

12TH

MUHC X CGSTA

Global Surgery Conference

Innovation in Global Surgery

April 13th, 2024



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About the Conference



Amanda Bianco

Co-President, McGill CGSTA Chapter

Welcome! The McGill University Health Centre (MUHC) Global Surgery Conference is a student-led conference that occurs annually to expose trainees to global surgery leaders and ongoing projects around the world. The 12th edition of the conference is being held in hybrid format (in person and virtual) and open to all trainees locally and internationally. The theme this year is *Innovation in Global Surgery*. The conference will include talks and workshops around education, advocacy, innovation, ethics and research in global surgery. It will also include a session for research poster presentations and a design competition. We would like to thank our sponsors for their generosity in making this conference a reality. We would also like to thank you for attending the conference this year, and we hope that you enjoy it!

Welcome to the 12th annual MUHC Global Surgery conference! I am very excited to be here with you today to discuss, enhance and renew a passion for building accessible and sustainable surgical systems locally and globally with trainees and leaders in the field. A warm welcome to our invited visiting professor Dr. Bugis from the Department of Surgery at the University of British Columbia, and to all our invited speakers and judges. Thank you for making the time for this; your presence at this conference is what allows us to create a space for trainees to learn, be inspired, and aspire to be the next global surgery leaders. Last but not least, welcome to all trainees attending in person or virtually. Your presence here today is testimony to your commitment to bettering surgical systems across the globe. We hope that you enjoy the conference!



Hamza Ahmad

Co-President, McGill CGSTA Chapter

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SCHEDULE

9:00 AM 9:30 AM	Opening Remarks by the Co-Directors of the Centre for Global Surgery
9:35 AM 10:05 AM	CGS Student Perspectives
10:10 AM 10:40 AM	Keynote Address By Dr. Bugis
10:45 AM 11:15 AM	Surgical Access By Dr. Gorgy
11:20 AM 12:20 PM	Innovation Competition Presentations
12:20 PM 1:00 PM	LUNCH
1:05 PM 1:55 PM	Research Poster Presentations Virtual and In-Person
2:00 PM 2:30 PM	Innovation in Global Surgery By Dr. Kundu
2:35 PM 2:55 PM	Closing Remarks
3:00 PM 4:00 PM	SIMULATION WORKSHOP Airway Assessment and Management

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Meet the Speakers



KEYNOTE SPEAKER

DR. SAMUEL PHILIP BUGIS

MD, FRCSC, FACS

Dr. Bugis brings a wealth of experience in surgical education and advocacy as well as in global surgical care. Currently, Dr. Bugis is Vice President, Physician Affairs and Specialist Practice, Doctors of BC. He is the past Board Chair of the Canadian Network for International Surgery and a Fellow and Examiner for the College of Surgeons of East, Central and Southern Africa. Dr. Bugis has been a member of the BGSC faculty as a co-instructor SURG 510 since 2021.

DR. SHREENIK KUNDU

MBBS, MSc, PhD(c)

Shreenik is an alum of the West China School of Medicine, Sichuan University, and holds a Master's in Experimental & Global Surgery from McGill University. His commitment to global health and surgery led him to complete a fellowship at the Global Surgery Foundation, Geneva, and a two-year research fellowship at Harvard's Program in Global Surgery and Social Change, Boston, USA. Shreenik has been involved in research and advocacy projects in China, India, Brazil, and Canada. He is currently pursuing a Ph.D. in Experimental Surgery at McGill's Commisur Lab, focusing on trauma and disaster management, leveraging virtual reality for emergency simulations.



DR. JEREMY GRUSHKA

Co-director, MUHC Centre for Global Surgery



Dr. Jeremy Grushka is an attending trauma surgeon and surgical intensivist in the Division of Trauma and General Surgery at the McGill University Health Centre (MUHC). He is Assistant Professor of Surgery at McGill University. Jeremy completed his medical degree and general surgery residency training at McGill University and then obtained his subspecialty training in trauma surgery and critical care at the Ryder Trauma Center, Jackson Memorial Hospital in Miami, Florida. During his fellowship training he also completed a Masters of Public Health at the University of Miami. He also holds a Master's of Science in Experimental Surgery from McGill University. In addition to his passion for clinical practice, Jeremy has developed an avid interest in surgical education and is the current Trauma Fellowship Program Director at McGill University. He is also an active member of the MUHC center for global surgery and is currently working on various education and surgical capacity building projects with local partners in Haiti, Nepal and Ukraine. His clinical research interests focus on error producing conditions in trauma, non-opioid pain management in the injured patient, host inflammatory response to injury and surgical education.

