



THE UNIVERSITY OF BRITISH COLUMBIA

Department of Surgery
Faculty of Medicine

30th CHUNG RESEARCH DAY

November 4, 2024

8:00AM-3:15PM - ACADEMIC SESSIONS

ZOOM

ID 99652 042124

PASSCODE 042124

OR

IN PERSON

PAETZOLD EDUCATION CENTRE
VANCOUVER GENERAL
HOSPITAL

6:00PM-9:30PM - DINNER

IN PERSON

UNIVERSITY GOLF CLUB



Scan to access the program, schedule, and evaluation:

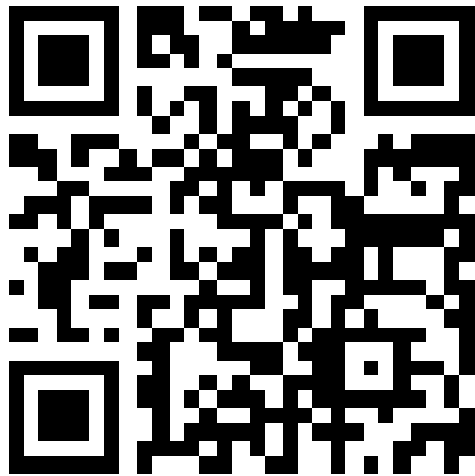


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Message from the Department Head, Dr. Gary Redekop



I am delighted to welcome you to the 30th Annual UBC Department of Surgery Research Day and Chung Lectureship. This day is made possible through a generous endowment made by Drs. Wally and Madeleine Chung. This year, we once again are hosting the event in a hybrid format, allowing participation from all of our distributed sites across British Columbia.

Our Chung Lecturer this year is Dr. Susan Mackinnon, Minot Packer Fryer Professor of Surgery, Director of the Center for Nerve Injury and Paralysis, and Professor of Plastic and Reconstructive Surgery at Washington University School of Medicine.

Chung Research Day serves as a platform to showcase the incredible range of basic, clinical, educational, and translational research within our department, and it also provides an opportunity to recognize and celebrate excellence in scholarship among our faculty.

This year, we received a record-breaking number of abstract submissions, which to me is a testament to the growing depth of research within the UBC Department of Surgery. I would like to extend my heartfelt thanks to all of our faculty, staff, and trainees for their dedication and contributions to advancing surgical science and scholarship over the past year and for making this celebration possible.

A handwritten signature in black ink that reads "Gary Redekop".

Gary Redekop
Head, Department of Surgery
November 2024

Land Acknowledgment

The UBC Department of Surgery would like to acknowledge that the land on which we gather in-person for this province-wide day-long celebration of our Department's research achievements, is the traditional, ancestral, and occupied territory of the Coast Salish Peoples, including the territories of the **xwməθkwəyəm (Musqueam)**, **Skwxwú7mesh (Squamish)**, **Stó:lō** and **Səlilwətaʔ/Selilwitulh (Tsleil- Waututh) Nations**. For millennia, these nations have passed on their culture, history, and traditions from one generation to the next on this site. We invite each attendee to critically reflect on the ongoing effects of settler colonialism and structural racism and question what it means to teach, learn, and conduct research on occupied lands.

[View the interactive map of BC First Nations communities and lands](https://www.bcafn.ca/first-nations-bc/interactive-map)

<https://www.bcafn.ca/first-nations-bc/interactive-map>

Founders of the W.B and M.H. Chung Lectureship



Prior to the establishment of the W.B. and M.H. Chung Research Day, the Department of Surgery only had division specific research days. In 1995, the Dr. W.B. and M.H. Chung created an endowment that allows us to hold an annual research day that has become the premier, department-wide event at which we recognize our research achievements.

Wallace B. Chung, MDCM, FRCSC, DSc

Dr. Chung was born and raised in Victoria, British Columbia. After pre-medical education at Victoria College and UBC, he attended the McGill University and received his M.D. in 1953. Following internship and surgical residency training at VGH and UBC, Dr. Chung was appointed to the Department of Surgery at UBC as an Instructor in 1960. After being appointed to an Assistant Professor in 1961, Dr. Chung rose quickly through the ranks to become a full Professor in 1972. For his many professional and community contributions, Dr. Chung has received many awards, including being appointed to the Order of Canada in 2005.

Professional Career

Dr. Chung was noted as a technically gifted surgeon who pioneered Vascular Surgery in Western Canada. In particular, Dr. Chung was known for his excellent surgical results for carotid artery surgery for transient ischemic attacks. He established Vascular Surgery as a new specialty in BC, and as a separate division of surgery at VGH and UBC. He was one of founders of the Canadian Society for Vascular Surgery, and served as its president in 1982. Throughout his academic career, Dr. Chung has taken positions of responsibility (appointed University Head of the Division of General Surgery in 1970, Head of the University Division of General and Vascular Surgery in 1978, Head of the Department of Surgery at the University Hospital in 1981). During his nine-year tenure he built the University Hospital Department of Surgery into an excellent academic unit with international recognition for vascular surgery and gastrointestinal surgery. He was also the Governor of the American College of Surgeons from 1980 to 1986. Dr. Chung has received many awards for his teaching and service, including being honoured by the vascular surgeons of British Columbia with a named day – The Wallace B. Chung Clinical Day.

Community Service

Dr. Chung has also been an effective and tireless pillar of the community. He has used his extraordinary gifts of wisdom and diplomacy to help advance the integration of the Chinese Community. He was one of the founding executives of the Chinese Cultural Centre of Vancouver serving as Chair from 1983-87. Under Dr. Chung's leadership, the Centre has become a model for other multicultural programs in Canada. Among his other community activities, Dr. Chung is a founding member and patron of the Sun Yat-Sen Gardens, served on the Board of Directors International Dragon Boat Festival Society, and Vice Chair of the Canadian Multiculturalism Council. Dr. Chung's contributions have been recognized by awards (Chinese Cultural Centre Outstanding Achievement Award in 1989 and Chinese Benevolent Association Outstanding Citizen Award in 1990) and his appointment to the B.C. Heritage Trust in 1993.

History Scholar

An avid reader and collector of first edition rare books, Dr. Chung became a renowned authority and collector of one of Canada's best libraries on the history of the Pacific Northwest exploration and Chinese Canadian immigration. Due to his interest in the Canadian Pacific Steamship Company, Dr. Chung was a guest curator of the Vancouver Maritime Museum for the "Empress to the Orient Exhibition" in 1991. In

recognition of this interest, the Vancouver Maritime Museum has named its library, the W.B. and M.H. Chung Library. In 1999 he made a gift of more than 25,000 rare and unique items to the University of British Columbia. The Chung Collection is housed in the Ike Barber Learning Centre (<http://chung.library.ubc.ca/>) and attracts scholars and visitors from around the world.

Madeline Chung, MD, FRCSC

Dr. Madeline Chung was born in Shanghai, China. Her medical education took place at the Yale Medical College of China. She did her internship in Victoria, B.C. followed by specialty training in Obstetrics and Gynecology in Montreal and at the Mayo Clinic in Rochester, Minnesota. Upon coming to Vancouver in the late 1950's, she was the first female and first Chinese-Canadian specialist in Obstetrics and Gynecology in British Columbia. She was appointed as a Clinical Instructor at the University of British Columbia and by the time of her retirement she had delivered over 6,500 babies over a 40-year career, and held the rank of Clinical Professor. Shortly after her retirement from clinical practice she was made an Honorary Life Member of the College of Physicians & Surgeons of British Columbia. Dr. Madeline Chung was also a Clinical Professor Emeritus of the Department of Obstetrics and Gynecology in the Faculty of Medicine at the University of British Columbia. She passed away on August 22, 2021.

Physician

She was known as a compassionate and empathic physician who gave freely and willingly of her time to her patients, often acting as a counselor to her patients and mentor to the children and adults who she had previously delivered. Frequently, the children she delivered would return to see Madeline years later when it was time for them to have their own babies.

Community Service

Dr. Madeline Chung extended her philosophy of volunteerism and service to the community in all aspects of her life. Not only was this evident in her professional life but she was active in her church and community as well. She served on boards of the Chinese United Church, the Vancouver Academy of Music, and was the founding Executive Director of the True Light Chinese School in Vancouver. Well into her eighties, she was given an honorary graduation certificate from York House School in recognition of her contributions to the school.

Family

Despite her tireless devotion and dedication to her patients she was still able to balance a healthy family life providing endless support to her husband, Wally, while raising two children who felt inspired enough by their home life to pursue careers in medicine. Their daughter Dr. Maria Chung is in the Division of Geriatric Medicine at the University of British Columbia. Their son Dr. Stephen Chung is the past University of British Columbia Head of the Division of General Surgery and the current Vancouver General Hospital Head of Hepatobiliary & Pancreatic Surgery. Late in her career, she experienced a life-threatening illness but was able to return to full-time work. At the same time, she was the primary caregiver to her elderly mother whom she looked after in her home.

Chung Lecturer 2024

Susan E. Mackinnon, M.D., F.R.C.S.(C.), F.A.C.S



Dr. Mackinnon graduated from medical school at Queen's University in Kingston, Ontario, Canada, in 1975. She trained in general surgery at the same institution and completed her plastic surgery training at the University of Toronto. She then completed a peripheral nerve research fellowship at the University of Toronto in the Department of Neurosurgery and a hand surgery fellowship in Baltimore at the Raymond Curtis Hand Center. Dr. Mackinnon joined the surgical staff at the University of Toronto in 1982. In 1988, she was awarded the Medal Prize in Surgery from the Royal College of Physicians and Surgeons for her work on nerve regeneration.

She is widely recognized as an international pioneer in nerve regeneration, nerve transfer and nerve transplant.

In 1991, Dr. Mackinnon joined the Department of Surgery at the Washington University School of Medicine. Her research work in St. Louis has been funded through the National Institute of Health since 1993 and has investigated nerve allotransplantation, nerve transfer and nerve regeneration. This work has resulted in new strategy of nerve transfers to reconstruct nerve injuries. She was the Division Chief of Plastic and Reconstructive Surgery from 1996-2020 and is now the Minot Packer Fryer Chair and Professor of Plastic Surgery.

She has published two classic textbooks, *Surgery of the Peripheral Nerve* and *Nerve Surgery*, 700 peer-reviewed publications, over 1000 national presentations, and 176 book chapters. Her comprehensive text *Nerve Surgery* is now in preparation for the second edition.

Dr. MacKinnon's open-access website provides surgical videos with all the "secret ingredients" that are used globally to improve the care of nerve-injured patients. She has recently completed leadership coaching through IPEC, The Institute of Professional Excellence in Coaching and is a certified professional coach in high performance. Dr. Mackinnon is Past President of the American Society for Peripheral Nerve, American Association of Hand Surgery, American Association of Plastic Surgery, and Plastic Surgery Research Council and is a member of the National Academies of Medicine. She is the recipient of the Jacobson Innovation Award from the American College of Surgeons in 2013 for her pioneering work on nerve transfers and in 2023 delivered the Olga Johansen lecture on culture change in Surgery.

In 2022, she received the Honorary Award in Recognition of Personal Achievements and Lifetime Contribution to the Field of Plastic Surgery from the American Association of Plastic Surgeons; the American Society of Plastic Surgeons Trustees Special Achievement Award; the Distinguished Service Award from the

American Society for Peripheral Nerve and the Pioneer Award from the International Federation for Surgery of the Hand. She was made an honorary member of the AANEM, American Association of Neuromuscular and Electrodiagnostic Medicine in 2023.

Dr. Mackinnon is a renewed Educator and has been responsible for the interdisciplinary training of an entire generation of specialists interested in surgical treatment and nerve injury including Neurosurgery, Orthopedic Surgery, and Plastic Surgery.

Dr. Mackinnon married Dr. Patterson in 1972 and has four talented children: Lachlan, a James Beard award-winning Chef; Megan, an Orthopedic hand surgeon; Brendan, an Orthopedic shoulder surgeon, and Caitlan, a hospital administrator. She has 11 wonderful grandchildren.

History of the Chung Lectureship

In 1995, Madeline and Wally Chung made a generous donation to the Department of Surgery at the University of British Columbia. The purpose of the donation was to support an annual UBC Department of Surgery research day and invite the W.B. & M.H. Chung Lecturer to present new academic work as well as judge academic productivity by learners and faculty. The Department is grateful for this wonderful legacy that Madeline and Wally Chung have left for the Department.

1995	Lloyd MacLean, Department Head, Surgery, McGill University and President of the American College of Surgeons
1996	John Duff, University of Western Ontario: <i>"Multisystem organ failure: manifestations and mediators"</i>
1997	K. Wayne Johnston, University of Toronto <i>"Issues in the management of abdominal aortic aneurysms in a rapidly changing health care environment"</i>
1998	Charles H. Tator, Professor and Chair, Division of Neurosurgery, The Toronto Hospital: <i>"The breadth of surgical research in the 1990's"</i>
1999	Garth Warnock, Chief General Surgery, University of Alberta Hospitals, Director, Division of Surgical Research, University of Alberta <i>"Progress in transplantation of insulin-secreting tissues for diabetes mellitus"</i>
2000	Paul Walker, Vice President, Toronto General Hospital Professor of Surgery and Laboratory Medicine, Pathobiology, University of Toronto <i>"The continuing challenge of sepsis"</i>
2001	James C. Thompson, Ashbel Smith Professor of Surgery, University of Texas Medical Branch <i>"Endocrine tumors of the pancreas"</i>
2002	Richard J. Finley, Professor, Department of Surgery Head, Division of Thoracic Surgery, University of British Columbia <i>"Future of image guided minimally invasive thoracic surgery"</i>
2003	Douglas W. Wilmore, Frank Sawyer Professor of Surgery, Department of Surgery Brigham and Women's Hospital, Boston, Massachusetts <i>"The pathophysiology and treatment of intestinal failure"</i>
2004	John Wong, Chair of Surgery & Head, Department of Surgery University of Hong Kong Medical Centre, Queen Mary Hospital, Hong Kong <i>"Complications of esophagectomy: confess and remember"</i>
2005	Richard K. Reznick, R.S. McLaughlin, Professor and Chair, University of Toronto Department of Surgery, Banting Institute, Toronto, Ontario <i>"Surgical training in 35 hours per week: laudable or lunacy?"</i>
2006	James T. Rutka, Janes Visiting Professor in Surgery, Dan Family Chair in Neurosurgery, Professor and Chairman, Division of Neurosurgery, University of Toronto <i>"Astrocytoma invasiveness: molecular mechanisms form the leading edge"</i>
2007	Markus W. Büchler, Professor of Surgery, Division of General Surgery Chairman Surgical Unit, University of Heidelberg <i>"Evidence based pancreatic surgery"</i>
2008	Thomas M. Krummel, Emile Holman Professor and Chair, Stanford University School of Medicine, Department of Surgery Susan B. Ford Surgeon in Chief, Lucile Packard Children's Hospital, Stanford, CA <i>"From Blood and Guts to Bits, Bytes and Beyond-- Upgrading the Surgical Apprentice Model"</i>
2009	Andrea L. Pusic, Assistant Attending Surgeon, Plastic and Reconstructive Surgery, Memorial Sloan-Kettering Cancer Center, New York <i>"Measuring patient reported outcomes in surgery"</i>
2010	Yvan Douville, Chief, Department of Surgery, University of Laval <i>"Evolution of Stentgraft for Treatment of Abdominal Aortic Aneurysms"</i>
2011	Gerald Fried, Chair, Department of Surgery, McGill University <i>"Teaching Billy how to operate: can we do better?"</i>
2012	Haile Debas, Executive Director of UCSF Global Health Sciences (GHS); former Dean of the UCSF School of Medicine (1993-2003); former Chair, UCSF Department of Surgery . <i>"Precious Times"</i>
2013	Lorelei Lingard, Professor and Director of the Centre for Education Research & Innovation, Schulich School of Medicine & Dentistry, Western University, London, ON

- 2014 *"Beyond communication skills: A rhetorical approach to communication for advancing the practice and teaching of teamwork"*
Thomas Waddell, Chair, Division of Thoracic Surgery, University of Toronto, Professor, Department of Surgery, University of Toronto Head, Division of Thoracic Surgery, UHN, Senior Scientist, Toronto General Research Institute, UHN
- 2015 *"The role of research training in surgical education"*
Garnett Sutherland, Professor, Clinical Neurosciences, University of Calgary, Founder and Director, Seaman Family MR Research Centre, Alberta Health Services. *"Magnetic resonance imaging and robotic surgery."*
- 2016 Dr. Ivar Mendez, Fred H. Wigmore Professor and Unified Head of the Department of Surgery at the University of Saskatchewan – *"Robotic and distance tele-mentoring surgery."*
- 2017 Dr. Michael Tymianski, Head of UHN's Division of Neurosurgery and Senior Scientist at the Krembil Research Institute
Dr. Wendy Lai, President of Médecins Sans Frontières (Doctors Without Borders) Canada
- 2018 Dr. Richard Reznick, Dean, Faculty of Health Sciences Queen's University and CEO, Southeastern Ontario Academic Medical Association
"Large scale educational change: difficult, but doable."
- 2019 Dr. Teodor Grantcharov, Professor of Surgery, University of Toronto. *"Surgical innovation, surgical education and patient safety"*
- 2020 Dr. Melanie Morris, Medical Director, Global Surgery Office, University of Manitoba and Lead, Indigenous Health, The Children's Hospital of Winnipeg. *"Something to Imagine: Equity in Pediatric Surgery."*
- 2021 Dr. Gelareh Zadeh, Professor and Dan Chair, Neurosurgery, University of Toronto Head, Division of Neurosurgery, Toronto Western Hospital. *"Equity and Inclusion in Surgical Leadership"*
- 2022 Dr. Chad Ball, Professor of Surgery and Oncology at the University of Calgary. *"Surgical Innovation: Failure, Success, and Everything in Between"*
- 2023 Dr. Jodi Sherman, MD, Associate Professor of Anesthesiology at the Yale School of Medicine. *"Healthcare and Its Pollution: Balancing Patient Safety and Public Health "*

Learning Objectives

The University of British Columbia Division of Continuing Professional Development (UBC CPD) is fully accredited by the Committee on Accreditation of Continuing Medical Education (CACME) to provide study credits for continuing medical education for physicians. This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada and has been approved by UBC CPD for up to **6.5 MOC Section 1** Group Learning credits. Each physician should claim only those credits accrued through participation in the activity.

1. To describe and evaluate the clinical, education and basic science research being conducted in the Department of Surgery.
2. To discover new and innovative research techniques.
3. To participate in the collaborative research environment within the Department of Surgery.

Accredited by UBC CPD



CONTINUING PROFESSIONAL DEVELOPMENT
FACULTY OF MEDICINE

Research Day Schedule

Paetzold Lecture Theatre, Vancouver General Hospital

Zoom: Meeting ID 99652 042124 Passcode 042124

8:00	Opening Remarks and Introductions	
8:15	Chung Lecturer: Dr. Susan E. Mackinnon <i>Professor of Plastic and Reconstructive Surgery, Washington University School of Medicine</i> CULTIVATING JOY AND WELL-BEING FOR PERFORMANCE, INNOVATION, AND PARADIGM SHIFTS	
MORNING SESSION 1 7.5-minute paper with 2.5-minute discussion Chair: Dr. Jugpal Arneja		
9:15	Fung, Lucas	Thoracic Surgery 126 Characterizing Pollution-Related Anthracotic Pigments within Normal Lung Samples
9:25	Li, Zhang Hao (Jim)	Radiation Oncology 148 Population-Based Local Control and Survival Outcomes of Brain Post-Metastasectomy Adjuvant Radiotherapy Versus Observation
9:35	Choi, Yoojin	Neurosurgery 117 The Impact of Pre-operative Corticosteroid Use on Intra-operative Diagnosis of PCNSL
9:45	Brakel, Benjamin	Neurosurgery 111 To Stave or not to Stave? The Impact of Barrel-Stave Osteotomy on Cephalometric Measurements in Patients Who Have Undergone Endoscopic Repair of Sagittal Craniosynostosis
9:55	Faran, Muhammad	Neurosurgery 125 Sex Disparity in Parkinson's Disease Patients Undergoing Deep Brain Stimulation
10:05	Illmann, Caroline	Plastic Surgery 193 Engaging Patients in Research: Our Experience Creating a Patient Advisory Committee
10:15	REFRESHMENT BREAK	
MORNING SESSION 2 7.5-minute paper with 2.5-minute discussion Chair: Dr. Heather Stuart		
10:30	Lu, Daphne	General Surgery, Plastic Surgery 153 Outcomes of Combined Complex Hernia Repair and Panniculectomy in Abdominal Wall Reconstruction: A Single-Center Retrospective Analysis
10:40	Heffernan, Austin	Otolaryngology-Head and Neck Surgery 134 Time-Driven Activity-Based Costing and Greenhouse Gas Emission Quantification of a Multidisciplinary Complex Airway Clinic
10:50	O'Reilly, Emily	Radiation Oncology 164 Impact of Clinical Target Volume Utilization on Outcomes in Patients with Non-Spine Bone Oligometastases Treated with Stereotactic Ablative Radiation Therapy
11:00	Alnasrallah, Noor	General Surgery

		104	Same-Day Discharge after Elective, Minimally Invasive Colectomy: Preliminary Results from a Single Center Experience
11:10	Parmar, Gurjit		Radiation Oncology
		167	Patient Satisfaction and Quality of Life of Newly Diagnosed Patients with Thyroid Cancer
11:20	Luthra, Shreya		Plastic Surgery
		156	Optimal Flap Selection for Secondary Orthopedic Reconstruction: A Comparison of Fasciocutaneous and Muscle Flaps
11:30	Banyi, Norbert		Otolaryngology-Head and Neck Surgery
		107	Predicting Endoscopic Sinus Surgery Clinical Outcomes Utilizing Preoperative Cytokines from Nasal Secretions: A Pilot Study
11:40	Cohen, Danielle		Plastic Surgery
		118	Comparison of Cumulative Operative Time for Autologous Versus Alloplastic Breast Reconstruction: A Ten Year Review of Data in our Institution
11:50	Schweitzer, Christina		Branch for Global Surgical Care, General Surgery
		172	Factors Associated with Blunt Cardiac Injury at Vancouver General Hospital: Thoracic Spine Fracture is a Novel Associated Injury in Nearly a Third of Patients
12:00	Nishimura, Kevin		Vascular Surgery
		162	Short Term Outcomes of MANTA Closure Device in Endovascular Aortic Repair at a Single Canadian Center
12:10	LUNCH		
SIMULTANEOUS SESSIONS 3-Minute Talks			
12:25	Jump to Simultaneous Presentations A schedule	Session A – Paetzold Lecture Theater Chair: Dr. Faizal Haji	Zoom: Meeting ID 99652 042124 Passcode 042124 Select Simultaneous Session A
12:25	Jump to Simultaneous Presentations B schedule	Session B – Paetzold Multi-Purpose Room Chair: Dr. Rebecca Warburton	Zoom: Meeting ID 99652 042124 Passcode 042124 Select Simultaneous Session B
AFTERNOON SESSION 7.5-minute paper with 2.5-minute discussion Zoom: Meeting ID 99652 042124 Passcode 042124 Select Plenary Chair: Dr. Graziano Oldani			
13:35	He, Meghan		Urologic Sciences
		196	Effectiveness of Digital Storytelling in Increasing Living Kidney Donor Recruitment in Canada
13:45	Lee, Jaimie		Radiation Oncology
		144	Bidirectional Transformer-Based Natural Language Processing for Automated Relapse Detection in Breast Cancer Computed Tomography Reports
13:55	Yang, Shuling		General Surgery
		190	Implementation of a Value-Based Health Care Pathway for Renal Transplant Patients with Tertiary Hyperparathyroidism in British Columbia
14:05	McLellan, Nicole		General Surgery
		160	Disordered Eating, Self-Compassion, and Wellness in Canadian General Surgery Residents
14:15	Cunningham, Joshua		Branch for Global Surgical Care, General Surgery
		120	Maintaining Rural and Remote Surgical Skills: A Needs Assessment Survey for a Surgical Virtual Education Platform
14:25	Cherukupalli, Abhiram		Otolaryngology-Head and Neck Surgery

[115](#) The Utility and Challenges of Using Large Language Models for Diagnostic Assistance in Telemedicine Applications in Rural India

14:35 Kwok, Christy

Plastic Surgery

[138](#) Harnessing Natural Language Processing and Machine Learning for Automated Extraction of Data from Unstructured Breast Cancer Pathology Reports

14:45 Jiang, Tony

Plastic Surgery

[136](#) Application of Augmented Reality for Breast Reconstruction with a DIEP Flap: A Feasibility Study

Session A

12:25 pm – 13:35 pm

3-minute paper with 1-minute discussion

Chair: Dr. Faizal Haji

Paetzold Lecture Theatre, VGH with Zoom Connection

Zoom: Meeting ID **99652 042124** Passcode **042124**

Select Simultaneous Session A

Abstract ID	Division	Presenting Author	Abstract Title
130	General Surgery	Guo, Michael	Reassessing Association Between HIV status and Post-operative Complications in the Modern Era.
123	Otolaryngology-Head and Neck Surgery	Dorling, Marisa	Patterns of Sequential Biologic Use in Chronic Rhinosinusitis: A Multicentre Canadian Study
154	Radiation Oncology	Lum-Wang, Sandy	An Evaluation of the Usage of Internet Resources by Patients with Lung Cancer
155	Radiation Oncology	Lum-Wang, Sandy	YouTube Videos as a Tool to Educate Medical Students About Careers in Radiation Oncology
191	Radiation Oncology	Yao, Nan Hui (Susan)	Inflammatory Bowel Disease May No Longer Be a Contraindication for the Use of Radiation Therapy: A Systematic Review of Toxicity Outcomes with Modern RT Techniques
176	Otolaryngology-Head and Neck Surgery	Shergill, Kurbaan	The Utility of Patient-Specific Surgical Plates in Free Flap Mandibular Reconstruction: A Systematic Review and Meta-Analysis
177	Neurosurgery	Shergill, Kurbaan	Comparing Outcomes of Solo Neurosurgical versus Multidisciplinary Approaches in Retrosigmoid Resection of Vestibular Schwannomas
192	General Surgery	Zeng, Danlin	Post-Operative Outcomes of Intracorporeal vs Extracorporeal Anastomosis for Laparoscopic Right Hemicolectomy in the Short- and Long-Term
110	Neurosurgery	Brakel, Benjamin	Use of Jugular Venous Pressure to Optimize Outcomes of Vestibular Schwannoma Resection: A Review of the Literature and Proof of Concept
151	General Surgery	Liu, Claire	Health Related Quality of Life Outcomes in Elderly Breast Cancer Surgery Patients
179	Neurosurgery	Tan, David CH	Partial Labyrinthectomy Petrous Apicectomy for Large Petroclival Meningiomas – Hearing Preservation and Quality of Life Outcomes
185	Neurosurgery	Wang, Catherine	Natural History and Surgical Outcomes of Single-Centre Experience in Management of Spheno-Orbital Meningiomas
186	Neurosurgery	Wang, Jessica CW	The Growing Problem of Spine Surgery Wait Times in British Columbia: Longitudinal Trends and Impacts On Perioperative Outcomes
161	General Surgery	Nabata, Kylie	Beyond the Curve: Understanding Corrective Culture in the COVID-19 Era
116	Otolaryngology-Head and Neck Surgery	Cherukupalli, Abhiram	A Novel Approach to Nasal Decongestion through Trans-Oral Neuromodulation of Sympathetic Sinonasal Nerve Fibers – a Porcine Model
133	Otolaryngology-Head and Neck Surgery	Gynn, Matthew	Developing a Predictive Model for Gastrostomy-Tube Placement in Head and Neck Cancer Requiring Free Tissue Reconstruction

[Jump back to Research Day Schedule](#)

Session B

12:25 pm – 13:35 pm

3-minute paper with 1-minute discussion

Chair: Dr. Rebecca Warburton

Paetzold Multi-Purpose Room, VGH with Zoom Connections

Zoom: Meeting ID **99652 042124** Passcode **042124**

Select Simultaneous Session B

Abstract ID	Division	Presenting Author	Abstract Title
150	Otolaryngology-Head and Neck Surgery	Needham, Cole	Six-Month Hearing Outcomes in Patients Randomized to Motivational Interviewing Sessions: The Motivational Interviewing and Hearing Aid Trial (MI-HAT)
166	Otolaryngology-Head and Neck Surgery	Oulousian, Emily	Creation and Program Evaluation of a Women in Surgery in ENT (WISE) Group
168	Otolaryngology-Head and Neck Surgery	Patry, Melissa	Patient Perception of Pain with Medialization Thyroplasty Surgery
169	Otolaryngology-Head and Neck Surgery	Patry, Melissa	Botulinum Toxin Treatment in Pregnant Laryngeal Dystonia Patients: Case Series & Survey of Current Practice of Canadian Laryngologists
103	General Surgery	Alnasrallah, Noor	Liver Transplantation from MAiD Organ Donors in British Columbia: A Retrospective Review Of Outcomes.
182	Otolaryngology-Head and Neck Surgery	Tholl, Samuel	Post-Operative Outcomes in Patients Undergoing In-Office Endoscopic Sinus Surgery for Chronic Rhinosinuitis
159	Pediatric Surgery	Mashat, Abdullah	Design and Development of a Low-Cost Modular Simulator for Training in the Surgical Management of Jejunioileal Atresia
112	Pediatric Surgery	Chae, Hyunwoong Harry	Assessment of Surgical Access among Patients with Undescended Testes in a Universal Healthcare System
137	Plastic Surgery	Kim, Michelle	Interdisciplinary Approach to Capsular Contracture Etiopathogenesis: Novel Application of Mathematical Model
145	Plastic Surgery	Leong, Cameron	Alignment of learning objectives in Canadian plastic surgery residency programs
132	Plastic Surgery	Salazar, Mariana G.	A Clinical Prediction Model in Prognosticating Salvage of the Infected Implant in Alloplastic Breast Reconstruction
188	Plastic Surgery	Wells, Hannah	Safety and Effectiveness of Prepectoral and Subpectoral Alloplastic Breast Reconstruction: A Longitudinal Prospective Study
195	Radiation Oncology	Bassi, Jasmine	Outcomes in HCC Patients Treated with SBRT Prior to Liver Transplantation: A Retrospective Analysis of Radiological Tumour Response and Histopathological Correlation
114	Radiation Oncology	Chan, Jonathan	Fast-TRIP: Fast Triage of Core Biopsy Pathology Reports by Natural Language Processing: Expediting Breast Cancer Treatment for High-risk Breast Cancers
178	Radiation Oncology	Siriani-Ayoub, Nicolas	Outcomes of Primary Chemoradiation Therapy Alone for cN3 Oropharyngeal Carcinoma: A Retrospective Review
147	Vascular Surgery	Li, Ying Jie	Canadian Vascular Surgeon's Perspective on the Impact of Device Representatives in the Operating Room: A CSVS Survey

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Abstracts

101

Title: The Effectiveness of Cryoprecipitate compare to Fibrinogen Concentrate (FC) in Treating Hypofibrinogenemia associated with cardiac surgery. Systematic review.

