

LEADING THE WAY

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DEPARTMENT OF SURGERY



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From the Chair | Douglas B. Evans, MD

It is hard to believe that the talented chief residents pictured on your right will not present another patient at our Wednesday morning M&M conference (perhaps until they return for our resident reunion—plans underway for the fall of 2020, stay tuned!). Mortality and Morbidity Conference is the cornerstone of surgical education and the presentations on Wednesday mornings reflect a tremendous amount of thought, research and often times team-based analysis—of what happened (pathophysiology), why it happened (decision making, technical factors, systems/infrastructure), and what may have been done to change the outcome (literature review, report of the MCW published experiences, best practices). The presentations on Wednesday mornings are also a mechanism for everyone to see the tremendous value in life-long learning; the importance of having the constant quest for new knowledge become part of daily surgical practice. Something that becomes both second nature and fun. The cast of six on this page have made countless presentations on Wednesday mornings and managed questions and comments with grace under pressure—no one has done it better! We have learned a lot from all of them—knowledge that has been translated directly to the bedside every day.



Leading the Way for the Department of Surgery: Our 2018–2019 Chief Residents: Drs. Justin Dux, Nathan Kugler, Rachel Landisch, Stephen Masnyj, Gregory Larrieux, Robert McMillan

FELLOWS

(and their upcoming staff positions):

Acute Care Surgery
Andrew Kamien, MD

Advanced GI MIS & Bariatric Surgery
Semeret Munie, MD
Assistant Professor of Surgery
Marshall University
Huntington, West Virginia

Endocrine Surgery
Lily Hsieh, MD

Hepato-Pancreato-Biliary Surgery
Lindsay Bliss, MD, MPH
Hartford Healthcare and the
University of Connecticut School
of Medicine
Farmington, Connecticut

Pediatric Critical Care
Alessandra Landmann, MD
Pediatric Surgery Fellowship
University of Oklahoma Health
Sciences Center
Oklahoma City, Oklahoma

Pediatric Surgery
Shannon Koehler, MD, PhD

Surgical Critical Care
Joseph Losh, DO
Trauma, Critical Care & Acute
Care Surgery
Mercy Medical Center
Des Moines, Iowa

Transplant Surgery
Badi Rawashdeh, MD
Abdominal Transplant
Surgery Fellowship
University of Virginia
Charlottesville, Virginia

Vascular Surgery
Nicholas Saguan, MD
Endovascular Surgical
Associates of Los Angeles
Los Angeles, California

CHIEF RESIDENTS

(and their future plans):

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Colon and Rectal Surgery
Fellowship
University of Rochester
Rochester, New York

Nathan Kugler, MD
Vascular Surgery Fellowship
Medical College of Wisconsin
Milwaukee, Wisconsin

Rachel Landisch, MD
Pediatric Surgery Fellowship
Stanford University
Stanford, California

Gregory Larrieux, MD
Transplant Surgery Fellowship
University of Minnesota
Minneapolis, Minnesota

Stephen Masnyj, MD
Advanced GI MIS/Bariatric
Surgery Fellowship
University Hospitals
Cleveland Medical Center
Cleveland, Ohio

Robert McMillan, MD
Sanford Health
Jamestown, North Dakota

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From the Battlefield to the Supreme in Cardiothoracic Surgery



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In our current political and news climate, reports are made daily about our most prominent political figures daily. However, this past December, a report surfaced about Supreme Court Justice Ruth Bader Ginsburg that the entire nation followed.¹ Justice Ginsburg, affectionately known as RBG in many circles due to a recent Academy Award-nominated documentary in which she was the topic, was reportedly found to have two lesions in one of the lobes of her lungs after a fall she had in November. After biopsy and staging, it was found that this was likely an early stage lung cancer. For Justice Ginsburg, who is 85, this was not her first time dealing with cancer. She has been treated for both colorectal and pancreatic cancer in the past. In this situation, Justice Ginsburg made three smart decisions. First, she keeps herself in great shape, working out often. Secondly, she went to see arguably one of the greatest thoracic surgeons in the world, Dr. Valerie Rusch. Dr. Rusch is a legend in the field of general thoracic surgery and is currently the president-elect of the American College of Surgeons. Thirdly, they together made the decision to do the surgery robotically. The surgery went well, and, per reports, Justice Ginsburg cast the tie-breaking vote in an immigration case the afternoon of surgery.

