



2024 RESEARCH SYMPOSIUM & 29TH ANNUAL HELEN & JOHN SCHILLING LECTURE

GUEST SPEAKER

FIEMU E. NWARIAKU, MD, MBA, FACS

FRIDAY, MARCH 15TH, 2024

UW TOWER AUDITORIUM

INTRODUCTION



Douglas E. Wood,
MD, FACS, FRCSEd



David R. Flum, MD, MPH

Welcome to the 29th Annual Department of Surgery Research Symposium and Schilling Lecture. Today we celebrate the phenomenal quality, breadth, and depth of research in the department and learn from distinguished visiting scholars. This is also our time to come together as a community of faculty, residents, fellows, staff, and students to cultivate our culture of curiosity, innovation, and discovery. That culture is an important part of what makes our department so strong.

This is our first year having the Schilling Symposium organized by the faculty and staff of the newly formed Division of Research. Nearly 100 faculty and staff took part in the inaugural Division of Research activities, and we especially thank those who participated in planning today's event. The division was developed to support our research community, and in its first year has become a place to connect our surgeon-scientists, provide services and resources and identify opportunities for improvement in the way we carry out our research mission. We want to highlight the excellent work of Drs. Scott Brakenridge, Meghan Flanagan, and Venu Pillarisetty and staff-members Victoria Good and Erin Fannon, in the early success of the Division of Research.

We are fortunate to welcome Dr. Fiemu Nwariaku as our Schilling Visiting Professor. Dr. Nwariaku is the Chair of the Department of Surgery at the Spencer Fox Eccles School of Medicine at the University of Utah. He is an esteemed endocrine surgeon and a prolific researcher. We look forward to having him with us for the research presentations and for his lecture in the afternoon entitled, "Academic Health Systems: A Pillar for Strengthening Global Health and Reducing Disease Burden".

Today, we will also be honoring this year's Schilling Distinguished Faculty Award recipient, Dr. Thomas Hatsunami and recognizing his remarkable career as a surgeon-scientist. This award celebrates the career achievements of outstanding University of Washington surgeon-scientists. Awardees have distinguished themselves through their scientific contributions, mentorship of colleagues

and training the next generation of surgeon-scientists. Past honorees include Dr. Ron Maier (2021), Dr. Nicole Gibran (2022), and Dr. Raymond Yeung (2023). A perpetual plaque sits in the Chair's office commemorating the award winners.

The Surgery Research Symposium and Schilling Lecture are made possible by a generous gift from the late Helen Schilling in honor of her husband Dr. John Schilling. The Schillings were deeply committed to teaching, scholarship and research, and this event, where residents showcase their research supported by faculty mentors, showcases a great aspect of their legacy. It is with tremendous pride and gratitude that we carry on this tradition and look forward to doing so for years to come. This is also an important learning opportunity for residents and fellows to refine their scientific presentation skills through presentations, audience Q&A, and feedback from our panel of judges.

The Schilling event is a celebration of the passion for research. Every member of the department plays a role in the success of our research mission in identifying the important questions that impact patients; by innovating in the OR and clinic and including results in registries; by asking patients to consider participating in clinical trials; supporting student and resident projects; and writing grants for funded research; and publishing and presenting findings at meetings. We are grateful to all of you for making research a priority. Research is the lifeblood of academic surgery and we appreciate your hard work and dedication in helping research thrive at UW.

We are pleased that you are joining us and hope that you find the events both informative and inspiring!

Douglas E. Wood, MD, FACS, FRCSEd
The Henry N. Harkins Professor and Chair
Department of Surgery
University of Washington

David R. Flum, MD, MPH, FACS
Professor of Surgery, Adjunct Professor School of
Public Health and Pharmacy
Vice Chair for Research, Department of Surgery
Director, Surgical Outcomes Research Center (SORCE)

ABOUT HELEN & JOHN SCHILLING

The Helen and John Schilling Endowed Lectureship was established by the late Helen Schilling to bring distinguished scholars to the Department of Surgery at the University of Washington, and to enhance the Department's commitment to the highest standards of patient care, teaching, research and scholarship. It was Mrs. Schilling's wish that the lectureship be named in honor of her husband, John.

Dr. Schilling devoted his life to academic medicine in a career spanning 50 years. He was born and raised just outside Kansas City, Missouri, and at the age of 15 entered Dartmouth College. After graduating from Dartmouth in 1937, he attended Harvard Medical School as a member of the class of 1941, the last class to graduate before World War II. In the six months before the start of his internship and residency at Roosevelt Hospital in New York City, he signed on as a ship's doctor on the schooner Effie M. Morrissey for a scientific expedition to the Arctic sponsored by the U.S. Bureau of Standards. After a number of perilous adventures along the Greenland coast and in the Hudson Straits, he returned to New York and started his training in general surgery. He joined the surgical staff at the University of Rochester in 1945 where he began his lifelong work on wound healing. His career at Rochester was interrupted for several months by a stint in the Central Pacific (Eniwetok) to participate in the study of flash burns as part of the atom bomb tests and the Manhattan Project. Subsequently he joined the Air Force as a volunteer and set up a surgical department at the new School of Aviation Medicine in San Antonio.

In 1956 Dr. Schilling was invited to be the Chief of the first full-time Department of Surgery in the new medical school at the University of Oklahoma. He was successful in recruiting a number of outstanding junior faculty, many of whom went on to become chairs. In addition to his administrative responsibilities, he maintained an extensive research program in wound healing in collaboration with Dr. Betty White. At the end of 18 years, Dr. Schilling and his faculty had trained 75 surgeons from Oklahoma and adjoining states, and had established a department known for its academic accomplishments.

Dr. Schilling came to the University of Washington in 1974 as a senior investigator and, upon the sudden resignation of the chair, was asked to take over the management of the Department of Surgery. Thus began his third chairmanship which lasted eight years until his retirement. His first responsibility was to recruit faculty to fill the many vacancies, a task he achieved after several stormy years. Upon his retirement in 1983, he had recruited 41 new faculty members and graduated a total of 40 chief residents.



Helen & John Schilling

His career in academic surgery was marked by a devotion to patient care and teaching, as well as research. Despite his commitment to the profession, Dr. Schilling still found time to engage in other activities. From his early childhood he enjoyed the outdoors and had become an expert tennis player, skier, and fly fisherman; he always believed that one's life work should be punctuated by intervals of travel and recreation.

Helen Schilling shared with her husband both the non-academic as well as the academic side of his life. They first worked together in Rochester and continued their professional association through the years in Oklahoma and Washington. They were married in 1979. Mrs. Schilling had a career in newspaper work and administration after graduating from Oberlin College. This dual background enabled her to be his close associate and administrative assistant for 40 years.

SCHILLING GUEST LECTURER

FIEMU E. NWARIAKU, MD, MBA, FACS



Dr. Fiemu E. Nwariaku came to University of Utah Health from the University of Texas Southwestern Medical Center (UTSW) in Dallas, Texas, where he served as the Malcom O. Perry Professor of Surgery and executive vice chair in the Department of Surgery, as well as associate dean for Global Health at the UTSW Medical School. He is a fellow of the American College of Surgeons and a past president of the Association of Academic Surgery.

Dr. Nwariaku cares for patients with a focus on endocrine surgery, is at the forefront of breakthroughs in treating endocrine system disorders, and was known for building clinical programs at UTSW across surgical specialties, hospital systems, and affiliates including the Texas Heart Resources Dallas. As an educator, he has established many academic pro-

grams locally, nationally, and internationally, including a global health curriculum for medical students and an endocrine surgery fellowship. An accomplished surgeon scientist, Dr. Nwariaku has broad research interests and achievements spanning from inflammation to cancer to the use of technology to improving surgical outcomes, and is nationally and globally recognized for his work.

As chair, Dr. Nwariaku oversees all surgical clinical care, research, training programs, faculty, and staff at University of Utah Health. The department provides surgery care to adults and children in one of the largest services areas in the country, an area that includes Utah, Idaho, Montana, Nevada, and Wyoming, and comprises 10 percent of the landmass of the continental United States. It is

a nationally ranked academic surgical program that, in addition to providing expert, compassionate clinical care, engages in scientific inquiry across a broad range of areas, including ground-breaking laboratory research, advanced surgical technology, and health care system innovations designed to guarantee that all patients have ready access to personalized, compassionate, high-quality surgical care that consistently responds to their individual needs, preferences, and values.

Dr. Nwariaku's background and training includes the University of Ibadan, University College Hospital in Nigeria, the University of Texas Southwestern Medical Center, where he trained and has served as a faculty member since 1998, and the University of Tennessee.

SYMPOSIUM AGENDA

- 7:00AM **REGISTRATION & BREAKFAST**
7:30AM **WELCOME — DOUGLAS E. WOOD, MD, FACS, FRCS-ED—THE HENRY N. HARKINS PROFESSOR AND CHAIR**
7:35AM **INTRODUCTION — DAVID R. FLUM, MD, MPH, FACS—VICE CHAIR FOR RESEARCH, PROFESSOR, DIVISION OF GENERAL SURGERY**

— SESSION I —

MODERATOR: SCOTT BRAKENRIDGE, MD, FACS—ASSOCIATE PROFESSOR, DIVISION OF TRAUMA, BURN & CRITICAL CARE SURGERY

- 7:45AM **Lindsay K. Dickerson, MD – Cancer Research Institute/Fibrolamellar Cancer Foundation Postdoctoral Fellow**
“Combination CXCR4 and PD-1 Blockade Increases T Cell Infiltration and Effector Function in Fibrolamellar Carcinoma”..... Page 10
- 8:00AM **Lauren L. Agoubi, MD, MA – T32 Pediatric Injury Research Training Fellow**
“Evaluating the Association Between Community Distress and Return to Work After Burn Injury” Page 11
- 8:15AM **Megan L. Ivy, MD – Esophageal Research Fellow/Center for Videoendoscopic Surgery**
“Impact of Gender on Payments by Industry to Surgeons”..... Page 12
- 8:30AM **Alexandra H. Hernandez, MD – T32 NIDDK Gastrointestinal Surgical Outcomes Research Fellow**
“Worsening Financial Toxicity is Associated with Worse Health Outcomes Among Trauma Patients in a National Cohort”..... Page 13
- 8:45AM **Jamie K. Olapo, MD – General Surgery R3**
“MRI to Predict Upstaging of DCIS to Invasive Cancer at the Time of Surgery”..... Page 14
- 9:00AM **BREAK**

— SESSION II —

MODERATOR: VENU G. PILLARISSETTY, MD, FACS—PROFESSOR, DIVISION OF GENERAL SURGERY

- 9:15AM **Arjune S. Dhanekula, MD – Cardiothoracic Surgery R5**
“Testing the Role of Mitochondrial Dysfunction and Senescence in Age-Related Hypertensive Aortic Disease”..... Page 15
- 9:30AM **Nina M. Clark, MD – T32 NIDDK Gastrointestinal Surgical Outcomes Research Fellow**
“Travel Time Versus Rurality as Indicators of Poor Access to Emergency Surgical Care”..... Page 16
- 9:45AM **Daniela Rebollo Salazar, MD, MPH – General Surgery R4**
“Long Term Outcome of the Kono-S Anastomosis: A Multicenter Study”..... Page 17
- 10:00AM **Alex W. Lois, MD, MS – Advanced Gastrointestinal Minimally Invasive Surgery/Foregut Fellow**
“Accuracy of Natural Language Processors for Patients Seeking Healthcare Information”..... Page 18
- 10:15AM **Christopher Little, MD – General Surgery R4**
“Evaluating the Correlation Between Anteroposterior Diameter Body Surface Area and Height for Liver Transplant Donors and Recipients”..... Page 19
- 10:30AM **BREAK**