Authors: Abdalla Mohamed¹,Omar Layla¹

Affiliations: 1Ain Shams University, Cairo, Egypt.

Background:

Cardiac surgery with cardiopulmonary bypass (CPB) may be associated with severe bleeding and hypofibrinogenemia. Fibrinogen, a key component in clot formation and hemostasis, is the first factor to fall to critically low levels during major or surgical bleeding. Hypofibrinogenemia during CPB can result from the consumption of coagulation factors, aggravated by hemodilution, hyperfibrinolysis, and interaction with the CPB circuit. There is a close link between severe postoperative bleeding and low fibrinogen levels. Recent guidelines advocate for the treatment of acquired hypofibrinogenemia during cardiac surgery with cryoprecipitate or fibrinogen concentrate (FC).

Objective:

This systematic review aims to compare the efficacy and safety of Fibrinogen Concentrate and Cryoprecipitate for Treating Acquired Hypofibrinogenemia in Bleeding Cardiac Surgical Patients.

Methods:

We conducted the systematic review and meta-analysis according to the Handbook of Cochrane Systematic Reviews of Interventions and the PRISMA guidelines. The search process was conducted using the following databases: the Cochrane Central Register of Controlled Trials (CENTRAL), PubMed, Scopus, and Web of Science. The RevMan software Version 5.4.1 was used to perform all statistical analyses.

Results:

From a total of 708 identified articles (71 in Pubmed, 97 in Web of science, 48 in Cochrane library, 201 Scopus, 291 Embase) 340 papers were duplicates, leaving a 368 papers for title and abstract screening. Of the 368 papers, 29 studies were full text reviewed and only 5 randomized clinical trials matched the selection criteria for this paper.

Conclusions:

Both fibrinogen concentrate and cryoprecipitate are effective in managing bleeding and correcting hypofibrinogenemia. Fibrinogen concentrate offers several advantages, including faster preparation time and a more favorable safety profile, making it a valuable option in various clinical settings. The choice of hemostatic agent should consider individual patient needs, clinical context, and resource availability. Further research is needed to confirm these findings and provide more robust evidence to guide clinical practice.

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Title: Consistent Differential Expression of miR-210-3p and miR-23a-3p in a North American sample of Sudden Sensorineural Hearing Loss Patients

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Background: Sudden sensorineural hearing loss (SSNHL) is an acute onset idiopathic and often devastating condition. The limited understanding of SSNHL pathophysiology restricts identification of effective treatments. Recent studies have identified differential expression of contrasting groups of small non-coding microRNAs (miRNAs) in SSNHL patients in different countries, suggesting that miRNAs are involved in the disease process. It is unclear if the lack of consistency in miRNA findings reflects methodological, regional, or population specific miRNA variation.

Objective: This study aimed to assess the comparative expression levels of six miRNAs previously identified in SSNHL patients in Asia, in SSNHL patients and controls from Vancouver.

Methods: Serum samples were collected from 11 SSNHL patients and 11 age and sex matched controls. Total RNA was extracted and reverse transcribed for quantitative real-time PCR. miRNA expression levels were normalized to an internal control. Inter-group statistical comparisons of mean age, sex distribution, and normalized test miRNA cycle threshold (Ct) values, were performed using Independent Sample t-tests, Chi-squared tests, or Mann-Whitney U tests, as appropriate.

Results: The mean ages of the SSNHL group 44.27 years (SD = 9.6), was similar to the control group 42.64 years (SD = 11.3). Both groups consisted of 7 females and 4 males. The median expression levels Δ Ct (IQR) of miR-210-3p and miR-23a-3p in the SSNHL group [4.64 (4.03); -3.04 (2.10)] were significantly different from those in the control group [7.24 (3.28); 1.75 (0.7)] (Mann-Whitney U, $p < 0.05$). No significant inter-group differences were observed in the expression levels of miR-15a-5p, miR-18b-5p, miR-143-3p, or miR-183-5p.

Conclusions: This study supports consistent dysregulation of miR-210-3p and miR-23a-3p in SSNHL patients in North America and Asia. Further study of these miRNAs in SSNHL patients may improve our understanding of disease pathogenesis.

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Title: Liver transplantation from MAiD organ donors in British Columbia: a retrospective review of outcomes.

Authors: N. Alnasrallah¹, S. Chartier-Plante¹, M. Bleszynski¹, S. Jayakumar¹, D. Chahal¹, P. Kim¹, V. Marquez Azalgará¹, E. Yoshida¹, R. Sara¹, D.H. Kim¹, M. Chen¹, J. Yu¹, Y. Yang¹, M. Segedi¹

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Background: In 2016, medical assistance in dying (MAiD) has officially been legalised in Canada as an option for end-of-life care. With that, organ donation after MAiD was also established, with limited, but rising number of cases done across Canada. The first liver transplant from a MAiD donor conducted in British Columbia (BC) was in 2020.

Objective: This study aims to review outcomes of liver transplant in recipients of MAiD donors with regards to complications, patient and graft survival. While organ donation after MAiD is a common practice in Europe, it remains new in North America with limited available data.

Methods: A retrospective review of available data from BC Transplant registry of all recipients of liver transplant from MAiD donors in BC from 2020 to 2022 was conducted, and descriptive statistics were produced.

Results: Our study included 8 cases of liver transplant from donors after MAiD. The indication for MAiD in most cases was amyotrophic lateral sclerosis (ALS) and a median donor warm ischemia time of 23.5 minutes. The 1-year graft survival as well as patient survival in our cohort is 100%. Early allograft dysfunction accounted for 37.5% (3/8 cases), which was managed conservatively and resolved before discharge without significant clinical outcomes. There was one case of anastomotic biliary stricture at 3 months post-operatively, which was managed with ERCP and biliary dilation, and one case of acute cellular rejection at 1 year post-operatively, which resolved with conservative management. Median length of hospital stay was 10.5 days.

Conclusions: While data regarding outcomes of liver transplant from donors following MAiD is limited in North America, the results are promising. Utilization of MAiD organ donation can expand the liver donor pool and alleviate the burden by decreasing transplant wait times. A multicenter study will be conducted to assess outcomes from a larger number of liver transplants from MAiD donors.

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Title: Same-Day Discharge after Elective, Minimally Invasive Colectomy: Preliminary Results from a Single Center Experience.

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Background: Perioperative care for elective, minimally invasive surgery (MIS) colectomy has seen great evolution with the implementation of enhanced recovery after surgery, with average hospital length of stay of 1-3 days. Same-day discharge (SDD) has become of interest since the COVID-19 pandemic and represents an evolution of enhanced recovery programs that has been successfully in a Canadian healthcare setting¹ but has not yet been attempted in British Columbia. After appropriate selection based on recent guidelines established by Society of American Gastrointestinal and Endoscopic Surgeons (SAGES)², SDD with growing success has demonstrated to be safe and acceptable among patients³ and is associated with cost savings⁴.

Objective: Our study aims to review preliminary results from our experience with SDD with regards to selection criteria, as well as readmission and emergency visits within one month.

Methods: We conducted a retrospective review of elective, uncomplicated MIS colectomy eligible for SDD based on modified SAGES criteria performed at Richmond Hospital in the period of March to September 2024, and descriptive analysis was performed.

Results: Our study included 8 cases of elective, MIS colectomy with SDD, including both right hemicolectomy and anterior resection. The indication for colectomy was malignancy. All patients were successfully discharged from the post-operative care unit as planned. Patients were followed up on the first post-operative day by phone interview to assess for pain management, tolerance of oral intake, and return of bowel function, and one-week post-operative to discuss pathology results. There were no emergency visits or readmissions within the one-month post-operative period in our cohort.

Conclusions: This is the first review of SDD for elective MIS colectomy in British Columbia. Preliminary results confirm prior research demonstrating that SDD is safe and acceptable to patients. Language spoken should not be a barrier to SDD if sufficient translation services are available. Utilization of SDD can alleviate the burden of hospital admissions on the healthcare team, hospital administration, and contribute to improved patient care.

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Title: Quality of Life after Mustardé Otoplasty for Prominent Ears

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Background: Prominent ears can negatively impact a patient’s psychosocial well-being. Otoplasty, surgical intervention for prominent ears, has shown to significantly improve patients’ quality of life (QoL). However, to date, research has yet to correlate QoL outcomes with patient-reported indications for surgery and which indications affect QoL. Furthermore, research has yet to focus on the patients’ satisfaction with ear appearance with QoL, lacking information on how QoL interacts with ear appearance.

Objective: To assess how the Mustardé otoplasty impacts QoL while examining patient indications for surgery and satisfaction with ear appearance post-operatively using the GBI/ GCBI and EAR-Q appearance scale.

Methods: Patients were recruited from the senior author’s (JA) clinical practice at BC Children’s Hospital. Patients who had undergone otoplasty for prominent ears between July 2009 and April 2023 were eligible for inclusion. Eligible participants were invited to participate in the study via post mail and telephone call. Patients agreeing to participate completed the EAR-Q Ear Appearance scale with the Glasgow Benefit Inventory (GBI) or Glasgow Children’s Benefit Inventory (GCBI), either over the phone or through a Qualtrics link. Raw scores were totaled and converted into Rasch transformed scores (0 to 100 for the EAR-Q, +/- 100 for the GBI/ GCBI) and were averaged. Chart review was also performed to collect demographic factors, pre-operative, operative, and post-operative information.

Results: Of the 76 patients invited to participate in the study, 42 (55.2%) completed the questionnaire. At the time of the survey completion, the average age of participants was 18.9 years old. Median score on the ear appearance scale was 64 (IQR, 58.0-76.0). The median score on the GBI was 30 (IQR, 16.7-43.3) and GCBI was 34.4 (IQR, 17.7-44.8). The average time from surgery to completion was 8.9 years. Patients who reported self-consciousness pre-operatively had higher EAR-Q and GBI scores on average (+16.6 points) than patients who did not. GBI subscale analysis showed that patients had the most improvement in general QoL and self-confidence.

Conclusions: Our study shows that most patients who went under the Mustardé otoplasty report an increase in QoL and are satisfied with their ear appearance. The results of this study may play an important role in better understanding indications for surgical intervention and patient perspectives after the intervention.

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Title: Mentorship in Otolaryngology Head and Neck Surgery: A Scoping Review

Authors: Norbert Banyai^{1,2}, Dr. Dianne Valenzuela MD, FRCSC², Dr. M. Elise Graham MD, FRCSC, NABBLM-C³, Dr. Amanda C Hu MD, FRCSC²

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Objective: Mentorship is the process whereby an experienced, highly regarded empathic person (the mentor) guides another individual (the mentee) in their learning and professional development. There has been a recent uptick of literature exploring mentorship in academic medicine given its role in medical education. The objective of this study was to assess the current literature on mentorship in Otolaryngology Head and Neck Surgery (OHNS).

Data Sources: Medline, EMBASE, and Web of Science.

Review Methods: The study protocol adhered to Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews guidelines and was registered on Open Science Framework (<https://doi.org/10.17605/OSF.IO/X5FQ7>). Two authors independently selected studies, with the senior author resolving discrepancies. English studies on medical trainees and staff in OHNS, from inception to September 20, 2023, were included. The primary outcome was the benefits of mentorship. Study quality was assessed using the Oxford Centre for Evidence-Based Medicine levels of evidence.

Results: From 415 unique articles identified, 45 studies were included. The median publication year was 2020 (IQR 6.5, range 1999-2023). The major themes of benefits from mentorship include improving residency uptake (n=22), clinical competency (n=20), diversity and equity (n=19), research productivity (n=17), career planning and advancement (n=17), and quality of life (n=11). Other common themes included active mentorship (n=29), near-peer mentorship (n=13), and utilizing digital tools for mentorship (n=6). Majority of studies discussed mentoring of medical student (n=25), resident (n=19), or faculty (n=15) mentees. Seventeen and fourteen studies included mentorship of URM and women, respectively. Majority of studies were level 5 (n=18). Otherwise, the studies' levels of evidence were as follows: Level 1 (n=2), level 2 (n=0), level 3 (n=17), and level 4 (n=5).

Conclusion: Mentorship in OHNS has seen a sharp increase in publications in recent years. There are numerous benefits to mentorship including improving residency uptake, diversity initiatives, clinical competency, research productivity, career planning and advancement, as well as quality of life.

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Predicting Endoscopic Sinus Surgery Clinical Outcomes Utilizing Preoperative Cytokines from Nasal Secretions: A Pilot Study

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Background: Classifying Chronic rhinosinusitis (CRS) by endotype in addition to the traditional classification of CRS with or without nasal polyps has been shown to lead to better outcomes. Endoscopic Sinus Surgery (ESS) is the gold standard of surgical management for CRS. In Canada, the use of biologics for CRS are reserved for those with type 2 inflammation and refractory disease. Predicting postoperative outcomes is challenging due to the limited predictive power of current disease measurement tools. Recent studies have highlighted nasal mucus cytokine profiles' potential in endotyping CRS and predicting surgical outcomes. Nasal mucus cytokines have previously been linked to clinical factors such as previous surgeries and CT severity scores.

Objective: The objective of this study is to predict postoperative outcomes using preoperative nasal mucous cytokine profiles.

Methods: Adults with CRS who elected for surgical management after failing medical therapy were enrolled continuously starting September 2023. Patients with tumors, ciliary dysfunction, fungal ball, and odontogenic sinusitis were excluded. Merocele was placed at the olfactory cleft bilaterally for 10 minutes prior to operation. Aliquot supernatants were prepared by centrifuging the Merocele in phosphate-buffered saline and were stored at or below -70°C. The MSD (Merck & Co., Rahway, NJ, USA) V-Plex assay was used to test for the levels of IFN- γ , IL-10, IL-12p40, IL-13, IL-17A, IL-1 β , IL-2, IL-4, IL-5, IL-6, IL-8, TNF- α . An MSD S-Plex assay was used to determine levels of TSLP. Chart review was conducted to collect clinical and laboratory data. Principal component analysis with partial least squares regression was used to determine cytokine predictors of 3-month postoperative SNOT-22 against cytokines. Linear regression was conducted to correlate cytokine levels with 3-month postoperative SNOT-22 and preoperative Lund-Kennedy Endoscopy scores (LKES). A random forest regression algorithm was also used to evaluate non-linear correlations.

Results: 15 patients were included. The PCA conducted (n=11 samples) resulted in eleven principal components (PC). PC1 and PC2 were primarily characterized by significant negative loadings of IL-10 and IL-12p40. IL-4 displayed a strong negative loading on PC2. Univariate analysis of SNOT-22 scores (n=11 samples) demonstrated that IL-12p40 (b = 0.25, p = 0.271) and IL-4 (b = 297.5) predicted higher postoperative SNOT-22 scores, where on multivariable analysis only IL-12p40 remained a predictor of increased postoperative SNOT-22 scores (b = 0.24, p = 0.0318). Random forest regression demonstrated that the relative importance of IL-4 for predicting 3-month SNOT-22 was significantly more than the other cytokines. On MLR, IL-4 (p=0.03), IL-5 (p=0.007), IL-13 (p=0.04), and IL-12p40 (p=0.02) were significant predictors of preoperative polyp severity on LKES (n=15). No significant predictors of postoperative LKES were found.

Conclusion: Our findings suggest that preoperative levels of IL-4, IL-5, IL-13, and IL-12p40 in nasal mucus may serve as predictors of postoperative outcomes in CRS patients undergoing ESS. Despite the small sample size, these findings highlight the potential of utilizing nasal cytokines for prognostication and guidance of CRS management.

Title: *Pediatric Fingertip Injuries: A Retrospective Study Comparing Treatment Outcome*

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Introduction: Fingertip injuries are the most common hand injuries in pediatric emergency cases, often involving nail bed damage. Distal phalangeal (DP) fractures, which account for 50% of all hand fractures, frequently occur with nail bed injuries. Treatment approaches for these injuries involve different degrees of fracture stabilization such as nail bed repair (NB) with or without nail plate replacement and fixation (NP), with or without splinting or casting. However, it remains unknown if the degree of fracture immobilization affects the rate of DP fracture nonunion. Given challenges in immobilizing young children's fingers effectively, exploring less restrictive treatments could streamline care, reduce risks like impaired blood flow, and minimize recovery disruption. This study aims to estimate the association between the degree of immobilization in the treatment approach and the occurrence of fracture nonunion.

Methods: This was a retrospective chart review of children with DP tuft fractures associated with a nail bed injury. Eligible study patients were identified by screening the clinical databases of pediatric plastic surgeons at BC Children's Hospital (BCCH) and were included if they were seen at the BCCH Plastic Surgery Clinic between 2014 and 2023. Demographics, treatment type, and complication details were collected from medical charts. Treatment approaches were categorized as having lower degrees of immobilization (dressing alone, nail bed repair (NB), and nail plate replacement and fixation (NP)) or higher degrees of immobilization (splinting or casting). Occurrences of nonunion or complications were analyzed by treatment approach(es).

Results: To date, 35 patients (mean age = 6.2 years; 75% right hand dominant; 49% female) met eligibility criteria. Most injuries resulted from crush mechanisms (94%). Primary treatments by immobilization degree were: dressing alone (n=5), NB (12), NP (4), NB+NP (5), NB+splint (3), NP+splint (1), NB+NP+splint (1), and splinting/casting alone (4). Four patients (11.4%) experienced one or more complications following their injury. These complications included: need for revision surgery; improperly reduced fractures; fever, rash, and infection; reduced active flexion of the DIP joint; and delayed union. Of note, one patient experienced challenges with their splinting and casting treatment. No instances of nonunion occurred, with comparable healing rates across treatment approaches.

Conclusion: Preliminary results suggest no association with immobilization degree for treatment and occurrence of nonunion. This suggests that less restrictive methods like NB may be as effective as more extensive immobilization like splinting or casting in young patients, with patients unlikely to experience nonunion. Future research should validate these findings with larger cohorts and a prospective methodology.

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Title: Brachial Plexus Injury Patterns and Their Effects on Patient-Reported Outcome Measures

Authors: Matthew Boroditsky^{1,2}, Gabriel Kuper², Emmanuel Ogalo³, Sean Bristol^{1,2,4}, Cameron Cunningham^{4,5}, Kristine Chapman^{4,6}, Shahin Khayambashi^{4,6}, Kristin Jack^{4,6}, Russ O'Connor^{4,5}, Alex Seal^{1,2,4}, Christopher Doherty¹⁻⁴, Michael J Berger³⁻⁵

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Background: Few studies have stratified brachial plexus injuries (BPI) by pattern of injury to examine whether these patterns result in differences in clinical and functional outcomes. We hypothesized that patients with pan-plexus injuries would have comparatively worse patient-reported outcome measures (PROMs) than individuals with more isolated injury patterns.

Methods: This was a retrospective evaluation of prospectively collected data from two tertiary peripheral nerve injury clinics. Inclusion criteria were males and female adults (>18 years) who sustained a traumatic BPI and who had not undergone any surgical intervention. BPI was divided by injury pattern into pan-plexus, shoulder/elbow predominant (e.g., upper trunk or axillary nerve lesion), and wrist/hand predominant (e.g., lower trunk or ulnar nerve lesion). PROMs for upper limb function (Disabilities of the Arm, Shoulder, and Hand; DASH), depression (Patient Health Questionnaire; PHQ-9), and pain (Brief Pain Inventory; BPI), were measured. PROMs were compared using a Kruskal-Wallis test.

Results: Sixty-two individuals met inclusion criteria; mean age was 50.7 ± 16.3 years and 69% were males. No significant differences were found across the mean time from injury to PROM completion ($p > 0.05$). PROMs were completed roughly 7 months after injury. When comparing PROMs, no significant differences were found between the pan-plexus group ($n=12$) when compared to shoulder/elbow predominant ($n=18$) and wrist/hand predominant ($n=32$) patterns for DASH ($p=0.60$), BPI ($p=0.51$), and PHQ-9 ($p=0.80$). Separate DASH subset analysis revealed no significant differences amongst DASH questions between groups.

Conclusions: BPI pattern demonstrated no significant differences on PROM data concerning upper limb function, pain, and depression scores in the sub-acute period after BPI. Our findings suggest potential limitations in the ability of the selected PROMs to accurately capture the heterogeneity amongst injury subtypes. Future research should aim to broaden the inclusion of BPI subtypes and conduct longitudinal comparisons across diverse PROMs to achieve standardization of outcome measures in this population.

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Title: Use of Jugular Venous Pressure to Optimize Outcomes of Vestibular Schwannoma Resection: A Review of the Literature and Proof of Concept

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Background: Surgical resection of vestibular schwannoma (VS) is often curative if gross total resection is achieved, however, it is a delicate procedure with high risk to the facial nerve. With retrosigmoid approach for resection, the head is positioned to maximize lateral head rotation and neck flexion in order to optimize the surgical field. However, this may inadvertently occlude cerebral venous drainage, elevating intracranial pressure (ICP) and increasing intraoperative bleeding.

Methods: We review relevant literature regarding the effects of head rotation and neck flexion on internal jugular vein (IJV) occlusion and ICP, and highlight the notion that head rotation and flexion may occlude the ipsilateral IJV, increasing ICP. Subsequently, we propose a novel technique using continuous, real-time monitoring of jugular bulb pressure (JBP) to detect obstructions in jugular venous flow and guide optimal head positioning prior to VS resection.

Results: As proof of concept, we present a single-patient case in which JBP monitoring was employed to optimize head positioning prior to a VS resection, which shows a significant reduction in JBP compared to traditional positioning.

Conclusions: This innovative approach offers promise in enhancing the safety and efficacy of intracranial surgery for VS and potentially other neurosurgical procedures.

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Title: To Stave or not to Stave? The Impact of Barrel-Stave Osteotomy on Cephalometric Measurements in Patients Who Have Undergone Endoscopic Repair of Sagittal Craniosynostosis

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Background: Treatment of sagittal craniosynostosis typically involves endoscopic suturectomy (ES) to allow skull expansion followed by postoperative helmet orthosis, with improvement in cranial deformity assessed using the cephalic index (CI). The impact of variations in surgical technique on long-term CI outcomes is not well understood, and there is controversy regarding whether adding barrel-stave osteotomy (BSO) to standard ES results in greater improvement in CI postoperatively. This approach is thought to improve cranial shape and overall clinical outcomes but may increase operative burden.

Objective: The aim of this study was to investigate the impact of BSO during ES on operative outcomes and postoperative cranial deformity in patients undergoing surgical correction of sagittal craniosynostosis.

Methods: We conducted a retrospective chart review of children treated at BC Children's Hospital for sagittal craniosynostosis with ES between 2010 and 2021. Demographics, operative outcomes, and postoperative longitudinal CI measurements were collected and compared between patients who underwent ES with or without BSO. Operative outcomes related to anesthetic and surgical time, blood loss, and length of stay were analyzed, as well as changes in CI at various follow-up times. A mixed effects model was used to compare longitudinal CI measurements between treatment groups, controlling for age and helmeting duration.

Results: A total of 86 patients were included (68 ES+BSO, 18 ES). Operative outcomes, including length of hospital stay, operative time, time under anesthesia, and blood loss, were similar between treatment groups ($p > 0.05$). The median follow-up time for CI measurements was 1705 days. While preoperative CI was similar for both groups (mean CI 67.34 for ES+BSO, 66.76 for ES; $p=0.54$), CI increased significantly more in the ES+BSO group at immediate post-op ($p = 0.0046$), 6-month follow-up ($p = 0.0234$), 2-year follow-up ($p = 0.0146$), and final follow-up ($p = 0.0145$). A mixed effects model revealed that the addition of BSO significantly increased CI measurements independent of age and helmeting duration (estimated effect size -3.38567, $p = 0.0002$).

Conclusions: The addition of BSO to ES significantly improves immediate and long-term cranial deformity in patients with sagittal craniosynostosis, without increasing operative burden.

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Title: Assessment of Surgical Access among Patients with Undescended Testes in a Universal Healthcare System

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Background: A key goal of a universal healthcare system is to achieve equity of access; however, systemic factors may prevent timely access to care. Undescended testes (UDT) is an ideal condition to investigate healthcare inequity among pediatric urology patients because it is screened at birth and its occurrence appears to be unaffected by socioeconomic status. Recent guidelines from the American Urological Association (AUA, 2014) and the European Association of Urology/European Society for Pediatric Urology (EAU/ESPU, 2016) recommend surgical intervention before 18 months of age.

Objective: The objective of this study was to evaluate access to surgical care for patients with undescended testis in Canada.

Methods: The prospectively maintained Canadian Institute of Health Information (CIHI) database was analysed for all UDT patients in Canada (excluding Quebec) who underwent orchidopexy or orchiectomy from March 2010 - March 2019. The primary outcome was surgery before 18 months of age.

Results: There were 1262 orchiectomies and 17947 orchidopexies for UDT performed during the study period. Overall, 135/1262 (10.7%) of orchiectomy and 5051/17947 (28.1%) of orchidopexy patients had surgery before 18 months of age. The proportion of cases performed at <18 months varied by province for orchiectomy (0-21.3%, $p=0.0885$) and significantly varied for orchidopexy (0-36.3%, $p<0.001$). Multivariate regression analyses demonstrated that hospital type did not affect timing of orchiectomy, but teaching hospitals were more likely (OR 2.19; 95% CI 1.86, 2.59; $p<0.001$), and children's hospitals were less likely (OR 0.69; 95% CI 0.59, 0.81; $p<0.001$) to perform orchidopexy within 18 months. Hospitals with a UDT volume in the lowest (4th) quartile (<46cases/year) were significantly less likely to perform surgery at <18 months compared to institutions in the 1-3rd quartiles (>46cases/year), for both orchiectomy and orchidopexy (all $p<0.05$). For surgeon type, only pediatric surgeons were significantly more likely to operate within 18 months relative to pediatric urologists (OR 2.07; 95% CI 0.12, 33.5; $p<0.001$) for orchiectomy, while pediatric and general surgeons were both more likely to do so (both OR>1 and $p<0.001$) for orchidopexy.

Conclusions: Only 10.7% of orchiectomies and 28.1% of orchidopexies were performed within the recommended timeline in Canada. Higher-volume institutions and pediatric surgeons were more likely to complete orchiectomies within 18 months, and higher-volume, teaching, non-pediatric institutions that are in closer proximity to patients, along with pediatric and general surgeons, were more likely to perform orchidopexy within 18 months. Despite Canada having a universal health care model, our findings suggest there are systemic barriers to timely surgical care among UDT patients. Further evaluation of local diagnosis-referral-treatment pathways are required to elucidate the reasons for this.

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Title: Exploring motivating factors for pursuing Radiation Oncology: a comparative analysis of medical students and residents

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Background: Increasing medical student (MS) interest in Radiation Oncology (RO) is important to meet the rising demand for radiation oncologists. Understanding the factors that drive medical students to pursue RO is crucial. This study compares motivating factors between medical students and RO residents to inform interventions to increase recruitment and sustained interest in the specialty.

Objective: This study compares motivating factors between medical students and RO residents to inform interventions to increase recruitment and sustained interest in the specialty.

Methods: Data from two similar studies investigating factors motivating MS and residents to pursue RO were analyzed. The first study surveyed Canadian RO residents to characterize enablers when applying to RO residency. The second study analyzed application essays from medical students applying to a RO studentship. A mixed methods approach was used to compare themes (“Career Aspects”, “Prior Exposure” and “Personal Experiences”) between the datasets.

Results: “Career Aspects” was the most common theme facilitating interest in RO careers. “Multidisciplinary work” and “Direct clinical contact and patient care” were prominent sub-themes. MS emphasized “Serious Illness and Palliative Care” and “Advanced Technology”, while residents prioritized RO as a “Rewarding Career”. “Prior exposure”, particularly through shadowing/observerships, was more important for MS than residents who valued clinical experiences. Practical career considerations including “Mentorship” and “Career Satisfaction and Lifestyle” were significant motivators for residents.

Conclusion: MS value content-based aspects of RO and emphasize shadowing. In contrast, RO residents prioritize lifestyle-based considerations. These differences highlight the opportunity for intervention throughout medical training to sustain interest in RO and facilitate applications to RO residency programs.

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Title: Fast-TRIP: Fast TRIage of Core Biopsy Pathology Reports by Natural Language Processing: Expediting Breast Cancer Treatment for High-risk Breast Cancers

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Background: Patients suspected of having breast cancer receive diagnostic core biopsies. A patient's breast cancer diagnosis triggers multiple referrals and handoffs between different care providers that can cause delays in receiving treatment, which allows cancers to spread and worsens clinical outcomes. The biomarkers identified in core biopsies, estrogen receptor (ER), progesterone receptor (PR), and HER2 receptor, determine the breast cancer subtype. Triple-negative and HER2-positive breast cancer subtypes have particularly high risk, and patients with these subtypes derive the most benefit from receiving neoadjuvant chemotherapy. Natural language processing (NLP), a machine learning technique that allows computer models to interpret human language, has emerged as a promising tool in automating the analysis and processing of medical reports.

Objective: Develop an NLP model to extract biomarker results from core biopsy reports to assess breast cancer risk, expedite triaging, and reduce wait times for neoadjuvant chemotherapy and surgery.

Methods: 997 core biopsy reports obtained from BC Cancer records were de-identified. Three independent reviewers annotated the reports and labeled the biomarker status for estrogen receptor (ER), progesterone receptor (PR), and HER2 receptors. 60% of these annotated reports were used to train a Gatortron and BlueBERT-based NLP model for biomarker prediction. The remaining 40% of the annotated reports were reserved for internal validation. The NLP model was then fine-tuned to improve extraction accuracy.

Results: The model reported 92%, 87%, and 93% accuracy for ER, PR, and HER2, respectively. Fields of interest that occurred more frequently in the training data had higher accuracy.

Conclusions: NLP models can be used to extract information from core biopsy reports and classify breast cancer subtypes with high accuracy. Future directions include development of a composite NLP model to accelerate breast cancer triage for high-risk breast cancer patients and reduce their chemotherapy and surgery wait times.

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Title: The Utility and Challenges of Using Large Language Models for Diagnostic Assistance in Telemedicine Applications in Rural India

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Background: The integration of telemedicine into low middle income countries has dramatically improved the healthcare access gap for rural patients. Current efforts in telemedicine platforms have successfully task-shifted patient medical history collection to Frontline Health Workers (FHW) and brought millions of patients access to diagnoses and treatments from highly trained remote physicians. However, limitations with this technology include short doctor-patient consultations, inefficient processes for patient information collection, and inaccurate patient diagnoses. With the advent of Large Language Models, the potential to close these gaps utilizing current platforms has become possible.

Objective: We chose to investigate the ability for Generative Pre-Trained Transformers (GPT) to provide medical diagnoses based on limited patient history information, to evaluate GPTs diagnostic accuracy on a clinical note similar one taken by an FHW for improving care in rural India.

