology were statistically significantly affecting the choice of surgery. Across all age groups, majority had mastectomy done. BCS is more popular among middle age group populations (40-59 years old) which is 50.4%. There were 8% of the population had multicentric breast disease and all underwent mastectomy.*

*Conclusion*

*Despite oncoplastic surgery service available in the center, mastectomy remained more popular among early breast cancer survivor. Further study needs to be carried out to identify factors affecting choice of surgery in early breast cancer in the center and the survival outcome.*

## DIAGNOSTIC UTILITY OF CORE NEEDLE BIOPSY VERSUS FINE NEEDLE ASPIRATION CYTOLOGY IN SMALL BREAST LUMPS

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*Introduction:* Breast biopsies are often performed by junior doctors in busy government-owned surgical clinics. In most instances, the palpable lumps are biopsied without the usage of ultrasound. This posed an additional challenge when dealing with small lesions. We assessed the diagnostic utility of freehand CNB vs FNAC in diagnosing and excluding malignancy in small breast lumps performed by junior doctors.

*Materials and Methods:* This retrospective cross-sectional study included patients who had either CNB or FNAC performed for breast lump from January 2015 until December 2022, at Hospital Ampang, Malaysia. The lump must be palpable with the largest dimension of 2.5cm on ultrasonography. The procedure was performed by medical officers without ultrasound guidance. Diagnostic utility was determined by comparing the CNB and FNAC results with the HPE for patients who had breast surgery. For those who did not have surgery, a minimum of two years follow-up must be completed to strongly suggest that the lump was benign.

*Results:* A total of 170 cases were studied (56 CNB, 114 FNAC). The sensitivity, specificity, PPV, NPV and diagnostic accuracy were 91.67%, 100.00%, 100.00%, 93.55% and 96.23% respectively for CNB. In comparison, FNAC showed a sensitivity, specificity, PPV, NPV and diagnostic accuracy of 88.89%, 97.47%, 80.00%, 98.72% and 96.59%. One patient who had CNB developed mastitis post procedure (complication rate 1.79%). The inadequacy rate was 5.36% for CNB and 21.92% for FNAC.

*Conclusion:* CNB is a useful diagnostic tool even when performed freehand in small, palpable breast lumps by junior doctors.

## BLINDSIDED: A RARE CASE OF SYMPTOMATIC CHOROIDAL METASTASIS IN BREAST CANCER

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### Introduction

Ocular metastasis has been shown to be common in metastatic disease, with breast cancer followed by lung cancer accounting for the majority of cases. Often, ocular metastasis remains subclinical. The incidence of clinically symptomatic cases is rare, with an estimated incidence varying between 2-3%. The choroid is the most common site of metastasis possibly due to anatomical reasons and blood vessel supply although the exact pathogenesis is unknown. Symptomatic choroidal metastasis (CM) often presents with visual field defects, deterioration of visual acuity, retinal detachment, photophobia and floaters. CM confers a poor prognosis as its presence often indicates systemic disease. It is associated with the occurrence of brain metastasis. External beam radiation therapy (EBRT) remains the standard of care and yields high remission rates with significant improvement in visual acuity.

### Case summary

We report a case of a 62-year-old woman, with a history of left breast infiltrating ductal carcinoma post-surgery and chemoradiotherapy 5 years ago, who presented with sudden onset painless right eye visual impairment for 3 days. Slit lamp examination revealed right eye choroidal elevation with basillary layer detachment. Magnetic resonance imaging (MRI) of the brain and orbit showed right posterior globe focal thickening, favouring choroidal metastasis.

### Conclusion

With this case report, we intend to highlight that although rare and unexpected, breast cancer patients can develop ocular metastases. It is important for clinicians to consider this during follow-up of patients with breast cancer and in patients with breast cancer who present with ocular symptoms. In such cases, a multidisciplinary team approach is invaluable.

**MALE BREAST CANCER IN BREAST ENDOCRINE CENTER SELANGOR: A CASE SERIES**

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*Male breast cancer represents a rare condition, comprising less than 1% of all diagnosed breast cancer cases. Despite an increase in its incidence paralleling that of female breast cancer, the etiology of male breast cancer remains largely unknown. Factors such as hormones, environment, and genetics have been suggested to play a role in its pathogenesis.*

*The objective of this case series is to retrospectively analyze cases of male breast cancer collected at the Breast Endocrine Center, Hospital Selayang, spanning the years 2018 to 2023. A total of six cases were indentified, all pathologically confirmed as invasive breast carcinoma. This review provides an overview of the frequency, etiology, clinical-pathological characteristics, and treatment approaches associated with the rare occurrence of male breast cancer (MBC).*

**HIGHLY COSMETIC AND SAFE BREAST-CONSERVING SURGERY: PERI-AREOLAR INCISION WITH SUBNIPPLE AND EXTENSIVE SUBCUTANEOUS DISSECTION**

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*Introduction:* In breast-conserving surgery, our institution employs peri-areolar incisions with subnipple and extensive subcutaneous dissection, to achieve superior aesthetic quality. We evaluated the cosmetic outcomes of our peri-areolar incisions using BCCT.core (Breast Cancer Conservation Treatment cosmetic results) software, based on postoperative photographs.

*Materials & Methods:* We retrospectively compared peri-areolar incisions (116 cases), tumor-surface incisions (63 cases), and lateral incisions (32 cases) performed from January 2021 to December 2023. Aesthetic outcomes were assessed on a four-tier scale (excellent, good, fair, poor) using BCCT.core. Subgroup analysis was conducted considering various clinicopathologic factors (tumor size, length of the resected specimen, quadrant, nipple-tumor distance, and body mass index). Additionally, we compared postoperative complication rates and positive/close margin rates (less than 2mm) among these different incisions.

*Results:* Peri-areolar incisions exhibited significantly better aesthetic outcomes than tumor-surface incisions (excellent: 63% vs. 35%, good 33% vs. 46%, fair 3% vs. 16%, poor 1% vs. 3%,  $p<0.01$ ). In all subgroups, peri-areolar incisions demonstrated superior results. Notably, in the inner quadrant, where breast volume is typically lower and reconstruction is challenging, peri-areolar incisions yielded remarkably better aesthetic outcomes than tumor-surface incisions (excellent: 63% vs. 9%,  $p<0.01$ ). There were no significant differences in complication and positive/close margin rates between peri-areolar and tumor-surface incisions. Peri-areolar incisions performed in outer quadrant had no significant differences compared with lateral incision in aesthetic outcomes (excellent 61% vs 56%, good 34% vs. 34%, fair 3% vs. 10%, poor 2% vs. 0%,  $p=0.669$ ), complication and positive/close margin rates.

*Conclusion:* Peri-areolar incisions with subnipple and extensive subcutaneous dissection demonstrated high aesthetic quality, with no significant difference in complication rates and positive/close margin rates compared to other incisions.



**INVASIVE LOBULAR CARCINOMA DIAGNOSIS AND TREATMENT: UNIQUE DRIVER IN PATIENT AND PROVIDER STRESS**

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*Invasive lobular carcinoma (ILC) is the second most common type of breast cancer (BC), representing 5-20% of invasive BCs. ILC-specific research is limited, despite distinct clinical, pathological, and biological characteristics. ILCs often present with subtle clinical and radiographic findings, limiting standard detection of primary and recurrent disease. ILC disease extent is often underestimated—related to its propensity for multifocality, synchronous bilateral disease, and low mammogram sensitivity—resulting in higher likelihood to present at advanced stages within the breast and axilla, higher likelihood of positive margins with lumpectomy (17-65%), and higher rates of mastectomy (22-52% vs 14-46%) when compared to patients with invasive ductal carcinoma. ILC also has different patterns of late, metastatic spread. The unique diagnostic and treatment challenges of ILC create distinct experiences for both patients and providers. We sought to investigate the impact of ILC diagnosis and treatment on patient and provider. Semi-structured and personal interviews were conducted with patients who had undergone treatment of ILC and providers experienced in the treatment of numerous types of BC. Thematic analysis was used to capture common experiences.*

*In preliminary analysis, patients and providers both expressed high levels of anxiety related to diagnosis of ILC. Both groups mentioned the dearth of information specific to ILC. High levels of stress related to limitations of preoperative imaging and perceived likelihood of larger extent of disease, positive margins, and nodal positivity. Uncertainty related to clinical decision-making also impacted treatment planning and patient and provider perceptions about treatment outcomes.*

*ILC is distinct from other BC types in presentation, diagnosis, and patterns of late recurrence and metastasis. Its impact on patient and provider stress and perceptions about treatment outcomes warrants exploration. Identifying the uncertainties surrounding ILC for patients and providers may help mitigate provider burnout and optimize patient outcomes.*

### DUALPLANE DTI RECONSTRUCTION OF PTOTIC BREAST WITH INFERIOR DE-EPIDERMIZED FLAP

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#### Introduction

*The use of skin sparing and nipple sparing mastectomies (including risk reduction) rised significantly during the last years. Most of dualplane technics use ADM or tetanized mesh, this devises makes reconstruction expensive and significantly increase risk of complications. In our practice we use a dualplane technic DTI reconstruction with de-epidermized inferior flap*

#### Materials and methods

*10 patients were underwent dualplane reconstruction: 6 patients after NACT with multicenter cancer or pCR, 3 with BRCA1 mutation, 1 with centrally localized tumor and nipple cancer. 1 patient performed skin sparing and 9 patients nipple sparing mastectomies. In all cases we used Wise pattern for skin flaps marking. We used upper-medial pedicle for nipple blood supply. After breast tissue removal inferior skin flap was de-epidermized, pectoral muscle cut off from the place of attachment to the ribs from 6 to 3 (9), margin of muscle fixed with de-epidermized inferior flap by absorbable sutures, upper pole of implant posted under muscle and lower pole under flap.*

#### Results

*In postop period we don't have any critical complications, 1 patient have epidermolysis of NAC. No seroma, hematoma, infection after reconstruction was present. All patients are satisfied with the aesthetic results*

#### Conclusion

*Dualplane DTI reconstruction with inferior de-epidermized flap is cheap, simple and technically accessible method of reconstruction of ptotic breast, without using any mash, with hight aesthetic results and low complication rates.*

### BREAST CANCER IN A POSTMENOPAUSAL WOMAN LIVING WITH PROLONGED ACROMEGALY

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#### Introduction

Acromegaly is a chronic disease due to excessive production of growth hormone (GH), and insulin-like growth factor-1 (IGF-1), resulting from a GH-secreting pituitary adenoma. If untreated, poses a threat to life expectancy and increases the likelihood of cancer development. Risk of breast cancer in acromegaly increases four times, making it the 2nd most common cancer after thyroid.

#### Case Presentation

We report a case of a 60-year unmarried postmenopausal female, with Hypertension and Type 2 Diabetes Mellitus, presented with a progressively increasing painless lump over left breast. Physical examination revealed enlargement of tongue, prominent jaw with prognathism, coarse facial features, broad hands and feet, gradually increasing over years. Laboratory findings indicated elevated GH and Somatomedin-C levels, and MRI-head confirmed acromegaly, revealing a pituitary adenoma. Core biopsy, mammography and IHC revealed Ductal Carcinoma-in-Situ(DCIS) luminal subtype-A (ER/PR+, HER2- and Ki67-3%) of left breast. She underwent Modified Radical Mastectomy(MRM), received tamoxifen and pegvisomant.

#### Discussion:

While the precise mechanisms linking acromegaly to an increased cancer risk are not fully understood, in vitro studies have revealed that GH and IGF-1 exert proliferative and anti-apoptotic effects on various cell lines, eventually leading to neoplastic evolution. IGF-1, specifically, induces the proliferation of estrogen receptor-positive breast cancer cells. Growth hormone receptor antagonist might be useful in preventing the development of breast and other neoplasms in high-risk acromegalic patients. Selective estrogen receptor modulators(SERMs) could offer dual benefits in both hormone-receptor+ breast cancer and acromegaly.

#### Conclusion

Acromegaly is rare condition, increases the risk of breast cancer in elderly women. Any elderly acromegalic women should be under high suspicion of developing breast carcinoma and should undergo regular mammography screening and Growth Hormone receptor antagonist therapy as measure of prevention.

**PREGNANCY-ASSOCIATED BREAST CANCER: IMPACT OF PREGNANCY ON SURGICAL ADHERENCE**

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**Background:**

Breast cancer is one of the most common malignancies during pregnancy. The incidence of pregnancy-associated breast cancer (PABC) has been in an increasing trend because modern women delay childbearing into their third and fourth decade. Even breast cancer therapies have been progressively advancing to improve survival, PABC women have higher risk of death and recurrence. Therefore, the treatment adherence is crucial for the optimal outcome.

**Methods:**

All newly diagnosed breast cancer from January 1, 2013, to Sept 30, 2023 were reviewed in this single-institution study. PABC is defined as newly diagnosed breast cancer during the antenatal period or in the first postpartum year and the surgical adherence is defined as women undergoing surgery within 30 days of tissue diagnosis or post neoadjuvant chemotherapy.

**Results:**

We identified 30 PABC women in the study (median age 34.0 years, range 23 to 44 years; mean gestational age 17.4 weeks, SD 9.6weeks). Overall, 53.3% women presented at early-stage (3.3% stage I, 50.0% stage II) and 43.4% presented at late-stage (26.7%, stage III and 16.7% stage IV). One of the women was stage 0 (ductal carcinoma in situ). Majority of treatment plans were discussed in a multidisciplinary team meeting (80%). During treatment, 23.3% women defaulted. Those received neoadjuvant chemotherapy was 36.7%. In total 73.3% underwent mastectomy, 10.0% breast conserving surgery and 16.7% did not have undergo any surgery. The surgical adherence rate was 36.0% (9 out of 25 women). Only women with positive family history of breast cancer were associated with adherence to surgery (adjusted OR 19.1 [95% CI 1.18, 309.2]).

**Conclusion:**

The study demonstrated late-stage presentation of breast cancer, high defaulter rate and low surgical adherence rate in PABC. Hence, important measures were needed to improve the breast health literacy among the healthcare worker and the community.

**EFFECT OF VITAMIN D AND CALCIUM SUPPLEMENTATION ON QUALITY OF LIFE AND TUMOUR RESPONSE IN STAGE II/III BREAST CANCER RECEIVING NEOADJUVANT CHEMOTHERAPY: A RANDOMIZED CONTROL TRIAL**

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**Background**

Vitamin D in various forms, is known for its importance at multiple levels of carcinogenesis. Vitamin D also possesses anti-oxidative stress, anti-invasion, anti-angiogenesis, and anti-proliferative effects. Additionally, the effects of a few anti-neoplastic drugs, such as anthracyclines and taxanes, are enhanced by vitamin D's synergistic effects on their ability to inhibit tumor growth. On other hand, neoadjuvant chemotherapy (NACT) worsens vitamin D insufficiency.

**Materials and methods**

A randomized controlled study was performed (Ethics Committee approval Ref. code: IV-PGTSC-IIA/P1 and CTRI registration no. CTRI/2022/03/040878) which included Stage II/III breast cancer cases receiving NACT (n=35 patients in each group; Group I – without calcium and VitD supplementation and Group II – patients with supplementation) from 2021 to 2022. Comparison for quality of life using the FACT-G questionnaire, Neutrophil/lymphocyte ratio (NLR) and clinical response (CR) were analysed between the groups.

**Results**

Physical, social and total quality of life was significantly higher ( $p < 0.05$ ) in Group II. There was no significant difference in functional and emotional well-being between two groups. Pretreatment Neutrophil to lymphocyte ratio (NLR) in Group I was 2.24 and in Group 2 was 2.97; whereas Post-treatment NLR in Group I and Group II were 2.21 and 2.63 respectively – statistically significant ( $p < 0.05$ ) decreased in Group II. Clinical tumour response was present in 91% of group I and 94.29 % of Group II; pathological complete response (pCR) was present in only 2.86% of the non-supplemented group and 5.7 % of the supplemented group.

**Conclusion**

Vitamin D and calcium supplementation has a potential role in achieving higher clinical tumor response and higher rates of pathological complete response (pCR). Vitamin D and calcium supplementation also cause significant falls in NLR. In context with QoL, VitD and Calcium supplementation exerts many significant effects on physical, and social aspects and total quality of life.

**THYROID IN THE CHEST: A RARE CASE OF BREAST MALIGNANCY WITH SUBSTERNAL GOITER**

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*Breast cancer is the most prevalent malignancy in Malaysian females. The incidence of having multinodular goiter in breast cancer patients is even rarer. We herein report a 65-year-old lady who was referred to us from a private center for 1 year history of right breast mass. On further history, she has symptoms of hyperthyroidism with no obvious neck swelling or obstructive symptoms. A contrast enhanced computer tomography (CECT) of thorax, abdomen and pelvis revealed a right breast tumor suspicious of malignancy as well as diffusely enlarged thyroid gland suggestive of multinodular goiter. No other metastases seen. Fine needle biopsy of the breast lesion confirms the diagnosis of malignancy. Her thyroid function test, however, shows a dysregulation of thyroid hormone (TSH <0.0005, T4: 85) that needed control with medications. A multi-discipline team discussion and approach was done as part of her pre-operative care. She then undergone neo-adjuvant chemotherapy and then Right Mastectomy and Axillary Clearance and Total Thyroidectomy with nerve monitoring with cardiothoracic surgeon backup. Post-operatively she was well and discharged home days later and currently is clinically euthyroid. Full histopathological examination shows triple negative invasive breast carcinoma with clear margins and benign nodular hyperplasia of the thyroid nodules. This case report highlights the pre-operative and postoperative challenges that the patient faces such as possible thyroid storm and risk of cardiothoracic injury due to the substernal goiter.*

**ROLE OF INTERVENTION RADIOLOGY IN EVALUATION OF BREAST ASYMMETRY: FIRST INSTITUTE EXPERIENCE IN MINIA UNIVERSITY HOSPITAL, EGYPT**

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**Introduction :**

Breast cancer is the most common cancer affecting women .Early stage cancer detection could reduce breast cancer death rate significantly. According to the guidelines, a non operative diagnosis should be possible in vast majority of invasive breast cancers. Also, the rise of the breast conservative surgery highlight the role of radiologist that becomes not only in diagnosis but in management .

Imaging guided breast intervention primarily composed of breast biopsy which is done for BIRADs IV lesions or BIRADs 5 . One of the challenging abnormalities at the breast is asymmetry which is an area at the breast of increased density in one breast compared to the corresponding areas in the opposite breast .Although most of breast asymmetry are benign yet, it can be of suspicious nature especially if they are changing or enlarging in size or there are other associated finding such as microcalcifications or skin involvement or suspicious lymph nodes .

Not only us guided biopsy is taken , the intervention radiology is not only in diagnosis but also in management . Only after confirmation on histopathology further treatment is planned based on hormonal receptors status of the tumour after the rise of chemotherapy this subsequently rise the role of breast conservative surgery , so that clip insertion is done at the suspicious asymmetry .

After chemotherapy this asymmetry may become non palpable or completely disappear , so that previously inserted clip will be the guide for the surgeon , where the role of the interventional radiology rise again to insert guided wire at the region of the clip , that will be the guide for the surgeon to be able to make breast conservative surgery .

The guided wire also needed at the non palpable suspicious breast lesion, that are discovered by mammography and pathologically proven after biopsy , to guided.

the surgeon for BCS( Breast conservative surgery) .

**Methods :**

50 female patients were included in the study , where sono- mammography was done , followed by biopsy . Clips insertion were done for the pathologically proven suspicious large ,developing , global asymmetry before chemotherapy . Wire insertion was done for the suspicious pathologically proven focal non palpable asymmetry . Wire insertion also done after chemotherapy at the site of the clip. Digital mammographies were performed using (FUJI Amulet Innovality) digital mammography device US Examination was done using Toshiba Aplio device with 10mhz linear probe.

**Results:**

25% of cases of focal asymmetry were malignant and had wire insertions. 45% of cases of developed asymmetry were malignant , had clips inserted followed by wires insertion.

**Conclusion**

The intervention radiology became the main component of breast management especially after the rise of breast conservation surgeries .

### STRATEGIES OF CHEST WALL RESECTION AND RECONSTRUCTION FOR A LOCALLY ADVANCED BREAST CANCER

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*Breast cancer, particularly locally advanced breast cancer (LABC), poses a complex clinical challenge requiring a multifaceted approach. This case study explores the management of LABC in particular the chest wall resection and reconstruction with focus on preoperative preparation and post operative care. The patient is a 45 years old female with a history of breast lump over right side for 8 months. Further investigation revealed the patient had a locally advanced breast cancer with invasion to the chest wall. Patient was referred to multiple disciplines to prepare the patient for definitive management. In the study we will explore multiple steps that are needed to carefully navigate the patient through the long road of treatment for her cancer. After extensive preoperative evaluation and treatment under multidisciplinary collaboration, surgical intervention, which is chest wall resection and reconstruction was performed successfully with intention to archive clear resection of tumor. Unfortunately, long term follow-up demonstrated that the disease progressed despite an aggressive course of treatment. This case underscores the complexities and challenges associated with managing such cases and emphasizes the significance of a multidisciplinary approach in achieving favorable patient outcomes.*



### EMERGENCY TRANSARTERIAL CHEMOEMBOLIZATION (TACE) IN BREAST CANCER; A CRITICAL INTERVENTION FOR LIFE-THREATENING BLEEDING TUMOURS

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#### Introduction

Treatment of acute bleeding of breast cancer includes compressive dressing, the use of topical or intravascular hemostatic agents, and radiotherapy. In severe cases, surgical therapy or intravascular measures may be indicated. TACE is increasingly recognized as an effective therapeutic approach for managing bleeding ulcerative tumors in advanced disease.

#### Case report

A 56-year-old female presented to our centre with Stage IV left breast cancer. It gradually grew in size for the past 10 years and was complicated with ulceration and bleeding. The fungating lesion was 15 cm x 20 cm with numerous subcutaneous nodules involving the contralateral breast and matted axillary lymphadenopathy. Biopsy was confirmed to be invasive breast carcinoma with hormonal receptors positive and HER2-negative. CT staging showed chest wall extension, bone, and liver metastasis. She refused systemic chemotherapy and was started on letrozole. She had few hospital admissions due to tumoral bleed and was waiting for funding for TACE and CDK4/6 inhibitors. Unfortunately, she developed haemorrhagic shock with Hb of 4.6g/dl. Emergency TACE was performed by the interventional radiology team. Tumoral blush was detected in the branches of left internal mammary, lateral thoracic and thoracodorsal arteries. Chemosaturation was performed using a cocktail of Fluorouracil (5FU), Mitomycin and Doxorubicin through the bleeding vessels, followed by gelfoam embolization. Post procedure, the bleeding stopped. She is planning for further TACE with Hepasphere™ once funding has been approved.

#### Conclusion

Interventional embolisation with chemotherapy for severe local ulcerative hemorrhage associated with breast cancer can be a life-saving measure with significant improvement in ulcer management and overall quality of life.

### EVALUATION OF INDOCYANINE GREEN FOR SENTINEL LYMPH NODE BIOPSY IN BREAST CANCER: TWO ARM OPEN LABEL PARALLEL DESIGN NON-INFERIORITY RANDOMISED CONTROL TRIAL

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**Introduction :** Radiocolloid and blue dye are standard agents for performing sentinel lymph node (SLN) biopsy in breast cancer. Limited centers offering nuclear medicine services contribute to the low acceptability of sentinel lymph node biopsy (SLNB). This study was done to evaluate performance of indocyanine green (ICG) against the standard radiocolloid & blue dye [methylene blue (MB)] combination for SLNB.

**Patients and methods:** This two-arm open label parallel design non inferiority randomized controlled trial was conducted with aim to compare Sentinel lymph node identification proportions of radiocolloid-blue dye [Group A] with Indocyanine Green [Group B]. The secondary objective was time required to perform SLNB. Trial was approved by institutional review board and registered under clinical trial registry-India. Sample size of 70 (35 in each arm) was calculated using identification proportion of 97% in control arm and 90% experimental arm with alpha error of 5%. Upfront operable node negative early breast cancer patients were included. Clinico-demographic data, number & type of SLN, time taken were noted. Chi-square/Fisher exact test were used to compare proportion between two groups.  $p$  value  $< 0.05$  represents statistical significance.

**Results:** The clinical-demographic factors were comparable in both groups. SLN identification rate was 96.96% in Group A and 94.11% in group B. Identification rate of MB, radioisotope and ICG were 96.96%, 84.84% and 94.11% respectively. Median number of SLNs identified were 2.39 in group A and 2.55 in group B. Median time required for SLNB was 12 min (range:6-33) and 12min (range:8-28.5) in group A and B, respectively. The logistics of posting the case was easier with ICG group allowing posting as first case in operating list.

**Conclusion:** ICG was found to be non-inferior to radio-colloid and blue dye for performing SLNB. This may help bridge disparities in performing SLNB due to non-availability of nuclear medicine facilities.

**CLINICOPATHOLOGICAL PROFILE AND OUTCOME OF MAMMARY PAGET'S DISEASE WITH AND WITHOUT INVASIVE BREAST CANCER IN A TERTIARY REFERRAL CENTER IN INDIA**

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*Introduction:* There is scarcity of literature on Mammary Paget's disease (MPD). Primary objective of this study was to investigate clinicopathological features and outcome of MPD in patients with and without invasive cancer (IC).

*Methods:* Retrospective study (January 2000-December 2022). Clinicopathological profile and outcomes were noted and compared between Group 1- MPD with IC and Group 2- MPD without IC.

*Results:* The incidence of MPD was 1.8% (n=52) among patients undergoing surgery for breast cancer. Mean age of patients was 54.2 ± 12.8 years and duration of disease was 16.8 months. All presented with nipple changes and 81% had palpable lump. Incidence of IC was 79% and carcinoma in situ (CIS) was 79%. Diseases stage was early, locally advanced and metastatic in 58, 29, 13% respectively. Mastectomy, breast conservative surgery and axillary dissection was performed in 95, 5 and 95% patients respectively. Radiotherapy and chemotherapy was administered in 77 and 79% respectively. There was no significant difference between groups in age (p=.885), menopausal status (p=.716); and incidence of CIS (p= 0.062), estrogen (p=.42), progesterone (p=.16) and HER-2 receptor (p=.72) expression. Incidence of Lump (p= <.001), metastasis (p=.042), mastectomy (p=.001), axillary dissection (p=.001) and adjuvant radiotherapy (p=.001) was significantly more in Group 1. Disease free survival was not different but OS (p=.09) was better in Group 2.

*Conclusions:* Majority of MPD patients presented late with advanced IC. High index of suspicion and early intervention could result in de-escalation of therapy and improved outcome.

### HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH BREAST CANCER – EXPECTATIONS FOR THE FIRST POSTOPERATIVE YEAR FOLLOWING BREAST RECONSTRUCTION

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#### Introduction

Health-related quality of life (HRQL) is an important aspect when evaluating the impact of surgical treatment. The effect of breast reconstruction on HRQL can be measured with the BREAST-Q questionnaire, a breast-specific patient-reported outcome measure used in breast surgery patients. We aimed to assess patient expectations for the first year following breast reconstruction using the BREAST-Q.

#### Materials & methods

We identified 145 patients awaiting breast reconstruction surgery in April 2020. We used the BREAST-Q: Expectations for Reconstruction module to determine patient expectations regarding the upcoming breast reconstruction. We assessed the first postoperative year, focusing on mental adjustment, breast appearance, and recovery of abdominal wall function after reconstructive surgery. The patients were asked to fill in the BREAST-Q questionnaire where applicable.

#### Results

A total of 59 (41 %) patients participated in the study. The median age was 56 years (IQR 48–63). The indication for mastectomy was cancer in 40 (68 %) patients, cancer-related genes in 6 (10 %) patients, and both in 7 (12 %) patients. Expectations for emotional recovery and return to normal life were high (median 100, IQR 68–100). At one year, breast appearance, shape, and clothing fit were expected to be close to normal (median 76, IQR 53–96). The patients estimated that abdominal wall appearance and function would return to near normal within one year (median 6 on a 4–12 point scale, IQR 5–7). A low score indicated high satisfaction on this scale.

#### Conclusions

Our study cohort reported high expectations regarding mental adjustment and physical appearance after breast reconstruction. The abdominal wall was expected to return to normal both functionally and aesthetically without major complications. This information will ease preoperative patient encounters, and help provide patients with sufficient information before reconstructive surgery.

**BREAST RECONSTRUCTION IN STAGE IV BREAST CANCER WITH OLIGOMETASTASIS IN YOUNG MALAYSIAN WOMEN : A SINGLE CENTRE EXPERIENCE**

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**Introduction:**

The landscape of Stage IV breast cancer treatment has evolved from a uniform approach to personalized care, emphasizing a multidisciplinary strategy. Advances in systemic treatments have contributed to an improved quality of life for Stage IV patients. Surgery for primary tumor is debatable; more so if clinicians were to incorporate breast reconstruction just to meet the psychosocial needs of this cohort of patients. We report our demographics of patients, tumor biology and survival outcome in this case series.

**Method**

Retrospective analysis, descriptive study of Stage IV breast cancer patients with oligometastasis at presentation with and without breast reconstruction between January 2020- December 2022

**Results**

Total 9 out of 15 patients with Stage IV oligometastasis had autologous one stage or two staged breast implant reconstruction. Average age in years (mean=33). Tumour biology were hormonal positive(45%) , HER-2 enriched (11%), triple negative (44%). Complication rate for reconstruction group is 3.4%. Survival outcome in this cohort is 93.3%.

**Discussion**

Immediate breast reconstruction is not always discussed as an option for Stage IV breast cancer patients due to the anticipation of complications or it being a controversy to the objective of treatment. In our case series, it is evident that with low complications rate and careful patients selection with multidisciplinary support, providing a good quality of life and satisfaction through breast reconstruction should be offered as a treatment to young Malaysian women with Stage IV breast cancer.

**Conclusion**

With its low complication rate, provision of immediate breast reconstruction as part of treatment is a reasonable option in Stage IV young breast cancer patients with oligometastasis.

### UTILIZING THE MILLER PAYNE SCORE AS A PATHOLOGICAL RESPOND PREDICTION TO NEOADJUVANT CHEMOTHERAPY IN HER2-POSITIVE AND TRIPLE-NEGATIVE BREAST CANCER

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*Background:* The implementation of neoadjuvant chemotherapy has significantly elevated the prevalence of breast-conserving surgery in breast cancer cases. This study aims to assess histopathological response of neoadjuvant chemotherapy in relation to Triple Negative Breast Cancer (TNBC) and HER 2 positive in our local population.

*Methods:* Data analysis involving breast cancer patients confirmed pathologically that underwent surgery in Hospital Selayang and neoadjuvant chemotherapy in oncology department, Hospital Kuala Lumpur. Retrospective sampling method was done using BHis which is a computerised-generated database from January 2022 until December 2023. All patients were given standard chemotherapy regimens. Demographic data and Miller Payne Score were analysed in TNBC and HER 2 positive group.

*Results:* A total of 43 patients received neoadjuvant chemotherapy in this study. Out of which 14 (53.85%) TNBC, 17 (39.53%) HER 2 positive, and 12 (46.15%) HR positive HER2 negative. Factors associated with survival were age and Miller Payne Score. These findings showed different figures of ascendency in tumor cell reduction in post neoadjuvant chemotherapy patients where tumor cell reduction >90% were seen highest in HER 2 positive. Mostly, estimated 30% and 90% reduction in tumor cells were seen in HER 2.

*Conclusion:* Our HER 2 positive breast cancer patients should receive neoadjuvant chemotherapy as they will have a higher rate of complete pathological response. Miller Payne Score is able to stratify survival outcome of patients after neoadjuvant chemotherapy which may predict overall survival and disease-free survival. However, this study will need further evaluation in the future.

**ATROPINE FOR PSEUDOPTYALISM SECONDARY TO PARA-OESOPHAGEAL LYMPH NODE METASTASES FROM A BREAST CARCINOMA: A CASE REPORT**

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**Introduction**

*Pseudoptyalism and dysphagia are commonly found in oesophageal and gastric diseases especially malignancy. This results in a poor quality of life. These are rare symptoms of metastatic breast carcinoma to the paraoesophageal lymph nodes.*

**Materials & Method**

*A middle aged woman initially presented with progressive dysphagia and pseudoptyalism. Upper endoscopy was unable to diagnose the cause. Repeated oesophageal dilatation only brought marginal relief. A PET CT later diagnosed a breast lesion which biopsy confirmed as a breast carcinoma. We describe the novel use of sublingual atropine sulfate two drops three times a day in this woman. This is the usual eye drops used, available in pharmacies.*

**Results**

*This brought rapid and significant relief to her before the effects of chemotherapy shrunk the affected lymph nodes which occurred several weeks later.*

**Conclusion**

*This is a novel finding which could be used for those with oesophageal and gastric benign and malignant conditions.*

**AWARENESS, KNOWLEDGE AND PRACTICE OF BREAST SELF-EXAMINATION AMONG WOMEN IN MAJENGO HEALTH CENTER, MOSHI MUNICIPALITY, KILIMANJARO REGION, TANZANIA: DESCRIPTIVE CROSS-SECTIONAL STUDY**

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*Background:* Currently, Breast cancer is the most frequent cancer among women. Despite being second and first leading cause of morbidity and mortality among women globally and in Tanzania respectively, breast cancer is detected by using potentially recommended breast self- examination (BSE) as cornerstone of breast cancer early detection method.