DR. DAN DECKELBAUM

Co-director, MUHC Centre for Global Surgery

Dr. Deckelbaum is an assistant professor at McGill University Health Centre, specializing in trauma and general surgery. He holds multiple roles, including an associate member of McGill University's Department of Epidemiology, biostatistics, and occupational health, and an honorary associate professor at the National University of Rwanda. He completed his medical degree and residency at McGill University, followed by subspecialty training in trauma surgery and critical care at Jackson Memorial Hospital in Miami, concurrently obtaining a Masters of Public Health from the University of Miami. Dr. Deckelbaum's passion for global health developed through his clinical experiences in East Africa and involvement in disaster response efforts in various regions. His research interests revolve around enhancing surgical education globally and disaster preparedness in resource-limited settings. He has authored numerous peer-reviewed articles and presented his work at national and international conferences. Dr. Deckelbaum is committed to improving medical education in global surgery and has contributed to virtual training programs for medical professionals in Ukraine focused on basic life support and emergency procedures.



DR. CHERINET OSEBO

MD, PhD



As a medical professional who completed postgraduate training in integrated emergency surgery from an Ethiopian medical school, I have dedicated my career to improving trauma and emergency surgical services in resource-limited settings. Working in a remote Ethiopian hospital has fueled my motivation for evidence-based changes. Driven by this passion, I pursued a Ph.D. in experimental surgery at McGill University's Centre for Global Surgery. My research focus is on enhancing trauma and operating theater services by establishing innovative data acquisition systems and expanding educational efforts. On March 25, 2024, I successfully defended my doctoral thesis titled "Development and Implementation of a novel Web-Based Trauma and Operating Theater Registry in Tanzania: Amber Database Initiatives." This thesis represents a significant contribution to the field, aiming to enhance innovative data-driven decision-making in trauma services in Tanzania and other LMICs.

DR. HAMAD AHMED ALSUWAIDI

My name is Hamad Alsuwaidi and I am a third year resident in the General Surgery program, McGill University. I am from the United Arab Emirates and I am a graduate of the Royal College of Surgeons in Ireland, Dublin. During and after medical school I was part of an initiative that involved me volunteering at various hospitals in Arusha and Zanzibar, Tanzania. I am interested in Trauma and Acute Care Surgery and I have recently completed a 6 month research project with Dr Grushka and the trauma group.



DR. ANDREW GORGY



Dr. Andrew Gorgy is a PGY-3 resident in Plastic and Reconstructive Surgery at McGill University with a rich background and a global perspective on healthcare. Born and raised in Egypt, Dr. Gorgy pursued his medical education in his home country, where he earned his MD degree. His journey in medicine and surgery took a significant turn in 2015 when he joined McGill University in Canada. At McGill, he embarked on a Masters in Experimental Surgery, specializing in Surgical Innovations with a focus on craniofacial implants. Following his master's, Dr. Gorgy took his passion for education and technological advancements in surgery a step further by initiating his PhD studies at McGill University. His research is centered on the use of advanced technologies in surgical education, aiming to enhance the learning experience and outcomes for future surgeons. Dr. Gorgy's dedication to improving lives extends beyond the borders of Canada. He harbors a deep interest in global surgery—a field that seeks to address disparities in surgical care worldwide. This interest recently led him to participate in a mission with the Global Smile Foundation in Ecuador, where he was actively involved in providing care for individuals with cleft lip and palate. This experience not only allowed him to apply his skills in a global health context but also reinforced his commitment to making surgical care accessible to those in need, regardless of where they are in the world.

Thank you to the organizing team!

