

November Annual Academic Surgery Conference

5 November 2020
Virtual



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OBESITY & METABOLIC HEALTH

GYNAECOLOGY

THORACIC / LUNG HEALTH

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HERNIA

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GENERAL SURGERY



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Welcome from Chair of Academic Surgery



Professor Marc Gladman

I am delighted to welcome you to our flagship November Annual Academic Conference 2020 which for the first time, is being conducted as a virtual meeting.

Despite this, our outstanding organising committee have produced an exceptional program with a stellar panel of invited speakers who are presenting on highly relevant themes that I'm sure will inspire, engage and ignite your interest in all aspects related to academic surgery.

I should like to extend a very warm welcome to our United States colleagues, Dr Sarah Tevis from the Association of Academic Surgeons and Professor Allan Tsung from the Society of University Surgeons. Traditionally, they would have been joining us here in Australasia but I'm extremely grateful that they have tackled the time zone differences to still be able to find time in their busy schedules to join us.

In addition, we are honoured to have Professor Mark Smithers, Mayne Professor and Head of the Discipline of Surgery, Faculty of Surgery, University of Queensland deliver the prestigious Jepson Lecture this year. Professor Smithers will share his view on "Aiming to achieve potential".

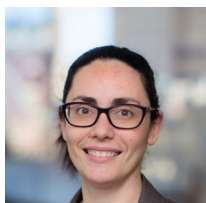
As all of us are by now familiar, 2020 has been an incredibly challenging year on so many levels. We have all been impressed by human resilience, adaptability and willingness to challenge ourselves and our familiar systems to continue to deliver "business as usual", and indeed, in many instances, improvements to our previous ways of going about our clinical and academic business. Delivering this conference has presented us with another such challenge and I would like to acknowledge Conference and Events (RACS) for working closely with, and supporting us and our invited presenters. Importantly, I would also like to acknowledge all our incredible colleagues who have agreed to participate in and / or assist with this important annual event of the Section of Academic Surgery.

We believe the program has been carefully constructed to be highly relevant to all attendees at all stages of their careers, so, once again, welcome and we really hope you enjoy the day.

Marc Gladman

Professor Marc Gladman
Chair Academic Surgery Committee

Conference Organising Committee



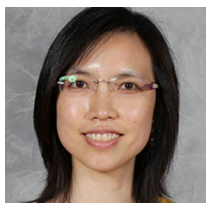
A/Professor Claudia di Bella



A/Professor Payal Mukherjee



Mr James Lee



A/Professor Cherry Koh

Welcome to the Section of Academic Surgery Conference

We have carefully curated a program delving into the pertinent topics of Global Surgery and Equity of Care and then focusing on Training Surgeons for the Future that are highly relevant given the current pandemic and our need to alter and adapt to the evolving situation.

We have a well balanced mix of presentations and panel sessions aimed at engaging attendees at all stages of their career.

We are delighted to host from the United States, Dr Sarah Tevis from the Association of Academic Surgeons and Professor Allan Tsung from the Society of University Surgeons.

We look forward to Dr Tevis' presentation on 'Opioid Overprescription in Breast Surgery', which was the highest scored presentation at the Annual Academic Surgical Congress and Professor Tsung's inspirational presentation on 'Maintaining the Passion'.

A/Professor Claudia di Bella
On behalf of the Section of Academic Surgery Organising Committee

Join the conversation



#SAS2020

Time Zone Conversion Table - Morning Sessions

The November Annual Academic Surgery Conference has been planned according to **Australian Eastern Daylight Time** (Sydney/Melbourne). The following table may help you to plan session times if you are in another State or Country for the Section of Academic Surgery Morning Sessions.

Time Zone		Session 1	Session 2	Session 3	Session 4	Lunch
New Zealand	(NZDT)	11:00am	12:05pm	1:05pm	1:45pm	2:40pm
Australia	Australian Commonwealth Territory / New South Wales / Tasmania / Victoria (AEDT)	9:00am	10:05am	11:05am	11:45am	12:40pm
	South Australia (ACDT)	8:30am	9:35am	10:35am	11:15am	12:10pm
	Queensland (AEST)	8:00am	9:05am	10:05am	10:45am	11:40am
	Northern Territory (ACST)	7:30am	8:35am	9:35am	10:15am	11:10am
	Western Australia (AWST)	6:00am	7:05am	8:05am	8:45am	9:40am
4 November 2020				5 November 2020		
United Kingdom	(GMT)	10:00pm	11:05pm	12:05am	12:45am	1:40am
4 November 2020		Session 1	Session 2	Session 3	Session 4	Lunch
United States	Eastern (EST)	5:00pm	6:05pm	7:05pm	7:45pm	8:40pm
	Central (CST)	4:00pm	5:05pm	6:05pm	6:45pm	7:40pm
	Mountain (MST)	3:00pm	4:05pm	5:05pm	5:45pm	6:40pm
	Pacific (PST)	2:00pm	3:05pm	4:05pm	4:45pm	5:40pm
	Alaska (AKST)	1:00pm	2:05pm	3:05pm	3:45pm	4:40pm
	Hawaii (HST)	12:00pm	1:05pm	2:05pm	2:45pm	3:40pm

Program

Thursday
5 November 2020

Morning Session

Section of
Academic Surgery

8:45AM	WEBLINK ACTIVE
9:00AM	SESSION 1: WELCOME & CLINICAL TRIALS
9:00am	Welcome by Chair of Academic Surgery Committee Professor Marc Gladman
9:02am	Welcome by Organising Committee A/Professor Claudia di Bella, A/Professor Payal Mukherjee, A/Professor Cherry Koh, and Mr James Lee
9:05am	Clinical Trials Network Australia and New Zealand (CTANZ) Update Professor David Watson
9:25am	Introduction of Invited Speaker Dr Sarah Tevis - AAS Best Abstract Winner Professor Marc Gladman
9:30am	Opioid Overprescription in Breast Surgery Dr Sarah Tevis
9:50am	Questions and Discussion
10:00AM	SHORT BREAK
10:05AM	SESSION 2: GLOBAL SURGERY AND EQUITY OF CARE Scientific Moderators: Payal Mukherjee & Cherry Koh
10:06am	Surgeons and Climate Change. What can we do? Dr Roger Harris
10:21am	Panel Session Dr Sarah Tevis Professor Allan Tsung Dr Jean-Frederic Levesque Dr Bridget Clancy
10:55AM	MORNING TEA

Program

Thursday
5 November 2020

Morning Session

Section of
Academic Surgery

11:05AM	SESSION 3: KEYNOTE SESSION
11:05am	Introduction of Invited Speaker Professor Allan Tsung - SUS Invited Guest A/Professor Greg O'Grady
11:07am	KEYNOTE SPEAKER: SOCIETY OF UNVIERSITY OF SURGEONS Maintaining the Passion Professor Allan Tsung
11:34am	Questions and Discussion
11:39am	Thanks and Acknowledgement Professor Marc Gladman
11:40AM	SHORT BREAK
11:45AM	SESSION 4: TRAINING SURGEONS - ARE WE FUTURE READY? Scientific Moderators: James Lee & Matthew Read
11:46am	App-Based Feedback and Digital Platform: What does it mean for Trainees and Trainers and How to do it properly Dr Jonathan Hong
11:57am	Competency Based Program, Flexible Hours and Part Time Training: Reasons behind the change and expectations Professor Ian Incoll
12:08pm	The Role of Simulation in Training: Are we there yet? A/Professor David Storey
12:19pm	How Training can be modelled in the era of robotics A/Professor Claudia di Bella
12:29pm	Panel Discussion Dr Jonathan Hong Professor Ian Incoll A/Professor David Storey A/Professor Claudia di Bella
12:40PM	LUNCH BREAK

Sponsor

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Association of Academic Surgery



Dr Sarah Tevis

University of Colorado

Dr. Sarah Tevis is an Assistant Professor of Surgery at the University of Colorado. She completed her General Surgery Residency at the University of Wisconsin and Breast Surgical Oncology Fellowship at MD Anderson Cancer Center.

Dr. Tevis' research interests include evaluating patient reported outcomes, processes of care and multi-modal analgesia in breast cancer patients. She also is dedicated to quality improvement and patient safety and hopes to advance breast cancer care through clinical research and continuous process improvement. She has written more than 50 original peer reviewed articles and book chapters on these topics. She enjoys mentoring medical students and residents in research and quality improvement work and recently developed a Medical Student Summer Research Program in the Department of Surgery.

Outside of work, she enjoys all that Colorado has to offer – snowboarding, hiking, and camping – with her husband, 7 year old son (Will), 2 year old daughter (Sam), and almost 1 year old daughter (Olivia).

Abstract

Overprescription in Breast Cancer

Dr Sarah Tevis

Abuse of opioids is a problem worldwide with the United States leading the world in deaths due to opioid use disorders at 13.3 per 100,000. Drug overdoses have been increasing since 1990 and have increased by 18% during the current pandemic. Surgeons play a role in the opioid epidemic as prescribers of opioids in the perioperative period and have a unique opportunity to decrease opioids in the community available for diversion.

We evaluated prescribing practices at our institution for 14 common general surgery procedures compared to the Opioid Prescribing Engagement Network (OPEN) guidelines. We found that prescribing in concordance with OPEN guidelines was variable across procedures and for the majority of procedures we are prescribing in excess of OPEN guidelines. A survey of resident and faculty perceptions about prescribing practices demonstrated that faculty prescription preferences were more often concordant with OPEN guidelines than residents (11 of 14 procedures). Residents rated type of surgery, amount of opioid used during inpatient stay, personal standard opioid prescribing habits, and attending preference as the top 4 influences in making decisions about prescribing narcotics at discharge. Residents report knowledge gaps in opioid conversions, pharmacokinetics, and proper opioid disposal and 84% of residents feel that formal education about opioids would be helpful.

In order for surgeons to reduce overprescription, increased awareness and education is needed. In addition, standardization of care and direct feedback to prescribers may decrease the number of opioid pills in the community that could be diverted.

Society of University Surgeons



Professor Allan Tsung

Ohio State University

Allan Tsung, MD is a Professor and Chief of the Division of Surgical Oncology at The Ohio State University Comprehensive Cancer Center – Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (OSUCCC – James) and the Ohio State University College of Medicine.

Dr. Tsung's clinical interests center on evaluating and managing patients with liver, bile duct and pancreas cancers, with expertise in laparoscopic and robotic surgery. He has a research laboratory focused on the hypothesis that inflammatory responses can alter the local microenvironment, leading to cancer progression via tumor cell survival, expansion and metastases. His research also evaluates the contribution of molecular markers in the diagnosis and clinical management of patients with hepatobiliary and pancreas cancers and projects focusing on improving the access, delivery and quality of surgical oncology care.

Dr. Tsung's work has generated 200+ published peer-reviewed manuscripts in leading scientific journals and culminated in multiple principal investigator NIH R01 grants and many society and institutional grants. His long-term goal is to continue bringing bench side research breakthroughs to bedside clinical therapies. As an advocate for medical students, general surgery residents and surgical oncology fellows, Dr. Tsung is the Program Director for the complex general surgical oncology fellowship at Ohio state and previously served as Vice Chair of Research for the Department of Surgery at University of Pittsburgh Medical Center. He is past President of the Society of University Surgeons and participates in leadership roles in several other important academic surgical organizations, such as the Society of Surgical Oncology, the Society of Asian Academic Surgeons, the Americas Hepato-Pancreato-Biliary Association and the American Association for the Study of Liver Diseases.

Abstract

Maintaining the Passion

Professor Allan Tsung

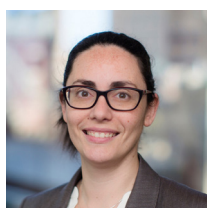
Is having passion enough to maintain one's drive to advance the science of medicine and to pass the torch of knowledge to the next generation of physicians? At the conclusion of this session, participants will be able to identify qualities that have motivated me to pursue academic surgery.

Invited Speakers



DR BRIDGET CLANCY

Dr Bridget Clancy is an ENT, Head and Neck Surgeon with more than 16 years' experience in practice in rural Victoria. She is a member of The Australian Society of Otolaryngology and Head and Neck Surgeons, The Australian Medical Association, Business and Professional Women Australia and is a member and graduate of the Australian Institute of Company Directors. She chairs clinical governance and medical advisory committees, is Chair of the Royal Australasian College of Surgeons Rural Surgery Section and Diversity and Inclusion Advisor to the Australian Society of Otolaryngology, Head and Neck Surgeons Federal Council. Her interests include rural health equity, governance, policy and communication. Dr Clancy was a 2019 Telstra Business Womens Award finalist for digital innovation. With Shireen Kumar, she published a systematic review in the Journal of Public Health 2020, Retention of Rural Physicians and Surgeons in Rural Areas: What Works?



A/PROFESSOR CLAUDIA DI BELLA

A/Professor Claudia Di Bella is an academic orthopaedic surgeon with a specific interest in advanced technologies for musculoskeletal regeneration.

A/Professor Di Bella is the leader of the Cartilage Regeneration Program of Research at the University of Melbourne (Australia), focused on the use of advanced 3D printing technologies, including surgical 3D bioprinting, robotics and stem cells for musculoskeletal regeneration.

A/Professor Di Bella was the recipient of the 2017 Royal Australasian College of Surgeons Senior Lecturer Fellowship and the 2020 NHMRC-MRFF Emerging Leadership Investigator Grant (EL1). A/Professor Di Bella has led her team to successfully secure more than 20 national peer reviewed grants, reinforced and strengthened national and international collaboration with key players in the field, and strongly contributed to the advances of the Biofab3D, the first Australian biofabrication hub embedded in the hospital setting. The successes of A/Professor Di Bella's team have been also recognised internationally (2018 World congress of Cartilage Regeneration: winner of the Award for the most innovative work in orthoregeneration) and nationally (Finalist at the prestigious NSW Eureka prize for Excellence in Interdisciplinary Scientific Research and winner of the Veski Innovator of the Year 2018 with her "team Biopen"), and showcased by national media such as ABC news, Channel 10 "The Project" and National Geographic.

A/Professor Di Bella is Vice Chair in the Board of Directors of the Australian Orthopaedic Association Research Foundation, faculty member of the Academic Section of the Royal Australasian College of Surgeons and Chair of their annual conference.

A/Professor Di Bella is very passionate about gender equality in STEM-M, she is a mentor in the academic surgery program of the University of Melbourne as well as a mentor for women in medicine and women in surgery nationally.



PROFESSOR MARC GLADMAN

Professor Marc Gladman is a Surgeon Scientist specialising in the care of patients with pelvic floor and functional lower gastrointestinal disorders. He received his degree in Medicine from King's College in the UK and was awarded a PhD by the University of London prior to completing a NIHR lectureship.

He is a highly accomplished researcher and medical educator with research interests focusing on the understanding of bowel structure and function in health and disease and the application of such knowledge to improve patient care and teaching interests focusing on technology-enhanced learning and personalised education. Professor Gladman is a member of the Academy of Surgical Educators and the University of Adelaide Education Academy and has authored 10 textbooks, including the highly acclaimed "Examination Surgery: A Guide to Passing the FRACS in General Surgery" and "Clinical Cases and OSCEs in Surgery", which has won recognition at international book awards.

He is the Chair of the Section of Academic Surgery and Academic Surgical Committee of RACS and a member of the AMC Specialist Education Accreditation Committee, an Advisory member of the Australian Australasian Students' Surgical Association and a member of the PICO Advisory Sub-Committee of the Medical Services Committee of the Department of Health.



DR ROGER HARRIS

Dr Roger Harris is a senior staff specialist in the Intensive Care unit at Royal North Shore Hospital and The Sydney Adventist Hospital. He is dual trained in Emergency Medicine (FACEM) and Intensive Care (FCICM). He is also a lecturer in Medicine at USyd.

Dr Harris has a passion for innovative medical education and is the founder of a large global healthcare community focussed on action to mitigate against and adapt for the #ClimateEmergency. This crisis threatens our patients and our families.

He also sits on the board of two health promotion charitable foundations: The Northcare Foundation and The Critical Care Education Trust, both registered Australian Charities.



DR JONATHAN HONG

Dr Jonathan Hong is a colorectal surgeon in Sydney. He is a dedicated trainer and is the supervisor of General Surgery training at his institution and the Deputy Director of Surgical Education at the Institute of Academic Surgery at RPA. He is developing expertise in surgical education and is currently undertaking the Master of Surgical Education. He was recently awarded the NSW Merit award and Medal for leadership in surgical education by the RACS NSW State Committee.

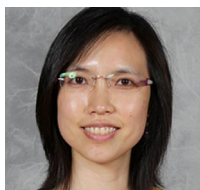


PROFESSOR IAN INCOLL

Professor Ian Incoll is an Australian clinician educator and Orthopaedic Surgeon. He is a Past President and Dean of Education of the Australian Orthopaedic Association. He was the lead developer for AOA 21, the innovative and contemporary redesign of Orthopaedic Surgical Training in Australia.

Dr Incoll is a Conjoint Professor in the Faculty of Health and Medicine at the University of Newcastle, Australia, and a subject coordinator for the Graduate Programs in Surgical Education at RACS and University of Melbourne, Australia. He is the District Clinical Director of Surgery and National Surgical Quality Improvement Program (NSQIP) Surgeon Champion at the Central Coast Local Health District in NSW. He is a Director and instructor for RACS Training in Professional Skills (TIPS) Course and an instructor for RACS Operating with Respect Course.

Professor Incoll has delivered international presentations and published on diversity and competency-based surgical training.



A/PROFESSOR CHERRY KOH

A/Professor Cherry Koh is a Colorectal Surgeon who works at Royal Prince Alfred Hospital in Sydney. Dr Koh underwent post-fellowship training at RPA in Sydney and the John Radcliffe Hospital in Oxford in the United Kingdom. A/Professor Koh has broad clinical and academic interests. Clinically, she is a peritoneal malignancy surgeon and has interests in pelvic exenteration, minimally invasive colorectal surgery, intestinal failure and pelvic floor conditions. Academically, her research focus has been on surgical outcomes, quality of and cost-effectiveness.



MR JAMES LEE

Mr James Lee is an academic endocrine surgeon at The Alfred and Monash Health in Melbourne. His research interest is in the development of biomarkers for precision medicine in thyroid cancer care. Mr Lee received the Doctor of Philosophy from the University of Sydney for his thesis on the miRNA biomarkers of papillary thyroid cancer. He is a former holder of the RACS Foundation for Surgery Senior Lecturer Fellowship. His current research is funded by The Aftershock, IMPACT Philanthropy and Epworth Research Institute Development Grant.

Mr Lee is also passionate about research training for the next generation of surgeons. He is the director of the Monash University short course Surgical Research Essentials (SuRE). With this course, James hopes to provide medical student, residents and surgical trainees the foundation skills needed to kick start their research endeavours. Since 2019, Mr Lee has been on the RACS Court of Examiners for General Surgery. Mr Lee serves on the executive committee

of the ANZ Endocrine Surgeons as the Community Outreach Officer, and the steering committee of the ANZ Thyroid Cancer Registry. He is the convener of the Endocrine Surgery Section of the RACS ASC in 2021.



DR JEAN-FRÉDÉRIC LEVESQUE

Dr Jean-Frédéric Levesque joined the NSW Agency for Clinical Innovation as Chief Executive in June 2017. He was previously Chief Executive of the Bureau of Health Information for four years.

Dr Levesque brings to the ACI leadership in healthcare system analysis and improvement, combining experience in clinical practice in refugee health and tropical medicine, in clinical governance and in academic research. He is a member of the Strategic Analytic Advisory Committee of the Canadian Institute of Health Information and a Fellow of the Royal College of Physicians of Canada in Preventive Medicine and Public Health. He has held senior positions responsible for publicly reporting information about the Canadian health system at the Institut National de Santé Publique du Québec and the Commissaire à la santé et au bien-être du Québec.

Dr Levesque has a Doctorate in Public Health, a Masters in Community Health and a medical degree from the Université de Montréal, Canada. He is a Conjoint Professor at the Centre for Primary Health Care and Equity of the University of New South Wales. His research focuses on how different models of care impact on patient outcomes and experiences of care. In 2011-12, he was a Visiting Academic at the University of Melbourne.



A/PROFESSOR PAYAL MUKHERJEE

A/Professor Payal Mukherjee is an Adult and Paediatric ENT Surgeon subspecialising in hearing and balance disorders. She is the Chair for the RACS NSW State committee, the ENT Research Lead of the RPA Institute of Academic Surgery, and also a committee member of the RACS, Section of Academic Surgery. She is a translational researcher with a passion for surgical innovation with her PhD on the translation of personalised medicine and 3D technologies in Otolaryngology. She also has a great interest in advocating for surgical research, building respect in surgery and gender equity in surgery and academia.