— SESSION III —

MODERATOR: MEGHAN FLANAGAN, MD, MPH—ASSISTANT PROFESSOR, DIVISION OF GENERAL SURGERY

- 10:45AM **Danielle J. Eble, MD, BS – Plastic Surgery R5**
“Conscientious Objection to Gender-Affirming Surgery in Plastic Surgery and Urology Residency Programs”..... Page 20
- 11:00AM **Malia A. Brennan, MD – General Surgery R3**
“Axillary Nodal Disease Burden in HR+ Breast Cancer Patients Undergoing Upfront Surgery”..... Page 21
- 11:15AM **Nicole H. Chicoine, DO – Pediatric Surgery Research Fellow**
“GATHER (Generate and Teach Health Equity Routinely): Changing Surgeon DEI Behaviors Through a Novel QI Framework”..... Page 22
- 11:30AM **Dariga A. Tugan, BSN, RN, BA – Research Assistant**
“Prolonged Aortic Cross Clamp is Safe in Surgery for Aortic Regurgitation”..... Page 23
- 11:45AM **Nzuekoh N. Nchinda, MD – Pediatric Surgery Research Fellow**
“Patient Factors Associated with Adverse Outcomes in Esophageal Atresia”..... Page 24
- 12:00PM **SCHILLING DISTINGUISHED FACULTY AWARD – THOMAS S. HATSUKAMI, MD**
PRESENTED BY DAVID R. FLUM, MD, MPH, FACS – PROFESSOR, VICE CHAIR FOR RESEARCH, GENERAL SURGERY
- 12:15PM **LUNCH**
–1:00PM

— SESSION IV —

MODERATOR: DAVID R. FLUM, MD, MPH, FACS—VICE CHAIR FOR RESEARCH, PROFESSOR, DIVISION OF GENERAL SURGERY

- 1:15PM **Samuel M. Schwarz, MD – Vascular Surgery R2**
“Minimal Blunt Aortic Injury Does Not Require Surveillance Imaging”..... Page 25
- 1:30PM **Divya Ramakrishnan, MD – T32 NIDDK Gastrointestinal Surgical Outcomes Research Fellow**
“Evaluation of Patient Communication and Perception of Risk in the Context of Opportunistic Salpingectomy”..... Page 26
- 1:45PM **Kate E. McNevin, MD – General Surgery R5**
“A Comparison of Sodium Bicarbonate and Ethanol Central Venous Catheter Locks in Pediatric Patients with Intestinal Failure”..... Page 27
- 2:00PM **Sanaa Mansoor, MD, MS – General Surgery R1**
“The Effect of Modifiable Risk Factors on Bronchial Dehiscence after Orthotopic Lung Transplant”..... Page 28
- 2:15PM **BREAK**
- 2:30PM **29TH ANNUAL SCHILLING LECTURE — GUEST LECTURER: FIEMU E. NWARIKU, MD, MBA, FACS**
“ACADEMIC HEALTH SYSTEMS: A PILLAR FOR STRENGTHENING GLOBAL HEALTH AND REDUCING DISEASE BURDEN”
- 3:30PM **ANNOUNCE SYMPOSIUM WINNERS/CLOSING**
- 4:00PM **ADJOURN**

MODERATORS



Scott C. Brakenridge, MD, FACS

Associate Professor, Division of Trauma, Burn & Critical Care Surgery

Dr. Brakenridge earned his medical degree from Rush Medical College and completed general surgery residency training at UT Southwestern/Parkland Memorial Hospital in 2012. After completing a Trauma/Surgical Critical Care fellowship at the University of Washington's Harborview Medical Center, Dr. Brakenridge was a faculty member in the Department of Surgery at the University of Florida from 2013-2021, where he was an active Trauma/Acute Care surgeon and surgical intensivist, Investigator and Core Lead for the NIH funded UF Sepsis and Critical Illness Research Center. In 2021, he returned to UW as an Associate Professor of Surgery and surgical scientist in the Division of Trauma, Burn & Critical Care Surgery at Harborview Medical Center. Dr. Brakenridge's

research has been continuously funded by the National Institutes of Health since 2014. The current focus of Dr. Brakenridge's research program is the characterization of different immune endotypes after severe traumatic injury and surgical sepsis, specifically those that characterize the persistent inflammation, immunosuppression and catabolism syndrome (PICS), drive chronic critical illness, and lead to poor long-term clinical outcomes after critical illness. Dr. Brakenridge is also interested in the development and translation of precision medicine approaches to identify endotypes among individual critically ill patients, in order to facilitate the successful implementation of mechanistically targeted therapies.



Meghan R. Flanagan, MD, MPH

Assistant Professor, Division of General Surgery

Dr. Flanagan is a breast surgical oncologist specializing in the treatment of patients with breast disease at the University of Washington, as well as an investigator at the Fred Hutchinson Cancer Research Center. Her research aims to better understand the genomic signatures associated with tumor response to chemotherapeutic, endocrine and immunologic agents in the preoperative setting, and how to study and translate these findings to clinical care of patients at a population level. Dr. Flanagan has extensive experience in health services and outcomes research and has won multiple awards and honors for her work. Dr. Flanagan believes in treating each patient individually, intentionally integrating standard of care and current developments in the field with patient preferences and goals. She feels that it is critical to remain apprised of ongoing advances in the field and is dedicated to optimizing and advancing breast care.

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Venu G. Pillarisetty, MD, FACS

Professor, HPB Surgical Oncology, Division of General Surgery

Principal Investigator, UW Tumor Immune Microenvironment (TIME) Lab

Associate Medical Director, Surgical Oncology, Fred Hutch & UW Medical Center-Montlake

Dr. Pillarisetty specializes in treating patients with pancreatic cancer using both open and minimally invasive surgical techniques.

Dr. Pillarisetty's research focuses on the immune response to pancreatic cancer and other solid tumors. The TIME lab uses human tumor models to understand how cancers evade the immune system's surveillance mechanisms and to develop novel therapies to overcome these evasion mechanisms. Residents interested in learning how to become surgeon-scientists are encouraged to join the TIME Lab's ongoing search for cancer cures!

SYMPOSIUM JUDGES

DEPARTMENT OF SURGERY RESEARCH LEADERSHIP



**Douglas E. Wood,
MD, FACS, FRCSED**

The Henry N. Harkins
Professor and Chair



**David R. Flum,
MD, MPH, FACS**

Professor of Surgery
Vice Chair for Research



**Saman Arbabi,
MD, MPH, FACS**
Professor



**Scott C.
Brakenridge,
MD, FACS**
Associate Professor



**Eileen M.
Bulger
MD, FACS**
Professor



**Meghan R.
Flanagan,
MD, MPH**
Assistant Professor



**David R. Flum,
MD, MPH, FACS**
Professor &
Vice Chair
Research



**Sarah L.M.
Greenberg, MD,
MPH, FACS**
Assistant Professor



**Mariam N.
Hantouli, MD**
Acting Instructor



**Catherine
E. Kling,
MD, MPH**
Assistant Professor



Ron Maier, MD
Professor



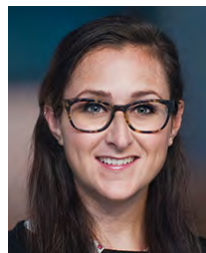
**Victoria
Roach, PhD**
Research
Assistant Professor



**Bryce R.H.
Robinson MD,
MS, FACS**
Professor



**David H.
Rothstein,
MD, MS**
Professor



**Caitlin A.
Smith, MD**
Associate Professor

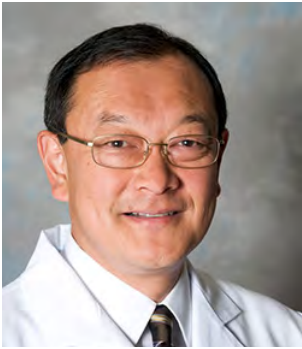


**N. Rhea
Udyavar, MD**
Assistant Professor



Peter Wu, MD
Associate
Professor

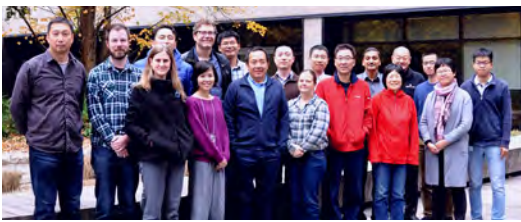
2024 SCHILLING DISTINGUISHED FACULTY AWARD



Thomas S. Hatsukami MD

Professor, Division of Vascular Surgery

Dr. Thomas Hatsukami was born in Portland, Oregon, and raised in Eureka, Oregon. He was awarded a scholarship to attend Stanford University for his undergraduate education and subsequently enrolled at University of California, Los Angeles for medical school. He embarked on his post-graduate training at the University of Washington (UW) as a general surgery resident. During the early years of his residency, Dr. Schilling was Chair of the Department of Surgery. Dr. Hatsukami subsequently completed his vascular surgery fellowship and research fellowship at the UW. He has clinically practiced at the VA Puget Sound Health Care System and Harborview Medical Center, and in 2016 he was awarded the V. Paul Gavora and Helen S. and John A. Schilling Endowed Chair in Vascular Surgery.



Top to bottom: Dr. Hatsukami with family in Philadelphia; his father's 96th birthday; Vascular Imaging Lab 2019; and Vascular Imaging Lab 25th anniversary symposium.

During his time as a trainee at UW, Dr. Hatsukami was fortunate to work with excellent mentors such as Drs. Eugene Strandness, Alec Clowes, and Stephen Schwartz. Dr. Hatsukami has been the co-director of the UW Vascular Imaging Lab (UW-VIL) since 1995 with his long-time colleague Dr. Chun Yuan, who is internationally recognized as a pioneer and thought leader in the field of vessel wall imaging with MRI and is currently Vice Chair for Research at the University of Utah. Their work in the field of vascular imaging along with Marina Ferguson, who was Director of Histology in their lab, led to UW being recognized as the preeminent institution for characterization of the vulnerable vascular plaque. Dr. Hatsukami has been involved as PI, multi-PI or co-investigator in 16 completed and two active NIH-funded clinical studies, as well as 13 other funded trials. One of the issues that has plagued vascular surgery is solely using the degree of stenosis to characterize carotid pathology and intervention. It has been well described that some plaques with similar degree of stenosis remain stable over time and others lead to a stroke. Earlier work by the team of investigators at UW-VIL studied the role of the neovasculature within an atherosclerotic plaque and the likely association of infiltration of inflammatory cells that could lead to plaque instability. Using dynamic contrast-enhanced MRI, UW-VIL was able to non-invasively study the extent of neovasculature and provide a link to plaque instability. Another significant finding from UW-VIL was utilizing MRI to monitor plaque progression, and they were one of the first to demonstrate that intraplaque hemorrhage (IPH), identified by MRI, was associated with more rapid carotid plaque progression and with an increased risk

for subsequent transient ischemic attack or stroke. Recently there has been a movement for nonoperative therapy for asymptomatic carotid stenosis and Dr. Hatsukami's work has identified areas which can assist in further classifying which patients warrant intervention. The UW-VIL continues to study plaques in other vascular beds as well.

Dr. Hatsukami completed an endovascular fellowship in 2009 and moved his clinical practice to Harborview Medical Center until 2013. While focused on research and being an expert open vascular surgeon, he took the time to learn new endovascular skills and become an expert in this area as well.

Dr. Hatsukami's career has taken him all over the world as a visiting professor and named lecturer at prestigious institutes as well as the recipient of numerous travelling fellowships. He has over 200 combined publications and has co-mentored 37 research fellows, 22 vascular surgery fellows, and nine graduate students. Dr. Hatsukami is most proud of the teamwork and collaboration in the UW-VIL. As he stated, "I want to thank all the members of the Vascular Imaging Lab over the years who spent countless hours in the lab, many who have carried on and established successful research careers at their home institution." He is humble and generous, and has been a leader in research, education, and clinical care – a bright light in the University of Washington Department of Surgery.