In the pursuit of offering patients the best overall operation, surgeons over the last half century have tried to offer surgeries that not only solve the underlying problem the patient has, but also leave the patient with the least amount of pain and recovery time. The first great breakthrough was the creation of laparoscopy. Laparoscopy and thoracoscopy gave surgeons the ability to perform surgery while sparing the patient large incisions. However, laparoscopy has its limitations. Most of the instruments are based on a straight stick design that only allows certain degrees of freedom. Surgeons became adept at straightforward surgeries, but only master laparoscopic and thoracoscopic surgeons could perform complex surgeries without having to convert to an open procedure.

The latest advent of minimally invasive surgical technology, robotic-assisted surgery, overcomes many of the shortcomings of laparoscopy and thoracoscopy. It provides the surgeon with seven degrees of freedom with its instruments. This means that the instruments can move with more freedom of movement than the human hand. Also, the camera used in the robotic platform provides a three-dimensional image. This allows for better visualization for the surgeon.



Despite this being the newest technology used by surgeons in all fields, the use of robots for the better of mankind is by no means new. Though the term robot was not coined until 1920 by Karel Capek, the concept of robots goes back as far back in history as 400 B.C.² In modern times, the idea of a robot has been prominent in popular culture in the realm of science fiction, movies, television and even children's cartoons. However, its first introduction into surgery came in 1985 when a man entered Queen's Square Hospital in London, England with a suspicious brain lesion.³ The neurosurgeon on call felt it needed to be biopsied and, with the assistance of two electrical engineers, was the first to use a robot on a human for medical purposes. The biopsy was successful and obtained a positive diagnosis. Interestingly, the case report was not published in a medical journal, and none of the physicians involved were authors or even named in the report.

Robotic surgery was first used routinely in urology with the PROBOT for transurethral prostatectomies. It could generate a 3D model of the prostate with the surgeon directing where the resection should occur. The first system that was used broadly in surgery was the AESOP systems. The AESOP was reported to improve operative times for laparoscopic surgery and was successfully used in inguinal herniorrhaphy, cholecystectomies, Nissen funduplications, adrenalectomies and colon resections.

Robotics in cardiothoracic surgery started in the late 1990s and early 2000s. Initially, it was used mostly by cardiac surgeons as they tried to perform heart surgery while avoiding a sternotomy. Using the ZEUS systems, surgeons began performing minimally invasive LIMA harvests and closed-chest on- and off-pump coronary artery bypass grafting.^{4,5}

Currently, the most frequently used robotic platform is the DaVinci series by Intuitive. Interestingly, the technology that would become our most current robotic-assisted machines began

Court: A Brief History of Robotics

as a tool to treat injured soldiers faster without putting surgeons at risk.² By using telepresence, the original design was first placed in an armored vehicle entitled the Medical Forward Area Surgical Team, known as MEDFAST. The vehicle could be driven to the battlefield and controlled from 10-35km away. The technology was eventually discarded by the military, but it was brought to the civilian ranks as Intuitive in the mid-1990s.

In cardiothoracic surgery, the current systems are being used by surgeons to different degrees. Cardiac surgeons still perform robotic CABGs and valvular surgery. There is also some interest in performing robotic arrhythmia surgery. However, thoracic surgeons have come to truly adopt the robotic platform. We currently perform all forms of lung surgery, esophageal surgery, diaphragm surgery, mediastinal and chest wall tumors robotically. This includes decortications, diaphragm plications, pneumonectomies, and esophagectomies. Additionally, we offer robotic surgeries for myasthenia gravis, thoracic outlet syndrome, and congenital diaphragm hernias.

Any given day, the faculty of the MCW Department of Surgery are using the top of the line robotic platforms to treat the patients of southeast Wisconsin or wherever they call home. We in the Section of Thoracic Surgery promise to provide the most current and cutting edge robotic thoracic surgery utilizing the best and most minimally invasive techniques. •

FOR ADDITIONAL INFORMATION on this topic, see references, visit mcw.edu/surgery, or contact Dr. Linsky, 414-955-6902, plinsky@mcw.edu.

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WE LOVE JULY!