A/PROFESSOR GREG O'GRADY

A/Professor O'Grady is a Surgeon Scientist with research expertise in medical devices and translational physiology. He founded and directs the Surgical Engineering Laboratory where his team develop novel technologies for unmet needs in surgery, and has co-founded three University spin-out companies. His work is supported by the RACS, NZ Health Research Council, and the NZ MedTech CoRE, and has achieved numerous publications and patents.



A/PROFESSOR DAVID STOREY

Clinical A/Professor David Storey trained at Royal Prince Alfred Hospital and University College Hospital, London. He was a Visiting Surgeon in HPB / Upper GI Surgery at RPAH from 1981 and Head of Department from 2007 to 2012. He has been the Chair, NSW Regional Committee, RACS and member of the Court of Examiners in General Surgery. His interests and publications have included oesophagogastric cancer, endoscopic control of haemorrhage, surgical nutrition and surgical training. He is currently the Director of Training, Sydney South West Surgical Skills Network and Director of Surgical Education, Royal Prince Alfred Institute of Academic Surgery. At the RPA IAS he has established the David Storey Surgical Skills and Simulation Centre and has developed new models for training using a combination of 3D printing and meshed silicone that offer significant advantages over traditional models based upon animal or cadaveric tissue.



PROFESSOR DAVID WATSON

Professor Watson is Professor and Head of Surgery at Flinders University, and an Oesophagogastric Surgeon at Flinders Medical Centre in Adelaide. His interests include gastroesophageal reflux, and oesophagogastric cancer. He leads clinical and laboratory research addressing benign and malignant esophageal disease, integrating laboratory, clinical and population research streams. He has published more than 400 papers and book chapters, led the development of Australian national guidelines for the management of oesophageal and gastric cancer, and contributed to national guidelines for the management of Barrett's oesophagus.

Professor Watson led the establishment of the Australia and New Zealand Gastric and Oesophageal Surgery Association (ANZGOSA) as its foundation President from 2006-10. He has served on Council for the Australian Academy of Health and Medical Sciences (AAHMS). He currently serves as President for the International Society for Diseases of the Esophagus (ISDE), and a Board member for Cancer Council South Australia. In 2018 he was appointed Clinical Director for the Clinical Trials Network Australia and New Zealand (CTANZ), an initiative of the Royal Australasian College of Surgeons to enhance surgical research capacity by supporting trainee led multicenter clinical trials.

Professor Watson has been a recipient of the John Mitchell Crouch Fellowship from the RACS, a James IV Travelling Fellowship, Honorary Fellowship of the Royal College of Surgeons of Edinburgh, election to Fellowship of the Australian Academy of Health and Medical Sciences, and appointment to a Matthew Flinders Distinguished Professorship at Flinders University.

Notes:

Welcome from Chair of Surgical Research Society of Australasia



A/Professor Greg O'Grady

It is my pleasure to welcome you to our Annual Surgical Research Society of Australasia Conference 2020, our premier forum to learn about the cutting-edge, high quality research, being conducted by our trainees, scholarship recipients and Fellows.

This meeting provides a wonderful and unique opportunity to interact via our conference virtual platform with leading researchers and academics from Australia and New Zealand.

Once again, we have had an overwhelming response following our call for abstract submissions. This year our capacity to showcase excellent research had to be reduced due to the half day format. However, in addition to the usual oral presentations, we have invited poster presentations to allow worthy researchers an opportunity to showcase their work.

We are privileged to have Professor Mark Smithers, Mayne Professor and Head of the Discipline of Surgery, University of Queensland, deliver this year's Jepson Lecture. With an interest in oesophageal cancer and melanoma, Professor Smithers is a Lead Clinician on the Queensland Melanoma Collaborative and involved with the International Society for Diseases of the Esophagus and International Gastric Cancer Association.

Professor Smithers is the immediate past Chair of the Section of Academic Surgery, Royal Australasian College of Surgeons who continues to take an interest in the Section's activities.

I look forward to interacting with you and hearing the great presentations during our virtual Conference.

A handwritten signature in black ink that reads "Gregory O'Grady". The signature is written in a cursive, flowing style.

A/Professor Greg O'Grady
Chair Surgical Research Society of Australasia

Jepson Lecture



Professor Mark Smithers

AM, MBBS, FRACS, FRCSEng, FRCSEd

Professor Mark Smithers is the Director of the Upper GI and Soft Tissue Surgical unit, Princess Alexandra Hospital and he is the Mayne Professor and Head of the Discipline of Surgery, Faculty of Medicine, University of Queensland. He is the past Chair of the Section of Academic Surgery, Royal Australasian College of Surgeons and he is the Chairman of the Queensland Melanoma Project and the Lead Clinician of the Queensland Melanoma Collaborative.

He is involved in committees for the International Society for Diseases of the Esophagus and on the executive of the International Gastric Cancer Association.

His clinical and research interests relate to the epidemiology and management of melanoma and oesophago-gastric cancer. He has been a co-investigator on a number of grants related to these interests (NIH, USA, NH&MRC, Cancer Australia) and a principal surgical investigator in a number of Phase I, II and III trials relating to the loco-regional treatment of cutaneous melanoma and role of neoadjuvant therapy for esophago-gastric cancer. He has published extensively.

Abstract

Aiming to Achieve Potential - One Surgeon's View

Professor Mark Smithers

Although I consider I could have done things differently and achieved more, in hindsight, I feel satisfied with my career path, working as a busy academic surgeon. In my opinion reaching ones full potential is not just about being recognised as a good technical surgeon. This presentation will use one surgeon's career path, outlining pathways for clinically based research. Being the active clinician has been a research enabler for scientists in diverse areas such cellular biology, epidemiology, and participation in National and International clinical trials. There are many aspects to one reaching "full potential". The major theme of this presentation is the impact from collaboration.

Prizes and Awards

The Surgical Research Society of Australasia conference has multiple prizes and awards available to those who present.

To be eligible for awards, candidates must be present for the full afternoon session and during the Awards and Prizes presentation at 4:40pm - 4:55pm.

These are:

Young Investigator Award:

One AUD\$4,000 prize is awarded to a presenter 40 years or younger. The Young Investigator Award funds the attendance and presentation at the Academic Surgical Congress (ASC) in the USA in 2022.

DCAS Award:

One AUD\$3,000 prize is awarded to a presenter who is a SET Trainee, Pre-vocational Doctor or Medical Student. The DCAS Award funds attendance at the Developing a Career and Skills in Academic Surgery Course at the Annual Scientific Congress in May 2021.

Travel Grant:

Four prizes (AUD\$750 each) are awarded to presenters who must be a SET Trainee, Pre-vocational Doctor or Medical Student. Each Travel Grant funds expenses towards travel, accommodation and conference/course registration.

Responsibilities for winners:

All award and prize winners are to submit a one-page report to the Academic Surgery Committee within 12 months detailing their learnings, and any resulting collaborations and/or publications/presentations.

Time Zone Conversion Table - Afternoon Sessions

The November Annual Academic Surgery Conference has been planned according to **Australian Eastern Daylight Time** (Sydney/Melbourne). The following table may help you to plan session times if you are in another State or Country for the Surgical Research Society of Australasia Afternoon Sessions.

Time Zone		Session 5	Session 6	Session 7	Session 8	End of Conference
New Zealand	(NZDT)	3:00pm	3:30pm	5:20pm	6:40pm	7:05pm
Australia	Australian Commonwealth Territory / New South Wales / Tasmania / Victoria (AEDT)	1:00pm	1:30pm	3:20pm	4:40pm	5:05pm
	South Australia (ACDT)	12:30pm	1:00pm	2:50pm	4:10pm	4:35pm
	Queensland (AEST)	12:00 noon	12:30pm	2:20pm	3:40pm	4:05pm
	Northern Territory (ACST)	11:30am	12:00 noon	1:50pm	3:10pm	3:35pm
	Western Australia (AWST)	10:00am	10:30am	12:20pm	1:40pm	2:05pm
5 November 2020						
United Kingdom	(GMT)	2:00am	2:30am	4:20am	5:40am	6:05am
4 November 2020						
4 November 2020		Session 5	Session 6	Session 7	Session 8	End of Conference
United States	Eastern (EST)	9:00pm	9:30pm	11:20pm	12:40am	1:05am
	Central (CST)	8:00pm	8:30pm	10:20pm	11:40pm	12:05am
	Mountain (MST)	7:00pm	7:30pm	9:20pm	10:40pm	11:05pm
	Pacific (PST)	6:00pm	6:30pm	8:20pm	9:40pm	10:05pm
	Alaska (AKST)	5:00pm	5:30pm	7:20pm	8:40pm	9:05pm
	Hawaii (HST)	4:00pm	4:30pm	6:20pm	7:40pm	8:05pm

Program

Thursday
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Afternoon Session

Surgical Research
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12:45PM	WEBLINK ACTIVE
13:00PM	SESSION 5: WELCOME & JEPSON LECTURER
13:00pm	Introduction of Jepson Lecturer A/Professor Greg O'Grady
13:05pm	JEPSON LECTURE Aiming to achieve potential - One surgeon's view Professor Mark Smithers
13:20pm	Questions and Discussion
13:25PM	SHORT BREAK
13:30PM	SESSION 6A: ORAL PRESENTATIONS
13:31pm	STIMulant and osmotic LAXatives to improve recovery of gastrointestinal function after colorectal surgery: the STIMULAX randomised controlled trial Nagendra Dudi-Venkata
13:42pm	Serum microRNA is a prognostic and post-operative monitoring biomarker in glioma Jordan Jones
13:53pm	RASi attenuates tumour growth in the regenerating liver and enhances populations of activated hepatic TRM tumour infiltrating T cells Georgina Riddiough
14:04pm	Safer, better bang for buck: improved efficiency and safety of prostate biopsy for prostate cancer diagnosis using MRI and transperineal biopsy method Arsalan Tariq
14:15pm	Risk of airway fire with use of KTP laser and high flow humidified oxygen delivery in a laryngeal surgery model Lucy Huang
14:26pm	The functional role of colonic motility in gas transit characterised by high-resolution impedance manometry Paul Heitmann
14:37pm	Predicting key outcomes in diabetic foot disease: a prospective observational study Guilherme Pena
14:48pm	Is the phone mightier than the hand: follow-up in the age of COVID19, a retrospective analysis of hernia repair outcomes at The Canberra Hospital Christopher Sean
14:59pm	Scope of outcomes from a quality improvement program in extended VTE prophylaxis - impacts on practice, health and cost Negin Sedaghat
15:10PM	AFTERNOON TEA

Program

Thursday
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Afternoon Session

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13:30PM	SESSION 6B: ORAL PRESENTATIONS
13:31pm	Randomised-controlled trial testing the efficacy of telmisartan to slow growth of small abdominal aortic aneurysms Jonathan Golledge
13:42pm	Mortality following postoperative pulmonary complications with and without SARS-CoV-2 infection: a comparative analysis of pre-COVID and COVID cohorts Kyle Raubenheimer
13:53pm	Modelling Human Stomach Development: Self-Organising 'Mini-Stomachs' in Floating Hydrogel Culture Brendan Jones
14:04pm	RURAL Study: Rural & Urban Risks of Appendicitis complications Comparison of anatomic severity of acute appendicitis in rural and urban paediatric patients: a multicentre, prospective cohort study Brodie Elliot
14:15pm	Putting 3D printing into the reality of surgery: an approach for regenerating joint cartilage within the body using one-step surgery Claudia di Bella
14:26pm	Impact of donor risk index on the outcome of liver transplantation of urgently listed patients in Australia and New Zealand Eunice Lee
14:37pm	Characterisation of Sympathetic Inputs to the Myenteric Plexus of the Human Colon Dominic Parker
14:48pm	A randomised, sham-controlled feasibility trial of patient-administered TENS for post-operative pain control after laparoscopic cholecystectomy William Xu
14:59pm	The pathogenesis of tonsillar hyperplasia in children Sita Tarini Clark
15:10PM	AFTERNOON TEA

Program

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Afternoon Session

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15:20PM	SESSION 7A: QUICK SHOT PRESENTATIONS
15:21pm	A Systematic Review and Network Meta-Analysis Comparing Treatments for Grade 1, 2 and 3 Hemorrhoids James Jin
15:27pm	Dynamic facial reanimation using active implantable prosthesis: restoring blink Shaheen Hasmat
15:33pm	Development of an integrated facial assessment tool Dulan Gunawardena
15:39pm	The effect of National public health interventions for COVID-19 on emergency general surgery in Northland, New Zealand Matthew McGuiness
15:45pm	Evaluation of anorectal physiology via a novel high-resolution electromyography probe and trans-sacral magnetic stimulation Chris Varghese
15:51pm	Can the ACS NSQIP risk calculator predict the risks of Colorectal Cancer surgery in an Australian Tertiary Hospital? – single-centre study at FMC Rahul Malhotra
15:57pm	Ultrasound Screening of Abdominal Aortic Aneurysm by Junior Medical Officers in Australian Rural Hospital Setting: A Pilot Study Vincent Wang Hon Chow
16:03pm	Monitoring Patient Recovery in the COVID Era Ben Harrison
16:09pm	Aneurysmal subarachnoid haemorrhage and the glycaemic stress response Mitchell Pryce
16:15pm	Readmissions after ileostomy formation: a retrospective analysis from a New Zealand tertiary centre Chen Liu
16:21pm	Risk factors for readmission with dehydration after ileostomy formation: a systematic review and meta-analysis Chen Liu
16:30PM	SHORT BREAK

Program

Thursday
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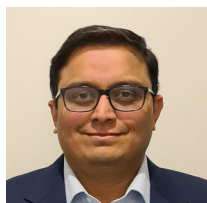
Afternoon Session

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15:20PM	SESSION 7B: QUICK SHOT PRESENTATIONS
15:21pm	Predicting response to neoadjuvant therapy in oesophageal adenocarcinoma Matthew Read
15:27pm	Comparing laparoscopic kidney transplantation versus robotic-assisted kidney transplantation using a porcine model Dylan Barnett
15:33pm	Timing of perioperative chemical thromboprophylaxis across general surgery: variations in practice and its clinical implications David Liu
15:39pm	Improved prostate cancer detection and prediction of outcomes using 68Ga PSMA PET/CT: towards non-invasive precision medicine Arsalan Tariq
15:45pm	Accuracy of Virtually Planned Mandibular and Maxillary Reconstruction Manraj Johal
15:51pm	Evaluating the influence of a general surgery rotation and the training factors impacting on medical students' interest in a surgical career Michael Wu
15:57pm	What is the accuracy of the ACS-NSQIP Surgical Risk Calculator in Emergency Surgery? A Meta-Analysis Cameron Parkin
16:03pm	Predictors of Postoperative Pain Following Rotator Cuff Repair Taif Rizvi
16:09pm	COVIDCare: A national survey of Australian surgical trainees assessing the broad impacts of the COVID-19 pandemic Georgina Riddiough
16:15pm	Concurrent focal therapy and lymphadenectomy in prostate cancer: A risk-adapted approach in men with higher-risk prostate cancer Akbar Ashrafi
16:30PM	SHORT BREAK
16:40PM	AWARDS AND PRIZES PRESENTATION
16:55PM	Closing Remarks A/Professor Greg O'Grady Professor Marc Gladman

Oral Presentation Abstracts:

Session 6A



STIMULANT AND OSMOTIC LAXATIVES TO IMPROVE RECOVERY OF GASTROINTESTINAL FUNCTION AFTER COLORECTAL SURGERY: THE STIMULAX RANDOMISED CONTROLLED TRIAL NAGENDRA DUDI-VENKATA

NAGENDRA DUDI-VENKATA (1, 2), HIDDE KROON (1, 2), SERGEI BEDRIKOVETSKI (2), MARK LEWIS (1), MATTHEW LAWRENCE (1), RONALD HUNTER (1), JAMES MOORE (1, 2), MICHELLE THOMAS (1, 2), TARIK SAMMOUR (1, 2)

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Introduction: Recovery of gastrointestinal (GI) function is often delayed after colorectal surgery. Enhanced recovery protocols (ERPs) recommend routine laxative use, but evidence for benefit is unclear. This study aimed to investigate whether the addition of multi-modal laxatives to our current ERP improves the return of GI function in patients undergoing colorectal surgery.

Methods: This is a single centre, open-label, randomized controlled trial. The intervention (STIMULAX) group received daily Coloxyl Senna + Movicol + Fleet enema from day 0 until bowel action or discharge. The control group received standard ERP postoperative care. The primary outcome was GI-2 (a validated composite measure of tolerance of solid diet and passage of stool). Secondary outcomes were the incidence of prolonged postoperative ileus (PPOI), length of stay (LOS) and postoperative complications. Statistical analysis was blinded to study allocation.

Results: Of a total of 170 participants, 85 were randomized to each group (STIMULAX and Control). Baseline

characteristics were evenly matched. Median GI-2 was a day shorter in the STIMULAX compared to the control group (2 vs 3 days, $P = 0.029$). Incidence of PPOI was reduced in the STIMULAX compared to the control group (22.4% vs 37.6%, $p = 0.030$). There was no difference in 30-day postoperative complications, including anastomotic leak rate between STIMULAX and control group (5.6% vs 6.5%, $p = 0.99$) respectively. Overall, there was no difference in the length of stay for participants in both groups.

Conclusion: Routine postoperative laxatives use after elective colorectal surgery results in earlier recovery of gastrointestinal function.



SERUM MICRORNA IS A PROGNOSTIC AND POST-OPERATIVE MONITORING BIOMARKER IN GLIOMA

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Introduction: Although magnetic resonance imaging (MRI) provides accurate anatomical and spatial details regarding gliomas, it is not reliable at predicting biological behaviour and is confounded by problems such as pseudo-progression. A circulating biomarker has potential to improve predictions of glioma outcomes and identify tumor progression post treatment, however no such biomarker is currently available. We aimed to discover a microRNA (miRNA) serum biomarker for longitudinal monitoring of glioma patients as well as identify miRNAs that are predictive of survival outcomes.

Methods: To investigate this a prospectively collected cohort of 91 gliomas and 17 healthy controls underwent pre and post-operative serum miRNA profiling using the next-generation sequencing platform Nanostring®. Differentially expressed miRNAs were discovered using a machine learning random forest analysis. Candidate miRNAs were then assessed by droplet

digital PCR (ddPCR) in 11 patients with multiple follow-up samples and compared to tumor volume based on MRI. A lasso-regression model was used to identify candidate miRNAs from pre-operative serum that were associated with both progression-free and overall survival.

Results: We identified a 9-gene miRNA signature that could distinguish between glioma and healthy controls with 99.8% accuracy. From the signature two miRNAs; miR-223 and miR-320e, best demonstrated dynamic changes that correlated closely with tumor volume in LGG and GBM respectively. Importantly, miRNA levels did not increase in two cases of pseudo-progression, indicating the potential utility of this test in guiding treatment decisions. Additionally, altered expressions of 6 miRNAs were found to be associated with overall and progression-free survival and were incorporated in a predictive model with already known survival factors.

Conclusion: We have identified a highly accurate 9-miRNA signature associated with glioma serum and observed specific miRNAs that both correlated with tumor volume over long-term follow up and were predictive of survival. These results support a large prospective validation study of serum miRNA biomarkers in glioma. A validation cohort from our institution of 102 gliomas with over 300 follow up samples is currently undergoing testing using ddPCR.



RASI ATTENUATES TUMOUR GROWTH IN THE REGENERATING LIVER AND ENHANCES POPULATIONS OF ACTIVATED HEPATIC TRM TUMOUR INFILTRATING T CELLS

GEORGINA RIDDIOUGH (1,2), KATRINA WALSH (1), THEODORA FIFIS (1), BANG TRAN (2), ELIZABETH VINCAN (2), VIJAYARAGAVAN MURALIDHARAN (1), CHRISTOPHER CHRISTOPHI (1), AND MARCOS PERINI (1)

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Introduction: Post-hepatectomy liver regeneration (PHLR) has been linked to

tumour recurrence in the future liver remnant. Previously, reninangiotensin inhibitors (RASi) have been shown to curb colorectal liver metastasis (CRLM) progression via immunomodulatory mechanisms in non-regenerating liver. Clinical studies have shown that an abundance of tissue resident memory (TRM) tumour infiltrating lymphocytes (TILs) are associated with improved disease-free and overall survival for some cancer types. This study investigates the efficacy of RASi in attenuating tumour progression in the regenerating liver and their ability to enhance populations of TRM-like TILs.