*Objective:* To determine awareness, knowledge, practice and barriers of BSE among women attending clinics at Majengo Health center in Moshi municipality, Kilimanjaro region.

*Methodology:* Hospital based Cross-sectional descriptive study was used. Systemic randomly sampling technique was used to select participants. Respondents interviewed by using semi- structured questionnaire. Data processed and analyzed by using SPSS Version 20.

*Results:* A total 300 urban women from Majengo health center were studied. Their age ranged from 20-56 with mean age of 28.82 years (SD+6.628). Majority 142(47.3%) have primary level of education and about 197(65.7%) were Self – employed. 95% of women heard about BSE, among them only 26(27%) had adequate awareness in which Mass media like Radio (36%) and Television (25%) were main source of information. 94% knew performing BSE and among them, only 31(33%) had adequate knowledge on performing Breast Self-Examination (BSE). 31% respondents practiced BSE and among them, only 25(26.6%) had regular practice. Lack of knowledge on performing BSE 179(59.7%) was the major Barrier in practicing BSE among respondents.

*Conclusion:* This work reveals low level and incomplete awareness, knowledge and practice of BSE among women in Moshi municipality.

*Recommendation:* Effective improvement of health Education covering knowledge and practice of Breast Self- Examination (BSE).



### VISCERAL CRISIS OF BREAST CANCER AND CLINICAL OUTCOME: ONE-YEAR SINGLE-CENTRE RETROSPECTIVE REVIEW

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#### Introduction

Visceral crisis (VC) of breast cancer is an emergency and severe organ dysfunction caused by excessive tumor burden. However, it is not widely understood and there is little local data for reference.

#### Method

Retrospective review of medical records was done in Sarawak General Hospital, Malaysia over 1 year.

#### Result

11 patients were diagnosed with VC in our breast tertiary center from October 2022 to October 2023. All are female with ECOG 3-4. Average age is 58 upon diagnosis. 2 patients had personal history of metastatic breast cancer. They underwent unilateral mastectomy and axillary clearance, 3 and 10 months respectively before VC. Meanwhile, upon presentation, 7 other patients had breast mass >5cm size, while 1 had clinically impalpable breast mass.

VC is the first presentation in more than half of the patients. 6 had pulmonary VC, 2 hepatic VC. Another 2 patients had both lung and liver VC. Notably, 1 had lung and pericardial involvement who passed away of cardiac tamponade despite pleural and pericardial drainage.

None of them were able to be commenced on chemotherapy. 2 were terminally discharged by palliative team. The rest died, on average, one week after diagnosis.

Histopathological examination showed 7 patients with Luminal A and B breast cancer, 3 basal-like and 1 with HER2 enriched disease.

#### Conclusion

The distribution of breast cancer subtypes is similar across literature among VC. However, literature commonly states 30-50% prevalence of liver VC. But our retrospective study revealed that lung VC is more common in our population. Moreover, our patients present at critical stage and none received chemotherapy. However, the small sample size may have attributed to these differences. More local data are required to study the presentation and prognosis of VC in Malaysia

### ARE WE DOING ENOUGH FOR BREAST CANCER SURVIVORS (BCS)? - BREAST CANCER SURVIVORSHIP BIOPSYCHOSOCIAL APPROACH

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#### Introduction

Breast Cancer(BC) prevalence is estimated to raise from 2million (2018) to more than 3million in 2046. 90% relative 5-years survival rate of BC currently warrants attention to quality of life (QoL) and sexual health among BCS. Breast cancer is a predictor for female sexual dysfunction (FSD) worldwide (31-77%). 70% of partners of BCS reported SD. However, onco-sexuality issues are less efficiently recognised and clinical dealt.

#### Aim

To highlight psychosexual factors and effects among BCS and identify potential multimodal approach for management.

#### Methodology

Literature review conducted using relevant keywords on electronic scientific databases like Medline, PubMed, Embase and Cochrane Library to obtain peer reviewed articles in English from 2008-2023. Inclusion and exclusion criteria were exercised to acquire the pertinent data.

#### Results

A majority of women feel that their breasts are important to their self-confidence (86.3%), femininity (84.0%), and sexuality (61.5%). Adverse impact of BC treatment on sexual health is multidimensional – 1)Physical- diagnosis, treatment type & duration, vaginal dryness, early/induced menopause, weight gain, alopecia 2) Interpersonal- changed body shape due to surgery causing sexual/social relationship's acceptance issues, self-image disorders, anxiety and depression. 3)Psychological- Body image (BI) concerns due to scars, asymmetry, and skin texture and sensory changes. Predictive factors for low BI include young age, higher education level, low sense of humour, culture, partner relationship quality, postoperative interval and delayed or no reconstruction affecting QoL, treatment compliance, survival and family relationship.

#### Discussion

Sexuality is "human dimension that is best characterised in a biopsychosocial manner that extends beyond genitality". Comparative risk of FSD 2.7 and 3.5-fold among cervical and BC, respectively. Monitoring BCS focusing just on biological aspects of the disease without psychosexual input will compromise QoL. Onco-psychosocial rehabilitation should be comprehensive integrating sexual health. Multimodal onco-sexology care approach involves Primary - Explore ICE & Inform at diagnosis for PS integrative harmony, Secondary- Screen & educate using routine onco-psychosexual screening tool, training for collaborative community care, spiritual healing, BCS sexual wellbeing information leaflet, Tertiary- Treat -onco-sexology care, psychosexual aid, couple therapy. Unflawed understanding of onco-sexology care may help UK Government to support healthcare policies towards improved assessments and effective timely interventions for this population.

#### Conclusion

Women's sexuality becomes complex after breast cancer diagnosis and treatment. Raising awareness among healthcare professionals, training, inventing new national integrated screening tool, BCS and partner education and counselling about sexual life should be incorporated into the healthcare program using biopsychosocial approach for holistic onco-care.

### LONG-TERM OUTCOME AND IMPACT OF COMBINED REVERSE ABDOMINOPLASTY FLAP IN RECONSTRUCTION OF ANTERIOR CHEST WALL DEFECTS POST EXTENSIVE MASTECTOMIES

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#### Background

The Reverse abdominoplasty flap(RA) for challenging chest wall resections in locally advanced, recurrent, and inflammatory breast cancer cases can be combined with any surrounding tissue replacement.

#### Methods

This is an observational retrospective cohort study conducted on previously operated patients with RA and combined surrounding chest wall mobilization and undermining, between 2015 and 2018, for 11 patients. The study group consisted of patients in whom aggressive tumor resection was performed resulting in huge defects not favorable for primary closure and challenging local rotational flaps like LD flaps were not an option due to previous surgery or current extensive surgery that compromises the thoracodorsal artery, the study included bi-annual follow up for the patients with serial documentation of the chest wall complications related to the scarring and fibrosis, recurrences and breast cancer morbidity, further radiotherapy complications and disease progression.

#### Results

5 years follow-up of the eleven patients who underwent the procedures (either RA alone in nine patients or the two patients, who needed a combined procedure with the LD flap reconstruction for a tension-free flap coverage of the defects). There were variable degrees of scar complications in the form of extensive fibrosis and keloid scar formation in 9 patients with a nodular surface( no cancer recurrence), delayed post-radiotherapy scar complications were minimal in the form of exudation, eruptions, and excess granulation tissue subsided over a three to six months post radiotherapy.no significant postoperative morbidity. Delayed healing happened in 40% of cases. However, in younger patients, there was a dramatic improvement in the general condition after the resection. Two patients have been admitted for correction of the general condition with blood transfusion and supportive therapies before the operation.

#### Conclusions

Simple reconstruction techniques, either RA alone or when combined with other operations provided safety, compliance, and patient satisfactory outcomes.

### EARLY EXPERIENCE WITH IMPLANT-BASED BREAST RECONSTRUCTION AND PATIENT REPORTED OUTCOME USING BREAST-Q: SINGLE CENTRE EXPERIENCE IN NORTH BORNEO

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*Implant based reconstruction had been used for centuries and was popularised by western country since 1964. Being a third world country, this oncoplastic technique is slowly gained trust and accepted by our people. In North Borneo Malaysia especially where the people generally are more conservative when it comes to breast cancer treatment, it takes longer time for this technique to be chosen and accepted by them.*

*We reported our early experience as the only breast and endocrine unit for whole North Borneo Malaysia, with implant-based breast reconstruction following mastectomy in our breast cancer patient. Data was retrospectively analysed from 2017 till 2023. 35 patients were enrolled in this study. Each of them was given BREAST Q questionnaire during follow up. Demographic data together with other information about mode of reconstruction, cancer treatment, complications, quality of life and patients' satisfaction were retrieved. BREAST-Q BR questionnaire was used to assess the latter two information.*

*Result. Thirty-five patients were enrolled in this study. Mean age of patient was 40-year-old with most of them had early breast cancer. All of the patients received chemotherapy. Less than half of them received radiotherapy. Only small percentage of the patient developed surgical site infection after reconstruction that required longer IV antibiotics and one of them needs re-operation for open drainage. Patient with early breast cancer had higher satisfaction score in surgical outcome compared to those with higher stage of cancer. We found no statistically significant in physical and sexual well-being, or satisfaction with the breast surgeon, medical team, and office staff.*

*Conclusion. Implant-based reconstruction had low complications and give high satisfaction with surgical outcome among patient in North Borneo Malaysia. It does not influence the patient's sexual and physical well-being.*

### **ANALYSIS OF BREAST SYMMETRY IN PATIENTS WHO UNDERWENT BREAST CONSERVING SURGERY WITH LOCAL PERFORATOR FLAPS USING THE BCCT.CORE (BREAST CANCER CONSERVATION TREATMENT. COSMETIC RESULTS) SOFTWARE**

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*The development of chest-wall perforator-based flaps/ techniques enabled sufficient volume replacement after breast conserving surgeries. Various oncoplastic techniques have emerged to improve breast cosmesis and symmetry without compromising oncologic treatment. CWPF paved way for less extensive and quicker procedures without the need of a contralateral symmetrizing surgery. Oncoplastic surgery is an essential aspect of breast cancer treatment aiming to improve physical and psychological well-being of breast cancer patients. Attaining optimal symmetry in reconstructed breasts is vital. Chest-wall perforator flaps have gained more popularity over autologous tissue reconstruction due to their advantage of natural tissue feel and long-term outcomes. The aim of this study is to objectively analyze the aesthetic outcome after breast conserving surgery with local perforator flaps using BCCT.core software.*

*The symmetry and aesthetic evaluation were objectively analysed using the BCCT.core (Breast Cancer Conservation Treatment. cosmetic results) software. The BCCT.core software has been used as a validated tool in numerous studies to assess cosmetic results after breast surgeries in terms of breast asymmetry.*

*Using a retrospective data analysis study, accessible photographs taken with VECTRA Imaging System of patients who underwent breast conserving surgery with local perforator flaps in Westmead Breast Cancer Institute from 2016 – 2023 were evaluated for symmetry using the BCCT.core software. Results were graded as excellent, good, fair, and poor. Predominantly outcomes are good and excellent results.*

*Chest wall perforator flaps are reliable techniques that can give optimal outcome in terms of volume replacement and result in improved breast cosmesis and symmetry.*

## RISK FACTORS FOR REOPERATION DUE TO SURGICAL COMPLICATIONS IN SKIN- OR NIPPLE-SPARING MASTECTOMY AND IMMEDIATE RECONSTRUCTION

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**Objective.** The practice of skin-sparing mastectomy (SSM) and nipple-sparing mastectomy (NSM) has become increasingly popular in recent years. These procedures allow patients to undergo immediate breast reconstruction, resulting in favorable outcomes both in terms of cosmesis and disease control. The objective of our study was to evaluate the frequency of surgical complications and eventual reoperations, and the predictive factors for reoperation among women with breast cancer who underwent either SSM or NSM.

**Methods.** We conducted a retrospective chart review study to examine the incidence and risk factors of reoperation for complications after breast reconstructive surgery in women who underwent either SSM or NSM. We included all women with invasive or intraductal breast carcinoma who underwent SSM or NSM at our clinic between January 2020 and December 2022.

**Results.** Within the specified timeframe, a total of 45 women underwent SSM and 58 NSM. Significant complications occurred in 25.7% of cases (29 out of 113), and the need for a second operation arose in 31% (35 out of 113). During the multivariate analysis, it was determined that a large implant volume and immediate breast reconstruction using Becker prostheses were significant factors that increased the risk of reoperation due to complications in reconstructive surgery.

**Conclusions.** Neither tumor nor patient characteristics had any impact on complications of reconstructive breast surgery. However, the use of high-volume implants and Becker prostheses for immediate reconstruction were significant risk factors for reoperation due to complications.

**SISTER MARY JOSEPH'S NODULE AS A METASTATIC PRESENTATION IN BREAST CARCINOMA.**

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*Sister Mary Joseph's (SJMN) nodule is used to describe an umbilical nodule which is due to metastatic cancer, often due to gastrointestinal and gynaecological malignancies. Approximately 15-29% of cases of SJMN have an unknown origin. SJMN presents as a firm, indurated swelling over the umbilicus and may even sometimes be ulcerated or have associated discharge. Recurrent breast cancer presenting with SJMN is an exceedingly rare presentation.*

*Herein we reported a case of a 69-year-old lady who was treated for left early breast carcinoma 15 years ago, presented with abdominal discomfort and umbilical swelling for the past two weeks. On examination, an umbilical firm nodule which was suggestive of SJMN was visible. A CT Abdomen was performed which suggested small bowel obstruction. She underwent an exploratory laparotomy which showed diffuse malignant peritoneal dissemination with a large peritoneal deposit at the terminal ileum causing small bowel obstruction. Resection of the umbilicus and a diverting loop ileostomy was performed. The histopathology of the umbilicus confirmed metastatic carcinoma, where the immunohistochemistry staining was strongly positive for CK7, ER, and PR and weakly positive for GCDFP15, favouring breast as the primary origin.*

*It is postulated that SJMN develops from tumour seeding via transperitoneal, hematogeneous, lymphatic or along falciform or umbilical ligaments. Breast cancer tends to metastasize primarily to the lymph nodes, bones, lungs, liver, and brain rather than into the peritoneal cavity. Such a case poses diagnostic challenges and CT imaging may aid in looking for any occult metastasis. Often, the presence of SJMN portrays a poor prognosis with an average survival time of 10months. Immunohistochemistry staining is crucial in determining the origin of SJMN.*

*SJMN arising from breast cancer is exceptionally rare. Maintaining a high index of suspicion and exercising sound clinical judgment is essential in avoiding the oversight of such a diagnosis.*

## SOX9 AND NANOG EXPRESSION AS PREDICTIVE MARKERS FOR CHEMOTHERAPY RESPONSE IN TRIPLE-NEGATIVE BREAST CANCER

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### Introduction

Triple-negative breast cancer (TNBC) is a challenging subtype of breast cancer due to its variable tumour heterogeneity and aggressive behaviour. The identification of biomarkers for predicting chemotherapy response is crucial. This study focuses on the potential of SOX9 and NANOG, transcription factors involved in cancer stem cell regulation, as predictive markers for chemotherapy response in TNBC.

### Materials and Methods

This cross-sectional study was conducted at Hospital Canselor Tuanku Muhriz involving 28 patients with histologically confirmed TNBC who had chemotherapy and surgery between June 2016 to May 2023. Immunohistochemical staining of tissue sections was performed to analyse SOX9 and NANOG expressions, which were then comparatively analysed with the chemotherapy response based on the Miller-Payne criteria and Residual Cancer Burden index.

### Results

A significant association was observed between SOX9 expression and chemotherapy response. Lower SOX9 expression was associated with a better response, indicated by a significantly lower distribution of SOX9 expression post-chemotherapy in pathological responders ( $p=0.008$ ) and when compared with non-responders ( $p=0.022$ ). Conversely, NANOG expression did not show a significant association with chemotherapy response ( $p=1.000$ ).

### Conclusion

The study highlights SOX9's potential as a predictive biomarker for chemotherapy response in TNBC, with lower expression levels indicating a more favourable response. This data assists in predicting chemotherapy efficacy which potentially leads to more personalised treatment strategies.



**COST ANALYSIS ON DIAGNOSTIC EXCISIONAL BIOPSY FOR BENIGN-ON-BIOPSY BI-RADS 3 AND 4 BREAST LESIONS**

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*Introduction:* Diagnostic excisional biopsy performed for BIRADS 3 and 4 breast lumps despite initial benign core biopsy (benign-on-biopsy) results is frequently practiced. We aim to investigate the extra cost incurred from diagnostic excision following a benign percutaneous core biopsy, and determine the imaging parameters most consistently related to benign histopathological (HPE) results in BI-RADS 3 and 4 lesions.

*Patients and Methods:* This cross-sectional study included patients with BI-RADS 3 and 4 breast lesions who underwent diagnostic excisional biopsy following a benign core biopsy in Hospital Canselor Tuanku Muhriz from 2008 to 2022. The cost and imaging parameters were analysed in relation to the final HPE for each BI-RADS category.

*Results:* 206 patients were included in this study. The cost of performing diagnostic excisional biopsy was higher than surveillance [median MYR 6894 (239.25) vs MYR 132 (144),  $p$ -value = 0.001]. Seven out of 206 (3.4%) patients had complications, with four of them requiring readmission with a mean cost of MYR 4643.5 (2399.4). The total cost for diagnostic excisional biopsy with benign final HPE was MYR 861,640. The most consistent imaging parameter with benign HPE was the sonographically circumscribed margin of the breast lesion ( $p$ -value = 0.02). Additionally, there was a significant association ( $p$ -value = 0.008) between the BI-RADS category and HPE result of the excisional biopsy; with BI-RADS 3 had the least risk of malignancy (2.3%), followed by other BI-RADS 4 subcategories (4a, 6.3%; 4b, 10.0%; 4c, 33.3%).

*Conclusion:* Diagnostic breast excisional biopsy procedures in benign-on-biopsy BI-RADS 3 and 4 lesions are associated with substantial costs borne by the healthcare and patients. Careful discretion of the procedure based on individual risk assessment is imperative to avoid unnecessary costs and morbidities.

**PROGNOSTIC AND PREDICTIVE VALUE OF PROGRAMMED CELL DEATH LIGAND 1 (PD-L1) IN TRIPLE NEGATIVE BREAST CANCER PATIENTS IN A LOW-TO-MIDDLE INCOME COUNTRY**

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**INTRODUCTION:** The morphological evaluation of Programmed Cell Death Ligand 1 (PD-L1) in breast cancer is gaining momentum as evidence strengthens the potential role of host immunosurveillance in influencing the biology of breast cancer. In this cohort study on triple negative breast cancer (TNBC) patients undergoing neoadjuvant chemotherapy (NACT), the PD-L1 proportion was correlated with response to neoadjuvant chemotherapy and oncological outcomes.

**METHODS:** This retrospective and prospective study involved TNBC patients who were treated with NACT between 2016 and 2021. The study was registered in ClinicalTrials.gov (NCT05250336). Pre-therapeutic core biopsies from 100 TNBC patients were assessed for the proportion of PD-L1 by standardized method and categorized into negative (0% staining), low expression (1-49%), and high expression ( $\geq 50\%$ ) of PD-L1. The association between PD-L1 expression and clinicopathological features, pathological complete response (pCR), disease-free survival (DFS), and overall survival (OS) were assessed.

**RESULTS:** Of the 100 TNBC patients 16 % patients had high PD-L1 expression, 27 % had low PD-L1 expression and 57 % patients had no expression of PD-L1. By univariate and multivariate analysis, TNBC patients with higher histological grades, and large tumor size tended to have higher PD-L1 expression levels. A pCR was achieved in 37.5 % of patients with high PD-L1 expression. DFS and OS also tended to be poorer in patients who overexpressed PD-L1 than in patients who did not express PD-L1 (DFS:  $p = 0.08$ , OS:  $p = 0.2$ ).

**CONCLUSION:** In this first study of its kind from a low-to-middle income country, PD-L1 overexpression was significantly associated with large tumor size and higher histological grades. Our results indicate that high PD-L1 expression may be a prognostic indicator for reduced DFS and OS. This information may be helpful to clinicians attempting to screen candidates for anti PD-L1 therapy. Prospective studies with larger homogeneous populations are needed to determine the role of PD-L1 expression.

### **A CASE REPORT OF A RARE PRESENTATION OF METAPLASTIC SQUAMOUS CELL CARCINOMA OF THE BREAST IN A YOUNG FEMALE**

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#### *Introduction*

Primary squamous cell carcinoma (SCC) of the breast is a metaplastic carcinoma (MpBC) subtype, a very rare and aggressive type of breast cancer, which accounts for 0.1% of all invasive breast carcinomas. . It is a tumor commonly in the elderly post-menopausal age group. Most cases of primary breast SCC are triple-negative breast cancer. This case report outlines a rare clinicopathological profile of a MpBC, SCC subtype in a young nulliparous woman with IHC profile; ER positive presenting with recurrent hemorrhagic breast cyst.

#### *Case Report :*

A 28-year-old woman presented with large left breast mass rapidly increasing in size over the past for 2 months, ultrasound findings of a large left breast complex cystic lesion. The cystic fluid that was evacuated and core biopsy of the mass showed no findings of malignancy however the cyst content quickly re-accumulates from monthly to 2-weekly need of aspiration, amounting from 300-500cc of hemorrhagic fluid evacuated each time. Excision biopsy of the cyst done 10 months from presentation confirmed MpBC, SCC subtype, a rare malignancy with IHC profile as follows: ER positive, PR & HER2 negative.

#### *Conclusion :*

Primary squamous cell carcinoma of the breast is an extremely rare invasive breast carcinoma with rapid progression and worse prognosis. Careful assessment and diagnosis of the entity should also be considered in a rapidly progressing breast tumor.

**Keywords:** Breast Neoplasms, Hemorrhagic breast cyst, Metaplastic Breast Carcinoma, Squamous Cell

### BREAST CANCER MOLECULAR SUBTYPES AND ITS CLINICOPATHOLOGICAL CORRELATION IN A NON-SUBSPECIALIZED HOSPITAL: A 7-YEAR RETROSPECTIVE CROSS-SECTIONAL STUDY

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#### *Introduction:*

Breast cancer (BC) is the most common cancer in Malaysia. The immunohistochemical (IHC) determination of BC subtypes with regards to estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor (HER2) status contributes to an improved selection of treatment choices and patient care. In the past decade, the incidence of diagnosed BC have increased in Sarawak, the largest state in Malaysia. Bintulu, located in the central region of Sarawak, is the fourth largest division and covers four districts. As we move forwards to an era of global surgery, we would like to look into the prevalence of BC subtypes and assess their associations with clinicopathological parameters for better treatment decisions in a non-subspecialized environment in Bintulu.

*Methods:* Retrospective cross-sectional study, including all BC patients who were operated on from January 2016 to December 2022. Two-way ANOVA test was used to evaluate the difference between BC subtypes and age. Fisher's Exact test was used to compare the clinicopathologic parameters with BC subtypes.

*Results:* Among 109 patients that were operated on, the mean age was 51.6 years. The indigenous population comprised of 71.6% and invasive ductal carcinoma (92.7%) was the most frequent histological type with grade 2 (44%) and grade 3 (44%) tumours encountered equally. The proportion of positivity of ER, PR and HER2 was 69.7%, 58.7% and 22.9% respectively. More than half the patients had luminal A (61.5%) subtype followed by Triple negative subtypes (15.6%), Non-luminal HER2 (13.8%) and Luminal B (9.2%). BC subtypes were closely correlated with age ( $p=0.018$ ) and tumour grade ( $p=0.031$ ).

*Conclusion:* The age of patients and tumour grade is significantly associated with BC subtypes. The findings of the present study are in line with the literature and should assist in treatment choices in a non-subspecialised clinical setting such as ours.

**DO PATIENTS IN REGIONAL CENTERS FACE DELAYS IN SURGERY DEPENDING ON THE LOCALIZATION METHOD OF NON-PALPABLE BREAST LESIONS: A RETROSPECTIVE COHORT STUDY COMPARING MAGNETIC SEEDS AND HOOKWIRES**

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*Introduction:* HWL remains widely utilized as the standard method of pre-operative localization of non-palpable breast lesions. Magseeds® were developed to counter the disadvantages associated with HWL.

*Methods:* A retrospective review of 77 female patients who underwent breast surgery after Magseeds® localization or HWL from the 14th of January 2022 to the 06th of December 2023. Results included primary outcomes (days from referral to localization) and secondary outcomes (lesion detection, marker retrieval, re-excision, and complications).

*Results:* A total of 33/77 (42.86%) of patients received Magseed®, while 44/77 (57.14%) received HWL. The average time from the first visit with a general practitioner or referral from breast screening to the first surgical visit was 9.8 days for HWL and 9.4 days for Magseed® localized patients. The average time from the first surgical visit to localization was 37.8 days for HWL and 3.7 days for Magseed® localized patients. The average time from localization to surgery was 0 days for HWL and 13.5 days for Magseed® localized patients. Re-excision rates were 13.63% (6/44 patients) in HWL and 3.03% (1/33 patient) in Magseed® groups, with no complications.

*Conclusions:* Magseed® is an alternative method for the localization of non-palpable breast cancers, compared to HWL. It has a significantly shorter time from first referral to Surgery and a lower re-excision rate. Magnetic seeds also provide the option of scheduling surgery at a convenient time for both patients and surgeons, as well as an equal clinical safety profile.

**METASTATIC PRIMARY SQUAMOUS CELL CARCINOMA OF THE BREAST: A DEATH SENTENCE?**

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*Introduction*

*Histologically, breast cancers are classified as ductal carcinoma in situ, lobular carcinoma in situ and invasive lobular carcinoma. Squamous cell carcinoma of the breast (SCCB) is a rare variant which carries a poor prognosis. We report a case of primary SCCB in a 60-year-old patient.*

*Case Presentation*

*A 60-year-old female patient presented with right breast swelling, pain and purulent discharge for 3 weeks. Clinically there was an 8x8cm, infected mass at the lower inner quadrant. Mammogram and ultrasound revealed a BIRADS 5 lesion. Biopsy specimen was suspicious of squamous cell carcinoma (SCC). A staging CT showed a locally advanced right breast mass with axillary and liver metastasis. The patient underwent mastectomy and axillary clearance in view of the infective nature of the breast lesion. Final histopathology confirmed a primary squamous cell carcinoma of the breast which was positive for KCAI/A3 and CK 5/6. ER, PR, HER2 were negative. Axillary nodes were negative for malignancy. Patient refused for adjuvant therapy which led to disease progression and death.*

*Discussion*

*SCCB is a rare breast malignancy with incidence reported to be as low as 0.04 - 0.1%. It mostly affects post-menopausal women, who present with large tumors and distant metastasis. Lymphatics are usually spared. Reported median survival is dismal at only 37 months, owing to advanced-stage presentation, diagnostic challenges, unclear pathogenesis, lack of established treatment guidelines and treatment-refractory diseases. Histologically, SCC can be recognized by the presence of keratin pearls, intercellular bridges and confirmed by immunohistochemistry which test positive for cytokeratin 5/6 and p63. Most SCCB are triple negative breast cancers and do not respond to hormonal treatments.*

*Conclusion*

*SCCB are rare tumors with poor prognosis which are confounded by late presentation and non-specific histological findings. A heightened degree of suspicion is warranted when dealing with atypical presentation of breast*

### MAXIMISING THE COSMETIC OUTCOME OF THE GOLDBLOCKS MASTECTOMY

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#### *Introduction*

*Goldilocks mastectomy was initially described for elderly women with ptotic breasts who may have comorbidities making them poor candidates for postmastectomy reconstruction. The wise pattern has been used with excision of the nipple areolar complex. Recently, the use of implants have been described which will add the cost plus increase risk of infection.*

#### *Materials and Method*

*A 65 year old woman with bilateral breast malignancy was operated upon. She underwent bilateral modified nipple sparing mastectomy. A transverse scar was made but saving the nipple areolar complex. The ptotic upper skin flap was double breasted over the lower skin flap. Drains were not inserted to conserve any potential seroma. Prophylactic antibiotics was given to prevent seroma infection.*

#### *Results*

*This resulted in fuller bilateral breasts post-operatively as compared to the originally described procedure, although no implants were used.*

#### *Conclusion*

*This modification resulted in conserving the nipple areolar complex and pleasing outcome.*

## KNOWLEDGE, ATTITUDE, AND PRACTICE ON BREAST CANCER AND THEIR RELATION TO LATE PRESENTATION IN PAHANG, MALAYSIA

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### Introduction :

Breast cancer has become the most prevalent cancer globally, surpassing lung cancer, with 2.3 million new cases. In Malaysia, its incidence is increasing, and a greater proportion of patients are presenting at advanced stages. To investigate the potential causes of delay, we explored Knowledge, Attitude, and Practice (KAP) in patients diagnosed with breast cancer in Pahang. This study aims to investigate level of awareness, perceptions, and healthcare-seeking behaviours related to breast cancer.

### Materials & Methods

A cross-sectional study using structured interviews at three major hospitals in Pahang, Malaysia was performed over 18 months from April 2022 to September 2023. Data includes socio-demographics, symptom duration, stage at diagnosis, and responses from a validated KAP Questionnaire. Data were analysed with R statistical programme.

### Results

A total of 147 patients were interviewed. The mean age of the participants was 51.9 years old. Over half of the patients presented at Stage III and IV (58%, n=85), and 40% (n=59) presented after 3 months of symptoms. The majority of the respondents had a good knowledge of breast cancer (80%, n=119), and results were influenced by education and income, however, knowledge score had no influence with late presentation. Regular breast examination practise (28%), and traditional treatment beliefs (25%) were not associated with delayed presentation. In terms of practice, 35% of patients delayed seeking treatment due to fear of the diagnosis (OR = 3.1, CI [1.5, 6.3]), and 45% feared mastectomy as a treatment diagnosis (OR = 1.7, CI [0.9, 3.3]). More than a third actively sought information on social and mass media.

### Conclusion

Fear of diagnosis negatively impacts patients' outcomes. There is a need for tailored awareness programme for Pahang's population to encourage early presentation.