- **Hamza Ahmad**, Co-President of the McGill CGSTA Chapter
- **Amanda Bianco**, Co-President of the McGill CGSTA Chapter
- **Nour Kabbes**, VP External of the McGill CGSTA Chapter
- **Ammar Saed Aldien**, VP External of the McGill CGSTA Chapter
- **Sébastien Lamarre-Tellier**, VP Finance of the McGill CGSTA Chapter
- **Mehrshad Hanafimosalman**, VP Research of the McGill CGSTA Chapter
- **Kacylia Roy Proulx**, Events Lead of the McGill CGSTA Chapter
- **Ali Fazlollahi**, MUHC Centre for Global Surgery
- **Johana Montero**, MUHC Centre for Global Surgery
- **Gabriela Sánchez**, MUHC Centre for Global Surgery
- **Dr. Theresa Farhat**, MUHC Centre for Global Surgery
- **Dr. Jeremy Grushka**, MUHC Centre for Global Surgery
- **Dr. Dan Deckelbaum**, MUHC Centre for Global Surgery

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ABSTRACTS

Whether virtual or in person, each poster presentation is scheduled to be 3 minutes in duration, followed by a 2-minute question and answer period.

Prizes will be awarded to the best presentations.

1 - (Virtual) Short-term Comparison Between Biological and Synthetic Mesh in Inguinal Lichtenstein Hernioplasty: A Systematic Review and Meta-Analysis, **Presenter: Mariana Silva (Escola Bahiana de Medicina e Saúde Pública, Brazil)**

2 - (Virtual) Advancements in Technological Innovations for Surgical Care in Resource-Limited Settings, **Presenter: Otari Chankseliani (Tbilisi State Medical University, Georgia)**

3 - (In Person) Disaster Preparedness: Impact of the Rural Emergency Trauma System Strengthening Program to Build Emergency Care Resilience in Nepal, **Presenter: Kedar K. V. Mate (McGill University, Canada)**

4 - (In Person) Clinical Applications of Biomaterials Used for Regeneration of Human Cornea: A Systematic Review, **Presenter: Mehrshad Hanafimosalman (McGill University, Canada)**

ABSTRACT #1

Short-term Comparison Between Biological and Synthetic Mesh in Inguinal Lichtenstein Hernioplasty: A Systematic Review and Meta-Analysis

Presenter: Mariana Silva (Escola Bahiana de Medicina e Saúde Pública, Brazil)

OBJECTIVE: This review aims to evaluate short-term outcomes, comparing biologic and synthetic meshes in Lichtenstein hernioplasty for inguinal hernia.

METHODS: Pubmed, Embase and Scopus were systematically reviewed up to September 2023, using as search strategy "Biologic" OR "absorption" OR "mesh" OR "synthetic" AND "inguinal" OR "hernia", in search of studies comparing short-term outcomes of biological and synthetic meshes. Some outcomes explored in the work were: hematoma, seroma and infection. The statistical analysis and heterogeneity of the study was carried out using the R Statistics software.

RESULTS: The systematic search resulted in 875 studies, with 6 studies meeting the inclusion criteria. All included were randomized controlled trials, encompassing a total of 875 patients, who underwent Lichtenstein hernioplasty. The average age of study population ranged between 46 and 64 years old. The follow-up varied between 6 and 60 months. Overall, the combined analysis of the studies showed statistically significant differences in favor of synthetic mesh. Among statistical analyses were: infection (OR: 1.44; 95% CI [0.76;2.71]; $p=0.38$; $I^2=0\%$), hematoma (OR: 1.51; 95% CI [0.64;3.53], $p= 0.53$; $I^2=0\%$) and seroma (OR: 2.01; 95% CI [0.90;4.50]; $p=0.55$; $I^2=10\%$). The main biological material for meshes were porcine small intestine submucosa and dermis.

CONCLUSION: Therefore, biological mesh proved to be more likely to cause short-term repercussions. Although the results have been demonstrated, the small number of studies is a limiting factor.

ABSTRACT #2

Advancements in Technological Innovations for Surgical Care in Resource-Limited Settings

Presenter: Otari Chankseliani (Tbilisi State Medical University, Georgia)

INTRODUCTION: Access to adequate surgical equipment is a challenge in resource-limited settings, hindering essential surgical care and worsening global health disparities. Despite medical technology advancements, many low- and middle-income countries lack reliable, affordable surgical instruments. Hence, there's a pressing need for innovative solutions to improve surgical outcomes in underserved communities. This review explores recent technological innovations in surgical care for resource-limited settings.

METHODS: A comprehensive search across academic databases (PubMed, MEDLINE, Google Scholar) identified relevant studies, reports, and case studies from 2011 to 2024. Search terms included "surgical innovations," "surgical equipment," "resource-limited settings," and "global surgery." Articles were screened for relevance, including data on technological innovations in surgical care delivery.