Methods: CBA mice underwent CRLM induction via splenic induction followed by 70% partial hepatectomy. Sub-groups were treated with RASi (captopril, 250mg/kg/day) or control. Mice were culled nine days following hepatectomy and livers fixed in formalin for stereometric tumour burden analysis or processed for flow cytometry. Populations of TRM-like TILs and myeloid derived cells were analysed. Patient-derived CRLM organoid lines were established and used to assess the efficacy of RASi on suppressing tumour growth *ex vivo*.

Results: RASi significantly reduces tumour burden in mice following partial hepatectomy ($p < 0.01$). This was associated with significant changes in the immune microenvironment. RASi was associated with a significant increase in PD1+ hepatic TRM T cells (CD8+/CD44+/CD69+/PD1+, $p < 0.001$, CD4-/CD8-/CD44+/CD69+/PD1+, $p < 0.0001$). RASi was associated with significant reductions in myeloid derived suppressor cells populations (CD11b+, $p < 0.01$, CD11b+/Ly6Chi, $p < 0.05$ and CD11b+/Ly6Clo, $p < 0.05$). RASi successfully suppressed patient-derived CRLM tumoroid progression *ex vivo* ($p < 0.0001$).

Conclusions: RASi successfully attenuate tumour progression in the regenerating liver following partial hepatectomy. Treatment with RASi specifically increased populations of activated (PD1+) hepatic TRM-like TILs, whilst decreasing the infiltration of immunosuppressive MDSCs. RASi appear to have dual mechanisms for tumour attenuation during PHLR. Early clinical translation of these findings show that RASi are capable of suppressing progression of human CRLM.



**SAFER, BETTER BANG FOR BUCK:
IMPROVED EFFICIENCY AND SAFETY
OF PROSTATE BIOPSY FOR PROSTATE
CANCER DIAGNOSIS USING MRI AND
TRANSPERINEAL BIOPSY METHOD**

ARSALAN TARIQ (1, 4), MATTHEW J ROBERTS (1, 2, 3, 4), ANDREW MORTON (1, 4), PETER DONATO (1, 4), ALASTAIR MACDONALD (1), SACHINKA RANASINGHE (3, 4), HARRISON BENNETT (4), PATRICK E. TELOKEN (1), PATRICK HARRIS (2, 5), DAVID PATERSON (2, 6), GEOFF COUGHLIN (1), NIGEL DUNGLISON (1), RACHEL ESLER (1), ROBERT A. GARDINER (1, 2, 7, 8), THOMAS ELLIOTT (9), LOUISA GORDON (9), AND JOHN YAXLEY (1, 2)

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Introduction: Prostate cancer diagnosis via biopsy can occur with transrectal (TR) or transperineal (TP) approaches for different morbidity profiles, while multiparametric magnetic resonance imaging (mpMRI) can improve cancer detection with targeted biopsy while reducing unnecessary biopsies. Our institution, the Royal Brisbane and Women's Hospital (RBWH) transitioned to a preference for multiparametric MRI-based triage and TP biopsy since 2014 so this study sought to describe subsequent clinical and health economic outcomes.

Methods: A consecutive cohort study considered prostate biopsies (over 11 years) and mpMRI (over 3 years). Standard clinical, imaging, histopathological and

financial parameters were collected for analysis of biopsy-avoidance, diagnostic accuracy and logistic (including financial) feasibility. Hospital presentations across the Metro North Hospital and Health Service (including RBWH and secondary centres) within 30 days of biopsy were collected. Costs implications were analysed and generalised linear models applied.

Results: 2,048 prostate biopsies were performed over 11 years. Recently, 653 mpMRI led to 344 biopsies, resulting in a 47% biopsy avoidance rate. 208 (60.5%) patients harboured significant cancer, with significant cancer more likely to be detected with targeted biopsies than systematic biopsies in PIRADS 5 and 4 patients. Similar re-presentation rates occurred for each biopsy approach. Presentations after TR biopsy were more likely to be infectious ($p < 0.001$) and cause hospital admission ($p = 0.007$) for similar rates of urinary retention. The mean overall cost was higher for the TP group ($p < 0.001$), adjusted for year and age, but reduced over time and was similar among re-presenting patients. Incorporation of mpMRI (with subsequently avoided biopsies), TP biopsy and re-presentations resulted in AU\$783.27 saving per biopsy.

Conclusions: The RBWH mpMRI-based triage system was feasible, cost effective and led to more efficient prostate cancer diagnosis, whilst reducing unnecessary biopsies and detection of insignificant cancer. TP caused less complications with reducing costs over time, resulting in an overall cost saving when used in conjunction with mpMRI.



RISK OF AIRWAY FIRE WITH USE OF KTP LASER AND HIGH FLOW HUMIDIFIED OXYGEN DELIVERY IN A LARYNGEAL SURGERY MODEL

LUCY HUANG (2), THEODORE ATHANASIADIS (1, 2), MARTINUS VERMEULEN (1), CHARMAINE WOODS (1, 2), ADAM BADENOCH (1, 2), SHAHID ULLAH (1), AND ENG H. OOI (1, 2)

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Aims: Airway surgery presents a unique environment for fire to occur as the shared airway is often oxygen rich. Airway fires are serious with potentially devastating complications. Transnasal humidified rapid insufflation ventilatory exchange (THRIVE) is a recent method of oxygenating patients while providing a tubeless surgical field. No studies have reported airway fire using KTP laser. This study aims to explore the factors of combustion when using KTP laser with THRIVE at various settings in an ex-vivo model.

Method: A cylindrical stainless-steel model was designed to simulate the upper airway and allow laryngeal surgery to take place. The variables tested were tissue type (porcine muscle and fat), tissue condition (charred and uncharred), oxygen concentration (30-90% at 10% increment), laser setting (5W and 2.6W continuous, 35W and 26W pulsed setting 15ms pulse width at 2pulse per second), smoke evacuation (on, off). Each combination of setting was tested 5 times for reproducibility. The flow rate was kept constant at 70L/min. Each firing was terminated after 60 seconds of firing or if a sustained flame occurred.

Results: A total of 1120 laser firings were performed. The most flammable condition was charred fat fired at 5W continuous without smoke evacuation where ignition occurred almost instantaneously at oxygen concentration above 70%. However, no sparks or fire occurred at oxygen concentrations below 40%. Muscle is comparably less likely to ignite than fat. However, sparks and fire still occurred with charred muscle even in

lower power 35W pulsed settings.

Conclusion: The laryngeal model used in this study is suitable for assessing airway fire risk with various lasers. Risk factors for airway fire demonstrated in this study included oxygen concentrations above 50% and presence of char when lasing. There is still a high risk of combustion when using KTP laser in a humidified oxygen rich environment.



THE FUNCTIONAL ROLE OF COLONIC MOTILITY IN GAS TRANSIT CHARACTERISED BY HIGH-RESOLUTION IMPEDANCE MANOMETRY

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Introduction: The colonic motor patterns associated with gas transit are poorly understood. To establish any association, both contractile activity and gas transit must be recorded concurrently, as reported in the oesophagus and small intestine using high-resolution impedance manometry (HRiM). This study describes the first application of HRiM in the human colon in vivo. Our aims were to (1) characterise colonic motility and gas transit before and after a meal, and, (2) characterise distal colonic motility in response to intraluminal gas insufflation.

Methods: HRiM recordings were performed in 19 healthy volunteers, with sensors positioned from the distal descending colon to the proximal rectum. Protocol 1 (n=10) compared pressure and impedance during pre- and post-prandial periods. Protocol 2 (n=9) compared pressure and impedance before and after gas insufflation into the sigmoid colon (60mL total volume).

Results: Both interventions resulted in an increase in the prevalence of the cyclic motor pattern (meal: (t(9))=-6.42, p<0.001; gas insufflation (t(8))=-3.13,

p=0.01), and an increase in the count of propagating impedance events (meal: Z=-2.80, p=0.005; gas insufflation Z=-2.67, p=0.008). Propagating impedance events temporally preceded propagating contractions, which is likely to represent a column of luminal gas being displaced ahead of a propagating contraction. The majority of participants reported no conscious urge to pass flatus during the studies.

Conclusions: Initiation of the cyclic motor pattern can be neurally-mediated following a meal and/or can occur as a localised sensorimotor response to gas. The absence of a conscious urge to pass flatus, and the temporal association between propagating contractions and gas transit, supports the hypothesis that the cyclic motor pattern acts as a physiological “brake” which modulates rectal filling.



THE USE OF SIEMENS SYNGO PVB DURING REVASCULARISATION OF DIABETIC PATIENTS WITH FOOT TISSUE LOSS

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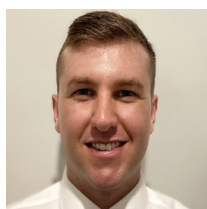
Introduction: It is estimated that every 30 seconds a lower limb is lost somewhere in the world as a consequence of diabetic foot disease. Peripheral arterial disease (PAD), which affect approximately half of patients with a diabetic foot ulcer/wound, is a strong risk factor for impaired wound healing and subsequent lower extremity amputation. The predilection for below knee vessel involvement (crural vessels) combined with extensive arterial calcification increases the technical challenges associated with revascularisation procedures in diabetic patients. There are no specific symptoms or signs that reliably predict healing of the ulcer. Assessing perfusion pressures using methods such as toe pressure and

Transcutaneous oxygen pressure can be useful in predicting healing, however these methods do not directly guide revascularisation procedure. This project aims to assess feasibility of Siemens Syngo Parenchyma Blood Volume (PVB) as an adjunct in endovascular revascularisation procedures for diabetic patients with foot tissue loss.

Method: Diabetic patients with foot ulcers and PAD affecting crural vessels underwent endovascular revascularisation. Pre- and post-angioplasty PBV analysis was performed. The PBV indicates the distribution of blood in lesions and surrounding tissue by means of color-coded cross-sectional blood volume maps. Based on this objective blood volume information, physicians can promptly evaluate changes in perfusion caused by treatment.

Results: This is an ongoing project and recruitment continues. The first six cases of PBV assessment during lower limb endovascular revascularisation in Australia have been performed. This novel technology has been shown to be feasible. The initial experience will be explored during the presentation

Conclusion: It is possible to assess PBV pre- and post-angioplasty during endovascular revascularisation intervention. However, further research needs to be done to validate this technique and assess its clinical utility.



IS THE PHONE MIGHTIER THAN THE HAND: FOLLOW-UP IN THE AGE OF COVID19, A RETROSPECTIVE ANALYSIS OF HERNIA REPAIR OUTCOMES AT THE CANBERRA HOSPITAL

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Introduction: COVID19 has brought widespread lockdowns and ubiquitous social distancing, highlighting the importance of reviewing long-held practices that may be lacking in evidence.

The attendance at clinic for physical examination as post-operative follow-up in uncomplicated hernia repair is one such practice. Recent studies have used phone follow-up to screen patients into groups that require physical examination and those that do not, reducing the number of patients presenting for physical review without missing pertinent post-operative complications. A review of post-operative hernia outcomes at The Canberra Hospital (TCH) was undertaken to identify if attendance at clinic for all patients continues to be worthwhile practice.

Methods: A retrospective analysis of all umbilical, inguinal and femoral hernia repairs conducted at TCH in a 4-year period between January 2016 and March 2020 was undertaken. The electronic medical records of the resulting 973 procedures were analysed to identify repair type, and to then identify post-operative follow-up findings.

Results: Of the 973 procedures there were 685 males and 288 females, with an average age of 58.5 years. 384 of the repairs were emergency cases, with the remainder being elective. Of the main hernia repaired for each patient, 392 were umbilical, 484 inguinal and 71 were femoral. Some patients had an additional hernia repaired during the same procedure, which included a further 27 umbilical, 1 inguinal, and 7 femoral herniae. For 922 patients this was their first repair, with 51 procedures for a recurrence. Follow up occurred on average at 40 days, with 660 out of the 973 patients attending their follow-up at TCH. In total 19 patients (2.88% of follow up cohort, 1.95% of total cohort) had a wound infection, with 0 (0%) having recurrence of their hernia at their post-operative clinic review. 25 patients (3.79%, 2.57%) had a wound infection noted by a GP prior to follow-up, with only 7 of these having infection noted at clinic.

Conclusions: Low rates of post-operative complication were identified at clinic follow-up, with no recurrence identified. In the age of COVID19 a review of long-held practices is warranted, with in-person attendance at clinic for hernia post-operative review a possible area of transition to telehealth that would render no change in outcomes or safety. Further study is currently being undertaken to contact the patients who did not attend follow-up in order to complete this dataset.



SCOPE OF OUTCOMES FROM A QUALITY IMPROVEMENT PROGRAM IN EXTENDED VTE PROPHYLAXIS - IMPACTS ON PRACTICE, HEALTH AND COST

NEGIN SEDAGHAT (1, 2), TIMOTHY BRIGHTON (2, 3), PHIL CROWE (1, 2), AND GREG KEOGH (1, 2)

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Introduction: A change in clinical practice should be associated with other important changes, including patient-health outcomes and favourable cost benefit. There is well-established evidence that the risk of venous thromboembolic (VTE) disease is greater in general surgical patients who have major abdominal surgery for benign or malignant disease. This risk is significantly reduced with extended-VTE prophylaxis. However, the uptake of prescribing extended-VTE prophylaxis in such situations has been low. A quality improvement (QI) program in extended-VTE prophylaxis for all general surgical inpatients was developed at a metropolitan tertiary hospital. The purpose of this study is to both describe the program as well as associated outcomes. In addition to observed change in prescription rates, the incidence of delayed-VTE and estimated cost-benefit of the program is also presented.

Methods: The QI strategies were implemented at a tertiary hospital in Sydney, Australia from April 2019. This included the development of an optout "extended-VTE prophylaxis pathway"; education across disciplines about the pathway; visual reminders on the wards; multi- and inter-disciplinary collaboration including nursing, surgical, haematology, pharmacy & geriatricians. Baseline audit and prospective audit from April 2019 to January 2020 was completed.

Results: Baseline audit prior to implementation of the QI program identified an overall compliance rate

of 38% [55/146] compared to 86% [127/148] post implementation ($p < 0.00001$). There were five delayed-VTE events at baseline compared to one delayed-VTE event post implementation ($p = 0.09$). The average estimated hospital cost of a delayed-VTE event is AUD10,007 (range, AUD6236-15077). The estimated hospital cost of extended-VTE prophylaxis is AUD4,577 over the QI program period.

Conclusion: This QI program facilitates increased extended-VTE prescription. Although there was no statistically significant difference in the number of delayed-VTE events, there may be an associated cost-benefit. Longer term evaluation is currently being completed to assess if these outcomes are sustained.

Oral Presentation Abstracts:

Session 6B



RANDOMISED-CONTROLLED TRIAL TESTING THE EFFICACY OF TELMISARTAN TO SLOW GROWTH OF SMALL ABDOMINAL AORTIC ANEURYSMS

JONATHAN GOLLEDGE (1, 2, 3), JENNA PINCHBECK (1), STEPHANIE M. TOMEE (4), SOPHIE E. ROWBOTHAM (1), TEJAS P. SINGH (1, 2), JOSEPH V. MOXON (1, 3), JASON S. JENKINS (5), JAN H. LINDEMAN (4), RONALD L. DALMAN (6), LORI MCDONNELL (6), ROBERT FITRIDGE (7) AND DYLAN R. MORRIS (1, 2) ON BEHALF OF THE TEDY INVESTIGATORS.

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3. THE AUSTRALIAN INSTITUTE OF TROPICAL HEALTH AND MEDICINE, TOWNSVILLE, QUEENSLAND, AUSTRALIA
4. DEPARTMENT OF SURGERY, LEIDEN UNIVERSITY MEDICAL CENTER, LEIDEN, THE NETHERLANDS
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6. DEPARTMENT OF SURGERY, STANFORD UNIVERSITY SCHOOL OF MEDICINE, STANFORD, CALIFORNIA, AND THE VETERANS AFFAIRS PALO ALTO HEALTH CARE SYSTEM, PALO ALTO, CALIFORNIA, UNITED STATES OF AMERICA
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Introduction: Abdominal aortic aneurysms (AAA) are usually identified when small but frequently progress to a size when surgery is required to prevent rupture. There is no drug therapy to limit AAA growth. Studies in rodent models and human samples have implicated angiotensin II in AAA pathogenesis. Animal experiments suggest that peroxisome

proliferator activator receptor (PPAR)- γ ligation can limit AAA development. Telmisartan is an angiotensin receptor blocker and has also been reported to stimulate PPAR- γ . The Telmisartan in the management of abdominal aortic aneurysm (TEDY) trial tested the efficacy of the telmisartan in slowing AAA growth.

Methods: TEDY was a double-blind placebo-controlled trial. Participants with 35-49 mm AAAs recruited from Australia, Netherlands and USA were randomly allocated 1:1 to 40 mg telmisartan or identical placebo. The primary outcome of the difference in AAA growth assessed on core imaging laboratory read ultrasound was tested with linear mixed effects models. Other outcomes included effects on blood pressure, computed tomography (CT)-measured AAA diameter and volume and time to AAA-related events (AAA repair or mortality from AAA rupture).

Results: Of 300 intended participants, 210 were enrolled and randomly allocated to telmisartan (n=107) or placebo (n=103). At one year, participants' allocated telmisartan had lower blood pressure compared to participants allocated placebo (p<0.001). There was no significant difference in ultrasound-assessed AAA growth (mean difference -0.11; 95%CI -0.60 to 0.38mm/y; p=0.66), CT-measured AAA diameter (-0.01; 95%CI -0.02 to 0.01mm/y; p=0.11) or AAA-related events (relative risk 1.35; 95%CI 0.54 to 3.35).

Conclusion: TEDY suggests that telmisartan does not slow AAA growth.



MORTALITY FOLLOWING POSTOPERATIVE PULMONARY COMPLICATIONS WITH AND WITHOUT SARS-COV-2 INFECTION: A COMPARATIVE ANALYSIS OF PRE-COVID AND COVID COHORTS

KYLE RAUBENHEIMER (1), GEOFFREY ZHANG (1), WILLIAM RIDLEY (1), JAMES GLASEBY (2, 3), SIVESH KAMARAJAH (3), PETER POCKNEY (4), TOBY RICHARDS (5), AND KENNETH MCLEAN (3)

1. TASMAN COLLABORATIVE
2. COVIDSURG COLLABORATIVE
3. STARSURG COLLABORATIVE
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NEW SOUTH WALES

5. DEPARTMENT OF SURGERY, FACULTY OF HEALTH AND MEDICAL SCIENCES, UNIVERSITY OF WESTERN AUSTRALIA, PERTH, WESTERN AUSTRALIA

Introduction: Respiratory complications following major surgery are relatively common and associated with worse patient outcome. Whilst the severe consequences of COVID-19 around the time of surgery are well described, no comparison has been made to pulmonary complications in the absence of infection. This study aimed to compare the risk of death after surgery in patients with and without SARS-CoV-2 infection.

Methods: A patient-level comparative analysis of two international prospective cohort studies; one conducted before (22 January to 19 October 2019) and one during the SARS-CoV-2 pandemic (from local emergence of COVID-19 to 19 April 2020). Patients undergoing elective resection of an intra-abdominal cancer with curative intent across five surgical oncology disciplines were included in analysis. The primary outcome measure was the mortality within 30 days of surgery.

Results: This study included 7402 patients from 50 countries; 3031 underwent surgery before the pandemic, and 4371 during the pandemic. Overall, 6.5% (n=484) patients suffered a pulmonary complication, and 1.4% patients (n=107) died. There was no difference between 30-day risk of pulmonary complications between COVID and pre-COVID cohorts (6.3% vs 6.7%, p=0.280). Risk of death at 30-days was significantly higher in the COVID as compared to the pre-COVID cohort (2.0% vs 0.7%, p<0.001). There was a higher proportion of open procedures during COVID compared to pre-COVID (52.8% vs 43.6%, p<0.001). During the pandemic, pulmonary complications were the primary driver of mortality (51.7% of deaths, n=45/87), with 5.1% patients (n=224/4371) having SARS-CoV-2 infection diagnosed. Patients with a pulmonary complication and SARS-CoV-2 had a higher adjusted odds of death (OR: 54.14, 95% CI: 23.46 to 124.91, p<0.001), than uninfected patients with a pulmonary complication (OR: 7.20, 95% CI: 3.85 to 13.45, p<0.001), and patients with neither diagnosis (reference). In risk-adjusted data, two thirds of variation in risk of death was explained by SARS-CoV-2 infection.