Methods: 45 standardized case studies met inclusion criteria for further analysis. LLM output was scored on a Likert Scale of 1-5 by a physician on the coherence of the LLM diagnoses with the official verified diagnosis. Diagnostic accuracy was measured across three different large language models (Chat GPT 3.5, 4.0, 4.0Turbo) and compared using multiple pairwise comparisons with a Bonferroni correction of $p = 0.02$. Further testing was conducted comparing common English vs medical terminology prompting to identify differences in quality of output.

Results: ChatGPT 4Turbo provided the most accurate diagnosis for complex, multi-system diseases, and output logical clinical reasoning for its differential diagnosis ($p = 0.29$). There was a noted 9% and 5% increase in diagnostic accuracy with medical terminology prompts in ChatGPT 4.0 and 4.0Turbo respectively ($p = 0.35$, $p = 0.5$ respectively).

Conclusion: Although not statistically significant, GPT 4Turbo had the highest diagnostic accuracy with limited clinical info. Also, utilizing medical terminology in the prompts further enhanced the large language model's ability to diagnose multi-system diseases accurately. Further research and development are required to harness other machine learning techniques to enhance diagnostic capabilities that consider demographics and local disease prevalence.

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A Novel approach to nasal decongestion through trans-oral neuromodulation of sympathetic sinonasal nerve fibers – a porcine model

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Background: Nasal congestion (NC) is one of the most common complaints in primary care and otolaryngology. Diseases with NC like Allergic Rhinitis and Chronic Rhinosinusitis cost the healthcare system over \$4 billion USD annually. This cost is mainly due to the persistent and repeated use of topical steroid treatment despite a failure rate of 45%. The current standard of care primarily focuses on the immune dysregulation process of the disease, falling short in addressing the neural overstimulation contributing to NC and nasal obstruction (NO).

Objectives: To utilize an animal model to evaluate the quantitative effect of trans-oral neurostimulation of sympathetic fibers in the sinonasal cavity on nasal airway patency

Methods: Two male Yorkshire pigs (45-55kg) were intubated and sustained on intravenous anesthesia. 10mL of chlorhexidine liquid was infiltrated into the bilateral nasal cavities to stimulate vascular engorgement of the nasal mucosa. Two Millar pressure catheters were placed and secured at the internal nasal valve and posterior aspect of the inferior turbinate. Continuous Positive Pressure was then provided to the sinonasal cavity using a CPAP machine at a fixed rate of 15L/min. Pressure and flow measurements within the sinonasal cavity were used to estimate a corresponding increase in volume and reduction in airway resistance during stimulation. The target nerve was identified in the oral cavity and stimulated at a range of 5-40 Hz, 0.1 - 1mA, and a stimulation duration of 2 min via a monopolar circuit. Data from continuous pressure measurements during stimulation was recorded and processed using MatLab.

Results: At 20Hz and 1mA there was a net ΔP between the anterior reference catheter and posterior catheter of 2mmHg over a 2 min stimulation period. This corresponded to an increase of total nasal airway patency of 0.3mm. Similar responses were seen with both needle electrodes and trans-mucosal surface electrode stimulation.

Conclusion: This is the first proof of concept porcine model for trans-oral sympathetic neuromodulation of the sinonasal cavity. Our results show an objective increase in nasal airway patency even with a short duration of stimulation. Although results may vary in human anatomy, this study provides support for further research into this novel approach for the treatment of NC and NO.

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Title: The Impact of Pre-operative Corticosteroid Use on Intra-operative Diagnosis of PCNSL

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Background: Primary central nervous system lymphoma (PCNSL) is a highly aggressive non-Hodgkin lymphoma, which is diagnosed through histopathological evaluation of tissue obtained during surgery. Accurate and timely diagnosis of PCNSL is imperative as it can have a significant impact on the choice of treatment. As such, intra-operative assessment of frozen biopsies is often used to make a preliminary diagnosis and inform decisions in the operating room before the final pathology result becomes available. Current guidelines recommend against the use of pre-operative corticosteroid use in suspected PCNSL cases, as this can interfere with the final diagnosis. However, no studies have assessed the effect of pre-operative corticosteroid use on the diagnostic accuracy of intra-operative diagnosis.

Objective: The primary objective of this study is to understand whether pre-operative corticosteroid use affects the accuracy of intra-operative diagnosis of PCNSL.

Methods: This is a retrospective chart review of PCNSL cases with intra-operative and final pathology at Vancouver General Hospital between 2000 and 2024. The primary outcome of the study is intra-operative pathology in patients with and without pre-operative corticosteroid treatment.

Results: A total of 167 patients with PCNSL were reviewed, of which 126 met the inclusion criteria for the study. The median age of the study population was 65 (25-87) with 62% being male. The most common presenting symptoms were weakness, confusion and headache. Patients either underwent craniotomy (59.6%) or Burr holes (40.4%), and tissues were obtained via needle biopsy (42.1%), tumor resection (37.9%) or open biopsy (20.0%). Pre-operative corticosteroid use was significantly associated with non-diagnostic pathology from intra-operative biopsies (89.7% vs 56.0%; $p = 0.006$). The most common mis-diagnosis of intra-operative biopsies from patients with pre-operative corticosteroid use was glioma.

Conclusions: Pre-operative corticosteroid use is associated with a significant increase in inaccurate diagnosis from intra-operative biopsies in patients with PCNSL. Our study provides further evidence to support the need to avoid pre-operative corticosteroid use in suspected PCNSL cases, as it may impact decisions in the operating room before the final pathology result becomes available.

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Title: Comparison of Cumulative Operative Time for Autologous Versus Alloplastic Breast Reconstruction: A Ten Year Review of Data in our Institution

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Background: Breast cancer is the most common non-cutaneous malignancy affecting Canadian women, and rates of both alloplastic and autologous breast reconstruction continue to rise. Despite this, there is still a paucity of published data regarding the overall healthcare resource requirements for each of these reconstructive approaches.

Objective: In this study, we compared the total cumulative operative time, total number of operations, and overall patient satisfaction between patients undergoing autologous versus alloplastic breast reconstruction.

Methods: A retrospective study was performed using electronic records to identify patients who underwent breast reconstruction between 2008-2018. Inclusion criteria were patients ≥ 18 years old having undergone unilateral/bilateral total mastectomy and immediate/delayed alloplastic/autologous breast reconstruction. Excluded were patients with < 3 years of follow up, those missing chart data, or who underwent partial mastectomy/lumpectomy. The BREAST-Q questionnaire was sent to all eligible patients. Cumulative operative time was evaluated using a multivariate linear regression model to analyze the effect of autologous or alloplastic reconstruction, while controlling for relevant surgical details and patient characteristics.

Results: 317 patients met inclusion criteria (211 alloplastic, 106 autologous). Cumulative operative times were significantly shorter in the alloplastic versus autologous groups, for both the unilateral (269 vs. 622 mins, $p < 0.0001$) and bilateral cohorts (368 vs. 777 mins, $p < 0.0001$). The total number of surgeries was similar for alloplastic versus autologous unilateral (2.55 vs. 3.04, $p = 0.02$) and bilateral (3.07 vs. 2.83, $p = 0.29$) reconstructive patients. Patients who underwent autologous reconstruction reported a greater increase in "breast satisfaction" scores following surgery using BREAST-Q patient reported outcomes.

Conclusions: Our data support the conclusion that although cumulative operative time is greater for patients undergoing autologous reconstruction, total surgeries required are similar between groups. Moreover, we found that patients who underwent autologous reconstruction reported greater improvements in breast satisfaction scores. Further studies are warranted to determine additional differences in healthcare resource allocation.

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Title: A Survey of Responses to the Climate Crisis

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Background: Climate change is the most pressing health concern of this century.

Objective: To assess professionals' awareness, knowledge, moral perspective and actions with respect to climate change.

Methods: Between October 2022 and March 2024 358 survey responses were collected at 12 different time points corresponding to pre-presentation surveys of attendees at rounds on planetary health. Respondents were asked about their relationship to the earth, their understanding of the climate crisis and their understanding of the economy. They were asked about 4 possible life changes, 5 things they could do for the earth, 5 groups they might work with at work, and 6 possible levels of political involvement.

They were asked about their fears for the future, their confidence to make change and their readiness to change.

Demographic data about age, gender, type of practice and years in practice were collected.

Results: Respondents have a therapeutic relationship with the earth, of more importance if older ($p=0.002$) or female ($p=.046$). Climate change is understood and more important if older ($p=0.001$) and less important for surgeons ($p=0.025$). The economy is not as well understood.

Whites were more likely to drive less and take active transportation ($p=0.018$). Women were more likely to switch to a plant-based diet ($p=0.002$). More time in practice meant more likely to make practice changes and more so for women ($p=0.004$). All groups showed more interest in working on the climate crisis with people they work more closely with. Younger respondents were less interested in collaboration (age < 34 years, $p=0.027$). Few are interested in political engagement, except those identified as being in climate activist groups (D4PH, CAPE, Cascades).

Everyone is afraid to a significant extent and those who deal with mental health the most ($p=0.001$).

Women and BIPOC respondents are more afraid for their personal safety $p=0.007$

Confidence and readiness to change are higher in engaged respondents ($p=0.007$). Older respondents ($p=0.012$) and women ($p=0.022$) are more ready to change.

Responses to "what would it take to make you change your response by +1" ranged from nihilism to 100% engagement. Important responses included: feeling that the problem was too large for one person to make a difference; needing better education and awareness; better infrastructure to support climate friendly behaviour; the need to see institutional, corporate and government leadership by way of obvious action. These reflect Hart's 7 stages of the process leading to physician activism for sustainable change.

Conclusions: Physicians are aware of the climate crisis and concerned but looking for leadership.

Lifestyle changes that would be good for the planet are not readily embraced. There is considerable concern about the future.

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Title: *Maintaining Rural and Remote Surgical Skills: A Needs Assessment Survey for a Surgical Virtual Education Platform*

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Background: Family Physicians with Obstetrical/Enhanced Surgical Skills (OSS/ESS) are crucial for the provision of rural surgical care in Canada. Despite positive surgical outcomes and a strong foundational training program, it can be difficult for these physicians to find Continuing Medical Education (CME) opportunities due to the vast distances between practitioners. The aim of this study was to define high-yield CME topics for a virtual educational platform, as well as important functionalities to include on the platform.

Methods: A multidisciplinary group created a survey with four topic categories based on existing key priorities: Foundations of Surgery, Obstetrical Procedures, Non-Obstetrical Procedures, and Continuing Professional Development. We used snowball sampling to recruit Canadian OSS/ESS physicians to rate topics on level of importance, suggest other topics, and comment on what virtual functions they think would best contribute to their CME. We calculated average response ratings and standard error for each topic rating.

Results: We analyzed 33 responses from 14 OSS (42%) physicians, 15 ESS (45%) physicians, and 4 (12%) in-training or retired OSS/ESS physicians. The highest rated topics from each category were “Intra-operative complications” (89.7/100, SE = 2.6), “Complications during cesarean section” (92.6/100, SE = 2.6), “Endoscopic complications and emergencies” (88.7/100, SE = 2.3), and “Skills maintenance” (81.6, SE = 3.6). Respondents listed the most important functions to include were quick refreshers of relevant literature/guidelines and the ability to connect with specialists willing to provide educational support.

Conclusions: A virtual education platform could add desired CME opportunities for OSS/ESS physicians in Canada. This could include relevant rural surgical modules based on identified priority topics and the ability to post coaching opportunities for OSS/ESS physicians.

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Title: Peri-operative Prognostic Factors in Recurrence of CRSwNP in Patients Undergoing Endoscopic Sinus Surgery: a Systematic Review**Authors:** Nima Derakhshan¹, Masih Sarafan¹, **Andrew V. Thamboo**²**Affiliations:** ¹UBC Department of Medicine, University of British Columbia, Vancouver, BC²Division of Otolaryngology and Head and Neck Surgery, University of British Columbia, BC

Background: Chronic Rhinosinusitis with Nasal Polyps (CRSwNP) is a multifactorial disease with comorbidities and quality-of-life outcomes like congestive heart failure and back pain. The gold standard treatment of CRSwNP includes endoscopic sinus surgery and ongoing medical management with topical steroids. However, management of this disease remains a challenge as it is reported that up to 30% of cases may require revision surgery. Evidence suggests that Biologics have great efficacy in the treatment of recurrent CRSwNP but are costly and reserved for severe patients. Understanding underlying factors could assist in development of predictive algorithms that assess severity and chance of recurrence in patients and allow for early intervention such as biologics drugs.

Objective: This review aims to consolidate and analyze recent findings on recurrence factors post endoscopic sinus surgery in CRSwNP patients, addressing the gap left by previous studies and expanding beyond revision surgery as the only objective indicator of disease recurrence.

Methods: We conducted a comprehensive literature search on MEDLINE, EMBASE and Cochrane libraries, screening over 815 studies. 78 relevant papers were identified in our analysis, focusing on ESS outcomes, recurrence of nasal polyps, and patient-reported QOL measures.

Results: Asthma, and Aspirin Exacerbated Respiratory disease, Serum and Tissue Eosinophilia, and perioperative CT scan scores were identified as significant CRSwNP recurrence factors, which are associated with higher chance of revision surgery, polyp recurrence and poor quality of life outcomes for patients.

Conclusions: Accurate prognostication of disease severity and refractoriness could inform decisions regarding eligibility for early biologic therapy, thus enhancing QOL and reducing costs associated with revision surgeries.

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Title: Evaluating the Applicability of a Canadian Surgical Education App to Saudi Arabian Medical Schools

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Background: LearnENT is a free iOS app and online learning resource for Otolaryngology – Head and Neck Surgery (OHNS). It was developed collaboratively by Canadian medical students, residents, and faculty to aid students in preparing for OHNS residency. Given its alignment with national curriculum objectives, LearnENT was endorsed as an official learning resource by the Canadian Society of OHNS. Currently, 7% of the Canadian OHNS residents are from Saudi Arabia, demonstrating a need for knowledge continuity between the two medical training systems.

Objective: Our study aims to explore the applicability of the LearnENT app to a broader population of medical trainees in Saudi Arabia.

Methods: A 15-question survey was disseminated among Saudi Arabian medical students to collect data on demographics, impressions of the app, and applicability of the app to Saudi Arabian medical curricula. Data was collected between January 2024 to March 2024.

Results: 33 medical trainees responded to the survey from 5 Saudi Arabian medical schools. Of these, 3 (9%) of respondents had previously familiarity with the app, while 30 (91%) were first-time users. 31 (94%) trainees expressed a willingness to recommend the app to a colleague and 26 (76%) believed the app content aligned with their OHNS training. 39% did not necessarily believe that LearnENT should be integrated as an official Saudi Arabian OHNS learning resource.

Conclusions: Given a notable proportion of international trainees pursuing OHNS and other surgical residencies in Canada, it is beneficial to create internationally applicable learning resources for medical trainees. The preliminary results of this study demonstrate the potential utility of the LearnENT app in facilitating cohesive, international OHNS education, with opportunities for improvement and further study.

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Title: Patterns of Sequential Biologic Use in Chronic Rhinosinusitis: A Multicenter Canadian Study

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Background: Type 2 biologics are increasingly used for the treatment of chronic rhinosinusitis with nasal polyps (CRSwNP). However, patterns for changing biologics are understudied, and there are no established guidelines for their sequential use.

Objective: In this multicenter study, we sought to examine type 2 biologic use patterns for CRSwNP patients across Canada, and identify underlying reasons and patient factors driving biologic changes.

Methods: This is a multicenter retrospective study of real-world patient data from across Canada. Patients were included if they had recurrent CRSwNP despite maximal medical and surgical management, and received at least one dose of a type 2 biologic. We examined the characteristics of patients who required an alternate biologic to achieve optimal symptom control. Reasons for requiring alternate therapies were compared by initial biologic type. A Kaplan-Meier survival curve was used to show the duration of efficacy for each biologic.

Results: 225 consecutive patients were included, of which 36 (16%) changed biologics. The most common change was from mepolizumab to dupilumab, with poor control of CRSwNP symptoms being the leading cause, while adverse events (i.e. arthralgia and rash) were the most common reasons for discontinuing dupilumab. Mepolizumab patients were more likely to experience a decline in efficacy late in their treatment, while patients on dupilumab were more likely to have sustained symptom control after 12 months of therapy (p-value <0.001).

Conclusions: Changing biologics for CRSwNP is common in Canadian rhinology practices, with 16% of patients undergoing at least one biologic change, most frequently from mepolizumab to dupilumab due to inadequate CRSwNP control despite well-managed asthma. Patients on dupilumab were more likely to experience long-term symptom control compared to mepolizumab. These findings may help inform guidelines for sequential use of biologics in CRSwNP patients.

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Title: Long term vagal nerve stimulator (VNS) discontinuation in pediatric drug-resistant epilepsy: a single centre study

Authors: Madeline W. Elder¹, Annika Weir², Samantha Nalliah³, Faizal Haji², Mandeep S. Tamber², Mary Connolly³, Ash Singhal²

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Background: VNS is one of the most common surgical interventions used in the treatment of drug-resistant epilepsy (DRE) in children. Previous studies have reported rates of device explantation in adults ranging from to 9-57% at 2 to 5 year follow-up. However, this does not account for inactive devices left in situ, and the true rate of continued long-term utilization of VNS therapy and its effect on long term seizure control remains poorly understood.

Objective: The aim of this study was to understand how seizure control differs in patients treated with VNS who elect to discontinue therapy, as compared to those who continue past 10 year follow-up.

Methods: A retrospective chart review was performed of pediatric patients with drug-resistant epilepsy treated with VNS at BCCH from 1992 to 2024. Seizure control was measured by the percent of patients who achieved >50% seizure reduction.

Results: Sixty-nine patients were included, 35 (51%) of whom were male, with a median follow-up time of 104 months (IQR 65-168). The rate of discontinuation of VNS therapy at 5 years was 27.1% (SE 5.4%), with similar rates of achievement of 50% seizure reduction between patients with active (70.5%, SE 7.9) and inactive VNS devices (66.6%, SE 13.6). The rate of discontinuation of VNS therapy at 10 years increased to 51.9% (SE 6.1) and interestingly, there was no significant difference in seizure control between ongoing VNS patients (69.2%, SE 13.3) and those who discontinued VNS therapy (78.5%, SE 11.3).

Conclusions: This study provides insight into the rate of discontinuation of VNS therapy in long term follow up of pediatric patients with DRE. The high rate of discontinuation found without significant effect on seizure control raises intriguing questions about the ongoing utility of VNS beyond the initial 5 year period.

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Title: Sex Disparity in Parkinson's Disease Patients Undergoing Deep Brain Stimulation

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Background: Deep brain stimulation (DBS) of the subthalamic nucleus (STN) is a common procedure used to treat advanced Parkinson's disease (PD). It has been shown that women with PD are disproportionately undertreated with DBS as compared to men. However, there seems to be conflicting data regarding the sex differences in postoperative outcomes of PD patients undergoing STN DBS.

Objective: We aimed to determine the differences in preoperative and one-year motor symptoms, dopaminergic medication use, and quality of life (QoL) domains between men and women undergoing STN DBS.

Methods: This retrospective cohort study evaluated 94 patients who received bilateral STN DBS at the University of British Columbia Hospital and Vancouver General Hospital from 2008 to 2023. The Unified Parkinson's Disease Rating Scale Part III (UPDRS-III) was used to assess motor symptoms, levodopa equivalent daily dose (LEDD) was used to measure the dosage of dopaminergic medications, and the Parkinson's disease questionnaire-39 (PDQ-39) was used to determine the quality-of-life outcomes. Exploratory linear mixed-effect models were used to investigate sex*time interactions for UPDRS-III, LEDD, and PDQ-39 scores.

Results: Preoperatively, women presented with a significantly longer disease duration ($p = 0.014$), larger UPDRS-III OFF-medication scores ($p < 0.001$), lower LEDD ($p = 0.001$), and worse PDQ-39 scores ($p < 0.001$). In terms of the PDQ-39 QoL domains, women had worse (higher) scores in the emotional wellbeing, mobility, stigma, bodily discomfort and activities of daily living domains. At one-year postoperatively, women continued to have worse PDQ-39 scores in each of those domains, although there were no significant sex*time interactions. When adjusting for disease duration, age, UPDRS-III OFF scores, and LEDD, there was a significant sex*time interaction for the cognition domain of the PDQ-39 at one-year, which showed a greater increase over time in women ($p=0.009$).

Conclusions: Despite STN DBS being equally clinically efficacious for both sexes, women are undertreated. Preoperatively, women present during more advanced stages of PD with worse motor symptoms and a lower QoL. Postoperatively, women score worse on the cognition index, a proxy for mood rather than cognition. Greater emphasis must be placed on getting women with PD treated with DBS earlier in the disease course and dopaminergic medications should be carefully optimized for both sexes. Furthermore, more psychosocial support should be offered to both men and women.

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Title: *Characterizing Pollution-Related Anthracotic Pigments within Normal Lung Samples*

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Background: Lung cancer continues to be the most diagnosed cancer and the leading cause of cancer related deaths globally, with over 1.8 million fatalities each year. In most parts of the world, particulate matter (PM) with an aerodynamic diameter of less than 2.5 μm (PM_{2.5}) pollution is the second most common cause of lung cancer after tobacco smoking. Notably, PM_{2.5} exposure is increasingly implicated in lung cancer risk. Thus, there is an urgent need to understand the adverse effects of air pollution on lung health and lung cancer development.

Objective: While pollution-associated anthracotic pigment (black carbon deposits) can be detected in Hematoxylin and Eosin (H & E) slides of lung tissue, H & E slide anthracotic read-outs are not commonly used as surrogates for pollution exposure estimates in research. This is because there is currently neither a standard quantitative measure of anthracosis nor a comprehensive characterization of samples harbouring high levels of anthracotic pigment. As such we plan to develop and use a machine learning classifier to quantify anthracotic pigment which can be applied to many archival H & E slides. We also plan to describe samples which harbour high levels of anthracotic pigment to better understand its impact on lung cancer initiation and development.

Methods: We trained a supervised machine learning model using the QuPath software to identify anthracotic pigment on scanned H & E slides derived from peribronchiolar tissue. For training the classifier, 20 different patch sections of tissue from 2 slide images on which we manually marked areas of anthracosis were used. We then applied this classifier to quantify the amount of anthracosis in the images.

Results: We obtained a selection of 5 H & E scanned slide images of background normal lung tissue from never-smoker lung cancer patients. QuPath noted the presence of anthracotic pigment in varying quantities in these samples. There is also a trend toward an association between the quantity of anthracosis and pollution exposure as estimated based on patient addresses at the time of diagnosis.

Conclusions: Our data indicate that it is feasible to use a machine learning method to quantify anthracotic pigment on H & E slides, and that there is a trend towards the quantity of anthracotic pigment correlating with geographical estimates of pollution exposure. Future work will involve training and testing our classifier on a larger number of slides, and associating the quantity of anthracosis with other clinical characteristics of the corresponding lung cancer patients.

Determining who would benefit from electrodiagnostic testing after cervical spinal cord injury: From the European Multicentre Study About Spinal Cord Injury

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Introduction: Nerve transfer surgery (NT) is an emerging technique to restore upper limb function following cervical spinal cord injury (SCI). The main indications for NT in SCI are for improving elbow extension and hand opening/closing by using expendable donor nerves from C5-6 innervated muscles. There is growing awareness that surgery may be “time sensitive” if there is an intercurrent recipient lower motor neuron (LMN) injury, which can be determined using electrodiagnostic (EDX) testing. The purpose of this study was to determine the proportion of individuals who would benefit from early EDX within 6 months of SCI to facilitate clinical decision-making.

Materials & Methods: This was a retrospective cohort study utilizing data from the European Multicenter study about Spinal Cord Injury (EMSCI), a multicenter longitudinal cohort study of over 5000 individuals with traumatic SCI. The inclusion criteria to determine those who would benefit from early EDX at 6 months post-SCI were: 1) cervical spinal cord injury; 2) motor complete or incomplete injuries; 3) weakness/paralysis in potential recipient muscles as defined by manual muscle grade 0-2 in either/all of elbow extension (C7), 3rd digit flexion (C8), and 5th digit abduction (T1); and 4) Intact donor nerve function as defined by manual muscle grade 4-5 in elbow flexion (C5).

Results: 1007 participants with cervical SCI were identified. 48.6% of patients (n=489) met the inclusion criteria and would benefit from EDX to help guide their candidacy for NT. Of these, 174 (35.6%) had complete motor injuries. The distribution of Neurological Level of Injury (NLI) for those who would benefit from EDX was C4 (n=148), C5 (n=157), and C6 (n=98). Of 489 individuals who would benefit from EDX, n=14 (2.9%) met criteria to restore elbow extension only (C7), n=298 (60%) to restore hand opening/closing (C8/T1) and n=250 (51.1%) for both elbow extension (C7) and hand opening/closing (C8/T1).

Conclusion: This study demonstrated nearly half of individuals with traumatic cervical SCI would benefit from the information provided by EDX at 6 months post-injury, based on our a priori clinical criteria. The majority of these individuals would benefit from evaluation for candidacy for all NT indications. If these individuals were determined to have a LMN injury with EDX, then NT may be considered time sensitive.

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Title: Resectable Adenocarcinoma of the Esophagus and Gastroesophageal Junction at BC Cancer: Wait Time from Diagnosis to Neoadjuvant Treatment and Potential Impact on Overall Survival

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Background: Adenocarcinomas (AC) of the esophagus and gastroesophageal junction (GEJ) are among the most rapidly increasing causes of cancer-related mortality worldwide. While strides have been made in reducing the delay between symptom onset, diagnosis, and treatment of esophageal and gastroesophageal AC, there remains a significant gap from symptom appearance to treatment initiation. Theoretically, extended wait times can potentially lead to tumor progression, advanced staging, and reduced overall survival rates.

Objective: To investigate the effects on overall (OS) and disease-free (DFS) survival of waiting time from diagnosis to treatment for patients with initially resectable, distal esophagus and gastroesophageal junction adenocarcinomas that were treated at BC Cancer.

Methods: Retrospective population-based cohort study including patients with pathologically proven adenocarcinoma of the esophagus or gastroesophageal junction, including those with regional nodal involvement, managed with neoadjuvant chemoradiation or perioperative chemotherapy at BC Cancer between 2008 and 2018. Patients were categorized into short and long wait time, which was defined as less than 8 weeks from diagnosis to initiation of perioperative chemotherapy or neoadjuvant chemoradiation for the short wait group and 8 weeks or more in the long wait group. The Kaplan-Meier method was used to estimate 2-year and 5-year median OS and DFS for patients with short and long wait times. Cox proportional hazards regression modeling was used to estimate the effect of wait time on both OS and DFS, after controlling for potential confounding factors.

Results: 506 patients were found that met inclusion. The final analysis comprised 498 patients: 253 in the short wait group and 245 in the long wait group. At 5-year follow up, DFS was 61.6% for short waiters compared to 53.0% for long waiters. Overall survival was 67.3% and 62.4% for short and long waiters, respectively. Quantitative survival analysis including hazard ratios with p-values for effects of wait times on OS, DFS, pT, pN and resection status pending.

Conclusions: This retrospective cohort study shows a trend between longer wait times from diagnosis to treatment and decreased overall and disease-free survival in patients with initially resectable distal esophageal and GEJ adenocarcinomas.

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Title: *BC Cancer Quality Improvement Project: Translating Printed Patient Education Pamphlets to Audio-Visual Digital Resources*

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Background: The mainstay for patient education materials in radiation oncology has traditionally been written pamphlets. With improvements in technology, more audio-visual resources are now used to support patient education.

Objective: Our goal is to improve patient education in radiation oncology through implementing newer technology. Specifically, we hope to assess the efficacy of animated videos in supporting breast cancer patients undergoing radiation therapy compared to paper pamphlets.

Methods: Information from the paper pamphlets traditionally used for patient education were consulted to create an animation video with a Voiceover narrative that illustrates educational materials related to radiotherapy.

40 patients recommended to receive adjuvant radiotherapy for breast cancer were recruited and presented with both the paper pamphlet and animation video. Surveys were administered and the results were reported descriptively, including basic demographic information, thoughts on the education materials provided, and preferences between the two modalities.

Results: Results from this study show that both educational materials seem easy to review and are of good length. When comparing the two educational modalities, more participants reported being 'very comfortable' with the upcoming treatment after watching the video, and more participants reported being 'very confident' in remembering the information presented.

In terms of patient preferences between the two modalities, most participants preferred either the video by itself or both the video and paper pamphlet combined. However, a significant portion of participants preferred the paper pamphlet alone, especially those who were shown the paper pamphlet before the video. Furthermore, after viewing both educational materials, patients report more positive emotions like relief, calmness, and confidence, in contrast to the mixed emotions felt before viewing the materials.

Conclusions: Overall, the animation video created in this project seem to support patient comfort and confidence when undergoing radiation therapy for breast cancer. However, both paper pamphlets and animation videos seem to be useful for patient education, and a combination of both could be implemented for optimal effectiveness. Overall, by implementing evidence-based programs, the results from this quality improvement project will change the patient education pathway in radiation oncology and lead to improvements in patient health outcomes.

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Title: Reassessing Association Between HIV status and Post-operative Complications in the Modern Era.

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Background: Advances in HIV care have dramatically reduced perioperative mortality, challenging outdated beliefs about worse outcomes for patients living with HIV (PLWHIV). Modern guidelines now deem surgery safe for most PLWHIV. However, concerns about post-operative infection and wound healing, particularly in abdominal surgeries, persist.

Objective: To compare rates of post-operative wound infection and wound complications in PLWHIV against non-PLWHIV undergoing general surgery procedures.

Methods: This retrospective cohort study utilized longitudinal data linking the British Columbia HIV-treatment database with hospital administrative data from the Comparative Outcomes and Service Utilization Trends (COAST) cohort. It included all PLWHIV, and age/sex-matched controls who underwent general surgery in British Columbia from January 2008, to February 2020. Post-operative infections and wound complications within 30 days were identified using ICD-9/10 diagnostic codes.

Results: 1252 PLWHIV were matched with 5008 non-PLWHIV. Post-operative infections occurred in 620 patients, with 14.0% in the PLWHIV group and 10.3% in controls. Wound complications were observed in 36 patients, 0.7% in PLWHIV and 0.5% in controls. After adjusting for age, sex, CCI, and recent history of infection, HIV status was not significantly associated with post-operative infection (OR:0.95, 95%CI:0.78-1.16) or wound complications (OR:1.07, 95%CI:0.19-6.00). However, a higher odds of post-operative infections was observed in patients on income assistance (OR:1.57, 95%CI:1.26-1.95), substance use disorder (OR:1.38, 95%CI:1.08-1.77) or IV drug use (OR:2.90, 95%CI:2.28-3.69).

Conclusions: HIV status alone does not increase the likelihood of post-operative infections or wound complications. However, socioeconomic factors such as income assistance and substance use history significantly impact these risks.

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Title: Acquired sensorineural hearing loss, oxidative stress and microRNAs: a systematic review of the current literature

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Background: Hearing loss is the third leading cause of human disability. Age related hearing loss, one type of acquired sensorineural hearing loss (SNHL), is largely responsible for this escalating global health burden. Noise-induced, ototoxic and idiopathic sudden sensorineural are other less common types of acquired SNHL hearing loss. The aetiology of these conditions is complex and multi-factorial involving an interplay of genetic and environmental factors.