Contributed by

Niten Singh, MD, FACS
Professor & Interim Associate Chief
Director of Limb Preservation Services
Division of Vascular Surgery
University of Washington



UW Medicine

DEPARTMENT OF SURGERY

2024 RESEARCH
SYMPOSIUM



LINDSAY K. DICKERSON, MD

Cancer Research Institute/Fibrolamellar Cancer Foundation Postdoctoral Fellow

PRONOUNS: She/Her

RESEARCH INTERESTS: Cancer immunology with a focus in fibrolamellar carcinoma, hepatopancreatobiliary cancer, palliative care

FACULTY MENTOR: Venu Pillarisetty, MD, FACS

MEDICAL SCHOOL: Johns Hopkins University School of Medicine

HOMETOWN: Los Gatos, CA

DISCUSSANT: Jeremy Sharib, MD

COMBINATION CXCR4 AND PD-1 BLOCKADE INCREASES T CELL INFILTRATION AND EFFECTOR FUNCTION IN FIBROLAMELLAR CARCINOMA

Dickerson LK, van den Bijgaart R, Jiang X, Carter JA, Farghli AR, Daniel SK, Sullivan KM, Liu Y, Kenerson HL, Yeung RS, Kim TS, Crispe IN, Sethupathy P, Barry KC, Pillarisetty VG

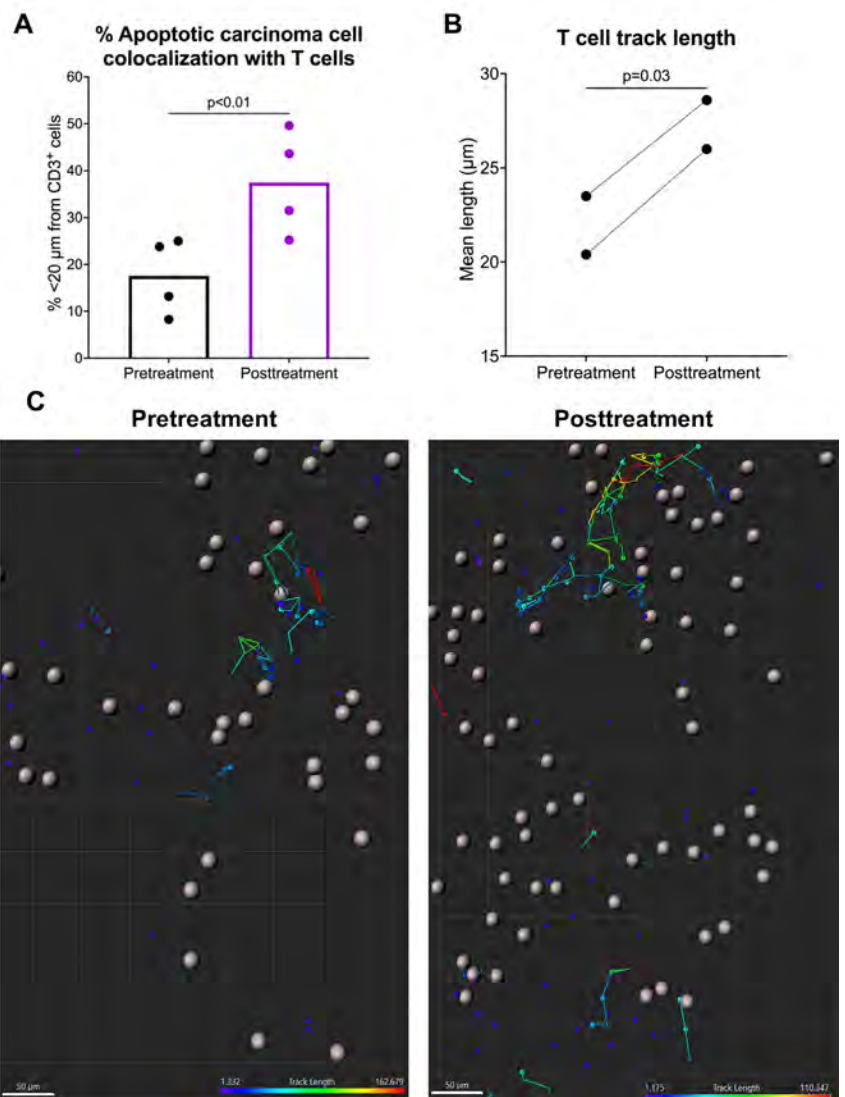
BACKGROUND: Fibrolamellar carcinoma (FLC) has a poor prognosis, due in part to an absence of effective systemic therapies. We hypothesized that combination blockade of the chemokine receptor CXCR4 and the immune checkpoint PD-1 would overcome T cell sequestration in the stroma and immune suppression, and lead to tumor cell death.

METHODS: FLC and non-tumor liver (NTL) were evaluated using single-nuclear RNA sequencing (snRNA-seq) and immunohistochemistry (IHC) to determine gene expression and T cell localization in relation to chemokine ligand CXCL12, respectively. FLC tumor slice cultures (TSCs; n=11) were treated with control (IgG1), a CXCR4 inhibitor (AMD3100), anti-PD-1 blocking antibody (α PD-1), or combination CXCR4+PD-1 blockade (AMD3100/ α PD-1). IHC, RNA expression (Nanostring), and live microscopy were used to assess T cell mobilization and function.

RESULTS: T cells colocalized with CXCL12 in the FLC stroma. SnRNA-seq analysis showed upregulation of CXCR4 in FLC lymphocyte and macrophage populations relative to NTL (15% vs 10%; 20% vs 5% expressed). Multiplex IHC of treated TSCs revealed more T cells in the carcinoma compartment after AMD3100 compared with IgG1 (63% vs 34%, p=0.05). Nanostring indicated upregulation of effector pathways (apoptosis, cytotoxicity, lymphocyte activation) after AMD3100/ α PD-1. Time-lapse live microscopy revealed a greater percentage of apoptotic carcinoma cells colocalized with T cells (37% vs 18%, p=0.005) and longer T cell tracks (27 vs 22 μ m, p=0.03) after AMD3100/ α PD-1 than before treatment. Cleaved caspase-3 (CC3) IHC demonstrated increased tumor apoptosis after AMD3100/ α PD-1 compared with IgG1 and monotherapy (53% vs 32% (IgG1), 39% (AMD3100), 42% (α PD-1) CC3⁺ cells, p=0.002, p=0.03, p=0.04).

CONCLUSIONS: CXCR4/CXCL12 mediates T cell exclusion in the FLC tumor microenvironment. Combination CXCR4 and PD-1 blockade overcomes immunosuppression by mobilizing T cells into the carcinoma compartment and activating their effector function, with resultant tumor apoptosis. These findings support consideration of clinical trials testing drugs targeting CXCR4 and PD-1 in FLC.

(A) Percent apoptotic carcinoma cells (CK7⁺SR-FLICA⁺) <20 μ m from T cells (CD3⁺) and (B) mean T cell track length pre and post AMD3100/ α PD-1 treatment. Each circle represents one live imaging location. (C) Representative plot of T cell track length pre and post AMD3100/ α PD-1 treatment. Spheres = apoptotic carcinoma cells, lines = T cell tracks.



LAUREN L. AGOUBI, MD, MA
T32 Pediatric Injury Research Training Fellow

PRONOUNS: She/Her

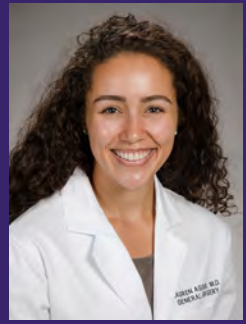
RESEARCH INTERESTS: Health systems, injury prevention, health policy

FACULTY MENTOR: Barclay Stewart, MD, PhD, MPH

MEDICAL SCHOOL: University of Michigan Medical School

HOMETOWN: San Antonio, TX

DISCUSSANT: Saman Arbabi, MD, MPH, FACS



EVALUATING THE ASSOCIATION BETWEEN COMMUNITY DISTRESS AND RETURN TO WORK AFTER BURN INJURY

Agoubi LL, Murphy S, McMullen K, Carrougner GJ,
Mason SA, Carter DW, Thompson CM, Suman-Vejas OE, Stewart B

BACKGROUND: Return to work after burn injury is integral to reintegration and mitigating income loss. Community-level disadvantage is associated with reduced health-related quality of life after burn injury. We evaluated the association between community-level disadvantage and return to work for burn injured patients, hypothesizing that higher community disadvantage would be associated with lower return to work.

METHODS: A multicenter burn injury database was queried from 1998-2021. Patients aged 18-65 years old with documented employment status and ZIP codes were included. Exposures were community distress (Distressed Communities Index, DCI), as quartiles, patient demographics, and injury characteristics. The primary outcome was odds of employment 6 months after burn injury using multi-level logistic regression models. An interaction term was included to evaluate the modification of the DCI-post-injury employment association by race.

RESULTS: 1,960 participants were included. Included patients were predominantly White and male, with a median age of 39.2 years (IQR 29.2, 49.3), 74% of whom were working when injured. Patients unemployed 6 months post-injury were more likely to be older, female, non-White, and previously unemployed, with larger median burn sizes and longer hospital lengths of stay. 59% of patients unemployed at 6 months were employed prior to injury. On multivariable analysis, higher age, larger burn size, more operations, Black race, and pre-injury unemployment were associated with the greatest odds of unemployment post-injury. Residence in the highest distress quartile ZIP codes was associated with 2.21 (95% CI 1.39-3.52) odds of unemployment at 6 months. The interaction between race and DCI was not statistically significant at the $p < 0.05$ level.

CONCLUSION: Patients living in the highest distress communities have over twice the odds of remaining unemployed 6 months after injury compared to those who do not. Screening patients for community distress by ZIP code may be a useful clinical tool to focus constrained post-discharge resources.



MEGAN L. IVY, MD

Esophageal Research Fellow/Center for Videoendoscopic Surgery

PRONOUNS: She/Her

RESEARCH INTERESTS: Gender equality, equity, diversity, esophageal cancer, esophageal diseases

FACULTY MENTOR: Andrew S. Wright, MD

MEDICAL SCHOOL: University of Missouri-Kansas City School of Medicine

HOMETOWN: Kansas City, MO

DISCUSSANT: Nick Cetrulo, MD

IMPACT OF GENDER ON PAYMENTS BY INDUSTRY TO SURGEONS

Ivy ML, Lois AW, Wright AS

BACKGROUND: This study aims to examine gender disparities in industry relationships with minimally invasive surgeons. It is unknown if there is bias in which physicians are hired as consultants by industry. In this study we use speakers at the SAGES annual meeting as a proxy for key thought leaders in minimally invasive surgery.

METHODS: We queried the Open Payments Database (OPD) for payments made to speakers at the 2020 SAGES meeting. Payments ≥ \$500 were collected. The National Provider Identity (NPI) Registry was cross-referenced to determine self-reported gender. Industry sponsors were analyzed based on differences in payments made.

RESULTS: A total of 279 speakers were assessed, with 39.8% female and 60.2% male. Of these, 193 (69.2%) were listed in OPD, with 76 (39.4%) women and 117 (60.6%) men. There were 56 females and 80 males receiving ≥ \$500 (p=0.53). Total industry sponsorship was \$3,162,476.72 for all 136 surgeons, with \$804,822.88 (25%) allocated to females and \$2,357,653.84 (75%) going to males (p=0.04). There were 268 unique payments made, with 99 (36.9%) going to females and 169 (63.1%) to males. The average amount per female was \$14,371.84 compared to \$29,470.67 for males. The median amount per female was \$5,833.65 (IQR 1,840.52-11,73.96), compared to \$9,404.39 per male (IQR 2,286.58-27,625.45).

There were 42 companies identified paying ≥ \$500. Table 1 shows the top 5 companies with the most payments, with differences in female compared to male surgeons.

DISCUSSION: While industry payments were made at similar rates to males and females, the level of payments was substantially higher to males than females. Men received almost twice as much on average as women. This may represent an inherent bias in who companies are partnering with and potentially impact the development of new tools and technology, with unknown implications for female surgeons use and ergonomics.