Conclusion: Pulmonary complications are the major driver of death after surgery. Health systems must implement measures to mitigate risk of SARS-CoV-2

infection to safely upscale surgery during the pandemic.



MODELLING HUMAN STOMACH DEVELOPMENT: SELF-ORGANISING 'MINI-STOMACHS' IN FLOATING HYDROGEL CULTURE

BRENDAN JONES (1, 5), CAMILLA LUNI (2), ELISA ZAMBAITI (1, 3), SILVIA PERIN (1), FRANCESCA SGUALDINO (1), NIKHIL THAPAR (1, 8), DAVIDE CACCHIARELLI (6, 7), SIMON EATON (1), NICOLA ELVASSORE (1, 2, 3, 4), PAOLO DE COPPI (1, 5) AND GIOVANNI GIUSEPPE GIOBBE (1)

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Introduction: Lgr5+ gastrointestinal stem cells are capable of self-organising into 3D organoids resembling the tissue of origin. However, compared to other endodermal epithelial organoids, human gastric epithelial organoids (HGEOs) lack morphological complexity and diversity of differentiated cellular subsets. We examined the ability of HGEO to self-organise into more complex structures by culture in floating extracellular matrix (ECM) hydrogel rings.

Methods: ECM hydrogels were prepared and tested for cytocompatibility and gelation. HGEO from 11- and 20-week fetuses and 11-year-old patient were expanded in Matrigel, then released and

encapsulated in ECM hydrogels. The HGEO-loaded gels were plated in a ring shape (200µL/well) in 24-well plates, and following gelation were detached by forceful addition of culture medium. The rings were maintained in floating culture for 13 days, following which some rings were implanted in immunodeficient mice for 4 weeks. Analysis was performed using immunofluorescence (IF), real time PCR (RT-PCR), and micro-computed tomography (microCT).

Results: By Day 6, each condition showed spontaneous organisation of HGEO into a continuous tube by growth and fusion of adjacent organoids. Formation of the tubes occurred together with contraction of the hydrogel ring. The external surface of the tubes showed smooth and budding areas, and whole-mount confocal imaging demonstrated gland-like structures opening into a continuous lumen. IF and RT-PCR demonstrated mature gastric epithelial cell subtypes including, chief (pepsinogen), enteroendocrine (chromogranin A), and mucus secreting cells (MUC5AC, MUC6). Tubes showed appropriate polarisation with the apical surface of cells orientated towards the common lumen. The self-organisation into tubes was associated with nuclear translocation of YAP, a transcription factor in the Hippo signalling pathway. Morphology, epithelial polarisation, and differentiated cell subtypes were maintained in the tubes after 4 weeks in vivo and there was evidence of luminal mucus by IF and microCT analysis of explants.

Conclusion: HGEO self-organise into complex stomach-like tubular structures with a continuous common lumen in floating hydrogel culture. The tubes demonstrate appropriate epithelial polarity and evidence of mature epithelial cell subtypes. These characteristics are preserved following in vivo transplantation. This increase in complexity is associated with activation of the Hippo pathway.



RURAL STUDY: RURAL & URBAN RISKS OF APPENDICITIS COMPLICATIONS COMPARISON OF ANATOMIC SEVERITY OF ACUTE APPENDICITIS IN RURAL AND URBAN PAEDIATRIC PATIENTS: A MULTICENTRE, PROSPECTIVE COHORT STUDY

BRODIE ELLIOTT (1), CHRISTOPHER HARMSTON (1, 2), AND IAN BISSETT (1, 2) - ON BEHALF OF THE STRATA COLLABORATIVE

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Introduction: Appendicitis is the most common reason children undergo acute general surgery. International studies have demonstrated racial and geographical inequities as a result of systemic racism and maldistribution of surgical services. Despite our significant rural and Maori population, national appendicitis outcomes remain unstudied in New Zealand.

Methods: A prospective, multicenter cohort study was undertaken by a national trainee-led collaborative group between Feb-July 2020. A total of 208 patients aged ≤16 years admitted to hospital with suspected appendicitis were recruited across 14 hospitals. The primary outcome was the effect of rurality and ethnicity on the American Association for the Surgery of Trauma (AAST) anatomical severity of appendicitis. This was supplemented by a parental questionnaire that evaluated participant-level pre-hospital and socioeconomic data points. The role of delay, post-operative complications, length of stay and national service provision was also investigated.

Results: 182 children had histologic or radiographically proven appendicitis with a median age of 11.6 (range: 3-16). The normal appendectomy rate was 13%. In order to access hospital, families had to travel a mean distance of 34.8km, and 57% of parents had to take time off work, leading to acute financial distress in 36% of families. The total rate of complicated appendicitis was 38.5%. Median pre-hospital time was significantly longer in the complicated appendicitis group

(47.8h vs 20.1h, $p < 0.001$), but the median time between admission and surgery did not vary significantly (10.7h vs. 13.2h, $p = 0.147$). On multivariate analysis, increased anatomical severity of appendicitis was found in rural (OR 4.33, 95%CI 2.04 – 9.21; $p < 0.001$), Māori (OR 2.40, 95%CI 1.15 – 5.02; $p = 0.012$) and younger children (OR 0.86, 95%CI 0.79 – 0.95; $p = 0.002$). The prehospital risk factors between these two groups varied.

Conclusions: Clear inequities exist in the outcomes of acute paediatric appendicitis in New Zealand. Increased severity of appendicitis is independently associated with rurality and Māori ethnicity. We argue that this is best explained by differential access to the determinants of health contributing to pre-hospital delay. It is unacceptable that in a modern, public health system that these inequities exist and that so many families report financial distress due to accessing acute surgical care for their child.



PUTTING 3D PRINTING INTO THE REALITY OF SURGERY: AN APPROACH FOR REGENERATING JOINT CARTILAGE WITHIN THE BODY USING ONE-STEP SURGERY

CLAUDIA DI BELLA (1)

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Musculoskeletal (MSK) conditions account for 15.3% of the global burden of death and disability in Australia. Current surgical options for joint injuries (such as microfractures and bone grafts) degrade and fail over time, and thus only delay the invasive procedure of a whole joint replacement, when patients are older and pain is severe enough. The root problem is that once damage occurs, our bodies cannot regrow normal cartilage.

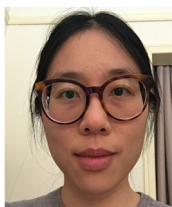
In direct response to the need observed daily by surgeons faced with no way to address damaged joints, I have led the design, development, and pilot implementation of a world-first surgical device: a handheld 3D bioprinter that can deliver a biomaterial capable of regenerating bone and cartilage.

With the support of this fellowship I

have achieved the aims of this project, by developing and optimising the optimal 3D bioprinting conditions for the regeneration of articular cartilage and subchondral bone in vitro, ex-vivo, and finally in an in-vivo large animal model.

During the years of the fellowship, in collaboration with a multidisciplinary team, I have produced numerous peer reviewed publications and been awarded significant international prizes. This journey is now bringing the team to the development of a commercial venture (Axcelda®) for the surgical implementation of this technique.

I will present the critical steps performed during this fellowship.



IMPACT OF DONOR RISK INDEX ON THE OUTCOME OF LIVER TRANSPLANTATION OF URGENTLY LISTED PATIENTS IN AUSTRALIA AND NEW ZEALAND

EUNICE LEE (1), MARCOS PERINI (1), GABRIEL ONISCU (2), GRAHAM STARKEY (1), B.Z. WANG (1), ROBERT JONES (1), ENES MAKALIC (3), AND MICHAEL FINK (1)

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Introduction: Australia and New Zealand prioritise liver transplantation for urgently listed patients with acute liver failure through a binational donor share scheme. It is hypothesised that urgently listed patients receive higher risk donor grafts than non-urgently listed patients. The aims of this study were to: 1) Compare the donor risk of grafts received by urgent and non-urgently listed patients; and 2) Determine whether donor risk affects post-transplant outcomes in urgently listed patients.

Methods: This retrospective study used clinical and demographic patient and donor data from the Australia and New Zealand Liver Transplant Registry. Patients transplanted from 1/1/2001 to 31/12/2018 were included. Donor risk was defined according to Feng donor

risk index (DRI).¹ Multi-organ, living donor, transplant for hepatoblastoma, and non-death censored patients were excluded. Outcomes considered were patient and graft survival. Survival curves were estimated using the Kaplan-Meier method and compared with log-rank testing. Welsh's t-test was used for comparison of means.

Results: In total 2,494 non-urgently listed and 287 urgently listed patients were included. In total, 90-day, 1, 5 and 10 year overall survival was 89.5%, 87.4%, 82.7% and 77.4 %, and graft survival was 87.1 %, 83.5%, 78.5% and 72.4%, respectively. The mean DRI for urgently listed patients was significantly higher than for non-urgently listed patients (1.71 vs 1.43, $p = 0.0001$). There was a higher risk of early graft failure for urgently listed patients compared to non-urgent listings, although there was no difference in long term graft failure risk. Urgently listed recipients were stratified into 4 groups according to DRI. Kaplan-Meier survival curves showed no difference in overall survival or graft survival between the 4 groups (log-rank test $p = 0.92$ and 0.96 respectively).

Conclusion: Despite receiving higher donor risk livers, urgently listed patients had good outcomes. Urgently listed recipients of higher risk grafts did not have significantly different outcomes from those who received lower risk grafts.



CHARACTERISATION OF SYMPATHETIC INPUTS TO THE MYENTERIC PLEXUS OF THE HUMAN COLON

DOMINIC PARKER (1, 2), **TIONG CHENG SIA** (1, 2), **ADAM HUMENICK** (1), **BAO NAN CHEN** (1), **DAVID WATTCHOW** (1, 2), **PHIL DINNING** (1), AND **SIMON BROOKES** (1)

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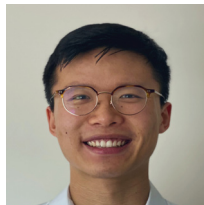
Introduction: Sympathetic nerve activity is known to cause inhibition of motility in the colon of mammals. Adrenergic inputs to the myenteric plexus of the enteric nervous system are central to this inhibitory effect on the muscularis propria. This study aims to characterise, in human colon, the relationship of sympathetic varicosities (nerve terminals) to excitatory and inhibitory neurons of the myenteric plexus and better define the pathway of sympathetic inhibition of colonic motility.

Methods: Human colonic specimens were obtained from the healthy resection margins of colorectal operations with ethics approval and patient consent. Small segments of tissue were fixed, then dissected down to a wholemount of myenteric plexus and longitudinal muscle. Multiple layer immunohistochemistry with elution between layers was used along with confocal microscopy to image noradrenergic (tyrosine hydroxylase, TH) and positive control (Enkephalin, Enk) varicosities to myenteric neuronal cell bodies. 3D reconstruction was performed on images to identify the proximity of varicosities to cell bodies. Cell bodies were subsequently identified as excitatory (choline acetyl transferase positive, ChAT) or inhibitory (nitric oxide synthase positive, NOS). The paired t test was used to compare proximity to ChAT and NOS cells. Results expressed as mean \pm SD.

Results: Colonic specimens from 5 patients were retrieved. 260 cells from 8 separate ganglia were studied, of which 95 were ChAT positive and 107 were NOS positive; 42 double positive. 16 double negative cells were excluded. ChAT cells

had a significantly larger surface area and volume than NOS cells (2359 ± 781 vs. $1687 \pm 654 \mu\text{m}^2$, $p = 0.02$ and 4159 ± 1062 vs. $2800 \pm 1055 \mu\text{m}^3$, $p = 0.02$, respectively). TH and Enk varicosities were closer in proximity to ChAT cells than NOS cell (TH; 0.0140 ± 0.0031 vs. 0.0099 ± 0.0034 varicosities/ μm^2 , $p = 0.002$; and Enk, 0.0414 ± 0.0164 vs. 0.0263 ± 0.0127 varicosities/ μm^2 , $p = 0.007$, respectively).

Conclusions: Sympathetic varicosities have closer associations with excitatory cholinergic neuronal cell bodies within the myenteric plexus than with inhibitory nitrergic neurons. Enkephalin-immunoreactive varicosities, which arise from enteric ascending pathways, also show a preference for excitatory cholinergic cell bodies. These findings suggest that sympathetic inputs inhibit colonic motility by action on excitatory pathways.



A RANDOMISED, SHAM-CONTROLLED FEASIBILITY TRIAL OF PATIENT-ADMINISTERED TENS FOR POST-OPERATIVE PAIN CONTROL AFTER LAPAROSCOPIC CHOLECYSTECTOMY

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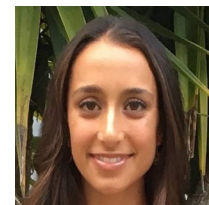
Introduction: Transcutaneous electrical nerve stimulation (TENS) is a non-invasive analgesic neurostimulation modality. Difficulties in clinical trial blinding and therapy administration have limited conclusions of previous trials. The aims of this study were to firstly investigate the feasibility and acceptability of patient-administered TENS after surgery, and secondly, the feasibility of using sub-sensory TENS as a proxy sham group for patient-blinding.

Methods: Over a 4-month period, patients undergoing laparoscopic cholecystectomy at a single centre were randomised to receive maximally

tolerable high-intensity (HI) TENS or sub-sensory low-intensity (LI) TENS. Patients and outcome assessors were blinded. Primary outcomes were the feasibility, tolerability, and acceptability of patient self-administered TENS, measured by patient-reported outcomes, and the strength of patient-blinding, measured using the James Blinding Index (JBI). Secondary outcomes explored clinical recovery and analgesic efficacy.

Results: Nineteen patients were screened for inclusion; ten patients were randomised and completed the feasibility study. TENS therapy was variably utilised (median duration of TENS 5.3 hours/day (IQR: 4.1 – 6.9)). The JBI was 0.7, indicating a strong strength of blinding. Majority of patients found the TENS unit easy to use (90%) and were confident with self-administration (100%). No patients experienced adverse effects of TENS use.

Conclusions: Patient-administered TENS is safe and acceptable. Future studies may use sub-sensory TENS as a proxy sham control to more reliably blind patients. A larger, double-blinded RCT employing these techniques is now needed to determine the analgesic efficacy of TENS in an enhanced recovery setting, and its potential to reduce opiate usage.



THE PATHOGENESIS OF TONSILLAR HYPERPLASIA IN CHILDREN

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Introduction: The surface area of the human palatine tonsils is extensive, with many folds and crypts. Bacterial micro-colonies in tonsillar crypts have been implicated as a target of host inflammatory cells, resulting in chronic

inflammation and substantial morbidity in children. Antibiotics are the primary medical treatment for both recurrent tonsillitis (RT) and sleep-disordered breathing (SDB), even though tonsillar microbiology is not well understood. The role of atopy in tonsillar hyperplasia is also largely unknown. We aimed to determine the underlying immunological and microbiological factors that may influence tonsillar hyperplasia in children.

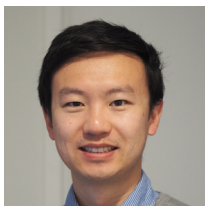
Methods: Paired tonsils were collected from 21 children undergoing tonsillectomy in the Auckland region. Immunohistochemistry and immunofluorescence techniques were used to identify local inflammatory cells and immunoglobulin isotypes. Bacterial micro-colonies were also excised using laser microdissection for bacterial amplicon sequencing.

Results: The most abundant bacterial genera identified in the micro-colonies were *Fusobacterium*, *Prevotella*, and *Porphyromonas*. There were no significant differences between children with RT and SDB. Strong Immunoglobulin E (IgE) staining was observed in the tonsillar follicles and was associated with B lymphocytes.

Conclusions: This is the first study to determine the bacterial composition of micro-colonies in tonsillar tissue. These results advance our understanding of the microbiology of tonsils in tonsillar hyperplasia, with important implications for antibiotic treatment. Furthermore, our novel finding of local IgE production in tonsillar follicles, independent to systemic atopy, offers new and important insights into the pathogenesis of tonsillar hyperplasia, which may influence future treatment options.

Quick Shot Presentation Abstracts

Session 7A



A SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS COMPARING TREATMENTS FOR GRADE 1, 2 AND 3 HAEMORRHOIDS

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Introduction: Multiple interventional treatments for early to moderate grade of prolapse for symptomatic haemorrhoids currently exist, each associated with their respective complications and risks. However, the relative efficacy of these treatments is not known. The aim of this study is to compare the clinical outcomes and effectiveness between interventional treatments for grade one to three haemorrhoids.

Methods: Randomised Controlled Trials (RCTs) were identified by means of a PRISMA compliant systematic review using the Medline, EMBASE and CENTRAL databases. Inclusion criteria were RCTs comparing procedural interventions for grade one to three haemorrhoids. Studies were excluded if the study population had grade four haemorrhoids. A Frequentist Network Meta-Analysis was performed using netmeta and shiny package in R.

Results: Sixty-three RCTs were identified, including 7956 patients and 20 different treatments. There were few instances of inconsistency between direct and indirect comparisons. Recurrence of hemorrhoidal symptoms was reported by 37 studies, involving 6254 patients and 17 treatments. Suture mucopexy was ranked

with the lowest recurrence, followed by open/closed hemorrhoidectomy, doppler guided haemorrhoid artery ligation (DG-HAL) with mucopexy, stapled haemorrhoidopexy, rubber band ligation, infrared coagulation and injection sclerotherapy. Post-operative bleeding was recorded in 37 studies involving 4442 patients. Open hemorrhoidectomy revealed the highest occurrence of post-operative bleeding, followed by radiofrequency coagulation, stapled haemorrhoidopexy and closed hemorrhoidectomy. Direct-current (DC) electrotherapy and bipolar coagulation had the lowest rates of bleeding. Pain on post-operative day 1 measured by a Visual Analog Scale was reported in 32 studies involving 2616 patients and 17 treatments. DC electrotherapy, DG-HAL with mucopexy and infra-red coagulation yielded the lowest pain scores, while closed hemorrhoidectomy, harmonic scalpel hemorrhoidectomy and diathermy hemorrhoidectomy were ranked with the highest pain scores.

Conclusion: Open and closed hemorrhoidectomies are associated with the highest pain scores with comparatively low rates of recurrence. Suture mucopexy and DG-HAL with mucopexy are associated with both lower recurrence rates and reduced pain compared to other treatment modalities. The benefits and risks of each treatment modality should be discussed with the patient before an interventional decision is made.



DYNAMIC FACIAL REANIMATION USING ACTIVE IMPLANTABLE PROSTHESIS: RESTORING BLINK

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Introduction: Ablative surgery for head and neck malignancies often results in facial nerve paralysis (FNP). The priority in FNP is managing the eye due to risk of loss of vision from lack of ability to blink. A range of advanced facial reanimation techniques have been described in restoring eye closure in FNP but none to date has achieved consistent results. Bionic lid implant for natural closure (BLINC) is a novel implantable prosthesis aimed at restoring blinking. BLINC combines established reconstructive techniques with the action of a mechanical actuator to restore dynamic facial movement. Herein the feasibility of BLINC is demonstrated in human cadaveric models.

Methods: BLINC was implanted in three human cadaveric heads. Eye closure using BLINC was compared to spontaneous blinking in three healthy human participants. The device was energized in two different settings, a steady current supply (DC power) and pulsed energy using a capacitor. The degree and speed of eye closure were compared.

Results: Time to eye closure using the capacitor, the DC power supply and during the spontaneous live blink were 22.1 ± 5.7 ms, 31.2 ± 10.4 ms and 82.3 ± 7.5 ms, respectively. The degree of closure measured as the percentage ratio of top eyelid displacement over the iris diameter in the same groups were $73.9 \pm 13.6\%$, $79.4 \pm 25.7\%$ and $82.6 \pm 7.1\%$, respectively. On regression analysis, there was no statistical difference in the degree of closure but the time to closure was significantly shorter for the BLINC compared to live controls, with shortest closure time occurring using the capacitor-powered device followed by DC power supply.

Conclusions: For the first time, dynamic facial reanimation has been achieved with physiological precision using BLINC, demonstrating that the BLINC combined with current reconstructive methods is a feasible option for effective eyelid closure in FNP and warrants further investigation.