**AN UNFORSEEN CONSEQUENCE : SPINAL CORD INFARCTION AFTER TRANSARTERIAL CHEMOEMBOLIZATION FOR BLEEDING LOCALLY ADVANCED BREAST CARCINOMA**

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*Bleeding breast cancer can be life threatening if left untreated. Some of these cases poses technical challenges especially among locally advance/metastatic inoperable disease. Transarterial chemo-embolization (TACE) is an emerging treatment gaining its popularity for being minimally invasive and quick procedure which are very helpful in managing complex cases especially acutely bleeding cancers. It involves injecting chemotherapeutic drugs into tumor feeding vessels followed by embolic agent injection. Although this is relatively safe procedure, there are some cases of unfortunate complication following this procedure. We report a case of post TACE to control acute bleeding in a patient with a voluminous ulcerated breast cancer. Immediately post procedure patient developed paraparesis from T4 level which lead to suspicion of rare scenario of spinal artery thrombosis. This was then confirmed by MRI Spine and further management taken accordingly.*

### INTERPRETING DISCORDANCE: FALSE CORE NEEDLE BIOPSY IN BREAST CANCER AND THE IMPERATIVE FOR PRECISION-GUIDED SURGERIES

sneha Yadav<sup>1</sup>

<sup>1</sup>Dr jayashri Pandya

#### *Introduction:*

*Breast cancer, a pervasive threat, often undergoes diagnostic scrutiny through core needle biopsy. However, the prevalence of false-negative results introduces complexities, prompting a closer examination of the need for surgeries to ensure accuracy in diagnosis and treatment planning.*

#### *Methodology:*

*This retrospective study scrutinised 846 core needle breast biopsies and the subsequent necessity for surgeries over a year. The focus of the investigation was on cases where false-negative core needle biopsy outcomes led to critical interventions, including wide local excision and modified radical mastectomy.*

#### *Results:*

*Malignant lesions were identified in 64.10% (568/846) cases. Of the remaining 278, wide local excisions were done in 39.2% (109/278) as USG was suspicious due to higher BIRADS, and high risk clinical profile. 34.86% (38/109) were benign, while 65.1% (71/109) were malignant. Surgery, including conversion to modified radical mastectomy, was required in 17.3% (19/109) of cases due to positive resection margins. The false-negative rate requiring surgery reached 8.3% (71/846), underscoring the need for comprehensive histopathological reassessment.*

#### *Conclusions:*

*False-negative outcomes in core needle biopsy results pose a significant challenge in the accurate diagnosis of breast cancer. The study emphasises the critical role of precision-guided surgeries, shedding light on their necessity in cases of false core biopsy findings. Insights gained from these cases contribute to refining diagnostic approaches and improving patient outcomes.*

#### *Keywords:*

*breast cancer, core needle biopsy, false-negative results, revision surgeries, precision-guided interventions*

## RECOMMENDATIONS FOR A MODIFIED BREAST CANCER SCREENING PROTOCOL IN FEMALES LIVING WITH HIV

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*Evidence has shown that breast cancer is diagnosed at a younger age in the HIV population, and with a more advanced stage. The current screening recommendations are inadequate for females living with HIV as many presents with clinically palpable lesions, well before attending a screening program recommended by most health systems.*

*A retrospective audit of patients from a dedicated breast oncology unit in Durban, South Africa was performed. A total of 285 females diagnosed with breast cancer and living with HIV, were identified. The average age of the HIV females who presented with breast cancer was 42.8yrs old compared to the HIV negative/naïve group, which was 56.6yrs old. More than 90% of the females identified, presented with a palpable lesion at the time of assessment to our clinic. If HIV positive women are presenting at a younger age group with breast cancer as evidence indicates, then this would impact on screening protocols for breast cancer in this population.*

*However, mammograms have lower sensitivity in younger females especially those with dense breast tissue. It is recommended that in the 30-40 age group, self-breast examination, clinic breast examination and ultrasound be conducted, while mammograms should be commenced annually for the 40 plus HIV positive population.*

*When clinically assessing females living with HIV, an elevated index of suspicion is important, especially in the symptomatic patient with a mass. Alternative screening methods such as ultrasound, whole breast ultrasound, or MRI of the breast should therefore be included in screening protocols.*

*Early diagnosis remains key to survival and screening remains the best tool to achieve overall survival in this population.*

**A MULTI-DIMENSIONAL CHALLENGE: A CLINICAL CASE PRESENTATION OF AN ELDERLY LADY WITH TRIPLE NEGATIVE BREAST CANCER, METAPLASTIC CARCINOMA, PAPILLARY THYROID CARCINOMA, AND A STRONG FAMILIAL PREDISPOSITION TO MALIGNANCY**

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*This clinical case presentation depicts the complex oncological journey of a 67-year-old woman with a notable medical history. Diagnosed with left breast cancer in 2007, characterised as triple negative, the patient underwent a comprehensive treatment regimen, including left breast-conserving surgery, axillary dissection, chemotherapy, and radiotherapy, leading to successful disease management. In 2006, she was also diagnosed with left shoulder liposarcoma, which was treated with wide local excision. After 16 years of being cancer-free, the patient recently was presented with a left breast skin nodule. An excision biopsy confirmed spindle cell carcinoma, identified as metaplastic carcinoma, displaying oestrogen receptor (ER) negative, progesterone receptor (PR) positive, and HER2 negative status. However, a CT staging scan incidentally detected a suspicious left thyroid nodule, which a biopsy revealed to be papillary carcinoma. Given the rarity and distinctive features of metaplastic carcinoma, a simple mastectomy and a left hemithyroidectomy were performed in the same setting. As the medial margin was involved, a total thyroidectomy was done to address the thyroid malignancy effectively. The patient has a strong family history of cancer, with multiple relatives affected by different malignancies. This case emphasises the importance of considering hereditary cancer syndromes in patients with multiple primary malignancies and a strong family history of cancer. Genetic counselling and testing are vital to assessing potential germline mutations contributing to cancer susceptibility in the patient and her family members. The management of multiple primary malignancies, coupled with a significant familial predisposition, necessitates a personalised and vigilant approach to treatment and surveillance. Understanding the underlying genetic basis of the patient's malignancies can aid in risk assessment and early detection of cancer in at-risk relatives, optimising overall patient care and outcomes. Further research is warranted to explore the interplay between genetic susceptibility and the development of multiple malignancies in such complex oncological cases.*

**EFFICACY OF INTRALESIONAL STEROID INJECTIONS IN CHRONIC GRANULOMATOUS MASTITIS: A CASE SERIES**

AR Nurul<sup>1</sup>; Pavitra M<sup>2</sup>; Dineshwary p<sup>3</sup>; DI Ha<sup>4</sup>; Hospital Selayang<sup>5</sup>

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<sup>4</sup>AL Juliana

*Background: The optimal treatment for chronic granulomatous mastitis (CGM) has yet to achieve consensus. While steroid administration has proven effective in treating chronic granulomatous mastitis (CGM), its use is associated with systemic side effects. A recent advancement in this field is the emergence of intralesional steroid injections as a novel therapeutic approach for CGM. Our goal is to evaluate the effectiveness of intralesional steroid injections in treating CGM within our local context, contributing valuable insights to the existing knowledge and practise. This case series involved five female patients diagnosed with chronic granulomatous mastitis through histopathological examination, with the exclusion of other factors confirmed via microbiological analysis. The administration of intralesional steroid injections was conducted by an intervention radiology team. Treatment responses were assessed at the 1st, 3rd, and 6th months using both clinical and radiological evaluation methods.*

*Conclusion: Intralesional steroid administration emerges as an effective and potentially safe treatment for chronic granulomatous mastitis (CGM), presenting itself as a viable and considered treatment option*

### **MULTIPLE FIBROADENOMAS IN WOMEN: A SYSTEMATIC REVIEW OF LITERATURE**

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#### **Objective**

*Fibroadenomas are a common type of breast tumor, mostly affecting women of reproductive age. In about 15-20% of cases, multiple fibroadenomas occur, usually with an average of 3-4 masses per breast. This report describes a systematic review of the literature of reports concerning unilateral multiple fibroadenomas.*

#### **Materials and Methods**

*A systematic review of the literature was carried out on an online software program (Rayyan) using the search term "multiple fibroadenomas". The process of selecting studies for the review included shortlisting based on titles, screening of abstracts, and a review of full-text articles. Qualitative statistical analysis was performed on the selected articles.*

#### **Results**

*The mean patient age was 24.9 years. Bilateral incidence of multiple fibroadenomas was more commonly seen than unilateral. Diagnostic methods included histopathology, fine needle aspiration, and radiology. Multiple breast fibroadenomas are rare and have unclear underlying causes. Possible factors for development include an in vivo estrogen imbalance, local hypersensitivity of the tissue of the breast to factors in the diet or estrogen, or inherited predisposition. Complete excision is the recommended management strategy for multiple fibroadenomas, the Gaillard-Thomas incision being a dependable method for removing multiple tumors with favorable cosmetic outcomes.*

#### **Conclusion**

*This report aims to expand the limited knowledge base and literature on bilateral multiple breast fibroadenomas and offer guidance on managing the same.*

**DOUBLE BLIND RANDOMISED CONTROLLED TRIAL EVALUATING EFFICACY OF CENTCHROMAN IN FIBROADENOMA AS COMPARED TO PLACEBO (FIBROCENT STUDY)**

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We evaluated the effect of ormeloxifene (centchroman/saheli) and multivitamins as placebo in decreasing the size of fibroadenoma in two arm double blinded placebo controlled trial. Patient having fibroadenoma were recruited between August 2022 to August 2023. Patient were divided into two groups (patients are blinded). One group was given centchroman and other multivitamin as placebo. Response was evaluated using Ultrasound at baseline, 1 month , 3 months and 6 months. A total of 150 women with fibroadenoma were randomized to Centchroman (n=75) and Placebo group (n=75). There was no significant difference in the reduction of size of fibroadenoma between two groups. Adverse event were reported in few patients taking ormeloxifene as compared to none in placebo group. And therefore in our study Ormeloxifene is not superior to placebo (i.e multivitamin) . Role of ormeloxifene in reducing fibroadenoma size needs further evaluation before recommending it.

**MAJOR MAMMARY DUCT EXCISION WITH A SAFE TECHNIQUE-LONG TERM FOLLOW UP**

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**MATERIALS AND METHODS :** Patients with nipple discharge, pain in the nipple with discharge, and recurrent breast abscess were evaluated with ultrasound/mammography, cytology/FNAC/core needle biopsy wherever indicated and patients with persistent nipple discharge especially blood stained, pain because of periductal mastitis, recurrent abscess formation were offered radical duct excision with this new modified technique where, incision was given over only one-third of areolar circumference and no areolar flap was raised.

**RESULTS:** Total number of patients operated were 300, with a mean age of 42.9 ranging from 20 to 72.97 patients presented with serous nipple discharge whereas 52 with greenish, and 48 with bloody discharge. 177 patients presented with pain along with discharge and 78 patients had associated lump. 132 patients presented with recurrent subareolar sepsis. Early complications and recurrence were followed up for 6 months. Early complications in the form of partial areolar skin necrosis was seen in 8 patients and loss of sensation over areola in 6 patients. No patient had any hematoma following surgery. Of the 300 patients histopathology was obtained in 292 patients and most common pathology was duct ectasia alone in 66 patients (24%), ductal ectasia with periductal mastitis in 40 patients (13.7%), periductal mastitis in 46 patients (15.75%), FCD 40 patients (13.7%), FCD with PD/PDM in 25 patients (8.56%), intraductal papilloma 60 patients (20.54%), DCIS alone 9 patients (3%), DCIS with intra ductal papilloma 3 patients (1.5%), and DCIS, IDC with IDP in 3 patients (1.5%). Seven patients had recurrent discharge after surgery for which reoperation was performed and few residual ducts were identified and excised.

**CONCLUSIONS:** Modified radical mammary duct excision is safe and has good cosmetic results.



### **SIMPLIFYING AND MODIFYING THE 'SCARLESS' REDUCTION MAMMOPLASTY**

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#### *Introduction*

*Reduction mammoplasty avoiding a vertical scar was described by Keskin et al in 2004. However, it remains relatively unknown compared to the Vertical or Wise Pattern reduction mammoplasty which results in an obvious vertical scar. For very ptotic breasts, authors have described excising the nipple areolar complex (NAC) and repositioning them as full thickness grafts. However, this will result in loss of NAC sensation and inability to breast feed.*

#### *Materials & Method*

*For Keskin's method, the minimum suprasternal notch nipple distance required is 26cm. To shorten operative time, excise the medial (estimated 4cm) & lateral (estimated 8cm) poles before deepithelization is done. Rather than the described 6cm distance, a distance of 7 cm from the new opening to the original areolar prevents over stretching of the skin to avoid ischaemia.*

#### *Results*

*It is an easy procedure to learn and results in a hidden inframammary scar. The NAC sensation is maintained along with lactational function. This 7cm distance also provides a pleasing position of the NAC without a bottom out appearance.*

#### *Conclusion*

*This is the preferred surgical procedure for symptomatic macromastia especially for younger women intending to breast feed.*

## INDUCTION OF LACTATION: A SCOPING REVIEW

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**Objective.** Lactation induction is a procedure that simulates changes in the mammary gland during pregnancy in non-pregnant women, allowing them to breastfeed. This literature review will identify and map the available evidence on lactation induction using the PCC (population, concept, context) framework.

**Methods.** A scoping review was conducted in accordance with the PRISMA-SCR and JBI guidelines, with searches in the PubMed/MedLine, Scopus, and Embase databases. The references and citations of the included studies were checked for additional sources. Articles in English, Italian, or Spanish that were relevant to the review's objective and provided full text were included. Publications in other languages, conference abstracts, and non-peer-reviewed sources were excluded. The findings were presented using figures, tables, and narrative synthesis.

**Results.** Of the 81 articles identified, 41 were deemed suitable. The articles were divided into two domains based on their main theme, and eight cross-cutting components were identified: population (including women with a history of breast cancer and transgender women undergoing breast stimulation), indications, success evaluation, benefits, complications, ethical issues, and the practitioner's role. The success rate was 100% for primary induction and 73.68% for secondary induction ( $p < 0.05$ ).

**Conclusions.** Despite the limited data available, the review concludes that lactation induction is a simple procedure with significant benefits for non-pregnant mothers and their children. The literature lacks data on success rates and frequency of use, suggesting the need for additional research.

**IS IT A BREAST CARBUNCLE? NOT ALWAYS, IT CAN BE A SYSTEMIC ANAPLASTIC LARGE CELL LYMPHOMA!**

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*Anaplastic large cell lymphoma (ALCL) is a rare type of T-cell lymphoma which accounts for an approximate 2% of adult non-hodgkin lymphoma. Location and the cancer cells' characteristics are used to classify the various types of ALCL. It is mainly subdivided into 3 types, namely primary systemic ALCL, primary cutaneous ALCL (PC-ALCL), and breast implant-associated ALCL (BI-ALCL). Primary systemic ALCL usually affects the lymph nodes, which includes anaplastic lymphoma kinase (ALK) - positive and ALK-negative ALCL. Extra-nodal sites involvement can occur in lungs, liver, bone marrow, bones, skin and soft tissues other than lymph nodes. Primary cutaneous ALCL starts in the skin and may spread to nearby lymph nodes, but it is less aggressive than primary systemic ALCL. Infrequently systemic ACLC can involve breast. We present a case of non-implant breast ALCL that presented with mimicking breast carbuncle during ongoing chemotherapy in a 60 years old patient who that gave diagnostic challenge to us. This serves as an important reminder for us to be more vigilant and not to neglect any simple carbuncle as purely an infective origin.*

**CASE REPORT : PHYLLOIDES TUMOR, SILENT YET AGGRESSIVE**

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**ABSTRACT**

*Phylloides tumor is a breast neoplasm that consists of stromal and epithelial components. It is a rare fibroepithelial neoplasm, accounting for approximately 1% of breast neoplasm in women. It can be subdivided into benign, borderline and malignant type according to its histologic features. Of all 10% - 30% phylloides tumor represent malignant which has a potential of recurrence and metastasis. The rate of metastasis is known to be less than 5%. We present a case of 47 years old Malay lady who underwent left mastectomy 5 years ago, which proven to be malignant phylloides tumor. Surveillance mammogram showed no recurrence. In early 2023, she presented with lower abdominal pain, aggravated by movement and associated with bilateral lower limb weakness. Physical examination showed no sign of local recurrence. There was an ill defined, immobile suprapubic mass which unable to get below. Pelvic and lumbar x-ray were normal. Contrast enhanced CT scan of abdomen and pelvis revealed a large expansile multilobulated heterogenous enhancing mass with epicentre arising from the right pelvic bone. The mass lead to destruction of the right pubic, ischium, acetabulum and pubic rami. Ultrasound guided core needle biopsy showed undifferentiated high grade pleomorphic sarcoma. Hence, the pelvic neoplasm was believed to be metastatic disease.*

*It becomes a challenge for surgeons to predict the development of local recurrence, metastatic disease or both in phylloides tumor. As the malignant tumor develops metastases more commonly, treatment as per metastatic disease, initiated. She was referred to oncology to commence on chemotherapy regime.*

*Keywords: Phylloides Tumor, Metastases, Pleomorphic Sarcoma, Chemotherapy, Malignancy*

**CHRONIC GRANULOMATOUS MASTITIS: MANAGEMENT CHALLENGE IN BREAST AND ENDOCRINE CENTRE OF NORTH BORNEO MALAYSIA**

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**Introduction**

*Chronic Granulomatous mastitis (CGM) is a rare, chronic inflammatory condition of the breast with unknown aetiology. The clinical presentation often mimics inflammatory breast cancer. Due to lack of data including randomized controlled studies, management of CGM is challenging. Its treatment has always been controversial. This study aims to analyse the cases of CGM in our centre and addressing the challenge that limit the optimum outcome of our patients.*

**Materials and methods**

*We performed a retrospective review of 120 patients with histologically proven CGM that was managed at Breast and Endocrine unit of Hospital Queen Elizabeth II, Sabah, from 2019 to 2022. Demographic, clinical, treatment and outcomes data were collected and analysed.*

**Results:**

*A total of 120 cases were identified. The median age at time of diagnosis was 34 years old.*

*All patients had palpable breast mass during presentation and majority of them (92.5%) had painful breast mass. 15% of patients had nipple discharge. Tissue diagnosis was obtained from all patients. They were followed-up for an average duration of 12 months after initiating treatment. 83 (70%) patients received antibiotics as initial treatment, whereas 32 (26.6%) underwent surgical procedures. Most of the patient received steroid therapy with small percentage of them 2 (1.67%) were started on Methotrexate. We encountered small percentage of CGM patient who resistant with steroid treatment. Overall recurrence rate was 5% (6 patients) and majority of them were those who underwent surgical procedure.*

**Conclusions:**

*More data and studies are needed in order to define best therapy for CGM.*

**GRANULOMATOUS MASTITIS MASQUERADING AS LACTATIONAL MASTITIS – AVOIDING CORTICOSTEROID THERAPY**

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*Introduction: Idiopathic granulomatous mastitis is a rare benign inflammatory condition of the breast that usually affects young women. Diagnosis is often difficult and may mimic other common breast conditions such as infective mastitis, lactational related mastitis or breast carcinoma. In addition, ultrasound and MRI may not provide definitive diagnosis due to non-specific breast changes. Diagnosis is often achieved with tissue biopsy that shows granulomas containing neutrophils or multinucleated giant cells forming granuloma.*

**Case Report**

*A 30-year-old female, with no prior history of tuberculosis or tuberculosis contact presented with left breast swelling, pain and fever for 4 days. She was actively breastfeeding and had history of admission for lactational related mastitis 6 months ago. Due to this, breast feeding was stopped but developed episodes of left breast mastitis and treated with antibiotics. Serial ultrasound scans showed nonspecific inflammatory changes with small collection suggestive of abscess. Despite antibiotics, she had persistent fever with a left tender breast mass over the lower quadrant 8x6cm. Repeated ultrasound showed multi-loculated abscess which was difficult to drain percutaneously and she underwent an incision and drainage with open biopsy. Intra-operatively, there was pus 10cc, with underlying thickened breast tissue. A course of antibiotics was given and was discharged on post-operative day 1. The wound was meticulously dressed with an antimicrobial cleansing agent with 2weekly follow-up. Histopathological results revealed focal aggregates of multinucleated giant cells forming granuloma with foci of suppuration and necrosis. These were consistent with acute on chronic granulomatous mastitis. After 4 months of dressing, the wound epithelised completely with complete resolution of the prior inflammatory mass. There were no usage of corticosteroids during this course of treatment. Patient remained well 6 months post epithelization of wound.*

**Conclusion**

*Granulomatous mastitis may mimic lactational mastitis. Complete recovery and fully epithelization of wound is possible without the use of corticosteroids.*

**OUTCOMES OF 2D ENDOSCOPIC ASSISTED GASLESS SUBCUTANEOUS MASTECTOMY AND CONVENTIONAL OPEN SURGERY FOR GYNAECOMASTIA: A PROSPECTIVE STUDY**

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*Background: Gynaecomastia is a benign breast growth in males with a rising prevalence. As those affected are mostly in their prime, it causes social and emotional challenges.*

*Aim: To assess short-term outcomes of gasless endoscopic surgery and assess patient satisfaction with cosmetic outcome.*

*Methods: This prospective study involved 38 patients with Simon grade 2 and 3 gynaecomastia selected through convenience sampling. Patients were divided into: Group A (n=15) underwent conventional subcutaneous mastectomy and Group B (n=23) underwent gasless endoscopic subcutaneous mastectomy. Outcome was recorded during drain removal within one week. All patients were assessed on satisfaction and quality of life after one- and three-months post-op.*

*Results: Endoscopic surgeries took less time than open surgeries (87 % cases taking <150 minutes versus 67 % taking >150 minutes). Lower intra-operative and immediate complications were seen in Group B patients. However, majority of these patients had minimal blood loss compared with Group A (91 % versus 80 %, p=0.377). Post-operative haematoma was similar in both groups (13 %, p=0.979). The open technique demonstrated lower mean post-operative pain scores in contrast to the endoscopic technique ( $1.33 \pm 1.291$  versus  $1.61 \pm 1.469$ , p=0.499); Group A patients had significantly higher one-month post-operative complications compared with Group B (66.6 % versus 21.7 %, p=0.049). Majority of Group B patients were very satisfied with the cosmetic outcome and reported improvement in quality of life.*

*Conclusion: Gasless endoscopic subcutaneous mastectomy is effective and safe, with good aesthetic outcomes. The surgery causes a hidden scar only and may restore the patients' self-confidence.*

**RECURRENT PRIMARY BREAST TUBERCULOSIS: DIAGNOSTIC AND TREATMENT CONUNDRUM: A CASE REPORT**

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*Introduction:*

*The incidence of tuberculosis in Malaysia is 78 cases per 100,000 population and extra-pulmonary tuberculosis represents about 14% of all cases. Worldwide, primary breast tuberculosis (BrTB) accounts for <0.1% and is considered a rare extrapulmonary manifestation; which is attributed to inherent resistance of breast tissue towards mycobacterium tuberculosis multiplication. BrTB is considered a diagnostic dilemma because it mimics other inflammatory or malignant breast diseases therefore microbiological and histopathological evaluations are essential.*

*Case presentation:*

*A 48-year-old nulliparous female with no particular medical history and TB contact presented to our center in 2016 with right periareolar abscess and blood-stained nipple discharge. Breast sonography showed superficial abscess and needle cytology reported as chronic abscess. Repeated sonography after one month revealed persistent superficial abscess. Incision and drainage with tissue biopsy and microbiology workup performed with acid-fast bacilli (AFB) test turn out positive. Standard anti-tuberculosis treatments were initiated for a period of six months to treat the disease. She presented again after 6 years with a similar presentation at the same site and sonographically also showed similar findings. Repeated AFB tested positive and she was treated as recurrent BrTB. Anti-tuberculosis treatment was started in November 2023 and aims to complete for another six months.*

*Discussion and Conclusion:*

*Occurrence of recurrent BrTB is possible despite completing the treatment however the real factors are still ambiguous. Most literature cites multi-drug resistant tuberculosis as a potential cause of recurrence. Up-to-date, there are uncertain guidelines regarding treatments of recurrent extrapulmonary tuberculosis including BrTB so a high index of suspicion is necessary to diagnose this rare yet treatable disease.*



### PHYLLODES TUMOR OF THE BREAST: A CASE SERIES OF 53 PATIENTS

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#### Background

Phyllodes tumor of the breast is a rare entity, accounting for 0.5% of breast neoplasms. It's treatment and prognosis is variable, and still up for debate.

#### Objective

The purpose of this study is to explore the clinicopathologic features of patients who underwent surgical treatment of phyllodes tumor at our institution.

#### Materials and methods

We retrospectively reviewed the medical records of 53 patients who had surgical treatment for phyllodes tumor in Hospital Putrajaya between 2020 - October 2023.

#### Results

The mean age was 45.3 ( 22-80 years ). The tumor grades were classified as benign (23 cases, 43.4%), borderline (16 cases, 30.2%) and malignant (14 cases, 26.4%). The mean tumoral size was 109 mm (28-220). Thirty one (58.5%) patients underwent a local excision of tumor (18 benign and 9 borderline cases) and twenty two patients (41.5%) underwent a mastectomy with or without reconstruction (5 benign, 7 borderline and 14 malignant). 9 of our patients underwent radiotherapy (4 borderline and 5 malignant). The 4 cases of borderline phyllodes had undergone mastectomy and had inadequate margin clearance. Among of our cases of malignant phyllodes, 5 (35.7%) of them had metastatic disease at presentation, and 2 patients progressed to metastases during the course of follow up. Local recurrence developed in 6 patients, (5 malignant, 1 borderline), giving a local recurrence rate of 35.7% for malignant, 6.25% for borderline, and 0% for benign respectively. The shortest time to the development of local recurrence in malignant disease was 3 months, further highlighting the aggressiveness of the malignant variant of phyllodes. In our results there was a significant correlation between tumor size and grade.

#### Conclusion

PT represents a heterogeneous group of tumors with an unpredictable outcome. Histopathological classification is the strongest prognostic factor for prognosis and a larger size at presentation should increase the suspicion of malignancy.

**ADULT COLO-COLONIC INTUSSUSCEPTION CAUSED BY LIPOMA: A CASE REPORT**

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*Objective: To present a unique case of Colonic Lipoma causing intussusception and to discuss its implication in pathophysiology, evaluation and surgical management.*

*Case: This is a case of a 44-year-old female found to have a 7cm x 4cm x 4cm Colonic Lipoma causing intussusception who presented with intermittent colicky abdominal pain, early satiety associated with bloatedness, and diarrhea for two weeks. On physical examination the patient had a tender palpable mass on the left hemiabdomen. A computed tomography of the abdomen was done revealing a colo-colonic intussusception at the mid transverse and proximal descending colon mass. The patient was managed as partial gut obstruction secondary to colo-colic intussusception the patient underwent an emergency exploratory laparotomy, left hemicolectomy, with creation of double barrel colostomy. Anastomosis was not amenable due to the poor patient's nutritional status and unfavorable bowel discrepancy. After 6 months, the patient underwent colonoscopy with unremarkable findings and take down of colostomy was done.*

*Results: In this case report, the patient presented with abdominal pain with signs of intestinal obstruction, intraoperatively intussusception of the mid transverse colon to proximal descending colon was seen with a pedunculated mass at the splenic flexure as the lead point. Histopathology result was colonic lipoma with congestion of transverse and descending colon with morphologically viable margins of resection. Follow up colonoscopy was done for surveillance of multiple lipoma or polyps that are not palpable during the time of procedure. The histopathology of the mass revealed a polypoid flesh colored doughy fibrofatty tissue favoring the definitive diagnosis of lipoma.*

*Conclusion: The incidence of lipoma in the gastrointestinal tract, specifically the colon ranges from 0.35 to 4.4% they are usually asymptomatic and can cause intussusception and obstruction when they are >2cm. Since adult intussusception has a rare occurrence, underlying etiology should be investigated due to its high association with malignancy. History taking, Physical examination and high clinical situation aided by imaging is vital in diagnosis. Abdominal CT scan remains the diagnostic imaging of choice for large lipoma and Surgical excision remains the mainstay treatment.*

**A MINIMALLY INVASIVE APPROACH TO CAECAL VOLVULUS: A RARE COMPLICATION OF COLONOSCOPY**

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*A 67-year-old Female attended the emergency department with progressive cramping abdominal pain starting in the lower abdomen and progressing to the right upper quadrant with associated nausea developing twenty-four hours following a routine colonoscopy with uncomplicated polypectomy. On examination the patient was tender in the lower abdomen and right upper quadrant and was focally peritonitic. Initial Investigation showed unremarkable blood work. Computed Tomography with contrast of the Abdomen and Pelvis showed the cecum displaced into the right upper abdomen, with no distension of the proximal ascending colon with moderate fat stranding (Fig 1). Within the setting of the clinical findings and patient history, the patient underwent Laparoscopy on which Caecal volvulus (CV) was identified. The Caecum was ischemic, intact, and not perforated. The patient's caecum/ ascending colon were untwisted (Fig 2). A laparoscopic right hemicolectomy was performed. Subsequent histological examination showed attenuation consistent with mechanical obstruction without any sign of malignancy. Timely identification and taking the patient promptly to theatre prevented the further ischemia and ultimately perforation. The patient made a good recovery and was discharged on post operative day five with a fully recovery and no complication at 3 month follow up.*

**REFRACTORY IBD – A TREATMENT CHALLENGE : EVALUATING THE TYPES AND OUTCOMES OF SURGICAL MANAGEMENT**

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**INTRODUCTION**

*Inflammatory bowel disease (IBD) is characterized by chronic or relapsing immune activation and inflammation. Refractory IBD not responding to first- and second-line medical therapy poses greater challenge in its treatment. With failure of medical therapy and cost of biologics like infliximab, surgery offers a definitive treatment. Present study evaluates the results of surgery in such patients performed over 10 years.*

**MATERIALS & METHODS**

*Current study is a retrospective study carried out in a single surgical unit at a tertiary center of northern India over period of 10 yrs. with 2 yrs. follow up. Endoscopy carried out by an experienced surgeon and HR Olympus EVISEXERA III endoscope along with narrow band imaging and histopathology were used for diagnosis.*

**RESULTS**

*Out of 1784 patients, 397 diagnosed as IBD with 295 as ulcerative colitis, 79 as Crohn's and 23 as indeterminate which were excluded from the study. Anti-inflammatory started in 374 cases, with addition of Immunosuppressives in those with moderate disease; 287 patients showed either complete or partial response to therapy and 87 had no response. Infliximab was started in only 15 patients with cost being limiting factor with complete remission observed in 3 cases. Surgery was done in non-responders to medical therapy (84 patients) and depending upon the extent of disease 19, 23, 28, 14 patients underwent distal colectomy, subtotal colectomy, hemicolectomy and total proctocolectomy with ileal pouch anal anastomosis respectively. Follow-up (monthly, 3 monthly, 6 monthly) carried out till 2 years. Complete remission observed in 79 cases with recurrence of symptoms in 5 cases which resolved with medical therapy. None of the patients required redo surgery.*

**CONCLUSION**

*Refractory IBD hampers quality of life, increases morbidity and treatment cost. Surgical treatment is observed as cost-effective, definitive, showing good response which can be considered in these patients.*

### PAINFUL PUZZLES: DECODING THE ENIGMA OF PERIANAL HIDRADENITIS SUPPURATIVA

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*Hidradenitis suppurativa (HS), commonly referred to as acne inversa, is a persistent and progressively inflammatory condition affecting the terminal follicular epithelium within the apocrine skin glands. Diagnosing HS can be challenging, as it may be confused with other conditions like ingrown hairs or infections, leading to a potential delay in the diagnostic process. Treatment modalities may involve medical management like antibiotics, steroid therapy or biologics such as adalimumab, a tumor necrosis factor (TNF)-alpha inhibitor. Alternatively surgical options can be advocated for refractory disease. The goal of this case is to highlight the significance of implementing aggressive management in the treatment of chronic hidradenitis suppurativa. We herein present a case of 53 years old man, presented with long standing history of multiple perianal wounds for the past 10 years. After a myriad of medical management, he was subjected for multiple episodes of surgical incision and drainage for perianal abscess. He also had seton's inserted for fistula in Ano. He was referred to our center for further management in view of unresolving perianal disease. We performed an incisional biopsy which revealed low grade dysplasia with no evidence of malignant change. A wide local excision was performed and examination under anesthesia revealed no obvious fistula in Ano. A laparoscopic assisted diversion loop sigmoid colostomy was matured to assist wound management. He required several wound dressings and was placed on vacuum assisted dressing once the wound bed had granulated. Post operatively, patient been able to resume daily chores and has been compliant to wound management. In this particular case, the diagnostic challenge that arose as the patient presented with signs and symptoms indicative of chronic perianal fistula masquerading perianal hydranitis suppurativa. Consequently, we believe it is important to maintain a heightened suspicion for perianal Hidradenitis Suppurativa when addressing chronic perianal diseases.*

**BEYOND THE SQUEEZE: TRIUMPHS IN ANAL STENOSIS SURGERY WITH CUTANEOUS FLAPS**

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*Anal stenosis, an infrequent yet impactful condition, may stem from various factors, including traumatic anal procedures, haemorrhoid excision, radiation therapy, congenital malformations, and inflammatory bowel diseases. Diverse corrective surgical techniques have been employed to address the narrowing of the anal canal and restore its healthy function. The association of anal stenosis with the closure of substantial perineal defects using local flaps introduces variability in its incidence rates. Treatment decisions, whether surgical or nonsurgical, pivot on the severity of the stenosis. The absence of a universally accepted gold standard underscores the imperative for personalized approaches in managing this condition. The aim of this article is to describe one of the well-known technique with local flap for severe anal stenosis after multiple perineal debridement. This case study delves into the experience of a 52-year-old Chinese male who underwent multiple perineal debridement for a perineal abscess, resulting in injuries to both internal and external anorectal sphincters. Subsequently, severe anal stenosis persisted for a year, necessitating forceful dilatation with the little finger and a 6 mm Hegar dilator. The patient underwent anal repair with House advancement and a Bipedicule flap. Scar tissue excision and meticulous graft fixation were instrumental in successfully addressing the severe stenosis, culminating in a favorable postoperative outcome. Following surgery, the patient was discharged without complications, and a one month follow-up affirmed the excellent condition of both flaps, signifying the success of the intervention. This case underscores the intricacies associated with managing anal stenosis and emphasizes the need for individualized treatment strategies tailored to the unique characteristics of each patient.*

**FROM TRAUMA TO TRIUMPH: GRACILIS NEOSPINCTER CASE CHRONICLE**

Khairul Farhan Khairuddin<sup>1</sup>; Soma Balaganapati<sup>2</sup>; Diana Melissa Dualim<sup>3</sup>; Nabil Azmi<sup>4</sup>; Zairul Azwan<sup>5</sup>; Nur Afdzillah<sup>6</sup>; Ismail Sagap<sup>7</sup>

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*The implementation of gracilis muscle neosphincter creation in addressing obstetric perineal injuries presents a range of potential benefits, primarily centering on the restoration of anal sphincter function to alleviate issues such as fecal incontinence arising from such injuries. By significantly improving patients' control over bowel movements, this surgical intervention offers a tangible enhancement in continence, thereby contributing to an elevated quality of life for women affected by obstetric perineal injuries.*

*Illustrating the efficacy of gracilis muscle neosphincter reconstruction, here we present a case of a successful restoration of anal sphincter function in a 37-year-old female patient who experienced fecal incontinence following a traumatic obstetric injury to the anal sphincter complex. Despite an initial repair at the time of the injury, she ended up with severe fecal incontinence 3 months post repair with complete disruption of anal sphincter complex depicted by the endoanal ultrasound. Subsequently the patient underwent gracilis muscle neosphincter surgery, employing meticulous techniques to establish a functional neosphincter. Postoperative assessment revealed a significant improvement in continence and overall quality of life, highlighting the effectiveness of gracilis muscle neosphincter reconstruction as a viable approach for reinstating anal sphincter function in specific cases of fecal incontinence.*

*In conclusion, gracilis muscle neosphincter reconstruction emerges as a promising and effective surgical strategy for managing obstetric perineal tears leading to fecal incontinence. The presented case reports underscore the successful restoration of anal sphincter function, emphasizing the potential of this reconstructive technique to enhance the overall well-being of women affected by obstetric perineal trauma.*

**UNVEILING THE UNCOMMON: A CASE REPORT OF RECTAL PROLAPSE IN A YOUNG ADULT**

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*Rectal prolapse is a condition most commonly associated with elderly individuals or those with predisposing factors such as chronic constipation, pelvic floor dysfunction, or prior surgeries. Rectal prolapse in a young adult without apparent predisposing factors is relatively uncommon. This case underscores the importance of recognizing atypical presentations, prompting a comprehensive exploration of contributing factors, and tailoring interventions to suit the individualized needs of the patient. We report on a 23-year-old gentleman who presented with symptomatic rectal prolapse with no obvious predisposing risk factors which we proceed with laparoscopic ventral mesh rectopexy after failed conservative measures. Initially presenting with 'meat prolapsing outwards during defecation,' associated with changes in bowel habits. Conservative measures, including dietary modifications and biofeedback therapy, were initially implemented but proved to be insufficient. Faced with persistent symptoms, laparoscopic ventral mesh rectopexy was performed as a definitive surgical intervention, successfully addressing anatomical abnormalities contributing to rectal prolapse. Postoperatively, the patient experienced substantial symptom improvement with no recurrence during the follow-up period. This case report underscores the challenges in managing rectal prolapse in a young adult and emphasizes the importance of multidisciplinary approach among healthcare personal in addressing the complexities of rectal prolapse management. In conclusion, this case contributes valuable insights to the nuanced management of rectal prolapse, particularly in cases departing from traditional risk profiles. The individualized approach outlined in this report, encompassing conservative measures, biofeedback therapy, and surgical intervention, serves as a guide for future cases with similar atypical presentations, advancing the understanding and treatment options for this intricate medical condition.*



**INTRA-ARTERIAL ICG STAINING, A FEASIBLE AND SAFE METHOD FOR NAVIGATION IN LAPAROSCOPIC HEPATECTOMY**

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*Introduction:* Indocyanine green (ICG) fluorescence staining is an effective navigation method, and the main staining methods currently used are portal or peripheral vein injection of ICG. However, portal vein staining has drawbacks in sub hepatic segment. This study uses superselective catheter placement in hepatic artery branches and inject ICG through the target hepatic artery to achieve positive staining of the sub hepatic segment. A cohort study was designed based on such a background, comparing the prognosis of laparoscopic hepatectomy with ICG staining via artery or portal vein.