Objective: Oxidative stress has recently been proposed as a likely linking cause in most types of acquired sensorineural hearing loss. Short non-coding RNA sequences known as MicroRNAs (miRNAs) have increasingly been shown to play a role in cellular hypoxia and oxidative stress responses including promoting an apoptotic response. Sensory hair cell death is a central histopathological finding in acquired SNHL, and as these cells do not regenerate in humans. It underlies the irreversibility of human SNHL. We review the last 5 years literature to establish the link between oxidative stress and miRNA biomarkers in acquired SNHL.

Methods: Ovid EMBASE, Ovid MEDLINE, Web of Science Core Collection, and Clinical Trials.gov databases over the period August 1 2018 to July 31, 2023 were searched with “hearing loss”, “hypoxamiRs”, “hypoxia”, “microRNAs”, “ischemia” and “oxidative stress” text words for English language primary study publications or registered clinical trials. Registered clinical trials known to the senior author were also assessed. 222 studies were thus identified. 39 primary studies and clinical trials underwent full text screening. This resulted in 11 animal, in vitro and/or human subject journal articles and 8 registered clinical trial database entries which form the basis of this narrative review.

Results: MiRNAs miR-34a and miR-29b levels increase with age in mice. These miRNAs were demonstrated in human neuroblastoma and murine cochlear cell lines to target Sirtuin 1/peroxisome proliferator-activated receptor gamma coactivator-1-alpha (SIRT1/PGC-1 α), SIRT1/p53, and SIRT1/hypoxia-inducible factor 1-alpha (HIF-1 α) signaling pathways resulting in increased apoptosis. Furthermore, hypoxia and oxidative stress had a similar adverse apoptotic effect, which was inhibited by Resveratrol and a myocardial inhibitor associated transcript, a MiR-29b competing endogenous mRNA. Gentamicin reduced miR-182-5p levels and increased cochlear oxidative stress and cell death in mice – an effect that was corrected by inner ear stem cell derived exosomes.

Conclusions: The evidence highlights the role of miRNAs in cochlear oxidative stress, especially in acquired SNHL. The majority of these findings were established using pre-clinical animal models. Despite challenges in studying this enigmatic condition, clinical trials are being conducted into potential treatments. Elucidating the underpinning pathophysiological mechanisms of hearing loss may improve surveillance and guide treatment of this debilitating condition.

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Title: A Clinical Prediction Model in Prognosticating Salvage of the Infected Implant in Alloplastic Breast Reconstruction

Authors: Mariana Gutierrez Salazar, MD MSc¹; Paul Rakoczy, BSc²; Chris Doherty, MD MPH¹; Nancy Van Laeken, MD¹; Peter A Lennox, MD¹; Esta S Bovill, MD PhD¹; J. Scott Williamson, MD^{1,2}; David Williamson, MD^{1,2}; *Kathryn V. Isaac, MD MPH¹; *Sheina A. Macadam, MD MHS¹

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Background: Periprosthetic infection (PPI) is a rare complication associated with alloplastic breast reconstruction resulting in reconstructive failure, delay of adjuvant therapies, and re-operations. Despite multiple observational cohort studies, the optimal PPI management remains unclear.

Objective: The aim of this study was to develop clinical prediction tools to guide management of periprosthetic breast infection following alloplastic breast reconstruction.

Methods: A multicenter retrospective cohort study was conducted. Consecutive breast cancer patients who underwent immediate alloplastic breast reconstruction between 2010-2020 were included. Data was collected including patient, oncologic, and reconstructive factors for patients whose postoperative course was complicated by either cellulitic or periprosthetic infection. Two models were created for prediction of progression from cellulitis to PPI and from breast infection to reconstructive failure.

Results: A total of 1468 patients (2165 breasts) were included. The incidence of infection was 7.1% ($n=145$). The implant reconstruction was salvaged in 67.1% ($n=104$) of cases. The first model, predicting progression from cellulitis to periprosthetic infection, had good predictive accuracy with an AUC of 0.61 (95% CI 0.53-0.70; $p<0.001$). The second model, predicting progression to reconstructive failure had good predictive accuracy with an AUC of 0.79 (95% CI 0.71-0.87; $p<0.001$). Models were converted into risk stratification tools where five clinical variables were identified for a prediction scoring model with weighted points for each tool.

Conclusions: This study presents novel clinical prediction tools with good predictive accuracy. Application of these prediction tools can assist the clinician in making evidence-based treatment decisions for treatment of PPI following alloplastic breast reconstruction. Future research will aim to prospectively validate treatment algorithms and improve reconstructive success.

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Title: Developing a predictive model for gastrostomy-tube placement in head and neck cancer requiring free tissue reconstruction

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Background: Up to 25% of head and neck (HN) cancer patients undergoing a surgery with free flap (FF) reconstruction require gastrostomy tube (G-tube). Accurately predicting those HN FF patients that will require a G-tube could greatly improve patient care and hospital efficiency and is the purpose of this analysis.

Objective: Predict gastrostomy tube dependence in patients after major head and neck surgery

Methods: All HN FF reconstructions (N=534) at the Vancouver General Hospital from 2015-2021 were analyzed for presence (13%, N = 72) or absence (87%, N = 462) of G-tube placements. Potential clinical and pathological variables that may predict G-tube placement were included. Two-paired T-test and chi-square analysis were performed to identify risk factors for G-tube dependence which were then incorporated into logistic regression analysis to build a predictive for G-tube dependence after surgery.

Results: There were 14 statistically significant risk factors for G-tube dependence. The four most significant variables being oropharynx primary (OR 4.10), hypopharynx/larynx primary (OR 3.28), ALT FF (OR 2.30), and bilateral neck dissection (OR 2.09). A practical (7 variable) and a comprehensive (14 variable) predictive model was generated with area under the curve of 0.825 and 0.862, respectively. Both models had accuracy as high as 87%.

Conclusions: This study reports the largest single dataset of H&N cancer patients undergoing FF reconstruction to build a predictive regression model for G-tube dependence after surgery. We propose a simple 14-point screening tool that incorporates 7 clinical variables that will be implemented prospectively at our institution to risk stratify patients into high-risk vs. low-risk for G-tube dependence post-operatively after major H&N surgery.

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Title: Time-Driven Activity-Based Costing and Greenhouse Gas Emission Quantification of a Multidisciplinary Complex Airway Clinic.

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Background: Patients with unified airway disease benefit from the collaboration of Otolaryngology, Allergy and Immunology, and Respiriology. Multidisciplinary clinics (MDC) enable this collaboration and mitigate multiple specialist visits which can streamline patient care, reduce redundant tests, and decrease monetary and social costs to patients. A Canadian pediatric MDC has demonstrated cost and carbon savings, suggesting that MDCs are a promising care model. However, a time-driven activity-based costing (TDABC) and detailed greenhouse gas (GHG) quantification of an adult MDC Centralized Care Airway Clinic (CCAC) have yet to be discussed.

Objective: To define the monetary cost and greenhouse gas emissions of an MDC CCAC from the perspective of the Canadian government payer and sustainability.

Methods: A time-driven activity-based costing model (TDABC) was used. Clinical pathways were created and used in real-time by a tertiary rhinologist, respirologist, and allergist. Tasks were assigned a cost based on the province's medical services commission payment schedule, laboratory fee schedule, and health authority salaries. Greenhouse gas emissions (GHG) (kgCO₂e) were calculated using the distance travelled (km), method of transport, accommodation status, number of travellers and specific emission conversion factors (EF). Descriptive statistics were calculated.

Results: This is the first TDABC and emissions assessment of an adult MDC CCAC. One new patient visit at the CCAC cost \$1197.97 CAD. High-cost items included consultation fees (\$170.61 to 255.94), spirometry (\$20.56), flexible rhinolaryngoscopy (\$14.619) and clinic space (\$12.97). The largest costs were accrued during the pre-clinic appointments (\$472.00) and clinic visit (\$636.75). Total GHG emissions for one MCAC (28 patients) was 692.82 kgCO₂e, equivalent to about one barrel of oil. The largest contributor being driving a car or light truck (mean (SD): 20.45 (44.21) kgCO₂e) and the least being the Skytrain (mean (SD): 0.21 (0) kg CO₂e).

Conclusions: The TDABC of running a multidisciplinary complex airway clinic in the Canadian healthcare system is \$1197.97 CAD per patient and is associated with 692.82 kgCO₂e emissions per clinic; equivalent to burning about one barrel of oil. Multidisciplinary clinics can improve patient care and reduce greenhouse gas emissions; however, additional work is needed to estimate the cost-benefit of an MDC CCAC prospectively.

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Title: Residential Radon Exposure and Lung Cancer: A Feasibility Study in the Interior Health Authority Region of British Columbia, Canada

Authors: Carmen Huang¹, Katriana Witham², Jordan Lo¹, Cora Withers², Anne-Marie Nicol³, Lindsay Forsman-Phillips³, Siavash Atrchian^{1,2}

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Background: Radon is a well-established human carcinogen correlated with lung cancer development, but it is often less well-known by the general public. Interior Health Region in British Columbia is known to have elevated levels of radon, however, there has yet been a case-control study in this area. This feasibility study seeks to assess the ability of radon testing during cancer diagnosis and the practicality of expanding the current research methods into a larger-scaled project with more participants.

Objective: The study has four aims: (1) Identify the large-scale feasibility of the project (2) Dose-response relationship between radon exposure and lung cancer (3) Correlation between tobacco use with radon exposure and lung cancer development (4) The relationship of histological types of lung cancer and radon exposure

Methods: Single-centered prospective case-control study based in BC Cancer Kelowna. Participants were above the age of 50 and resided within the Interior Health Authority for at least 5 years. Subjective lifestyle information and histological diagnosis were collected. Participants were provided with alpha-track radon detectors and instructed to keep them in place for 100 days during the late fall and winter seasons. Upon completion, the participants were informed of their radon level and whether it was within the Canadian guidelines.

Results: There were 316 lung cancer patients approached from BC Cancer Kelowna, which yielded a total of 101 case (N = 64) and control (N = 37) participants. The recruitment rate was 32.0% and the retention rate 69.3% for the case and control participants. There was a strong association between small cell lung cancer and radon levels between 200 and 600 Bq/m³ (odds ratio = 17.5). There was a statistically significant association (p-value 0.02487) with Fisher's exact test alone. However, there was no statistical significance when the Bonferroni method was used (p-values > 0.05). There was an association between lung cancer and radon levels between 200 and 600 Bq/m³ (odds ratio = 0.3459). However, there was no significant association between lung cancer and radon level when using Fisher's exact (p-value 0.1137) and Bonferroni method (p-values > 0.05). The mean radon measurement was 143.69 Bq/m³ and 163.14 Bq/m³ for case and control participants respectively (p-value 0.6866).

Conclusions: After careful consideration of the efforts dedicated to this study, we have decided to conclude the study due to significant challenges. Measures to improve recruitment and retention rates are necessary to expand the current project into a larger-scaled study. While the findings suggest that data collection and testing may be feasible, specific concerns related to laboratory delays, timing of enrollment, and participant compliance must be addressed.

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Title: Application of Augmented Reality for Breast Reconstruction with a DIEP Flap: A Feasibility Study

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Background: A CT angiogram (CTA) is commonly used to identify perforators in preparation for breast reconstruction with a deep inferior epigastric perforator (DIEP) flap. However, the utility of this imaging data is limited by a surgeon's ability to precisely translate the vascular anatomy from the CTA onto the patient to inform their flap design and harvest based on perforator location and intramuscular course. This study aimed to evaluate the application of Augmented Reality (AR) for optimizing preoperative imaging to improve the efficacy of DIEP flap reconstruction.

Methods: A novel software was developed to translate patient-specific CTA data from the institutional imaging system onto two separate platforms: the Meta Quest 3 and the Apple Vision Pro. The accuracy of digital imaging segmentation, registration, and projection was evaluated on a mannequin. With institutional ethics approval, patients planned for breast reconstruction with a DIEP flap consented to the use of AR. In this single-surgeon feasibility trial, the visualization, registration, and interaction with the segmented vascular anatomy were evaluated for its safety and utility in pre-operative flap design and intra-operative flap harvest. The AR headset was used to visualize and interact with the segmented imaging data to identify perforators and their intramuscular course.

Results: The reprojection error between the segmented virtual anatomy and the real-world patient anatomy was measured at 1.3mm. Three patients underwent immediate breast reconstruction with AR-assisted DIEP flap planning and harvest. Preoperatively, AR was used to translate the perforator locations and their intramuscular course from the CTA onto the patient, facilitating flap design and perforator selection. Intraoperatively, the application of AR effectively delineated the vascular anatomy of the DIE perforators and pedicle relative to the rectus muscle, fascia, and overlying subcutaneous tissue. With the AR headset, the surgeon registered, visualized and interacted with the digital imaging. Using AR, digital information was safely and effectively applied to inform flap design and harvest, with guidance on perforator selection, fascial incision placement and length, and intramuscular pedicle dissection.

Conclusions: AR can accurately, safely, and effectively translate preoperative imaging for clinical use in DIEP flap design and harvest. By leveraging this immersive technology, AR may serve as an adjunct in reconstructive procedures to optimize safety, efficacy, and operative workflow.

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Title: Interdisciplinary Approach to Capsular Contracture Etiopathogenesis: Novel Application of Mathematical Model

Authors: Michelle Kim^{1,2}, Michelle Ho¹, Muhammad Assad¹, Yuqi Xiao³, Hannah Wells¹, Raveena Gowda¹, Leah Edelstein-Keshet³, Kathryn Isaac^{1,2}

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Background: Capsular contracture (CC) is a significant complication of alloplastic breast reconstruction. Despite extensive research, CC etiology remains unclear, with theories involving hypertrophic scarring, immune responses, mechanosensitivity, and implant properties. The complex processes driving CC remain difficult to decipher, highlighting the value of mathematical models that can simulate early-stage behaviour in a cost-effective, low-risk, time-efficient, and personalized manner. When integrated with literature reviews and human studies, these models offer a robust framework for understanding the underlying mechanisms of CC.

Objective: We aimed to enhance the understanding of CC etiology by integrating insights from a narrative review into the development of a mathematical model.

Methods: We employed an interdisciplinary approach, combining mathematical modeling with clinical research. We conducted a narrative review to identify key factors contributing to CC, focusing on immunohistological, mechanical, and genetic aspects. Insights from this review helped inform the development of a mathematical model. Ongoing feedback between literature review, model refinement, and biobank studies will allow us to test hypotheses on mechanosensitive cellular responses and improve our understanding of CC.

Results: The review identified common pathological features of hypertrophic scarring and capsular contracture, including increased fibroblast activity, chronic inflammation, and myofibroblast differentiation. Factors such as cell contractility, recruitment rate, collagen production, and tissue elasticity were found to contribute to CC. Human leukocyte antigens and diverse genetic factors also contribute to CC, with no single gene identified. The mathematical model incorporates these variables to explore CC formation.

Conclusions: The integration of math modeling with clinical research offers a novel approach to understanding CC etiology and improving surgical outcomes. Our model provides a cost-effective and time-efficient tool for predicting individual risk factors and opportunities to develop precise screening questionnaires and targeted interventions. This interdisciplinary approach opens new avenues for collaboration between surgeons and mathematicians to tackle complex medical challenges.

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Title: Harnessing Natural Language Processing and Machine Learning for Automated Extraction of Data from Unstructured Breast Cancer Pathology Reports

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Background: Vast amounts of breast pathology data are generated each year, as breast cancer remains one of the most prevalent cancers among women. Extracting data for research or research purposes remains challenging as current methods rely on manual annotation. The challenge magnifies with unstructured reports, which are often free-text narratives that lack a standardized format. A promising solution is to utilize Bidirectional Encoder Representations from Transformers (BERT) models, which are both Natural Language Processing (NLP) and Machine Learning (ML) technologies, to automate data extraction.

Objective: This study aims to develop BERT-based NLP models as a feasible solution for automating data extraction from unstructured breast cancer pathology reports

Methods: Human annotators analyzed 565 unstructured breast cancer pathology reports from the Provincial Health Services Authority for patients diagnosed with an invasive carcinoma, ductal carcinoma *in situ* or both. 38 fields of interests (FOIs), which were clinically relevant variables, were extracted. Each FOI was further categorized as either a Categorical Single FOI, which means that it has one possible outcome, a Categorical Multiple FOI, which means that there are multiple possible outcomes, and Free Text FOIs, which simply requires text extraction. In our NLP pipeline, Free Text FOIs are fed through a question-answering (QA) BERT model while both Categorical Single FOIs and Categorical Multiple FOIs are further fed into a classifier. An additional 512 structured breast cancer pathology reports were used to train and validate the model.

Results: Of the 38 FOIs, 11 were Categorical Single FOIs, 5 were Categorical Multiple FOIs and 22 were Free Text FOIs. Categorical Single FOIs had an average f1-score of 0.846, precision of 0.847, and recall of 0.867. Categorical Multiple FOIs had an average f1-score of 0.773, precision of 0.772, recall of 0.776 and a Jaccard Similarity of 0.859. Free Text FOIs had an average f1-score of 0.909, precision of 0.910, and recall of 0.918.

Conclusions: BERT-based NLP models offer a promising solution for automating data extraction from unstructured breast cancer pathology reports, potentially accelerating the extraction process and significantly reducing the resources traditionally required. Our findings demonstrate the strong feasibility and accuracy of this approach, suggesting its potential if implemented in clinical or research settings.

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Title: Identifying Breast Cancer Relapse from 15-F Fluorodeoxyglucose Positron Emission Tomography (FDG-PET) Reports Using Natural Language Processing (NLP) and Machine Learning (ML)

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Background: Breast cancer relapse is a critical long-term concern for both patients and clinicians, as it often signals a more aggressive disease course. Patients accumulate a large amount of Electronic Health Records (EHRs) from diagnostic tests, treatments and follow-up procedures. Among the various EHRs, 5F-fluorodeoxyglucose positron emission tomography (FDG-PET) imaging reports are particularly valuable for detecting local, regional, and distant relapses. Currently, data extraction for these reports have relied on manual methods, which are costly, prone to errors and, most importantly, time-consuming. Automatic data extraction may be achievable using Machine learning (ML) and Natural Language Processing (NLP) methods. Bidirectional Encoder Representations from Transformers (BERT), which are a relatively new NLP advancement, holds the most promise for extracting data from PET reports due to their ability to understand complex medical languages, extract relevant information from both structured and unstructured texts and differentiate subtle meanings.

Objective: The aim of this study was to assess the feasibility and accuracy of BERT models in classifying both breast cancer recurrence and its specific types — distant, regional, and local — from FDG-PET reports.

Methods: Using an annotation scheme developed by an expert radiation oncologist, we annotated 1,574 digital FDG-PET reports for BC Cancer breast cancer patients who are undergoing staging or post-treatment imaging for any type of breast cancer. The fields of interests (FOIs) included the three types of relapses – distant, regional and local – and a specific relapse location, intramammary chain (IMC). The model was trained, validated and tested using Biomedical Language Understanding Evaluation (Blue) BERT, a transformer model pre-trained on PubMed abstracts and MIMIC III clinical notes, and evaluated using a 10-fold cross validation. The model's accuracy, specificity and sensitivity were then assessed.

Results: The model detected distant relapses with an accuracy of 74.4%, sensitivity of 84.3% and specificity of 66.1%, regional relapses with an accuracy of 91.4%, sensitivity of 67.25 and specificity of 95.6%, and local relapses with an accuracy of 91.9%, a sensitivity of 37.9% and specificity of 97.6%. It was also able to identify the presence of an IMC relapse to an accuracy of 98.3%, a sensitivity of 80.4% and specificity of 99.1%.

Conclusions: The BlueBERT NLP model shows promise in automating breast cancer relapse classification from FDG-PET reports, reducing the resources, like time and human labour, that have been historically involved with manual extraction. Our findings support its potential for implementation in both clinical and research settings.

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Title: Establishing Quality of Care Indicators for Thyroid Cancer Management: A Scoping Review

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Background: Defining quantitative and qualitative quality indicators (QIs) are imperative in facilitating optimal perioperative outcomes for thyroid cancer patients. This review aimed to identify a comprehensive and evidence-based list of QIs to improve thyroid cancer care consistency.

Methods: A database search through MEDLINE (OVID), EMBASE (OVID), PubMed and Web of Science included studies up to June 16, 2023. QIs that defined structures and resources, processes, and outcomes of thyroid cancer care were collected and categorized into 5 phases of care: pre-diagnosis, diagnosis, treatment, post-treatment care & surveillance, and end of life care.

Results: Amongst 3,143 articles identified, 105 met criteria for full-text review, and 39 articles were included for data extraction. Of the 185 QIs extracted, 1 was categorized in the pre-diagnosis group, 30 in the diagnosis group, 128 in the treatment group, 19 in the post-treatment & surveillance group, and 7 into the end-of-life care group. Frequently reported diagnostic QIs included the use of a standardized ultrasound reporting system (N=4), followed by the performance of diagnostic fine needle aspiration biopsy (FNA) (N=3), and standardized FNA cytology reporting with the Bethesda System for Reporting Thyroid Cytopathology (TBSRTC) (N=3). Thyroidectomy performed by high-volume surgeons (≥ 10 -32 cases/year) was the most common treatment related QI (N=7) in addition to performance of preoperative voice assessment and laryngoscopy for higher risk patients (N=4). Use of intraoperative recurrent laryngeal nerve monitoring (N=4), assessment for postoperative hypocalcaemia with parathyroid hormone (PTH) measurements (N=3) and evaluation of recurrent laryngeal nerve (RLN) injury (N=3) were also emphasized. Surveillance with serum thyroglobulin (Tg) for disease recurrence (N=2) was the most important post-treatment QI.

Conclusions: Establishing an evidence-based list of QIs can be used to help identify current gaps in care delivery, improve practice efficacy, promote standardization, and ultimately improve patient thyroid cancer care.

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Title: Developing a planetary health menu for an acute care hospital: process and implications

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Background: Nutrition for hospitalized patients is critical to their recovery. Yet current menus do not meet standards for patient satisfaction, leading to inadequate intake and considerable food waste, as revealed in recent studies at Vancouver General Hospital (VGH). While patients report concern about planetary health, the current menu is highly greenhouse gas emissions (GHGe) intensive, and is poorly aligned with principles of environmental sustainability. A novel planetary health menu was developed for VGH with the aims of improving patient satisfaction through improved taste and cultural diversity, and improving planetary health by incorporating more sustainable foods.

Objective: The objectives of this study were to characterize the menu development process, and evaluate the impact of the menu change on nutritional adequacy, cultural diversity, and environmental impacts.

Methods: Novel dishes were created by a team comprising an Executive Chef, food services managers, and a dietitian. Focus groups were held with patient partners, clinical staff (physicians, nurses, dietitians, allied health), and food services staff, in which feedback was solicited via surveys on the palatability of these dishes. Descriptive measures were used to characterize changes in protein and cultural diversity, and t-tests to assess the difference in macro and micronutrients between the standard and novel menu. The validated Planetary Health Diet Index (PDHI) was used to quantify alignment of the new menu with the planetary health diet. GHGe and land use associated with the food served were calculated for the novel menu and compared to those of the standard menu.

Results: A total of 54 new dishes, primarily entrees, were tested, with high average scores (taste 4.3/5, food quality 4.5/5) and 86% of respondents stating they would want to eat them if hospitalized. In total, 303 individual survey responses were received, with respondents being primarily food services staff (43%) and dietitians (40%). Three focus groups with plant-based dishes tastings were held with patient partners, who indicated they would enjoy such dishes in the hospital 92% of the time. The novel menu significantly increased plant-based proteins from 8% to 34% of entrees, and cultural diversity of meals offered, with non-Western dishes accounting for 38% of the entrees offerings, instead of 20%. Both menus were nutritionally equivalent, with no significant differences in calories or proteins served ($p > 0.05$). PHDI scores calculations are underway. GHGe were 43% lower with the new menu, and land use was reduced by 56%.

Conclusions: A Planetary Health Menu was successfully developed for an inpatient setting meeting guidelines for nutritional adequacy for hospitalized patients and significantly improving food-related environmental impacts. This is the first reported instance of a Planetary Health Diet being adapted to meet the unique requirements of a hospital setting.

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Title: Implementation of a planetary health menu in an acute care hospital

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Background: Planetary Health Diets have been increasingly recognized for their role in decreasing morbidity and mortality from non-communicable diseases, while lessening the problematically large environmental impact of global food systems. Such plant-forward nutrient-dense diets are more common in general populations, but no studies have reported on implementation of a Planetary Health Diet for inpatients in a healthcare institution. Concerns around palatability and nutritional adequacy of such diets for acutely ill patients has limited their application in this setting. A Planetary Health Menu was designed for Vancouver General Hospital (VGH) that met nutritional standards for hospitalized patients.

Objective: To assess the acceptability of this novel menu among inpatients.

Methods: Between October 2023 and March 2024, 19 new dishes featuring plant-based and low-carbon animal proteins were gradually implemented at VGH. Patient feedback was sought through in-person surveys of at least 10% of all patients who received the new dishes. Meal uptake was assessed via production tallies and food waste was assessed using visual plate waste audits. Greenhouse gas emissions (GHGe) and land use impacts for each new dish were calculated using established methodologies. Overall patient experience with food at VGH and at UBC Hospital, a control site, was measured using a validated survey administered to at least 15% of patients admitted before the introduction of the meals and at the end of the project.

Results: In total, 157 different dishes were evaluated, 2929 individual patient surveys were administered, and 38904 trays were assessed for waste. New dishes were served on average to 57.8-72.6% of admitted patients, which was significantly impacted by the number of therapeutic diets meals were compliant with and the main protein featured in the dish ($p < 0.001$). Fish dishes received significantly higher scores than meat replacement and tofu dishes (p 's < 0.044). While there was significant variability in waste rates based on proteins types, present in the previous and in the novel menu, waste was significantly lower with new dishes across all protein types ($p < 0.001$). New dishes were on average 8-14 times less GHGe-intensive on average than beef dishes for plant-based proteins, and 6 times for poultry or fish. A total of 258 patients at VGH and 76 patients at UBCH completed the overall experience survey. The experience with hospital food and the perception of food quality were not significantly different before and at the end of the project. In a subgroup analysis of VGH patients at the end of the project, there was no significant difference in satisfaction based on age, gender, diet, or prior tofu consumption.

Conclusions: This study suggests that plant-forward Planetary Health Diets can be acceptable within an inpatient acute care population, and can realize considerable environmental benefits. It also highlights the importance of preserving choice for patients, and exploring opportunities beyond main entrees when considering how to improve the overall patient experience with food in the hospital.

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Title: Validation of a Machine Learning Model for Predicting Post-Mastectomy Radiotherapy Recommendation Following Immediate Breast Reconstruction

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Background: Immediate breast reconstruction (IBR) performed at the time of mastectomy is associated with improved patient satisfaction but is complicated by long-term morbidity following post-mastectomy radiotherapy (PMRT). While PMRT reduces risk of breast cancer recurrence, it can cause complications such as reconstructive failure and capsular contracture. Machine learning (ML) algorithms can develop personalized risk profiles by analyzing population-level data. These profiles could guide decisions on the type and timing of breast reconstruction surgery, ultimately optimizing long-term outcomes for breast cancer patients. To ensure generalizability across various clinical scenarios, the reliability of ML models is dependent on successful validation on diverse patient cohorts.

Objective: This retrospective cohort study aimed to validate an Elastic Net-based ML model predicting the probability of requiring PMRT following IBR.

Methods: The study cohort comprised 224 breast cancer patients who underwent mastectomy with immediate alloplastic breast reconstruction from January 2021 to December 2022. Data were collected on 12 patient characteristics identified as predictive in our ML model. Pre-operative characteristics were recorded from clinical history, physical examination, diagnostic imaging, and core biopsy pathology. Model evaluation metrics included Area Under the receiver operating characteristic Curve (AUC) and precision-recall curve.

Results: Of 224 patients, 37.5% (n=84) were recommended PMRT. Our ML model demonstrated excellent predictive performance, attaining an AUC of 0.841 [95% confidence interval 0.785 – 0.891], along with a recall of 0.857 and precision of 0.649. The most predictive characteristics for PMRT recommendation included invasive histology, presence of metastasis on pre-operative axillary biopsy, tumor size, and suspicious lymph node size. Characteristics predicting against PMRT recommendation included having undergone a core needle biopsy rather than surgical excisional biopsy and older age.

Conclusions: A ML model for predicting PMRT following IBR was developed and now validated on a new study cohort. It has also been translated into an online nomogram calculator for providers and patients to assist in clinical decision-making. The calculator is available for real-time use at <https://surgery.med.ubc.ca/divisional-research/plastic-surgery/pmrt-nomogram>.

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Title: Bidirectional Transformer-Based Natural Language Processing for Automated Relapse Detection in Breast Cancer Computed Tomography Reports

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Background: Breast cancer relapse is a major concern for oncologists and patients. However, the tracking of such relapses is infrequently performed at the population level by cancer registries. This gap is primarily due to the financial and logistical burdens associated with long-term follow-up. Natural language processing (NLP), a computational technique that integrates artificial intelligence with linguistics, presents a promising solution by enabling efficient analysis of large volumes of text. This capability is particularly relevant for analyzing computed tomography (CT) reports, which are routinely used in breast cancer care and contain information on relapse findings.

Objective: To develop NLP models automating the detection of local, regional, and distant breast cancer relapses in the text of unstructured CT reports.

Methods: We conducted an analysis of follow-up CT reports from patients diagnosed with breast cancer between January 1, 2005, and December 31, 2014. These reports were curated and annotated to identify the presence or absence of local, regional, and distant breast cancer relapses. We selected BlueBERT, a bidirectional transformer model pre-trained on PubMed abstracts and MIMIC III clinical notes, as our base model. To train and test our models for identifying the various types of relapses in CT reports, we implemented a 10-fold cross-validation method. The performance of the models was evaluated using classification metrics and results were reported with 95% confidence intervals [CI].

Results: The study cohort comprised of 887 breast cancer patients with a median age at breast cancer diagnosis of 58 years (range 25-90 years). A total of 1,445 CT reports were included from these patients, with 799 reports (55.3%) describing any relapse, 72 reports (5.0%) documented local relapses, 97 reports (6.7%) noted regional relapses, and 743 reports (51.4%) described distant relapses. The model for detecting any type of relapse achieved an accuracy of 89.6% [87.8-91.1], with a sensitivity of 93.2% [91.4-94.9] and a specificity of 84.2% [80.9-87.1]. The model for local relapse detection reached an accuracy of 94.6% [93.3-95.7], but had a lower sensitivity of 44.4% [32.8-56.3], although its specificity was high at 97.2% [96.2-98.0]. The regional relapse model showed an accuracy of 93.6% [92.3-94.9], sensitivity of 70.1% [60.0-79.1], and specificity of 95.3% [94.2-96.5]. The model for distant relapse detection exhibited an accuracy of 88.1% [86.2-89.7], a sensitivity of 91.8% [89.9-93.8], and a specificity of 83.7% [80.5-86.4].