DEVELOPMENT OF AN INTEGRATED FACIAL ASSESSMENT TOOL

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Background: Facial paralysis is a debilitating and common clinical problem leading to major aesthetic and functional sequelae. Clinician-graded assessment tools facilitate communication and enable outcome monitoring during the course of recovery of an injured facial nerve. No single tool has gained universal acceptance and the numerous published grading tools indicate the inadequacies that exist within each system. The aim of this project was to develop an Integrated Facial Assessment Tool (IFAT) that automatically harmonised all major clinician-graded tools in order to standardise facial nerve paralysis assessment.

Methods: The correlation between scoring components of four commonly employed clinician-graded assessment tools (House-Brackmann, Sunnybrook, Sydney, and eFACE) was determined and used to develop an algorithm that allowed for the answering of the above scoring systems using a singular assessment. This algorithm was converted to JavaScript language, integrated with a graphical user interface, deployed online and implemented within a clinical setting. A testing and validation study of the tool was conducted by reviewing previously recorded videos

of forty-two unilateral facial paralysis patients.

Results: The IFAT application demonstrated either very strong (ICC \rightarrow 0.8) or strong correlation (ICC 0.6 – 0.79) with existing grading scales excluding the Sydney scale, where correlation was either strong or only moderate (ICC 0.4 – 0.59).

Conclusion: Many facial nerve researchers have focussed on developing a single universally applied facial nerve severity scale, however ultimately this has just increased the number of potential communication tools. We have applied a different approach, recognising that different scales have unique attributes that make them appealing to different users but that a common language is essential to evidenced based outcomes. IFAT was designed to be used by clinicians whilst examining the patient to create real-time scores which are linked to patient details. Early validation data exhibits good correlation between the scores generated from IFAT compared to previous manually generated scores. With a single assessment, the IFAT application can provide quick and reliable scores for multiple grading systems, facilitating standardisation within the field.



THE EFFECT OF NATIONAL PUBLIC HEALTH INTERVENTIONS FOR COVID-19 ON EMERGENCY GENERAL SURGERY IN NORTHLAND, NEW ZEALAND

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Introduction: In March 2020 the New Zealand government instituted escalating public health interventions to prevent the spread of COVID-19. There was concern that this would affect health seeking behavior possibly leading to delayed presentation and worse outcomes for patients with acute medical and surgical problems. The aim of this study was to examine the effects of public health interventions for COVID-19 on rate and severity of acute general surgical admissions in Northland, New Zealand.

Methods: A retrospective comparative cohort study was performed. Two cohorts were identified, one from 28 February to 8 June 2020 and one from the same time period in 2019. Five shorter time periods corresponding to different levels of intervention were identified within these groups. Surgical admission and Emergency Department presentation data was obtained from the hospital data warehouse. Three index diagnoses were assessed for severity using internationally accepted methods. The primary outcomes of interest were the difference in rate of acute general surgical admissions, interventions and severity between non COVID-19 and COVID-19 time periods.

Results: There were 650 acute general surgical admissions in the 2019 cohort and 627 in the 2020 cohort (p 0.353). Acute general surgical operations were performed in 226 and 224 patients respectively (p 0.829). Emergency Department presentations decreased from 11398 to 8743 (p \lt 0.001). No difference in severity in patients with acute appendicitis (p 0.970), acute diverticulitis (p 0.333) or acute pancreatitis (p 0.803) between 2019 and 2020 cohorts was detected. Median length of stay, 30-day mortality and admission diagnosis were also comparable.

Conclusion: Despite a significant reduction in Emergency Department presentations, the Public Health interventions for COVID-19 in Northland, New Zealand did not result in a difference in the rate of acute surgical admissions, operations, or severity of disease.



EVALUATION OF ANORECTAL PHYSIOLOGY VIA A NOVEL HIGH-RESOLUTION ELECTROMYOGRAPHY PROBE AND TRANS-SACRAL MAGNETIC STIMULATION

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Introduction: Faecal incontinence afflicts one-in-eight New Zealanders, yet effective electrophysiological diagnosis of its aetiology remains challenging. Continence is maintained via intact pudendal nerves (S2-4) and external anal sphincter. Current clinical testing of this neuro-musculature is unreliable and limited to the St. Mark's electrode.

Methods: Sphincter potentials were evoked via trans-sacral magnetic stimulation (TSMS) delivered by Magstim Rapid² (MagStim Company, Dyfed, UK), with a 70mm figure-of-eight coil. High-resolution electromyography (HR-EMG) of the sphincter was measured using a custom anorectal probe (FlexiMap, New Zealand). Probes 14mm or 16mm in diameter were constructed from thermoplastic polyetherimide and bonded to an array of 64 electrodes spaced 1cm apart in an 8x8 circumferential array. Evoked electrical sphincter activation was measured in high-resolution to understand the sequence, latency and velocity of activation.

Results: Preliminary studies involved three healthy males with average baseline faecal incontinence severity index of 7.7/61 and St. Mark's Incontinence Score of 1.3/24. Early trials have established methodological feasibility, safety and a diagnostic workflow. HR-EMG correlated to anorectal manometry and gentle

squeezes were lower in amplitude than tight squeezes, demonstrating feasibility. Median visual analogue pain score was 1/10 during probe insertion and 0/10 during magnetic stimulation. Median discomfort during probe insertion was 3/10, median discomfort during magnetic stimulation was 1/10 and median discomfort throughout procedure was 2/10. The overall procedure was tolerated well by patients and resulted in no adverse events.

Conclusion: HR-EMG recordings of evoked sphincter potentials via TSMS was a feasible, safe and patient tolerable method of evaluating pudendal nerve and external anal sphincter function. Further trials are planned to validate this methodology against the St. Mark's electrode and anorectal manometry in healthy and incontinent patients. HR-EMG with TSMS aims to fit into routine pelvic floor physiology testing alongside endoanal ultrasound and manometry.



CAN THE ACS NSQIP RISK CALCULATOR PREDICT THE RISKS OF COLORECTAL CANCER SURGERY IN AN AUSTRALIAN TERTIARY HOSPITAL? – SINGLE-CENTRE STUDY AT FMC

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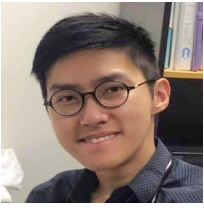
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Introduction: Surgical patients must be equipped with potential morbidity and mortality complications to be adequately consented prior to their procedure. The American College of Surgery National Surgical Quality Improvement Program online surgical risk calculator (SRC) uses patient-specific pre-operative variables to make logistic model-based predictions for 13 general and 2 procedure-specific 30-day outcomes.

Methods: Colorectal cancer surgery patients at Flinders Medical Centre (FMC) from 2014 to 2018 were evaluated. The RC's predicted outcomes were compared with observed outcomes. Statistical analysis included Brier score, C-statistic and Standardized Event Ratio.

Results: A total of 267 patients were included. The RC's Brier score was 0.03 and 0.18 for predicting mortality and morbidity, respectively. The observed event rate for Return to Theatre, pneumonia, UTI and Anastomotic leak was higher than the RC predicted (standardized event ratio 1.67 CI [1.07-2.49], 2.01 CI [1.21-3.13], 2.07 CI [1.13-3.48] and 2.00 CI [1.12-3.29], respectively). The observed event rate for SSI, Readmission and Sepsis was lower than the RC predicted (standardized event ratio 0.38 CI [0.19-0.68], 0.12 CI [0.03-0.32] and 0.35 CI [0.11-0.81], respectively). The observed length of stay was longer than predicted for all patients (12.6 vs 7.6 days, $P < 0.001$).

Conclusions: The SRC was a weak discriminator for predicting complications of FMC colorectal cancer patients. We attribute the variation to differences in documenting, coding systems, specific patient and surgical characteristics between Australian and American patient demographics. Compounding the differences was the limitations which included a smaller sample size, a single institution and using the SRC to focus on colorectal cancer patients excluding general surgical patients. This warrants further research into the area to confirm or deny the results starting with a larger sample size with a multi-centered approach.



ULTRASOUND SCREENING OF ABDOMINAL AORTIC ANEURYSM BY JUNIOR MEDICAL OFFICERS IN AUSTRALIAN RURAL HOSPITAL SETTING: A PILOT STUDY

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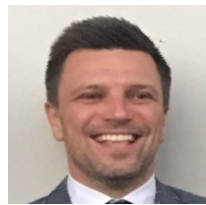
Introduction: Cost-effectiveness of Abdominal Aortic Aneurysm (AAA) ultrasound screening in the metropolitan setting has been demonstrated. Literature suggests that trained novices can reproduce abdominal aorta measurements comparable to sonographers. This study aimed to determine if, after limited training, junior doctors could perform ultrasound AAA screening reliably in a rural Australian hospital setting. We hypothesised that junior doctors would be able to achieve interobserver variability of within 5mm and agree on AAA diagnosis with each other in at least 95% of patients.

Methods: This was a 23-day study carried out at the Whyalla Hospital and Health services, a regional health provider in rural South Australia. Participants aged 50 years or above were recruited from the hospital inpatients and community volunteers. Three junior doctors who underwent 2-hour practical Point-of-Care ultrasound training performed scans sequentially on participants. The maximum anteroposterior diameter of infrarenal aorta was measured. Measurement discrepancies between operators were compared against the clinically acceptable difference (CAD) of 5mm. Scanning efficiency and aneurysm detection were statistically analysed.

Results: Among 71 participants, measurements were successfully attained by all operators in 66(93.0%) cases, and within CAD in 58(81.7%) cases between three operators – 16(61.5%) inpatients and 42(93.3%) volunteers. Measurement reproducibility

substantially improved after standardisation of ultrasound technique on day one. Agreement on aneurysm detection was excellent between operators. No previously known AAA was missed. Improvement in scanning efficiency from inpatients to volunteer groups was statistically significant. A cost of AUD13.2 per screened subject is possible.

Conclusions: For screening purposes, junior doctors were able to reproduce intrarenal aorta measurements comparable to sonographers after two hours of training. One day of supervised practice is recommended to institute standardised ultrasound technique for novices. Ultrasound AAA screening by junior doctors in rural Australia is feasible, cost-effective and should be advocated.



MONITORING PATIENT RECOVERY IN THE COVID ERA

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Introduction: Devices that capture step counts enable objective measurement of activity. These activity monitors have been used in clinical trials to assess secondary endpoints of mobilisation after surgery. Many smartphones are also capable of capturing step count data however their general applicability for monitoring surgical patients has not been assessed. Smartphones offer the additional benefit of remote monitoring possibilities which is particularly relevant in the COVID era where ‘virtual follow up’ is becoming standard. We aimed to assess the feasibility and patient acceptance of smart phone mobility tracking in the peri-operative period.

Methods: A prospective qualitative observational study was performed at one hospital in Western Australia (Ethics Number 1622). Patients were included if recovering from major surgery, defined by admission to an Intensive Care Unit (ICU). A two stage intervention included a structured questionnaire detailing patient demographics, smartphone ownership and device access in the ICU setting. Every 3rd patient was invited to participate in a semi structured interview exploring patient attitudes to smartphone utilisation and activity monitoring, specifically the ‘imposition’ of third party applications, constant phone carriage and acceptable timeframes for monitoring. Quantitative data was assessed for percentage of patients with immediate access to an applicable device with qualitative analysis of patient acceptability.

Results: Overall, 50 patients were included; median age 66 (range 25 - 84), 66% were male. At initial approach in ICU 98% of patients had a mobile phone which was with them at that time. Most (80%) were smartphones with step count ability (Apple iPhone 50%, Samsung Galaxy 35%). Elderly patients were less likely to have a smartphone; 10 of 19 patients >75yrs compared to 30 of 31 patients < 75yrs 2 (P<0.01). In interviews with 13 patients, none rejected utilising their own device for activity monitoring. Patients expressed interest in how this could be used to influence and guide their recovery, although concerns were voiced over personal data and any costs incurred.

Conclusions: Measuring post-operative recovery remotely via smartphones could be feasible in many patients. Concerns exist with applicability in the elderly and patients require reassurance that appropriate data safeguards are in place.



ANEURYSMAL SUBARACHNOID HAEMORRHAGE AND THE GLYCAEMIC STRESS RESPONSE

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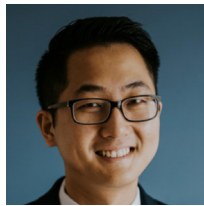
Introduction: Hyperglycaemia is recognised as a common stress response and is often seen in the brain injured patient. Along with adverse effects at the cellular level, hyperglycaemia has been shown in preclinical studies to lead to dysregulation of neuronal metabolism, cerebral blood flow and intracerebral pressure. For aneurysmal subarachnoid haemorrhage, there is a paucity of evidence to support current guideline recommendations for glycaemic control. Thus, a greater understanding of the relation between blood glucose in the critical period following haemorrhage and neurological outcome may aid in the reduction of secondary brain injury.

Methods: We conducted a single centre, retrospective audit of aneurysmal subarachnoid haemorrhage patients initially admitted to the intensive care unit (ICU) over a 10 year period. World Federation of Neurosurgery (WFNS) grade as well as blood glucose on admission, over the first 48 hours and throughout the ICU length-of-stay was collected. Neurological outcome was graded with the modified Rankin Score (mRS) at the interval of 6-12 weeks.

Results: 211 patients were identified for inclusion. One-way ANOVA analysis of WFNS grades showed a statistically significant difference for 48 hour mean blood glucose ($F(4,205) = 5.70, p < 0.01$) and mRS at 6-12 weeks ($F(4,169) = 15.81, p < 0.01$). Logistic regression was

conducted to assess the neurological outcome with mRS 0-3 defined as "good outcome" and mRS of 4-6 defined as "poor outcome". Univariate analysis for WFNS grade (OR 1.97, 95% CI 1.56-2.50, $p < 0.01$) and 48 hour mean glucose (OR 1.49, 95% CI 1.16-1.90, $p < 0.01$) were statistically significant.

Conclusion: A poorer grade subarachnoid haemorrhage correlates with greater blood glucose stress response, increased systemic glucose variability and is associated in our cohort with a worse neurological outcome. While a poorer grade could partly explain the connection between blood glucose and neurological outcome; the relationship may suggest that greater glycaemic control in the intensive care setting may be a modifiable risk factor for prevention of secondary brain injury.



READMISSIONS AFTER ILEOSTOMY FORMATION: A RETROSPECTIVE ANALYSIS FROM A NEW ZEALAND TERTIARY CENTRE

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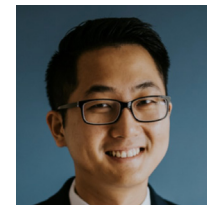
Background: Ileostomy formation is a commonly performed procedure in colorectal surgery. The morbidity associated with ileostomies is substantial, particularly for unplanned hospital readmissions and readmissions with dehydration. Studies of post-ileostomy readmissions from an Australasian institution are currently lacking. This retrospective study aimed to quantify the 60-day readmission rate after ileostomy formation in a New Zealand tertiary centre and to determine the predictive factors.

Methods: The surgical database of Auckland City Hospital was searched for all patients aged ≥ 18 years with a new ileostomy formed between 1st January 2015 and 1st January 2019. Patient electronic medical records were reviewed to obtain data regarding the primary outcome of readmissions within 60 days of discharge, as well as patient and operative variables. Multivariate regression analysis was performed to

identify independent predictors of all-cause readmissions and readmissions with dehydration.

Results: 246 patients with 266 ileostomy formations were included. The 60-day readmission rate was 29.3%, with dehydration present in 27.0% of these readmissions. Renal impairment at discharge (OR 2.819, 95% CI: 1.087-7.310, $p=0.033$) and the presence of at least one Clavien-Dindo 1 complication (OR 2.268, 95% CI: 1.301-3.954, $p=0.004$) were independently associated with all-cause readmission. The independent predictors of readmission with dehydration were renal impairment at discharge (OR 5.752, 95% CI: 1.696-19.514, $p=0.005$), codeine prescribed on discharge (OR 9.024, 95% CI: 1.628-50.002, $p=0.012$), Charlson Comorbidity Index (OR 1.235, 95% CI: 1.018-1.497, $p=0.032$), and Body Mass Index (OR 1.081, 95% CI: 1.016-1.151, $p=0.014$).

Conclusion: Unplanned hospital readmission following ileostomy formation is a significant issue in the New Zealand patient population. Some patient groups are at particularly high risk, such as those with renal impairment at discharge.



RISK FACTORS FOR READMISSION WITH DEHYDRATION AFTER ILEOSTOMY FORMATION: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction: Ileostomy formation is a commonly performed procedure with substantial associated morbidity. Patients with an ileostomy experience high rates of unplanned hospital readmission with dehydration and such events have long term health and economic impacts. Reports of the significant risk factors associated with these readmissions have been inconsistent.

Methods: The aim of this study was to identify significant risk factors for readmission with dehydration following

ileostomy formation. A systematic search was conducted using the Medline, Embase, Cochrane and CINAHL databases. All original research articles reporting on risk factors for readmission with dehydration following ileostomy formation for any indication in adults were included. The main outcomes were the pooled risk ratios of clinical variables potentially associated with dehydration-related readmissions following ileostomy formation.

Results: Ten studies with a total of 27,089 patients were included. Eight variables were found to be significantly associated with dehydration-related readmissions following ileostomy formation: age \geq 65 years, body mass index \geq 30 kg/m², diabetes mellitus, hypertension, renal comorbidity, regular diuretic use, ileal-pouch-anal-anastomosis procedure and index admission length of stay. A pre-operative diagnosis of colorectal cancer was less likely to result in readmission with dehydration. The pooled incidence of 30-day and 60-day readmission with dehydration following ileostomy formation were 5.0% (95% CI: 2.9-8.3%) and 10.3% (95% CI: 7.0-14.9%), respectively. The definition of dehydration was heterogeneous and inconsistent. All the included studies analyzed patients from the same country and were retrospective in design.

Conclusions: Readmission with dehydration following ileostomy formation is a significant issue with several identified clinical variables increasing the risk. Further investigation into targeted interventions and preventative measures are warranted, in order to minimize this risk.

Quick Shot Presentation Abstracts

Session 7B



PREDICTING RESPONSE TO NEOADJUVANT THERAPY IN OESOPHAGEAL ADENOCARCINOMA

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Introduction: Locally advanced oesophageal adenocarcinoma (OAC) is treated with neoadjuvant therapy (NAT) followed by surgery. Response to NAT is routinely assessed from the resection specimen following surgery. Unfortunately, a clinically meaningful response to NAT is restricted to less than a third of patients. The remainder are subject to significant morbidity and a mortality rate of up to 2%. Therefore, the aim of this proposal is to develop and validate a biomarker capable of predicting a patient's response to NAT in OAC. In order to achieve this, two separate approaches will be assessed. The first involves assessing the feasibility of using organoids developed from treatment naïve tumour biopsies as a preclinical tool to determine future treatment response. The second involves assessing the gene expression of treatment naïve biopsies using a panel of 26 genes that have previously been demonstrated to be predictive of treatment response (sensitivity 80%, specificity 70%).

Methods: Endoscopic biopsies of treatment naïve OAC will be obtained from patients at the UMC, Utrecht. Part of each biopsy will then be kept for validation and the remainder used for organoid generation as per previously

established protocols. Once successfully generated and passaged, organoids will then be validated using a combination of morphological assessment, immunohistochemical analysis, sequencing, qPCR and response to Nutlin3a. Organoids will then be treated with both radiation and chemotherapy in vitro as per the CROSS protocol. Organoid response will then be correlated with the pathological response determined following surgery. In order to validate the 26 gene panel, patients who underwent NAT followed by surgery for OAC at St Vincent's Hospital in Melbourne will be identified from a prospectively maintained database. Treatment responses will then be determined, and patients grouped into responders and non-responders.

Results: Organoids have been cultured from treatment naïve tumour with a success rate of 60%. Validation has confirmed that organoids recapitulate a glandular morphology and express markers of upper gastrointestinal differentiation. In vitro treatment as per the CROSS protocol has been shown to match the response seen in the patient.

Conclusion: Preliminary results support the feasibility of using both organoids and gene panels to predict response to NAT in OAC. If successful, this will enable a personalised approach to treatment selection.



COMPARING LAPAROSCOPIC KIDNEY TRANSPLANTATION VERSUS ROBOTIC-ASSISTED KIDNEY TRANSPLANTATION USING A PORCINE MODEL

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Introduction: Two techniques for minimally invasive surgery (MIS) in kidney transplantation (KT) have been described

in humans. Laparoscopic kidney transplantation (LKT) uses "traditional" laparoscopic instruments and robotic-assisted kidney transplantation (RAKT) uses the DaVinci surgical robot (Intuitive Surgical, Sunnyvale CA). No studies have been performed directly comparing the two modalities.