		INTUITIVE	COVIDIEN_ MEDTRONIC	MDBS	GORE	ETHICON
Payments by Gender	Total	73	41	25	19	15
	F	34 (44%)	16 (39%)	11 (44%)	6 (32%)	4 (27%)
	M	39 (56%)	25 (61%)	14 (56%)	13 (68%)	11 (73%)
Amount (USD)	Total	1299471	198037	174454	311659	198977
	F	299948 (23%)	57313 (29%)	49760 (29%)	42860 (14%)	16638 (8%)
	M	999522 (77%)	140723 (71%)	124693 (71%)	268798 (86%)	182339 (92%)



WORSENING FINANCIAL TOXICITY IS ASSOCIATED WITH WORSE HEALTH OUTCOMES AMONG TRAUMA PATIENTS IN A NATIONAL COHORT

Hernandez AH, Clark NM, Scott JW

BACKGROUND: Given substantial gains in inpatient survival after traumatic injury, more attention is now placed on long-term wellbeing among survivors. One aspect impacting recovery is “financial toxicity”—defined as the objective and subjective impact of financial strain—which may subsequently impact patients’ overall wellbeing. The aim of this study is to provide the first-ever national estimate of financial toxicity among trauma patients, and evaluate the independent association between financial burden and overall health.

METHODS: We used the 2011-2022 National Health Interview Survey to evaluate four elements of financial toxicity: (1) problems paying medical bills, (2) problems with nonmedical expenses, (3) overall financial worry, and (4) cost-related delays in care. To control for secular trends, adults hospitalized for injury were matched to uninjured control patients on demographics, income, and insurance status. We also used logistic regression models to evaluate for the association between financial toxicity elements and worse self-reported health among trauma survivors.

RESULTS: Among a weighted sample of 4,468,444 adult trauma survivors, 46% reported ≥ 1 element of financial toxicity. All four elements were more prevalent among trauma patients compared to non-injured matched controls, including problems with medical (29% vs. 16%), and nonmedical (22% vs. 16%) expenses, financial worry (21% vs. 15%), and cost-related delays in care (19% vs. 14%; $p < 0.01$ for all). In adjusted models, each financial toxicity element was associated with increased odds of poor/fair self-reported health among trauma patients: medical (aOR:2.40, 95%CI:1.65-3.51), and nonmedical expenses (aOR:2.88, 95%CI:1.89-4.39), financial worry (aOR:1.91, 95%CI:1.25-2.91), and cost-related delays in care (aOR:2.33, 95%CI:1.48-3.68). Increasing financial toxicity was associated with poor health in a dose-response manner (Figure).

CONCLUSION: In a nationally representative sample, financial toxicity impacts almost half of all trauma survivors and is strongly associated with worse health. Efforts to optimize long-term outcomes need to address patients’ financial wellbeing after trauma.

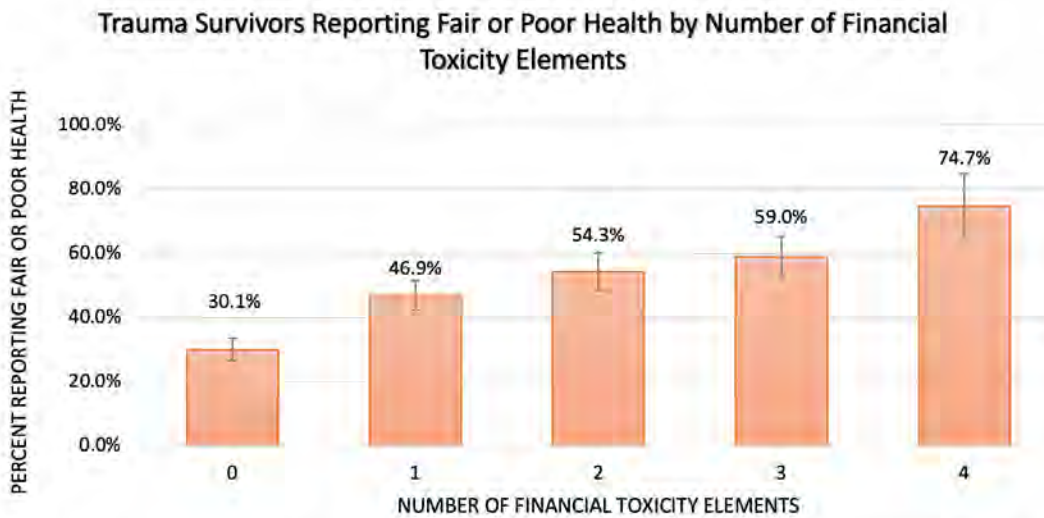


Figure. Adjusted margin estimates of fair/poor health stratified by number of financial toxicity elements. Adjusted for age, sex, marital status, race/ethnicity, income, employment status, insurance status and census region.

Author’s interpretation. Prevalence of fair/poor health increases with increasing financial toxicity elements



JAMIE K. OLAPO, MD

General Surgery R3

PRONOUNS: She/Her

RESEARCH INTERESTS: Surgical clinical outcomes research—specifically the effects of diet and nutrition on prevention of surgical pathology and recovery from surgery

FACULTY MENTOR: Sara H. Javid, MD

MEDICAL SCHOOL: Medical College of Wisconsin

HOMETOWN: Oconomowoc, WI

DISCUSSANT: Meghan R. Flanagan, MD, MPH

MRI TO PREDICT UPSTAGING OF DCIS TO INVASIVE CANCER AT THE TIME OF SURGERY

Olapo JK, Javid SH, Kazerouni A, Hippe DS, Guo A, Hirano M, Biswas D, Bryant ML, Li I, Kim J, Kilgore M, Dontchos B, Partridge SC, Rahbar H

BACKGROUND: Ductal carcinoma in situ (DCIS) is a pre-invasive breast cancer that is generally overtreated due to imprecise risk stratification. Clinical trials offering surveillance for “low-risk” DCIS are limited by the fact that one quarter of DCIS cases upstage at excision, raising the potential for undertreatment. We aimed to determine if quantitative MRI markers from contrast-enhanced MRI can identify DCIS at risk of upstaging to invasive cancer.

METHODS: A prospective observational clinical trial of women diagnosed with DCIS on image-guided biopsy was performed. All participants underwent 3T MRI. Quantitative MRI features included signal enhancement ratio (SER) and peak percent enhancement (PE), and Ktrans (marker of vascular permeability) were measured from dynamic contrast-enhanced (DCE) MR images. Univariable associations with upstaging were summarized using area under the curve (AUC). Logistic regression was used for multivariate analyses.

RESULTS: Of 58 DCIS lesions, 15 (26%) upstaged to invasive cancer at surgery. Forty-six of 58 lesions (79%) enhanced on MRI, though enhancement alone was not significantly associated with upstaging ($p = 0.42$). Among enhancing lesions, peak PE (AUC = 0.81, adj. $p = 0.009$) and Ktrans (AUC: 0.76, adj. $p = 0.034$) were significantly associated with upstaging (Figure 1). Both MRI markers were correlated with each other ($r = 0.70$) and combining markers did not significantly improve prediction of upstaging. Both markers remained significantly associated with upstaging at surgery after adjusting for lesion size ($p < 0.016$ for both). None of the clinical, pathologic, or mammographic features were predictive of upstaging ($p > 0.24$ for all).

CONCLUSIONS: Peak PE, measured on routine breast MRI, and the advanced DCE-MRI marker Ktrans demonstrated good performance in identifying which patients with DCIS on CNB upstage to invasive cancer at excision. These features may prove valuable for appropriate selection of active surveillance in future DCIS de-escalation trials.

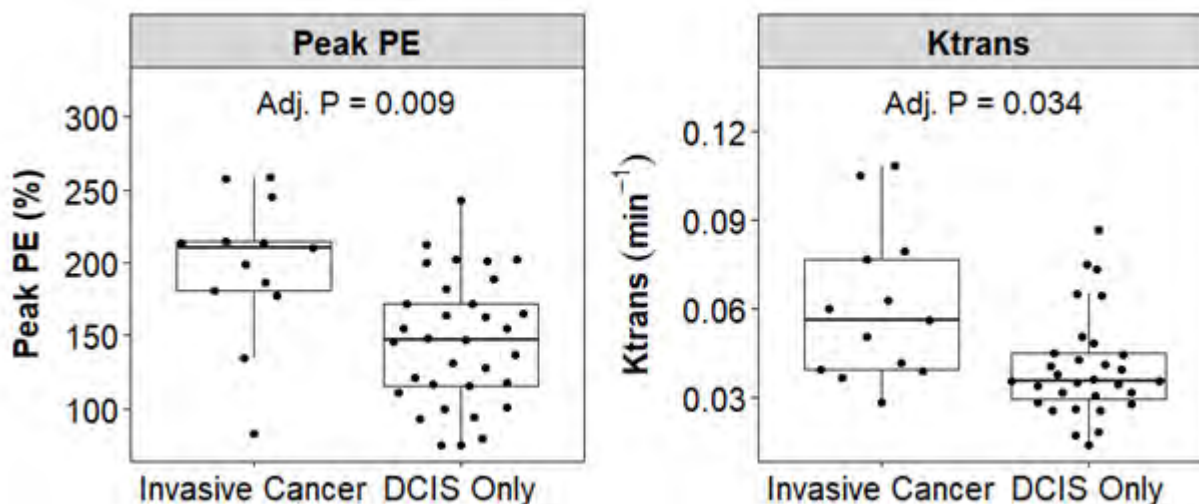


Figure 1. Univariable results for upstaging to invasive cancer at time of surgery

Peak PE had the strongest association with upstaging at surgery (AUC = 0.81, adj. $p = 0.009$), followed by Ktrans (AUC = 0.76, adj. $p = 0.034$). Each of these features remained significantly associated with upstaging after adjusting for lesion size or each clinical, pathologic, or mammographic feature considered.



TESTING THE ROLE OF MITOCHONDRIAL DYSFUNCTION AND SENEESCENCE IN AGE-RELATED HYPERTENSIVE AORTIC DISEASE

DhaneKula AD, DeRoo SC, Burke CR, Hwang B, Mulligan MS, Pal JD, Marcinek DM

BACKGROUND: Aging is a risk factor for hypertension and aortic disease. However, the mechanisms behind this are poorly understood. Both mitochondrial dysfunction and senescence drive age-related disease. We seek to better characterize mitochondrial dysfunction and senescence in thoracic aortic pathology and whether preserving mitochondrial function with targeted therapeutics (MT) can treat age-related aneurysmal disease.

METHODS: A unique mouse model replicating age-related hypertensive aortic disease was developed. A pilot study used multiple doses of angiotensin II (AngII) treatment for 4 weeks to test the development of aortic disease in 20 month C57Bl/6 mice (n=8). Based on these results, wild type C57Bl/6 mice at ages 23-24 months were treated for 4 weeks with AngII (1500 ng/kg/min), AngII with MT (3mg/kg/d), or saline. Power analysis dictated an n=12 in each group. Mice underwent echocardiograms and blood pressure readings pre- and post-treatment. At endpoint, the aortas are harvested either for mitochondrial function assays or frozen and fixed for assessment of senescent expression and histologic analysis.

RESULTS: Pilot data revealed an increase in ascending aortic size for AngII doses ≥ 1000 ng/kg/min (1.603 +/- 0.054mm versus 1.433 +/- 0.064mm, $p < 0.05$) (Figure 1). Peak oxygen consumption was higher in the AngII > 1000 ng/kg/min group compared to non-treated mice (58.0 +/- 9.5pmol/(sec*mg) versus 29.0 +/- 2.8pmol/(sec*mg), $p < 0.05$).

CONCLUSIONS: Pilot data demonstrate that AngII administration in aged mice results in the development of thoracic aneurysmal disease, with a change in mitochondrial function, suggesting a role for MT. This is a unique and clinically useful model for studying thoracic aortic disease. Other models result in extensive dissection or rupture in much younger mice; these are less clinically relevant for studying targeted therapeutics, as similar patients require emergent surgery. Confirmation of these findings with larger sample size, while testing the role of MT, will be critical to translate these findings to the bedside.