*Method:* The preoperative preparations for patients in Group A and Group B were similar. The surgical plan for Group A patients is to perform arterial watershed resection based on the tumor location, while the plan for Group B patients is to perform Couinaud segment resection. Group A patients underwent femoral artery intubation after anesthesia. Then the guide wire enters the target hepatic artery to perform embolization using gelatin sponge. Then, ICG is injected into the target artery. Finally, the surgery was performed under fluorescence laparoscopy based on the staining boundary.

*Result:* Preoperative arterial staining can select arteries of grade 3 or above, achieving precise resection of sub liver segments. The intraoperative staining effect is good with clear staining boundary. At the same time, small satellite lesions that were not found in preoperative imaging can be detected. There were significant differences in intraoperative bleeding volume, incisal margin, and surgical time.

*Conclusion:* Intra-arterial ICG staining is safe and feasible.

**POOR PROGNOSTIC FACTORS AFTER RESECTION OF HUGE HEPATOCELLULAR CARCINOMA (≥10 CM)**

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*Purpose: Huge hepatocellular carcinoma (hHCC) is highly associated with vascular invasion and considered to have a poor prognosis. Transarterial chemoembolization (TACE) alone or in combination with drug therapy for hHCC has a certain effect, but long-term control is difficult. Therefore, surgical resection is selected for patients with good liver function. In this study, we will analyze the prognosis of resected hHCC patients and verify the validity of surgical treatment.*

*Method: Among 2203 patients who underwent liver resection for HCC between 2001 and 2019, 119 patients (6.3%) with hHCC ≥10 cm were included, and death within 1 year was defined as poor prognosis. A comparison was made between 37 patients who died less than 1 year and 82 patients who survived for more than a year.*

*Results: Nine patients (9.7%) had positive surgical margins. Preoperative major portal vein invasion (mVP) occurred in 20 cases (21.7%) and histological vascular invasion in 64 cases (69.5%). Univariate analysis revealed three prognostic factors : mVP (Odds ratio(OR): 3.90 [1.52-10.0],  $p = 0.005$ ), poorly differentiation (OR: 3.43 [1.28-9.22],  $p = 0.049$ ), vascular invasion (OR: 2.83 [95%CI; 1.06-7.57],  $p = 0.049$ ). Multivariate analysis revealed that only one factor : mVP (OR: 3.12 [1.08-9.02],  $p = 0.035$ ). The median survival time (MST) for resected hHCC was 33.7 months, and the 5-year survival rate was 25.4%. The MST for mVP cases in hHCC was 6.5 months, while the MST for TACE cases including combination with drug therapy was 5.5 months.*

*Conclusion: Although mVP is a poor prognostic factor, liver resection appears to be reasonable treatment compared with TACE.*

## SAFETY OF LIVER RESECTION IN THE ELDERLY: A SINGLE-INSTITUTION EXPERIENCE

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### Background:

In recent years, liver resection has been performed for elderly patients in Japan with the development of surgical operations. However, it is generally considered that the risk of perioperative adverse events is higher in elderly patients. In this study, we investigated the safety of liver resection for the elderly in our institution.

### Methods:

A total of 2025 open liver resections for primary liver cancers between 2000 and 2020 were included. Comparisons were made between two groups: elderly patients aged 75 years or older and non-elderly patients aged less than 75 years. Preoperative risk factors for postoperative complications in the elderly group were also extracted. Predictive scores such as FIB-4 index and NAFLD fibrosis score were used to assess liver fibrosis. The Clavien-Dindo (C-D) classification was used to classify postoperative complications.

### Results:

In an intergroup comparison of 482 (23.8%) elderly patients and 1543 (76.2%) non-elderly patients, the FIB-4 index (3.57 vs. 2.78,  $p < 0.001$ ) was significantly higher in the elderly group. Intra-operative blood loss was significantly lower in the elderly group (198 ml vs. 283 ml,  $p = 0.001$ ) and operative time was shorter (263 min vs. 324 min,  $p < 0.001$ ). The rate of postoperative complications of C-D Grade IIIb or more was significantly higher in the elderly group (8.2% vs. 3.8%,  $p = 0.021$ ). Multivariate analysis of preoperative factors to predict the postoperative complications of C-D Grade IIIb or more showed that the NAFLD fibrosis score ( $>2.64$  (odds ratio [OR]; 4.16,  $p < 0.001$ ) and FIB-4 index ( $>5.46$  (OR; 2.35,  $p = 0.031$ )) were extracted as the independent risk factors.

### Conclusion:

Our results suggest that open liver resection for the elderly was associated with a high risk of serious postoperative complications. High predictive value of liver fibrosis scores could be risk factors for postoperative complications.

**FEASIBILITY OF USING LAPAROSCOPIC EXPLORATION FOR THE MANAGEMENT OF RESIDUAL GALL BLADDER MUCOSA AFTER CHOLECYSTECTOMY**

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*Background :* Some post cholecystectomy patients experience recurrent symptoms postoperatively. Residual gallbladder mucosa left after cholecystectomy may develop recurrent lithiasis and become symptomatic, which mandates surgical exploration and removal. Well examination and investigations are a must for confirming the diagnosis.

*Methods:* A prospective study included patients with recurrent symptoms after cholecystectomy and elevated liver enzymes and alkaline phosphatase and was confirmed by MRCP during a period of 24 months.

*Results:* 34 patients were included . Female to male ratio was 7.5:1 . Ultrasonography was only positive in 5 patients showing residual part of the gall bladder. Imaging with MRCP revealed elongated cystic duct in 65% and sessile gall bladder in 35%. All underwent laparoscopic exploration and completion cholecystectomy. Median hospital stay was 1 day. There was no mortality. Post cholecystectomy syndrome has a higher incidence after open cholecystectomy when compared to laparoscopic cholecystectomy.

*Conclusions:* Recurrent symptoms after cholecystectomy should raise the suspicion of residual gall bladder. Clinical evaluation along with laboratory investigations can strengthen the suspicion. MRCP evaluation is a useful investigation for confirming the diagnosis and laparoscopic management is feasible despite being technically not easy.

**A RARE CASE REPORT OF BILOMA AFTER CHOLECYSTECTOMY**

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*Biloma is defined as intrahepatic or extrahepatic collection of bile outside of the biliary tree and within the abdominal cavity. The complication's epidemiology ranges from 0.3% to 2%. Although it is uncommon after cholecystectomy, it most frequently happens after hepatobiliary surgery. Traumatic injuries to the biliary system, spontaneous biliary tract rupture, and abdominal trauma are among the causes of biloma.*

*We report a case of 37 years old male with underlying Ischemic heart disease(IHD) and history of cholecystectomy for gallstone pancreatitis initially presented to casualty with complaints of left hypochondriac pain without evidence of obstructive jaundice. His blood work revealed normal leucocyte count but abnormal liver enzymes. Ultrasound finding showed loculated anechoic lesion seen at the gall bladder bed measuring approximately 1.9x4.5cm with minimal debris and presence of dilated common and bilateral intrahepatic duct measuring 1.0x0.4cm. Computed topography (CT) liver 4 phases images showing loculated rim enhancing collection causing dilatation of common bile duct. He then underwent endoscopic retrograde cholangiopancreatography (ERCP)-guided biliary stent placement across the site of the biliary leak which resulted in the complete resolution of symptoms. Including biloma in the differential diagnosis for right upper quadrant pain is essential, requiring a high level of clinical suspicion and timely treatment.*

**A RARE CASE REPORT OF DOUBLE PRIMARY MALIGNANCY : SYNCHRONUS INTRAHEPATIC CHOLANGIOCARCINOMA AND INTRADUCTAL BREAST CARCINOMA**

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*Intrahepatic cholangiocarcinoma, a primary liver malignancy of the biliary tract epithelium, has a dismal prognosis. Synchronous intrahepatic cholangiocarcinoma and breast intraductal carcinoma are rarely described in the literature. We herein report the diagnosis and surgical management of this unusual entity. A 62-year-old woman had painless jaundice, tea-coloured urine, and pale stool for 2 weeks associated with anorexia and weight loss. She has hypertension, type II diabetes, and dyslipidaemia. Her mother suffered from bone cancer and her paternal aunt had breast cancer. She had a bilateral breast lumpectomy for benign disease in 2007. Physical examination revealed a deeply jaundiced patient with an upper abdominal mass. Her left nipple-areolar complex was deformed but no palpable breast or axillary lump. Her biochemistry showed obstructive jaundice features with a predominant direct bilirubin of 235 mmol/L. AFP and CA 19-9 were normal. A staging CT scan found dilated intrahepatic ducts and a hilar mass with a 7 cm segment IV liver lesion. An EUS biopsy of the liver lesion confirmed adenocarcinoma. There was also a 2 cm diameter lobulated left retroareolar lesion on the mammogram in which a core biopsy proved an invasive carcinoma. She underwent left hemihepatectomy, caudate lobe resection, biliary reconstruction, and left central wide local excision with sentinel lymph node biopsy. Histopathology demonstrated moderately differentiated intrahepatic cholangiocarcinoma and invasive ductal breast carcinoma. She is well on adjuvant chemotherapy a year after the surgery. In conclusion, synchronous intrahepatic cholangiocarcinoma and intraductal breast carcinoma are rare and require interdisciplinary diagnosis and treatment.*

**BENIGN LIVER NODULES MISDIAGNOSED AS HEPATOCELLULAR CARCINOMA AFTER RESECTION**

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*Background: The aim of this study is to evaluate, the clinical features of benign liver tumors that misdiagnosed as hepatocellular carcinoma (HCC).*

*Methods: A retrospective review was performed the clinical features of patients in liver resection for preoperatively diagnosed HCC between 2001 and 2019 at Nihon University Itabashi Hospital.*

*Results: Of the 2016 patients who underwent liver resection for clinically diagnosed HCC, 19(0.9%) were histologically diagnosed as benign liver tumor postoperatively. (angiomyolipoma(n=2), PEComa(n=3), focal nodular hyperplasia (FNH)(n=4), hepatocellular adenoma (HCA) (n=6), SFT(n=1), hamartoma(n=1), hemangioma(n=1) and necrotic tissue(n=1)). CT scans were taken in all 19 patients, whereas MRI was done in 15 cases (78.9%). Of the 19 patients, 11 (57.8%) had typical hallmarks of arterial enhancement and portal/delayed washout on CT scans; among them, 6 cases had MRI findings compatible to HCC.*

*Conclusion: To avoid false positive, careful follow-up should be done for atypical images of HCC*

**CASE REPORT-UNFORTUNATE BILIARY INJURY IN ISOLATED RIGHT POSTERIOR SECTORAL DUCT, A RARE BILIARY VARIANT**

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**Introduction:**

Bile duct variant is a well-known risk factor for bile duct injury during cholecystectomy. Isolated right posterior sectoral duct is an uncommon biliary variant (<5%). It poses great challenge to surgeon, both in diagnosis and management of this condition. Here we report an unfortunate case of injury to the isolated right posterior sectoral duct, which is a rare biliary variant.

**Case description:**

A female patient underwent emergency laparoscopic cholecystectomy for acute calculous cholecystitis sustained iatrogenic bile duct injury. It was detected postoperative suggested by persistent bile in drain. ERCP showed no obvious bile leak. MRCP demonstrated suspicious leakage of right hepatic duct. Emergency exploratory laparotomy and biliary reconstruction was done. Intraoperatively noted hanging clipped duct near the gallbladder bed. The duct was opened up, cholangiogram through aforementioned duct showed an isolated right posterior sectoral duct, which was clipped during the dissection of the Calot's triangle. Roux-en-y biliary reconstruction was performed to the isolated right posterior sectoral duct. Postoperatively, patient was discharged well. ERCP performed after 2 months showed no bile leak.

**Conclusion:**

Bile duct variant is a major cause of bile duct injury in cholecystectomy. In ideal setting, MRCP should be performed pre-operatively to identify biliary anatomy, in order to minimize the risk of bile duct injury. However, socioeconomic status is a major determinant of routine pre-operative MRCP. Hence, we report this case to highlight the importance of awareness of this rare biliary variant, and its significance in cholecystectomy.



## BACTERIAL ANALYSIS OF THE BILE IN THE PATIENTS WITH ACUTE CHOLECYSTITIS USING NEXT-GENERATION SEQUENCERS

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### *Bacterial analysis of the bile in the patients with acute cholecystitis using next-generation sequencers*

#### *Background*

Commonly in around half of the patients with acute cholecystitis bile is sterilized by the traditional culture technique. However, recent human whole-genome sequencing to microbial species revealed the presence of bacteria flora even in aseptic bile by the traditional culture technique. In the present study, we review bacterial flora in bile of acute cholecystitis using an autologous sequencer.

#### *Material and Methods*

Bile samples were obtained from 29 patients who was diagnosed with acute cholecystitis by Tokyo Guideline 2018 and underwent laparoscopic cholecystectomy in our hospital. Bacterial flora was analyzed both by conventional culture technique and by 16S rRNA sequencing.

#### *Results*

Fourteen out of 29 patients were culture-negative by traditional culture technique. However, metagenomic analysis clearly showed the bacterial flora such as *Anaerobacillus* sp., *Fusobacterium* sp., *Shigella* sp., *Curvibacter* sp., *Corynebacterium* sp., etc. were detected even in the bile that was aseptic by traditional culture.

#### *Conclusion*

In a bacterial flora analysis targeting the 16S ribosomal gene, a specific bacterial flora was detected in bile collected from the patients with acute cholecystitis even in the patients whose bile was sterilized by traditional culture techniques.

### RISK FACTORS OF MORTALITY IN PATIENTS WITH LIVER NECROSIS

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*Introduction: This study sought to perform epidemiological analysis of risk factors associated with mortality among liver necrosis (LN) patients in hospitals in the United States.*

*Methods: Data obtained from hospital patients with LN was analyzed using the National Inpatient Sample database 2005-2014. Demographics, clinical data, and outcomes were collected and used multivariable logistic regression models.*

*Results: A total of 10,476 adult and 3,207 elderly patients with acute or subacute liver necrosis were admitted to hospitals. 1354 (13%) adults and 617 (19%) elderly patients died during their hospital stay. Females accounted for 53% of the sample in both age groups.. Elderly patients had approximately a 6-7% higher mortality rate than adults. In operatively treated patients, invasive diagnostic procedures showed a significant protective effect against mortality (OR = 0.690, 95% CI: 0.534-0.890). Age was associated with higher mortality rates in adult patients (OR = 1.016, 95% CI: 1.004-1.027). In patients with no operation, medical/surgical complications increased mortality odds by over 2.6 times in adults (OR = 2.665, 95% CI: 1.470-4.831) and by 4.3 times in elderly patients (OR = 4.331, 95% CI: 1.932-9.705). Increased hospital length of stay raised mortality odds in adults (OR = 1.013, 95% CI: 1.004-1.022) and lowered them in elderly patients (OR = 0.966, 95% CI: 0.944-0.988). Invasive diagnostic procedures were a significant protective factor in non-operated patients (OR = 0.714, 95% CI = 0.586 - 0.871) for adults; OR = 0.552, 95% CI = 0.385 - 0.790) for elderly). Being female decreased mortality odds by about 36% in non-operated adults (OR = 0.638, 95% CI = 0.556 - 0.731).*

*Conclusion: Age, medical/surgical complications, and prolonged hospital stays as consistent risk factors for mortality in liver necrosis patients. Invasive diagnostic procedures prove to be a robust protective factor, reducing mortality odds in adults undergoing operations.*

**CD8+ T CELL TRAJECTORY SUBTYPES DECODE TUMOR HETEROGENEITY AND PROVIDE TREATMENT RECOMMENDATIONS FOR HEPATOCELLULAR CARCINOMA**

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*Introduction:*Mounting evidence has revealed that the interactions and dynamic alterations among immune cells are critical in shaping the tumor microenvironment and ultimately map onto heterogeneous clinical outcomes. Currently, the underlying clinical significance of immune cell evolutions remains largely unexplored in hepatocellular carcinoma (HCC).

*Materials & Methods:*A total of 3,817 immune cells and 1,750 HCC patients of 15 independent public datasets were retrieved. The Seurat and Monocle algorithms were used to depict T cell evolution, and nonnegative matrix factorization (NMF) was further applied to identify the molecular classification. Subsequently, the prognosis, biological characteristics, genomic variations, and immune landscape among distinct clusters were decoded. The clinical efficacy of multiple treatment approaches was further investigated.

*Results:*According to trajectory gene expression, three heterogeneous clusters with different clinical outcomes were identified. C2, with a more advanced pathological stage, presented the most dismal prognosis relative to C1 and C3. Further explorations elucidated C1 to be characterized as lipid metabolic HCC, and C2 was referred to as cell-proliferative HCC, whereas C3 was defined as immune inflammatory HCC. Moreover, C2 also displayed the most conspicuous genomic instability, and C3 was deemed as ""immune-hot"", having abundant immune cells and an elevated expression of immune checkpoints. The assessments of therapeutic intervention suggested that patients in C1 were suitable for transcatheter arterial chemoembolization treatment, and patients in C2 were sensitive to tyrosine kinase inhibitors, while patients in C3 were more responsive to immunotherapy. We also identified numerous underlying therapeutic agents, which might be conducive to clinical transformation in the future.

*Conclusion:*Our study developed three clusters with distinct characteristics based on immune cell evolutions. For specifically stratified patients, we proposed individualized treatment strategies to improve the clinical outcomes and facilitate the clinical management.

**CASE REPORT: SPLENIC ARTERY EMBOLIZATION AS A SALVAGE PROCEDURE AFTER LIVER FAILURE FOLLOWING ASSOCIATED LIVER PARTITION AND PORTAL VEIN LIGATION FOR STAGED HEPATECTOMY**

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*Introduction*

Associating liver partition and portal vein ligation in staged hepatectomy (ALPPS) is an advanced salvage two-stage surgery in extensive colorectal liver metastases and inoperable advanced hepatocellular carcinoma (HCC) with limited future liver remnant (FLR). ALPPS is designed to rapidly induce hypertrophy of FLR, mitigate the risk of post-hepatectomy liver failure and ensure the achievement of R0 resections.

*Presentation of the case*

A 65-year-old male with right lobe HCC closely between right and middle hepatic vein with insufficient FLR for extended right hepatectomy. Following the first stage of ALPPS was performed, FLR increased to 44% and the second stage was performed smoothly on postoperative day 13. Nevertheless, postoperative liver failure manifested with persistent massive ascites. Decision of splenic artery embolization was made to rescue post hepatectomy liver failure and ascites had been markedly improved in the following 3 weeks. Three months postoperatively, CT revealed no further complications except loculated fluid collection in the spleen.

*Discussion*

The ALPPS technique has demonstrated significant efficacy in enhancing the resectability of previously deemed inoperable liver tumors. The most common postoperative complications of ALPPS include biliary fistula and infection. There had been a scarcity of studies focused on post-ALPPS liver failure. In our case, postoperative liver failure manifested immediately, prompting the implementation of splenic artery embolization on postoperative day 5. This intervention proved to be feasible, with noticeable symptom improvement observed within one week. Notably, the severe complications after embolization are not uncommon after the procedure in cirrhotic patients.

*Conclusion*

In our specific case, the utilization of splenic artery embolization emerged as a practicable intervention to effectively manage and mitigate liver failure subsequent to ALPPS.

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**EFFECTS OF VITAMIN D AND CALCIUM SUPPLEMENTATION ON QUALITY OF LIFE (QOL) RECEIVING PALLIATIVE CHEMOTHERAPY FOR ADVANCED GALLBLADDER CANCER: A PILOT STUDY FROM INDO-GANGETIC BELT**

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**"Background**

Vitamin D in various forms, is known for its importance at multiple levels of carcinogenesis. Vitamin D also possesses anti-oxidative stress, anti-invasion, anti-angiogenesis, and anti-proliferative effects. Cancer patients frequently have vitamin D deficiency, which is linked to the advancement of disease. Patients with palliative cancer frequently lack vitamin D, which has been linked to an increased risk of pain, infections, and depression and thus affecting the QoL.

**Materials and methods**

A cross-sectional study was performed which included n=48 advanced gallbladder cancer cases receiving palliative chemotherapy (gemcitabine and cisplatin). Palliative chemotherapy with 60,000IU of vitamin D and 1000mg of calcium was orally supplemented to all enrolled patients. Quality of life was assessed using FACT – G questionnaire before initiating chemotherapy and at the end of 6 cycles.

**Results**

The median survival observed was 35.7 weeks (~ 9 months). Changes in vitamin D, serum calcium levels and functional aspects after chemotherapy were not significant. Changes in physical (p-value = 0.000), social (p-value = 0.000), and emotional (p-value = 0.000) were significant. The quality-of-life score had significant changes with a p-value of 0.021.

**Conclusion**

The study demonstrated that vitamin D and calcium supplementation does not significantly change the serum values of vitamin D and calcium in patients receiving palliative chemotherapy for advanced carcinoma gall bladder. In context with QoL, VitD and Calcium supplementation exert many significant effects on physical, emotional and social aspects and total quality of life scores."

## OPTIMIZING BILIARY STENT MANAGEMENT: THE IMPACT OF EXPERT TRANSABDOMINAL ULTRASOUND IN PLANNING AND FOLLOW-UP

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### *Background:*

*Biliary stenting is pivotal for managing obstructions and related complications. Current protocols rely on CT and EUS, neglecting the potential of high-quality transabdominal ultrasound (US).*

### *Materials and Methods:*

*In our comprehensive analysis of ten cases, we showcase ultrasound's efficacy in planning and monitoring biliary stents for conditions like biliary hypertension and Vater's papilla stenosis. Ultrasound's ability to detect stent patency, inclusion, inflammation, and visualize lesions is discussed.*

### *Results:*

*Through the examination of ten cases, our analysis conducted by skilled operators accurately assesses biliary stent status, identifying parameters like patency, inclusion, and inflammation. It unveils lesions not easily visible on CT, aiding early diagnosis and timely corrective measures. The findings elucidate specific tendencies in stent behavior, contributing valuable insights into the field.*

*Precise monitoring using expert ultrasound improves patient outcomes, crucial for addressing complications like stent malfunction, migration, strictures, and adhesions. Early detection ensures timely intervention, aligning with the primary goal of stent placement—alleviating symptoms and restoring bile flow.*

### *Conclusions:*

*Incorporating expert transabdominal ultrasound into standard protocols enhances planning and follow-up for biliary stents. Offering real-time imaging, avoiding radiation exposure, and assessing parameters missed by other modalities, ultrasound becomes an essential tool. We advocate for its inclusion, foreseeing improved patient outcomes and refined treatment approaches in biliary stenting management. The analysis of ten cases adds depth to our understanding, elucidating specific tendencies and findings that further underscore the significance of ultrasound in this context.*



**CHALLENGING MANAGEMENT OF PURE SQUAMOUS CELL CARCINOMA OF GALLBLADDER WITH LIVER METASTASIS- A CASE REPORT**

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*Pure squamous cell carcinoma of gallbladder is an extremely rare case of gallbladder carcinoma. The presentation is either by accidental finding or with advanced symptoms. This case reported a 69-year-old man with a history of gallstone pancreatitis presented with recurrent acute cholecystitis, failed antibiotic treatment and treated with open cholecystectomy. Intraoperatively gallbladder was embedded to the liver bed with fundal perforation and multiple liver nodules. Clinical decision made for R2 resection as the fundal wall of gallbladder already macerated.*

*Histopathological examination showed a squamous cell carcinoma of gallbladder with liver bed invasion. In view of poor ECOG status, the adjuvant treatment was abandoned. The main aim for this case report is to discuss the best treatment for this patient as limited data is available to treat this condition.*

# THE INTERACTION BETWEEN ESRP1 AND ZEB1 AFFECTS PROGNOSIS OF INTRAHEPATIC CHOLANGIOCARCINOMA

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*Introduction:* The interaction feedback loop between Epithelial Splicing Regulatory Protein 1 (ESRP1) and Zink-finger, E-box binding 1 (ZEB1) regulates tumor phenotype and affects prognosis via epithelial-mesenchymal transition (EMT) in some cancers. However, this role in intrahepatic cholangiocarcinoma (ICC) remains unclear.

*Materials and Methods:* The association between clinicopathological features and expression of ESRP1 and ZEB1 in 57 ICC cases (2010-2022) was analyzed immunohistochemically. The intensity and positive proportion of ESRP1, ZEB1 immunostaining were evaluated. These cases were investigated separately into the central area scores and the invasive area scores, and the combined total scores of the central area scores and the invasive area scores because ICC was a very heterogenous tumor derived from some differentiations.

*Results:* Well-to-moderately differentiated adenocarcinoma exhibited significantly higher ESRP1 expression and lower ZEB1 expression scores ( $p < 0.05$ ), while poorly differentiated adenocarcinoma exhibited significantly higher ZEB1 expression and lower ESRP1 expression scores ( $p < 0.05$ ). The ESRP1-low groups in the invasive area had significantly larger tumor size ( $p < 0.05$ ); however, other clinicopathological factors such as age, CEA, CA19-9, tumor number, lymph metastasis, vascular invasion, bile duct invasion, and stage based on UICC classification were similar. The ZEB1-high groups in the invasive area had significantly high blood CEA level ( $p < 0.05$ ); however, other clinicopathological factors were similar. The low ratio of ESRP1 to ZEB1 scores significantly aggravated the disease-free survival after the primary surgery in the three-type investigations (invasive area score, central area score, and total score).

*Conclusion:* ICC cells exhibited oppositely ESRP1 and ZEB1 expression. The lower ESRP1 and higher ZEB1 cells promoted tumor progression and metastasis.

**RARE OCCURRENCE OF SPONTANEOUS BLEEDING PSEUDOANEURYSM OF SPLENIC ARTERY PRESENTED AS HEMOSUCCUS PANCREATICUS**

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*Hemosuccus pancreaticus is a rare cause of acute upper gastrointestinal bleeding, originated from the pancreatic duct and escapes into the duodenum. It is commonly caused by chronic pancreatitis that leads to formation of pseudoaneurysm.*

*We report a case of rare presentation of hemosuccus pancreaticus. A 49-year-old man presented with abdominal pain, hematemesis and melenic stool. He was anemic and required urgent packed cell transfusion.*

*Oesophagogastroduodenoscopy (OGDS) performed was unable to locate the source of bleeding. CT angiogram of the abdominal aorta done revealed a saccular aneurysmal dilatation seen at the splenic artery measuring 2.0 x 1.6 x 2.0 cm with thick mural calcification. There was localised extravasation of contrast and hematoma at the retroperitoneum measuring 5.6 x 5.7 x 7.0 cm. He had recurrent episodes of hematemesis that required an exploratory laparotomy. Intra-operatively no blood was seen in the peritoneal cavity. There was a large pulsating bulge seen inferior to the pancreatic body, pushing the pancreas upward. Upon clamping the splenic artery, Doppler scan noted collapse of the pseudoaneurysm cavity with disappearance of 'yin-yang' sign that was suggestive of turbulence flow, this sign reappeared upon releasing the vascular clamp. The pseudoaneurysm sac was adhered to the fourth part of duodenum (D4), taken down to reveal a defect suggestive of fistulous communication between the pseudoaneurysm and D4. Spleen-sparing distal pancreatectomy was done. Ex-vivo examination of the specimen showed that the pseudoaneurysm cavity was filled with layered blood clots. Probing of the pancreatic duct with lacrimal probe showed communication between pseudoaneurysm cavity with pancreatic duct that was suggestive of possible hemosuccus pancreaticus.*

*Hemosuccus pancreaticus is uncommon but serious abdominal bleeding originating from the pancreas, caused by pancreatic inflammation, masses, or vascular issues. Identifying and stopping the source of bleeding is key.*

**RECURRENT IDIOPATHIC PANCREATITIS.SURGERY OR NOT? A CASE REPORT**

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**Introduction :**

*Acute pancreatitis is an episode of inflamed pancreatic gland in which may progress to chronic state where it carries a high potential for surgical morbidity and it is debilitating condition that may even lead to death due to the complication arises. Out of many aetiologies, occult biliary disease has been suggested as the most common underlying cause of acute pancreatitis, not to be missed an idiopathic recurrent acute pancreatitis (IRAP).*

**Material :**

*Here, we present a case of IRAP in a lady, whom having multiple episodes of recurrence with no clear evidence the inkling caused of her developing such state despite serial episode of imaging performed. A cholecystectomy was performed following multiple episodes of idiopathic recurrent acute pancreatitis after thorough consideration and discussion with the patient, gastro-enterology and surgical team*

**Result :**

*Post operatively she recovered well with no episode of recurrence abdominal pain to suggest recurrent pancreatitis during outpatient clinic review. Histopathology report of the specimen proved that the recurrence episode of idiopathic pancreatitis developed from occult biliary disease.*

**Conclusion :**

*Management of idiopathic acute pancreatitis following recurrent episode should be based on individual presentation. Minimally invasive modalities such as EUS can be offered to the patient however effectiveness in preventing episodes of recurrent pancreatitis is clouded which potentially may be harmful for its possible complications. Thorough discussion should be made prior to surgery as cholecystectomy itself doesn't come without complications and preparation in term of future diet management should be prompt earlier to improve patients' satisfaction and quality of life.*

**LIVER ENZYMES AS PREDICTORS OF CHOLEDOCHOLITHIASIS: A SCOPING REVIEW**

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*Background:* Cholelithiasis with concurrent bile duct stones continues to provide diagnostic and operative challenges and contributes to increased morbidity. This study aims to identify the role of liver function tests as a non-invasive method of predicting choledocholithiasis.

*Materials/Methods:* A scoping review of retrospective and prospective cohort studies published from January 2011 to December 2021 was done on the PubMed database in the English language. Data was synthesised and reported according to the following five themes – bilirubin, other liver function tests (LFTs), application of the American Society for Gastrointestinal Endoscopy (ASGE) guidelines, repeat LFTs, and inflammatory markers.

*Results:* Twenty-five articles were identified as part of this scoping review. Eight articles identified bilirubin as a statistically significant predictor, with cut-offs ranging from 1.2 to >4 mg/dL. Another four, ten, four, and five articles respectively found gamma-glutamyl transferase (GGT), alkaline phosphatase (ALP), aspartate aminotransferase (AST), and alanine aminotransferase (ALT), to be statistically significant predictors, with cut-off levels spanning across a considerable range. On the contrary, four and three articles respectively did not find bilirubin and other LFTs to be statistically significant predictors. A smaller number of articles reported on the significance of LFT trends and white cell count, with further heterogeneity noted in the statistical significance of changes in LFTs on serial testing. There were no articles that found leucocytosis to be a statistically significant predictor. The diagnostic performance of the ASGE guidelines appears to be suboptimal in that the application of its risk stratification profile still results in the performance of unnecessary ERCP in up to >40% of patient populations.

*Conclusion:* LFTs continue to disappoint as gross predictors of choledocholithiasis and should be used in conjunction with clinical picture and radiological findings, not in isolation, to diagnose or exclude choledocholithiasis.