Methods: Following ethics approval, four Landrace pigs were acquired because of their anatomic similarities to humans. Following nephrectomy, the kidney was flushed sequentially with chilled crystalloid and University of Wisconsin (UW) preservation solution then stored in ice. Autotransplantation was performed in a heterotopic fashion onto the external iliac vessels, mimicking the procedure in humans. We measured anastomotic time (AT) taken for each procedure as this is the most technically challenging component and a key performance indicator in KT. All procedures were performed by a single surgeon. A semi-structured interview was performed afterwards to qualitatively assess surgeon perceptions. LKT was attempted with a FlexDex needle driver (FlexDex Surgical, Brighton MI) to emulate the "wristed" action of the DaVinci system. This proved impractical and was replaced with a Storz needle driver (26173HA, Karl Storz SE & Co, Germany). The robotic operations were completed using the DaVinci Xi surgical robot system.

Results: All four KTs were completed successfully. AT was 90 minutes and 120 minutes (mean 105 mins) respectively in the laparoscopic arm, compared with 60 and 75 minutes respectively (mean 67.5 mins) in the robotic arm. From the interview it was determined that ergonomically the laparoscopic procedure was more taxing on the surgeon with significant operator fatigue and neuralgia. With RAKT however, there was no operator fatigue and laparoscopic suturing was greatly assisted by the wristed robotic instruments. For the robotic procedures, less input was also required from the assistant with precise and sustained retraction provided by the robot's third arm. The number of ports required were the same for both MIS procedures.

Conclusion: In a large animal model, RAKT is superior to LKT in terms of time to graft revascularisation, surgeon ergonomics and technical difficulty.



TIMING OF PERIOPERATIVE CHEMICAL THROMBOPROPHYLAXIS ACROSS GENERAL SURGERY: VARIATIONS IN PRACTICE AND ITS CLINICAL IMPLICATIONS

DAVID S. LIU (1, 2, 3), SEAN STEVENS (1), ENOCH WONG (4), JONATHAN FONG (1, 5), AND KRINAL MORI (1, 2, 6) ON BEHALF OF THE PROTECTING INVESTIGATORS AND THE VERITAS COLLABORATIVE

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Introduction: Despite guidelines recommending perioperative chemical thromboprophylaxis for patients undergoing major general surgery, the most appropriate time for its initiation is unknown. In this context, we have observed significant variations in its practice. Here, we quantified the heterogeneity of timing of perioperative chemoprophylaxis across general surgical subspecialties. Using cholecystectomies as a model, we investigated whether timing of chemoprophylaxis affects venous thromboembolism (VTE) and bleeding rates post-operatively.

Methods: Retrospective review of all elective major general surgeries performed between 1 January 2018 to 30 June 2019, across seven university-affiliated Victorian hospitals. Clinical VTE was defined as imaging-proven symptomatic disease within 30 days of surgery. Major bleeding was defined as the need for blood transfusion, surgical intervention, or $\rightarrow 20$ g/L fall in haemoglobin from baseline.

Results: 5912 patients who underwent 6628 procedures were reviewed. Significant heterogeneity was found in the use of chemoprophylaxis and the timing of its initiation. These variations were observed within the same procedure, and between different

surgeries and subspecialties. Overall, 1744 cholecystectomies were reviewed. Chemoprophylaxis was given early (pre- or intra-operatively), postoperatively or not given in 847 (48.6%), 573 (32.9%), and 324 (18.6%) patients respectively. Clinical VTE occurred in 5 (0.3%) patients. This was not associated with the timing of chemoprophylaxis. Bleeding occurred in 42 (2.4%) patients, of which half were major events. These required surgical control in 5 (11.9%) patients and 9 (21.4%) received blood transfusions. Bleeding also extended length of stay (mean (SD), 3.1 (4.0) vs 1.4 (2.2) days, $p < 0.001$). One mortality was recorded. Importantly, when compared with postoperative (RR 1.36, 95% CI 1.01-1.57) or no (RR 1.39, 95% CI 1.13-11.53) chemoprophylaxis, early usage significantly increased bleeding risk and predicted its occurrence on multivariate analysis.

Conclusions: Perioperative chemoprophylaxis across general surgery is highly variable. Unrationalizable variations in practice may compromise patient safety. In cholecystectomies, chemoprophylaxis administered pre- or intra-operatively increases bleeding risk without appreciable additional protection against VTE.



IMPROVED PROSTATE CANCER DETECTION AND PREDICTION OF OUTCOMES USING 68GA PSMA PET/CT: TOWARDS NON-INVASIVE PRECISION MEDICINE

ARSALAN TARIQ (1, 4), MATTHEW J. ROBERTS (1, 2, 3, 4), ANDREW MORTON (1, 4), PETER DONATO (1, 4), SAMUEL KYLE (4, 5), DAVID A. PATTISON (4, 5), PAUL THOMAS (4, 5), GEOFF COUGHLIN (1), RACHEL ESLER (1), NIGEL DUNGLISON (1), ROBERT A. GARDINER (1, 2, 6, 7), SUHAIL A. DOI (8), LOUISE EMMETT (9, 10), AND JOHN YAXLEY (1, 4)

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10. FACULTY OF MEDICINE, UNIVERSITY OF NEW SOUTH WALES, KENSINGTON, NEW SOUTH WALES, AUSTRALIA

Introduction: 68 Gallium (68Ga) prostate-specific membrane antigen (PSMA) positron emission tomography (PET) represents a promising approach to prostate cancer (PCa) diagnosis and staging. Available data on PSMA-based primary tumour characterisation is limited, hence this study sought to investigate the benefit of 68Ga PSMA PET/CT characterisation of the primary tumour, in comparison to multiparametric MRI (mpMRI) and histopathology (biopsy, radical prostatectomy; RP), and prediction of survival outcomes after RP.

Methods: A retrospective cohort study of patients undergoing mpMRI, prostate biopsy, and 68Ga-PSMA PET/CT (PSMA-PET) over a 3-year period was conducted. Standard clinical and imaging parameters were collected. "Per patient" and "per lesion" analyses for image-based detection according to RP histopathology were described using sensitivity, specificity and other measures of diagnostic accuracy. Intraprostatic PSMA intensity was correlated to adverse pathology outcomes (Gleason score and upgrading from biopsy, pathological stage) and progression-free survival using multivariate statistical analysis.

Results: 144 patients were included in the study with a median age of 66.5 years and median PSA of 8.6 ng/ml. PSMA-PET intensity in vivo predicted all of Gleason score on RP, upgrading from biopsy to RP histopathology, pathological stage and PFS. PSMA-PET detected more foci overall (77%, AUC 0.817 vs) and bilateral (42% vs 21%) and multifocal (34% vs 19%) disease than mpMRI. The additional detection yield favoured PSMA-PET over mpMRI for index (13.5% vs 4.3%) and total lesions (18.2% vs 5.4%). PSMA-PET identified significant tumours in 9/11 patients with normal (PIRADS-2) mpMRI. Prediction of progression-free survival was particularly enhanced by PSMA among patients with biopsy Gleason score $\leq 3+4$ according to

Cox-proportional hazards regression. Cox-regression adjusted survival analysis predicted a 5.48-fold increase in hazard for Gleason score $\leq 3+4$ patients with high ($SUV_{max} \rightarrow 8$) compared with low ($SUV_{max} \leftarrow 8$) PSMA intensity.

Conclusions: PSMA-PET incrementally improved tumour localisation compared with mpMRI. Intraprostatic PSMA intensity is prognostic and may be a valuable new biomarker in localised prostate cancer, especially in men with biopsy-proven Gleason 3+4 disease considering an initial approach of active surveillance or focal therapy.



ACCURACY OF VIRTUALLY PLANNED MANDIBULAR AND MAXILLARY RECONSTRUCTION

MANRAJ JOHAL (1), **EUGENE WONG** (2), **JOLANDE MA** (3), **DAVID LEINKRAM** (4), **KAI CHENG** (5), **MARUF AL MARUF** (4), AND **JONATHAN CLARK** (4, 5, 6)

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6. SYDNEY MEDICAL SCHOOL, FACULTY OF HEALTH AND MEDICAL SCIENCES, UNIVERSITY OF SYDNEY, CAMPERDOWN, NEW SOUTH WALES

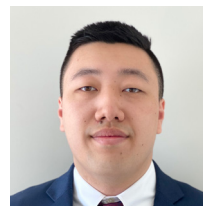
Introduction: Virtual or computer-assisted surgical planning of the mandibular and maxillary reconstructions have shown to be more accurate when computer-assisted as well as having reduced ischemic time, total operative time, reconstructive time and length of stay. Most commonly accuracy has been determined by measuring deviations in the condyle, gonion, bone grafts and whole mandible. The ability to objectively state accuracy is difficult due to the lack of universally applied accuracy measurement protocol. This study aims to provide a substantial data set determining the accuracy of virtual reconstructions using a classification

system based loosely on that proposed by Brown et al. The study also aims to compare factors which may increase or decrease accuracy.

Methods: The post-operative CT scans DICOM files and pre-operative STL files were collated for 62 patients who underwent virtual reconstruction of the maxilla or mandible between 2011 and 2020. The post-operative CT scans were segmented using 3D slicer, to form STL files which could then be directly compared to the preoperative STL virtual plan. Each case was then classified according to the degree of initial defect and the number of osteotomies performed. Key angles and lengths were taken to assess the accuracy of the virtual reconstruction.

Results: There were 44 mandible and 18 maxillary reconstructions performed using virtual surgical planning in 36 males and 26 females. The overall accuracy was high when compared to the preoperative plan in mandibular reconstruction but higher variation was observed in maxillary reconstructions. We found that there was a higher correlation to the virtual plan amongst reconstructions with less osteotomies and smaller initial defects. The vast majority of the cases are fibula free flaps followed by deep circumflex iliac artery and scapula osseous free flap, there were no major discrepancies between the type of free flaps and the accuracy of reconstructions. The key reconstructive techniques were the Alberta Reconstructive Technique, Rohner technique and the Sydney modified Alberta Reconstructive Technique (SM-ART). We found the SM-ART technique showed an increase in accuracy compared to ART and Rohner. In this article we will aim to present illustrative examples highlighting the challenges of executing the virtual plan.

Conclusion: VSP enhances the ability of reconstructive surgeons to perform complex reconstructions of the mandible and maxilla.



EVALUATING THE INFLUENCE OF A GENERAL SURGERY ROTATION AND THE TRAINING FACTORS IMPACTING ON MEDICAL STUDENTS' INTEREST IN A SURGICAL CAREER

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Introduction: A growing body of international literature has shown that surgical interest amongst medical students (MS) has been steadily declining. Our objective was to assess the pre- and post-rotation understanding, knowledge and interest in surgery for a cohort of Australian MS and to evaluate how exposure to different factors during their surgery rotation (SR) impacted on their surgical interest.

Methods: Surveys were sent to penultimate and final year MS who had completed at least 4 weeks in a general SR. Survey items were expressed on 5-point Likert scales and assessed pre- and post-rotation understanding, knowledge and interest in surgery. Exposure to factors experienced within the rotation were measured with 10 items, as was the perceived impact. Survey reliability was tested using Cronbach's alpha. Differences and relationships between pre- and post-rotation variables were tested with paired t-test and Spearman rank correlation. Univariate and multivariate logistic regression analyses were carried out to assess the effect of variables on high interest in a surgical career (SC).

Results: The response rate was 50.9% (160/314). There were significant increases in self-ratings of surgical knowledge and skills ($p < 0.001$) however there were no significant differences in interest in a SC ($p = 0.069$) before and after the rotation. All correlations were positive between knowledge and skills in surgery and understanding and interest in a SC. There were statistically significant associations between gender and pre-rotation interest in a SC ($4^{\wedge}2 = 21.3, p < 0.001$). There was a large

positive correlation overall between exposure to factors in the SR and perceived impact ($r_s=0.77, p<0.001$). Having 'surgeons as role models', (OR:3.35, $p=0.001$), 'scrubbing and assisting in theatre' (OR:2.58, $p=0.013$) and 'research opportunities' (OR:2.57, $p=0.033$) were the most positive influential rotation factors for a high interest in a SC. High pre-rotation interest (OR:7.35, $p<0.001$) and self-rating of post-rotation knowledge and skills (OR:4.76, $p=0.001$) were significant external factors for a high interest in a SC.

Conclusion: Our study shows that a SR can have a large impact on the career interests of MS. Surgical educators can better promote the field of surgery by focussing on the SR factors that inspire early surgical interest amongst MS. More studies in the future should evaluate the experience and quality of surgical rotations and undergraduate surgical education in Australia.



WHAT IS THE ACCURACY OF THE ACS-NSQIP SURGICAL RISK CALCULATOR IN EMERGENCY SURGERY? A META-ANALYSIS

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Introduction: The ACS-NSQIP surgical risk calculator provides an estimation of 30-day post-operative complications including mortality. This tool has the potential to both aid in decision-making for patients and their families, but also aid in optimising management of high-risk patients. Whilst validated within the American surgical population, its utility internationally in patients requiring emergency surgery is not yet known. This study undertook a systematic review and meta-analysis to assess the calculator's accuracy in predicting mortality in emergency surgery patients. According to the literature, this is one of first studies

to perform a meta-analysis assessing the performance of the ACS-NSQIP calculator in an external patient cohort outside of the ACS-NSQIP database.

Methods: A comprehensive literature search was conducted between October 2019 to April 2020. The PubMed, Medline and Cochrane Databases were searched for relevant studies. The search strategy included studies from January 2013 to April 2020. Studies including elective surgery were excluded. There were no language restrictions placed. Reference lists of retrieved articles from these databases were used to identify further studies eligible for inclusion. 402 records were screened. 66 full-text articles were assessed for eligibility. Six studies were included in our final meta-analysis. A random effects model was used and fitted using restricted maximum likelihood estimation (REML). The O/E ratio was used to validate the calculator's accuracy in predicting mortality. Heterogeneity was analysed using the I² and Cochrane Q tests.

Results: Six studies were included in the meta-analysis, with a total of 1835 patients undergoing emergency surgery. The summary estimate of the O:E ratio of the ACS-NSQIP surgical risk calculator in predicting 30-day post-operative mortality was 1.06 (95% CI 0.74-1.51). As expected there was significant heterogeneity between studies with a Cochrane Q of 11.96 ($p = 0.04$) and I² = 57.5%.

Conclusion: This meta-analysis has showed that that the calculator does have potential to be utilised in the multi-disciplinary care of patients undergoing emergency surgery. As the ACS-NSQIP surgical risk calculator is still reasonably new, there remains limited studies published in the literature attempting to externally validate its performance, accounting for this studies heterogeneity.



PREDICTORS OF POSTOPERATIVE PAIN FOLLOWING ROTATOR CUFF REPAIR

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Background: Postoperative pain after arthroscopic rotator cuff repair (RCR) is difficult to predict and often problematic.

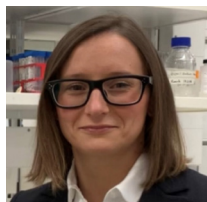
Aim: To determine which patient factors contribute to postoperative pain following arthroscopic RCR.

Methods: This cross-sectional study evaluated 2172 patients who received an arthroscopic rotator cuff repair at a single institution. Pain frequency and severity were measured preoperatively and at 6 weeks' post-surgery using Likert scales. Multiple linear regression analysis was conducted to examine the relationship between postoperative pain scores and preoperative pain scores, age, sex, tear size, strength, level of sporting and work activity, and work-related injury status.

Results: (a) Preoperative pain: The severity of preoperative rest pain ($r=0.33, p<0.001$), preoperative night pain ($r=0.32, p<0.001$), and frequency of extreme pain ($r=0.31, p<0.001$) were the strongest independent associations with the frequency of pain at 6 weeks postoperatively. The severity of preoperative pain had the strongest independent associations with the severity of postoperative pain at 6 weeks post-surgery ($r=0.35, p<0.001$). (b) Tear Size: Patients who never experienced extreme pain postoperatively had the largest tear size (mean 4cm²), and patients with the highest frequency of extreme pain had the smallest tears (mean 2cm²). Tear size was inversely related with pain severity ($R^2=0.85$). (c) Other associations with postoperative pain frequency included work-related injury status ($P<0.001$), younger age ($P=0.001$), and males ($P=0.04$).

Conclusion: The two major determinants of pain post rotator cuff repair were preoperative pain and tear size. Patients

with significant preoperative pain and those with small tears were most likely to have increased pain at 6 weeks post-surgery.



COVIDCARE: A NATIONAL SURVEY OF AUSTRALIAN SURGICAL TRAINEES ASSESSING THE BROAD IMPACTS OF THE COVID-19 PANDEMIC

GEORGINA RIDDIOUGH (1), DANIEL R.A. COX (1), DEBRA NESTEL (1), AND VIJAYARAGAVAN MURALIDHARAN (1), ON BEHALF OF THE VERITAS COLLABORATIVE
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Introduction: The COVID-19 pandemic, as in many other countries, has severely impacted the provision of surgical services in Australia. Alongside the dramatic effects of the pandemic on elective surgical services and outcomes, the pandemic has also impacted surgical trainees. We designed a survey to assess the effects of the pandemic amongst surgical trainees in Australia across broad categories including; working patterns, training, income, health and wellbeing, clinical interactions and accessibility of PPE.

Methods: An anonymous 35-question survey was distributed nationally via surgical trainee-led research collaboratives to non-accredited and accredited registrars and fellows. The online platform, Qualtrics® (Provo, Utah, USA), was used to design, distribute and collate survey results. The survey was designed by a multidisciplinary team including surgical trainees, director of clinical training and surgical educator.

Results: 184 trainees responded to the survey providing an estimated response rate of 19%. 55% and 11% of trainees reported feeling moderately or severely affected by the COVID-19 pandemic respectively. 74% of respondents reported that their working roster changed as a result of the COVID-19 pandemic and 43% of trainees were transferred to a rotating roster by their employer. As a result of roster changes, 83% of trainees reported reduced income. 73% and 71% of trainees and fellows

reported a reduction in primary operator rates during the pandemic respectively. The proportion of trainees reporting moderate to severe anxiety increased from 32% prior to the pandemic, to 52% during. However, not all impacts were negative. Trainees commented that during the pandemic access to online education, collaboration, team work and work-life balance all improved.

Conclusions: The COVID-19 pandemic has had far-reaching effects on surgical trainees. Trainees have reported detrimental effects on surgical training, alongside reduced income as well as increased rates of moderate-severe anxiety. Whilst there have been positive impacts of the pandemic including improved work-life balance, these have not compensated for the increased rate of anxiety reported by trainees.



CONCURRENT FOCAL THERAPY AND LYMPHADENECTOMY IN PROSTATE CANCER: A RISK-ADAPTED APPROACH IN MEN WITH HIGHER-RISK PROSTATE CANCER

AKBAR N. ASHRAFI (1), ANDRE LUIS DE CASTRO ABREU (1), ALESSANDRO TAFURI (1), ALIASGER SHAKIR (1), MATTHEW WINTER (1), GIOVANNI E. CACCIAMANI (1), DANIEL PARK (1), LESLIE BALLAS (3), SARMAD SADEGHI (2), DAVID QUINN (4), PARKASH GILL (1), AND INDERBIR S. GILL (1)

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Purpose: Radical treatment for prostate cancer (PCa) routinely incorporates treatment of regional pelvic lymph nodes in men considered to be at risk of lymph node invasion (LNI). However, during partial gland ablative therapies

for similar-risk PCa, the regional lymph nodes remain untreated. Our objective was to demonstrate proof-of-concept for concomitant focal high-intensity focused ultrasound (fHIFU) and lymph node dissection (LND) in localized PCa.

Methods: We identified men undergoing fHIFU and concomitant minimally-invasive LND for clinically localized primary or recurrent Grade Group ≥ 2 PCa between July 2016 and September 2018. LND was offered in men with recurrent PCa or $\rightarrow 5\%$ risk of LNI. Complications, and short-term oncological/ functional outcomes were evaluated. Continence was defined as use of no pads. Categorical and continuous variables were reported using total count and percentages, and median and range, respectively.