Effect of AngII Treatment on Ascending Aorta Diameter

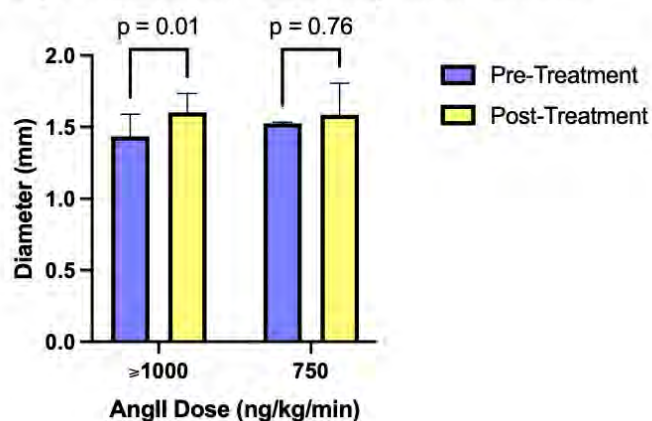


Figure 1: Change in ascending aortic diameter (as determined by echocardiogram) after pilot study with 4-weeks of angiotensin II treatment in 20 month C57Bl/6 mice. 10 mice were initially treated, and 8 survived to treatment endpoint (5 males, 3 females). When angiotensin II dose was at least 1000 ng/kg/min, the ascending aorta grew from an average of 1.43 +/- 0.064 mm to 1.603 +/- 0.054 mm, a statistically significant increase (n=6). However, at a dose of 750 ng/kg/min, there was no statistically significant growth in aortic size (1.587 +/- 0.155mm versus 1.525 +/- 0.006mm, $p = 0.76$) (n=2).



NINA M. CLARK, MD

T32 NIDDK Gastrointestinal Surgical Outcomes Research Fellow

PRONOUNS: She/Her

RESEARCH INTERESTS: Improving access to care in surgical emergencies in rural/austere environments

FACULTY MENTOR: John Scott, MD

MEDICAL SCHOOL: University of California, San Francisco

HOMETOWN: Pinckney, MI

DISCUSSANT: Dana C. Lynge, MD

TRAVEL TIME VERSUS RURALITY AS INDICATORS OF POOR ACCESS TO EMERGENCY SURGICAL CARE

Clark NM, Hernandez AH, Scott JW

BACKGROUND: Prompt treatment of emergency general surgery (EGS) conditions improves outcomes but may be limited due to poor access to care, leading to severe disease at the time of presentation. Geospatial proximity to care may be a more informative measure of access than rurality with important policy implications. We evaluated predictors of severe EGS disease at presentation, hypothesizing that travel time, more than rurality, predicted severe presentations.

METHODS: Adult patients with EGS conditions in the Healthcare Cost and Utilization Project State Inpatient and Emergency Department Databases from Florida and California were evaluated. The outcome of interest was severe or non-severe EGS disease at presentation. Exposures included travel time to the facility in minutes and rurality. Multivariable logistic regression was utilized to identify associations between rurality, travel time, and severe disease presentation, adjusting for clinical and demographic factors.

RESULTS: 211,466 EGS patients were included, and 42,259 (20%) presented with severe disease. Patients with severe disease were more likely to be male (54% vs. 47% of patients with non-severe disease) and have private insurance (37% vs. 33%). Adjusting for clinical and demographic characteristics, longer travel times were associated with increased odds of presenting with severe EGS disease (aOR 1.03 [1.01-1.07] for 16-30min, 1.08 [1.04-1.14] for 31-60min, 1.14 [1.03-1.25] for 61-120min, 1.27 [1.19-1.36] for >120min versus ≤15min). After full adjustment including for travel time, patients living in rural areas were less likely to present with severe EGS disease (aOR 0.80, 95% CI 0.73-0.89 vs. metropolitan).

CONCLUSIONS: Travel time to hospital care, rather than rurality, was associated with increased odds of presenting with severe EGS disease and prolonged length of stay in this cohort of adult patients from two large, socio-demographically diverse states. Policies impacting access to care in rural patient populations must consider geospatial proximity, which may facilitate earlier, less severe patient presentations.

DANIELA REBOLLO SALAZAR, MD, MPH

General Surgery R4

PRONOUNS: She/Her

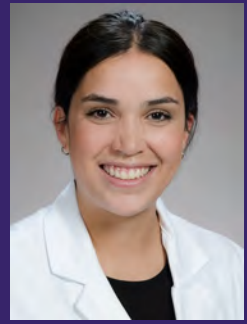
RESEARCH INTERESTS: Colorectal surgery outcomes, healthcare disparities, surgical education

FACULTY MENTOR: Mukta K. Krane, MD, FACS

MEDICAL SCHOOL: New York University

HOMETOWN: Caracas, Venezuela

DISCUSSANT: Sarah Atkinson, MD



LONG TERM OUTCOME OF THE KONO-S ANASTOMOSIS: A MULTICENTER STUDY

Fichera A, Mangrol, A, Olortegui KS, Rebollo Salazar D,
Stringfield S, Kapadia M, Madduri SS, Krane M

BACKGROUND: Postoperative recurrence remains a significant problem in Crohn's disease (CD), and the mesentery has been implicated in the pathophysiology. The Kono-S anastomosis was designed to exclude the mesentery from the anastomotic lumen, to limit luminal distortion, and to preserve innervation and vascularization. The aim of this multicenter study is to review the postoperative and long-term outcomes of the Kono-S anastomosis in a large series of consecutive unselected CD patients.

METHODS: Consecutive CD patients undergoing resection and Kono-S anastomosis at four academic medical centers were included in a prospective database and retrospectively reviewed. Patients were excluded if an anastomosis was not performed. Recurrence was defined as endoscopic, clinical, laboratory, and surgical, including endoscopic intervention on the anastomosis.

RESULTS: A total of 262 consecutive patients (53.4% male) were included. Mean duration of disease at surgery was 145.1 months. One hundred thirty-five patients (51.5%) had previous abdominal surgery for Crohn's disease. Forty-four patients (17%) were actively smoking and 150 (57.3%) were on biologic therapy. Anastomotic failure occurred in 4 (1.5%) with two patients requiring reoperation (0.7%). Sixteen patients had postoperative surgical site infection (6.1%). With a median follow-up of 49.4 months, 88 patients (33.6%) were found to have at least one indicator of recurrence. In the multivariate analysis, perianal disease (OR=2.83, p=0.001), urgent/emergent surgery (OR=3.23, p=0.007), postoperative use of steroids (OR=2.29, p=0.025) were associated with increased risk of overall recurrence.

CONCLUSIONS: This is the largest series of consecutive, unselected Kono-S anastomoses reported to date. Our study showed low infectious and anastomotic complication rates despite the complexity of the patient population. There was a low rate of recurrence of Crohn's disease, likely due to the intrinsic advantages of the anastomotic configuration and the low postoperative septic complications. In experienced hands, the Kono-S anastomosis is a safe technique with promising short- and long-term results.



ALEX W. LOIS, MD, MS

Advanced Gastrointestinal Minimally Invasive Surgery/Foregut Fellow

PRONOUNS: He/His

RESEARCH INTERESTS: A.I. in healthcare; surgical outcomes: foregut; metabolic surgery

FACULTY MENTOR: Andrew S. Wright, MD

MEDICAL SCHOOL: Medical College of Wisconsin

HOMETOWN: Kenosha, WI

DISCUSSANT: Rebecca P. Petersen, MD, MSc, FACS

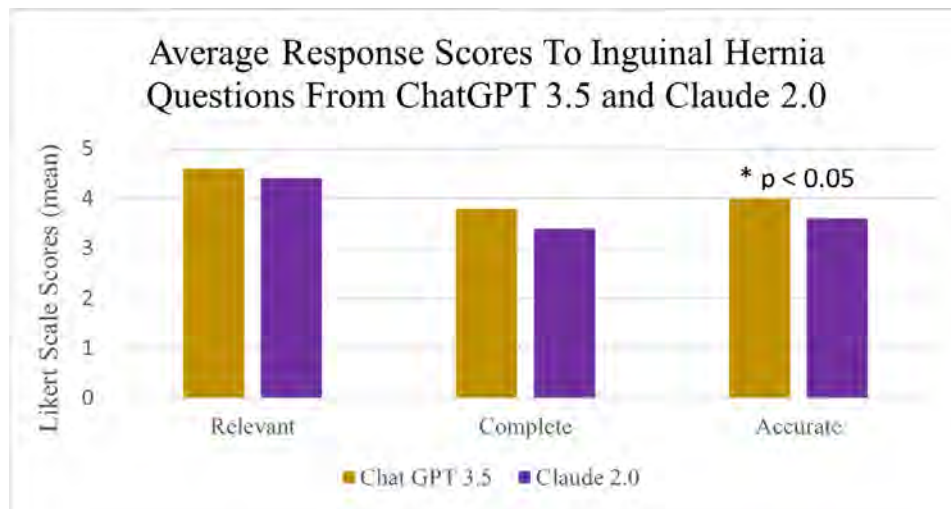
ACCURACY OF NATURAL LANGUAGE PROCESSORS FOR PATIENTS SEEKING HEALTHCARE INFORMATION

Lois A, Yates R, Ivy M, Chen-Meekin J, Khandelwal S, Wright A

BACKGROUND: This study aims to assess the accuracy of responses generated by Natural Language Processors (NLP) regarding queries around common surgical conditions. NLPs are artificial intelligence platforms that use computational linguistics and machine learning to analyze text and generate responses to questions. NLPs such as Chat-GPT are now readily accessible, are quickly being integrated into our most widely used Internet search tools and will likely underpin the primary methods by which patients obtain healthcare information. The accuracy of NLP-generated responses to health information queries is unknown.

METHODS: We queried two NLPs (ChatGPT 3.5 and Claude 2.0) for responses to a predetermined list of 17 questions about inguinal hernia surgery with topics including symptoms, diagnosis, surgical treatments, mesh safety, complications, and recovery. Responses were graded on a Likert scale (1 poor to 5 excellent) for relevance, completeness, and accuracy. Collective responses were compiled and scored collectively using the DISCERN criteria, a previously validated tool for evaluating patient information sources (scored from 16 to 80 points). NLP responses were compared to two gold-standards, patient education materials provided by SAGES and the American College of Surgeons (ACS). Evaluations were performed by two expert hernia surgeons (AW, RY).

RESULTS: DISCERN scores (mean±SD) were 56.5±3.5 vs 53±8.5 vs 55±8.5 vs 63±12.7 for information provided by ChatGPT, Claude, SAGES, and the ACS, respectively. Relevance, accuracy, and completeness of NLP responses are seen in the figure.



CONCLUSIONS: NLPs provided succinct, readable responses to questions about inguinal hernia surgery. Collective responses from both NLPs provided answers similar in relevance to patient education materials produced by surgical societies. Currently, responses from Chat-GPT were more accurate than Claude, and surgeons may consider endorsing its use with their patients to help them better understand their procedure.