RESULTS: Recent years have seen significant advancements in technological innovations to address surgical care challenges in resource-limited settings. These innovations include low-cost, durable surgical instruments suitable for challenging environments. Portable, battery-operated devices like ultrasound machines and drills facilitate surgeries in remote areas with limited infrastructure. Moreover, innovative sterilization technologies ensure equipment safety where traditional methods are insufficient.

CONCLUSION: Technological innovations offer promise in improving surgical care and reducing health disparities in resource-limited settings. Leveraging engineering and design advances, solutions tailored to underserved communities have emerged. However, successful implementation requires user-centered design, community engagement, and sustainable infrastructure. Continued investment in research, development, and implementation is crucial for equitable access to safe surgical care globally.

ABSTRACT #3

Disaster Preparedness: Impact of the Rural Emergency Trauma System Strengthening Program to Build Emergency Care Resilience in Nepal

Presenter: Kedar K. V. Mate (McGill University, Canada)

BACKGROUND: The Canadian Red Cross (CRC) and the Centre for Global Surgery (CGS) at the McGill University Health Centre implemented the Rural Emergency Trauma System Strengthening (RETSS) following the 2015 earthquake in Nepal. The objective of this program was to enhance emergency care capacity in rural areas and establish a durable trainer network via the Train-the-Trainers (ToT) courses in basic life support (BLS), Rural Trauma Team Development Course (RTTDC), and Primary Trauma Care (PTC). The objective of this project is to demonstrate the impact of the RETSS program on the knowledge gain, retention, and skills among the healthcare professionals (HCP).

METHODS: Paired t-test and Wilcoxon signed-rank tests were used to demonstrate statistical differences in scores before and after the course, and subsequent retention rate.

RESULTS: The inception cohort of 23 HCPs who participated in the train the trainer program, subsequently offered courses to around 1,170 HCPs in BLS (n=1031), PTC (n=89), and RTTDC (n=50) in the three districts most impacted by the earthquake over the span of 3 years. Course participants were mostly young (aged 18-29) and female (61%) with the majority being the Auxiliary Health Workers. Pre- and post-course test scores showed statistical differences with the mean score for BLS, PTC, and RTTDC courses. Additionally, participants who repeated the RTTDC about 18 months later demonstrated significant retention of information ($p < 0.12$).

CONCLUSION: The RETSS program demonstrated improvements in knowledge and skills among HCPs. The implementation of the program in collaboration with local resources and stakeholders is efficacious to enhance emergency care outcomes in rural Nepal.

ABSTRACT #4

Clinical Applications of Biomaterials Used for Regeneration of Human Cornea: A Systematic Review

Presenter: Mehrshad Hanafimosalman (McGill University, Canada)

BACKGROUND: Corneal transplantation is necessary in severe ocular conditions, but donor corneas are unavailable in 53% of countries, leaving over 12 million people blind. For the first time, this systematic review examines all clinical attempts to regenerate human corneas using biomaterials as alternatives to transplantation, identifies methodological pitfalls, and proposes a standardized approach for biomaterial implantation in ocular tissues.

METHODS: A literature search of PubMed, Cochrane CENTRAL, WHO database, Embase, and ClinicalTrials.gov was conducted (January 1, 2005 to November 30, 2023). Studies were included if they reported (1) corneal regeneration using biomaterials in humans and were (2) published in English after 2005. Preclinical studies, reviews, abstracts, and studies of keratoprosthesis replacing the cornea were excluded.

RESULTS: A total of 826 nonduplicate records were screened, from which 13 studies were included. Most studies used collagen-based hydrogels (38%) or fibrin scaffolds (23%) to regenerate the human cornea. In collagen and fibrin studies, corneal re-epithelialization was achieved in all eyes and no complications were reported, with an average follow-up of 28 months. Visual acuity improved by 2+ Snellen lines in up to 70% of eyes with collagen-based implants.

CONCLUSION: Although collagen and fibrin show promise due to great biocompatibility, a "one-size-fits-all" corneal substitute for all indications seems unlikely. Most biomaterials with preclinical success do not translate into clinical practice due to non-compliance with good manufacturing practice or lack of regulatory approval. Several issues remain unresolved in the literature, explaining the need for further clinical research of biomaterials with larger sample size.

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