Results: fHIFU and LND was technically successful in all patients. Median preoperative risk of LNI was 11%. Median operating time was 5.2 hours, robotic console time 1.5 hours, blood loss 25 mL and hospital stay 1 day. There were no major complications or readmissions. PSA reduction was 84% with a time-to-nadir PSA of 3 months. At median follow-up of 14 months, two patients had recurrent PCa in the treated lobe and one was commenced on ADT. All men were continent, and post-operative SHIM and IPSS scores were unchanged.

Conclusions: This is the initial clinical study evaluating proof-of-concept and the feasibility of concomitant fHIFU with LND in clinically localized PCa.

Visual Abstracts

Organising Committee

The organising committee for the Surgical Research Society of Australasia invited presenters for the afternoon session to create a visual abstract that could accompany their presentation.

Visual abstracts provide a method to disseminate research in a visual manner that is brief and concise, with conferences and journals including these images in tweets to promote discussion about the research topics.

Accuracy of Virtually Planned Mandibular and Maxillary Reconstruction

Manraj Johal (Session 7B), Eugene Wong, Jolande Ma, David Leinkram, Kai Cheng, Maruf Al Maruf, and Jonathan Clark

Virtual Surgical Planning – Which factors determine accuracy in mandibular and maxillary reconstruction?

We compared deviation of the preoperative surgical plan to the post-operative CT scan and found...		
Improved accuracy in Mandibular vs Maxillary reconstructions	Improved accuracy in reconstructions with smaller initial defect and single osteotomy reconstructions	Improved accuracy in In-house reconstructions compared to commercially planned reconstructions



Program

Thursday
5 November 2020

Poster Session

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POSTERS

Clinical performance of decellularized heart valves versus standard tissue conduits: a systematic review and meta-analysis

Sameer Bhat

An Update on the Epidemiology of Oesophagogastric Cancer in Australia

Samuel Banting

Effect of tonsillectomy on antibiotic prescribing in children

Sita Tarini Clark

Retrospective evaluation of prognostic factors in metastatic spine disease: serum albumin and primary tumour type are key

William Cook

Variation in Postoperative Prescribing after General Surgical Procedures: A Physician Survey

Grace Dennis

After-hours emergency laparotomy mortality between centres with or without a 24-hour acute surgical unit: A Multi-Centre Retrospective Study

Giles Devaney

E-learning in plastic surgery education: a systematic review

Lisa Ellis

Should we be resecting colorectal cancer in those over 85?

David Flynn

Consistency of global recommendations regarding open versus laparoscopic surgery during the COVID-19 pandemic: A systematic review

Susan Jacob

Fixation medium for histology of testicular biopsies in the investigation of infertility: Davidson's fluid is a superior alternative to formalin

Darren Katz

Teaching the Millennial Interns: An Analysis of Learning Style Preference

Humaira Haider Mahin

uPAR as a diagnostic tool for high risk follicular thyroid neoplasm. A systematic review

Humaira Haider Mahin

Surgical Decision-Making in Uncomplicated Type B Aortic Dissection: A Survey of Australian/New Zealand & European Surgeons

Bijit Munshi

Retrospective analysis of Tilmanocept as a novel tracer in lymphatic mapping and detecting sentinel lymph nodes in melanoma patients

Derek Mwangiru

Outcomes of rib fractures in the geriatric population: a 5-year retrospective single institution Australian study

Bhavik Patel

Program

Thursday
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Poster Session

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Use of unblocked mobile phones and text messaging in patient surveys: a method for increasing response rates

Luke Peters

Surgical Outpatient Study (SOS): Characterising the educational experience of outpatient clinics for surgical trainees

Sean Stevens

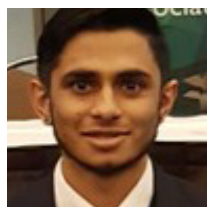
Sentinel lymph node biopsy for high risk thin (T1b) melanoma: review of Queensland practice over 16 years

Harrison Theile

Re-Setting the Score: An International Multicentre Study to Validate the Bern Comprehensive Complication Index for Reporting Surgical Complications

Jonathan O'Brien

Poster Abstracts



CLINICAL PERFORMANCE OF DECELLULARIZED HEART VALVES VERSUS STANDARD TISSUE CONDUITS: A SYSTEMATIC REVIEW AND META-ANALYSIS

SAMEER BHAT (1, 2), STEVE W.F.R. WAQANIVAVALAGI (2, 3), MARCUS B. GROUND (2), PAGET F. MILSOM (4), AND JILLIAN CORNISH (2)

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3. ADULT EMERGENCY DEPARTMENT, AUCKLAND CITY HOSPITAL, AUCKLAND DISTRICT HEALTH BOARD, GRAFTON, AUCKLAND, NEW ZEALAND

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Introduction: Valve replacement surgery is the definitive management strategy for patients with severe valvular disease. However, valvular conduits currently in clinical use are associated with significant limitations. Tissue-engineered (decellularized) heart valves are alternative prostheses that have demonstrated promising early results. The purpose of this systematic review and meta-analysis is to perform robust evaluation of the clinical performance of decellularized heart valves implanted in either outflow tract position, in comparison with standard tissue conduits.

Methods: Systematic searches were conducted in the PubMed, Scopus, and Web of Science databases for articles in which outcomes between decellularized heart valves surgically implanted within either outflow tract position of human subjects and standard tissue conduits were compared. Primary endpoints included postoperative mortality and reoperation rates. Meta-analysis was performed using a random-effects model via the Mantel-Haenszel method.

Results: Seventeen articles were identified, of which 16 were included in the meta-analysis. In total, 1,418 patients underwent outflow tract reconstructions with decellularized heart valves and 2,725 patients received standard tissue conduits. Decellularized heart valves were produced from human pulmonary valves and implanted within the right ventricular outflow tract in all cases. Lower postoperative mortality (4.7% vs. 6.1%; RR 0.94, 95% CI: 0.60-1.47; P=0.77) and reoperation rates (4.8% vs. 7.4%; RR 0.55, 95% CI: 0.36-0.84; P=0.0057) were observed in patients with decellularized heart valves, although only reoperation rates were statistically significant. There was no statistically significant heterogeneity between the analyzed articles (I²=31%, P=0.13 and I²=33%, P=0.10 respectively).

Conclusions: Decellularized heart valves implanted within the right ventricular outflow tract have demonstrated significantly lower reoperation rates when compared to standard tissue conduits. However, in order to allow for more accurate conclusions about the clinical performance of decellularized heart valves to be made, there need to be more high-quality studies with greater consistency in the reporting of clinical outcomes.



AN UPDATE ON THE EPIDEMIOLOGY OF OESOPHAGOGASTRIC CANCER IN AUSTRALIA

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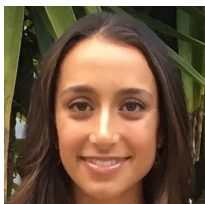
Introduction: The incidence of oesophagogastric (OG) malignancies has steadily increased in the past decades, despite falling rates of known risk factors such as smoking. There has been little publication in the literature on the

epidemiology of OG malignancies on a national level in Australia in recent years. The aim of this research is to present an update on the epidemiology of OG malignancies in Australia, as well as present rates of surgical resections.

Method: The Cancer Council in each State and Territory of Australia prospectively collects data from all malignancies. The Australian Institute of Health and Welfare collates this data nationally and has made this publicly available from the years 1982 until 2018. Data points collected included annual incidence, gender, mortality, age at diagnosis and state of origin. Statistics Australia collates data from the Medicare Benefit Schedule and reports on each item number from 1994 until 2018. The Australian Bureau of Statistics was sourced for Australian population data.

Results: In 2015, gastric cancer ranked 15 and oesophageal cancer ranked 19 in incidence in Australia, however, rise to 14 and 15 respectively for annual mortality. The annual incidence of OG malignancies has risen from 1690 to 4054 from 1982 until 2018. The incidence of oesophageal cancer in males has increased over 3.5 times from 317 to 1152 over that same time period. The 5-year survival data has improved from 11% to 22% for oesophageal cancers and 18.7% to 30.3% for gastric cancers. The highest incidence age-group remains 65-69 years representing 17% of all presentations. The number of oesophagectomies performed in Australia each year has decreased from 2.8 to 2.3 per 100,000 from 1994 until 2019.

Conclusion: OG cancer is an increasingly prevalent malignancy in Australia with a high associated mortality, however there is no national audit to collate epidemiological data on this topic. We believe this paper highlights the need for such an audit.



EFFECT OF TONSILLECTOMY ON ANTIBIOTIC PRESCRIBING IN CHILDREN

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Introduction: Tonsillectomy is commonly performed in the paediatric population, with over 580,000 operations performed in the United States each year. The major indications are recurrent tonsillitis (RT) and sleep-disordered breathing (SDB). Multiple courses of antibiotics are typically prescribed prior to surgical intervention. While it may be assumed that the number of courses of antibiotics prescribed following a tonsillectomy would reduce, there is almost no evidence to confirm that this occurs. Recently, our group published a retrospective case series that described the clinical characteristics and outcomes of children under the age of 16 years who underwent tonsillectomy. This study is a follow-up on this previous case series and its purpose is to determine whether tonsillectomy in this group of children led to a reduction in the number of antibiotics prescribed in the year following surgery.

Methods: Data were collected from the clinical records departments of two district health boards in Auckland, New Zealand. Hospital morbidity records were reviewed for all children younger than 16 years old, who underwent a tonsillectomy between December 2015 and December 2017 in the Auckland region.

Results: A total of 1538 children underwent tonsillectomy during the study period. Following surgery, antibiotics were prescribed to 828 (54%) patients at the time of discharge, with an average of 1.2 ± 0.1 courses in the year following surgery. This was significantly reduced compared to preoperative antibiotic intake (3.4 ± 0.1 courses) in the year preceding surgery ($p < 0.001$). Readmission within 30 days of discharge was not associated with increased antibiotic usage postoperatively. In the two weeks following surgery, 25% of patients were prescribed a course of antibiotics for a presumed postoperative

infection.

Conclusions: These findings support the benefit of tonsillectomy in reducing antibiotic prescription in the year following surgery. Furthermore, it has highlighted areas of practice, such as perioperative antibiotic prescription, which can be improved to further reduce the prescription of antibiotics for children with tonsillar hyperplasia.



RETROSPECTIVE EVALUATION OF PROGNOSTIC FACTORS IN METASTATIC SPINE DISEASE: SERUM ALBUMIN AND PRIMARY TUMOUR TYPE ARE KEY

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Introduction: Treatment decisions for metastatic spine disease are complex and depend on prognosis. Four prognostic systems in use are the Oswestry Risk Index (OSRI), modified Bauer score (MBS), van der Linden score (VDLS), and New England Spinal Metastasis Score (NESMS). We aimed to determine the performance of these scoring systems in a New Zealand cohort of patients and develop a prognostic score specific to this demographic.

Methods: A retrospective review of a patient cohort from 2009 to 2016 was undertaken. Scores and individual scoring items were evaluated with univariate and multivariate analysis. Significant items were used to design a simple, population-specific, and objective scoring system, which was then tested.

Results: 106 patients receiving either surgery and radiotherapy (65) or radiotherapy alone (41) were included. Mean post-treatment survival time was 13.7 months. All scoring systems were significantly correlated with survival and had similar concordances. The MBS had the largest coefficient of determination (Cox and Snell's $R^2 = 0.18$), followed by the NESMS ($R^2 = 0.14$). On multivariate analysis, the lung cancer (MBS) and serum

albumin (NESMS) items were significant. A modified OSRI primary tumour item and NESMS serum albumin outperformed the MBS ($R^2 = 0.20$), providing the basis for a prognostic scoring tool specific to our demographic.

Conclusions: Based on serum albumin and primary tumour type, we propose the 'Metastatic Spine Risk Index' as a simple and objective tool, specific to our population for predicting survival, which can be used in conjunction with other clinical information when considering treatment options for this difficult disease entity.



VARIATION IN POSTOPERATIVE PRESCRIBING AFTER GENERAL SURGICAL PROCEDURES: A PHYSICIAN SURVEY

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Introduction: In Australia, the responsibility of prescribing discharge medications after surgical procedures differs between the public and private setting. In the public, the surgeons and their teams are responsible, while in the private sector the anaesthetist is typically the prescriber of discharge medications. We sought to investigate the differing practices of these two groups via physician survey.

Methods: We emailed consultant general surgeons and consultant anaesthetists in our local district requesting participation in an online survey on their individual prescribing practices. We used local mailing lists from both public and private hospitals in the district to identify potential respondents. The survey requested information surrounding the routine discharge prescription practices after the following uncomplicated operations: laparoscopic appendicectomy (LA), elective inguinal hernia repairs (IH),

and laparoscopic cholecystectomy (LC). The study has been approved by the local ethics committee.

Results: 66 consultants responded to the survey, 38 anaesthetists and 28 surgeons. The anaesthetic cohort were more likely to prescribe opioids for all operations than their surgeon counterparts: LA 16.7% vs 34.3%, IH 30.8% vs 52.9%, LC 26.9% vs 70.3%. Despite this, only LC reached statistical significance ($p=0.002$). The mean quantity of opioids theoretically prescribed (in oral morphine equivalents) by each prescribing group likewise differed, with the anaesthetic cohort averaging higher quantities for all procedures: LA 7.8 vs 58.88 ($p=0.024$), IH 27.6 vs 52.73 ($p<0.001$), and LC 21.6 vs 73.13 ($p=0.007$).

Conclusion: This survey demonstrates that there may be a difference in prescribing practices between the surgeon and anaesthetic cohorts. Moreover because of the different settings of each of these prescribing groups (i.e. public vs private practice) patients may be receiving differing quantities of opioids in the private and public setting. While our study does not specifically look at the frequency and quantity of opioids prescribed to actual patients, it does highlight areas for potential change when dealing with the over-prescription of opioid medications after general surgical procedures. Further prospective studies are required to investigate the actual difference in prescribing between the public and private sectors.



AFTER-HOURS EMERGENCY LAPAROTOMY MORTALITY BETWEEN CENTRES WITH OR WITHOUT A 24-HOUR ACUTE SURGICAL UNIT: A MULTI-CENTRE RETROSPECTIVE STUDY

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Introduction: Emergency laparotomy carries high associated morbidity and mortality. There is currently no Australasian data comparing mortality rates for after-hours emergency laparotomies between centres with a 24-hour acute surgical unit (ASU) and those with on-call services. The Greater Newcastle region of Hunter New England Local Health District (HNELHD) encompasses 1 hospital with an ASU and 3 hospitals without an ASU. This study aims to explore any differences in mortality between patients presenting to a hospital with or without ASU services.

Methods: A retrospective review was conducted encompassing all consecutive patients receiving emergency laparotomy between January 2016 and December 2018 across all 4 acute public hospitals in the Greater Newcastle area. Data were collected from paper and electronic medical records. All patients undergoing emergency laparotomy were included. Laparotomies were categorised according to start time; In hours (8am – 5pm), evening (5pm – 12am) and night (12am – 8am). Patient demographics, NELA risk and mortality were recorded. Primary outcome was 30-day mortality. Statistical significance was determined at $P<0.05$.

Results: 939 patients received an emergency laparotomy over the study period. 582 (62.0%) received a laparotomy between 8am-5pm, 282 (30.0%) between 5pm – 12am and 75 (8.0%) between 12am – 8am. The 30-day mortality rates between ASU and Non-ASU facilities were as follows: 8.5% vs 10.0% In hours ($P=0.53$), 8.8% vs 6.4% Evening ($P=0.53$), 9.8% vs 17.6% Night ($P=0.32$). When comparing ASU vs non-ASU cases, there was no statistically significant difference in recorded 30-day mortality overall, or by subgroup. Median NELA mortality risk was highest for patients operated on at night, and greater in non-ASU patients (10.3% vs 17.2%, $P=0.173$) however this failed to reach statistical significance.

Conclusion: Differences in 30-day mortality and NELA mortality risk for cases operated on between 12am and 8am were identified but failed to reach statistical significance. While this data suggests there was no significant difference in emergency laparotomy associated mortality between centres

with a 24-hour ASU and those without we suggest further analysis of this trend with a larger study cohort.



SHOULD WE BE RESECTING COLORECTAL CANCER IN THOSE OVER 85?

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Introduction: Colorectal cancer is most commonly diagnosed in the seventh decade of life. As Australia's population ages, the prevalence of colorectal cancer in the elderly is also increasing. The aim of the study was to evaluate the post-operative outcomes for patients ≥ 85 years old who have undergone colorectal cancer resection.

Methods: Patients who underwent colorectal cancer resection at The Prince Charles Hospital (Brisbane) between 2009-2018 were divided into two groups: Group A (≥ 85 years old, $n=48$) and Group B (75-84 years old, $n=136$). Surgical outcomes and clinicopathological features were compared using appropriate parametric and non-parametric testing.

Results: The median length of stay (LOS) between the groups was 8 days, with no statistically significant difference in LOS between the groups ($p=0.54$). Post-operative complications were graded by Clavien-Dindo classification. High grade post-operative complications were defined as those Grade III-V. No significant difference was identified between the groups with regards to high grade complications (22% vs 17%, $p=0.65$) or overall complication rates ($p=0.42$). Similarly, the 30-day mortality was equal between the groups (2% in each group, $p=1.0$). No significant statistical difference was found in the distribution of cardiovascular, respiratory, metabolic or autoimmune comorbidities between the groups. Additionally, there was no significant difference between ASA grades between the groups ($p=0.426$).

Conclusion: No significant differences were identified in outcomes from colorectal cancer resection in patients \geq 85 years old when compared to those 75-85 years old. Therefore, age should not be a factor for withholding surgery for management of colorectal cancer.



CONSISTENCY OF GLOBAL RECOMMENDATIONS REGARDING OPEN VERSUS LAPAROSCOPIC SURGERY DURING THE COVID-19 PANDEMIC: A SYSTEMATIC REVIEW

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Introduction: Throughout the COVID-19 pandemic, there has been considerable debate amongst surgeons worldwide regarding whether open surgery should be performed in preference to laparoscopic surgery due to the theoretical higher risk of virus aerosolization by the release of pneumoperitoneum. We aimed to:

1. Assess the consistency of global recommendations regarding the choice of open versus laparoscopic surgery during the COVID-19 pandemic;
2. Assess the quality of evidence of viral emission in aerosols generated surgery; and
3. Assess the quality of evidence comparing aerosol generation by different surgical energy devices.

Methods: A systematic review of PubMed, Medline, Embase and Cochrane databases was performed. National surgical society guidelines regarding the choice of open versus laparoscopic surgery were searched manually. Three search strategies were employed. 33 studies were included in the final analysis. Individual studies were rated using the Oxford Centre for Evidence-

Based Medicine Levels of Evidence tool and quality assessed using the Johanna Briggs Institute checklists for text and opinion; or non-randomized experimental studies respectively. Where applicable, confidence in review findings was assessed using the GRADE-CERQual (Confidence in Evidence from Reviews of Qualitative research) tool.

Findings: There is considerable consistency among worldwide recommendations regarding the choice of open versus laparoscopic surgery, with a majority (fifteen out of twenty) not recommending one type of surgery in preference to another. There is evidence that viral particles can be emitted in surgical aerosol, but the evidence is limited and of low quality. There is no evidence of infectivity of such emissions, even in studies examining viral transmission to the operator. There is a paucity of literature on the quantity of surgical aerosol produced by different surgical energy devices, and no evidence to support the use of one surgical instrument over another to minimize aerosol production.

Conclusions: The choice of open or laparoscopic surgery during the COVID-19 pandemic should be decided on a case-by-case risk minimization approach. To better inform clinical recommendations, further research examining viral emission, transmission and infectivity in surgical aerosol is required; as is research quantifying the amount and the nature of surgical aerosol produced.

PROSPERO Registration Number: CRD42020186434



FIXATION MEDIUM FOR HISTOLOGY OF TESTICULAR BIOPSIES IN THE INVESTIGATION OF INFERTILITY: DAVIDSON'S FLUID IS A SUPERIOR ALTERNATIVE TO FORMALIN

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Introduction: As a first in the world, we look to assess the histomorphological clarity of testicular biopsies performed for the investigation of male infertility using Davidson's fluid (DF) as fixative and compare it to standard fixation in 10% neutral buffered formalin (F).

Methods: A prospective study looking at histological testis samples from the same testis undergoing a micro-TESE. Concurrent testicular biopsies from the same testis from patients undergoing a Micro-TESE for azoospermia were separately fixed in DF and F and processed for histological examination. Testicular tissue histology including sloughing of cells, cytoplasmic shrinkage of tubular epithelium, nuclear chromatin detail, cytoplasmic graininess and overall clarity of morphological detail were graded on a 1-4 scale (1=minimal, 2=slight, 3=moderate, 4=marked).