CHRISTOPHER LITTLE, MD

General Surgery R4

PRONOUNS: He/His

RESEARCH INTERESTS: Equity and access of organ allocation; transplant immunology and tolerance induction

FACULTY MENTOR: Catherine E. Kling, MD, MPH

MEDICAL SCHOOL: University of Wisconsin School of Medicine & Public Health

HOMETOWN: Appleton, WI

DISCUSSANT: Mark Sturdevant, MD



EVALUATING THE CORRELATION BETWEEN ANTEROPOSTERIOR DIAMETER, BODY SURFACE AREA AND HEIGHT FOR LIVER TRANSPLANT DONORS AND RECIPIENTS

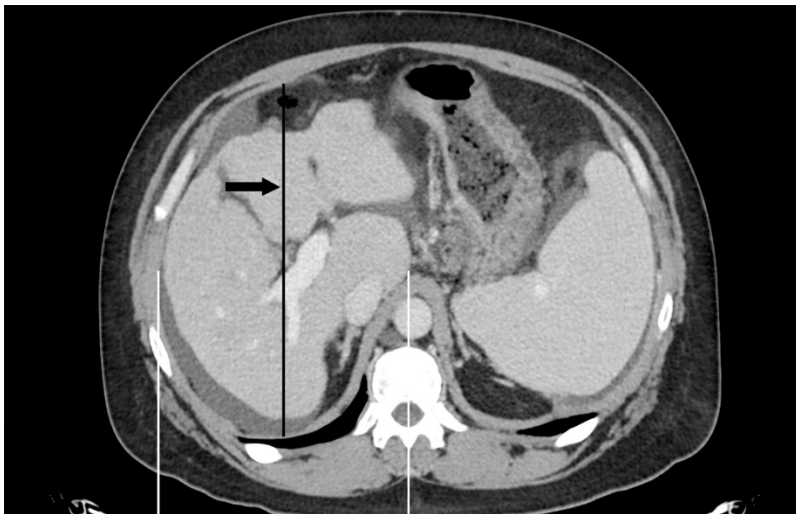
Little CJ, Biggins SW, Perkins JD, Kling CE

BACKGROUND: Small stature and female sex correlate to decreased deceased donor liver transplant (DDLT) access and higher waitlist mortality. However, efforts are being made to improve access and equity of allocation under the new continuous distribution (CD) system. Liver anteroposterior diameter (APD) is a method utilized by many centers to determine size compatibility for DDLT but is not recorded systematically, so cannot be used for allocation algorithms. We therefore seek to correlate body surface area (BSA) and height, to APD in donors and recipients and compare waitlist outcomes by these factors to support their use in the CD system.

METHODS: APD was measured (Figure 1) from single center DDLT recipients and donors with cross-sectional imaging. Linear, Pearson's and PhiK were used to correlate BSA and height to APD. Competing risk analysis of waitlist outcomes was performed using United Network for Organ Sharing data.

RESULTS: For 143 pairs, donor BSA correlated better with APD than height (PhiK = 0.63 vs 0.20). For recipient all comers, neither BSA nor height were good correlates of APD, except in recipients without ascites, where BSA correlated well (PhiK = 0.63) but height did not. However, among female recipients BSA, but not height, strongly correlated to APD regardless of ascites status (PhiK = 0.80 without, PhiK = 0.70 with). Among male recipients, BSA correlated to APD only in those without ascites (PhiK = 0.74). In multivariable models, both BSA and height were predictive of waitlist outcomes, with higher values being associated with increased access, decreased delisting for death/clinical deterioration and decreased living donor transplant (model concordance 0.748 and 0.747, respectively).

CONCLUSIONS: Taken together, BSA is the superior surrogate for APD and can therefore be used in allocation decision making in the upcoming CD era to offset size and gender-based disparities among certain candidate populations.





DANIELLE J. EBLE, MD, BS

Plastic Surgery R5

PRONOUNS: She/Her

RESEARCH INTERESTS: Gender affirming surgery, health equity, medical education

FACULTY MENTOR: Shane D. Morrison, MD, MS

MEDICAL SCHOOL: Boston University School of Medicine

HOMETOWN: Saranac Lake, NY

DISCUSSANT: Andrew S. Wright, MD

CONSCIENTIOUS OBJECTION TO GENDER-AFFIRMING SURGERY IN PLASTIC SURGERY AND UROLOGY RESIDENCY PROGRAMS

Eble D*, Nguyen A^{1*}, Tople T², Roblee C³, Friedrich J^{1,4}, Skokan A⁴, Hagedorn J⁴,
Sorensen M⁴, Kraft K⁵, Janis J⁶, Kuzon W³, Ettinger R¹, Morrison SD¹

¹ Division of Plastic Surgery, University of Washington, Seattle, WA, USA

² University of Minnesota Twin Cities School of Medicine, Minneapolis, MN, USA

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⁶ Department of Plastic and Reconstructive Surgery, Ohio State University Medical Center, Columbus, OH, USA

*These authors contributed equally to this work

BACKGROUND: Medical conscientious objection (CO) is a federally-protected right of U.S. healthcare workers to refuse participation in any patient service that conflicts with their values. Objections have historically involved controversial areas of medicine, such as reproductive rights and physician-assisted suicide. As awareness and availability of gender-affirming interventions have increased in recent years, transgender healthcare has become similarly divisive.¹⁻³ However, there is a paucity of literature examining physician CO in this context. This study therefore aims to characterize provider objections to gender-affirming surgery (GAS) and related institutional policies within relevant subspecialty residency programs.

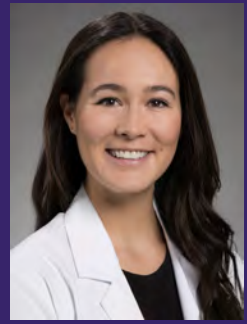
METHODS: A cross-sectional electronic survey was administered to leadership of accredited plastic surgery and urology residencies from February to October 2023. The survey contained questions regarding trainee exposure to GAS, programmatic experience with CO, and related institutional policies. Results were analyzed using descriptive statistics.

RESULTS: Leadership from 59 plastic surgery (48%) and 65 urology (52%) residencies completed the survey. Most programs incorporated didactic training and direct clinical exposure to GAS (n=107, 86%; n=98, 79%). In total, 16 programs (13%) reported *at least* one objection to GAS by faculty and/or residents. 19.4% of the cohort had a formal CO policy, yet only five (4%) specifically addressed objections to GAS. Amongst programs with incidents of CO to GAS, the majority (n=10, 63%) lacked a formal objection policy. Notably, presence of formal policies significantly increased program leadership's confidence in addressing future CO incidents (p<0.05).

CONCLUSIONS: Many accredited residency training programs in plastic surgery and urology engage in didactic and clinical training related to GAS, yet few have official policies related to faculty and trainee objection to these services. Although the prevalence of objection is low in this cohort, these incidents do occur and programs may benefit from anticipatory policies to address objectors.

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AXILLARY NODAL DISEASE BURDEN IN HR+ BREAST CANCER PATIENTS UNDERGOING UPFRONT SURGERY

Palmquist E, Brennan M, Bains J, Young B,
Buchanan CL, Calhoun KE, Javid SH, Flanagan MR

BACKGROUND: Studies demonstrate equivalent locoregional disease control with omission of axillary lymph node dissection in clinically node negative breast cancer with <3 positive sentinel lymph nodes. However, increasing imaging may lead to overtreatment of clinically node negative patients. This study aims to identify imaging, patient, and tumor characteristics that predict axillary burden in hormone receptor-positive HR+ breast cancer.

METHODS: Retrospective single institution analysis of HR+ breast cancer patients undergoing upfront surgery from 2020-2023. Inclusion criteria: biopsy-proven clinically node positive (cN1) disease and clinically node negative with nodal positivity on pathology (cN0pN+). Univariate and multivariable logistic regression were performed.

RESULTS: 302 patients identified; 226 cN0pN+ and 76 cN1. Majority (77%) had 0-2 positive nodes on final pathology. There were no significant differences among those with 0-2 versus ≥ 3 positive nodes based on age, menopausal status, BMI, pre-operative physical exam, abnormal lymph nodes on mammogram or tumor grade ($p > 0.05$). Patients with ≥ 3 pathologically-positive nodes were more likely to have abnormal appearing lymph nodes on ultrasound and MRI ($p < 0.001$), multifocal/centric disease ($p = 0.006$), larger median tumor size ($p < 0.001$), lobular or mixed histology ($p = 0.03$). Among those with pre-operative ultrasound or MRI with ≥ 3 abnormal nodes, 65% and 54% had ≥ 3 positive nodes on final pathology, respectively. Multivariable analysis (Table) demonstrated the only factor associated with ≥ 3 positive nodes was ≥ 3 abnormal appearing lymph nodes on MRI (OR 4.49, 95% CI 1.68-11.99).

CONCLUSION: In this contemporary cohort of cN0pN+ and cN1 HR+ breast cancer, ≥ 3 abnormal-appearing lymph nodes on MRI was significantly associated with ≥ 3 positive lymph nodes. However, nearly half of patients with such findings on MRI had <3 nodes positive and could safely be spared axillary dissection. Although imaging appears helpful in identifying axillary burden, US and MRI have limitations predicting the extent of axillary nodal disease.

Table. Multivariable analysis of factors associated with ≥ 3 positive lymph nodes among women with HR+ cN0pN+ / cN1 breast cancer.

Patient Characteristics	Odds Ratio	95% CI	p-value
Race			
White	1	reference	
Black or African American	2.29	0.26,19.97	0.45
Asian	0.869	0.20,3.79	0.84
American Indian/Alaska Native	5.979	0.47,75.77	0.17
Declined to Answer / Unknown / Other	0.759	0.08,7.06	0.80
Pre-operative ultrasound			
0-2 abnormal appearing nodes	1	reference	
≥ 3 abnormal appearing nodes	1.489	0.34,6.47	0.60
Pre-operative MRI			
0-2 abnormal appearing nodes	1	reference	
≥ 3 abnormal appearing nodes	4.359	1.49,12.75	0.007
Multifocal/multicentric disease	1.429	0.50,4.06	0.51
Mastectomy	0.969	0.32,2.85	0.95
Pathologic tumor size (mm)	1.029	1.00,1.05	0.08
Histology			
Invasive ductal carcinoma	1	reference	
Invasive lobular carcinoma	0.789	0.23,2.62	0.69
Invasive mammary carcinoma	2.55	0.22,29.10	0.45
Estrogen receptor expression	1	reference	
10-50%	0.95	0.20,4.42	
51-89%	1	1.00,1.00	0.95
$\geq 90\%$			



NICOLE H. CHICOINE, DO

Pediatric Surgery Research Fellow

RESEARCH INTERESTS: Pediatric surgery, health equity, global surgery

FACULTY MENTOR: Sarah L.M. Greenberg, MD, MPH, FACS

MEDICAL SCHOOL: Marian University College of Osteopathic Medicine

HOMETOWN: Santa Rosa, CA

DISCUSSANT: Estell J. Williams, MD

**GATHER (GENERATE AND TEACH HEALTH EQUITY ROUTINELY):
CHANGING SURGEON DEI BEHAVIORS THROUGH A NOVEL QI FRAMEWORK**

Chicoine NH, Rooholamani SN, Tieder JS, Sullivan E, Bell S, Price T, Greenberg SLM

BACKGROUND: Minimal data exists supporting the effectiveness of educational interventions to improve clinician diversity, equity, and inclusion (DEI) behaviors. We studied a 3-session, peer-driven quality improvement (QI) educational intervention (GATHER) for clinicians at our pediatric medical center, and its impact on equity-focused behaviors for surgical clinicians. We hypothesized improvements in equity-focused behaviors as compared to a participant’s baseline through completion of the program.

METHODS: Participants enrolled in Generate and Teach Health Equity Routinely (GATHER) reported frequency of seven DEI behaviors using self-assessments. All surgical clinicians who enrolled in the intervention and completed one self-assessment between 9/2021-8/2023 were included (n=52). Participants completed assessments monthly for three months pre-intervention, weekly during the intervention, and at 1, 2, 3 and 6 months post-intervention. Mixed effects logistic regression models were used to model the binomial probability of ‘often’ or ‘always’ engaging in measured DEI behaviors. Time was assessed categorically based on model fit and timing of responses. Population averaged predictive probabilities and odds ratios for each time period were calculated with 95% confidence intervals and a statistical significance level was set at p <0.05.

RESULTS: 52 surgical clinicians completed at least one self-assessment during their participation in GATHER over the 23-month time period (median: 11 surveys, range 2-15). Predicted probability and odds ratios for reporting ‘often’ or ‘always’ engaging in a behavior increased over time for all seven behaviors. Compared to baseline, there were increased odds of engaging in DEI behaviors after participation in each session, and the increased odds were statistically significant after one session of GATHER for the first six behaviors and after two sessions for the seventh behavior (Table 1).

CONCLUSION: A novel DEI QI educational intervention was associated with significant and sustained improvements in self-assessed frequency of equity-focused behaviors for surgical service providers at our institution.