### ACUTE CHOLECYSTITIS IN SITUS INVERSUS

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*Situs inversus is a rare condition where the organs in the chest and abdomen are reversed or mirrored from their normal positions. In the context of acute cholecystitis, which is the inflammation of the gallbladder, situs inversus give a challenging in diagnosis and management. The gallbladder is normally located in the right upper quadrant of the abdomen, but in situs inversus, it may be on the left side. This anatomical variation can make it difficult to interpret symptoms and physical examination findings, as medical practitioner are accustomed to look for signs of cholecystitis on the right side. If a person with situs inversus develops acute cholecystitis, the symptoms may still include left upper abdominal pain, nausea, vomiting, and fever. We have a case in Hospital Jasin, a 40 years old female with underlying of Hypothyroidism and Morbid Obesity was presented with Left Hypochondriac Pain and fever. Diagnosis may involve imaging studies such as ultrasound, which may need to be specifically adapted to account for the reversed anatomy. Ultrasound abdomen was done and showed situs inversus, cholelithiasis with Cholecystitis features, but no biliary obstruction. Laboratory tests, including blood tests to assess for signs of inflammation, can also contribute to the diagnostic process. In terms of management, the principles for treating acute cholecystitis remain the same regardless of situs inversus. The patient was given pain relief, antibiotics, and was counseled for elective surgery to remove the gallbladder (cholecystectomy). In summary, while situs inversus adds complexity to the diagnosis and management of acute cholecystitis, it is not an insurmountable challenge. Medical practitioners need to be aware of the reversed anatomy and adapt their approach to ensure accurate diagnosis and appropriate management for the patient.*

**GRUBER-FRANTZ TUMOR: A RARE PANCREATIC NEOPLASM**

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*Solid pseudopapillary tumors of the pancreas, known as Frantz tumors represent an uncommon entity. The tumor is of low-grade malignant potential, as the majority of the cases are cured by simple, but complete surgical resection. We present the case of a 46-year-old, healthy man, with a history of community-acquired pneumonia. A chest CT scan was conducted, revealing a solid mass arising from the body and tail of the pancreas and multiple hepatic lesions in the lowest lung windows. Due to radiological suspicion of pancreatic neuroendocrine tumor with hepatic metastasis, a subsequent abdominal CT and Endoscopic ultrasound-guided fine needle aspiration were performed. The examination disclosed tumor cells exhibiting papillary architecture, and immunohistochemical analysis indicated cells positive for markers, including beta-catenin and focal expression of synaptophysin, with a Ki67 proliferation index of 1%. The liver lesions were revealed to be adenomas. Following these diagnostic procedures, the patient underwent a caudal pancreatectomy and splenectomy and the pathological examination confirmed the presence of a pseudopapillary tumor of the pancreas. The surgery was performed using an open approach due to the anomalous dimensions of the vascular tree and to reduce the risk of iatrogenic complications. The patient was not given any adjuvant therapy.*

*Surgery stands as the gold-standard treatment for this condition, considering that no other treatments have proven effective. Additionally, surgical intervention is frequently curative due to the tumor's low malignant potential.*

## CONSIDERATION OF PANCREATODUODENECTOMY IN LATE ELDERLY PATIENTS AT A COMMUNITY-BASED HOSPITAL

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*Introduction:* Establishment of the Japanese Society of Hepato-Biliary-Pancreatic Surgery board certification system has decreased mortality subsequent to pancreatoduodenectomy (PD) in Japan. However, not all patients live in proximity to board-certified centers. The aim of this study is to evaluate clinical outcomes of PD in octogenarians from a community-based low-volume center.

*Method:* Between 2006 and 2023, a total of 97 PDs were performed. We analyzed clinicopathological data and short-term outcomes in octogenarians (Group O: n=29) compared with patients <80 years (Group Y: n=68).

*Results:* In our center, the proportion of octogenarians who underwent PD reached 29.9%. There were no statistical differences between two groups in preoperative morbidity; however, preoperative median prognostic nutritional index (PNI) in Group O was 39.1 (26.3-51.9) and significantly lower than Group Y ( $p=0.05$ ). There were no significant differences in operative time and blood transfusion between two groups. In terms of postoperative complications, Clavien-Dindo IIIa $\geq$  was 27.6% in Group O and 8.8% in Group Y, which was significantly different ( $p=0.026$ ). The rate of postoperative fistula, delayed gastric emptying, and severe infection were almost same between two groups. The median length of hospital stay were 19 days in Group O and 17.5 days in Group Y, which was not significantly different. The rate of hospital mortality was 0% in Group O and 1.4% in Group Y.

*Discussion:* In our center, possibly due to regional factors, there is a higher proportion late elderly patients undergoing PD compared to previous reports. Nevertheless, the short-term outcomes of the surgery including safety, were adequately acceptable.

*Conclusions:* Fortunately, our outcomes of PD were equivalent of high-volume centers. PD for elderly patients is believed to be safely performed with careful patient selection even in a community-based small hospital.



### LONG-TERM RESULTS AFTER TOTAL PANCREATECTOMY FOR PANCREATIC ADENOCARCINOMA

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*Purpose: The total pancreatectomy is the rare operation till now. The purpose of this study is to assess long -term results of the such operation.*

*Method: Our Clinic has the 20 years experience of that surgery. We had 84 such operations for the pancreatic adenocarcinoma. M:F ratio was 3:1.*

*Results: There were many calculated parameters. Most interesting data were long -time survival (not more then 4 years after the surgery) and specific complications (especially septic and including intraabdominal abscesses).*

*Conclusion: Our results showed that the total pancreatectomy not a technically difficult surgery. But long-time results are still bad and long-term postoperative complications are very serious.*

## A STUDY OF THE RESULTS OF OUR EFFORTS TO THE POSTOPERATIVE PANCREATIC FISTULA IN OUR HOSPITAL

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*[Introduction]* Postoperative pancreatic fistula (POPF) is one of the most important complications after distal pancreatectomy (DP). The effectiveness of early drain removal (EDR) and polyglycolic acid (PGA) felt and fibrin glue (FG) use at the pancreatic stump closure after DP has been reported. We report the ingenuity and progress for preventing POPF in our hospital.

*[Methods]* Risk factors for POPF were examined using the  $\chi^2$  test for 66 cases from 2012 to 2022. They were classified into three groups and studied retrospectively. Group 1: 29 cases from 2012 to 2016. Group2: 18 cases from 2017 to 2019 with EDR. Group3: 19 cases from 2020 to 2022 using PGA felt and FG with EDR.

*[Result]* Surgery time, drainage period, and use of PGA felt and FG were significantly ( $P<0.05$ ) associated with the occurrence of POPF. POPF occurred in 10 of 29 cases (34%) in Group1, 6 of 18 cases (36%) in Group2, and 0 of 19 cases (0%) in Group3. The median drainage period was 20 in Group1, 7 in Group2, and 4 in Group3. The median time of discharge was 27 in Group1, 27.5 in Group2, and 16 in Group3. *[Discussion]* In Group1, there were some cases of POPF due to retrograde infection caused by long drainage period. In Group2, EDR was attempted, but there was no improvement in POPF. In Group3, use of PGA felt and FG markedly reduced POPF. Improved pancreatic stump closure process also shortened the drainage period, leading to a shorter hospital stay. In the cases of EDR, we experienced few cases of delayed gastric emptying and intra-abdominal abscesses.

*[Conclusion]* We report that EDR combined with PGA felt and FG significantly improved the incidence of POPF, resulting in early discharge from the hospital.

**PATHOMORPHOLOGICAL AND IMMUNOHISTOCHEMICAL EVALUATION OF THE PANCREATIC CELLULAR CHANGES IN PATIENTS WITH CHRONIC PANCREATITIS**

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**Introduction.**

*Chronic pancreatitis (CP) is a persistent inflammatory condition affecting the pancreas, characterized by gradual and irreversible damage to the organ. Understanding the pathomorphological and immunohistochemical alterations in pancreatic tissues is crucial for both diagnosis and developing targeted surgical strategies for treatment of chronic pancreatitis.*

**Materials**

*Surgical specimens derived from 46 patients who had complicated form of chronic pancreatitis and were treated from 2010 to 2021 in the clinic of surgery of the medical faculty № 2 of the National Pirogov memorial medical university, Vinnytsia.*

**Results.**

*The number of  $\alpha$ -SMA-positively stained pancreatic stellate cells per 0.1 mm<sup>2</sup> was  $9.80 \pm 0.01$  and vimentin-positive pancreatic stellate cells –  $21.1 \pm 1.10$ . These results were obtained at the first stage of pancreatic tissue fibrosis (by Stolt classification). The second stage of fibrosis had the following number of  $\alpha$ -SMA:  $24.50 \pm 1.59$  and  $20.00 \pm 1.21$ , respectively. The third stage had  $41.40 \pm 2.01$  and  $16.20 \pm 0.98$ . And fourth stage:  $27.90 \pm 1.60$  and  $12.20 \pm 0.71$  ( $p < 0.05$ ). The area of collagen fibers per 1 mm<sup>2</sup> according to morphometric analysis for 1 stage fibrosis averaged  $0.13 \pm 0.12$  mm<sup>2</sup>, for second :  $0.35 \pm 0.02$  mm<sup>2</sup>, for third :  $0.66 \pm 0.01$  mm<sup>2</sup> , for fourth stage:  $0.87 \pm 0.05$  mm<sup>2</sup> .*

**Conclusions.**

*Increased expression of immunohistochemical markers such as alpha-smooth muscle actin ( $\alpha$ -SMA) and collagen are associated with activated pancreatic stellate cells, which play a crucial role in fibrosis development. The integration of these data into clinical practice has the potential to improve strategies of choosing surgical treatment methods of CP and ultimately improve the quality of life of people who are suffering from CP.*

# MICROBIOTA AND SERUM TUMOR MARKERS IN PATIENTS WITH PANCREATIC CYSTIC NEOPLASM

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**Introduction:** One of the main precursory lesions for pancreatic cancer is pancreatic cystic neoplasms (PCN). Differentiation between the benign and malignant cysts is a clinical challenge. The aim of the study was the assessment of serum tumor markers compared with microbiological status, biochemical parameters, and histopathological results in patients with PCN.

**Materials&Methods:** 59 patients (41 women) with PCN treated in 2022-2023 at the Department of General and Oncological Surgery, Medical University of Lodz, were included in the study. Preoperatively serum inflammatory: c-reactive protein (CRP) and leucocytosis and tumor markers (CA19-9, CA15-3, CA125, AFP, CEA) were measured. Bacterial culture results were taken from the cyst fluid and bile (in case of cholecystectomy) and histopathological reports were analyzed.

**Results:** 17 of 59 patients (28.81%) had positive culture results. 19 of 59 patients (32.20%) had malignant tumors. Seven (41.18%) patients with positive culture had cancer compared with 12(28.57%) negative patients ( $p=0.35$ ). In the malignant group CA19-9 level was higher than among benign lesions ( $190.43\pm427.80$  vs.  $100.16\pm506.22$  ng/ml;  $p=0.02$ ). Among patients with positive culture, CRP level was higher ( $31.84\pm70.91$  mg/l vs.  $10.94\pm28.75$  mg/l;  $p=0.03$ ) and serum AFP levels were lower ( $2.34\pm1.13$  vs.  $4.08\pm2.44$  ng/ml;  $p=0.04$ ) than in the negative culture group. They had longer hospitalization ( $14.76\pm10.73$  vs.  $9.93\pm7.05$  days;  $p=0.03$ ). Furthermore, in the malignant group CRP level was positively correlated with CA19-9 level ( $R=0.50$ ;  $p=0.03$ ) and negatively correlated with hospitalization period ( $R=-0.46$ ;  $p=0.04$ ). There was a negative correlation between CRP and AFP levels in the studied group ( $R=-0.34$ ;  $p=0.03$ ). In the negative culture group, there was a negative correlation between CRP and AFP level ( $R=-0.51$ ;  $p=0.006$ ) and positive correlation with CA125 level ( $R=0.39$ ;  $p=0.02$ ).

**Conclusion:** Patients with positive cultures tended towards a higher incidence of cancers, increased CRP levels, and longer hospitalization. CRP level had a correlation with tumor marker levels.

## CALCIUM-PHOSPHATE METABOLISM DISORDERS AFTER PANCREATIC SURGERY

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*Introduction: Electrolyte disturbances are common in patients undergoing major abdominal surgery. The impact of pancreatic surgery on the occurrence of calcium-phosphate metabolism disorders is unknown. The aim of the study was to compare the parameters of calcium-phosphate metabolism in the perioperative period in patients undergoing pancreatic resection and palliative surgery.*

*Materials&Methods: 42 patients (23 women) with pancreatic cancer operated on in 2022 at the Department of General and Transplant Surgery, Medical University of Lodz were included in the study. Pancreatic resection was performed in 21 patients (50%). Before the surgery and on the 1<sup>st</sup> (1POD), 3<sup>rd</sup> (3POD) and 5<sup>th</sup> (5POD) postoperative day, the levels of: parathyroid hormone (PTH), total calcium (Ca), phosphates (P), magnesium (Mg), albumin, creatinine, CRP and leukocytosis were assessed in the blood.*

*Results: PTH level in the resection group on the 1POD and 5POD was statistically significantly higher than in the palliative group:  $94.83 \pm 45.75$  vs.  $45.90 \pm 23.91$  pg/ml,  $p=0.000367$ ;  $55.96 \pm 43.95$  vs.  $29.25 \pm 14.65$  pg/ml,  $p=0.004$ , respectively. Ca level was statistically significantly lower on the 1POD in the resection group than in the palliative group:  $2.11 \pm 0.11$  vs.  $2.14 \pm 0.10$  mmol/l,  $p=0.044$ . Mg levels were statistically significantly higher in the resection group before the procedure, on the 3POD and 5POD than in the palliative group:  $0.83 \pm 0.07$  vs.  $0.77 \pm 0.09$  mmol/l,  $p=0.007$ ;  $0.84 \pm 0.15$  vs.  $0.76 \pm 0.10$*

*mmol/l,  $p=0.014$ ;  $0.83 \pm 0.10$  vs.  $0.74 \pm 0.08$  mmol/l,  $p=0.009$ , respectively. A positive correlation between the PTH level and CRP level on the 1POD in the group of all patients ( $R=0.33$ ,  $p=0.032$ ) and in the resection group ( $R=0.51$ ,  $p=0.019$ ) was found.*

*Conclusion: We demonstrated significant disturbances in calcium-phosphate metabolism after pancreatic resections. In the resection group increased PTH level was probably related to the tissue damage during surgery and the hypocalcaemia in the postoperative period. The higher concentration of PTH increased the reabsorption of Mg in the kidneys.*

**TOTAL PANCREATECTOMY: NUTRITIONAL SUPPORT**

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*In accelerated recovery protocols, nutrition is given great attention. For total pancreatectomy (TP), an accelerated recovery protocol has not been formulated, and the closest available one has been created for pancreaticoduodenectomy.*

*The aim of our study was to adapt a nutritional protocol to the specific needs of patients who have undergone TP. TP was performed from 2008 to 2022 by a single surgical team using the traditional open method. In all cases, accelerated recovery techniques were used in the perioperative period. The observation period included the entire hospitalization period and 30 days from discharge.*

*RESULTS: The results of treatment of 25 consecutively operated patients were studied. Demographic indicators: men 16, women 9; average age is 61 years (43-83). In all cases, the indication for surgery was a suspicion of a pancreatic tumor. The average duration of inpatient treatment was 21 days. Of the 25 patients, 4 died due to postoperative complications. Parameters of nutritional status, metabolic status, and glycemic control were collected and analyzed to ensure real-time protocol adjustments.*

*CONCLUSIONS: The current ERAS protocol for pancreaticoduodenectomy offers an acceptable approach to nutritional support for patients with TP. However, it has features associated with metabolic disorders and specific postoperative complications caused by the development of ACUTE SEVERE postoperative diabetes mellitus.*

### ANTIMICROBIAL TREATMENT FOR TOTAL PANCREATECTOMY

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*Accelerated recovery protocols (ERAS, Fast-Track) have found their application in most areas of surgery. In many of them, antimicrobial prophylaxis occupies an important place. For total pancreatectomy (TP), an accelerated recovery protocol has not been formulated, and the closest available one has been created for pancreaticoduodenectomy.*

*The purpose of our study was to highlight the characteristics of patients who have undergone TP that may require adjustment of the antimicrobial prophylaxis (and treatment) protocol.*

*TP was performed from 2008 to 2022 by a single surgical team using the traditional open method. In all cases, accelerated recovery techniques were used in the perioperative period. The observation period included the entire hospitalization period and 30 days from discharge.*

*RESULTS: The results of treatment of 25 consecutively operated patients were studied. Demographic indicators: men 16, women 9; average age is 61 years (43-83). In all cases, the indication for surgery was a suspicion of a pancreatic tumor. The average duration of inpatient treatment was 21 days. Of the 25 patients, 4 died due to postoperative complications. Various aspects of antimicrobial prophylaxis (and treatment) were analyzed during the work to ensure that the protocol was adjusted empirically.*

*CONCLUSIONS: The regimen of antimicrobial prophylaxis (and treatment) in patients who have undergone TP differs from the regimen proposed for pancreaticoduodenectomy, and in some way contradicts the existing dogma.*

### **SOLID PSEUDOPAPILLARY NEOPLASMS OF THE PANCREAS: SINGLE-CENTER CASE SERIES**

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*Introduction:* Solid pseudopapillary tumors (SPTs) are rare tumors of the pancreas (1-2%) with low malignant potential and usually affect young females. In Chile, 29 cases have been reported from 2008 to 2014. This study aims to describe our experience in a university center.

*Methods:* We report eleven SPT cases from 2014 to 2021, all confirmed with biopsy and immunohistochemistry. The clinical records were retrospectively reviewed, and the results were reported using descriptive statistics.

*Results:* Most patients were women (91%) with a median age of 32 years (range 16-50). Only six patients (55%) had symptoms, mainly abdominal pain, vomiting, and nausea. All cases were studied with computed tomography or magnetic resonance, but only five (45%) were diagnosed as SPTs by the radiologist. The tumor location was 9% in the body, 36% in the tail, and 54.5% in the head. One patient underwent a distal pancreatectomy alone, and two had concomitant splenectomy. Pancreatoduodenectomy was performed in four cases, while enucleation (2) and body/tail pancreatectomy (2) were performed in the others. The laparoscopic approach was used in 63.6% of the cases. The median diameter was 65 mm (range 20-105). No metastatic disease was present in any of the patients. Perioperative 90-day mortality was zero. All eleven patients are alive and disease-free at a median follow-up of 70 months (range 33-109).

*Conclusion:* The general characteristics of STP in our center are similar to what is currently known, with a good prognosis.



## A SIMPLE AND SAFE ANASTOMOSIS PANCREATICOGASTROSTOMY USING A LINEAR STAPLER AFTER PANCREATODUODENECTOMY

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**【Background】** Even today, postoperative pancreatic fistula (POPF) remains the major problem after pancreaticoduodenectomy (PD), leading directly to serious operative outcomes. Pancreatic juice could leak from the main pancreatic duct as well as the duct branches on the cut surface of the pancreas. To overcome the POPF, we apply the new modified anastomosis of pancreaticogastrostomy using linear stapler (stapled-PG).

**【Patients & Methods】** Clinical records of the totally 30 consecutive patients undergone PD were reviewed between 2013 and 2023 at our community hospital. Twelve PG and eighteen pancreaticojejunostomy (PJ) were performed after PD. Pancreas was transected for long compression by linear stapler as pre-compression of 5 min, stapling of 5 min, and dissection of 5 min. After removal of the staples at the main duct opening site of the remnant pancreas stump, PG anastomosis was performed. The outer layer was anastomosed by a single row pancreas-transfixing suture between the remnant pancreas and gastric posterior wall, and the inner layer anastomosis was also done between a pancreatic duct and gastric mucosa. The anastomosis of PJ was performed without the transection using linear stapler. POPF was defined as a clinical manifestation of POPF (Grade B/C) by ISGPF criteria.

**【Results】** None of the twelve patients who were undergone stapled-PG developed clinical relevant POPF, whereas 7 (39%) patients undergone PJ developed POPF. Four patients were in POPF grade B and 3 patients were in POPF grade C.

**【Conclusion】** Stapled-PG after PD may reduce clinical relevant POPF. Because our sample size is small, further accumulated cases are required to validate this method.

## VALIDATION OF TWO-STAGE PANCREATOJEJUNOSTOMY AFTER PANCREATODUODENECTOMY FOR PATIENTS WITH A SOFT PANCREATIC TEXTURE

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### Background

Postoperative pancreatic fistula (POPF) remains a serious complication after pancreatoduodenectomy (PD) especially in patients with a soft pancreatic consistency. Although there have been no definite methods to conquer POPF, minimizing grade C POPF is the key to decreasing the number of in-hospital deaths. Two-stage pancreatojejunostomy (PJ) after PD is one of the methods for minimizing pancreatic juice-related adverse events, especially in patients with a soft pancreatic consistency.

### Study Design

401 PDs were carried out between 2009 and 2023. We adopted two-stage PJ for patients with a soft pancreatic texture. 130 patients with a soft pancreatic texture underwent two-stage PJ after PD. PJ was not carried out at the initial PD. The pancreatic tube was exteriorized through the abdominal wall incision. About 3 months after PD, we performed PJ. This study was designed to review 130 patients who underwent two-stage PJ after PD.

### Results

After the initial PD, no patients developed complications classified as grade III or greater. Although 26 out of 130 patients developed grade B POPF, there were no patients who suffered Grade C POPF or postoperative bleeding related to POPF. None of the patients died after the initial PD. Four patients were unable to undergo the second operation due to rapid recurrence of their cancers. 126 patients underwent the two-stage PJ. The median operation time was 133 min, and the median intraoperative blood loss was 20 mL. After PJ, Grade B POPF occurred in 7 patients, and none of the patients suffered grade C POPF. The second surgery was not technically demanding and was accompanied with minimum postoperative complications.

### Conclusion

Although a patient must undergo the operation twice, in patients with a soft pancreatic consistency, a two-stage PJ should be considered in order to minimize the incidence of complications worse than grade III and grade C POPF.

**INITIAL EXPERIENCE WITH COMPLETE LAPAROSCOPIC PANCREATICODUODENECTOMY FOR PERIAMPULLARY MALIGNANCY USING FAST LOIN TECHNIQUE: INSIGHTS FROM A JUNIOR/YOUNG SURGICAL TEAM AT A UNIVERSITY HOSPITAL**

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**Background**

Laparoscopic pancreaticoduodenectomy (LPD) is an intricate surgical procedure that has yet to garner widespread acceptance. This study aimed to assess the safety, feasibility, and clinical benefits of LPD in comparison to open pancreaticoduodenectomy (OPD) for managing periampullary malignant lesions.

**Material/Methods**

A prospective analysis (intraoperative, postoperative, and short-term complication data) of n=7 LPD procedures performed between January 2018 and December 2023 was conducted. The surgical team, consisting of two surgeons below 40 years of age, each with over 20 open pancreaticoduodenectomies and more than 5 years of laparoscopic experience, utilized a 6-trocar technique. A 30° scope with Full HD/4K technology provided vision during both the resection and reconstruction phases.

The surgeons used an indigenous point of technique especially for intracorporeal anastomosis – pancreatojejunostomy and hepaticojejunostomy so that the suture knot lies outside the anastomotic lumen. This technique was labelled as FAST LOIn technique – First Angle Stitch Left (limb) Outside In for the initial start of anastomosis.

**Results**

All patients underwent successful laparoscopic procedures without conversion. N=5 cases involved distal cholangiocarcinoma, and n=2 presented ampullary malignancy. Histopathological analysis revealed negative resection margins in all cases. Preoperative endo-biliary drainage was performed in 5 out of 7 patients. Postoperative complications included biochemical leak (n=3), Pancreatic Fistula (Class B, n=1), delayed gastric emptying (n=3), and no instances of haemorrhage. Median operative time was 580 minutes (540 mins – 780 mins), and median blood loss was 450 ml (380-800ml). The mean hospital stay was 8 days, with a median return-to-work duration of 3 weeks.

**Conclusions**

LPD using FAST LOIn technique exhibits promising short-term outcomes, notably reduced hospital stay and blood loss, albeit with a prolonged operative time. Continued advancements and increasing experience with LPD with FAST LOIn technique are anticipated to further enhance overall procedural efficiency and patient outcomes.

**RARE MALIGNANT TUMOR LESION - SARCOMA OF THE PANCREAS (REPRESENTATIVE CASE)**

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*Introduction: Tumor(-like) lesions of the pancreas, in particular, those with solid characteristics show a broad differential diagnosis.*

*Aim: To describe the rarely described case of low-grade sarcoma as a rare tumor(Tu)-entity of the pancreas*

*Material & methods: Scientific case report*

*Results (CASE DESCRIPTION):*

*A 52-years old female patient presented w/ a suspicious pancreatic Tu-lesion as an intraop. finding by coincidence. Additional diagnoses are partial thrombosis of the thoracic aorta as well as left renal & hepatic arteries. Clin. characteristics comprised a reduced general & cachectic nutritional status (lab parameters, L/CrP increased; CA19-9/CEA within normal range). Thoracic/abdominal CT scan revealed inhomogeneous Tu-lesion of the pancreatic tail & unclear Tu-suspicious lesions of the left pararenal gland + the 10th thoracic vertebra – in addition, pseudoaneurysm of the splenic artery, thrombus of the thoracic aorta & occlusion of the common hepatic artery. The Tu-board recommended TEVAR & open resection of the pancreatic tail with splenectomy, which were performed w/o complications within a 4-d interval.*

*Postop. course was characterized by delayed GI passage & gastric atony (temporarily, approached w/ gastric tube & prokinetics) + therapy-resistant hypertension w/ need of a new medication. Postop. Tu-board conference recommended radiation & adequate Tu-follow up due to the histopathologically investigated diagnosis of a retroperitoneal, spindle-cell low-grade sarcoma. In case of the status CRM+ (< 1 mm; “R0 narrow“ to the retroperit. vessels), histopathol. reference investigation was ordered in Muenster (Germany), which revealed an undifferentiated spindle-cell sarcoma – repeat Tu-board confirmed need of additive radiation, which was postponed due to the delayed reconvalescence. Patient died from Tu-disease 4 weeks after initiation of therapy.*

*Conclusion: This case demonstrates sarcoma as a rarely occurring Tu-entity of the pancreas, which needs to be included basically into the spectrum of the differential diagnoses in case of unclear pancreatic Tu-lesions.*

**SUSPICIOUS PANCREATIC TUMOR LESION - MID-TERM FINDING AFTER PANCREATIC TRAUMA**

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*Introduction: Pancreatic tumor-lesion can be considered a demanding differential diagnosis.*

*Material & methods: Scientific case report*

*Results (CASE DESCRIPTION):*

*Medical Hx: - Current: 57-years old male patient was presented with tumor(-like) lesion of the pancreas of unclear dignity in CT-scan performed for staging purpose of a histologically diagnosed prostate cancer; no complaints or "B-symptomatology".*

*- Own: Status after a fall with abdominal trauma and posttraumatic conservatively treated pancreatitis 1.5 years ago*

*Secondary diagnoses: Status after prostate cancer with open prostatectomy*

*Clinical finding: Good clinical and normosome nutritional as well as cardiopulmonarily compensated status; abdominal wall soft, no muscular defense, scar of a median laparotomy with no inflammatory signs*

*Diagnostic measures: - Laboratory parameters: No elevated inflammatory parameters, liver parameters (such as GLDH) minimally elevated, cholestasis parameters and tumor-markers not elevated (CA19-9: < 9 U/mL, CEA: 2.4 ng/mL)*

*- Thoracic/Abdominal CT-scan (in a different hospital): Fluid formation within the pancreatic corpus, no clear tumor-lesion, no cholestasis*

*- EUS: Semiliquid area within the isthmus, the remaining pancreas w/o finding, transgastric puncture aspirating yellow-grey fluid for microbiological/histopathological investigation*

*Histopathological investigation: Pancreatic necrosis with hint for malignancy*

*Clinical course: After uncomplicated EUS-guided puncture, the case was repeatedly presented in tumor-board conference including polytrauma-related images with declining local finding.*

*Diagnosis: Fluid formation within the pancreatic corpus after traumatic pancreatic contusion and posttraumatic pancreatitis*

*Differential diagnosis: Pseudocyst, cystic (serous-cystic, mucinous-cystic) pancreatic lesion*

*Therapy: Conservative approach*

*Proceeding: Control imaging using ultrasound after 3 months and clinical follow-up in an outpatient-clinic setting, regular follow-up investigations of the prostate cancer*

*Conclusion: (Status after) Abdominal trauma is a not rarely occurring clinical finding in the emergency room with a broad spectrum of clinical aspects, which can be considered a challenge for the abdominal surgeon as in the presented case with a trauma-caused pancreatic lesion suspicious for pancreatic tumor-growth in the differential-diagnostic considerations.*

## EXAMINATION OF SURGICAL OUTCOMES AND TECHNIQUES IN LAPAROSCOPIC(ROBOT-ASSISTED) ENUCLEATION PANCREATIC ENUCLEATIO

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**Background:** laparoscopic (Robot-assisted) enucleation(L(R)-EN) is a surgical procedure performed for benign or low-grade malignant pancreatic tumors. According to the second edition of the Pancreatic and Gastrointestinal Neuroendocrine Tumor Treatment Guidelines, pancreatic enucleation is an option for non-functional pancreatic neuroendocrine tumors (PNEN) less than 1 cm in size or insulinomas with a low risk of main pancreatic duct injury. L(R)-EN is performed for similar indications at our institution.

**Methods:** We retrospectively analyzed the perioperative and long-term outcomes of L(R)-EN performed at our institution from 2013 to 2022, and will present videos of the surgical techniques.

**Results:** There were a total of 9 cases, including 8 PNENs (5 insulinomas and 3 non-functional tumors) and 1 other case. The median tumor size (range) identified in preoperative examinations was 10 mm (7-20 mm). Tumor locations were as follows: pancreatic head (Ph)/body (Pb)/tail (Pt) - 3 cases (33.3%) / 2 cases (22.2%) / 4 cases (44.4%). The operative time was 165 minutes (103-273 minutes), and the blood loss was 5 ml (5-25 ml). In one case, the main pancreatic duct near the tumor was damaged during surgery, necessitating a switch to laparoscopic spleen-preserving distal pancreatectomy. The postoperative hospital stay was 12 days (7-66 days), and postoperative pancreatic fistula (ISGPF grade B or higher) was observed in 1 case (11.1%). The median follow-up period (range) was 33 months (1-131 months), with no cases of recurrence observed. Postoperative diabetes was observed in 1 case (11.1%).

**Conclusion:** Despite the potential risks of main pancreatic duct injury and pancreatic fistula, laparoscopic pancreatic enucleation is a minimally invasive and function-preserving surgery that aims to preserve as much pancreatic parenchyma as possible.

**BMI AS A RISK FACTOR FOR POSTOPERATIVE PANCREATIC FISTULA FOLLOWING CLASSICAL WHIPPLE PANCREATODUODENECTOMY**

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*Background* POPF(Postoperative pancreatic fistula) is a common complication following pancreaticoduodenectomy, with an incidence of 19.2% and a clinically relevant pancreatic fistula rate of 11.1%. Of the many risk factors analyzed in the past, soft pancreas and small duct diameter have been shown to predict POPF consistently. A soft pancreas, also called a fatty pancreas, is a comment on visceral obesity, with BMI being its closest proxy. Hence, this study aims to analyze the role that BMI has on POPF.

*Material and methods:* This was an ambispective study conducted in PGIMER, Chandigarh, from 2018 to 2023 with a sample size of 106 patients. Here, the patients were grouped into 4 categories based on their BMI as per the WHO classification for Asian populations. BMI and its influence on POPF, PPH ( Post pancreatectomy hemorrhage), DGE ( Delayed gastric emptying), bile leak and intra-abdominal collections were analyzed. Aside from BMI, all preoperative, intraoperative, and postoperative factors were analyzed in relation to POPF.

*Results:* Out of 106 patients, 19 belonged to the overweight group ( 23.5-24.9kg/m<sup>2</sup> ), and 21 belonged to the obese group( ≥25kg/m<sup>2</sup> ). In our study, the percentage of patients who developed POPF in the overweight and obese categories were 31.5 % and 42.8 %, respectively, with neither of the two groups influencing fistula formation ( p-0.268; d=0.104). There was, however, no effect of BMI on DGE, PPH, and bile leak. Additionally, our study found a soft pancreas (p-0.001; OR: 3.944), smaller MPD (Main pancreatic duct) diameter (p-0.021; d=0.512), and a high PFRS ( pancreatic fistula risk score) (p-0.0001; d=0.739) were strongly associated with POPF.

*Conclusion:* BMI was not a risk factor for POPF in our study. As predicted, in our study, a small MPD diameter, soft pancreas and a high PFRS were risk factors for POPF.

## THE PROGNOSTIC IMPLICATIONS OF PERIOPERATIVE SERUM CHOLESTEROL LEVELS IN PATIENTS WITH GASTRIC CANCER

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*Background:* Although cholesterol is an important indicator of nutritional status, it is also involved in cancer progression. In this study, we investigated the clinical significance of the dynamics of perioperative total cholesterol (T-Cho) levels in patients with gastric cancer (GC).

*Patients and Methods:* A total of 212 patients with pathological stages II and III disease who underwent gastrectomy between 2004 and 2020 were enrolled in this retrospective study. The preoperative and postoperative serum T-Cho levels were measured in these patients.

*Results:* Increased serum T-Cho levels were significantly correlated with low preoperative serum albumin levels ( $p < 0.001$ ). Patients with increased serum T-Cho levels after surgery had significantly lower overall and recurrence-free survival rates ( $p = 0.030$  and  $p = 0.013$ , respectively; log-rank test). Cox proportional hazards model revealed that increased serum T-Cho levels ( $p = 0.040$ ), advanced pathological stage ( $p < 0.001$ ), and the provision of adjuvant chemotherapy ( $p = 0.006$ ) were independent prognostic factors for recurrence-free survival in patients with GC.