Results: Fifty-six biopsies from fifteen patients with a median (range) age of 35 (27-52) years were examined. Sloughing of cells into the tubular lumina was significantly less for DF-fixed tissue when compared to F. DF-fixed tissue showed less cellular shrinkage and cytoplasmic graininess when compared to F. The nuclear chromatin detail was significantly superior with DF-fixed tissue when compared to F.

Conclusions: Compared to Formalin, Davidson's Fluid is a much better fixative for testicular biopsies, allowing better evaluation of nuclear and cytoplasmic features of seminiferous tubule cells. This is the first study of its kind to assess DF for this use.



TEACHING THE MILLENNIAL INTERNS: AN ANALYSIS OF LEARNING STYLE PREFERENCE

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Introduction: Australia anticipates an ongoing shortage of surgeons in the near future. Understanding this generation's learning preferences may help educators tailor teaching to meet Generation Y's needs, and increase the attraction for surgery as a career pathway.

Methods: Two different teaching approaches were used to deliver information to Generation Y interns. A convenience sample of junior doctors were invited to attend two education sessions as part of the Intern Careers Information Session to junior doctors. The first session 'how to train a surgeon' employed video clips of a child playing her violin as she progressed from absolute beginner to Grade 5, illustrating the commitment required to progress in a skills-based profession like surgery. The second session, 'CV writing and interview techniques', was a standard PowerPoint presentation with information from the Royal Australasian College of Surgeons website. A survey was used to gauge preference regarding format.

Results: Feedback from 10 participants for the first session and 12 participants for the second session indicated that the didactic education session format was preferred: it was rated more highly and found to be more useful than the video education session.

Conclusions: In this cohort, interns from Generation Y preferred the structured didactic method of presentation with the information laid out for them, over that of having to infer their own conclusions through video. More research is required to explore the reasons behind this choice, and establish the best method for teaching this generation. Collaboration with surgeons and academics will be required to attain and retain interns to

surgery.



UPAR AS A DIAGNOSTIC TOOL FOR HIGH RISK FOLLICULAR THYROID NEOPLASM. A SYSTEMATIC REVIEW.

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Introduction: Thyroid cancer is one of the fastest growing diseases. Accurate diagnosis (pre-operatively) between benign and malignant tumours requires further investigation to ensure the correct patients are chosen for thyroidectomy. The urokinase-type plasminogen activator receptor (uPAR) may provide a pre-operative determination of a cancer diagnosis to more accurately choose high risk patients requiring surgery. The aim of this study was to review the existing literature regarding the use of uPAR a method to diagnoses high risk follicular thyroid cancer.

Methods: Electronic databases were searched (January - March 2020). Peer-reviewed, English language articles were included if they investigated uPAR as a diagnostic tool for high risk follicular thyroid neoplasm. Two researchers independently screened and assessed the articles for inclusion. The risk of bias of each individual study was reviewed using the Cochrane risk of bias assessment for observational and intervention studies. Descriptive study characteristics as well as information regarding the diagnostic method used and the results were extracted for each included article. A finding was reported as statistically significant if $p < 0.05$.

Results: uPAR was used as a diagnostic tool for high risk follicular thyroid neoplasm in three included studies. There were five different diagnostic

tools used (uPAR protein amounts, uPA activity, correlation of uPAR with other cancerous factors, prognostic impact of uPAR, truncated form of uPAR) for high risk thyroid neoplasm. Increased concentrations of uPAR in differentiated carcinomas were significantly associated with high MMP-9 ($p=0.034$). Patients with primary tumours of differentiated and anaplastic histology (FTC, PTC, ATC) ($p=0.015$), and when analysing the whole patient population ($p=0.043$), high uPAR was significantly associated with overall poor survival. All studies were observational and lacked the statistical power needed to provide strong evidence.

Conclusions: High uPAR was significantly associated with overall poor survival and increased concentrations of uPAR in differentiated carcinomas were significantly associated with high MMP-9. Further research is required using a more rigorous investigative approach to confirm these findings.



SURGICAL DECISION-MAKING IN UNCOMPLICATED TYPE B AORTIC DISSECTION: A SURVEY OF AUSTRALIAN/ NEW ZEALAND & EUROPEAN SURGEONS

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Introduction: Current guidelines provide clear direction for surgical intervention of acute complicated Type B aortic dissection (TBAD). However, there is controversy about the role of pre-emptive Thoracic Endovascular Aortic Repair (TEVAR) in uncomplicated TBAD. More vascular surgeons are adopting an aggressive approach towards early TEVAR but (over)treatment may expose patients to unnecessary operative risk. Hence, we aim to understand expert opinions, and the factors influencing decision-making in this context.

Methods: In 2018, surgeons from Australia/New Zealand (ANZ) and Europe (EUR) participated in an online survey which comprised questions about preference for pre-emptive TEVAR followed by five case scenarios. Case 1 was designed to favour TEVAR in a hypertensive patient with partial false lumen thrombosis and large diameters. Case 2 had no risk factors mandating TEVAR, according to current evidence. Cases 3, 4 and 5 were designed to test one risk factor respectively, large entry tear on the inner aortic curvature, partial false lumen thrombosis, and large diameters alone.

Results: There were 75 responses, 42 from EUR and 33 from ANZ. About half of surgeons (49.3%) endorse pre-emptive TEVAR. In Case 1 and 5 which included large diameters, 58.3% and 52.8% of surgeons respectively chose TEVAR, the highest rates obtained in the survey. Surgeons who recommend pre-emptive TEVAR were more likely to choose TEVAR in both Case 1 (83.3% vs 33.3%, $p < 0.0001$, 95% CI 27.6% to 65.8%) and

Case 5 (69.4% vs 38.2%, $p = 0.0084$, 95% CI 8.2% to 50.0%).

Conclusions: In this survey about uncomplicated TBAD, about half of surgeons recommend pre-emptive TEVAR in selected cases. The surgeon's predisposition towards intervention, and large diameters appear to be the most influential factors in decision-making. These findings underline the uncertainty in today's practice and emphasise the need for better predictive tools. An understanding of current trends in clinical practice will assist with the design of practical and functional risk prediction tools.



RETROSPECTIVE ANALYSIS OF TILMANOCEPT AS A NOVEL TRACER IN LYMPHATIC MAPPING AND DETECTING SENTINEL LYMPH NODES IN MELANOMA PATIENTS.

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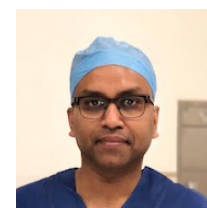
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Introduction: Sentinel lymph node biopsy (SLNB) is a technique that has widely been used in the surgical management of cutaneous melanoma. SLNB provides crucial information regarding to the microscopic nodal involvement of melanoma in patients and thus plays a major role in staging. The ideal radiopharmaceutical for lymphatic mapping in melanoma has properties including a standardize preparation, non-toxic, painless, rapid up take and accumulation in first-echelon nodes in high amounts with minimal pass through to second echelon (non-sentinel) lymph node. Tilmanocept is a novel radiopharmaceutical that accumulates in lymphatic tissue by selectively targeting and binding to CD 206 receptors on the surface of macrophages and dendritic cells which are found in high concentration in lymph nodes. This study aims to assess if Tilmanocept would be an appropriate and accurate radiopharmaceutical to map and intraoperatively identify sentinel lymph node biopsy in cutaneous melanoma.

Methods: This study was a retrospective analysis of patients presenting to Westmead Crown Princess Mary Cancer Centre Melanoma clinic who consented for a melanoma excision with SLNB. Patients with primary cutaneous melanoma biopsy proven and clinically node negative lymph nodes had Tilmanocept administered and lymphoscintigraphy either day of or day before surgery. Melanoma excision was completed and with the assistance of a handled gamma prob to identify SLN. The primary data collected and analysed was the detection and retrieval rate of SLN. Secondary data obtained was the pathological status of sentinel lymph node biopsies (recorded as either positive or negative). Data were expressed as a percentage of sentinel lymph nodes identified in lymphoscintigraphy, intraoperatively and histologically expressed with a 95% confidence interval.

Results: In this study 12 out of 12 patients (100%) who had Tilmanocept administered had lymphoscintigraphy that was able to identify at least 1 hotspot/ draining basin. In terms of tissues specificity 100%, tissues identified by Tilmanocept radiotracer were identified histologically as lymph nodes with no false positive.

Conclusion: Tilmanocept is an accurate and feasible method of assessing the nodal status in patients with cutaneous melanomas. This research is the first to evaluate the use of Tilmanocept in the Australian setting and adds to the growing but limited studies worldwide.



OUTCOMES OF RIB FRACTURES IN THE GERIATRIC POPULATION: A 5-YEAR RETROSPECTIVE SINGLE INSTITUTION AUSTRALIAN STUDY

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Objectives: To describe the incidence and management of rib fractures in elderly patients at a Level 1 Australasian Trauma Centre and compare the complications of each approach.

Design/setting: A single-centre, retrospective study between January 2014 and November 2019 at a Level 1 Trauma Centre identified from the trauma registry.

Participants: Patients aged ≥ 70 , admitted to hospital with blunt trauma-induced rib fractures.

Main outcome measures: Demographics, pre-morbid function, acute length of stay (LOS) and Intensive Care Unit admission, injury characteristics, analgesia and operative managements, and complications.

Results: 920 presentations were identified, with 295 meeting analysis criteria. Falls accounted for majority (50.2%, n=148) with median Injury Severity Score (ISS) 10 (inter-quartile range [IQR] 10-14). Severe chest trauma occurred overall in 80% (n=243), and 100% (n=15) of operative patients. Conservative management was used in 95% (n=280). Patient controlled analgesia was common (60.0%, n=177) and regional techniques increased in the surgical approach (80.0%, n=12) compared with conservative (25.4%, n=71). Despite longer acute LOS (12 days IQR 9-15), operative management resulted in similar complications (26.7% vs 30.4%) and no deaths. Operative intervention was significantly associated with increased number of fractures ($p < 0.001$), flail segment ($p = 0.001$) and severe Abbreviated Injury Score chest ($p < 0.001$); however, not significant for age ($p = 0.90$), comorbidities (0.91) or anticoagulation use ($p = 0.51$).

Conclusions: The surgical management of rib fractures in the elderly could be performed without increased complications within this centre's multimodal approach. Comorbidities, age, and anticoagulation use alone may not be adequate reasons to withhold surgical rib fixation, and standard indications for rib fixation may be applicable in the elderly population.



USE OF UNBLOCKED MOBILE PHONES AND TEXT MESSAGING IN PATIENT SURVEYS: A METHOD FOR INCREASING RESPONSE RATES

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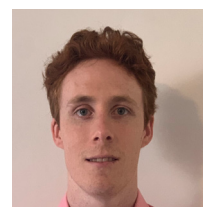
Introduction: Patient reported outcomes are becoming increasingly important in surgical quality in healthcare projects. There has been a continuing decline in health-related survey responses in the last 30 years, with most published data claiming between 20-60% response rates. A 75% response rate has been deemed necessary to ensure validity in a study; a very difficult target to reach. We have sought to design a methodology to increase the response rate of patient phone surveys using unblocked numbers and text messages for a quality in healthcare project.

Method: For our project, patients were contacted via unblocked mobile phones one week after discharge from hospital. They were not made aware that they would be contacted for the project. If contact was not made after two consecutive phone calls on the same day, a text message was sent to the patient explaining the rationale for the call. If still no response by the following day, patients were then called once again with the same number. We recorded our response rate including at which stage in the method it occurred. The survey itself was always conducted via a call and could not be completed through text message.

Results: We attempted contact of 1112 patients. Though our method we achieved an 83.7% response rate. 74% of the patients responded to the first attempt at contact. A further 9.7% of patients were recaptured using text messaging and a call the following day. Of the 181 patients who did not participate in the study, 20 of them answered the call but did not wish to

participate.

Conclusion: With this method, we were able to achieve a superior response rate of 83.7%. At our institution, patients are routinely called the day after discharge with a blocked number which achieves a response rate of 20-50%. We believe our high response rate can be contributed to two main factors: firstly due to the unblocked number which allows patients to directly return a missed call and may increase the likelihood of answering, and secondly the text messages which notifies the patients of the reason for the call, serving as a less intrusive method of communication. We have demonstrated the effectiveness in our centre for achieving a response rate greater than 75%. Validation in other centres is required to ensure reproducibility.



E-LEARNING IN PLASTIC SURGERY EDUCATION: A SYSTEMATIC REVIEW

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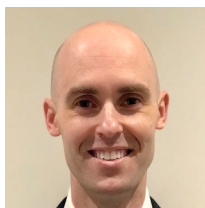
Introduction: E-learning enables learners to participate at a time, place and location convenient to them. E-learning may be the solution to poor exposure of medical students to plastic surgery and provide an opportunity for efficient education of plastic surgery trainees who need to reserve their newly-limited work hours for the mastery of practical skills. The use of e-learning in surgical education in general has been shown to be beneficial, but there is a paucity of evidence on e-learning for the varied skills and knowledge required for plastic surgery in particular. This review aimed to establish whether e-learning was a useful resource in increasing knowledge and skills plastic surgery in medical students

and junior doctors.

Methods: A systematic search of the English literature was undertaken on e-learning in plastic surgery education. Data collected included e-learning method, topic, population, and outcome measures used to assess knowledge gain. This study was conducted in line with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and bias was assessed using the Cochrane Collaboration Risk of Bias Tool.

Results: Nine of 2422 articles met our inclusion criteria. E-learning tools included smartphone/tablet-based applications, computer-based video instruction, multimedia software/animation and online courses and were compared to traditional learning tools. Topics taught included hand surgery, craniofacial surgery, skin cancer surgery and burns. Eight studies had subjects who were medical students and one studied plastic surgery residents. E-learning was significantly better than traditional learning in all five studies which studied a practical skill-related outcome. Of the six studies which compared e-learning with a traditional method using multiple choice question (MCQ) examination as an outcome measure, three demonstrated e-learning was significantly better than traditional learning. A meta-analysis on four articles performed favoured e-learning for knowledge gain. Risk of bias in included articles was evaluated to be of high or unclear risk, calling into question the meaningfulness of the data set.

Conclusion: E-learning is associated with large positive effects compared with traditional instruction for both knowledge gain and practical skill improvement in plastic surgery. Further research should compare different e-learning tools in plastic surgery for a variety of medical audiences.



SURGICAL OUTPATIENT STUDY (SOS): CHARACTERISING THE EDUCATIONAL EXPERIENCE OF OUTPATIENT CLINICS FOR SURGICAL TRAINEES

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Introduction: Attendance at outpatient clinics (OPCs) by surgical trainees is intended to be a training and educational activity while providing a service essential to the delivery of surgical care. Evidence supporting the educational benefit of attending OPCs, particularly for surgery in Australasia setting is lacking.

Method: We conducted a prospective multi-centre survey of general surgical trainees to explore their experiences in the outpatients' clinics. A novel web-based survey was designed that trainees completed on their smartphones. The survey included eight questions focussing on the clinic demographics, activity and consultant support received by trainees.

Results: Thirty-seven trainees completed 313 surveys with a median of 5 surveys per trainee (1-49 surveys). Participants included trainees at all levels of training from NSET to SET5. Trainees managed a median of eight patients (range 0-22) per clinic, including one 'new', four 'review' and three 'postoperative follow-up' patients. A median of two consultants were present per OPC (range 0-6). Input from consultants was sought for a median of one patient per OPC. The mean perceived educational value of OPCs, scored from 0 (did not support training) to 100 (very much supported training) on a continuous scale depending upon individual trainees' perception of the degree to which attendance at the OPC supported their education and training,

was rated 51 out of 100.

Conclusion: We have used a mobile web-based application for contemporaneous data gathering on trainee's experience of surgical OPCs. This data suggests that trainees perceive the educational experience of OPCs to be far less than optimal, while being negatively impacted by the degree of clinical workload and positively impacted by consultant involvement.



SENTINEL LYMPH NODE BIOPSY FOR HIGH RISK THIN (T1B) MELANOMA: REVIEW OF QUEENSLAND PRACTICE OVER 16 YEARS

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Introduction: Sentinel lymph node biopsy (SLNB) is a surgical procedure providing key staging and prognostic information for melanoma. Current Australian guidelines recommend SLNB be considered for patients with lesions \rightarrow 0.75mm with other "high risk pathological features". Based on emerging evidence, 'high risk thin' T1b melanoma has been defined by the American Joint Committee on Cancer (AJCC) 8th Edition as a lesion with Breslow thickness 0.8-1.0mm or ulceration (any thickness \leftarrow 1.0mm). Given the majority of new melanoma diagnoses are T1 lesions, it is important to better appreciate which T1 melanoma patients are high risk and should undergo SLNB. Therefore our aim was to assess Queensland SLNB practice for high risk thin T1b melanoma over a 16-year period.

Methods: The Queensland Oncology Repository was utilised to anonymously extract retrospective data on all Queensland patients diagnosed with AJCC 8th Edition T1b cutaneous primary melanoma from 2002 - 2017 inclusive. Patient demographic, geographic and melanoma clinico-pathologic

characteristics were analysed, as well as whether SLNB was performed. The SLNB sub-group was evaluated for trends in patient selection for the procedure, and risk factors for positive SLNB status.

Results: Over 16 years in Queensland, 6979 T1b melanoma cases were diagnosed, of which 232 (3.3%) underwent SLNB. Relatively more T1b patients who had SLNB were female, aged 40-59 years and had Breslow thickness of 1.0mm. Fewer patients had SLNB for melanomas located on the head and neck. 20 patients had a positive SLNB (8.6%). Positive SLNB cases tended to be thicker at 1.0mm Breslow thickness. Ulceration and mitotic rate did not correlate well with positive biopsy. SLNB was clustered at major city hospitals, with patients from regional/rural areas (2.3%) undergoing SLNB less often than patients from major cities (4.0%).

Conclusions: Queensland is a high incidence melanoma setting, with the majority being T1 lesions. SLNB was positive in 8.6% of AJCC 8th Edition T1b melanoma cases, which supports SLNB being performed for these high risk thin melanoma patients. Despite this positive rate, only 3.3% of T1b patients underwent SLNB in the 16 years studied. Further education, training and resource allocation to expand access to SLNB for T1b melanoma would be beneficial for patient care given the volume of melanoma disease, especially in rural/remote areas considering the geographical breadth of Queensland.



RE-SETTING THE SCORE: AN INTERNATIONAL MULTICENTRE STUDY TO VALIDATE THE BERN COMPREHENSIVE COMPLICATION INDEX FOR REPORTING SURGICAL COMPLICATIONS

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Introduction: Reproducible assessment of postoperative complications is essential for reliable evaluation of quality of care and recovery to make patient counselling more transparent. Traditional single metric complication reporting systems evaluate only the most severe complication and therefore underestimate the true overall postoperative morbidity. The Bern Comprehensive Complication Index (BCCI) aims to more reliably estimate morbidity by consolidating all post-operative complications on scale from 0 (no complication) to an upper limit of 100 for death. The aim of this study is to test applicability and validity of the Bern Comprehensive Complication Index to improve complication reporting.

Methods: Inclusion criteria are all patients which underwent a major urological surgery (radical cystectomy, radical prostatectomy, partial nephrectomy, radical nephrectomy, nephroureterectomy, retroperitoneal lymph node dissection) between 1995-2020. Retrospective post-operative complication data was collected on approximately 10,000 patients from 117 medical institutions across the globe. Patients with <30 days postoperative follow up were excluded. Complications were graded according to the Clavien-Dindo classification (CDC). A modified Berne CCI was developed using an exponential function, which transforms the sum of the weights into a value from 0-100. Global performance will

be assessed by generating Receiver Operating Curves and calculating the Area Under the Curve. Calibration curves were used assess performance across the score range.

Results: The complication rate for major urological operations were heterogeneous. With traditional complication scoring models the maximal index value of 100 was exceeded in →200 cases. The maximal value of the BCCI reported was 98.5. On univariate analysis the BCCI demonstrated a lower standard deviation across all procedures when compared to traditional models. Preliminary multivariate analysis results suggest that BCCI is accurate predictor of complication rates associated with the procedures studied.

Conclusions: Initial data suggests that BCCI provides a more precise depiction of postoperative morbidity in patients with →1 complication. The preliminary results of this study demonstrate that the BCCI model can reliably evaluate the quality of care and recovery across multiple urological procedures. Further analysis will determine the utility of this tool for reporting complications in other surgical fields.