Table 1: Odds Ratios (95% CI) of ‘Always’ or ‘Often’ Engaging in Behaviors after 1, 2, or 3 sessions of GATHER as Compared to Baseline for Surgical Service Clinicians

Table 1: Odds Ratios (95% CI) of ‘Always’ or ‘Often’ Engaging in Behaviors after 1, 2, or 3 sessions of GATHER as Compared to Baseline for Surgical Service Clinicians

Survey Question	Baseline (3 Months Pre GATHER – Week 0)	During GATHER: After Session 1 (Week 1-Week 4)	During GATHER: After Session 2 (Week 5-11)	Post GATHER: 1, 2, 3, and 6 Months
1. When I experienced what I perceived as a health equity barrier, I took steps to break down the barrier	1.0	6.0 (2.4, 15.3) P=0.0002	13.6 (5.0, 37.1) P<0.0001	19.8 (6.4, 61.2) P<0.0001
2. I considered how the concepts of privilege and oppression may play into my relationship with a patient/family	1.0	5.5 (2.5, 12.4) P<0.0001	16.6 (6.3, 44.0) P<0.0001	11.1 (3.7, 33.1) P<0.0001
3. I modeled what I learned in EDI training with colleagues and/or trainees	1.0	4.6 (2.1, 10.1) P=0.0002	9.9 (4.1, 23.9) P<0.0001	28.6 (7.7, 105.9) P<0.0001
4. I thought about assumptions that I may be making about a patient/family	1.0	2.8 (1.1, 7.2) P=0.0368	8.1 (2.6, 25.4) P=0.0004	17.5 (3.5, 88.6) P=0.0006
5. My plan of care considered the unique burdens and benefits to a patient/family (e.g., social, economic and transportation)	1.0	6.9 (2.5, 18.9) P=0.0002	10.0 (3.5, 28.6) P<0.0001	13.1 (3.9, 44.1) P<0.0001
6. I initiated conversations about equity, diversity and/or inclusion during meetings, huddles, presentations, etc. that were not explicitly focused on EDI	1.0	6.0 (2.6, 13.7) P<0.0001	14.4 (6.2, 33.6) P<0.0001	14.4 (5.5, 37.7) P<0.0001
7. I role-modeled and set an expectation with my team that all patient care occur in the patient/family’s primary language, concordant with patient/family preference	1.0	1.7 (0.8, 3.9) P=0.1941	3.1 (1.3, 7.6) P=0.0141	10.2 (2.1, 48.8) P=0.0036



PROLONGED AORTIC CROSS CLAMP IS SAFE IN SURGERY FOR AORTIC REGURGITATION

Tugan DA, Shird D, Thomas R, Flodin R, Dhanekula A, DeRoo S, Burke CR

OBJECTIVE: Prolonged myocardial ischemic times risks adverse outcomes after cardiac surgery, especially in patients with long-standing aortic regurgitation (AR). We aim to investigate the impact of extended ischemic times on outcomes in aortic valve interventions for significant AR, considering advancements like del Nido cardioplegia for improved myocardial protection.

METHODS: From 2019-2022, adults undergoing aortic valve surgery for clinically significant aortic regurgitation (AR, $\geq 2+$) were studied, excluding cases with acute type A dissection or transcatheter aortic valve replacement. Analysis compared aortic cross-clamp times ≥ 180 minutes to < 180 minutes, assessing demographics, operative, peri-operative, echo, and long-term outcomes using appropriate statistical tests.

RESULTS: Among 194 patients analyzed, 33 had cross clamp times ≥ 180 minutes (Prolonged XC) and 161 had < 180 minutes (Short XC). Pre-operative demographics were similar, but the Prolonged XC had a higher prior cardiac surgery incidence (55% vs. 28%, $p = 0.003$). Baseline LV ejection fraction (EF) and LV volume index did not differ between groups. Prolonged XC exhibited higher peak glucose (185 vs. 166.5, $p = 0.037$), higher peak lactate (3.8 vs. 2.5, $p = 0.023$) at 48 hours, and a lengthier ICU stay (3.0 vs. 2.0 days, $p = 0.009$). Inotrope use, post-operative dialysis, ventilator hours, in-hospital mortality, and post-operative LV EF did not differ. Sub-group analysis for Prolonged XC patients with depressed pre-operative EF ($< 55\%$) ($n=12$) revealed similar peri-operative outcomes; only one patient (8.3%) suffered peri-operative mortality in the depressed EF group.

CONCLUSIONS: Prolonged myocardial ischemia times is safe in aortic regurgitation surgeries, even with depressed pre-operative EF. Utilizing del Nido cardioplegia proves effective in safeguarding during lengthy aortic valve procedures. Although prolonged ischemic times correlate with elevated post-operative glucose and lactate, and longer ICU stays, clinical indices of left ventricular function and survival remain equivalent between groups. Implications for complex valve operations on such patients are significant.

Characteristic	XC < 180 (n = 161)	XC \geq 180 (n = 33)	Total (n = 194)	p-value
TIA	1 (0.6%)	0 (0%)	1 (0.5%)	>0.9
Stroke	9 (5.6%)	0 (0%)	9 (4.7%)	0.4
Extubated in OR	3 (1.9%)	0 (0%)	3 (1.6%)	>0.9
Hours on Ventilator	10.00 (5.00, 24.00)	6.00 (3.00, 24.00)	10.00 (5.00, 24.00)	0.3
Reintubation	9 (5.6%)	1 (3.1%)	10 (5.2%)	>0.9
Tracheostomy	4 (2.5%)	0 (0%)	4 (2.1%)	>0.9
New Dialysis	7 (4.4%)	1 (3.0%)	8 (4.1%)	>0.9
Peak Creatinine within 48 hours	0.99 (0.83, 1.33)	0.93 (0.80, 1.22)	0.97 (0.83, 1.33)	0.4
Discharge Creatinine	0.85 (0.69, 1.01)	0.88 (0.68, 0.95)	0.85 (0.69, 1.01)	0.8
Peak Glucose within 48 hours	166.50 (148.25, 194.00)	185.00 (167.25, 205.50)	169.50 (150.25, 194.00)	0.037
Peak Lactate within 48 hours	2.50 (1.60, 4.00)	3.80 (2.60, 5.30)	2.60 (1.70, 4.00)	0.023
Takeback for Bleeding	6 (3.8%)	0 (0%)	6 (3.1%)	0.6
ICU Transfusion	24 (15%)	6 (19%)	30 (16%)	0.6
Re-operation Before Discharge	14 (8.8%)	5 (15%)	19 (9.8%)	0.3
New PPM	12 (7.5%)	3 (9.1%)	15 (7.8%)	0.7
Atrial Fibrillation	58 (37%)	14 (42%)	72 (38%)	0.5
Pneumonia	8 (5.0%)	1 (3.0%)	9 (4.7%)	>0.9
Prolonged Inotropes (>48 hours)	22 (19%)	8 (33%)	30 (21%)	0.12
Hours on Inotropes	13.00 (3.75, 39.00)	24.00 (0.00, 36.00)	13.00 (3.00, 36.00)	0.9
Wound Infection	3 (1.9%)	0 (0%)	3 (1.6%)	>0.9
Wound Dehiscence	1 (0.6%)	0 (0%)	1 (0.5%)	>0.9
ICU Length of Stay	2.00 (1.00, 4.00)	3.00 (2.00, 6.00)	2.00 (1.50, 5.00)	0.009
Total Hospital Length of Stay	8.00 (6.00, 14.00)	10.00 (8.00, 15.00)	9.00 (6.00, 15.00)	0.079
In-Hospital Mortality	6 (3.8%)	1 (3.0%)	7 (3.7%)	>0.9

Table 1: Peri-operative outcome comparison between patients with a cross-clamp time < 180 minutes and patients with a clamp time ≥ 180 minutes. The only difference in peri-operative outcomes is a higher post-operative glucose (185 versus 166.5, $p=0.037$) and post-operative lactate (3.8 versus 2.5, $p=0.023$) in the prolonged clamp-time group.



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PATIENT FACTORS ASSOCIATED WITH ADVERSE OUTCOMES IN ESOPHAGEAL ATRESIA

Nchinda NN, Arellano L, Wang X, Dellinger MB

BACKGROUND: Esophageal atresia (EA) is a severe congenital aerodigestive anomaly that can lead to long-term comorbidities following repair. Anastomotic leak and anastomotic stricture are the most common adverse outcomes. Previous literature has mixed results on patient risk factors, with some showing correlation between esophageal gap length and anastomotic leak. However, there is not previous inclusion of demographic factors in evaluation of patient risk factors for adverse outcomes.

OBJECTIVE: To evaluate for association of patient demographics and congenital conditions with development of anastomotic leak, anastomotic stricture requiring dilation and gastroesophageal reflux (GER) in EA patients

METHODS: This is a retrospective cohort study using electronic medical records of all pediatric patients with prior repair of esophageal atresia receiving treatment at Seattle Children's Hospital (SCH), from 2001-2023. Univariate analysis was computed via R statistical software with further multi-variate analysis.

RESULTS: A total of 124 patients were evaluated including those with index surgical repair completed at SCH and outside hospitals. Demographic factors including race/ethnicity, gender, insurance status, and distance of birth center from SCH as site of repair as well as prematurity did not have significant association with anastomotic leak, anastomotic stricture or GER. Long gap EA (> 2 vertebral bodies) was associated with increased occurrence of anastomotic leak and anastomotic stricture ($p = 0.00791$ and $p = 0.00031$). Anastomotic leak was associated with increased occurrence of anastomotic stricture ($p = 0.00682$) but not GER.

CONCLUSION: Within a single-site retrospective study, patient demographic factors were not associated with adverse outcomes in EA patients. Long gap EA has consistently shown to be a risk factor for the associated outcomes of anastomotic leak and anastomotic stricture. This initial study evaluating for potential patient demographic risk factors indicates a need for larger multi-center studies to better capture underlying associations with EA outcomes.



MINIMAL BLUNT AORTIC INJURY DOES NOT REQUIRE SURVEILLANCE IMAGING

Schwarz S, Stafforini NA, Toth E, Wong S, Hemingway JF, Singh N, Tran NT, Starnes BW, Quiroga E

INTRODUCTION: SVS guidelines recommend conservative management with serial imaging for Grade I blunt aortic injuries (BAI), though the data supporting surveillance is sparse. Our institution developed a pragmatic classification for BAI, which characterizes “minimal aortic injuries” (MAIs) as those with intimal flap/irregularity <10 mm and absence of external aortic contour abnormality. We currently recommend non-operative management, antiplatelet therapy and no surveillance imaging for these patients. We aim to evaluate the clinical outcomes of MAI.

METHODS: A retrospective review of all patients diagnosed with MAI at a single level I trauma center from 2015-2023 was performed. All patients had an imaging diagnosis of MAI on admission, and patients with subsequent axial imaging within 30 days of presentation were identified. Data collected included demographics, indication and timing of subsequent imaging, mechanism of injury, in-hospital mortality, requirement for aortic intervention, aorta-related complications or mortality, and aspirin use following diagnosis.

RESULTS: Among 41 patients with MAI on admission, 25 received subsequent imaging (61%) an average of 5.28 days after initial diagnosis. Seven patients (17%) were scanned for aortic surveillance prior to our discontinuation of this practice. Additional scan indications included: PE/hypoxia (n=9), sepsis (n=1), hemorrhage (n=4), injury re-assessment (n=3), evaluation of other vascular injury (n=1). Improvement/resolution of MAI was seen in 12 patients (48%) while 13 (52%) showed stable MAIs and 0 demonstrated progression. Seven patients (17%) did not receive aspirin: six due to lack of formal recommendation and 1 due to early post-admission death. Subsequent imaging was obtained in three of these patients, which demonstrated two cases of resolution/improvement and one instance of stable MAI. There were no instances of aorta-related intervention, complication or mortality in our cohort.

CONCLUSIONS: Minimal aortic injury does not require operative therapy or surveillance imaging. The utility of antiplatelet therapy in this patient population requires further evaluation.