*Conclusions:* Increased serum T-Cho levels after gastrectomy may be an independent prognostic factor in patients with GC.



**INDOCYANINE GREEN TRACER-GUIDED RADICAL ROBOTIC DISTAL GASTRECTOMY USING THE FIREFLY SYSTEM IMPROVES THE QUALITY OF LYMPH NODE DISSECTION IN PATIENTS WITH GASTRIC CANCER**

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**Introduction:** This study aimed to investigate the role of indocyanine green (ICG) as an intraoperative tool for improving lymph node dissection quality in radical robotic distal gastrectomy (RDG) for gastric cancer by comparing the rate of lymph node (LN) noncompliance with or without use of the Firefly system. **Methods:** Patients with potentially resectable gastric cancer including of clinical tumor stage cT1-T4a, N0/+, M0 were registered in a prospective cohort study at our institution between March 2019 and December 2022. Patients were assigned to the da Vinci surgical system (DVSS) with Firefly system (F group) or the DVSS without Firefly system (non-F group). The F group patients received endoscopic peritumoral injection of ICG to the submucosa 1 day before surgery. The rate of LN noncompliance, number of harvested LNs, and short-term outcomes were compared. **Results:** Of the 94 patients participating in this study, 55 underwent Firefly system guided RDG and 39 underwent conventional RDG. The rate of LN noncompliance in the F group was lower than that in the non-F group (32.7% vs. 61.5%,  $p=0.006$ ). The mean number of LNs harvested in the F group was significantly higher than that harvested in the non-F group (mean [SD], 31.2 [10.2] vs. 25.7 [12.6],  $p=0.02$ ). Significant differences were found between the groups in blood loss and postoperative 30-day hospital stay (83.9 [75.1] vs. 301.9 [766.7] mL;  $p=0.003$  and 13.4 vs. 17.4 days,  $p=0.049$ ). **Conclusion:** The quality of LN dissection was improved with use of the Firefly system assisted ICG tracer without compromising safety.

### GASTRIC MALIGNANCY: FROM DIAGNOSE TO SURGERY - OUR CASUISTIC

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Gastric cancer (GC) is the 5th most common malignancy worldwide, with 5.7% of all diagnosed cancers. From all gastric malignant tumors most common are adenocarcinoma (90%). Other 10% represents primary gastric lymphoma, gastrointestinal stromal tumor, carcinoid tumor and others. Main treatment option is surgery intervention. GC is big problem in world because of high mortality rate. An important prerequisite for successful treatment is early diagnostic and operative procedures.

Our aim is to present diagnose protocol, treatment modalities regarding tumor localization, size, and type and survival rates.

On our 10-year material at Surgery Department, Health Center Vranje, it was diagnosed 87 cancer malignancies: 20% with physical examination, 30% with roetgenoscopy, and 50% with biopsy gastroscopy. CT and US were used to identify intramural processes and to provide insight into the possible extent of metastases.

Of 87 patients with diagnosed GC (49 males, 38 females), 47 patients (54.02%) were in advanced stadium. Lab tests had no practical value in early detection. We had to settle for one of the palliative methods at 30 patients: GEA on 10 patients, explorative laparotomy with biopsy on 7, suture of perforating cancer on 5, explorative laparotomy without biopsy on 5, and jejunostomy on 3 patients. Palliative methods mortality rate in first year was 70%. Operative methods were done: 9 patients - total gastrectomy; 26 patients - subtotal gastrectomy. In total gastrectomy it was done mostly Roux-en-Y reconstruction, with remote jejunal anastomosis of at least 40 cm from ezofagojejunal anastomosis. Of 22 subtotal resections, 8 were done with splenectomy and omentectomy in block, and digestive continuity was restored with Billroth II with Braun. Remaining 22 patient treated conventionally or refused operation.

We insist on early depistage for patients with gastric problems and emphasize operative treatment radical measures such as subtotal and total gastrectomy.

## SAFETY AND EFFICACY OF NEOADJUVANT CHEMOTHERAPY FOR ADVANCED GASTRIC CANCER IN ELDERLY PATIENTS

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**Background/Aim:** Elderly patients with pathological stage II/III gastric cancer struggle to complete adjuvant chemotherapy. Neoadjuvant chemotherapy (NAC) for treating locally advanced gastric cancer (LAGC) has drawn attention; however, its indication for elderly patients who are vulnerable to chemotherapy is unclear. This study aimed to investigate the feasibility and efficacy of NAC for elderly patients with gastric cancer.

**Patients and Methods:** In this study, patients aged  $\geq 75$  years who underwent curative gastrectomy for LAGC or adenocarcinoma of the esophagogastric junction between April 2013 and November 2021 were included. Vulnerable patients, with poor Eastern Cooperative Oncology Group Performance Status (ECOG-PS) of 2-3 were also included. The patients were classified into NAC+ (n=20) and NAC- (n=45) groups. The clinicopathological data of the patients were retrospectively investigated.

**Results:** The NAC+ group showed a higher R0 resection rate than the NAC- group (100% vs. 89.1%,  $p=0.3$ ) and pathological downstaging was achieved in 12 (60%) cases, including five (25%) pathological complete responses. The incidence of adverse events during postoperative chemotherapy was 35%, and the rate of postoperative complications greater than Clavien–Dindo Grade II was comparable between the two groups (35% vs. 46.7%,  $p=0.43$ ). The NAC+ group showed a higher three-year overall survival rate (75% vs. 36%,  $p=0.015$ ).

**Conclusion:** NAC was feasible and effective for elderly patients including vulnerable patients with LAGC or adenocarcinoma of the esophagogastric junction. It can be considered as treatment option, with a high down staging rate and better survival.

**A CASE OF PARTIAL GASTRECTOMY INVOLVING OTHER ORGANS FOR MALIGNANT LYMPHOMA ORIGINATING IN THE GASTRIC FORNIX**

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**【Background】**

The main treatment for Diffuse Large B-cell Lymphoma (DLBCL) is chemotherapy. However, in cases where ulcerative lesions are present, gastric perforation or refractory bleeding may occur after chemotherapy. In particular, perforated peritonitis that occurs in a state of immunosuppression due to chemotherapy is likely to become severe. Therefore, surgical resection may be performed before chemotherapy to prevent these complications. Here, we report a case of surgery prior to chemotherapy for DLBCL originating in the gastric fornix that had invaded other organs.

**【Case Presentation】**

A 70-year-old man visited a nearby hospital with a chief complaint of fatigue. Blood examination revealed anemia, elevated white blood cells and platelets, and elevated IL-2 receptor levels. CT scan revealed an approximately 8 cm low-density area extending from the gastric vault to the spleen, tail of the pancreas, and left diaphragm. Upper gastrointestinal endoscopy revealed an ulcerative lesion in the gastric fornix. A biopsy revealed a histological diagnosis of DLBCL. Because it had invaded other organs, there was a possibility that chemotherapy would cause perforation. So, we decided to perform surgical resection before chemotherapy. In order to preserve organs as much as possible, the stomach was partially resected and the tail of the pancreas, spleen, diaphragm, and part of the left lung were removed. Postoperatively, a pancreatic fistula was detected, but the condition improved conservatively. After being discharged from the hospital, 6 courses of R-CHOP chemotherapy were performed, and the patient achieved a complete response (CR). Twenty-one months after the surgery, the patient continues to maintain a CR.

**【Conclusion】**

Gastric malignant lymphoma that has invaded outside the serosa is at risk of perforation due to chemotherapy. Therefore, it was considered as one of the strategies to perform surgery in advance to prevent complications.

### DOES SHORTER OPERATING TIME IMPROVE LENGTH OF STAY IN PATIENTS UNDERGOING LAPAROSCOPIC SLEEVE GASTRECTOMY?

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#### Introduction

Length of stay (LOS) after laparoscopic sleeve gastrectomy (LSG) can be influenced by many factors including age, body mass index (BMI) and gender. The aim of this study is to analyse the correlation between operating times (OT) and length of stay after LSG.

#### Materials and Methods

Data from a prospectively collected database of patients undergoing LSG under a single surgeon from January 2013 to June 2023 was analysed. Patients who underwent concurrent operations (cholecystectomy, adhesiolysis, hiatus hernia repair) were excluded. Patients were divided into 2 groups: OT under 60 minutes and OT over 60 minutes. Patient demographics, LOS, 30-day readmission, unplanned return to theatres, complications and mortality were further analysed.

#### Results

Of the 3090 patients included in this study, 1812 had OT 60 minutes or under and 1278 had OT >60 minutes. LOS was significantly lower in the OT < 60 minutes group (1.21 vs 1.55 days.  $p = 0.0001$ ). Patients requiring LOS >1 day were also higher in the OT >60 minutes group (47.81% vs 18.88%.  $p = 0.0001$ ). The 30-day readmission rate and complications were equal in both groups.

#### Conclusion

Shorter OT can reduce exposure of patients to nausea-inducing anaesthetic agents and reduce the average LOS in patients undergoing LSG. This can have significant implications for the hospital and patients.

**ASSOCIATION OF HELICOBACTER PYLORI AND EPSTEIN–BARR VIRUS CO-INFECTION IN GASTRIC CANCER PATIENTS: A PROSPECTIVE ANALYTICAL STUDY**

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**Introduction:**

Recent evidence suggests that Epstein Barr virus (EBV) and *H. pylori* co-infection increase the prevalence of gastric cancer in the younger age group and are associated with poor prognosis. Identification of this association has important implications in the management of gastric cancer and also to identify the population at high risk of developing gastric malignancy. The present study aimed to determine the prevalence of *H. pylori* and EBV co-infection in patients with gastric cancer.

**Materials & Methods:**

It is a single-center prospective analytical study. A total of 182 patients were included. The study group (n=91) included all consecutive patients of age  $\geq 18$  years with gastric cancer. The control group (n=91) included individuals with normal endoscopy findings. Both groups were analyzed for the presence of *H. pylori* and EBV.

**Results:**

The overall prevalence of *H. pylori* infection in gastric cancer patients was 70.3%, EBV infection was 63.7 % and *H. pylori* & EBV co-infection was 51.6 %. The *H. pylori* & EBV co-infection in the study and control group was 51.6 % versus 13.1 % ( $P < 0.001$ ). The remaining parameters like smoking socioeconomic class, dietary habits, prior gastric surgery, tumor location, histological subtype, stage of the tumor, distant metastasis, and lymph node metastasis did not show any significance.

**Conclusion:**

There was a significantly higher prevalence of EBV infection and *H. pylori* & EBV co-infection in patients with gastric cancer. The prognostic and therapeutic role of co-infection requires long-term follow-up and assessment of treatment response.

**ULCERATED GASTRIC LEIOMYOMA CAUSING MASSIVE UPPER GASTROINTESTINAL HEMORRHAGE: A RARE OCCURENCE**

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**INTRODUCTION:**

*Leiomyomas are rare, benign submucosal tumours originating from smooth muscle cells. The clinical presentation is usually asymptomatic, with excellent prognosis. We herein report a case of 60 year old female with a solitary leiomyoma found on evaluation for abdominal pain and melena. Histopathological examination revealed smooth muscle proliferation supported by positive staining for smooth muscle and negative staining for CD117 and S-100*

**CASE REPORT :**

*A 60 year female, known diabetic and hypertensive presenting with abdominal pain for 1 month- epigastric region, not radiating, crampy pain, aggravated by food intake; nausea during fasting; melena since 1 week*

**PER ABDOMEN-Soft, BS+**

*No tenderness*

*No mass palpable*

**PER RECTUM- Melena+**

**INVESTIGATION**

**CECT- ABDOMEN & PELVIS**

*5\*4.6cm homogeneous well defined intraluminal mass lesion without significant contrast enhancement noted involving fundal region of stomach. Ulceration noted along the luminal surface of lesion. No e/o calcification/ necrotic component-P/o Gastric leiomyoma*

**PROCEDURE-** *Laparoscopic wedge resection was done.*

*Postoperative biopsy- suggestive of leiomyoma*

**DISCUSSION**

*In the past, leiomyomas and GISTs were referred to interchangeably. However it is clinically important to distinguish these two entities, as leiomyomas are benign, while GISTs may have malignant potential. It is important to differentiate leiomyoma from leiomyosarcoma, which is a malignant tumour, and from GISTs, which possess malignant potential. According to American Gastrointestinal Association guidelines, patients with submucosal tumours <3cm may be followed up by periodic EGD or endoscopic ultrasound examinations, while lesions >3cm require surgical or endoscopic excision for diagnosis*

**CONCLUSION**

*In conclusion, gastric leiomyoma is a rare, benign submucosal tumour originating from smooth muscle cells, most commonly found in the gastric cardia. It bears no predilection for gender and is most frequently found in patients aged 50–70 years. It is important to have the differential of Leiomyoma as management varies. Furthermore, according to AGA practice guidelines, surgical or endoscopic resection is recommended for tumours sized >3 cm. The patients with surgically resected tumours have a favourable clinical outcome.*

**PE 296**

**PRESENTATION CANCELLED**



**SURGICAL EXPERIENCE IN PERFORATED PEPTIC ULCER DISEASE IN A PHILIPPINE PROVINCIAL HOSPITAL**

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*Peptic ulcer affects 4 million people around the world. Complications are encountered in 10-20% of the population and 2-14% of these ulcers will perforate. According to the latest WHO data published in 2020, Peptic Ulcer Disease in the Philippines reached 6,865 or 1.02% of total deaths. The age adjusted Death Rate is 9.95 per 100,000 population which ranks the Philippines #12 in the world. As presented in the SPHeRel: Study on prevalence of H. pylori infection by Rapid Urease Test among endoscopic patients in two communities in the Philippines, H. pylori has a prevalence of 15-30% in the urban-based hospitals. A recent study showed 50% prevalence of H. pylori in the predominantly farming communities of the Cordilleras. In the world, depending on geographical region and economic development, the prevalence of H.pylori infection in adults is reported to vary from 24% to 73% across populations, with pooled global prevalence estimated at about 50%.*

*This study aims to present the experience of General Emilio Aguinaldo Memorial Hospital Department of Surgery in handling Perforated Peptic Ulcer Disease since its accreditation for General Surgery Training program last 2015. Specifically, this study documented GEAMH's experience in surgically managing PPUD in terms of the preoperative risk profile, sociodemographic profile, procedure done, and post-operative outcomes. In the near future, it is projected to have lesser cases of PPUD that will be encountered in General Surgery Training, due to the advent of early detection, screening for H.pylori, and the use of H2 blockers. Thereby, documenting an institution's surgical experience for these cases is very prudent to be written, especially in the perspective of tertiary Provincial Hospital located in the midpoint of frontline health facilities and more congested apex hospitals. This study also aims to highlight the importance of sound patient selection for definitive surgery and management of PPUD.*

## GLP-1 ANALOGUES: THE EMERGING MEDICATION AS ADJUNCT IN BARIATRIC SURGERY FOR WEIGHT AND METABOLIC MANAGEMENT - A SYSTEMATIC REVIEW

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*Background:* The benefits of bariatric surgery in weight reduction and improving metabolic outcomes were well established, however maintaining a sustained weight loss or preventing weight regain after bariatric surgery remains a major challenge. GLP-1 analogues are emerging as weight management and glycemic control agent however its effect in sustaining and improving total weight loss(TWE) or improving metabolic markers such as Hba1c , blood pressure and lipid levels before or after metabolic surgeries are not well studied.

*Aim:* We aim to study the effects of introducing GLP- 1 analogues prior or post bariatric surgery to understand its benefits in sustaining or enhancing the positive outcomes of metabolic surgeries

*Methods:* We have conducted a literature search on multiple databases (Pubmed, MEDLINE, Embase, Cochrane) to search for randomized controlled trials, case controlled studies or observational studies on pre or post operative usage of GLP-1 analogues in patients who has undergone bariatric surgeries. *Results:* Out of 1847 articles screened , 20 studies met the inclusion criteria, 14 of which compared GLP-1 Analogues vs placebo and 6 of it comparing GLP-1 analogues with an alternative pharmacotherapy as control. All of the patient in the study received GLP-1 analogues either prior or after bariatric surgery. TWE, additional weight loss ,weight recurrence, improvement in Hba1c, blood pressure and lipid levels were studied using random effect meta-analyses.

*Discussion:* The included studies showed that introduction of GLP-1 analogues before or after surgery have demonstrated additional weight loss , sustained weight loss and improvement in metabolic markers in obese patients who underwent metabolic surgery.

*Conclusion:* GLP- 1 analogues would be a cost - effective and less invasive method for patients with weight regain or unsatisfactory weight loss after bariatric surgery without undergoing another endoscopic or surgical procedure.

### DESPITE MAXIMAL THERAPY GASTROPARESIS LEADS TO SIGNIFICANT DISABILITY

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#### INTRODUCTION:

Gastroparesis (GP) is a functional disorder resulting in dysmotility or paralysis of the stomach causing nausea and vomiting. Patients experience a range of symptom severity and frequency. Initial treatment is anti-emetics and pro-kinetics. Those not improved are offered surgical implantation with an electrical stimulation device (Enterra) and pyloroplasty. Despite maximum medical and surgical therapy, symptoms often result in reduction in capacity for one to work and provide adequate basic income. Many GP patients apply for Social Security Disability Insurance (SSDI) by the US Federal government to have adequate income and fulfill basic needs.

#### METHODS

After IRB approval and informed consent, we administered a survey questionnaire to patients with GP who had previously undergone both pyloroplasty and insertion of an electrical stimulation device (Enterra). Twenty-five agreed to participate by answering 13 questions regarding hospitalizations, symptoms, and adverse effects on daily living.

#### RESULTS

Patients were hospitalized on average 3.2 times/year with a 8.6 day average LOS. Patients experienced symptoms of nausea and vomiting on average 5 day/week. Most (23/25) patients reported that the GP symptoms prevented them from fulfilling their personal and professional obligations leading to negative feedback and consequences. 21/25 surveyed patients reported the need to extend deadlines to successfully accomplish tasks. Most (23/25) patients reported feelings of being unfairly judged or marginalized by members of the medical community during majority of interactions. Of those patients surveyed, 52% had applied for SSDI. Thirteen patients applied and were initially denied SSDI. The average SSDI applicant had applied 1.76 times, a costly and arduous process.

#### CONCLUSIONS

Gastroparesis remains a debilitating disease in most patients, despite best efforts by medical and surgical interventions. These data support the fact that this condition remains poorly understood and treated. Further, that GP leads to disability and decreases one's ability to care for themselves.

**EQUIVALENT EFFICACY AND SAFETY OF PLASTIC STENTS AND LAMS IN THE TREATMENT OF PERIPANCREATIC FLUID COLLECTIONS: A PROSPECTIVE STUDY**

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**Background:** Endoscopic ultrasound (EUS)-guided transmural drainage using double pigtail plastic stents (DPPS) has been routine for the treatment of peripancreatic fluid collections (PFC). Lumen-apposing metal stents (LAMS) have since their introduction been the preferred choice, however their superiority has not been proven. The aim of this study was to compare the efficacy and safety of DPPS and LAMS.

**Methods:** This was a single-center, prospective study in which consecutive patients undergoing EUS-guided drainage between January 2010 and December 2020 were included. The primary endpoints were technical success, clinical success, and adverse event rate, while the secondary endpoints included symptomatic relief, length of hospital stay, and need for adjunct drainage. A subgroup analysis of Walled of Necrosis (WON) was performed.

**Results:** A total of 89 patients (median age: 56 years) underwent EUS-guided transmural drainage (DPPS: n=53; LAMS: n=36) due to a pseudocyst (n=37) or a WON (n=52). Both DPPS and LAMS had a 100% technical success rate and a comparable adverse event rate (4% vs 6%, p=0.24). An equivalent efficacy for the drainage of PFC comparing DPPS and LAMS was recorded and no significant statistical difference was recorded in clinical success (DPPS 60% vs LAMS 61%, p=0.94) or the need for reintervention (DPPS 11% vs LAMS 13%, p=0.72).

**Conclusions** In this large, prospective study on EUS-guided drainage of peripancreatic fluid collections LAMS and DPPS showed equivalent safety, technical success, clinical success, and hospital stay. Both techniques were associated with a comparable need for complementary necrosectomy.

**Keywords:** Pancreatic pseudocyst; Stents; endoscopic ultrasonography Self-expandable metallic stents; Drainage; Pancreatitis

**INTESTINAL OBSTRUCTION ASSOCIATED WITH PHARMACOBEOAR IN A PATIENT WITH CROHN'S DISEASE**

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*Crohn's disease might result from a complex interplay between genetic susceptibility, environmental factors, and altered gut microbiota, leading to dysregulated innate and adaptive immune responses. The reported case presents a patient with intestinal subocclusion associated with a pharmacobezoar who had a good evolution with clinical treatment. This case report aims to demonstrate the complexity of diagnostic search, even with the classic version of the disease. And it also comes to show the need for a thorough medical history and differential diagnosis investigation.*

**IMPACT OF ABDOMINAL FAT DISTRIBUTION IN PANCREATIC PSEUDOCYST FORMATION: A RETROSPECTIVE ANALYSIS**

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*Background:* Obesity plays an important role as a risk factor in acute pancreatitis. Assume that the volume of visceral adipose tissue (VAT) directly influences the severity of acute pancreatitis, by increasing the pro-inflammatory environment. We investigated the relationship between abdominal fat distribution parameters measured with computed tomography (CT) and pancreatic pseudocyst development.

*Methods:* The study included patients monitored due to AP in the 4th Department of Surgery of University Hospital Bratislava from January 2019 to December 2023. Body mass index (BMI) was calculated from the database. Computed tomography was performed in all patients. An open source image processing analysis software (Slice, v 3.9) was used to calculate individual abdominal fat distribution parameters from CT scans by segmentation of abdominal tissues. VAT, subcutaneous adipose tissue (SAT), waist circumference (WC) and visceral to total fat tissue area ratio (VTR) were measured (from -50 to -250 Hounsfield units) at the level of the intervertebral disk between L2 and L3. Atlanta criteria were adopted to define severe acute pancreatitis. Clinical courses were investigated and Ranson and acute physiology and chronic health evaluation II (APACHE II) scores were calculated for all patients. *Results:* BMI, VAT, SAT, WC and VFA were correlated with the severity of acute pancreatitis in a univariate analysis, but VAT and VFA had a strong correlation with severe acute pancreatitis and also the presence of pseudocysts in the multivariate analysis. Particularly, the presence of pancreatic pseudocyst was significantly related to VAT volume. ( $p < 0.001$ ).

*Conclusion:* In patients with AP diagnosis and abdominal CT scans, VAT volume and VFA are strongly correlated with the formation of a pseudocyst and high VAT volume may lead to persistent pseudocyst formation. Our study shows that these parameters should be included in AP predictive scoring systems.

**PE 303**

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## TRENDS AND SEASONALITY IN HOSPITALISATIONS FOR ACUTE PANCREATITIS: A RETROSPECTIVE ANALYSIS

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*Introduction:* Seasonal changes in the onset of several acute diseases have been reported. The current study aims to verify the possible existence of seasonal variability in acute pancreatitis. Approximately 20% of cases of acute pancreatitis (AP) are considered idiopathic. The purpose of this study was to identify the prevalence of different AP etiologies during the weather seasons and to investigate the relationship between the seasonal effect and the onset of acute pancreatitis.

*Methods:* We conducted a retrospective cohort study of consecutive patients admitted with acute pancreatitis at our department between 01/2013 and 12/2023. We identified the diagnosis of acute pancreatitis by ICD10 code and/or lipase <3 times the normal upper limit. Biliary and alcohol-induced acute pancreatitis were distinguished by diagnostic and procedural ICD-10 codes. Seasonal trend decomposition was performed. We constructed multivariate logistic regression models.

*Results:* We analysed 1095 patients. The mean monthly hospitalisation number was 91 patients (range 88 to 116). There was a linear increase in the annual incidence of acute biliary pancreatitis, while the incidence of acute alcoholic pancreatitis peaked in 2019. AP incidence demonstrated annual incidence amplitude in fall and winter peak. In 2021, the highest incidence was observed among our population. The most consistent and rapid increase in AP incidence was observed in younger patients with biliary aetiology after the COVID-19 pandemics.

*Conclusions:* Seasonal effects can affect the etiology of acute pancreatitis. The incidence and annual trends of acute pancreatitis vary significantly between demographic groups and this knowledge may be useful for planning healthcare resources and identification of at-risk populations.



**PERFORATION OF THE GI TRACT (SMALL INTESTINE) AT AN ABDOMINAL TUBERCULOSIS (TBC) LESION**

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*Introduction: Suspicious acute abdomen needs clarification of the diagnosis and in case of its confirmation, surgical intervention has to be derived in etiopathogenetically reasoned indication for surgical intervention despite eventually complicating factors.*

*Material & methods: Scientific case report*

*Results (CASE DESCRIPTION):*

*Medical Hx: 27-years old male patient (pat. – Pakistan-born student) with severe abdominal pain (VAS, 8/10), no stool excretion for 5-6 d, severe vomiting*

*Clinical findings: Pat. in reduced general status and stable but hypertonic blood circulation / abdomen, ubiquitous muscular defense*

*Diagnostic: - Lab parameters (SI): Venous pO<sub>2</sub> 19.6 mmHg, O<sub>2</sub>-saturation 25.3%, Lactate 3.0 mmol/L, "L" 13.2 Gpt/L, CrP 68.8 mg/L, neutrophils 81.9%*

*- CT scan: Hollow organ perforation with free air within the right upper abdomen, mechanic ileus of the small intestine, additional signs of a fistula and abscess formation, no hint for pulmonary manifestation*

*Diagnosis: Suspicious perforation of the small intestine (jejunum) and abdominal Tbc manifestation*

*Decision-making: Implantation of a gastric tube, withdrawal of blood samples for microbiological investigation, initiation of i.v. broad spectrum antibiotics with Piperacillin/Tazobactam 3x4.5 g, infusion therapy, emergency explorative laparoscopy*

*Surgical management: Laparoscopy – segmental resection of the small intestine (20 cm) of the perforated bowel segment with side-to-side jejunojejunostomy, partial omentum resection, adhesiolysis of the small intestine and lavage, excision of several Tbc-typical nodes at the small intestine*

*Histology: Necrotizing granulomatous inflammation in the surgical specimen of the small intestine and the greater omentum according to Tbc infection*

*Proceeding: Gastric tube, continuation of the calculated antibiotic administration, initiation of oral nutrition, nutritional advisement, continuing tuberculostatic therapy*

*Conclusion: This case can be considered the complication of an abdominal Tbc, which prompted to derive emergency surgical intervention despite a high complication potential in ongoing tuberculostatic therapy and further intraabdominal Tbc manifestations as well as simultaneous precautions for the surgical and anesthesiological personnel in (emergency) intervention.*

**DEMANDING DIFFERENTIAL DIAGNOSIS OF “UNCLEAR ABDOMINAL ILLNESS” WITH POSSIBLE SURGICAL CONSEQUENCE - FAMILIAL MEDITERRANEAN FEVER (FMF)**

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*Introduction (Aim): To raise awareness of rare autoinflammatory diseases as a differential diagnosis in patients with recurrent febrile attacks accompanied by unexplained acute abdominal pain*

*Material & methods: Scientific case report*

*Results (Case presentation): - Medical history (hx): A 19-years old male patient had presented to the surgical emergency department because of an episode of fever accompanied by acute abdominal pain for 2 d with worsening tendency in the right lower abdomen with associated arthralgia and thoracic pain during breathing. The patient reported similar episodes in the past with complete healing after 2 to 3 days without any specific treatment.*

*- Physical examination: Severely reduced general condition, normal nutritional status; vital signs, stable, examination of the abdomen, marked rigidity and tenderness in the right lower quadrant. The abdominal wall was rigid and there was peritonism.*

*- Diagnostic measures indicated a CRP level of 35.0 mg/L and a normal range white blood cell count of 8.6 GpT/L.*

*Abdominal ultrasound did not show any signs of appendicitis or other serious illnesses.*

*- The patient received a conservative therapeutic approach, which involved infusion therapy, administration of analgesics, and an initial “nil per os” period. Oral nutrition was then gradually resumed. The patient's family history was reexamined after recovery, revealing a similar case in a related family member.*

*- The clinical course was uneventful, the patient was free of fever and pain after 2 days of conservative therapy.*

*Conclusion: The case described a late manifestation of FMF with typical clinical symptoms. This diagnosis should be considered a significant disease in case of positive familial history or case of descent from high-incidence areas. This case emphasizes the importance of taking a precise medical history and highlights FMF as an increasing disease in Germany as an up-coming consequence of migration.*

**OPTIMIZATION OF TRACHEOESOPHAGEAL FISTULA MODEL ESTABLISHED WITH T-SHAPED MAGNET SYSTEM BASED ON MAGNETIC COMPRESSION TECHNIQUE**

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*Introduction:* To investigate the effectiveness of a T-shaped magnet system for establishing a tracheoesophageal fistula model in beagle dogs.

*Materials and Methods:* Twelve beagles were randomly assigned to groups in which magnets of the T-shaped scheme and normal magnets were implanted into the trachea and esophagus separately under gastroscopy. Operation time, operation success rate, and accidental injury were recorded. Dogs in the control group were euthanized after X-ray and gastroscopy to confirm establishment of tracheoesophageal fistulas after coughing, and gross specimens of tracheoesophageal fistulas were obtained. Dogs in the study group were euthanized after X-ray and gastroscopy 2 weeks after surgery, and gross specimens were obtained. Fistula size was measured in all animals, and then harvested fistula specimens were examined by HE and Masson staining.

*Results:* The operation success rate was 100% for both groups. Operation time did not differ between the two groups. Dogs in the control group had severe cough after drinking water at 6–9 days after surgery. Gastroscopy showed tracheoesophageal fistula formation. Gross specimens of tracheoesophageal fistulas from the control group showed the formation of fistulas with a diameter of  $4.94 \pm 1.29$  mm. Dogs in the study group did not exhibit obvious coughing after surgery. X-ray examination 2 weeks after surgery indicated fixed magnet positioning. The magnets were removed using a snare under endoscopy, and tracheoesophageal fistula was observed. Gross specimens showed well-formed fistulas with a diameter of  $6.11 \pm 0.16$  mm, which exceeded that in the control group ( $P < 0.001$ ). Scar formation was observed on the internal surface of fistulas by HE and Masson trichrome staining, and the structure was more regular than that in the control group.

*Conclusion:* Use of the modified T-shaped magnet scheme is safe and feasible for establishing tracheoesophageal fistula and can achieve a more stable and uniform fistula size compared with ordinary magnets.

**THE EFFICACY AND SAFETY OF ESOPHAGECTOMY IN ELDERLY PATIENTS WITH ESOPHAGEAL CANCER**

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*[Background]* Careful consideration should be required when surgeons make a decision whether to perform an esophagectomy on the elderly because of their high co-morbidity and deterioration of physical strength. On the other hand, radical chemoradiotherapy is often highly invasive for the elderly. In our hospital, surgery is proactively performed in elderly patients with ASA-PS2 or less by minimally invasive surgery and thorough postoperative management. In this study, we examined the surgical outcomes and safety of surgery in elderly patients.

*[Method]* We divided 625 patients who underwent esophagectomy between January 2004 and December 2020 in to 2 groups ( $\geq 80$  years old: elderly group,  $< 80$  years old: control group) and analyzed the difference of clinicopathological factors, surgical treatment, morbidity and mortality rates, and survival rates.

*[Results]* There were 13 cases (male/female, 12/1) in the elderly group and 612 cases (male/female, 528/84) in the control group. Surgical factors were compared between the elderly group vs. the control group. The results showed that 8% vs. 26% of the patients underwent dissection reduction to 2 or less regions, and the operation time was 450 minutes vs. 494 minutes, indicating that the elderly group tended to reduce dissection and shorten operation time. There was no difference in complications of Clavien-Dindo Grade II or higher in the two groups: 69% vs. 57%, recurrent nerve palsy 7% vs. 12%, pneumonia 23% vs. 17%, and suture failure 15% vs. 15%. In-hospital mortality was relatively higher in the elderly group 15% (2/13) than the control group 1.1% (7/612). 3 year OS and 3 year RFS (3 year OS; 48% vs 70%  $p=0.04$  / 3 year RFS: 50% vs 58%;  $p=0.422$ ).

*[Conclusion]* Esophagectomy could be performed feasibly and safely to elderly patients when careful consideration is made.