Conclusions: We developed BlueBERT-based NLP models to identify local, regional, and distant breast cancer relapses in CT reports. The automation of breast cancer relapse identification has the potential to enrich cancer registries with information on patient outcomes and enhance patient care by facilitating timely relapse identification.

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Title: Alignment of learning objectives in Canadian plastic surgery residency programs

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Background: Competence by design (CBD) is a model of postgraduate medical education created by the Royal College of Physicians and Surgeons of Canada (RCPSC). CBD emphasizes an outcomes-based approach to residency training in contrast to the traditional time-based model. Training progression is benchmarked by achievement of Entrustable Professional Activities (EPAs) which comprise discipline-specific core tasks. We propose that residents and attending surgeons may prioritize different EPA learning milestones based on their knowledge, experience, and cognitive load. Misalignment of the perceived educational priorities between teachers and learners can negatively impact learning, educational satisfaction, and quality of care.

Objective: The purpose of this study was to (1) compare learning priorities of Canadian plastic surgery residents and attending surgeons using the EPA framework, and (2) explore resident and attending perceptions of CBD.

Methods: Online surveys were administered to plastic surgery residents and attending surgeons identified through the Canadian Society of Plastic Surgeons (CSPS) mailing list. Participants were asked to rank milestones for two EPAs on a five-point Likert scale. They were also asked two optional open-ended questions about their opinions on CBD. A thematic analysis was conducted on the open-ended responses.

Results: A total of 90 participants (59 attendings and 31 residents) responded to the survey, with an overall response rate of 17.2%. Residents tended to prioritize gathering a relevant clinical history as less important than attendings (OR = 0.32, 95% CI 0.11-0.89, p=0.032). They were also more likely to rank preparing for the procedure as lower importance than attending plastic surgeons (OR = 0.23, 95% CI 0.06-0.80, p=0.028). Residents and attendings were aligned in their prioritization of the other EPA milestones. The qualitative data revealed five themes revealing significant variability in the perceived utility of EPAs as a learning and feedback tool, ranging from not useful to valuable.

Conclusions: Overall, resident and attending plastic surgeons prioritize most EPA milestones similarly, with the exception of gathering a clinical history and preparation for the procedure. Perceptions of the benefits and limitations of CBD in plastic surgery are similar to those reported in other specialties.

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Title: Why Not a Cochlear Implant? Demographic, Clinical, and Psychosocial Parameters that Influence Decision to Decline Cochlear Implant in Eligible Candidates.

Authors: Ying Jie Li¹, Jayant Seth¹, Fainess Mwakisimba², Paula A. Tellez², Ruth Chia², Julie Pauwels², Frederick K. Kozak², Mark Felton², Amjad Tobia²

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Background: Cochlear implantation (CI) in bilaterally hearing-impaired children significantly enhances language development, academic performance, and quality of life. Recently, single-sided deafness (SSD) was included in BC’s CI candidacy criteria due to its benefits in improving binaural hearing abilities and reducing tinnitus. However, despite this expansion, there appears to be an increased rate of refusal for CI among eligible candidates. The interplay between socioeconomic and sociocultural factors influencing this refusal remains unclear.

Objective: To investigate clinical, demographic, and psychosocial parameters associated with the refusal of CIs in eligible pediatric candidates.

Methods: A retrospective chart review was conducted for all patients aged 0-18 yrs at the time of referral to the BC Children’s Cochlear Implant team (CIT). This study includes referrals from April 2015 - May 2024. Preliminary data from previous work between April 2007- March 2015 was used for the purpose of comparison. Demographic information, audiological history, and socioeconomic parameters were extracted for all eligible patients.

Results: Data from 2007-2015 included 224 referred patients. 20/244 (8%) denied candidacy assessment by the CI team due to preference for hearing aids (8/20, 40%), perceived “enough” residual hearing (4/20, 20%), family history of hearing loss with strong connection to use of sign language (5/20, 25%), wanting to wait until their child was 18 yrs to make the decision on their own (1/20, 5%), or disinterest in assessment for surgery (2/20, 10%). Following audiologic evaluation from the CI team, 59/ 224 (26%) patients were found to be inappropriate CI candidates due to type of hearing loss (7/59, 12%), significant benefit with hearing aids (14/59, 24%), too much residual hearing (11/59, 19%), absence of bilateral cochlear nerves (11/59, 19%), or other reasons such as extended length of auditory deprivation or good hearing in the contralateral side (16/59, 27%). Of the 145 eligible CI candidates, 4 declined CI because of underlying patient co-morbidities, perceiving the surgical risk to outweigh the benefits of CI (2/4, 50%), reporting sufficient benefit from hearing aids (1/4, 25%), or preference for bilateral CI despite absent cochlear nerve in one ear (1/4, 25%). This data forms a basis of comparison for our study, which will encompass a larger sample size and SSD CI candidates.

Conclusions: Clinically, reasons for why patients did not receive a CI are varied, but center around medical co-morbidities or existing benefit by a hearing aid. Ongoing investigations aim to further study socioeconomic parameters influencing patient decisions.

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Title: Canadian Vascular Surgeon's Perspective on the Impact of Device Representatives in the Operating Room: A CSVS Survey

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Background: Industry has contributed significantly to the development of endovascular aneurysm repair (EVAR), a minimally invasive alternative to open surgery for the management of abdominal aortic aneurysms. Device sales representatives (DSR) are often present in the operating room to guide device use. However, potential ethical concerns regarding the effects of DSRs on surgeon's perceptions and decision-making remain poorly characterized.

Objective: To determine the current attitudes of Canadian vascular surgeons towards DSRs and their presence in the OR during standard infra-renal EVAR cases.

Methods: A 22-question survey investigating perceptions of the harms and benefits of DSRs in the OR was created using a 5-point Likert response scale and distributed to members of the Canadian Society for Vascular Surgery. Participants were sub-grouped based on duration of practice and academic or community practice modality. Analysis was completed with descriptive statistics and Fisher's exact tests using SPSS (v.26).

Results: The study returned a response rate of 38.2%, with 68 vascular surgeons surveyed. Overall, participants viewed DSRs beneficially, such as for case efficiency, planning and device specific knowledge (65.6%, 55.2% and 82.8% respectively). The majority did not perceive significant ethical issues (81.8%), although they felt their colleagues were more influenced by relationships with DSRs (74.5%). Of those who did feel that DSR presence in the OR were not ethically appropriate, most were academic practitioners (27% vs 5%, $p=0.04$). Majority of surgeons surveyed stated they would continue their having DSRs present during standard infra-renal EVARs. However, of those who were likely to discontinue this practice, the majority were also academic (35% vs 4%, $p=0.01$). Duration of practice showed no significant differences with regards to perceived benefits/harms.

Conclusions: Most Canadian vascular surgeons perceive significant benefit to DSR presence during standard EVAR cases. While some recognize potential areas for conflicts of interest, they felt that their colleagues were more subject to these pressures.

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Title: Population-Based Local Control and Survival Outcomes of Brain Post-Metastasectomy Adjuvant Radiotherapy Versus Observation

Authors: Zhang Hao (Jim) Li¹, Linden Almeida², Jennifer Wang², Nan Hui (Susan) Yao², Andrew Lee³, Serge Makarenko³, Mostafa Fatehi³, Herve H. F. Choi⁴, Ermias Gete⁴, Fred Hsu¹, Waseem Sharieff¹, Shrinivas Rathod¹, Hannah Carolan¹, Jessica Chan¹, Roy Ma¹, Alan Nichol¹, Justin Oh¹

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Background: In recent years, randomized studies have shown that post-operative stereotactic radiosurgery (SRS) and stereotactic fractionated radiotherapy (SFRT) offer greater local control of brain metastases compared to observation. However, population-based studies examining how adjuvant surgical cavity radiotherapy (aRT) translate into real-world outcomes are lacking in the literature.

Objective: First, to review clinical outcomes of patients within BC who underwent brain metastasectomy followed by either aRT or observation. Second, to assess and identify the factors associated with the outcomes of patients with brain metastasectomy followed by observation or aRT.

Methods: A multi-centre retrospective chart review was conducted on patients in BC who received brain metastases resection between 2018 – 2020. Patients were excluded if they had received whole brain radiotherapy, an aRT dose of <15 Gy, or >5 fractions. Study endpoints were local recurrence, distant intracranial failure, radionecrosis (RN), and overall survival (OS). Survival analyses were performed using the Kaplan-Meier method. Univariable (UVA) and multivariable (MVA) analyses were performed using the Cox proportional hazards model to identify factors predictive for local control and OS.

Results: 113 patients were identified. The median number of brain metastases per patient was 1 (range: 1-13). 31 patients received aRT while 82 did not. There were no significant baseline differences between the two cohorts. 12-month local control was 69.7% (95% CI: 50.9-88.5%) for the aRT cohort and 31.6% (95% CI: 18.1-45.1%) for the observation cohort (P < 0.001). 12-month distant intracranial control was 44.4% (95% CI: 26.0-62.8%) for the aRT cohort and 46.2% (95% CI: 30.1-62.3%) for the observation cohort (P = 0.9). The 12-month OS was 61.3% (95% CI: 44.2-78.4%) for the aRT cohort and 32.4% (95% CI: 22.2-42.6%) for the observation cohort (P < 0.03). En bloc resection (P < 0.05, HR 0.48, 95% CI: 0.24-0.99) and aRT (P < 0.001, HR 0.26, 95% CI: 0.13-0.53) were predictive of local control on MVA. There was no difference in local control (P = 0.4) or OS (P = 0.4) between aRT patients and the subset of observation patients who had en bloc resection. aRT was predictive of OS upon MVA (P < 0.02, HR 0.57, 95% CI: 0.36-0.90). 4 patients in the aRT cohort developed RN (13%). No grade 3 or higher toxicities were reported.

Conclusions: Among the general population, aRT is generally well-tolerated and associated with better local control and OS. The findings of this study support the current practice guidelines recommending aRT. Future research could explore predictive factors that would allow safe omission of aRT, such as those with en bloc resection.

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Title: Bibliometric Analysis of Near-Infrared Autofluorescence use for Parathyroid Identification

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Background: Recent advancements in the innovative label-free technique Near-Infrared Autofluorescence (NIR-AF) for intraoperative detection of parathyroid glands (PG) have gained significant research interest.

Objective: Our study conducts a comprehensive bibliometric analysis of all published articles on NIR-AF, aiming to map the developmental trajectory and identify evolving trends in this emerging field.

Methods: Bibliometric data from papers published on NIR-AF until October 1, 2023 was extracted from the Web of Science database. Descriptive bibliometric analysis and graphical networks were performed using Bibliometrix, Microsoft Excel, and VOSViewer software. Countries, institutions, journals, authors, keywords, and citation lifecycles of the collected articles were examined using various analyses such as co-citation, co-authorship, and co-occurrence analysis.

Results: 128 unique publications were extracted with 95 original articles, 25 review articles, and 11 proceedings papers. The research of NIR-AF for PG detection has garnered 2055 citations, averaging 18.66 citations per document and an annual citation rate of 3.63 per document. A substantial growth in this field is seen as evidenced by a 30.32% annual increase in scientific production. In terms of contributions to NIR-AF research, the United States has the highest scientific production with Vanderbilt University, Cleveland Clinic, and Ohio State University at the forefront of institutional publications. The most prolific contributors are Mahadevan-Jansen and Berber. The most frequently occurring keywords in the literature are "autofluorescence," "parathyroid gland," and "thyroid surgery," reflecting the core focus of the research topic. The journals having the highest production for this research are Frontiers in Endocrinology and the Journal of Surgery, highlighting their significance in the field.

Conclusions: Bibliometric analysis of the literature on NIR-AF provides an overview of the contributions of the field and the evolution of the novel technique since first reported 12 years ago. The analysis highlights the importance of NIR-AF for endocrine surgery and the trajectory of this emerging research.

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Six-Month Hearing Outcomes in Patients Randomized to Motivational Interviewing Sessions: The Motivational Interviewing and Hearing Aid Trial (MI-HAT)

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Background: Hearing loss is the third leading global cause of disability and is associated with poorer quality of life. However, hearing aid uptake and use rates are low despite the prevalence of disabling hearing loss.

Objective: This study aims to investigate the impact of one-on-one motivational interviewing (MI) sessions on hearing aid use among new adult users.

Methods: A multi-center, prospective, randomized controlled trial of hearing aid users ≥ 18 years of age who were randomly assigned after recruitment to either a treatment arm or control arm. The treatment cohort attended a MI session in addition to standard audiological care. The control cohort received standard audiological care only. Demographic and baseline hearing data were collected. Primary outcomes were hearing aid device-logged hours of use and patient-reported outcomes using the International Outcome Inventory for Hearing Aids (IOI-HA). Six-month post intervention data was assessed. Student t-test and Mann-Whitney U tests were used for analysis as appropriate.

Results: In total, 82 participants (mean age 63.5 years, 54.9% female) were recruited. The majority (79.3%) of participants self-identified as Caucasian and 6-month follow-up data was available on 65 participants. There were no significant baseline differences between the two cohorts by age, gender, average hearing loss (dB), word recognition score, or hours of hearing aid use. Device-logged hours of use and IOI-HA scores trended higher at 6-month follow-up in the MI cohort (8.1 hours in MI vs. 6.6 hours in control; IOI-HA score 27.8 in MI cohort vs. 26.9 in control), but this was not significant.

Conclusions: Current follow-up data does not demonstrate a significant effect of one-on-one MI on hours of hearing aid use or patient reported quality of life at 6 months. Patient recruitment and follow-up is ongoing to increase the power of this conclusion.

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Title: Comparison of Health-Related Quality of Life Outcomes in Older Breast Cancer Patients Undergoing Breast Conserving Surgery, Mastectomy, and Reconstruction: A Prospective Study.

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Background: Modern day treatments have improved breast cancer survival, making health related quality of life (HRQoL) after treatment increasingly important in breast cancer survivorship. This dimension is even more relevant when counselling surgical options in the elderly population, as a higher value may be placed on quality rather than quantity of life. There is a knowledge gap in the HRQoL outcomes of older patients undergoing breast cancer surgery.

Objective: To evaluate the preoperative and six-month postoperative change in patient-reported HRQoL in several aspects of mental and physical health, comparing outcomes for breast conserving surgery (BCS), total mastectomy no reconstruction (TMNR), and total mastectomy with immediate reconstruction (TM+R) in older patients.

Methods: This prospective cohort study enrolled breast cancer patients between 2016 – 2023. Participants completed surveys that measured their mental and physical health. Surveys were completed preoperatively after surgical consultation and again six-months postoperatively. The BREAST-Q questionnaire was used to assess breast cancer specific outcomes including breast satisfaction, psychosocial, sexual, and chest physical well-being. General patient-reported outcomes were categorized in depression, anxiety, pain, and perceived health.

Results: This study had 259 breast cancer patients ≥ 70 years old meeting inclusion/exclusion criteria complete their pre- and six-month postoperative surveys. Of these, 191 underwent BCS, 55 TM, and 13 TM+R. On average, patients who underwent TM and TM+R experienced clinically significant reductions in breast satisfaction (-5.8, -5.6) and sexual well-being (-5.4, -9.1). TM patients also had decreased psychosocial (-4.2) and chest physical well-being (-5.0), while BCS patients showed no significant changes. In the multivariable linear regression model, BCS ($\beta = 13.6$, 95% CI: [4.0, 23.2], $p = 0.006$) and TM+R ($\beta = 19.1$, 95% CI: [3.1, 35.1], $p = 0.02$) were significantly associated with higher postoperative breast satisfaction scores compared to TM, controlling for tumor factors, neoadjuvant, and adjuvant therapies. BCS was also associated with higher postoperative chest physical well-being compared to TM ($\beta = 8.8$, 95% CI: [0.9, 16.6], $p = 0.03$). There was no significant difference in the change in depression, anxiety, or pain scores within and across the surgical modalities.

Conclusion: BCS has improved HRQoL outcomes overall compared to mastectomy. Older breast cancer patients should be counselled to undergo BCS when feasible.

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Title: Improving the Quality of General Surgery Continuous Quality Improvement Rounds: Lessons Learned from British Columbia

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Background: Continuous Quality Improvement Rounds, analogous to Morbidity and Mortality Conferences, are an essential aspect of medical and surgical departments which aim to enhance the quality of care provided to patients and play an important role in medical education, quality assurance, and accreditation in Canadian hospitals.

Objective: While previous studies with broader scopes, within Canada or internationally, have assessed CQIR delivery, we aim to establish a more thorough understanding of their specific application and perceived value in general surgery departments on a provincial scale within hospitals in British Columbia (BC), Canada.

Methods: A 27-item cross-sectional survey was conducted between August to December 2023 amongst general surgery department heads across BC hospitals, with the goal of obtaining information on CQIR logistics such as scheduling, format, and content, as well as surgeons' subjective assessments on quality improvement, educational value, and barriers to participation. **Results:** Thirteen complete responses representing surgical departments across BC were qualitatively analyzed. Most reported monthly or four-monthly CQIR meetings, lasting at least one hour, with strong attendance by attending surgeons. Noted areas for improvement included the absence of specific inclusion criteria, the need for standardized error classification, and lack of post-CQIR engagement for learning assessment. Respondents expressed satisfaction with CQIR effectiveness but communicated a desire for more in-person meetings and increased structure.

Conclusions: CQIRs in BC are effective but occur less frequently than is ideal, as defined in past studies, for medical education and quality improvement. This survey suggests an increase in meeting frequency and organization in case selection and analysis may enhance the delivery and application of key learning objectives. Future research in this area is needed.

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Title: Outcomes of Combined Complex Hernia Repair and Panniculectomy in Abdominal Wall Reconstruction: A Single-Center Retrospective Analysis

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Background: The increasing incidence and complexity of abdominal wall hernias present unique challenges, leading to significant variations in its surgical management. These include differences in the selection of mesh material, plane placement, and the choice between open or minimally invasive techniques. Additionally, many patients require both functional and cosmetic corrections, necessitating a multidisciplinary approach among plastic and general surgeons. While numerous studies have evaluated outcomes related to the repair of ventral hernias, there is a paucity of published literature related to hernia repairs when combined with panniculectomy to achieve abdominal wall reconstruction.

Objective: To evaluate outcomes in patients undergoing abdominal wall reconstruction with single stage open hernia repair with panniculectomy.

Methods: This single-center retrospective cohort study included patients >18 years old who underwent elective ventral hernia repair with concomitant panniculectomy at St Paul's Hospital from January 2014 – 2024. Parastomal hernia repairs were excluded. Outcomes included hernia recurrence, incidence of surgical site complications, and 30-day adverse events. Descriptive summary statistics were performed using Wilcoxon rank sum and Fischer's exact test for comparative analysis. All statistical tests used p-value <0.05 for statistical significance.

Results: Of the 57 patients identified, 52 (91.2%) required mesh-based hernia repairs. Among these, 27 (50.9%) had undergone at least one previous hernia repair. Hernia recurrence was observed in only 2 patients (3.5%), both of whom had repairs with biologic mesh and had associated surgical site infections. Fascial closure was successfully achieved in all but one patient. The most common surgical site complications were infection (21.1%), seroma (21.1%), skin or soft tissue ischemia (7.0%), stitch abscess (5.3%), chronic pain defined as lasting >6 months (5.3%), and mesh infection (3.5%). 30-day adverse events included acute kidney injury (10.5%), ileus (3.5%), and prolonged ventilation >48hrs (3.5%). Comparative analysis between underlay and onlay mesh repair revealed no statistically significant difference in the incidence of surgical site complications or 30-day adverse events. The median length of hospital stay was 4.5 days (IQR 3-7) for underlay mesh repair and 5.5 days (IQR 3-7) for onlay mesh repair.

Conclusions: In conclusion, the combination of open hernia repair with panniculectomy in abdominal wall reconstruction demonstrated low rates of hernia recurrence and high rates of successful fascial closure. The study found no significant difference in surgical site complications or 30-day adverse events between underlay and onlay mesh placements, supporting the feasibility of either approach in this complex patient population.

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Title: An Evaluation of the Usage of Internet Resources by Patients with Lung Cancer

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Background: Lung cancer remains the leading cause of cancer mortality. Meanwhile, the Internet remains a remarkably popular source of health information. This study characterizes how patients with lung cancer utilize online resources including social media and examines how this online health information-seeking behaviour (HISB) influences their healthcare journeys.

Methods: From September 2022 to August 2023, a survey of 38 open- and close-ended questions was distributed to patients with lung cancer at a tertiary cancer centre. Quantitative data was analysed with descriptive statistics, and qualitative data was evaluated using a grounded-theory approach.

Results: 74 surveys were distributed, with 54 responses. 89% of respondents reported online HISB. Of this subgroup, only 29% searched social media for health information, and 77% used a search engine. 89% of the search engine users utilized Google, selecting top hits (57%) and/or websites from sources they considered reputable (57%). Participants who did not use search engines directly accessed websites recommended by trusted sources such as physicians, friends, and family. Treatment was the most frequently sought topic (70%). While most respondents engaging in online HISB considered the Internet to be useful (79%), less than half found it influential for their treatment decisions (45%).

Conclusions: Most respondents in this study searched the Internet for lung cancer information. Our data highlights the Internet as complementary to clinical discussions with trusted medical professionals. Physicians should recognize the widespread adoption of online HISB, guide patients to evaluate the credibility of online health information, and contextualize it within the patients' unique healthcare journey.

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Title: YouTube Videos as a Tool to Educate Medical Students About Careers in Radiation Oncology

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Background: For medical students, choosing a specialty is an important and complex career decision that has major implications for their professional and personal lives. As the popularity of using YouTube increases, medical students may seek information about potential specialties from this platform. This study aims to characterize existing YouTube videos that may inform medical students about careers in radiation oncology.

Methods: 6 different search terms related to careers in radiation oncology were entered into YouTube on December 2023. The first 50 results of each search were programmatically web scraped using a custom Python script for a total of 300 search results. The combined list was then rank-ordered by prioritizing videos found across multiple search phrases and those that appeared earlier in search results. Inclusion and exclusion criteria were applied, and the first 50 remaining videos were reviewed using a previously validated video assessment tool. Two independent reviewers were used for inter-rater reliability. Quantitative parameters such as view count were analysed with descriptive statistics, and thematic analysis was performed on qualitative video content.

Results: Videos were published by channels from four countries: United States (36/50), India (9/50), Canada (3/50), and Australia (2/50). Most videos were published within 4 years of the search date (80%), with the largest number of videos (32%) published in 2020. 50% of the videos were published by health care facilities, and 48% of these videos aimed to inform viewers about their respective residency programs. Career aspects were discussed variably with areas such as labour content (i.e. job specifics, patient population) (86%), altruism (60%), and intellectual satisfaction (58%) often addressed, and other aspects such as lifestyle (26%) and salary (16%) receiving less attention. Videos recurrently depicted careers in radiation oncology as being “patient-oriented” (74%), involving “advanced technology” (72%), providing “compassionate care” (68%) to carry out “meaningful work (62%), and fostering “intellectual satisfaction” (58%).

Conclusions: Our study illustrates that YouTube videos predominantly address the labour content of careers in radiation oncology, portraying the role to involve compassionate, meaningful, patient-centred care alongside intellectually stimulating work facilitated by advanced technology. Notable gaps were evident in addressing factors such as lifestyle and salary that are recognized as influential on subspecialty choice. Providing medical students with accurate, relevant, and elucidative information to inform career selection may be especially important for radiation oncology due to underexposure in the medical school curriculum. The results of this study can support future development of resources to inform, recruit, and retain engaged learners into radiation oncology programs.

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Title: Optimal Flap Selection for Secondary Orthopedic Reconstruction: A Comparison of Fasciocutaneous and Muscle Flaps

Authors: Shreya Luthra¹, Henry Zhao¹, Hannah Wells¹, Kathryn V. Isaac¹

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Background: Lower extremity limb salvage rates have increased with advances in microvascular surgical techniques. Secondary procedures are often necessary for orthopedic reconstruction; thus, the optimal initial type of soft tissue reconstruction should provide sufficient durability in the event of flap re-elevation.

Objective: This study aimed to compare complication rates between muscle flaps (MF) and fasciocutaneous flaps (FCF) following secondary orthopedic reconstruction.

Methods: In this retrospective cohort study, all patients treated operatively using MF or FCFs for lower limb soft tissue reconstruction with secondary revisions at a level 1 trauma institution in British Columbia from January 2000 to January 2020 were enrolled consecutively. Patient demographics, injury classifications, operative details, and flap complications were collected. A preliminary comparison of the data was conducted.

Results: Among 56 patients enrolled, 45 patients received MF and 11 received FCF. Average age was 54 years old and consisted of 62.5% males with a mean Charlson Comorbidity Index range of 1.9-2.2. In this preliminary comparison, MF had high complication rates as compared to FCF, both following the initial reconstruction (42.2% vs. 18.2%) and following the secondary orthopedic procedure (31.1% vs. 18.2%). Of these secondary complications in the MF group, four required additional soft tissue transfer either with pedicled or free flaps, whereas none in the FCF group required additional flap coverage. Median time interval between the primary and secondary orthopedic procedures for MF was 161 days (IQR 685 days) and for FCF was 211 days (IQR 337 days).

Conclusions: For lower limb salvage, initial soft tissue reconstruction with a muscle flap may be associated with need for additional flap coverage for secondary orthopedic revision surgery.

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Title: The Role of Silastic Stents in Enhancing Sinus Surgery Outcomes: Safety and Efficacy Analysis

Authors: Richard Mageto, BSc¹, Abhiram Cherukupalli, MD, MHSc, MSE^{1,2}, Anas Gomati, MB, BCh, FRCSEd^{1,2}, Arif S. Janjua, MD, FRCSC².

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Background: Endoscopic sinus surgery is the standard of care for management of severe and recalcitrant sinonasal disease such as chronic rhinosinusitis with and without nasal polyposis. Silastic stents are used in endoscopic sinus surgery to maintain the patency of the sinus cavity openings and to prevent postoperative complications such as middle turbinate adhesion and lateralization. The current definition for prolonged placement of intranasal silastic stents is 2–3 weeks with extended placement past this period quoted to have complications of toxic shock syndrome, biofilm accumulation, and chronic infections. However, the current practice of a tertiary rhinologist is placement of silastic stents for 4-12 weeks.

Objective: The objective of this study is to evaluate the rate of adverse events associated with prolonged silastic stent placement of 4-12 weeks. A secondary objective is to evaluate an associated effect of sinonasal disease severity on adverse events with prolonged stent placement.

Methods: This was a retrospective cohort study of 80 patients who underwent endoscopic sinus surgery between 29 August 2023 and 29 February 2024 by a single tertiary level rhinologist. Data was extracted from patient records on Plexia and Powerchart. Adverse events were recorded by looking at postoperative emergency room visits, or hospital admissions related to their sinus surgery and the duration of postoperative follow-up at a rhinology clinic.

Results: There were 67 patients who had silastic stent placement for 4 weeks and 39 patients who had silastic stents placement for 12 weeks. There were six postoperative emergency room visits recorded (7.5% and 5.1% respectively) but only one visit was related to a stent complication associated with nasal obstruction (1.25%). This did not require early stent removal. Five patients presented with epistaxis and did not require ENT intervention. When the 80 patients were organized into groups of mild, moderate, severe, and very severe sinonasal disease based on preoperative imaging, the patient who presented to the emergency department with a stent complication had moderate sinonasal disease. No other group had a stent related emergency room visit.

Conclusions: Prolonged silastic stent placement for 4-12 weeks did not result in any significant or adverse postoperative complications. Specifically, there were no reported events of toxic shock syndrome or chronic infection. There was also no appreciable correlation between adverse events and preoperative sinonasal disease severity in patients with prolonged silastic stent placement. These findings suggest that prolonged silastic stent placement is a safe and effective practice for optimizing a patients post operative sinonasal cavity healing.

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Title: The Effectiveness of Inhaled Methoxyflurane vs Placebo for Pain Relief in Outpatient Sinus Procedures: A Double-blind, Randomized, Placebo-Controlled Trial

Authors: Helia Mansouri Dana, Juan Carlos Hernaiz, Azin Tabari, Amin Javer

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Background: In properly selected cases, outpatient endoscopic sinus surgery is a cost-effective and efficient method of addressing chronic sinusitis. Minor in-office sinus surgery is safely done under local anesthesia; however, the procedure can feel uncomfortable and induce anxiety for a significant number of patients. Methoxyflurane is an inhaled analgesic that has been indicated for minor trauma and small procedures. There is a large body of literature exploring the role of this drug in emergency medicine and its effectiveness in treating acute pain, though there have been minimal studies assessing its use in minor surgical procedures. Further, there have been no studies assessing its use in outpatient rhinology and sinus surgery. This study aims to assess the effectiveness of methoxyflurane as means of anxiety and pain control in patients undergoing in-office sinus surgery.

Objective: The aim of this study is to investigate the effectiveness of methoxyflurane as a short-term analgesic in coblation and minor sinus procedures as compared to placebo.

Methods: To achieve a power of 90%, a sample of 100 patients scheduled for office-based sinus procedures will be recruited prospectively. Research participants will be stratified into two groups according to the type of procedure, either minor sinus procedures or coblation procedures, and randomly assigned to a methoxyflurane or placebo arm. The randomization scheme will be created prior to recruitment and stored on a centralized computer to ensure allocation concealment. Immediately following the procedure, a visual analog scale (VAS) pain questionnaire will be completed by the patient and used as the primary outcome. Other relevant data such as pain duration (in minutes), pain location, pain character, and a pain numeric score will also be recorded. Secondary outcome measures include the change in Sino-Nasal Outcome Test-22 (SNOT-22) pre- and post-operatively, as well as estimated blood loss and the Boezaart grading scale for bleeding recorded throughout the procedure. As methoxyflurane has anti-anxiety effects, we will further measure the anxiety levels of patients pre-operatively using the Amsterdam Preoperative Anxiety and Information scale (APAIS), and post-operatively using a modified VAS scale for anxiety.

Results: Anecdotal internal data at our center has shown that methoxyflurane reduces pain levels, warranting a controlled clinical trial to investigate this phenomenon. This study is pending approval by Health Canada and the REB. We are expecting to begin recruitment by October 1st, 2024. There will be no interim analysis conducted.

Conclusions: This prospective double-blind placebo-controlled study will provide essential information on the use of methoxyflurane as an anti-anxiety analgesic for office-based sinus procedures. It will allow for an improvement in patient experience while helping to alleviate wait times for endoscopic sinus surgery.

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Title: Design and Development of a Low-Cost Modular Simulator for Training in the Surgical Management of Jejunoileal Atresia

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Background: The surgical treatment of jejunoileal atresia, a defect which occurs in approximately 1:1000 live births, requires highly specialized skills due to the complexity of the repair techniques. Yet, the disease rarity makes training opportunities sparse. The use of surgical simulators has been effective for improving performance in other surgical procedures.