The Department of Surgery welcomes the incoming 2019-2020 PGY1 General Surgery Residents:

Elise Biesboer

University of Illinois
College of Medicine - Peoria

Katherine Scheidler

Indiana University School of
Medicine

Andrew Perez

Vanderbilt University
School of Medicine

Matthew Kasson

University of Cincinnati
College of Medicine

Melissa Drezdson

University of Wisconsin School of
Medicine and Public Health

Benjamin Seadler

Southern Illinois University
School of Medicine

Philip Skummer

State University of New York
Upstate Medical University

Joseph Lankford

Rush Medical College of Rush
University Medical Center

Colleen Flanagan

University of Arkansas for
Medical Sciences College of
Medicine

Monica Stumpf

Southern Illinois University
School of Medicine

Spencer Klein

University of Wisconsin School of
Medicine and Public Health

Keerthana Mohankumar

Indiana University
School of Medicine

Xavier Jean

Western Michigan University
Homer Stryker M.D. School of
Medicine

Taylor Jaraczewski

Loyola University Chicago
Stritch School of Medicine

Ellen Larson

Washington University
St. Louis School of Medicine

welcome

Factors Predicting Unplanned 30-day



KATHERINE HU, MD
General Surgery Resident



JACQUELINE BLANK, MD
General Surgery Resident



CARRIE PETERSON, MD, MS
Associate Professor
Division of Colorectal Surgery

Unplanned readmissions have negative consequences for both hospitals and patients. They are expensive (estimated to have cost Medicare \$15 billion in 2005), are utilized as an important measure of hospital quality and negatively affect hospital reimbursements.¹⁻³ It has been difficult to identify which surgical patients are at greatest risk for readmission and would be the best target for intervention. Whereas medical patients often are readmitted for the same diagnosis as their index admission, surgical patients are most likely to be readmitted for post-operative complications, which vary by patient and procedure and may not be apparent at time of discharge.^{4,5} Additionally, not all readmissions may be preventable.

Prior studies evaluating readmission in surgical patients have demonstrated that preoperative patient factors, such as baseline medical comorbidities, were most predictive of readmission, with slightly improved prediction when post-operative variables, such as pain scores and labs, were included.^{4,6} In medicine patients, vital sign instability at time of discharge has been associated with both increased risk-adjusted 30-day mortality and readmission.⁷ Although abnormal vital signs at time of discharge have been shown to be a simple and effective way for clinicians to assess readiness for discharge and risk for readmission in medicine patients, this has not been examined for surgical patients.

We conducted a study investigating unplanned 30-day readmissions in surgical patients at Froedtert Hospital over a one-year period. We hypothesized that abnormal vital signs and laboratory values at time of discharge may be predictive of readmission in surgical patients. Our

aim was to identify parameters that could be utilized at time of discharge to identify patients at increased risk for readmission. Vital signs and labs we examined in our study included heart rate (HR), temperature, respiratory rate, systolic blood pressure, oxygen saturation, frequency of bowel movements, blood urea nitrogen (BUN), white blood cell count (WBC), blood glucose, and hemoglobin.

In our study of 2,607 surgical admissions, 243 (9.1%) were unplanned 30-day readmissions, with a median of 10.0 days between date of discharge and readmission. Readmitted patients were older (median age 59.0 vs 57.0 years, $p=0.01$), had a longer length of stay (median 7.0 vs 4.0 days, $p<0.01$) during their index admission, and higher American Society of Anesthesiologists (ASA) scores ($p<0.01$) compared to the patients who were not readmitted. In total, there were 767 (29.4%) discharges with abnormal vital signs and 773 (29.7%) with abnormal labs at time of discharge.

No patients with a fever ($>101.4^{\circ}\text{F}$) or hemoglobin drop $>2\text{g/dL}$ on day of discharge were readmitted, and no patients were discharged who had >5 bowel movements on day of discharge. In unadjusted analysis, HR >99 beats per minute ($p=0.03$), BUN $>23\text{mg/dL}$ ($p<0.01$), albumin $<3.8\text{g/dL}$ ($p<0.01$), and presence of any abnormal value in our labs of interest ($p<0.01$) were significantly associated with readmission, with positive predictive values of 11.6%, 19.4%, 18.4%, and 13.6% respectively (Figure 1). After adjusting for discharge vital signs, lab values, ASA score, insurance status, and admitting surgical services, the factors independently associated with increased risk for readmission included HR $>99\text{bpm}$ (odds ratio 1.45, 95% CI 1.07-1.97, $p=0.02$), BUN $>23\text{mg/dL}$ (OR 1.59, 95% CI 1.07-2.37, $p=0.02$), and higher ASA scores (OR 2.11, 95% CI 1.24-3.58, $p=0.01$ for ASA 3 and OR 3.30, 95% CI 1.87-5.82, $p<0.01$ for ASA 4-5).