**THORACOSCOPIC PRIMARY ESOPHAGEAL REPAIR IN PATIENTS WITH BOERHAAVE'S SYNDROME**

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*Boerhaave syndrome is a surgical emergency, which is defined by spontaneous rupture of the esophagus that occurs after bouts of forceful emesis. In view of the high morbidity and mortality rates, early diagnosis and treatment are key prognostic factors. Here we present a case of Boerhaave syndrome in haemodynamic shock, with underlying esophagitis and huge forrest 2c duodenal ulcer, presented to us with epigastric pain following by episodes of vomiting. The initial CT scan revealed a distal esophageal perforation with right hydropneumothorax, contrast extravasation within the right thoracic cavity and right lateral chest wall subcutaneous emphysema. Primary esophageal repair is performed by minimally invasive approach via thoracoscopy followed by feeding jejunostomy allows a quick favourable clinical evolution without digestive complications. Minimally invasive approach via thoracoscopy in the case of boerhaave syndrome improves the outcome by reducing the postoperative pain, lesser respiratory complications and shorter hospitalization.*

## SQUAMOUS ESOPHAGEAL CARCINOMA OF THE YOUNG FEMALE ADULT

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*Introduction: Squamous esophageal carcinoma of the young adult can be considered a rare tumor manifestation.*

*Aim: To illustrate the interesting and newsworthy case of a young female patient with squamous esophageal cancer as a rare tumor manifestation*

*Material & methods: Scientific case report*

*Results (case description):*

*Medical Hx: - Current: Dysphagia*

*Diagnostic measures: - Esophagogastroduodenoscopy: tumor lesion extending from 22 to 38 cm from row of teeth  
- Thoracic/Abdominal CT scan*

*Decision-making (tumor board conference): Neoadjuvant radiochemotherapy (derived from CROSS protocol with 41.4 Gy and 5 cycles of chemotherapy with Paclitaxel 50 mg/m<sup>2</sup> and Carboplatin AUC2 as well as subsequent resection within the 6-weeks interval*

*Diagnosis: Squamous esophageal carcinoma (ypT3 pN0 M0 L0 V0 R0 G1) of the middle and lower third (22-38 cm from row teeth)*

*Differential diagnosis: Adeno-carcinoma of the esophagus, achalasia*

*Secondary diagnosis: - Mixed collagenosis*

*- Liver hemangiomas within the segment III and the right hepatic lobe*

*Surgical intervention: Thoracoabdominal esophagus resection with thoracic transposition of the stomach and esophagogastrostomy as well as pyloromyotomy (in a different hospital)*

*Course: - Leukopenia (approximately 2.6 [SI]) during radiochemotherapy*

*- 3-yr-interval: Lobectomy of the right upper lobe*

*- After 5 yr: i.v.-port explantation due to infection with recurrent fever attacks*

*Follow up: Adequate control investigations in a different hospital; currently, no hint for tumor recurrency*

*Conclusion: Despite the untypically young age, which does not exclude completely the manifestation of a squamous esophageal carcinoma, the same established treatment principles and modes are pursued (with limited experiences due to the rare manifestation), which resulted in a 7-yr-survival.*

**UNVEILING THE MYSTERY OF THE BLACK OESOPHAGUS**

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*Acute oesophageal necrosis is a rare condition with a prevalence of 0.01-0.28%. Its endoscopic hallmark appearance of circumferential diffuse blackish oesophageal mucosa gave rise to its monicker "Black Oesophagus". It is more common in men, and usually occurs in patients with malnutrition and numerous comorbidities. Although the aetiology is obscure, it is postulated that an ischemic state coupled with gastric outlet obstruction causes reflux injury to the oesophageal mucosa leading to this condition.*

*We report on a 77-year-old man who presented with vomiting coffee ground material, passage of melena and epigastric discomfort. He underwent an upper endoscopy which revealed circumferential diffuse blackish mucosa from middle third of the oesophagus to the gastrooesophageal junction. The patient recovered with conservative management and a repeated upper endoscopy showed complete resolution.*

*The diagnosis of acute oesophageal necrosis is often incidental, when an upper endoscopy is performed for a patient with upper gastrointestinal bleeding. Biopsy of the mucosa is recommended to exclude other etiologies such as caustic ingestion, pseudomembranous oesophagitis, and melanoma. Treatment of this rare condition includes treatment of medical illnesses, submucosal adrenaline injection for significant bleeding, proton pump inhibitors, keeping the patient nil by mouth, and intravenous fluids. Oral sucralfate and parenteral nutrition may be considered as well. Most patients recover with supportive treatment, although mortality can go up to 35%, especially when complicated with oesophageal perforation.*

*This case serves to highlight a rare but potentially deadly condition which is characterized by a synergy of an ischemic insult, backflow chemical injury from gastric outlet obstruction, and alteration in physiological process.*

**'PERFORMING THE UNTHINKABLE' ENDOSCOPIC RETRIEVAL OF A RETAINED NASOGASTRIC TUBE USING AN OLYMPUS LOOP CUTTER FOLLOWING A THORACOSCOPIC IVOR LEWIS ESOPHAGECTOMY. A CASE REPORT AND REVIEW OF THE LITERATURE.**

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*Introduction.*

*The incidence of adenocarcinoma at the gastroesophageal junction (GEJ) has increased despite the decrease in gastric cancer incidence in western countries. Esophagectomy for cancer of the oesophagus is commonly performed using minimally invasive techniques. Several feeding methods have been used for oesophageal cancer patients in the postoperative period with jejunostomy and NGT (nasogastric tube) feeding being the commonest approaches*

*Case Report.*

*The case report details the endoscopic removal of the inadvertently sutured nasogastric tube at the esophagogastric anastomosis following thoracoscopic Ivor Lewis Esophagectomy in a 62 – year – old woman with esophagogastric junction adenocarcinoma.*

*Discussion.*

*The reusable Olympus Loop Cutter was used to remove the inadvertently sutured nasogastric tube to the esophagogastric anastomosis and it allowed our patient to avoid the need for re-surgery as it is associated with increased in-hospital mortality and hospital costs.*

*Conclusion.*

*Management strategies to avoid inadvertently suturing the NGT to the anastomosis should be employed and the Olympic Loop Cutter although not designed to cut sutures, could be used as a salvage approach in the absence of an endoscopic cutter to remove retained NGT endoscopically following upper GI surgeries.*



**PALLIATIVE OPTIONS IN ADVANCED OESOPHAGEAL CANCER: A CASE REPORT AND REVIEW OF THE LITERATURE**

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*Introduction.*

*Oesophageal cancer remains a significant global health concern, particularly in East Asia and among patients with higher socioeconomic status and most oesophageal cancer patients in Malaysia present late with advanced disease. Patients with stage IV disease have numerous and complex symptoms, including pain, dysphagia, malnutrition and psychological symptoms due to location of the tumour and required treatments, and patients benefit from a comprehensive approach to care to effectively support their physical, emotional and spiritual needs.*

*Case Report*

*We report a case of a 51-year-old male with advanced adenocarcinoma of the oesophagus and the high-quality palliative care provided to improve his quality of life. The case report illustrates the challenges faced by this patient with advanced oesophageal cancer, including dysphagia, malnutrition, pain, upper gastrointestinal bleeding. The patient received various interventions to address these complications.*

*Discussion.*

*The discussion highlights the importance of palliative care in addressing cancer-related symptoms and improving quality of life. The management of dysphagia, malnutrition, pain, bleeding, anaemia, and fistulation in advanced oesophageal cancer patients is explored in detail, emphasizing the need for a multidisciplinary approach to care.*

*Conclusion.*

*Many patients with oesophageal cancer come to medical attention with a heavy symptom burden and therefore early involvement of specialty palliative care can improve the symptom management and quality of life for these patients.*

**ENDOSCOPIC ULTRASOUND-GUIDED BILIARY DRAINAGE (EUS-BD) FOR MALIGNANT BILIARY OBSTRUCTION AFTER FAILED ENDOSCOPIC RETROGRADE CHOLANGIOGRAPHY (ERC) IN PRE-OPERATED PATIENTS**

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*Introduction (Aims): Investigation of the effectiveness and safety of EUS-BD after previous ERC failure in patients with jaundice due to malignant biliary obstruction and postsurgically altered anatomy of the upper GI-tract.*

*Material & methods: Over a defined time period, all consecutive patients who had undergone EUS-BD were analysed retrospectively. Those individuals with jaundice due to malignant biliary obstruction and postsurgical altered anatomy were separately investigated using a computer-based registry (study design, clinical systematic unicenter observational study with prospective data documentation in a consecutive patient cohort).*

*Various parameters and factors were selected and statistically tested (as appropriate) with potentially prognostic relevance for the postinterventional survival time.*

*Results: From 2005-2020, overall 118 patients were registered (mean age, 69 years). Antegrade drainage was achieved in 42 patients, extra-anatomical stent position in 52 individuals and combination of both in 15 subjects. Technical and clinical success rate was 92.4 and 94.4%, respectively. Adverse events (AE) occurred in 19.5% and reinterventions were necessary in 27.9% of cases. Patients with chemotherapy had a significantly higher AE-rate. The median postinterventional survival time was 85 (95%-CI: 45-256) days. The following parameters were associated with a significant shorter survival time: pancreatic cancer and previous pancreatic surgery, CRP >50 mg/L, white blood cell count >9.8 Gpt/L, bilirubin serum level >200 µmol/L, high tumour burden, Karnofsky index <80 and manifest malnutrition status.*

*Conclusion: EUS-BD in malignant biliary obstruction is a safe and effective method, even with surgically altered anatomy of the upper GI-tract in experienced hands of interventional EUS (including adequate abdominosurgical background) at a center of visceral medicine, to reduce the symptom burden of predominantly palliative patients avoiding further restriction of their quality of life. In this context, it is pre-interventionally possible to identify patients with a particularly poor prognosis, which allows to provide and even optimize individualized treatment planning.*

**TECHNICAL DIFFICULTIES IN TRANSCATHETER ARTERIAL EMBOLIZATION (TAE) FOR BLEEDING PEPTIC ULCERS**

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*Introduction:* In peptic ulcer bleedings (PUB) the problem of rebleeding is extremely important and observed in 10-15% cases after endoscopic hemostasis. Currently, the second line of treatment holds Transcatheter Arterial Embolization (TAE), which usually recommended for hemodynamically stable patients with previously performed endoscopic hemostasis with ""high risk"" status and in case of recurrent bleeding. Although a number of authors report 100% possibility of performing TAE, there are cases of technical difficulties of its application.

*Material and methods:* a retrospective, single-center study from 2021 to 2023 enrolled 89 patients with PUB and indications for TAE. Technical difficulties in performing TAE observed in 11 (12.4%) patients.

*Results:* For 7 patients the goal of embolization was a Gastroduodenal Artery (GDA): in 4 cases, an acute angle of origin noted, the tortuosity of the vessels and Aorta and stenosis of a Celiac Artery - 2 patients and 1 patient had a congenital anomaly - the origin of the Common Hepatic Artery (CHA) from the Superior Mesenteric Artery (SMA). For 4 patients the goal of embolization was the Left Gastric Artery (LGA): in 2 cases, a stenosis of the Celiac Artery detected, in 1 patient, an acute angle of origin and 1 patient had an Aortic Aneurysm and as a separate difficulty the intestinal pneumatosis also described. Among 11 patients with an unsuccessful TAE, rebleeding observed in 5 patients, open surgery performed for 2 patients. Lethal outcomes stated for 5 patients. As complication after TAE's attempt in 1 case has developed acute renal failure, required hemodiafiltration.

*Conclusion:* TAE in PUB had difficulties in performing in 12.4% cases. The main difficulties for TAE performing were anatomical features. Although TAE in most cases reduces the number of rebleeding and the need for open surgical intervention, but it may have limitations.

**CONCURRENT UMBILICAL RECONSTRUCTION DURING CYTOREDUCTIVE SURGERY; FEASIBILITY, TECHNICAL APPROACH, AND OUTCOMES**

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*Introduction: The goal of cytoreductive surgery for peritoneal malignancy is to remove all macroscopic disease, which often requires excision of umbilicus. Disease involvement of the umbilicus is secondary to seeding of previous port sites or direct infiltration by the disease. The absence of the umbilicus can be aesthetically unfavourable for some patients and cause psychological distress. In this study, we present our technique for umbilical reconstruction during cytoreductive surgery. We evaluate the feasibility of this approach, assessing postoperative outcomes and cosmesis after healing.*

*Method: Patients requiring umbilical excision during cytoreductive surgery were offered umbilical reconstruction. Our technique involved reconstructing the subcutaneous fat space, creating umbilical skin flaps and anchoring them to the anterior fascia. Measured outcomes included post-operative infection rate, wound dehiscence, seroma formation, and wound appearance.*

*Results: 30 patients had umbilical reconstruction after cytoreductive surgery with this technique. 5 patients experienced inflammation at the wound site post operatively. 7 patients experienced wound infections (6 superficial and 1 deep) and all were managed conservatively with antibiotics. 2 patients experienced wound dehiscence and required healing by secondary intention. None of the reconstructions resulted in seromas, wound widening or wound stenosis. No patients required reoperation due to complications related to the umbilical reconstruction.*

*Conclusion: Umbilical reconstruction in patients undergoing cytoreductive surgery did not significantly compromise wound healing outcomes. Our technique aims to enhance cosmesis, patient satisfaction, and long-term body image for those undergoing major abdominal surgery. It provides surgeons with a viable option for umbilical reconstruction when complete cytoreduction necessitates umbilical excision*

**DISTAL ILEUM ADENOCARCINOMA MASQUERADING AS ACUTE APPENDICITIS**

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*Introduction:*

*Small bowel cancer is an uncommon entity. Amongst the subtypes of small bowel cancer, the commonest are neuroendocrine tumour (40%) and adenocarcinoma (40%), followed by sarcoma, lymphoma, gastrointestinal stromal tumour (GIST) and secondaries. Small bowel adenocarcinoma commonly affects the duodenum and proximal jejunum, with its incidence decreasing distally; the exception is seen in Crohn's disease, where most adenocarcinomas occur in the ileum.*

*Case description:*

*We report here a 50-years-old lady with distal ileum adenocarcinoma who presented to us with symptoms and signs of acute appendicitis on physical examination, lacking specific symptoms, with the diagnosis being made with a combination of preoperative computed tomography scans and intraoperative findings, confirmed by histopathological examination. The patient underwent segmental small bowel resection with primary end-to-end anastomosis, followed by adjuvant chemotherapy. As of 2 months post-operative, the patient is well with good tolerance to chemotherapy and no reported recurrence.*

*Conclusion:*

*This case highlights the importance of considering small bowel adenocarcinoma as a cause of acute abdominal pain as it usually has no specific symptoms to avoid delay in diagnosis and for earlier initiation of treatment. Due to the low incidence of small bowel adenocarcinoma, there is potential for further study to evaluate the diagnostic modalities, investigations, treatment options and post-treatment surveillance for this disease.*

### PORT SITE HERNIA: RARE BUT MAY BE DANGEROUS

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*Port Site Hernia is an incisional hernia occurring at the trocar insertion sites laparoscopic surgeries. A number of factors increase the risk of port site hernia at any given trocar site. It is considered a serious and a preventable complication*

*The incidence of port site hernia after laparoscopic gastrointestinal surgeries averaged 0.74%. Laparoscopic colorectal surgeries had the highest incidence of 1.47% compared to laparoscopic bariatric surgeries which had a low incidence (0.57%).*

*Factors affecting the occurrence of port site hernia include the site of the port; the type of trocar used and the trocar size. The larger the trocar size, the higher is the chance of development of port site hernia.*

*Defects placed in the midline near umbilicus are a high risk factor for herniation, as the umbilicus is the weakest area of the abdomen. On the contrary, ports in the lateral abdominal wall are less in contact with the small bowel and passes through overlapping anterior and posterior sheaths with muscle layers in between.*

*Fascial closure should be done in all defects of size greater than 5 mm in adults and all defects regardless of size in children.*

*Some trials recommend gradual release of CO<sub>2</sub> from the abdominal cavity as bowel can be drawn into the defect by sudden decompression of intra-abdominal pressure (chimney effect).*

#### *Conclusion*

*Although Port Site Hernia is an uncommon complication after laparoscopic surgery, yet it can be dangerous. Several factors contribute to its occurrence, including trocar site, size, type and closure of the port site at conclusion of the procedure. To reduce its incidence, attention to these factors is necessary and ports should be routinely closed especially larger ones.*

### NEAREST FUTURE ENDOSCOPIC SURGERY DIRECTIONS – HOW EFFORTS WILL BE MADE TO FILL GAPS?

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*Background. The GI endoscopy has undergone rapid and significant evolution in last two decades. The Endoscopy Devices Market (EDM) research and competitive intelligence provider, historically, only from 2017 to 2021, market value of the EDM increased at around 7,6% per year, and in 2021 it was valued at 44,8 Billion USD, and according this tendency all EDM revenue would increase 2,3 X between 2022 and 2032, reaching roughly in USD till the 113,8 Billion on 2032 year.*

*Method. Directions over the next decade:*

*The breakthrough in DNA-based testing allow for in home screening of CRC has opened a new avenue in Home testing (HT), making care accessible to large population. The declining cost of DNA sequencing we can expect on Sequencing technologies (ST) both diagnostics as well as data – driven therapeutics targeting the GIT microbiome. Results. Artificial intelligence (AI) has already used in deep learning process to detect polyps and GI bleeding. The rapid accumulation of clinical imagings and datas laying the path for precision medicine (video-presentation Introduction with Medtronic system).*

*The disruptive technologies, particular genetics and molecular – based testing, may make a dent in routine endoscopic procedures, newer procedures and technologies like motorized enteroscopy (vide).*

*Defect closure and bleeding control devices will evolve to help conquer more complex endoscopic challenges and will be simpler to use in emergency situations. (Video) of Apollo system – is already seeing a transformation with the emergency of endo-bariatrics surgery).*

*The advances resection platforms into interventional endoscopy and Endo-Robotics (R-E) would have come of age and be firmly established by 2030, thereby transforming to the third – space endoscopy and the entire endo-surgery field (video-presentation).*

*Conclusions. Home message. I am excited to see what the next decade brings for GI surgery and our patients.*

**PRIMARY INTRA-ABDOMINAL SYNOVIAL SARCOMA IN A YOUNG ADOLESCENT WITH DELAYED PRESENTATION : A RARE ENTITY**

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*Primary Intra-Abdominal Synovial Sarcoma In A Young Adolescent With Delayed Presentation : A Rare Entity*



**THREE CARCINOMAS (CA) AT DIFFERENT SEGMENTS OF THE GASTROINTESTINAL (GI) TRACT AT THE SAME TIME**

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*Introduction:* Coincidence of neoplastic lesions can be considered an extremely interesting subgroup of malignant tumor patients.

*Material & methods:* Scientific case report

*Results (Case description):* - Medical Hx: \* 69-years old male patient w/

1) colon Ca;

2) status after ESD of early gastric Ca (intestinal type at prepyloric site) pT1b(sm1)L1V0Pn0R0G1; MMRp status; HER2/new status, negative;

3) status after squamous cell Ca of the left oropharynx cT4cN2bcM0 w/ primary radiochemoTx

- Clinical findings: Patient in age-related general & nutritional status

- Diagnostic: \* Lab parameters: CrP, 172 mg/L / white blood cell count, within normal range

\* Colonoscopy/Histology (Bx), adeno-Ca of the sigmoid colon, 70x42x14 mm in size,

lymphangiosis carcinomatosa

- Dx: Three Ca of the GI tract with a recently diagnosed adeno-Ca of the sigmoideo-rectal junction

- Decision-making: Indication for surgical intervention

- Therapy: Anterior rectum resection with TME, lymphadenectomy & descendorectostomy + protective loop ileostoma

- Histopathology: pT3pN1b(2/28)L1V0Pn0R0

- Postop. course: Intensive care for 24 h; on the 6th/12th postop. d: surgical re-intervention (anastomotic resection & new creation); thereafter, improvement of clinical finding & lab parameters

- Complications: Anast. insufficiency, wound seroma

- Proceeding: Antiseptic wound care (upper pole) in an outpatient clinic-setting, stoma care,

postop. chemotherapy ("CAPOX") according to tumor board conference's recommendation, adequate follow up-investigations of the early gastric & oropharynx Ca

- Long-term outcome: Follow up-time periods of 45, 42 & 39 months, resp., depending on Tu Dx showing recurrent Tu growth of oropharynx Ca after 40 months w/ subsequent radiation

*Conclusion:* From the extremely rare case example of a 3-fold Tu manifestation with Ca's at the same organ (GI tract), a substantial familial burden & a considerable individually increased risk constellation with regard to epithelial &/or GI tract-associated tumorigenesis (also carcinogenesis) can be derived.

### **A RARE CAUSE OF INTESTINAL OBSTRUCTION. SMALL BOWEL HERNIATION THROUGH BROAD LIGAMENT IN AN 42-YEAR-OLD LADY: A CASE REPORT**

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#### *Introduction.*

Broad ligament defects are very rare and only accounts for 4% - 7% of all internal hernias. It is usually due to congenital (primary) or acquired (secondary) defects. Congenital defects occur during peritoneal development. Acquired defects can be caused by trauma, surgery, pregnancy, and spontaneous rupture of pelvic cystic lesions. Bowel herniation can lead to pain and intestinal obstruction. Prompt and timely diagnosis will prevent possibility of bowel ischemia and necrosis.

#### *Case Presentation.*

A 42-Year-Old lady without any co-morbidities presented with worsening right sided abdominal pain. Previously she has no abdominal surgery and she delivered all her children vaginally. Blood parameters and urine tests were unremarkable. Pain located at right iliac fossa with rebound tenderness. Her symptoms associated with no bowel opening since admission and the initiation of pain. Initially she was diagnosed as acute appendicitis however in view of her atypical presentation, she was subjected for abdominal CT. It revealed small bowel knuckle herniation into the right broad ligament causing proximal small bowel dilatation. She underwent laparotomy and broad ligament primary repair. Small bowel appears healthy. She was discharged later without complications.

#### *Discussion.*

Achieving the diagnosis proves to be subtle as right sided herniation could mimic other pathologies in women. Proper clinical history and associative radiological imaging is important in achieving the diagnosis. Delay in diagnosis may lead to intestinal necrosis and perforation.

#### *Conclusion.*

A broad ligament hernia is treated surgically with reduction of the hernia and closure of the broad ligament defect. To avoid recurrence, exploration of the contralateral broad ligament should be systematic, since these defects can be bilateral.

**A MULTI-MODAL STRATEGY TO A CASE OF CAECAL NEUROENDOCRINE TUMOUR WITH HEPATIC METASTASIS: IS OPEN RIGHT HEMICOLECTOMY, RADIOFREQUENCY ABLATION AND METASTASTECTOMY AN OPTIMAL TREATMENT PLAN?**

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*Gastro-intestinal neuroendocrine tumours are considered rare in view of its unique histological, and biological characteristics, with an incidence of seven per million. From that said incidence, in between 46% to 93% of those cases presented with hepatic metastases at diagnosis. Management of these metastatic diseases at presentation are often multifaceted, having to take into consideration of addressing patient's symptoms, possible complications and extension of patient's survivability. This literature presents a case of a 60-year-old lady who initially presented with right abdominal pain and diarrhoea. Her colonoscopy revealed an erythematous and oedematous caecum with presence of superficial ulcers. Random biopsies taken at the site had then came back as well-differentiated neuroendocrine tumour – low grade. Her CT staging and DOTATATE following the diagnosis then revealed multiple enhancing liver lesions suggestive of hepatic metastasis. She had then underwent an open right hemicolectomy, radiofrequency ablation and metastastectomy. This literature discusses on the optimal strategy for such case, and highlights the need for further study to enhance our understanding of the disease.*

**SURPRISE IN THE FORM OF A BIRYANI SPICE: A RARE CAUSE OF SMALL BOWEL PERFORATION**

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*Foreign body ingestion is commonly seen in clinical practice with possible consequence of bowel obstruction and / or perforation. Nevertheless, edible material ingestion leading to small bowel perforation is rarely reported in literature. We report on a case of small bowel perforation due to an impacted spice.*

*Patient is a 61-year old gentleman with no past surgical history who presented to a private centre with generalised abdominal pain, distension and vomiting for 3 days. Clinically, there was mild abdominal tenderness without peritonism. Computed Tomography (CT) of abdomen and pelvis showed dilated small bowels with transition zone at the mid abdomen. Patient was referred to our centre for definitive management with an initial diagnosis of bowel ischaemia. Due to a diagnostic conundrum, CT images were reviewed with a second radiologist who detected the presence of an impacted foreign body within the small bowel with minimal amount of extra-luminal air.*

*Immediate decision for surgery was made. There was minimal contamination seen intra-operatively. A foreign body was felt within the small bowel whereby an enterotomy was made and an impacted food material with sharp ends measuring 4cm was removed. Segmental resection of small bowel with primary end-to-end anastomosis was performed. Correlation with patient's history was made where he had a delicious Biryani lunch containing the culprit, 3 days prior to presentation.*

*The ingestion of food material leading to small bowel perforation could happen although it is a remote possibility. Decision for surgical intervention would require holistic evaluation of patient's history and examination. Radiological investigation should also be evaluated with care as it could cause further diagnostic dilemma and serve as a red herring especially in the case of micro-perforations. If precise pre-operative diagnosis could not be achieved, principles for operative management should be adhered to.*

**A RETROSPECTIVE STUDY OF LARGE INTESTINAL INJURIES AT HERAT REGIONAL HOSPITAL, AFGHANISTAN**

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*Background: large intestinal injuries are common in war-torn countries like Afghanistan. Herat Regional Hospital is the only tertiary referral hospital in the western region of Afghanistan, that accepts these patients from 5 cities around it. In low-resource settings, large intestinal injuries seem to have significant complications and different pathophysiology due to the presence of many problems, such as lack of resources, lack of transportation, and lack of rehabilitation centres. Therefore, we focused on the incidence, complications, and pathophysiology of large intestinal injuries in Herat Regional Hospital to find out differences from high-resource settings.*

*Method: it was a retrospective study for the period of one year (2019). 58 patients came to the emergency department of Herat Regional Hospital with the diagnosis of large intestinal injury. The data was collected using patients file and it was analyzed with SPSS 14.*

*Results: The oldest age was 72 years and the youngest was 4 years old. Penetrating trauma accounts for 76% (including 53% due to gunshot and 23% due to stab wounds), and blunt trauma accounts 24% (including RTA with 17%). Most sites were the transverse colon 33.93%, followed by the sigmoid colon 28.57%, and the last site was the rectum 1.79%. grade 1 injury was present in 28.57% of the patients, grade 2 was present in 33.93% of patients, and grade 3 was present in 37.5% of patients and patients. According to surgical procedure, the most common procedure was primary repair 37.5%, and the most minor procedure was DCL 1.79%. In this research, only 5.36% of patients received primary care before arriving at the emergency department.*

*Conclusion: in this research primary anastomosis was found to be perfect for the intestinal injuries of grades 1 and 2. Pathophysiology and causes of injuries were found to be different in low and high-resource settings. We have found that rehabilitation prior to surgery has a better outcome. Although we assume complications might be significantly different between low and high-resource settings, they are almost the same.*

**PREDICTION OF SIZE OF DOUBLE LUMEN TUBE BY COMPARISON OF CT AND USG GUIDED CRICOID CARTILAGE DIAMETER IN INDIAN POPULATION-A RANDOMISED PROSPECTIVE STUDY**

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*Introduction-Airway management plays an vital role in single lung ventilation in the field of anaesthesiology. Double lumen tubes have become the gold standard for one lung ventilation. However, there is still no one best method to determine the size of DLT. Hence CT and USG guided cricoid cartilage diameter has been compared to determine the appropriate size of double lumen tube for one lung isolation surgery with conventional methods in Indian population.*

*Material and Methods-Total 120 patients requiring one lung ventilation surgery were divided into 3 groups-*

*1st group – DLT size determined using transverse diameter of cricoid cartilage by USG*

*2nd group – DLT size determined using transverse diameter of cricoid cartilage by CT*

*3rd group- DLT size determined by conventional method ie height and gender*

*The aim of the study was to compare the USG and CT guided transverse diameter of cricoid cartilage for determining the size of DLT. Primary objective was to compare appropriateness of tube size - appropriate or inappropriate and number of times tube changed and secondary objectives were to compare the effect of lung collapse based on verbal rating scale by surgeon and to compare the severity of sore throat among groups.*

*Results-Size of LDLT was inappropriate in 25% subjects in conventional group and inappropriate in only 2.5% and 5 % cases in CT and USG group respectively (p value - 0.044) Effect of lung collapse was statistically significant among the groups (p value- 0.031). Sore throat was more seen in the patients where DLT size was chosen with conventional method having statistically significant results (p value-0.010)*

*Conclusion- The accuracy of selection of LDLT based on cricoid cartilage diameter via CT and USG is significantly higher as compared to conventional methods. Although CT seems to be best modality for predicting the size of double lumen tube.*

### MENTOR- MENTEE COLLABORATION AND RECIPROCITY IN ENDOCRINE SURGERY

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*Mentor mentee relationship is the key to success of future of young knife happy endocrine Surgeons. We report questionnaire based surgery of young faculty mentoring 5 students over a period referral institute.*

*Materials and Methods:*

*Mentee or candidate score was calculated based on score given by the mentor*

*Academic Score*

*Operative Score*

*Research Score*

*Personal score*

*Max Score being* 25

*Minimum Score being* 0

*Candidate Score:*

A	B	C	D	E	
Academic	20	25	15	25	25
Operative	20	22	15	15	20
Research	20	25	15	20	25
Personal	20	20	15	10	20
		80	92	60	70
					90

*Discussion:*

*Most mentee had regard for their mentor. Gender bias was present since out of five students four were lady endocrine Surgeons. The mentor has to have an uniform approach in regard to mentee and trait all students same.*

*The score did have an influence in their future practice and patient interaction. The mentor should periodically apprise mentee of their performance in all this regard.*

*Conclusion:*

*The mentee score did affect the future development as endocrine Surgeon and so mentoring is vital during superspeciality training.*

**PREDICTORS OF HEALTH-RELATED QUALITY OF LIFE AMONG MEN DIAGNOSED WITH PROSTATE CANCER IN GHANA**

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*Background: Prostate cancer is the most common cancer among men worldwide and is a significant public health concern in Ghana. While the incidence and mortality rates of prostate cancer are increasing, little is known about the Health-Related Quality of Life (HRQOL) of patients diagnosed with prostate cancer in the Volta Region. The study assessed the Health-Related Quality of Life of patients diagnosed with prostate cancer in Two Municipalities in the Volta Region.*

*Materials and Methods: The study utilized a cross-sectional descriptive study using a quantitative approach/principle. A sample size of 205 prostate cancer patients in Sogakope and Hohoe municipalities were interviewed. Data collected was entered and analyzed with STATA version 17.0. Frequencies and percentages of data were displayed using tables. Chi-square test was done to establish associations between the dependent and independent variables. Multiple logistic regressions were used to control for confounders.*

*Results: Majority (91.2%) of the patients were more than 50 years old. More than half (52.7%) of the Prostate cancer patients had a good quality of life. Erectile dysfunction [(AOR=0.18; 95% CI-0.05-0.66),  $p<0.001$ ], bowel problems [(AOR=0.37; 95% CI-0.17-0.83),  $p<0.001$ ], experience with pain [(AOR=0.18 95% CI-0.09-0.35),  $p<0.001$ ] and experience with anxiety or depression [(AOR=0.46; 95% CI-0.22-0.95),  $p<0.001$ ] decreased the odds of good HRQOL. Physical exercise and support from health professionals in managing prostate cancer were the perceived interventions indicated by the patients for improving HRQOL*



## THE BIOMARKERS OF BACTERIAL TRANSLOCATION AND INTESTINAL WALL DAMAGE IN THE PATIENTS WITH MULTIPLE ORGAN DYSFUNCTION SYNDROME

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### Introduction

*In the critically ill patients in ICU due to microcirculation disorders of the intestinal wall, its permeability increases and its barrier function is disrupted. As a result, bacteria and/or their endotoxins penetrate the damaged intestinal wall, which further enhances the immune response, which becomes systemic and ultimately can lead to multiple organ dysfunction syndrome (MODS), sepsis and even death. Therefore, the aim of our pilot study was to evaluate the biomarkers of bacterial translocation (LBP, sCD14-ST) and intestinal wall damage (I-FAB, Zonulin, Reg3a) in the patients with MODS.*

### Materials & Methods

*The study involved 39 patients with MODS set according to the SOFA scale. Venous blood was sampled during diagnostics of MODS, on the 3rd and on the 7th day of its development. The biomarkers in blood serum were determined by ELISA.*

### Results

*Compared with the surviving patients (59%), in deceased patients (41%), the sCD14-ST on Day 1 was higher by 14.15 ng/mL, on Day 3 was higher by 14.51 ng/mL ( $p=0.003$  and  $p=0.029$ , respectively), the I-FAB on Day 3 was higher by 76 pg/mL ( $p=0.004$ ), the REG3a on Day 1 was higher by 4.66 ng/mL ( $p=0.001$ ).*

### Conclusion

*In the patients with MODS, the increase in sCD14-ST, I-FABP, REG3a in blood indicates a violation of intestinal barrier function and increased bacterial translocation, which may increase the risk of death. It is required to further study the factors leading to intestinal wall permeability disorders to screen for timely intensive care measures that can help reduce the stay and mortality rate of ICU patients.*

*This research is funded by the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan (Grant No.AP19677271).*

### PROGNOSTIC VALUES OF MONITORING CHANGES IN COAGULATIVE, INFLAMMATORY AND CHEMICAL MARKERS IN ICU COVID19 PATIENTS

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Covid infection is associated with thromboembolic events & severe inflammatory reactions that have an impact on final prognosis of patients infected by this virus. Hypercoagulable state, DIC & overwhelming inflammation have been linked to Covid & they are more prevalent in critically ill patients who have comorbidities & need admission to ICU. In this study we evaluate prognostic values of changes in coagulative, inflammatory & blood chemistry markers in Covid patient's before & during admission to ICU. Methodology: descriptive observational retrospective cohort study was conducted on 90 Covid patients in ICU. Patients were divided into 2 groups. Group 1 included 42 patients who survived & while group 2 included 48 patients who died. Demography of patients, comorbidities & laboratory results (including: D-dimer, lactic dehydrogenase, procalcitonin, prothrombin time, platelet count, ferritin, C reactive protein, glucose, and creatinine results) were collected on admission, after starting treatment & on discharge or death, their prognostic values were evaluated. Inclusion criteria for patients selected in this study were: Covid adult patients who need an ICU admission. Exclusion criteria were, Children, Covid patients who did not require admission to ICU & ICU admitted patients who were not infected by Covid19 virus. Results: study showed that platelet counts were significantly increased in survivors compared to non-survivors from the time of admission to the moment of death or discharge. Procalcitonin & serum ferritin levels increased in non-survivors, while it decreased in survivors. C-reactive protein levels dropped in both groups. In survivors, there was a drop in glucose levels, while non-survivors had an increase in their glucose levels. Conclusion This study identifies key biomarkers predicting Covid outcomes. It highlights the association between platelets count & final fate of Covid patient who was admitted to ICU. High ferritin levels predict worsening disease & poor prognosis, while low glucose levels indicate better prognosis.