Objective: To design a low-cost, modular simulator to enable comprehensive training in jejunoileal atresia repair techniques.

Methods: 3D-printed molds were used to cast silicone models of type II and type IIIa atretic bowel and mesentery. Off-the-shelf silicone tubing was used to simulate the surrounding non-atretic bowel. A small plastic container modified with an opening was used to simulate the neonatal abdomen. 3D-printed models of the costal margin, xiphoid process and anterior superior iliac spine were glued on the lid. To model the skin, a combination of silicone and fabric layers were combined and secured over the bony landmarks and container.

Results: Through the iterative design process, a portable simulator for learning and practicing jejunoileal atresia repair was developed. The model and components are illustrated in the accompanying figure. It can be used to practice laparotomy, anastomosis, and ostomy. The modularity promotes reusability and interchangeability between different atresia types. The cost of all the components was \$19.50 and the price of the reusable 3D-printed molds was \$18.

Conclusions: Our low-cost, modular simulator provides a promising avenue for training surgical management of jejunoileal atresia. In the future, we aim to validate the simulator with expert pediatric surgeons.

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Disordered Eating, Self-Compassion, and General Wellness in Canadian General Surgery Residents

Authors: Dr. Nicole McLellan (R2 General Surgery, UBC), Dr. Jessica Lie (Surgical Oncology Fellow, MD Anderson), Dr. Heather Stuart (MD, FRCSC, Surgical Oncologist- Vancouver General Hospital, BC Cancer)

Background: Surgical residents experience higher levels of negative stress and helplessness compared to the general population. Prior studies show that 87% of Canadian surgical residents report somewhat to extreme stress on most days of the year, 19% report increasing or decreasing food intake as a coping mechanism, and 66% noted changes to their weight during residency. Understanding the factors contributing to these findings will help optimize mental health during residency training.

Methods: We conducted a mixed-methods cross-sectional survey of general surgery residents in Canada (N=450). The survey assessed disordered eating, quality of life, and self-compassion using the Eating Attitudes Test (EAT-26), Kessler Psychological Distress Scale (KPDS), and Self-Compassion short-form scale (SCSF), respectively. A qualitative component examined factors influencing eating habits in residency.

Results: 118 residents completed the survey out of an estimated 450 possible responses (26%). Respondents were 21% male and 79% non-male-identifying, across PGY-levels 1-6+. Based on the KPDS, 69% of respondents were likely to have a mild to severe mental disorder. Every respondent scored “low” on the SCSF, and 37% met criteria for formal assessment of clinically significant disordered eating (EAT-26). Factors having a positive effect on eating habits were having a partner at home and engaging in non-residency related extracurricular activities. Overnight call shift frequency had the greatest negative effect.

Conclusion: Canadian general surgery residents have high levels of distress, low self-compassion, and are at risk for clinically significant disordered eating. Further study surrounding contributing factors and mitigation strategies are required.

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Title: Beyond the Curve: Understanding Corrective Culture in the COVID-19 Era

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Background: Corrective culture refers to the norms and behaviours that enable organisations to prevent and address problems. It consists of three interconnected elements: the detection of problems ('identification'), appreciation of their meaning ('interpretation') and responses to prevent harm ('action'). Weaknesses in corrective culture have been linked to institutional failures. Strengths in corrective culture, however, can help organisations not only prevent failures, but also experiment with solutions and facilitate learning.

Objective: To explore the role of corrective culture during the COVID-19 pandemic, a combined natural language processing and qualitative analysis was used to examine the COVID-19 public inquiries from seven countries.

Methods: This study employed a mix-methods analysis of both quantitative analysis from natural language processing (NLP), as well as qualitative thematic analysis to investigate the manifestations of corrective culture during the COVID-19 pandemic.

Results: This mixed-methods analysis revealed that weaknesses in any of the elements of identification, interpretation and action led to organisational setbacks. Furthermore, competing corrective culture loops also led to breakdowns. The analysis further demonstrated that a strong corrective culture supports both single- and double-loop organisational learning.

Conclusions: Overall, the analysis suggested that during the COVID-19 pandemic, governments faced initial management issues but were able to rectify problems. This underscores that a strong corrective culture is not characterised by an absence of failures but by the ability to respond appropriately. This study also helps to demonstrate the potential usages for NLP and thematic analysis of large textual data to produce comprehensive cultural assessments, this has important potential within the medical and surgical fields.

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Title: Short Term Outcomes of MANTA Closure Device in Endovascular Aortic Repair at a Single Canadian Center

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Objective: To evaluate the safety and efficacy of MANTA Closure Device (MCD) for percutaneous closure of the common femoral artery (CFA) following endovascular aortic repair.

Methods: A retrospective review was conducted on 50 consecutive patients at a single Canadian center who underwent endovascular abdominal aortic aneurysm repair (EVAR), thoracic endovascular aneurysm repair (TEVAR), or fenestrated endovascular aneurysm repair (FEVAR) between October 3, 2022 and October 18, 2023. In all cases, one or two CFAs were percutaneously closed using MCD. Technical success was considered as the primary outcome of this study. Technical success was defined as achieving percutaneous vascular closure of the CFA using MCD, without necessitating immediate surgical or endovascular intervention. Secondary outcome was access related complications. Patient's 1-month postoperative computed tomography (CT) scans were also reviewed to assess for vascular access complications.

Results: There were 45 men and 5 women, and the mean age was 76 (standard deviation [SD] 8). Of the procedures performed, 58% (29/50) were EVAR, 24% (12/50) were TEVAR, and 18% (9/50) were FEVAR. Recorded outer sheath diameter ranged from 14.1Fr to 25.5Fr. The MCD used were either 14Fr (34%, 27/80) or 18Fr (66%, 58/80) and there were a total of 80 closures performed. Technical success rate was 99% (79/80) with 1 attempt failing due to intraluminal deployment, requiring intraoperative open repair. There were 7 documented uses of manual compression in addition to MCD use. There was 1 case of an immediate complication following closure (hematoma). The mean length of stay in hospital was 3 days (standard deviation [SD] 5) post-operatively, and there was 1 case of death although unrelated to access complications. From the 1-month follow-up CT scan, 76% (38/50) of patients had no reported complications, 0% (0/50) had type 1 endoleaks, 16% (8/50) had type 2 endoleaks, 2% (1/50) had type 3 endoleaks, and 4% (2/50) had pseudoaneurysms.

Conclusions: The findings of this study demonstrate that MCD is a safe and effective option for percutaneous vascular closure of large-bore arteriotomies in patients undergoing endovascular aortic repair.

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Title: Right Vagal Nerve Stimulation for Epilepsy – Case Series and Systematic Review

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Background: Untreated epilepsy can be debilitating and life-altering. In cases refractory to anti-epileptic medications, neuromodulation interventions such as vagal nerve stimulators (VNS) can significantly reduce seizure frequency and increase quality of life. Traditionally, VNS implantation occurs on a patient's left side as right vagal nerve stimulation is thought to lead to greater cardiac side effects due to more stimulation of the sinoatrial node of the heart. However, this rationale was based on animal studies and has not been thoroughly studied in humans.

Objective: To better understand the potential complications and efficacy of right VNS (R-VNS) implantation for epilepsy. We aim to systematically summarize the limited literature on R-VNS cases and add to this by reporting all such cases from BC.

Methods:

Case Series: We performed a retrospective review of patients who received an R-VNS at VGH or BCCH. Patient information including seizure diagnosis and frequency and the reason for R-VNS implantation were collected.

Systematic Review: We concurrently conducted a systematic review of all cases of R-VNS used to treat seizures in the literature by querying four large databases (Embase, Medline, Web of Science, and Scopus). We extracted similar data in our review as we collected in our case series.

Results:

Case Series: We identified six patients (three from VGH, three from BCCH) with R-VNS implantation. Five had a previously placed L-VNS, with the remaining patient having a left-sided central venous catheter, precluding VNS placement. The reasons for L-VNS replacement were infection (n= 2), lead breakage/device failure (n= 2), and device malfunction (n= 1). Patients experienced similar seizure control between their right and left VNS units. Besides one patient having asymptomatic bradycardia, all pre- and post-operative cardiac evaluations were normal.

Systematic Review: 1332 studies were identified across our four databases and a total of eight studies were identified as having patients with R-VNS and were included. Three were single case reports and five reported multiple cases with a combined total of 15 patients. The primary reasons for L-VNS removal/inactivation were infection (n= 7), lead breakage (n= 3), and intra-operative difficulty (nerve fibrosis and thyroid vein bleeding, n= 2). One patient had a cardiac-related condition (Self-limiting asystole and bradycardia with stimulation) that later had full resolution of this event with no documented recurrence.

Conclusions:

Although classical teaching advises against placing VNS for epilepsy on the right vagus nerve to avoid potential cardiac complications, the available literature, though limited, does not demonstrate additional long-lasting complications. This is further supported by our case series, the largest in the literature, which did not identify cardiac complications in six patients.

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Title: Impact of Clinical Target Volume Utilization on Outcomes in Patients with Non-Spine Bone Oligometastases Treated with Stereotactic Ablative Radiation Therapy

Authors: Emily O'Reilly¹, Eshawn Johal², Haley Clark³, Benjamin Mou³, Reno Cereno³, Mitchell Liu¹, Devin Schellenberg⁴, Will Jiang⁴, Tanya Berrang⁵, Abraham Alexander⁵, Hannah Carolan¹, Siavash Atrchian³, Emma Dunne¹, Scott Tyldesley¹, Robert Olson⁶, Sarah Baker⁴.

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Background: Despite advancements in stereotactic ablative radiotherapy (SABR) for non-spine bone metastases (NSBMs), uncertainty remains surrounding target volumes. While expert consensus guidelines recommend a clinical target volume (CTV), patterns of failure analyses are lacking, and larger volumes may be associated with higher toxicity.

Objective: This study aims to compare local failure, marginal failure, and toxicity in NSBMs treated with versus without a CTV in a population-based cohort.

Methods: A retrospective review was conducted on all patients in British Columbia treated with SABR for NSBMs on the single-arm phase II SABR-5 trial (November 2016 – July 2020) and on the BC Oligometastases Registry (August 2020 - October 2022). Use of a CTV was optional for both SABR-5 and the Registry. NSBMs were stratified based on CTV use for treatment planning.

Results: A total of 148 patients (104 on SABR-5 and 44 on Registry) with 183 NSBMs were included. 145 (79%) NSBMs were treated with a CTV and 38 (21%) without a CTV. Groups with vs without a CTV did not differ in baseline patient or tumor characteristics. The most common histologies were prostate (60%), breast (17%) and lung cancer (6%). Rib (36%) and pelvis (44%) were the most common lesion sites. Most lesions received 35 Gy in 5 fractions (80%) or 24 Gy in 2 fractions (15%). A pre-treatment MRI was obtained in 52 (35%) cases. After a median follow-up time of 33.7 months (interquartile range 19.5-48.9), local failure rates did not differ, with a 2-year local failure of 8.6% (95% confidence interval [CI] 3.9-13.2) with a CTV and 8.1% (95% CI 0-16.8) without a CTV (p=0.53). Marginal failure, defined as disease recurrence outside of the GTV but within 1cm of PTV, did not differ between groups (6.4% [95% CI 2.3-10.45] and 2.6%, [95% CI 0-7.7], respectively [p=0.23]). 2-year overall survival was similar (84.6%, 95% CI 78.1 – 91.1, and 90.3%, 95% CI 79.9 – 100, respectively; p=0.95). 2-year cumulative incidence of grade ≥ 2 toxicity did not differ (15.8%, 95% CI 9.7-21.9 and 16.2%, 95% CI 4.2-28.2 respectively; p=1.00). On multivariable regression, use of a CTV was not associated with the risk of local-marginal failure (hazard ratio [HR] 1.81, 95% CI 0.62-5.31, p=0.28). Extrasosseous extension (HR 2.59, 95% CI 1.18-5.67, p=0.02) and lack of receipt of systemic therapy (HR 0.27, 95% CI 0.14-0.54, p=0.0002) were associated with higher risk.

Conclusions: Use of a CTV was not associated with local or marginal failure or toxicity. Extrasosseous extension and lack of receipt of systemic therapy were associated with higher risk of local-marginal failure. This may assist in informing future approaches to treatment planning in this patient population.

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Title: Development and Implementation of a Radiation Oncology Residency Bootcamp: A Pilot Study

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Background: The transition from medical school to residency is accompanied by many new experiences in the clinical environment. Enhanced residency orientations or “Bootcamps” have been proposed as one method to ease this transition to residency and have been adopted by various medical specialties.

Objective: The purpose of this study was to develop and implement a novel Radiation Oncology Bootcamp using Kern’s Model of Curriculum Development, to introduce junior residents to the fundamentals of radiation oncology and management of on call issues.

Methods: This study developed a novel curriculum to introduce junior residents to the fundamentals of radiation oncology using Kern’s Six-Step Approach to Curriculum Development. Following identification of perceived difficulties in the transition from medical school to radiation oncology residency, a targeted need assessment was performed. From this needs assessment, the objectives of the educational sessions were developed. The curriculum was delivered over a two day period, with both didactic and interactive sessions, taught by a team of varied allied health professionals. Following completion of the curriculum, the residents were invited to participate in a post-program survey.

Results: The bootcamp was attended by PGY1 and PGY2 radiation oncology residents at UBC (n=4).

Qualitative and quantitative data was collected by means of an anonymous post-course survey.

Quantitative data was acquired using a 5 point Likert scale. All participants strongly agreed that the Bootcamp created a sense of cohesiveness amongst the resident group. All participants also agreed or strongly agreed that the Bootcamp increased their knowledge of on call issues, radiation oncology emergencies, management of radiotherapy side effects, radiotherapy planning applications (eg. ARIA) and increased their confidence beginning on call shifts. Iterative thematic analysis of the qualitative data with a second coder revealed signals of increased awareness of structural and procedural knowledge, increased confidence in managing uncertainty, increased familiarity with radiation planning software, and an enhanced sense of cohesiveness and community amongst the resident group.

Conclusions: This study has allowed for the successful development of a Radiation Oncology Residency Bootcamp curriculum. The curriculum was well received by participants, with trends of gaining structural and procedural knowledge, increasing confidence, and furthering a sense of community and cohesiveness reported by participants. It is hoped that insights collected from this pilot study will help to inform approaches to improve the Bootcamp curriculum in future years.

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Title: Creation and Program Evaluation of a Women in Surgery in ENT (WISE) group

Authors: Emily Oulousian, MDCM¹, Elise Graham, MD, FRCSC², Yvonne Chan, FRCSC, MSc, HBSC³, Jane Lea, BSc, MD, FRCSC¹, Amanda Hu, BA, MD, FRCSC¹

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Background: Interest in equity, diversity, and inclusion (EDI) in medicine is growing, with women now making up 54% of Canadian physicians under the age of 40. Despite increasing representation, women in surgical specialties remain underrepresented, facing challenges such as professional isolation and work-life imbalance. In response, the University of British Columbia (UBC) Otolaryngology Division created the Women in Surgery in ENT (WISE) group to foster EDI. This is the first journal club of its kind described in the literature.

Objective: Our objective was to describe the creation and program evaluation of a WISE group.

Methods: A quarterly journal club meeting was created in a hybrid format to discuss peer-reviewed articles on EDI. Topics covered include gender income disparity, misidentification as a microaggression, and ergonomics for female surgeons. Grant funding was obtained from a physician association. Moore's pyramid of effectiveness in continuing medical education was used as a framework for program evaluation. An anonymous web-based survey with Likert-style questions was administered to participants one week after each session. General self-efficacy scale (GSES) was also administered.

Results: Eight-two attendees responded to the survey over seven meetings, comprised of 57 (76.0%) women and 18 (24.0%) men. Participants included 38 (46.3%) attendings, 8 (9.8%) fellows, 29 (35.4%) residents, and 7 (8.5%) medical students. 90.2% agreed or strongly agreed that the group promoted collegiality. 81.7% agreed or strongly agreed that the group supported the participants' well-being. 89.0% agreed or strongly agreed that the group provided a safe environment for discussion. This initiative was rated as outstanding by 48.1% and above average by 46.3%. GSES was high at 31.0 +/- 4.3.

Conclusions: A Women in Surgery in ENT (WISE) group has been created and warmly received by participants. This initiative represents one step of UBC's ENT division's commitment to EDI.

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Title: Patient Satisfaction and Quality of Life of Newly Diagnosed Patients with Thyroid Cancer

Authors: Gurjit Parmar¹, Cheryl Ho¹, Sarah Hamilton¹, Matthew Chan¹, Aria Shokoohi², Vivien Wong³, Jonn Wu¹, Eric Tran¹, Nicole Chau¹, Sam Wiseman³, Paul Jugpal¹, Sabrina Gill³, Scott Durham³, Adam White³, Eitan Prisman³, Adrienne Melck³, Daegan Sit¹, Dan Worsley³, Kathryn Darras³, Rob Olson⁵, Eric Berthelet¹

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Background: The incidence of thyroid cancer has increased rapidly over the past 3 decades. At our institution, we evaluate approximately 150 new cases of thyroid cancer yearly. Care is currently provided by physicians from various specialties: family medicine, endocrinology, surgery, radiation oncology, nuclear medicine and medical oncology. The purpose of this study was to evaluate the overall satisfaction with medical care received and quality of life (QOL) of patients treated with thyroid cancer at our institution undergoing radiation oncology consultation.

Methods: The protocol received local ethics approval. A total of 60 patients were enrolled in the study and informed consent was obtained from all participants. Overall satisfaction and QOL were measured using the FACIT-TS-PS and EQ5DL5 previously validated questionnaires respectively. Data was collected at two time points: Initial consultation and first follow-up (FU) visit. Descriptive statistics were used for analysis.

Results: A total of 60 patients were recruited for the study, 20 males and 40 females, at the time of their radiation oncology consultation. Age at presentation were <55 years in 53% of patients. Histologies were papillary, follicular and Hurthle cell carcinoma in 82%, 17% and 1% respectively. Total thyroidectomy was the initial treatment in 78% of patients and I-131 therapy was recommended in 53% of cases. Rates of survey completion were 100% at the time of initial consultation and 93% at the first FU visit. Overall mean QOL scores were 73% versus 76% at the first and second assessments respectively. The domain scoring the highest level of dysfunction was Anxiety/Depression with mean scores of 1.7/5 and 1.8/5 at the first and second assessments respectively. The overall satisfaction with care provided was 2.75/3 or 92% as assessed with the FACIT-TS-PS. After normalization to 100% for all patients and both visits combined, levels of satisfaction were 95% for Physician Communication, 66% for Staff Communication, 93% for Technical Competence, 93% for Nurse Communication and 95% for Confidence and Trust. There was a systematic but small decrease in satisfaction level between initial consultation and first FU for all questions. Questions with the lowest mean scores pertained to how staff discussed the impact of treatment on personal relationships and emotional health.

Conclusions: Thyroid cancer patients who participated in our study reported relatively high QOL at baseline and first FU visit with radiation oncologist. Generally, patients were satisfied with care but improving staff communication, as well as the impact of treatments on mental health are areas that should be explored.

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Title: Patient Perception of Pain with Medialization Thyroplasty Surgery**Authors:** Melissa Patry, MD FRCSC¹, Elnaz Roohi¹, Peter Rose MD FRCPC², Shamir Karmali MBBS FRCPC², Amanda Hu, MD FRCSC¹**Affiliations:** ¹Division of Otolaryngology, Head and Neck Surgery, University of British Columbia, Vancouver, BC and ²Department of Anesthesiology, Pharmacology & Therapeutics, University of British Columbia, Vancouver, BC, Canada**Background:** Medialization thyroplasty is a procedure used to treat glottal insufficiency associated with unilateral vocal fold paralysis and vocal fold bowing. It is conducted with the patient under IV sedation for vocal feedback. Even though the patient is an important stakeholder in this procedure, there is paucity of studies on the patient's experience with pain management during this surgery.**Objective:** The main objective was to evaluate the patient's perception of pain during and after medialization thyroplasty surgery. A secondary objective was to evaluate voice outcomes.**Methods:** In this prospective observational study, patients undergoing thyroplasty surgery completed the validated short-form McGill Pain Questionnaire (SF-MPQ) and Quality of Recovery Scale (QoR-15) before surgery and on post-operative days (PODs) 1 and 7. Patients completed the validated Bauer Patient Satisfaction Questionnaire with Anesthesia on POD1 and the validated Voice Handicap Index questionnaire (VHI-10) before surgery and POD7. Demographic and clinical data were collected. Non parametric tests were used for statistical analysis.**Results:** Forty patients (19 female), with a median age of 68 years (IQR 13.3) participated to this study between March 2023 and August 2024. In the 37 patients with complete data, 67.5% required analgesia on POD1 and 44.4% required opioids (Tylenol 3 or Hydromorphone). Overall, mild levels of pain were reported on the SF-MPQ on POD1 and POD7 in all components: visual analog scale, present pain intensity and total score. The QoR-15 median score on POD7 was 143 (IQR 21), equivalent to the preoperative median value of 140.5 (IQR 20.3). On the Bauer Patient Satisfaction Questionnaire, 58.3% of patients reported moderate pain at the site of surgery during the procedure and 8.8% reported moderate pain at the site of anesthetic injection. Most patients (66.7%) were very satisfied with pain management after surgery. Patient voices also significantly improved, with a pre-operative median VHI-10 score of 29 (IQR 12) improving on POD7 to 10 (IQR 12.8) ($p < 0.05$).**Conclusions:** Although medialization thyroplasty was completed under IV sedation, the pain and discomfort were well tolerated during surgery. Patients were satisfied with the anesthesia and had improved voice outcomes. Patients recovered well from surgery by POD7. Less than half of the patients used opioids for post-operative pain and the levels of post operative pain were mild. There are opportunities from improved opioid stewardship in pain management of this surgery. This study was one of the only prospective studies evaluating pain during and after medialization thyroplasty.

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Title: Botulinum Toxin Treatment in Pregnant Laryngeal Dystonia Patients: Case Series & Survey of Current Practice of Canadian Laryngologists

Authors: Kaishan Aravinthan, MD¹, Melissa Patry, MD¹, Amanda Hu, MD FRCSC¹

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Background: OnabotulinumtoxinA (BTX) for the treatment of laryngeal dystonia (LD) is a widely accepted first line treatment. US Food and Drug Administration designated BTX as a pregnancy category C drug because there are no well controlled studies in pregnant women. As LD can occur in women of reproductive years, it is important to explore whether this treatment is considered safe during pregnancy.

Objective: The objectives are to evaluate pregnancy and neonatal outcomes in patients with LD treated with BTX injections during pregnancy, as well as assessing the current practice and comfort level of Canadian laryngologist in treating these patients.

Methods: A retrospective chart review was conducted at an academic laryngology center from 2010-2020 and an anonymous, online, cross-sectional survey according to Dillman's Total Design method was distributed.

Results: Four adductor LD patients received BTX during each of their two pregnancies; eight pregnancies were examined. Patients received a median of 4.5 treatments (IQR 3) with a median cumulative dose of 5.12U (IQR 2.93U) over the whole pregnancy- One pregnancy was pre-term and the median APGAR score was 9 (IQR 0.5). All mothers breastfed their babies. There were no adverse events (AE) and all children are healthy, with a median age of 7 (IQR 2).

Twenty-three Canadian laryngologists responded to the survey, for an 85.2% response rate. Three laryngologists (13.0%) have previously injected BTX in a total of five pregnant women. All five pregnancies went to term with no AE. The majority (68.4%) of respondents would offer pregnant SD patients BTX injections after informed consent was obtained.

Conclusions: This case series was the largest in the literature of pregnant LD patients undergoing BTX treatment and added to the growing literature on the safety of this intervention during pregnancy. The majority of Canadian laryngologists would offer the procedure to pregnant women with informed consent.

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Title: *Factors Associated with the use of Sentinel Lymph Node Biopsy in Northern British Columbia: A Retrospective Chart Review*

Authors: Evan Jost¹, Kylie Peake²

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Background: Sentinel lymph node biopsy (SLNB) is a technique that is utilized in the staging of a variety of different cancers to determine nodal basin status. It is therefore a critical part of the work-up for melanoma; however, at our centre there appears to be a lack of consistency on the criteria for SLNB completion. Our study aimed to analyze pathological and clinical factors associated with SLNB in cutaneous melanoma in Northern British Columbia.

Hypothesis: We hypothesized that the rates of SLNB in cutaneous melanoma patients in Northern British Columbia are low. We evaluated the correlation of prognostic features of melanoma with the completion of a SLNB. These prognostic features include Breslow thickness, ulceration, mitotic rate, satellitosis, and geographic location and remoteness.

Methods: Retrospective chart review of patients aged >18 diagnosed with primary cutaneous melanoma between 2018 and 2022 in the Northern Health Authority of British Columbia. We performed descriptive statistics using student's T test and nonparametric tests where appropriate. We performed univariate and multivariate regression analyses to investigate associations between prognostic factors and receipt of SLNB.

Results: 159 patients were included, 86 of whom had a SLNB (53.4%) and 19 were positive (22%). Mean patient age at initial biopsy was 63.7 years. Most melanomas were stage T2a (31.4%, 95%CI). Mean Breslow depth for initial biopsy was 2.61mm and mean mitotic rate was 5.29/mm². Ulceration was present in 28.3% of the excised melanomas and satellitosis was present in 1.9%. Maximum Breslow depth demonstrated a statistically significant positive association with SLNB positivity (OR 1.22, 95%CI). Ulceration correlated with a moderately positive association with SLNB completion (OR 2.33, 95%CI) as well as SLNB positivity (OR 1.76, 95%CI). Mitotic rate and satellitosis did not increase the odds of having a SLNB. Patient age and medical specialty of the provider performing initial biopsy did not significantly influence SLNB completion or positivity.

Conclusions: In our centre, ulceration and maximum Breslow depth influence SLNB completion and positivity. Mitotic rate, satellitosis, and age do not correlate with an increased odds of receiving a SLNB.

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Sacral Periosteal Elevation as Alternative to Sacrectomy for Advanced Rectal Cancers with Posterior Extension: Short Term Outcomes

Erika Schmitz, Raphaelle Charest-Morin, Andrew McFadden, Nicolas Dea, Elizaveta Vasilyeva, Jason Park

Introduction

En-bloc sacrectomy for resection of rectal cancers with posterior extension are associated with high morbidity. Sacral periosteal elevation (SPE) is a newly described variation on sacrectomy involving sacral cortex osteotomy and subperiosteal dissection, while preserving bone and uninvolved nerve roots. SPE allows for extending dissections to higher spinal levels while reducing morbidity, but outcome data of rectal cancers are limited. We reviewed our single institution experience with SPE in rectal cancer patients.

Methods

Patients who underwent SPE for primary and recurrent locally advanced rectal adenocarcinoma with posterior extension abutting the sacrum were reviewed from 2021-2024. Negative pathologic margin (R0 resection) was the primary outcome. Secondary outcomes included intra-operative blood loss, perioperative complications, and survival.

Results

Seven patients (mean age 58) underwent SPE for primary rectal adenocarcinoma (n=1) and locally recurrent disease (n=6). Two patients underwent S5 sacrectomy after SPE (SSPE). Periosteal elevation levels included S2 (n=1), S3 (n=1), S4 (n=4) and S5 (n=1). 5/5 SPE patients and 1/2 SSPE patients had R0 resections. SPE Mean blood loss was 3.5 L (SD 2.8), and 2.7 L (SD 2.5) in SSPE. There were no deaths <90 days. Two patients had minor post-operative complications (Grade 1), and five had major post-operative complications (Grade 3b) including flap dehiscence (n=3), enterocutaneous fistula and pelvic abscess. One patient had local recurrence (54 days), while three patients had distant recurrences (mean 275 days, SD 103).

Conclusion

SPE as an alternative or adjunct to sacrectomy is feasible and associated with a high R0 resection rate in well selected rectal cancer patients.

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Title: Factors Associated with Blunt Cardiac Injury at Vancouver General Hospital: Thoracic Spine Fracture is a Novel Associated Injury in Nearly a Third of Patients

Authors: Christina Schweitzer¹, James McKay², Lily Tung¹, Emilie Joos^{1,3}

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Introduction: Blunt cardiac injury (BCI) represents a spectrum from asymptomatic structural or electrical disturbances to fatal arrhythmias or chamber rupture. Screening at-risk patients with ECG and troponin is recommended, so that significant BCI can be monitored and treated. Diagnosis remains a challenge, and there is no consensus on screening criteria for BCI. Previous research has shown association with hemopneumothorax, sternal fracture, and rib fracture. This study investigated associated injuries, findings, and clinical outcomes of patients with BCI at Vancouver General Hospital (VGH).

Methods: This retrospective cohort study included all patients presenting to VGH with a diagnosis of BCI from January 1 2012 to December 31 2018, included in regional trauma registries. Abbreviated Injury Scores (2005) 440400/1002/004/006/018/089/099/200/300 were used to define BCI. Patient data were reviewed from the electronic medical record. Patients were excluded if they were transferred from an outside hospital >24h after presentation or had surgery before transfer. Additional exclusion criteria included suspected cardiac event preceding injury, and presentation to hospital in post-traumatic cardiac arrest without return of spontaneous circulation (ROSC).

Results: 115 patients met study criteria. Most patients were male (73%), with a median age of 45 (range 17-94). 43% of patients were transferred from outside hospitals. Median Injury Severity Score (ISS) was 29. The most common mechanisms of injury were motor vehicle collision (39%) and fall from height (19%). Thoracic injuries most frequently associated with BCI were rib fracture (63%), pneumothorax (54%), pulmonary contusion (40%), and thoracic spine fracture (31%). Almost all patients (98%) had a troponin (TnI) on presentation, which was abnormal in 92% of patients. Nearly all patients (97%) had an electrocardiogram (ECG) on presentation. Two thirds (68%) of patients had an abnormal initial ECG. Common ECG abnormalities were sinus tachycardia (37%), ST and T wave abnormalities (22%), right bundle branch block (6%), and repolarization abnormalities (6%). Three patients had pulseless electrical activity (PEA) arrests, and survived to discharge. 50% of patients underwent echocardiogram during their admission, of whom 49% had a normal study. Of patients who underwent echocardiogram, 16% had a pericardial effusion, 9% had abnormal septal motion, and 9% had left ventricular dysfunction. In-hospital mortality was 9% (10 cases). Two mortalities were associated with bradycardia leading to PEA arrest.

Conclusions: Thoracic spine fractures were associated with BCI in nearly a third of patients (31%), an association not found in previous registry studies. Screening for BCI in patients with thoracic spine fractures should be considered, and the predictive value of thoracic spine fractures assessed in future studies. Other associated injuries and ECG and echocardiogram findings were consistent with previous research.