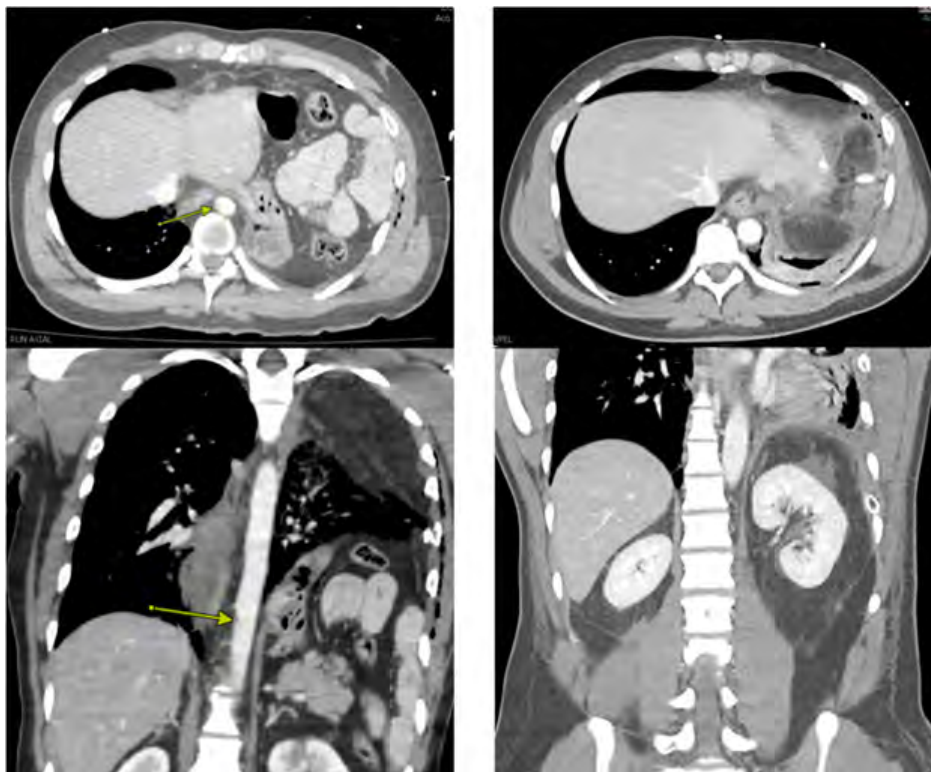


Figure 1. CT scan demonstrating MAI (left) on presentation with interval scan (right) demonstrating resolution.



DIVYA RAMAKRISHNAN, MD

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EVALUATION OF PATIENT COMMUNICATION AND PERCEPTION OF RISK IN THE CONTEXT OF OPPORTUNISTIC SALPINGECTOMY

Ramakrishnan D, Tveleneva A, Wright JD, Fischkoff KN, Agrawal N and Flum D

BACKGROUND: Surgeons can play a role in the prevention of ovarian cancer (OC) by resecting the fallopian tubes at the time of other surgical procedures, known as opportunistic salpingectomy (OS). It is unclear if patients undergoing non-gynecologic surgery will find OS acceptable. Discussing the risks and benefits of OS with patients can also be challenging because it involves multiple and varying probabilities. We aimed to test different strategies (verbal, numeric, and combination descriptors) to describe the risk of OC and OS and assess their impact on the acceptability of OS and perception of risk.

METHODS: A survey was administered to 200 women recruited using an online survey platform. Participants were provided vignettes describing OC and OS (OC incidence, risk of spread, 5-yr survival, and OS risk reduction) randomized to four communication formats: verbal, numerical, and two versions of verbal+numerical. Outcomes included the respondent's estimates of these risks and perceived acceptability of OS.

RESULTS: Overall acceptability of OS was 60.75%, with worry about OC, personal history of cancer, and childbirth associated with greater acceptability. Factors negatively associated with acceptability included concerns about the risk and impact of OS and risk estimate inaccuracy (Figure).

Vignettes with verbal descriptors resulted in more inaccurate estimates of risks for all four rates. For three out of four rates, the verbal arm resulted in greater variance compared to the other arms. The addition of verbal descriptors to numerical descriptors did not improve risk estimates. The communication approach did not impact the acceptability of OS.

CONCLUSION: Approximately 6 in 10 women found OS acceptable. Using verbal descriptors instead of numbers adversely impacted perception of risk but not acceptability of OS. This information is helpful for understanding how patients interpret information about risk and should inform communication strategies about OS and other risk reducing interventions.

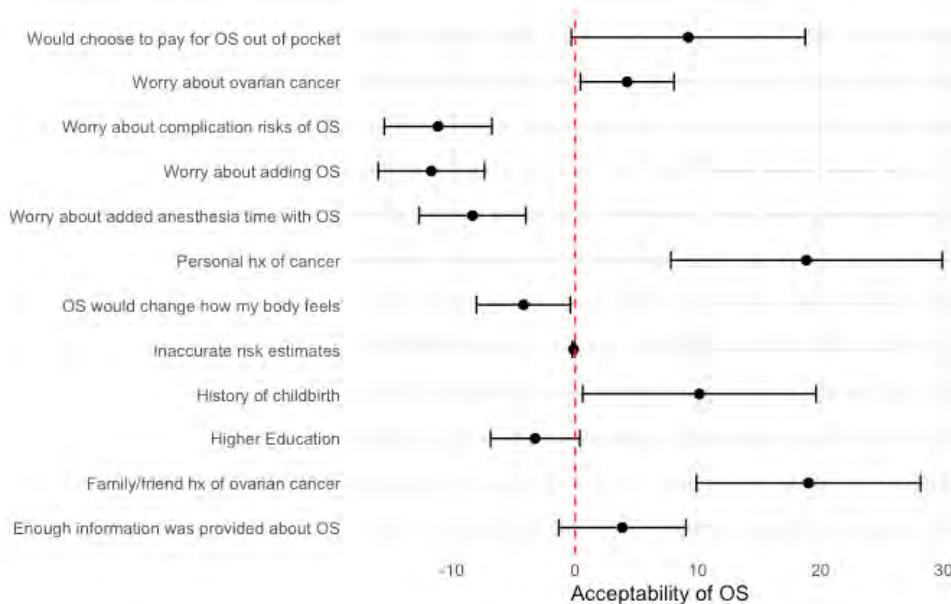


Figure. Factors associated with acceptability of OS*
*Univariate linear regression, slope estimate with 95% CI



A COMPARISON OF SODIUM BICARBONATE AND ETHANOL CENTRAL VENOUS CATHETER LOCKS IN PEDIATRIC PATIENTS WITH INTESTINAL FAILURE

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BACKGROUND: Children with intestinal failure (IF) require central venous catheters to receive parenteral nutrition, increasing the risk of central line associated blood stream infections (CLABSI). To prevent CLABSI and maintain catheter function, ethanol locks have been commonly utilized. However, a national shortage of ethanol necessitated exploring alternatives like sodium bicarbonate, known for its cost-effectiveness and beneficial properties against infections and clotting.

PURPOSE: Assess the impact of ethanol and sodium bicarbonate locks on CLABSI rates in pediatric patients with IF. Secondary endpoints including frequency of line replacements, repairs, and occlusions were also evaluated.

METHODS: A retrospective cohort study was conducted in pediatric patients with IF 0 - 21 years of age followed by the Intestinal Rehabilitation Program at Seattle Children's Hospital who received ethanol or sodium bicarbonate locks from 2018 - 2023. Collected variables include demographics, CLABSI rates, line repairs, replacements, and occlusions. Variables were compared between the two groups using the Mann-Whitney U tests or Fisher's exact test.

RESULTS: The cohort consisted of 55 patients including 19 children who received ethanol and 36 with sodium bicarbonate. Rates of CLABSI were similar between the two cohorts (0.00 [0.00 - 2.18]; 0.00 [0.00 - 2.63] (median [IQR]); p = 0.73). The sodium bicarbonate group had a lower incidence of line replacements (0.00 [0.00 - 1.73] compared to ethanol (2.21 [1.17 - 3.84]; p=0.01 (median [IQR])) and trended toward a lower number of line repairs (1.07 [0.00 - 1.61]; 1.94 [0.00-4.15]; p=0.23). No difference was identified between the two groups in the rates of line occlusion requiring alteplase administration (0.00 [0.00-1.43], 0.00 [0-1.31]; p=0.34). No difference in the total number of admissions between cohorts was identified (5.42 [2.04 - 12.97], 4.55 [1.98 - 7.91], p=0.30).

CONCLUSION: These results demonstrate that sodium bicarbonate locks are an effective alternative to ethanol locks for pediatric patients with IF.

Table 1. Outcomes per 1000 catheter days

	Ethanol	Bicarbonate	p-value
CLABSI rate (median [IQR])	0.00 [0.00, 2.18]	0.00 [0.00, 2.63]	0.73
CVC replacement rate (median [IQR])	2.21 [1.17, 3.84]	0.00 [0.00, 1.73]	0.01
CVC repair rate (median [IQR])	1.94 [0.00, 4.15]	1.07 [0.00, 1.61]	0.23
Rate of admissions (median [IQR])	5.42 [2.04, 12.97]	4.55 [1.98, 7.91]	0.30



SANAA MANSOOR, MD, MS

General Surgery R1

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RESEARCH INTERESTS: Transplantation, cardiothoracic surgery, global health

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THE EFFECT OF MODIFIABLE RISK FACTORS ON BRONCHIAL DEHISCENCE AFTER ORTHOTOPIC LUNG TRANSPLANT

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OBJECTIVE: Bronchial dehiscence is associated with increased morbidity and mortality following bilateral orthotopic lung transplantation (BOLT). Despite data suggesting an incidence of bronchial dehiscence of approximately 10%, investigations of modifiable risk factors are lacking. The aim of this study was to investigate whether exposures to vasoactive medications or transfusion of blood products in the perioperative period are associated with bronchial dehiscence.

METHODS: A single center, retrospective cohort study of all patients who underwent BOLT during the past 12 months was conducted. Exposures to vasoactive medications were calculated using a composite vasoactive-inotropic score (VIS) on arrival to the intensive-care unit (ICU), as well as the maximum in the first 24-hours postoperatively. Additional exposures were total blood product transfusion volume (mL) intraoperatively and at 24-hours post operatively.

RESULTS: A total of 54 patients underwent BOLT. Bronchial dehiscence was identified in seven (13%) via bronchoscopy. Median VIS scores on arrival to the ICU and at 24-hours postoperatively were VIS Arrival 6.86 (IQR 2, 10.06) and VIS Max 13 (IQR 6,16.39). Median transfusion volumes intraoperatively and at the first 24-hours after conclusion of the case were six (IQR 3.25, 12) and 0 (IQR 0, 1), respectively. In unadjusted analyses, neither VIS nor transfusion of blood products were found to be associated with bronchial dehiscence. After adjusting for patient age, sex, and allograft ischemic time, these associations remained unchanged (Table 1).

CONCLUSIONS: In this retrospective cohort study, exposure to vasoactive medications or transfusion of blood products were not associated with bronchial dehiscence in patients undergoing BOLT. While exposure to vasoactive medications may increase the risk of ischemic changes, we did not find an association with VIS and bronchial dehiscence. Multivariate analysis may allow for the characterization of modifiable risk factors for bronchial dehiscence after orthotopic lung transplantation.

Predictor	OR (95% CI)	OR (95% CI) adj Covariates
VIS Arrival	1.12 (0.94, 1.36)	1.09 (0.88, 1.40)
VIS Max	0.99 (0.85, 1.13)	1.03 (0.84, 1.24)
Transfusions (OR)	1.02 (0.93, 1.09)	1.05 (0.95, 1.17)
Transfusion (First 24)	0.96 (0.76, 1.09)	0.98 (0.70, 1.18)

Table 1. Association of Vasoactive Medications and Transfusion of Blood Products on Bronchial Dehiscence after Orthotopic Lung Transplantation

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