**FEASIBILITY AND ACCURACY OF LOW COST LARYNGOSCOPE FOR THE ASSESSMENT OF VOCAL CORD FUNCTION: A PROSPECTIVE STUDY**

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*Introduction:*

*Peri-operative evaluation of vocal cords in patients undergoing thyroid and parathyroid surgery is mandatory to avoid complications and medicolegal issues. However, in most low resource settings, pre-operative evaluation is done with indirect laryngoscopy which has low accuracy. Likewise, immediate post-operative assessment is usually not possible due to non-availability of flexible direct laryngoscopy (DL) in the operating room (OR). In this prospective study we have evaluated the feasibility and accuracy of a low-cost Endoscopic Vocal Cord Assessment (LEVA) device.*

*Method:*

*All patients undergoing thyroid and parathyroid surgery were evaluated with LEVA. Pre-operative assessment was done in the outpatient department and results were compared with IDL. Post-operative assessment was done in the OR, immediately after extubation. Results were compared with IDL on day 1 and DL done between 7-10 days after surgery by a laryngologist.*

*Results:*

*A total of 60 consecutive patients were included in the study. Total number of nerves at risk was 84. All sixty patients had successful LEVA immediately after extubation, making it 100% feasible. Four patients with failure of LEVA pre-operatively, had successful visualization of vocal cords in the OR. Post-operative IDL on Day 1 was feasible only in 70% of the patients. Post-operative standard DL on 7th day was compared with post-operative LEVA and there was 100% correlation. Hence, the accuracy of LEVA was 100%.*

*Conclusion:*

*In patients undergoing thyroid and parathyroid surgery, LEVA is a feasible and accurate method for assessment of vocal cord function. This is especially beneficial and suitable for low resource settings.*

### WHO GETS AUTHORSHIP CREDIT FOR COSECSA PEER-REVIEWED RESEARCH?

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*Introduction: The College of Surgeons of East, Central and Southern Africa (COSECSA), the largest sub-Saharan African (SSA) surgical training institution, celebrates 25 years in 2024 with training programs in 14 countries (<https://www.cosecsa.org>). Authorship fairness and ethics are relevant discussion topics, particularly when researchers from high-income countries (HIC) collaborate with colleagues in less-resourced environments (LRE). Because of the vital role COSECSA plays in SSA surgery, a search of peer-reviewed literature was undertaken to find the number of COSECSA-related articles and ascertain who receives first- and senior-author status (2nd author sometimes considered senior).*

*Materials & Methods: The theme for the 2023 COSECSA conference was "Technology, Innovation & Surgical Care In Africa;" therefore, the search terms chosen were: "College of Surgeons of East, Central and Southern Africa (COSECSA) and Technology," "College of Surgeons of East, Central and Southern Africa (COSECSA) and Innovation," and "COSECSA." Respected and widely-used Western databases not requiring fees were searched: PubMed, PubMed Central, Google Scholar.*

*Results: The 3 search terms produced: PubMed—57; PubMed Central—197; Google Scholar--1845. Because PubMed Central articles are open access, PubMed Central results were used as a "sample of convenience" to collect author-affiliation articles. After removing articles that were literature searches or unrelated, 164 articles were analyzed:*

- 56 (34%) -- LRE first authors
- 22 (13%) -- no LRE authors
- 30 (18%) -- first author from HIC, co-authors, LRE
- 56 (34%) -- HIC first and senior authors -- 10 (6%) with LRE second author (considered senior author in some institutions)

*Conclusion: Two-thirds of collaborative publications report HIC authors as major contributors and 13% have no LRE authors at all. Collaborative surgical research is impossible without essential input and support of LRE colleagues. Future collaborations must establish LRE authorship equity -- at project inception -- in publications and academic presentations.*

### ADVANCING SOTA CARE IN RURAL COMMUNITIES

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**Background:** In eastern DR Congo, members of 35% of households in 2 health zones required a surgical procedure in the preceding 12 months. Surgery, Obstetrics, Trauma and Anaesthesia care is a critical part of primary health care. Most surgery is performed by general doctors as the SAO ratio is only 0.4/100,000 population. 25% of those requiring surgical care did not present due to poor prior care.

**Materials and Methods:** To overcome this poor quality of a surgery, a Diploma in SOTA Care Course was begun in early April 2023. 4 doctors from rural hospitals and health centres spend 2 months at a regional centre participating in SOTA care skills and knowledge training. Details of the course will be outlined. Approval for the course and data collection was obtained from Provincial Health Authorities. Data is collected from participants by pre and post testing of knowledge and each participant rates their surgical skills confidence on a 0 to 10 numerical rating scale before and after the course. By time of presentation 7 cohorts will have completed the course.

**Results:** Preliminary data from the first 4 cohorts shows an average improvement in knowledge from 56% to 74% (pre-testing to post-testing). Overall skills confidence increased from a mean of 5 prior to the course to 8 at the completion. For Bellwether procedures, the skills confidence mean increased for each of 3 procedures (Laparotomy 5 □ 8; C-section 7 □ 9; Management of an Open Fracture 3 □ 7). Participant surveys revealed most rural doctors performing surgery had not been trained in the basics of surgical care or patient safety.

The aim of this structured practical skills-based upskilling for rural doctors is to reduce morbidity and mortality from surgery and improve clinical outcomes. Such a hands-on based curriculum like this may be required in many LMICs.

**THE DIRECT MEDICAL COST OF BREAST CANCER MANAGEMENT IN A PROVINCIAL HOSPITAL OF PAPUA NEW GUINEA: A COST OF ILLNESS STUDY OF CONSECUTIVE PATIENTS FROM 2017 TO 2022**

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**Introduction**

*Breast cancer is a major global health, gender and socioeconomic challenge. In PNG it is the leading cause of female mortality. Understanding direct medical costs related to breast cancer management can direct resource allocation and investment in breast cancer screening, treatment, infrastructure and training.*

**Methodology**

*A cost of illness study was conducted amongst patients with breast cancer at Alotau Provincial Hospital from the 12th of January 2017– 9th of August 2022. A bottom up approach of micro costing was applied to estimate the patient and hospital perspectives of direct medical costs.*

**Results**

*The total cost of breast cancer management was K1,624,656.14 (US\$471,150.28). 58.5 % (n = 38) of patients with breast cancer did not undergo any form of surgery. Hospital costs accounted for 99.7 % (K1,620,156.14, US\$469,845.28) of the total direct medical costs. The average cost per patient was K24,994.71 (US\$ 7248.47). The dollar conversion was 1 KINA = 0.29 USD.*

**Conclusion**

*Investment in screening, diagnosis and treatment is crucial in addressing the burden of breast cancer in PNG.*

**AN EPIDEMIOLOGICAL AND CLINICAL STUDY OF TRAUMATIC BRAIN INJURY IN PAPUA NEW GUINEA  
MANAGED BY GENERAL SURGEONS IN TWO PROVINCIAL HOSPITALS**

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**Introduction**

Traumatic brain injury is a global health priority. The burden is highest in the western pacific region, and it is estimated that two-thirds of patients in rural Papua New Guinea die before hospital admission. Managing traumatic brain injury is further compounded by limited investigations and neurosurgery services. The aim of this study was to investigate the potential factors of mortality amongst patients with moderate and severe head injuries.

**Methodology**

A retrospective cohort study was conducted from two provincial hospitals in Papua New Guinea. Potential factors of mortality were investigated by using logistic regression analysis. There was a significant odds of reduced mortality in patients with vomiting and headache (OR 0.16, 95% CI 0.04–0.69,  $p = 0.0132$ ), reactive pupils (OR 0.02, 95% CI 0.00–0.17,  $p = 0.0005$ ), a higher GCS (OR 0.77 for every 1 point increase in GCS, 95% CI 0.63–0.95,  $p = 0.0147$ ), and length of hospital stay (OR 0.84 per 1 day increase, 95% CI 0.72–0.98,  $p = 0.0258$ ). In contrast, mortality was increased with the use of mannitol (OR 9.17, 95% CI 1.34–62.71,  $p = 0.0239$ ), hypoxia (OR 20.91, 95% CI 4.00–109.37,  $p = 0.0003$ ), presence of complications (OR 5.25, 95% CI 1.41–19.51,  $p = 0.0133$ ), and admission to KPH compared with APH (OR 4.71, 95% CI 1.25–17.75,  $p = 0.0222$ ).

**Conclusion**

This study highlights potential factors associated with traumatic brain injury mortality in rural Papua New Guinea. The findings can help direct policy makers, assist in public health awareness, and improve surgical research, care, and management for patients with traumatic brain injury in rural Papua New Guinea.

**CONGENITAL DIAPHRAGMATIC HERNIA MANAGEMENT IN A PROVINCIAL HOSPITAL OF PAPUA NEW GUINEA: A CASE REPORT OF CHALLENGES IN A NON-NEONATAL INTENSIVE CARE SETTING**

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*Introduction*

*The outcome of babies with congenital diaphragmatic hernia has improved with advances in surgery , anesthesia and neonatal intensive care post operatively. In provincial hospitals of Papua New Guinea, the management of congenital diaphragmatic hernia is made difficult by poor diagnostic services and post-operative care.*

*Case presentation*

*We report the case of a one day old female with congenital diaphragmatic hernia (Bockdalek) that was successfully managed in a resource limited, non-neonatal intensive care setting in Alotau Provincial Hospital of Papua New Guinea.*

*Conclusion*

*Congenital diaphragmatic hernias can be successfully managed in resource limited settings. The degree of pulmonary hypoplasia, timely diagnosis and intervention and good post-operative nursing care contributes to the outcome of patients with congenital diaphragmatic hernia.*



**THE DIRECT MEDICAL COST OF ACUTE APPENDICITIS SURGERY IN A RESOURCE-LIMITED SETTING OF PAPUA NEW GUINEA**

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**Background**

*Acute appendicitis is a common surgical emergency, and challenges in access to surgery in a low middle-income country can direct cost implications.*

**Methods**

*A prospective cost of illness study was conducted at Alotau Provincial Hospital (APH) from October 14, 2019, to June 1, 2020. A bottom-up approach of microcosting was used to estimate the direct medical cost of consecutive patients with acute appendicitis undergoing surgery.*

**Results**

*The mean cost of acute appendicitis surgery for each patient was K39,517.66 (US\$11,460.12) for uncomplicated appendicitis, K45,873.99 (US\$13,303.46) for complicated appendicitis and K38,838.80 (US\$ 11,263.25) for a normal appendix. In total, the direct medical cost for acute appendicitis in this study was K4,562,625.29 (US\$ 1,323,161.33) with the majority of expenditure incurred by surgical ward expenses.*

**Conclusion**

*This study demonstrates that direct medical costs for uncomplicated appendicitis surgery in a resource-limited hospital are less expensive. As the pathology progresses, the cost also exponentially increases. Policy makers and clinicians must establish appropriate curative surgical services at secondary (NOM of acute appendicitis and laparoscopic surgery) and primary health-care levels to address acute appendicitis surgery as this can reduce costs.*

## THE DIRECT MEDICAL COST OF TRAUMA AETIOLOGIES AND INJURIES IN A RESOURCE LIMITED SETTING OF PAPUA NEW GUINEA: A PROSPECTIVE COST OF ILLNESS STUDY

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### Background

Injuries are a significant public health concern globally. Papua New Guinea has failed to achieve all eight health millennium development goals, and in doing so has not prioritized injuries in previous health policies. Understanding costs related to injuries can ultimately guide policies for surgical service delivery in achieving local, and universal health coverage objectives.

### Methods

A prospective cost of illness study was conducted at Alotau Provincial Hospital (only major referral hospital), in the Milne Bay Province of Papua New Guinea, from the 1st of June 2020 to the 21st of December 2020. A bottom up approach of micro costing was used to estimate the direct medical cost of trauma aetiologies, and injuries of patients admitted to the surgical ward at Alotau Provincial Hospital.

### Findings

The mean cost of managing traumatic injuries was K45, 900.40 (US\$13,311.12) per patient. The most common cause of injury was alcohol related injuries (n=32) with a total direct medical cost of K1, 417, 023.73 (US\$410,936.88). The most common injury was fractures (n=40) with a total direct medical cost of K1, 907, 531.88 (US\$553,184.25). The highest cost for trauma aetiologies were MVAs with a mean cost of K48, 687.40 (US\$14, 119.35) per patient. The highest cost for injuries was abdominal trauma with a mean cost K55,929.69(US\$16,219.61) per patient.

### Interpretation

Poor regulation of alcohol and road safety is associated with high surgical costs. In an era of financial instability, reducing injuries is economical in achieving health care objectives that rely heavily on adequate funding, and financing.

**SAFETY AND FEASIBILITY OF A LOW-COST LAPAROSCOPE IN A PORCINE MODEL.**

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*Introduction:* KeyScope (KS) is a low-cost laparoscope that connects to a laptop computer and is designed for low- and middle-income countries (LMICs). This study describes its safety and feasibility in a porcine model.

*Methods:* Surgeons performed three laparoscopic tasks (stapled bowel resection, intracorporeal knot tying, and cholecystectomy) in three pigs: practice, KeyScope, and standard-of-care (SOC). Vital signs, task completion time, and complications were compared using paired nonparametric tests. Surgeons completed a survey to assess feasibility and opportunities for technology improvement.

*Results:* Five surgeons completed 45 laparoscopic tasks in 15 animals. There were no significant differences in vital signs between KeyScope and SOC. There were no significant differences in median times to perform stapled bowel resection or cholecystectomy (KS 3min, SOC 3min,  $p=0.185$ ; KS 6min, SOC 8min,  $p=0.887$ ). Surgeons performed intracorporeal knot tying on SOC significantly faster than KeyScope (KS 5min, SOC 3min,  $p = 0.012$ ). All surgeons entered the gallbladder during dissection, with more liver bed injuries using the SOC compared to KeyScope ( $n=3$ , 60% vs  $n=2$ , 40%). Surgeons' willingness to use KeyScope surpassed their routine laparoscopic performance for several laparoscopic procedures. When asked to rate the performance of KeyScope versus SOC, there was a preference for KeyScope in ergonomics and degree of fogging but a preference for SOC for light intensity, distance vision, and amount of focus. They felt KeyScope and SOC performed equally in glare, tissue color, and close vision. Finally, surgeons reported a preference for the KeyScope to an open approach.

*Conclusions:* In standardized porcine studies, KeyScope performed similarly to the SOC with fewer complications, demonstrating its safety. Surgeons preferred the KeyScope for its ergonomics and lack of fogging but preferred SOC for light intensity and amount of focus. This data supports that KeyScope is a feasible tool to increase laparoscopy in LMICs.

**RISK FACTORS FOR SEVERE POSTOPERATIVE PAIN IN LAPAROSCOPIC GYNECOLOGY: ROLE OF BREATH-HOLDING DURATION**

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*Introduction. The problem of perioperative pain relief has not lost its relevance over the years. Studies have shown that patients report moderate to severe pain after surgery, even after laparoscopy. In recent years, great interest among specialists has been focused on the role of baroreflex sensitivity in the functional state of the nociceptive and antinociceptive systems. Studies have shown that a test with a maximum breath-holding during inspiration allows for a non-invasive and accurate assessment of the functional state of the cardiorespiratory system, making it possible to identify a cohort of patients with reduced baroreflex sensitivity*

*Objective. The aim of the study was to assess the relationship between the breath-holding test and postoperative pain and to develop a model for predicting pain after laparoscopic gynecological surgery.*

*Material and methods. Data from 489 patients undergoing gynecological laparoscopy at the Clinic of the Kuban State Medical University from August 2019 to September 2023 were analyzed.*

*Results. Severe postoperative pain was reported in 146 patients (29.9%). The duration of breath-holding was statistically significantly longer in patients without severe pain; Generalized Anxiety Disorder scale score, Pain Catastrophizing Scale score and duration of surgery were higher in patients with severe postoperative pain, endometriosis surgery was also the factor for severe postoperative pain (NRS 7-10). AUROC for prognostic model was 0,81.*

*Conclusion. The breath-hold test, along with other factors, may be useful in assessing the risk of severe postoperative pain after laparoscopic gynecology.*

**HEART RATE VARIABILITY OF PATIENTS WITH RESPECT TO INDUCTION OF ANESTHESIA IN GYNAECOLOGY SURGERY**

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*Introduction:*

*Heart rate variability (HRV) is a physiological phenomenon that goes beyond the heart rate to reflect the sino atrial nodes response to parasympathetic and sympathetic nervous system input. It thus describes the variations between consecutive inter-beat-intervals. It is a well-established quantitative predictor of clinical cardiac events and thus may be an indispensable tool of the anaesthetist, thus motivating our study, with the aim of analysing HRV at induction of anaesthesia With the hope of guiding choice of drugs for this purposes.*

*Methodology:*

*We carried out a prospective cross-sectional study from the November 1st, 2019 to December 31st, 2021. All stable patients presenting for elective gynaecologic surgery under general anaesthesia were included. HRV of patients was measured at rest, and in 5-minute segments during induction. Results were analysed with the aid of KUBIOS software. HRV parameters were compared with baseline resting values and presented in tabular form.*

*Results:*

*Forty-three patients were included, majority of patients being under the age of 40 years and were anaemic. There was a general decrease in HRV of patients, following intravenous induction of anaesthesia, with significant sympathetic predominance over parasympathetic input on the HRV. Analysis of HRV following introduction of anaesthetic gases in general revealed statistically significant decreases in LF, HF spectral components of HRV. Advancing age (above 40), obesity, anaemia and hypertension led to decreased HRV with varied contributions of PNS and SNS to individual effects seen.*

*Conclusion:*

*HRV decreases with induction of anaesthesia. While sympathetic predominance is seen following induction with intravenous agents, a general significant decrease is seen across the PNS and SNS with inhalation of gaseous hypnotics. Comorbidities, further decrease HRV during induction of anaesthesia.*

*Key Words: Heart rate variability, Induction, Anaesthesia, low Frequency, High Frequency*

### IMPACT OF POSTOPERATIVE CARDIOVASCULAR COMPLICATIONS ON 30-DAY MORTALITY AFTER MAJOR ABDOMINAL SURGERY: AN INTERNATIONAL PROSPECTIVE COHORT STUDY

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#### Background

Postoperative cardiovascular complications (PCC) after major surgery are a problem. This is compounded by confusion over definitions of cardiac injury or complication and variability in assessment and management of patients. This international prospective cohort study aimed to define incidence and timing of PCC and to investigate its impact on 30-day all-cause mortality.

#### Methods

A prospective, international cohort study was performed between January 23 and May 1, 2022. Data were collected on consecutive patients undergoing major abdominal surgery in 446 hospitals from 28 countries across Europe. The primary outcome was PCC as defined by Standardised Endpoints in Perioperative Medicine- Core Outcome Measures in Perioperative and Anaesthetic Care (STEP-CoMPAC) up to 30-days after surgery. The secondary outcome was 30-day postoperative mortality. Multilevel logistic regression was used to adjust for risk factors associated postoperative cardiovascular complications rates between countries. A counterfactual analysis was performed to estimate the absolute risk reduction in mortality in the absence of all PCC.

#### Results

This study included 24,203 patients, of whom 611 (2.5%) developed PCC and 458 (1.9%) died within 30-days of surgery. Of patients who died, 123 (26.9%) were related to cardiac causes. Mortality rates were higher in patients who developed PCC than those who did not (19.8% vs 1.4%,  $p<0.001$ ), which persisted after risk adjustment (HR: 4.15, 95% CI: 3.14 - 5.48;  $p<0.001$ ). We estimated a 0.4% (95%CI: 0.3 - 0.5;  $p<0.001$ ) absolute risk reduction in mortality in the absence of all PCC. This confers to a relative risk reduction in mortality by 21.1% if all PCC were prevented. Sensitivity analyses demonstrated impact of PCC to mortality were from patients with myocardial aetiology compared to AF or thromboembolic.

#### Conclusion

PCC are common and occur early after major abdominal surgery. However, 1-in-5 postoperative deaths were attributable to PCC, highlighting an important area for future randomised trials.

### CASE REPORT: PINK URINE SYNDROME

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#### *Background:*

*Propofol is a commonly used anesthetic agent due to its rapid onset of action and relatively safe therapeutic window. Propofol acts by modulating the inhibitory function of the GABA neurotransmitter. It is primarily metabolized by the liver through glucuronidation and to a smaller extent via cytochrome P450 enzymes, which are then excreted through the kidneys. As a result, Propofol has infrequently been associated with a self-limiting urine discoloration which will seem alarming for those unfamiliar with the phenomena.*

#### *Clinical case:*

*A 35-year-old obese gentleman, with no prior urological history, developed pink sedimented urine after undergoing urgent sigmoid colectomy for severe diverticulosis under general anesthesia; with Propofol given on induction. He was managed post-operatively in the intensive care unit and was kept sedated using Propofol. On day 1 postoperative, he was noted to have asymptomatic pink discoloration of his urine. Clinical examination did not reveal any abnormalities. A urinalysis showed a low urinary pH of 5.0, the absence of blood, leukocytes, or nitrate. His serum creatinine level was within normal range. Cultures of the urine were sterile and the ultrasonography of the urinary system was normal. Interestingly his urine microscopic examination revealed amorphous urate crystals and no blood cells. His serum uric acid level was high at 450umol/L. A pink sediment rapidly precipitated in the urine following centrifugation. This condition spontaneously resolved after 4 days.*

#### *Conclusion:*

*There are several hypotheses for the occurrence of pink urine with Propofol usage. Male gender, obesity, insulin resistance lowered urinary pH, and high serum uric acid were noted in all reported cases. Propofol increases uric acid excretion in the urine, meanwhile, a lowered pH encourages sedimentation. This heightened urinary excretion of uric acid crystal is usually transient and with no toxicity to the human body and unnecessary testing should be avoided.*

**A SYSTEMATIC REVIEW ON SURGICAL ANTIMICROBIAL STEWARDSHIP IN NIGERIA**

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*Introduction: Antimicrobial resistance is a global public health threat that affects both developed and developing countries. The aim of this systematic review is to evaluate the current state of antimicrobial stewardship (AMS) in Nigeria and identify areas for improvement.*

*Methods: We searched two major databases, PubMed and Google Scholar, for studies published between January 2010-December 2022 that evaluated AMS interventions in Nigeria using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Two independent reviewers screened the articles for eligibility and extracted data from the included studies.*

*Results: Our search yielded a total of 4,634 articles, of which 6 met inclusion criteria. These 6 studies evaluated various AMS interventions in Nigeria, such as active pharmacist involvement, staff education, and reliance on information technology for auditing and feedback. 3 of 6 studies showed that only about 24% of the hospitals had active AMS teams. While some interventions showed little improvements in antimicrobial use, the majority (33%) showed no effect due to poor implementation of AMS programs. Overall, the results showed insufficient evidence to support widespread implementation of specific interventions in the Nigerian context.*

*Conclusion: AMS is crucial for reducing the growing threat of antibiotic resistance globally. However, there is a sizeable gap in the existing literature detailing multifaceted AMS interventions that are both effective and reproducible with none being specific to surgery. More high-quality trials are needed in Nigeria to address the region-specific challenges associated with implementation of AMS programs.*



**EXCISION OF TAILGUT CYST BY KRASKE APPROACH**

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*Tailgut cysts or retrorectal hamartomas are benign neoplasms originating from caudal embryonic remnants, typically located in the presacral space. The vast majority are asymptomatic; however, surgical resection is the treatment of choice due to potential malignant transformations or compressive symptoms. The case involves a 30-year-old woman complaining of dysmenorrhea associated with rectal bleeding. Upon digital rectal examination, an elastic swelling of the posterior wall was identified. Despite undergoing endoscopic studies that revealed no abnormalities and strong suspicion of pelvic endometriosis with extra rectal involvement, it was necessary to rule out retrorectal cystic hamartoma.*

*A pelvic magnetic resonance imaging was performed, revealing free fluid in the Douglas pouch associated with several hyperintense hemorrhagic subfoci in the uterine body and an oblong retrorectal formation, with extra-peritoneal location, imaging-compatible with a hamartoma.*

*Surgical excision of the lesion was performed through a posterior presacral incision, using the Kraske approach. The lesion, along with the coccyx, was resected, presenting a cystic, encapsulated appearance with a vascular pedicle originating from the sacral periosteum. The histopathological study confirmed the diagnosis of a tailgut cyst. The treatment of tailgut cysts is surgical. The surgical approach adopted will vary depending on the location, extension, and size of the lesion. Opting for a posterior approach for benign lesions located in areas below S3, without involvement of the rectum, provides direct access to the presacral region and avoids the need for an abdominal approach to access the peritoneal cavity.*

**NO CHANGE IN COMPLICATIONS FOLLOWING THYROIDECTOMY DESPITE INCREASING THYROID CANCER SURGERY: A META-REGRESSION ANALYSIS**

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*"Purpose: The increase in thyroid cancer incidence inevitably led to an increase in thyroid cancer surgery. This meta-regression analysis aimed to determine if the rate of post-thyroidectomy complications changes by year.*

*Materials and methods: PubMed and Embase databases were used to perform a systematic literature search of studies published from January 1, 2005, using the keywords "thyroidectomy and complication." A meta-regression was performed for post-thyroidectomy hypocalcemia and bleeding.*

*Results: This meta-analysis included 25 studies involving 927,751 individuals. There was no significant difference through the years of publications about the proportion of post-thyroidectomy hypocalcemia and bleeding in this study (P=0.9978, 0.6393)*

*Conclusion: Although the number of thyroid surgeries has recently increased, the incidence of post-thyroidectomy hypocalcemia and bleeding did not significantly increase. "*

**COMPARISON BETWEEN GROUPS ACCORDING TO SUBTYPES IN PAPILLARY THYROID CANCER**

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*"Background: There are several subtypes of thyroid cancer, each of which is divided into aggressive and non-aggressive. In this study, we plan to study what clinical features are obtained when these subtypes and conventional type are present at the same patient.*

*Methods: From March 2009 to December 2021, we retrospectively compared 26,449 patients into five groups according to subtypes of papillary thyroid cancer (Conventional, Aggressive, Non-aggressive, Conventional + Aggressive, Conventional + Non-aggressive). We investigated patient characteristics and clinical features.*

*Results: There was a significance difference according to the subtypes of PTC. Aggressive group had more aggressive clinical features than conventional group, and also conventional group than Non-aggressive group. If each group had a conventional type together, each group's clinical features tended to be closer to the conventional type than the original group.*

*Conclusions: In the comparison between groups according to subtypes in papillary thyroid cancer, the aggressiveness of each group was intensified in the following order. ( Aggressive > Conventional + Aggressive > Conventional > Conventional + Non-aggressive > Non-aggressive )"*

**RETROSPECTIVE AUDIT OF PATIENTS UNDERGOING RADICAL CYSTECTOMY FOR BLADDER CANCER: AN ANALYSIS OF SHORT TERM MORBIDITY, MORTALITY, AND ONCOLOGIC OUTCOMES**

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*Globally, bladder cancer is the 11th most common cancer. Muscle invasive urothelial carcinoma has aggressive behavior and prognosis is poor, and if not treated it has a two-year survival lesser than 15% .Radical cystectomy (RC) with pelvic lymph node dissection and urinary diversion is the preferred treatment for non-metastatic MIBC and for some cases of high-risk NMIBC, in patients fit for major surgery.*

*Primary Objective:*

1. *To estimate the in hospital and 30 day morbidity, mortality and quality of life in patients undergoing radical cystectomy*

*Methodology:*

*Study Setting :*

*This was an ambispective study of patients undergoing radical cystectomy in Regional Cancer Centre from 1st January 2010 to 30th April 2022. The clinicopathological factors were recorded from the patient's clinical record files.*

*Result*

*Sample size: 106 , 89 males and 17 female (16.67%). Mean age : 59.35. 56.43 % were MIBC) and 13.7% were NMIBC. 55.88% had undergone Neoadjuvant chemotherapy (NACT) and in 11.7%, the cystectomy was done post CTRT. 76 were done via laparotomy and 26 laparoscopically. Mean hospital stay was 5 days. There were no intrahospital or 30 day mortality. The HPR showed 28 patients having no PCR. 88 patients were kept on followup. 27 patients had recurrence. Mean disease free survival was 23 months with mean overall survival being 13.09 months.*

*Discussion*

*Deep muscle biopsy not being done was found in 27.5% of patients and only 3 patients had undergone post TURBT chemotherapy instillation. This may be reason for the inappropriate treatment planning and resultant impairment in patient survival, which needs to be addressed to improve the quality of life and the survival.*

**COMPARATIVE ANALYSIS OF SHORT-TERM AND LONG-TERM OUTCOMES: TERTIARY CANCER CARE CENTRE EXPERIENCE WITH MCKEOWN AND IVOR LEWIS ESOPHAGECTOMY IN LOWER ESOPHAGEAL SQUAMOUS CELL CARCINOMA**

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*Aims & Objectives: The McKeown esophagectomy is a frequently employed surgical intervention for esophageal cancer, aiming for optimal lymph node clearance. In contrast, the Ivor Lewis esophagectomy is primarily conducted in cases of lower esophageal cancer. While perioperative outcomes of both procedures have been subject to comparison in existing literature, limited studies have focused on assessing survival outcomes. This study delves into the analysis of both McKeown and Ivor Lewis esophagectomies specifically in Lower Esophageal Squamous Cell Carcinoma, with a primary focus on survival outcomes.*

*Material & Methods: The surgical data were retrieved retrospectively from the computerized database of Dr BRA-IRCH, AIIMS New-Delhi institute and the patients operated on for Lower Esophageal SCC from January 2014 to December 2022, were included. Both procedures were analysed for Demographic details, perioperative outcomes, complication rate, overall survival and disease-free survival*

*Results: A total of 171 patients undergoing esophagectomy for lower esophageal SCC were studied, with 100 in the McKeown group and 71 in the Ivor Lewis group. Demographic characteristics, histopathological data, and perioperative mortality were largely comparable between the two groups. The McKeown esophagectomy group exhibited higher rates of recurrent laryngeal nerve (RLN) palsy and anastomotic leaks. The estimated five-year overall survival (OS) was 49% (95% CI 0.24-0.70) for the McKeown group and 58.3% (95% CI 0.38-0.73) for the Ivor Lewis group ( $p<0.3$ ). The estimated five-year disease-free survival (DFS) was 41% for McKeown and 63.9% for Ivor Lewis ( $p<0.58$ ). In the Ivor Lewis group, a comparison of histological subtypes revealed a significant difference in the estimated five-year OS (74% vs. 26.3%,  $p<0.05$ ) and a trend in DFS (74.5% vs. 42%,  $p=0.07$ )*

*Conclusions: The findings of this study demonstrate that the Ivor Lewis procedure is a viable and oncologically sound option for lower one-third esophageal cancer SCC in carefully selected patients, with no notable differences observed in short-term outcomes.*

**DEALING WITH GIANT INTRATHORACIC TUMORS- A CHALLENGING SURGICAL EXPERIENCE**

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**Introduction:**

*Giant intrathoracic tumors lack a clear definition, although some publications classify them as tumors with a long axis exceeding 10 cm or those covering more than 50% of the hemithorax. Dealing with these massive tumors presents significant surgical challenges, including determining the best approach for complete excision, addressing issues such as neurovascular invasion and compression of adjacent structures, managing underlying lung collapse, mediastinal shift, and hemodynamic instability. This study reviews the complexities and surgical experiences encountered during the intraoperative management of patients with sizable resectable intrathoracic masses*

**Materials and Methods:**

*09 giant intrathoracic masses operated at the department of Thoracic Surgery, Sir Ganga Ram Hospital from 2022-2024 were included in the study. The masses occupying more than half of the hemithorax with a long axis of 15 cm or larger radiologically were included and evaluated.*

**Results:**

*Average size of the tumour was 20.1cm and weight was 3.2kg, largest weighing 5.5kg. Lateral positioning resulted in hemodynamic instability in 05 patients requiring supine positioning. 04 patients with medially situated large tumours required awake intubation. Anterolateral, median sternotomy, thoracoabdominal and combined approaches were used for the excision of tumours according to their location. Tracheal (n=1), esophageal (n=1) and vascular injuries (n=1) were encountered during excision of mass. Re-expansion pulmonary edema was noted in 3 patient, managed by elective ventilation and later bipap support. Post operatively, patients received adjuvant chemo-radiotherapy according to their histology.*

**Conclusion:**

*Resection of large intrathoracic tumours requires tailor made surgical approach and anaesthetic co-ordination. Mediastinal compression during induction, hemodynamic instability during lateral positioning and vascular collaterals to the tumour are the few challenges encountered in our series. Post operatively, patients with residual lung are prone to develop re-expansion pulmonary edema which requires good supportive care.*