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Title: Review of Regular Triune Tympanostomy Tubes (Duration of Function and Complications) at BC Children's Hospital (2012-2024)

Authors: Jayant Seth¹, Ying Jie Li¹, Fainess Mwakisimba¹, Jeffery Ludemann¹

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Background: Tympanostomy tube (TT) placement is the most common surgical treatment considered for chronic or recurrent otitis media externa cases that are not self-resolving. Current TT models have several complications associated with insertion such as otorrhea, blockage, premature extrusion, tympanic membrane (TM) perforation and rarely implantation cholesteatoma (IC). The Triune tympanostomy tube (TrTT) is a new silicon-based TT designed to address some specific complications of previous TT renditions. TrTTs are made of three flanges that help the tube to hold perpendicular to the TM and softly angle the TT to the convex shape of the TM to further prevent trauma to the TM tissue.

Objective: The objective of this study is to determine: the duration of function (longevity) and complications rate such as perforation, granulation, and IC of the regular TrTTs in children inserted at BC Children's Hospital.

Results: We are in the process of retrospectively reviewing 50 patient charts of pediatric patients that received TrTTs at BC Children's Hospital between 2012 and 2022. Preliminary data is available for 25 patients. Baseline demographics and both pre- and post-operative outcomes were collected. In total, 28 ears were inserted with TrTTs, with an average duration of action of 49 months. 55.14% of patients were male and the average age of TrTT insertion was 7.92 years. The most common comorbidities among patients were Trisomy 21, cleft palate, adenoid hypertrophy, and sleep apnea. TM perforations occurred in 14.29% of ears with 3.57% of ears having persistent perforation. Additionally, 3.57% of ears developed IC after the insertion of TrTT. No IC in our study required major ear surgery for removal: in fact all (100%) were completely removed in clinic, during TrTT removal (which was often nearly pain-free). Moreover, around 7.14% of ears with TrTT inserted developed granulation tissue upon follow-up examination.

Conclusions: Our findings indicate a slightly higher rate of TM perforation compared to the manufacture's study; and an IC rate not previously reported. Our results suggest that the use of the TrTT has a reasonable therapeutic index for certain pediatric patient populations, including patients with moderate to severe TM retraction and/or risk factors for prolonged Eustachian tube dysfunction, including previous TT insertions, cleft palate and/or craniofacial disorders. We advocate for regular long-term postoperative follow up for all patients after TT insertion. A significant limitation of our study is the loss of follow-up for many patients with TrTTs during and after the pandemic. As a result, many TrTTs were not removed within the typical timeframe of 3-4 years, potentially leading to higher complication rates. Further studies are necessary to compare different TT types in terms of complication rates and to better understand the patient or surgical circumstances under which specific tubes are preferred.

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Title: Virtual (Zoom) Appointments for Children with Brachial Plexus Birth Injuries**Authors:** Sara Sheikh-Oleslami MD¹, Beenu Bajwa BSc², Doria Bellows BScPT³, Sophia Shayan BSc^{2,4}, Rebecca Courtemanche MSc CCRP^{1,4}, Sally Hynes, MD FRCSC^{1,4}**Affiliations:** ¹Division of Plastic Surgery, University of British Columbia, Vancouver, BC²Faculty of Medicine, University of British Columbia, Vancouver, BC ³Department of Physiotherapy, BC Children's Hospital, University of British Columbia, Vancouver, BC⁴BC Children's Hospital, Vancouver, BC

Background: Birth-related brachial plexus injuries (BRBPI) occur due to excessive traction or trauma during delivery, affecting nerves from the spinal cord to the shoulder, arm, and hand. Initial diagnosis is largely clinical, based on physical symptoms, with regular follow-ups recommended for best outcomes. The COVID-19 pandemic significantly changed healthcare delivery, accelerating the use of telemedicine. Previously, telehealth was mainly for patients in remote areas or those unable to commute. While telemedicine offers benefits, it also presents challenges, including accessibility and quality of care.

Objective: This study aimed to assess caregiver experiences with BRBPI virtual appointments and identify the benefits and barriers of this healthcare delivery method, providing recommendations for optimization.

Methods: This cross-sectional study gathered data from a patient-reported survey and chart review. The survey comprised two parts: a narrative section and the Telehealth Usability Questionnaire (TUQ), a validated series of quantitative questions assessing telehealth satisfaction. Caregivers of patients with appointments from March 1, 2020, onwards were invited to participate, capturing those who transitioned from clinic to virtual (Zoom) appointments. Medical records provided information on demographics, diagnosis and injury severity, treatment details, appointment types and frequency, and providers involved (e.g., clinicians, physiotherapists, occupational therapists).

Results: 17 patients were included in the study, covering 116 appointments: 11.2% (13) consults, 87.9% (102) follow-ups, and 0.9% (1) surgical planning. 72.4% (84) appointments were in-person, 29.3% (34) were virtual. Clinicians attended 100% (116) of appointments, physiotherapy 72.4% (84), and occupational therapy 35.3% (41). Of the 17 patients, injury severity included 58.8% neurapraxia (10), 5.9% (1) Erb's Palsy, 11.8% (2) pan-plexus injuries, and 23.5% (4) unspecified. Treatments included 100% physiotherapy (17), 47.1% splinting (8), 11.8% Botox (2), and 11.8% surgery (2). Six themes emerged from the narrative survey: (1) telehealth convenience/accessibility, (2) technical challenges, (3) communication improvements, (4) assessment accuracy concerns, (5) in-person preference dependent on appointment type, and (6) need for additional supports during telehealth, such as physiotherapy involvement. The TUQ revealed high satisfaction with virtual appointments, with mean ratings for ease of use, communication clarity, and overall satisfaction ranging from 4.3 to 6.3 on a 7-point scale. Time-saving benefits received the highest mean rating, while perceived equivalence to in-person visits was rated the lowest.

Conclusions: This study highlights high caregiver satisfaction with telehealth for BRBPI, emphasizing time-saving benefits and ease of use. However, concerns about assessment accuracy and a preference for in-person visits persist. Recommendations include optimizing appointment modality by appointment type, addressing technical challenges and enhancing telehealth support to improve virtual care delivery.

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Title: A Needs Assessment of Pediatric Burn Care at the Medical Day Unit

Authors: Paige Knight MD MSc¹, Sara Sheikh-Oleslami MD¹, Sophia Shayan², Rebecca Courtemanche MSc CCRP^{1,2}, Sally Hynes, MD FRCSC^{1,2}

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Background: Pediatric burn nurses provide significant care to patients receiving outpatient dressing changes. Provision of care is based on contextual factors including environmental factors, clinical resources, and psychosocial aspects. Children undergoing acute burn care may experience pain and anxiety, affecting their ability to tolerate such procedures. Pharmacological and non-pharmacological supports have been proven to reduce pain and anxiety in these settings but are resource dependent.

Objective: This qualitative study aimed to explore: (1) the experiences of nurses in an outpatient pediatric burn clinic and (2) nursing insights on enhancing the contextual factors influencing pediatric burn care.

Methods: A semi-structured focus group was conducted with X# of nurses providing weekly acute burn care to patients within a tertiary hospital. Three main topics were explored: (1) general experiences, (2) patient and family pain and anxiety, and (3) pharmacological and non-pharmacological adjuncts. The session was recorded, transcribed, and analyzed thematically.

Results: Three main themes emerged: systems, education, and treatment adjuncts. Within *systems*, subthemes included resource availability, communication effectiveness, time constraints, and staffing. Within *education*, stakeholder engagement between physician and nursing staff (ie. emergency, plastic surgery, burn clinic), and the patient and their family were discussed. Within *adjuncts*, greater access to analgesia and the integration of psychosocial interventions, such as Child Life Specialists (CLS) and music therapy, were discussed.

Conclusions: Nursing play a fundamental role in pediatric burn care and offer valuable insights into care delivery. This study has revealed their invaluable insights into care delivery, highlighting resource limitations as a recurring concern across all themes. Recommendations to enhance patient care include implementing standardized clinic referrals with detailed information, establishing private treatment rooms to ensure patient confidentiality, and introducing treatment enhancements such as dedicated Child Life Specialists (CLS) to alleviate patient pain and anxiety.

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Title: The Utility of Patient-Specific Surgical Plates in Free Flap Mandibular Reconstruction: A Systematic Review and Meta-Analysis

Authors: Kurbaan Singh Shergill¹, Arshbir Singh Aulakh¹, Elana Robibo², Khanh Linh Trinh³, Harkaran Singh Dial⁴, Cornelius Kürten³, Sena Turkdogan³, Hamidreza Aftabi⁵, Eitan Prisman³

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Background: Mandibular reconstruction is essential for restoring both facial symmetry and oral functions, such as chewing and speaking, following pathologies like tumors, fractures, or osteonecrosis. Traditionally, reconstructive plates are manually contoured during surgery or pre-bent with a guide to fit the patient's anatomy, but this process can be time-consuming and technically challenging, often leading to suboptimal outcomes. With advancements in virtual surgical planning (VSP) and computer-aided design/manufacturing (CAD/CAM), 3D-printed patient-specific surgical plates (PSSPs) have emerged, offering the potential for greater accuracy and efficiency in mandibular reconstruction.

Objective: To evaluate the accuracy and clinical outcomes using patient-specific surgical plates (PSSPs) in mandibular reconstruction.

Methods: MEDLINE, EMBASE, Scopus, and Web of Science were searched. Study, patient, PSSP characteristics, and clinical outcomes from eligible studies were extracted using a standardized form. The risk of bias was assessed using the Cochrane Risk of Bias tool. Statistical significance for descriptive variables was evaluated using a t-test and chi-square tests. Common and random effects models were used for the meta-analysis. Inter-study heterogeneity was tested using the I^2 test.

Results: Our search strategy yielded 1238 records, 12 of which met our eligibility criteria. Overall, the included studies provided a pooled participant size of 585 patients, of which 260 were in the intervention group, and 325 were in the control group. In our meta-analysis, PSSPs were associated with significantly lower intercondylar distance deviation (MD -2.15, 95% CI: -2.81 to -1.49) and intergonial distance deviation (MD -3.62, 95% CI: -6.77 to -0.47). However, the intercondylar angle deviation did not differ between PSSPs and controls. In addition, PSSPs may lead to shorter operative times (MD -77.18 minutes, 95% CI: -101.99 to -52.36) without significant differences in the length of hospital stay or the rates of postoperative complications.

Conclusions: Our results indicate that PSSPs have the potential to improve clinical outcomes in mandibular reconstruction, particularly in reducing operative times and improving reconstruction accuracy. However, moderate-to-high heterogeneity and a high risk of bias underscore the need for further research, especially randomized controlled trials, for a more robust analysis.

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Title: Comparing Outcomes of Solo Neurosurgical versus Multidisciplinary Approaches in Retrosigmoid Resection of Vestibular Schwannomas

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Background: Vestibular Schwannomas (VS) are surgically managed using retrosigmoid, translabyrinthine, and middle cranial fossa approaches. Multidisciplinary approaches combining neurosurgery and neuro-otology are critical to improve surgical outcomes. However, in some circumstances, a combined surgical team approach is not possible, and empirical evidence directly comparing these multidisciplinary approaches to solo surgical interventions is limited.

Objective: This study compares surgical outcomes in resection of VS with the retrosigmoid approach with and without involvement of a subspecialized neuro-otologist.

Methods: A retrospective cohort study was conducted at a single quaternary hospital, assessing patients who underwent retrosigmoid VS resections between 2001 and 2023. The outcomes of interest were postoperative House-Brackman facial nerve scores, hearing preservation, operative time, blood loss, extent of resection, and length of hospital stay.

Results: 65 out of a much larger cohort of patients who underwent retrosigmoid VS resection have been assessed so far; of 65 cases, 50 were operated on by both a neurosurgeon and a neuro-otologist, and 15 by neurosurgeons alone. Preliminary analysis revealed no statistically significant differences in hearing preservation, House-Brackman scores, operative time, or blood loss between the groups. The incidence of residual tumors was lower in the multidisciplinary group (34.78%) compared to the solo group (61.54%), although this difference was not statistically significant ($p=0.16$). The mean length of hospital stay was shorter for the multidisciplinary group (3.82 days) compared to the solo group (5.27 days), but this difference also did not reach statistical significance ($p=0.106$).

Conclusions: We observe a trend towards greater rate of resection and a shorter hospital stay with a multidisciplinary team consisting of a neurosurgeon and a neuro-otologist compared to neurosurgeons operating alone.

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Title: Outcomes of Primary Chemoradiation Therapy Alone for cN3 Oropharyngeal Carcinoma: A Retrospective Review

Authors: Nicolas Siriani-Ayoub¹, Kelly Wei¹, Eric Berthelet¹, Matthew Chan¹, Daegan Sit¹, Eric Tran¹, Jonn Wu¹, Sarah Hamilton¹

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Purpose: It has been proposed that locally advanced oropharyngeal squamous cell carcinomas, including those with clinical N3 stage, may benefit from definitive surgical management followed by adjuvant therapy versus definitive chemoradiotherapy alone. The purpose was to determine the outcomes of these patients treated with primary surgery versus chemoradiotherapy and factors associated with superior clinical outcomes in the era of high rates of p16+ disease.

Methods: A provincial head and neck cancer database was used to identify patients with clinical stage N3 oropharyngeal cancer (regional lymph node \geq 6cm per AJCC 7th edition) treated definitively from 2012 to 2016. Our endpoints were overall survival (OS), locoregional recurrence free survival (LRRFS), and progression free survival (PFS), and these were measured via the Kaplan Meier method.

Multivariable analysis was also used to identify whether certain patient, disease, or treatment factors affected outcomes.

Results: There was a total of 46 patients who met the inclusion criteria, of which 40 (87%) were treated with primary chemoradiotherapy or radiotherapy alone (RT), and 6 (13%) were treated with primary surgery (Surg) with adjuvant radiation +/- chemotherapy. Of the patients in the RT group, only 5% received salvage surgery for residual regional disease. A total of 27 (59%) of cases were p16+, while 10 (22%) were p16-, and 9 (20%) were unknown. Median follow-up time was 30.7 months. Median age at diagnosis was 66 years in the RT group and 62 in the Surg group. Most patients reported being former or current smokers across all groups (81% in RT, 100% in Sx, 81% in p16+ and 100% in p16-). Most patients (16 of 30, 53%) had complete response on their first PET scan post-radiation treatment. The 5-year estimated OS, LRRFS, and PFS for the RT group were 47%, 70%, and 62%, as compared to the Surg group, whose estimates were 34%, 80%, and 60% respectively (all $p > 0.05$). The 5-year estimated OS, LRRFS, and PFS for the p16+ group were 48%, 80%, and 73%, as compared to the p16-, whose estimates were 30%, 47%, and 40% respectively (all $p > 0.05$). On multivariable analysis, age, smoking, p16 status, and primary treatment modality did not significantly impact OS, PFS, or LRRFS (all $p > 0.05$).

Conclusions: In this study, very few patients (5%) with N3 tumours treated with primary chemoradiation received salvage surgery for residual nodal disease, suggesting that chemoradiotherapy alone is adequate as a primary treatment in clinical N3 oropharyngeal cancers. The small number of patients limit comparison based on upfront treatment and p16 status, but the 5-year LRRFS in the RT (+/- chemo) group was 70%, suggesting a high rate of locoregional control with a non-surgical approach.

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Title: Partial labyrinthectomy petrous apicectomy for large petroclival meningiomas – Hearing preservation rate and quality of life outcomes

Authors: David Tan¹, Jeremy Kam¹, Benjamin Brakel¹, Serge Makarenko¹, Brian Westerberg², Ryojo Akagami¹

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Background: The petroclival region is generally considered a challenging area for surgical access due to the depth and the surrounding delicate neurovascular structures. Various operative techniques have been described for resection of tumours in this area including retrosigmoid, presigmoid retrolabyrinthine and translabyrinthine approaches. The partial labyrinthectomy petrous apicectomy (PLPA) approach involves removal of the superior and posterior semicircular canals following mastoidectomy, with preservation of the endolymph to maintain hearing. This is followed by skeletonization of the internal acoustic meatus and drilling of the petrous apex to increase exposure. Removal of the two semicircular canals increases the working angle whilst preserving hearing. We present hearing preservation rate and long-term quality of life outcomes for patients who underwent PLPA approach for removal of petroclival meningiomas.

Methods: We carried out a retrospective review of all patients who had PLPA operation for petroclival meningioma resection between 2002 and 2024 at a large tertiary centre. We collected data on patient demography, tumour size, pre- and post-operative hearing assessment by the Otolaryngologist and formal audiometry, quality of life data using the 36-Item Short Form Survey (SF-36).

Results: 34 out of 41 patients had data available for collection (10 males, 24 females). The mean age was 53.8 years old and the average tumour size was 43.4mm. Two patients had post-operative leak of cerebrospinal fluid (5.9%) – one resolved with the use of a lumbar drain, the other required return to theatre for repair. Majority of the patients had a World Health Organization (WHO) grade 1 meningioma, whilst six of them had a grade 2 meningioma. Six patients had poor, non-serviceable hearing pre-operatively. Out of the 28 patients who had PLPA operation with the aim of preserving hearing, 9 patients did not have follow-up hearing assessment, 15 patients had preserved and serviceable hearing post-operatively, and four patients had worse hearing. Overall, the hearing preservation rate is 78.9% (15 out of 19) with an average follow-up of 14.1 months. Pre-operative and post-operative SF-36 data were collected and scored for all eight domains of the physical and mental components. These were divided into short-term (up to 3 months), medium-term (3 to 12 months), and long-term (12 to 24 months) follow-up. The patients had transient reduction in the physical component scores during short-term reviews post-operatively, with subsequent improvement in all domains during medium-term and long-term follow-up.

Conclusions: In conclusions, we achieved a hearing preservation rate of 78.9% for patients who underwent PLPA operation for large petroclival meningiomas, with two patients experiencing CSF leak post-operatively. These patients achieved satisfactory quality of life on medium and long-term follow-up.

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Title: Long-term Quality of Life Deterioration in Vestibular Schwannoma Patients Treated with Radiotherapy: A Matched Cohort with Surveillance, Radiation and Surgery

Authors:

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Objective:

With a reduction in mortality rate and the increasing role of radiation therapy (R) in vestibular schwannoma (VS) management amongst other mainstay treatments of surgery (S) and active surveillance (A), there is a need to understand differences in outcomes of long-term quality of life (QoL) in patients. Whilst such data is increasingly available, none have accounted for confounding factors such as patient age and tumor size. As such, this study compares the long-term QoL outcomes between active surveillance, radiation and surgery in a matched cohort.

Methods

Retrospective review of consecutive VS patients undergoing active surveillance, radiation or surgery at a single tertiary centre between 2000 and 2017 was conducted to obtain baseline clinical symptoms and QoL outcomes using the 36-Item Short Form Health Survey (SF36). Prospective collection of the same data outcomes was performed to collate longitudinal follow up. R and A groups were matched for tumor size and age against the S group using propensity score matching

Results

14 A patients, 24 R patients, 49 S patients met matching and inclusion criteria. Mean age, tumor diameter and follow up was 69.1 years, 21.6mm and 12.0 years respectively. Mental component summary (MCS) scores deteriorated significantly in the radiation group (3.1 S, 3.7 A, -3.5 R, p-value 0.008). Physical component summary scores remained stable at follow up (-0.2 S, 0.00 S, -4.0 R, p-value 0.227). Various symptoms resolved statistically in surgery group, whereas tinnitus on follow up was higher with radiation (R: 40.8%, S:66.7%, p-value 0.038).

Conclusion

Surgery group demonstrated improvements in overall long term QoL with good symptom resolution. Radiation group in contrast had significant deterioration in mental health aspects with limited symptom resolution.

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Title: Transient Unilateral Oculomotor and Trigeminal Nerve Palsy Following Intranasal Local Anesthesia Infiltration

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Background: For medically resistant nasal obstruction due to septal swell body or turbinate hypertrophy, surgery is indicated. Coblation, a mucosal preserving method, is effective in reducing inferior turbinate (IT) and septal swell body hypertrophy and is commonly performed under local anesthesia in an office setting. Complications are typically due to the procedure itself, and involve rhinitis, pain, congestion, and bleeding. However, rare cases of cranial nerve palsies from local anesthesia infiltration can occur.

Objective: To present a rare complication of an oculomotor and partial trigeminal nerve palsy, resulting from intranasal local anesthetic infiltration prior to coblation of the ITs and septal swell bodies that has not been previously reported in the literature.

Case Presentation/Results: A 75-year-old female patient presented with a one-year history of recalcitrant bilateral nasal obstruction due to hypertrophic ITs and swell bodies. She underwent an in-office primary bilateral coblation of the ITs and swell bodies. Four percent lidocaine soaked neuropatties were applied over the ITs and swell bodies, followed by infiltration with 0.25% sensoricaine with 1:200,000 epinephrine. Shortly after infiltration of the left IT and left swell body, the patient developed ptosis of the left eye and was unable to adduct the left eye, resulting in diplopia. The patient also reported numbness in the ophthalmic (V1) and maxillary (V2) dermatomes. All symptoms resolved within 15 minutes. We postulate three mechanisms to explain the reported symptoms. Firstly, the sensoricaine could have either extravasated into the left sphenopalatine vein, deep facial vein, or anterior ethmoidal vein, or been directly injected intravenously. With exception to the anterior ethmoidal vein, the local anesthesia then drained into the pterygoid plexus, and subsequently into the cavernous sinus via emissary veins where it transiently affected the oculomotor nerve and both the V1 and V2 branches of the trigeminal nerve on the ipsilateral side. For the left anterior ethmoidal vein, the local anesthetic would have flowed into the left facial vein followed by the left ophthalmic vein, and then into the cavernous sinus through the left superior orbital fissure. A second plausible mechanism involves an intraarterial injection into the left anterior ethmoidal artery during infiltration of the left swell body. Via retrograde flow, the sensoricaine would arrive at the left ophthalmic artery, diffuse, and be able to decrease nerve firing of the oculomotor nerve, in addition to the V1 and V2 branches of the trigeminal nerve on the ipsilateral side. Our third theory is that due to retrograde flow caused by an injection into the left anterior ethmoidal artery, the epinephrine induced a vasospasm of the left ophthalmic artery, limiting blood supply to cranial nerves three and five, thereby causing the reported symptoms.

Conclusions: Although relatively low risk, surgeons should be aware that local anesthesia with epinephrine infiltration of the ITs and swell bodies can result in complications with oculomotor and trigeminal nerve involvement.

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Title: Post-Operative Outcomes in Patients Undergoing In-Office Endoscopic Sinus Surgery for Chronic Rhinosinusitis

Authors: Samuel Tholl¹, Juan Carlos Hernaiz¹, Richmond Lim¹, Amin Javer¹

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Background: Chronic rhinosinusitis (CRS) is an inflammatory condition of the nasal cavity and sinuses that persists for longer than 12 weeks. Corticosteroids and antibiotics are the first line of treatment, however for medically resistant CRS, endoscopic sinus surgery (ESS) is indicated. Technological advancements in the past decade have allowed ESS to be performed in an office setting with local anesthesia, reducing wait times and the cost of surgery. Despite these benefits, surgeons are sometimes hesitant to perform in-office procedures due to potential safety and efficacy concerns.

Objective: To investigate the safety and efficacy of in-office ESS up to one-year post operation.

Methods: Medical records of patients who underwent in-office ESS at St. Paul's Sinus Centre were retrospectively reviewed. Patients were included if they were ≥ 18 years of age, had a confirmed diagnosis of CRS, and had undergone in-office ESS between January 2020 and December 2023. We excluded individuals scheduled for tumour biopsies or other procedures unrelated to CRS. Patient demographics, previous sinus related medical history, operative details, clinical outcomes, and both intra and post-operative complications were recorded.

Results: A total of 165 patients met the inclusion criteria. One hundred and thirty-seven (81.8%) patients underwent a revision procedure for their captured operation. The most common procedure performed was a polypectomy (n=67, 26.2%), followed by maxillary antrostomy (n=39, 15.2%), frontal sinusotomy (n=37, 14.5%), partial anterior middle turbinectomy (n=31, 12.1%), ethmoidectomy (n=25, 9.8%), scar band excision (n=25, 9.8%), sphenoidotomy (n=22, 8.6%), and other (n=10, 4%), for a total of 256 procedures overall. All 165 patients had either sensoricaine or lidocaine injected intranasally, however four patients also received methoxyflurane for pain management. At 12 months post-operation, SNOT-22 scores had decreased by 31.07% (28.76 ± 22.20 vs. 39.04 ± 25.49). At 3 months post-operation, the median Modified Lund-Kennedy (MLK) endoscopic score had decreased by one point and remained stable after 6- and 12-months follow-up. Two (1.2%) intraoperative complications occurred: one vasovagal episode, and one instance of a patient swallowing a neuro pattie. No episodes of post-operative pain were noted. Out of the four (2.5%) episodes of postoperative bleeding, two (1.3%) of the cases required an emergency department visit, and one (0.6%) case was taken to the operating room for emergency cauterization of nasal vessels. Twenty-nine (19.1%) patients underwent revision surgery within one year of their procedure, and of those cases, 13 (44.8%) of them occurred under local anesthesia.

Conclusions: In-office ESS for CRS is an effective, safe, and well tolerated treatment alternative for well selected patients with CRS. This study highlights the sustained safety and success of using local anesthesia to perform in-office sinonasal surgery for CRS patients.

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Title: Systematic Review of Fluid-Based Biomarkers in Vestibular Schwannoma

Authors: Kira Tosefsky, BSc¹, Alexander D. Rebchuk, MD MSc², Catherine Wang, BSc¹, David W. Chen, BSc¹, Brian D. Westerberg, MD MHSc,³ Ryojo Akagami, MD MHSc,² Cathie Garnis, PhD,³ Stephen Yip,⁴ Serge Makarenko, MD.²

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Background: Vestibular schwannomas (VS) are common benign intracranial tumors deriving from the myelinating Schwann cells of the vestibulocochlear nerve. While the majority of VS are slow or non-growing, a subset of tumors exhibits rapid growth and/or substantial tumor-associated hearing loss, neither of which are reliably predicted based on clinical or radiographic features at baseline. Uncertainty regarding the likely behaviour of VS complicates management decisions, which require weighing the risks of microsurgery or radiosurgery-associated morbidities against the risks of significant tumor or symptom progression between scans. In this context, there has been growing interest in identifying fluid-based biomarkers which can be used to predict tumor growth, hearing loss and response to treatment for VS. Likewise, biomarkers discriminating VS from healthy individuals may provide insights into underlying tumor pathobiology.

Objective: In this systematic review, we summarize current evidence for the utility of various fluid-based biomarkers in predicting tumor progression and hearing outcomes for VS patients

Methods: We searched for primary source articles using keywords for fluid-based biomarkers and outcomes in adult (≥ 18 years) patients with de novo diagnoses of sporadic vestibular schwannomas from Ovid MEDLINE, Embase, Web of Science and Scopus from database inception until October 31st, 2023. Case reports involving <5 patients were excluded.

Results: Ten studies conducted between 2011-2024 met our inclusion criteria. Five studies measured biomarkers in blood, two in CSF and two in perilymph. Three studies evaluated immune-related biomarkers, one analyzed protease enzymes, three performed proteomics and a final study performed microRNA profiling. In perilymph, alpha-2-HS glycoprotein and CFHR2 were identified as potential biomarkers of severe hearing loss. CSF studies revealed fibronectin-1 and fibrinogen as markers associated with hearing impairment. Blood biomarker studies highlighted two matrix metalloproteinases and TGF-Beta-1 as associated with tumor adhesion and growth, respectively. We found a lack of overlap in biomarkers across different fluid types, emphasizing the complexity of VS pathophysiology.

Conclusions: Fluid-based biomarkers show promise in predicting tumor growth and hearing outcomes in vestibular schwannoma, with specific markers identified in perilymph, CSF, and blood. However, the heterogeneity in biomarker profiles and the small sample sizes in existing studies highlight the need for further research in this area using standardized approaches.

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Carotid subclavian bypass compared to transposition for zone 2 aortic repair: Long term results of a retrospective cohort study.

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Background:

Left subclavian artery revascularization is indicated in most cases of zone 2 aortic repair. This is commonly accomplished using left carotid to subclavian bypass or transposition. Proponents site benefits of each procedure, however long-term comparative studies are lacking.

Objective: The goal of this study is to compare perioperative and long-term outcomes for patients undergoing carotid subclavian bypass versus transposition in zone 2 aortic repair.

Methods: The goal of this study is to compare perioperative and long-term outcomes for patients undergoing carotid subclavian bypass versus transposition in zone 2 aortic repair.

Results: A total of 121 patients underwent subclavian artery revascularization during the study period. Sixty-two underwent subclavian-carotid transposition (51.2%) and fifty-nine (48.8%) underwent carotid-subclavian bypass. There was no significant difference in peri-operative mortality, stroke or paraplegia between cohorts. Post-operative hoarseness was significantly higher in SCT cohort (37.1% vs 13.6%, p=0.003), but there were no significant differences at the 6-month mark (3.4% vs 9.7%, p=0.27). Long term results revealed no significant differences with regards to thrombosis of revascularization or need for re-intervention. Logistic regression demonstrated that patients who underwent subclavian-carotid transposition had nearly four-times higher odds of perioperative hoarseness compared to those who underwent carotid-subclavian bypass (OR, 3.76; 95% CI, 1.52, 9.30)

Conclusions: Perioperative outcomes are similar between carotid subclavian bypass and transposition, with a higher rate of hoarseness in the transposition patients. Long term results show that most cases of hoarseness resolve and there was no significance difference between groups at long term follow up.

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Title: Natural History and Surgical Outcomes of Single-Centre Experience in Management of Spheno-Orbital Meningiomas.

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Background: Spheno-orbital meningiomas (SOM) are intracranial tumours that arise from the sphenoid wing. Common clinical presentations include visual impairment, exophthalmos, and headache. Extent of resection (EOR) is associated with patient outcomes. Gross-total resection (GTR) is difficult due to anatomic complexity. Subtotal resections (STR) present high risks of residual progression. Adjuvant radiation therapy (RT) is used for establishing residual control. However, radiation-induced neuropathies often result, necessitating individualized management strategies.

Methods: Between 2001 and 2023, we retrospectively reviewed the medical records of 100 patients who underwent craniotomy and microsurgical resection for SOM at our institution. They were separated into two groups based on post-operative management strategies: surgery-only (S-only) versus surgery followed by adjuvant RT (S-RT). We analyzed clinical presentation, surgical outcomes, resection rates, post-operative course, disease recurrence, and adjuvant treatment outcomes.

Results: 100 patients (68% female) were included in our analysis (68 S-only and 32 S-RT) with a median age of 59 years (range, 28 - 85 years). There were no major demographic differences between the two groups. Mean follow-up time was 70 months. The most common clinical presentations were visual defect (43%), headache (41%), optic neuropathy (32%), and exophthalmos (22%). Significantly more S-RT patients presented with exophthalmos (40.6% vs. 13%; $p=0.0038$), optic neuropathy (46.9% vs. 24.6%; $p=0.0388$), and retro-orbital pain (25% vs. 5.8%; $p=0.0166$). S-RT lesions were more likely to demonstrate vascular encasement (46.9% vs. 22.1%; $p=0.0185$), orbital involvement (59.4% vs. 32.4%; $p=0.0160$), optic apparatus involvement (71.9% vs. 42.7%; $p=0.0096$), and cavernous sinus invasion (43.8% vs. 19.1%; $p=0.0151$). Greater EOR was achieved in S-only cohort (70.6% GTR; $p<0.0001$), with 16.2% (0% S-RT) being Simpson grade I ($p=0.0150$) and 51.5% (18.8% S-RT) Simpson grade II ($p=0.0022$). Regrowth ($p=0.741$) and recurrence ($p=0.156$) rates did not significantly decrease after adjuvant RT.

Conclusions: Microsurgical management of SOM often results in subtotal resection of tumour given the location of the lesion and critical neurovascular structures. We report outcomes after attempts at maximal safe resection and document patterns of recurrences. The post-operative course of SOM disease progression tends to be delayed around the areas of the orbit. Thus, long-term surveillance and individualized planning by a multidisciplinary skull base team is crucial in achieving proper management.

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Title: The growing problem of spine surgery wait times in British Columbia: longitudinal trends and impacts on perioperative outcomes

Authors: Jessica C.W. Wang¹, Raphaële Charest-Morin¹, Nicolas Dea¹, Charles Fisher¹, Marcel Dvorak¹, Brian Kwon¹, Tamir Ailon¹, Scott Paquette¹, John Street¹, Charlotte Dandurand¹

Affiliations: Combined Neurosurgical and Orthopedic Spine Program, University of British Columbia¹

Background: Surgical wait times for degenerative spinal disease are a growing problem in publicly funded healthcare systems. The impact of wait time intervals on outcomes is unknown. Longitudinal trends of the different wait times remain uncharacterized.

Objective: Evaluate longitudinal changes in wait times over the last decade. Identify which wait time interval has increased the most during the study period. Investigate which wait time intervals are associated with increased perioperative adverse events, prolonged hospitalization, and disposition to facility other than home.

Methods: This was a single-center retrospective analysis of prospectively collected data of patients who underwent elective spine surgery for degenerative spinal disease between 2009 and 2020. The wait time intervals assessed were T1 (between referral and initial consultation), Ti (between initial consultation to surgery booking), T2 (between surgery booking and surgery date).

Results: 2041 patients were included. Longitudinal analyses were adjusted for age, sex, diagnosis, surgical volume, while outcomes analyses were age and sex-adjusted. Total T1+Ti+T2 increased 8.1% annually ($p<0.001$).

T1 decreased 4.3% annually ($p=0.032$). It was not associated with adverse events (AEs) or disposition. Every 100 days of T1 was associated with 1.0% longer hospitalization ($p=0.001$). Ti increased 21.0% annually ($p<0.001$). Every 100 days of Ti was associated with 2.9% increased odds of an adverse event ($p=0.002$), 1.8% longer hospitalization ($p<0.001$), and 15.9% increased likelihood of discharge home ($p<0.001$).

T2 increased 7.0% annually ($p<0.001$) and was not associated with AEs. Every 100 days of T2 was associated with 11.6% longer hospitalization ($p<0.001$) and 76.5% increased likelihood of discharge home ($p<0.001$).

Conclusions: Total wait times (T1+Ti+T2) for elective spine surgery have significantly increased between 2009 and 2020. Ti increased most over the study period (ninefold) and was associated with a significant increase in adverse events and prolonged hospitalization. These results illustrate an overloaded healthcare system especially in the preoperative workup of degenerative spine disease. Further resource allocation to outpatient imaging and image-guided injections may be most effective in reducing overall wait times and improving patient outcomes.

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Title: Imaging vs. Reality: Pediatric Dermoid Cysts with Intracranial Extension

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Background: Dermoid cysts on the head and neck, while typically benign, pose significant risks if they extend intracranially, potentially leading to infections and brain abscesses. Effective preoperative imaging is essential for surgical planning, yet current guidelines are inconsistent and may underestimate intracranial extensions.

Objectives: This study aims to assess the accuracy of preoperative imaging in predicting intraoperative findings in pediatric patients with craniofacial dermoid cysts and to identify the most effective imaging modalities for detecting intracranial extension.

Methods: We performed a retrospective chart review of pediatric patients at BC Children's Hospital (BCCH) from 2013 to 2024. Inclusion criteria were a diagnosis of craniofacial dermoid cyst, at least one preoperative imaging modality, and surgical excision at BCCH. We collected data on demographics, clinical presentation, imaging modalities (MRI, CT, Ultrasound), surgical findings, and postoperative outcomes. We evaluated the sensitivity and specificity of each imaging modality in detecting intracranial extension.

Results: The study encompassed 111 patients, with an equal distribution of males and females, and an average age of 24 months at surgery. Cysts predominantly located in the periorbital region often exhibited bony scalloping and intracranial extension. Preoperative imaging included MRI, CT, and Ultrasound, with 11 cases of intracranial extension confirmed during surgical excision. Discrepancies between imaging and intraoperative findings highlight the need for improved imaging protocols.

Conclusions: Accurate preoperative imaging is crucial for effective surgical planning in craniofacial dermoid cysts with potential intracranial extension. Both CT and MRI demonstrated reliability in detecting intracranial involvement. Standardizing imaging guidelines are proposed to enhance surgical planning and improve patient outcomes.

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Title: Safety and Effectiveness of Prepectoral and Subpectoral Alloplastic Breast Reconstruction: A Longitudinal Prospective Study

Authors: Hannah Wells¹, Esta Bovill¹, Nancy Van Laeken¹, Sheina Macadam¹, Christopher Doherty¹, Kathryn Isaac¹

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Background: Alloplastic Breast reconstruction is the most common method chosen by patients for restoration of the breast mound following mastectomy. The prosthesis may be placed in a sub-pectoral or pre-pectoral plane. The subpectoral technique (SPBR) requires elevation of the pectoralis muscle and may be associated with increased pain, animation deformity and capsular contracture. More recently, the prepectoral technique has re-emerged in popularity, with placement of the implant above the pectoralis muscle using biologic and synthetic meshes. However, the prepectoral technique incurs greater cost and may be associated with implant visibility.

Objective: For immediate breast reconstruction (IBR), the optimal plane for implant placement is debated between prepectoral (PPBR) placement and subpectoral (SPBP) placement. This study evaluates the safety and effectiveness profiles of PPBR and SPBR.

Methods: This is a single institution, multi-site, double-arm prospective cohort study, inclusive of all immediate alloplastic breast reconstruction patients from March 2021 to December 2023. Patient records were reviewed to acquire demographics, oncological, and surgical details. At three months post-operatively, safety outcomes were recorded. Statistical analysis included Pearson's Chi-square test, Wilcoxon rank-sum test, and multivariate logistic regression.

Results: Among 362 patients enrolled, 205 underwent PPBR and 157 underwent SPBR, with the majority as staged reconstructions (84%, n=303). We observed no differences in rates of device loss [PPBR 14 %, SPBR 10%], reoperation [PPBR 18 %, SPBR 17%], readmission [PPBR 15 %, SPBR 11%], infection [PPBR 18 %, SPBR 17%], seroma [PPBR 13%, SPBR 17%] and MFN [PPBR 14 %, SPBR 14%] ($p>0.05$). Odds of readmission were significantly lower for patients undergoing SPBR in staged alloplastic reconstruction, adjusting for mastectomy weight, smoking status, and surgical indication (OR=0.46, 95% CI=0.211-0.996, $p=0.0489$). For both techniques, mastectomy weight, and surgical indication were independent predictors of adverse safety outcomes. With every 100g increase in mastectomy weight, there was a 13-18% increased risk of reoperation, seroma, and MFN. For surgical indication, prophylactic procedures had 2-fold increased odds of reoperation compared to those undergoing therapeutic mastectomy for invasive disease.

Conclusions: Both PPBR and SPBR are safe and effective techniques with comparable risk factors for poor outcomes. Based on the current results, readmission is more likely following prepectoral reconstruction and predictors of poor safety outcomes includes mastectomy weight and surgical indication.

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Title: A Descriptive Analysis of Usage, Readability, and Quality of Online Websites on Proton Radiation Therapy in Canada

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Introduction: Proton beam therapy (PBT) reduces the burden of late treatment effects compared to conventional photon radiation by limiting radiation to normal tissues via its steep dose gradient and absence of an exit dose. Unfortunately, PBT is unavailable in Canada and patients requiring treatment are referred to the United States (US). Many patients and their families rely on online health information to make treatment decisions. There are limited studies assessing the quality of online health information for PBT, which has the potential to influence a patient's willingness to pursue out-of-country treatment. This study describes the quality, readability, and usage patterns of online PBT websites in Canada.

Methods: A list of websites was generated for analysis by searching "proton therapy" with 2 metasearch engines (DuckDuckGo, Dogpile) and 1 search engine (Google) in June 2024. Exclusion criteria included: broken links, advertising websites, journal articles, news articles, social media or video sharing platforms, blogs or discussion boards, paid websites, non-websites, and websites not providing patient-directed information. Websites were reviewed and given an overall website score using our validated structured website evaluation tool that considers accountability, interactivity, organization, readability, and quality of content. Readability was calculated using readability indicators such as Flesch Kincaid Reading Ease, Flesch Kincaid Grade Level, Gunning Fog Score, Coleman Liau Index, Automated Readability Index (ARI), and SMOG Index scores. Welch two-sample t-tests were used to compare readability and website scores between different website groups.

Results: Since 2010, the number of proton therapy searches has increased by 657.47% in Canada. British Columbia, Ontario, and Alberta were the top provinces with the most searches for proton therapy. From 204 viable websites generated by each search engine, 60 websites were eligible. Most eligible sites were noted to have non-profit affiliations (53.3%). US proton centre websites and other eligible non-proton centre websites were usually the first to appear on search engines, with an average appearance order of 87/204 and 58/204, respectively. The top 3 proton centres that appeared on search were the Mayo Clinic, MD Anderson, and Johns Hopkins. Proton centre websites did not significantly differ in readability grade levels compared to non-proton centre websites ($p > 0.05$); however, proton centre websites scored lower in overall website scores compared to non-proton centre websites ($p < 0.01$).

Conclusions: There is a growing demand for proton therapy information as more Canadian patients are being referred to the US for treatment over time. Considering that US proton centre websites had lower overall website scores, providers should consider directing patients to non-proton centre websites first. Future directions involve incorporating informational accuracy into quality assessment, as well as conducting qualitative interviews among families and patients needing proton therapy to better elucidate how they understand the information gathered online and how it impacts their decision-making.

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Title: Implementation of a value-based health care pathway for renal transplant patients with tertiary hyperparathyroidism in British Columbia

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Background: Tertiary hyperparathyroidism (THP) occurs when hyperplastic parathyroid glands continue to produce elevated parathyroid hormone (PTH) despite correction of the primary disorder by renal transplant. Hypercalcemia leads to complications including fractures, nephrolithiasis, and may compromise graft function. Ultimately, the treatment for THP persisting longer than one year after transplant is parathyroidectomy. Timely surgical management can be challenging owing to the fragmented coordination of care between multiple specialties. We have observed delays in surgical referral and treatment, prolonged use of cinacalcet as a bridge to definitive surgery, and heterogeneity regarding perioperative approaches. Value-based health care (VBHC) is a shifting paradigm of health care delivery that focuses on improving patient outcomes while minimising costs. A care pathway for the treatment of THP has the potential to resolve gaps in current clinical practice and streamline the patient experience. Following stakeholder engagement meetings, a THP care pathway was developed and implemented at St. Paul's Hospital, the largest tertiary centre for endocrine surgery servicing all British Columbians and the Yukon. **Objective:** This retrospective cohort study aims to evaluate the effect of the implementation of a VBHC pathway for THP treatment in a single academic centre on patient health outcomes, process metrics, and care costs compared to the previous protocol. **Methods:** We performed a retrospective chart review on all patients with kidney transplant who underwent parathyroidectomy for THP between 2010 and 2024 at St. Paul's Hospital and compared the cohorts before and after implementation of the VBHC pathway. Clinical encounters were reviewed for timing of diagnosis of THP, ordering of preoperative imaging, timing of surgical referral, preoperative cinacalcet use, and time to surgery. Descriptive statistics were used for patient demographics. Student's t-tests were used to compare continuous variables and Fisher's exact test to compare categorical variables. Cost savings analysis was determined using time driven activity-based costing. **Results:** 37 patients in the pre-pathway group were compared to 12 patients in the post-pathway group. Implementation of the pathway led to decreased time to imaging (-188.2 d, $p = 0.14$) surgical referral (-137.6 d, $p = 0.21$), surgical consultation (-133.5 d, $p = 0.23$), and parathyroidectomy (-111.3, $p = 0.26$). We also observed decreased hospital length of stay (-1.2 d, $p < 0.01$). Cost savings was determined to be \$143.02-187.72 per patient at minimum. **Conclusions:** We observe a trend of decreased time to care and clear cost savings following implementation of the VBHC pathway for THP treatment. Further analysis of the data will include cost savings from the reduced cinacalcet use and shortened length of stay, as well as a qualitative analysis on patient reported outcomes.

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Title: Inflammatory Bowel Disease May No Longer Be a Contraindication for the Use of Radiation Therapy: A Systematic Review of Toxicity Outcomes with Modern RT Techniques

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Background: Inflammatory bowel disease (IBD) continues to be considered a contraindication to the use of Radiation Therapy (RT). Oncologists are often unwilling to deliver RT, due to a perceived risk of severe bowel toxicity, or IBD exacerbation. Modern precision RT techniques allow significant reduction in dose to normal organs, and several studies have reported low toxicity rates. We performed a systematic review of recent studies to summarize the current evidence regarding RT toxicity in cancer patients with IBD.

Methods: MEDLINE and EMBASE databases were searched, using combinations of key terms, for relevant studies published over the past 15 years (2008 – 2023). Reference lists of eligible articles were also hand-searched. A total of 625 articles were screened, and 15 studies met our search criteria to be included in this review

Results: From the fifteen relevant studies, the outcome data of 458 patients with mostly inactive IBD, treated using RT for various solid malignancies were pooled and analyzed. The reported median follow-up was 66.8 months. 81% of patients (n = 371) were male; 51% had Ulcerative Colitis (n=235), 38% had Crohn's Disease (n=176), and 10% of patients had non-specified IBD (n=47). Based on the pooled literature data, 14% of patients (48/332) reported ≥Grade 3 acute GI toxicity; 18% of patients (33/185) reported ≥Grade 2 late GI toxicity; and 6% of patients (12/185) reported ≥Grade 3 late GI toxicity. Alternatively, 26% of patients (13/50) reported acute GU toxicity ≥Grade 2 and 18% of patients (7/39) reported ≥Grade 2 late GU toxicity. The rate of reported post-RT IBD flare in literature ranges from 4.3-18%.

Conclusions: With the progressive adaptation of modern RT techniques over the past 15 years, the rates of severe GI and GU toxicity and post-treatment IBD flares are relatively low for patients with well-controlled IBD. When compared to non-IBD populations, there are often no significant differences in the rate of hospitalization, surgeries, or mortality between IBD and non-IBD cohorts post RT. While meticulous patient selection and precise RT planning remains crucial for optimizing outcomes, the existing literature does not suggest IBD to be an absolute contraindication to the use of modern RT techniques.

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Title: Post-Operative Outcomes of Intracorporeal vs Extracorporeal Anastomosis for Laparoscopic Right Hemicolectomy in the Short- and Long-Term

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Background: Laparoscopic hemicolectomy is the standard of care technique for resection of right sided colonic malignancies and endoscopically unresectable polyps, but there is controversy on the preferred anastomotic technique. This study compares differences in operative time, post-operative complications in the short- and long-term, length of hospital stay, and return of bowel function between extracorporeal anastomosis (ECA) and intracorporeal anastomosis (ICA) for laparoscopic right hemicolectomy.

Objective: To compare intracorporeal with extracorporeal anastomosis for laparoscopic right hemicolectomy in terms of intra-operative and post-operative outcomes both during a patient's hospital stay and post-discharge.

Methods: Retrospective chart review of patients who underwent a laparoscopic right hemicolectomy involving either an intracorporeal anastomosis using a Pfannenstiel extraction site or extracorporeal anastomosis at Richmond Hospital between January 1, 2015, to December 31, 2023. Right hemicolectomies performed for infectious or inflammatory etiologies, or intracorporeal anastomosis using midline extraction sites, were excluded. Demographic data, intraoperative data, and postoperative data were collected and analyzed using chi-squared test for categorical variables and t-test for numerical variables using SPSS 29.0.2.0.

Results: 203 patients were included, with 150 ICA (73.9%) and 53 ECA (26.1%) patients followed for 30 days after laparoscopic right hemicolectomy. Patient demographics such as age, sex, BMI, and presence of co-morbidities that may affect surgical outcomes were similar between the ICA and ECA patient groups. Indication for surgery was malignant in 159 (78.3%) cases and benign in 44 (21.7%) cases. Operative times were similar between ICA (151.9 mins, SD 36.6) and ECA cases (146.1 mins, SD 34.8) ($p = 0.319$). ICA patients passed their first flatus earlier at 1.97 days (SD 1.04) compared to ECA patients at 3.5 days (SD 2.8) ($p < 0.001$). Rates of postoperative ileus were lower for ICA patients (9, 6.0%) than for ECA patients (13, 24.5%) ($p < 0.001$). ICA patients had lower incisional hernia (0.0%) and adhesive small bowel obstruction (SBO) rates (0.0%) compared to ECA patients (4, 7.5%; 3, 5.7%). Nodal harvest is greater in ICA patients (20.3, SD 8.6) compared to ECA patients (15.5, SD 5.1) ($p < 0.001$). Length of hospital stay post-surgery was shorter for ICA patients, with ICA patients staying 2.8 days (SD 1.8) and ECA patients 5.0 days (SD 3.2) ($p < 0.001$). The number of patients requiring 30-day readmission (ICA 7, 4.7%; ECA 5, 9.4%), presenting to ED within 30 days (ICA 17, 11.3%; ECA 7, 13.2%), and with surgical site infection (ICA 0.0%; ECA 2, 3.8%) were similar between ECA and ICA patients. Although not statistically significant, there was a trend in favour of ICA over ECA when assessing the incidence of surgical site infections.

Conclusions: ICA resulted in earlier return of bowel function; fewer post-operative ileus, incisional hernia, and SBO; greater lymph node harvest; and shorter hospital stays compared to ECA. There was no significant difference in operative times between ICA and ECA.

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Title: Engaging Patients in Research: Our Experience Creating a Patient Advisory Committee

Authors: Caroline F. Illmann¹, Joscelyn Baker², Michele Hemphill², Debbie Shaw², Raveena Gowda¹, Kathryn V. Isaac¹

Affiliations: Division of Plastic Surgery, Department of Surgery, University of British Columbia, Vancouver, BC Patient Advisory Committee, University of British Columbia Breast Reconstruction Program

Background:

Patient oriented research (POR) is an area of research focussed on engaging patients as partners in the research process to ensure that studies focus on topics and outcomes that are meaningful to patients. This project aims to describe and evaluate our experience building a Patient Advisory Committee (PAC) and implementing POR in Plastic Surgery, commencing with the Breast Reconstruction Program at UBC.

Methods:

This narrative review examines three years of development and implementation data. From 2021-2024 we collected details on program requirements, patient partner (PP) recruitment, protocols, sustainability, terms of reference and outputs. We propose a set of recommendations outlining critical components necessary to develop, conduct and implement POR with guidance on establishing a PAC.

Results:

Building a PAC requires underlying supportive research infrastructure including qualified research personnel in addition to active engagement of PPs. Initially, PP recruitment was facilitated by partnership with a local patient group, with an inaugural PAC of 5 PPs. Overtime we have employed additional strategies including recruiting from a pool of previous research participants who have expressed interest, growing to a group of 8 PPs. PAC abides by terms of reference outlining scope, membership and commitment which were collaboratively written. PAC has collaborated on 12 projects at all points along the research lifecycle, including idea generation, grant application, recruitment methods for RCTs, creation of interview guides and knowledge translation. With PAC's guidance, we have secured 4 grants in national and institutional competitions.

Conclusions:

Development and implementation of POR with a PAC is feasible with infrastructure and programming, resulting in desirable outputs for a clinical research program.

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Title: Prognostication of Non-Small Cell Lung Cancer with Concurrent Chemoradiation Treatment Using Neutrophil-to-Lymphocyte Ratio

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Background: Non-small cell lung cancer (NSCLC) with stage III unresectable locally advanced disease is treated with concurrent chemoradiation (CRT). There has been increasing attention to systemic inflammation as an important contributory factor in cancer treatment response. A marker of systemic inflammation is neutrophil-to-lymphocyte ratio (NLR), a simple index that reflects common cancer-associated effects such as neutrophilia and lymphopenia. Neutrophils are known to promote tumour progression through mechanisms including immunosuppression, angiogenesis, and cytokine-mediated invasion, while lymphocytes have roles in adaptive immunity and accounts for the effects of toxicity in CRT.

Objective: Our project aims to evaluate pre- and post-CRT NLR as a prognostic factor for survival in stage III NSCLC patients. In addition, we aim to evaluate change in neutrophils and lymphocytes post-CRT to determine which cell type has a greater contribution to NLR change.

Methods: A retrospective review of patients from January 2005 to December 2020 diagnosed with stage III NSCLC who received concurrent CRT with a 60/30 or 66/30 regimen was performed. Exclusion criteria included prior infections, certain malignancy history, past systemic steroid use, past chemotherapy, and granulocyte colony-stimulating factor use. Pre-CRT NLR, post-CRT NLR, and change in NLR were calculated, with cutoffs determined via maximally selected log rank statistics. Multivariate Cox regression analyses compared high and low groups of NLR and NLR fold-changes. Paired *t*-tests assessed changes in neutrophils and lymphocytes pre- and post-CRT.

Results: Of 328 eligible patients, the median age at diagnosis was 64 years. Median overall survival (OS) was 30.8 months (95% CI: 27.1-38.3). Geometric mean NLR increased by 1.76-fold (95% CI: 1.58-1.96, $p < 0.0001$) during CRT, primarily mediated by a decrease in lymphocyte count (-60.2%, 95% CI: 57.7-62.7, $p < 0.0001$), while neutrophil count also decreased, but by a lesser degree (-13.0%, 95% CI: 0.61- -26.6, $p < 0.0001$). After adjusting for age and sex with multivariate analysis and using 5.16, 6.11, and 2.11 as cutoffs between high and low groups of pre-CRT NLR, post-CRT NLR, and NLR fold-change respectively, we found that the high group for all three parameters were associated with lower median OS compared to respective low groups (25.1 vs 36.7 months, HR=1.41, 95% CI: 1.09-1.82, $p = 0.008$; 17.8 vs 35.3 months, HR=1.84, 95% CI: 1.32-2.58, $p = 0.0004$; 20.7 vs 40.5 months, HR=1.60, 95% CI: 1.24-2.07, $p = 0.0004$).

Conclusions: Preliminary results suggest that a high pre-CRT NLR, post-CRT NLR, and significant NLR fold-change are associated with worse survival. While lymphopenia and neutropenia are known possible side-effects of radiation therapy, the mechanisms underlying their relative changes and impacts on survival require further inquiry. Further analyses to explore the associations between radiation doses to organs-at-risk, NLR, and OS are currently underway.

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Title: Consistent Differential Expression of miR-210-3p and miR-23a-3p in a North American sample of Sudden Sensorineural Hearing Loss Patients

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Background: Sudden sensorineural hearing loss (SSNHL) is an acute onset idiopathic and often devastating condition. The limited understanding of SSNHL pathophysiology restricts identification of effective treatments. Recent studies have identified differential expression of contrasting groups of small non-coding microRNAs (miRNAs) in SSNHL patients in different countries, suggesting that miRNAs are involved in the disease process. It is unclear if the lack of consistency in miRNA findings reflects methodological, regional, or population specific miRNA variation.

Objective: This study aimed to assess the comparative expression levels of six miRNAs previously identified in SSNHL patients in Asia, in SSNHL patients and controls from Vancouver.

Methods: Serum samples were collected from 11 SSNHL patients and 11 age and sex matched controls. Total RNA was extracted and reverse transcribed for quantitative real-time PCR. miRNA expression levels were normalized to an internal control. Inter-group statistical comparisons of mean age, sex distribution, and normalized test miRNA cycle threshold (Ct) values, were performed using Independent Sample t-tests, Chi-squared tests, or Mann-Whitney U tests, as appropriate.

Results: The mean ages of the SSNHL group 44.27 years (SD = 9.6), was similar to the control group 42.64 years (SD = 11.3). Both groups consisted of 7 females and 4 males. The median expression levels Δ Ct (IQR) of miR-210-3p and miR-23a-3p in the SSNHL group [4.64 (4.03); -3.04 (2.10)] were significantly different from those in the control group [7.24 (3.28); 1.75 (0.7)] (Mann-Whitney U, $p < 0.05$). No significant inter-group differences were observed in the expression levels of miR-15a-5p, miR-18b-5p, miR-143-3p, or miR-183-5p.

Conclusions: This study supports consistent dysregulation of miR-210-3p and miR-23a-3p in SSNHL patients in North America and Asia. Further study of these miRNAs in SSNHL patients may improve our understanding of disease pathogenesis.

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Sacral Periosteal Elevation as Alternative to Sacrectomy for Advanced Rectal Cancers with Posterior Extension: Short Term Outcomes

Erika Schmitz, Raphaelae Charest-Morin, Andrew McFadden, Nicolas Dea, Elizaveta Vasilyeva, Jason Park

Introduction

En-bloc sacrectomy for resection of rectal cancers with posterior extension are associated with high morbidity. Sacral periosteal elevation (SPE) is a newly described variation on sacrectomy involving sacral cortex osteotomy and subperiosteal dissection, while preserving bone and uninvolved nerve roots. SPE allows for extending dissections to higher spinal levels while reducing morbidity, but outcome data of rectal cancers are limited. We reviewed our single institution experience with SPE in rectal cancer patients.

Methods

Patients who underwent SPE for primary and recurrent locally advanced rectal adenocarcinoma with posterior extension abutting the sacrum were reviewed from 2021-2024. Negative pathologic margin (R0 resection) was the primary outcome. Secondary outcomes included intra-operative blood loss, perioperative complications, and survival.

Results

Seven patients (mean age 58) underwent SPE for primary rectal adenocarcinoma (n=1) and locally recurrent disease (n=6). Two patients underwent S5 sacrectomy after SPE (SSPE). Periosteal elevation levels included S2 (n=1), S3 (n=1), S4 (n=4) and S5 (n=1). 5/5 SPE patients and 1/2 SSPE patients had R0 resections. SPE Mean blood loss was 3.5 L (SD 2.8), and 2.7 L (SD 2.5) in SSPE. There were no deaths <90 days. Two patients had minor post-operative complications (Grade 1), and five had major post-operative complications (Grade 3b) including flap dehiscence (n=3), enterocutaneous fistula and pelvic abscess. One patient had local recurrence (54 days), while three patients had distant recurrences (mean 275 days, SD 103).

Conclusion

SPE as an alternative or adjunct to sacrectomy is feasible and associated with a high R0 resection rate in well selected rectal cancer patients.

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Outcomes in HCC patients treated with SBRT prior to liver transplantation: A retrospective analysis of radiological tumour response and histopathological correlation

Background

For patients with hepatocellular carcinoma (HCC) awaiting orthotopic liver transplantation (OLT), stereotactic body radiotherapy (SBRT) is emerging as an effective local treatment to 'bridge' patients to OLT or to 'downstage' those outside of transplant criteria. We report the radiological and histopathological outcomes in this group.

Methods

All HCC patients treated with SBRT prior to OLT between 2013 - 2020 were included in this retrospective analysis. The radiological response post SBRT was compared to explant pathology.

Results

24 patients (31 lesions) were identified. 18 patients (75%) were treated as a bridge, 6 (25%) to down stage to OLT. All patients had cirrhosis, (Hepatitis B (38%), Hepatitis C (42%), NAFLD (8%), ALD (8%) and autoimmune hepatitis (4%)). 18 patients (75%) received prior liver direct treatment (LDT) with a median of 3 interventions (1-6). Baseline Child-Pugh score (CPS) was A5 (50%), A6 (25%) B7 (12.5%), B8 (12.5%). 45Gy in 3 fractions (BED10 112.5Gy) was prescribed in 13 (54.2%) cases, 45Gy in 5 fractions in seven (29.2%) and 40Gy in 5 fractions in three (12.5%) and 42.5Gy in 5 fractions in one.

All patients proceeded to OLT with a median time from SBRT to transplant of 9.5 months (2-50 months). Median GTV size was 57.4 cc (3.1-329.1). Median dose delivered was 80.6Gy BED10 (54.6 – 114.8Gy BED10).

On explant analysis, 12 patients (50%) had pathological complete necrosis (CPN), 3 (12.5%) 80-90% necrosis, 7 (29%) incomplete necrosis, 2(8%) no response. 21% of patients with CPN, were reported as no or partial response to SBRT on imaging. The median dose delivered to those with CPN was 82.4Gy BED10 (56.5 – 114.8Gy BED10)

Conclusion

Radiological response after SBRT for HCC may underestimate the actual treatment response seen in the explant, however this may be a time dependent factor. SBRT is a safe and effective local treatment to bridge or downstage to OLT in patients with HCC.

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Title: Effectiveness of Digital Storytelling in Increasing Living Kidney Donor Recruitment in Canada

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Background: Storytelling-based transplant education has been found to narrow the accessibility gap in living donation among racialized patients in America. However, efficacy of storytelling interventions for have yet to be evaluated among Canadian minority populations.

Objectives: Explore how a narrative approach to transplant education influences patient perspectives, knowledge, and actions in the pursuit of living kidney transplant among Canadian White- and Asian-identifying patients.

Methods: This is a two-arm randomized control trial at Vancouver General Hospital using video-based patient stories told by past living donor kidney recipients. Outcomes were measured using the validated surveys, “Actions Related to Kidney Disease (ARKD)” and “Knowledge Assessment of Renal Transplantation (KART) 2.0” at baseline and 1-month post-intervention. Donor inquiries and evaluations will be evaluated at 3-month post-intervention via chart review.

Preliminary Results:

8 control and 8 experimental group patients were recruited from May to July 2024 (8 White, 8 Asian; 50% female, average age 59). Statistical significance was not calculated due to small preliminary sample size.

Baseline readiness and motivation to pursue living transplant was higher in Asian than White patients (average ARKD Asian = 2.25, Caucasian = 1.96). Baseline transplant knowledge was comparable across race, sex, and age, but differed across education level (average KART high school education = 58%, higher education = 79%) and household income (average KART income <\$20,000 = 50%, income >\$20,000 = 78%).

Storytelling-based education was deemed health-literate and culturally safe by 100% of Asian and 75% of White participants. Race concordance between participant and storyteller did not influence results for neither Asian nor Caucasian groups.

Conclusion: Patient stories can serve as a health-literate and culturally safe approach to transplant education to promote living donor kidney transplant among minority populations in Canada.

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