Our intention was to identify vital signs and laboratory values that could predict which patients in our institution were at high risk for readmission at time of discharge. This would ideally help identify patients who may not be ready for discharge, or who may benefit from additional interventions to prevent readmission. In our study, HR $>99\text{bpm}$, BUN $>23\text{mg/dL}$, albumin $<3.8\text{g/dL}$, and presence of any abnormal lab value (from WBC, blood glucose, albumin, BUN, and drop in hemoglobin) within 24 hours of discharge were associated with increased incidence of unplanned 30-day readmissions in surgical patients. Although these lab and vital sign parameters are statistically suggestive of increased readmission risk, they are of limited clinical utility due to their poor positive predictive values.

With risk adjustment, HR $>99\text{bpm}$, BUN $>23\text{mg/dL}$, and increased ASA scores were associated with significant risk for readmission. Elevated BUN and increased ASA scores are reflective of likely unmodifiable baseline patient characteristics, such as cardiac and renal comorbidities. This is consistent with larger national studies that demonstrated the most important factors contributing to readmission risk in surgical patients were patient-level factors, such as comorbidities and social factors.^{5,6}

Readmissions in Surgical Patients

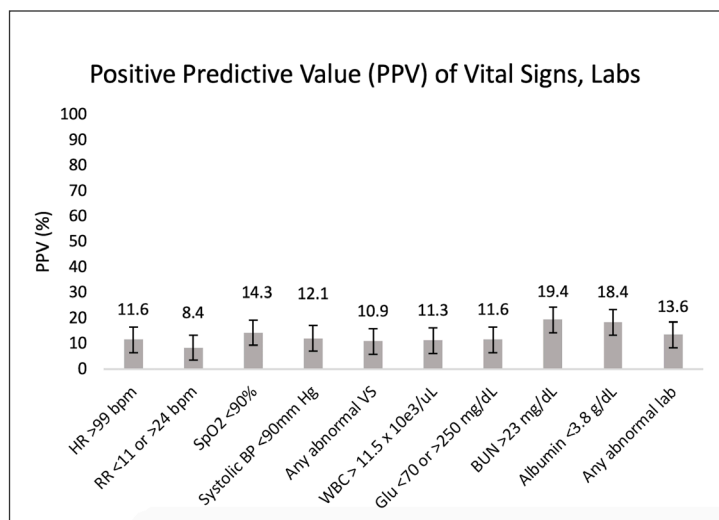


Figure 1. Positive predictive value of discharge vital signs and labs.

Furthermore, although preoperative patient factors have been shown to be most predictive of readmissions, these factors can be difficult or impossible to modify. Prehabilitation programs have been suggested as means to improve postoperative outcomes, but the data supporting their efficacy is limited. Focus should therefore be turned to preventing common post-discharge complications that can lead to readmission, such as surgical site infections and wound complications.⁶ Efforts should also be made to identify modifiable post-discharge social factors that may prevent readmission, such as availability of outpatient support and follow-up with a primary care provider.⁸

Other existing indices of patient condition may be helpful in predicting readmission risk as well. The Rothman index is a peer-reviewed and validated patient acuity score, updated in real-time using data documented in the electronic health record to indicate a patient's current health condition.⁹ It was recently integrated into the Froedtert Hospital clinical care setting and has been shown to predict 30-day readmissions in mixed cohorts of medicine and surgery patients.¹⁰ We plan to investigate the applicability of Rothman index scores in predicting readmissions specifically in surgical patients. •

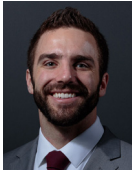
FOR ADDITIONAL INFORMATION on this topic, see references, visit mcw.edu/surgery, or contact Dr. Peterson, 414-955-1471, cypeterson@mcw.edu.

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Management of Metastatic Appendiceal Cancers:



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Appendiceal mucinous tumors (AMTs) are rare neoplasms, constituting 0.2-0.3% of all appendectomies.¹ Neoplastic transformation of the mucosal epithelium leads to abundant mucin production, intraluminal accumulation, and eventual rupture that can lead to mucin deposition with or without epithelial cells in the peritoneum also called pseudomyxoma peritonei (PMP).² (Figure 1.) PMP is characterized by a wide spectrum of clinical behavior, from seemingly indolent tumors that progress very slowly to extremely aggressive high-grade adenocarcinomas with rapid progression and dismal prognosis.³ While several variable classifications have been developed to categorize these tumors, recent international consensus guidelines broadly classify these tumors into low- and high-grade subtypes.⁴ While the majority of low-grade AMTs are confined to the appendix, a perforated low-grade appendiceal mucinous neoplasm can often lead to dissemination and subsequent progression to PMP, which if left untreated is invariably fatal.⁵ High-grade AMTs pose the risk of nodal as well as peritoneal metastases even in the absence of frank rupture, with relatively rapid progression leading to a much worse prognosis. These variations in clinical behavior, although correlated to pathological findings, not infrequently occur as a result of variations in tumor biology that are not clearly defined. Understanding this is especially important because, despite the therapeutic nihilism with which these tumors have been traditionally approached, recent advances in treatment have resulted in improved survival for patients with this disease. Patients with low-grade tumors respond poorly to systemic treatment with cytotoxic chemotherapy. However, cytoreductive surgery (CRS) and

hyperthermic intraperitoneal chemotherapy (HIPEC) is a relatively novel treatment developed for the regional treatment of metastatic AMTs that, in well-selected patients, can lead to meaningful long-term survival (5-year survival up to 80%).⁶ Conversely, high-grade tumors tend to be more aggressive and receive upfront systemic therapy, with CRS/HIPEC considered in patients that have a good response to treatment.⁷ While tumor grade has been considered a marker of tumor biology, much variability exists even within pathological subtypes, making patient selection for treatment challenging.

Somatic tumor mutation profiling has been a valuable tool in the understanding of the pathogenesis, improving diagnostic accuracy, prognostication, and development of novel targeted therapies for various cancers.⁸ However, the role of these mutational alterations in AMTs is still evolving. Establishing a molecular and genetic signature may provide insight into the biological variability of these tumors, enhance our understanding of mechanisms of progression, potentially improve patient selection for various therapeutic approaches, and provide actionable targets for therapy. While many studies have attempted to characterize mutations in AMTs, given the rarity of these tumors, variability of classification systems used, and the relatively small number of specimens analyzed, findings have not been generalizable for clinically meaningful use.

Our group recently conducted a systematic review of the literature to identify all somatic alterations common to AMT subtypes and those associated with more biologically aggressive phenotypes. Using available studies between 1990-2018, we identified 21 full-text articles that demonstrated somatic alterations in 1,099 AMTs. Using standard

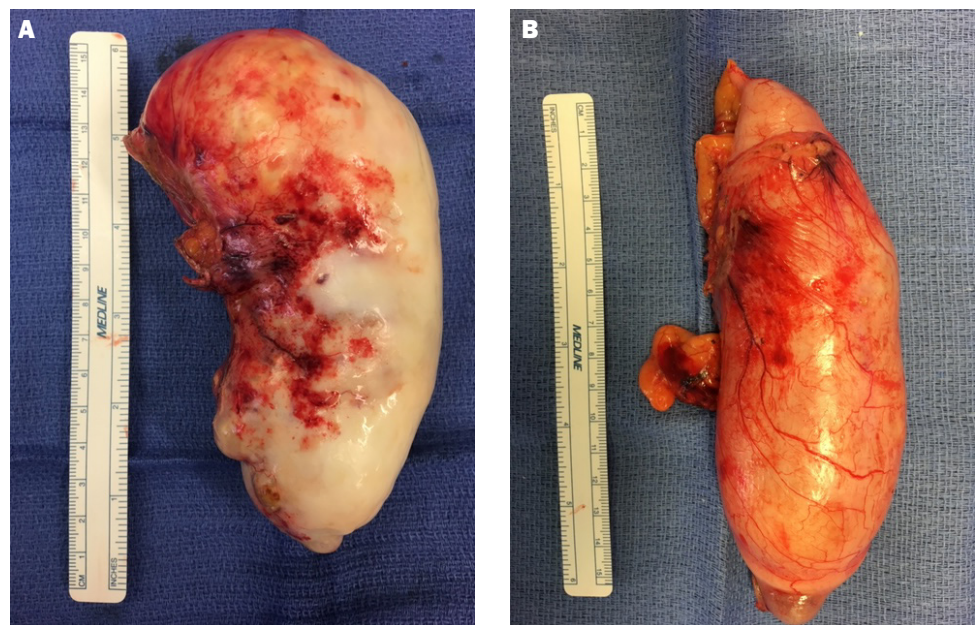


Figure 1. Low-Grade Appendiceal Mucinous Neoplasm (LAMN) with (A) and without (B) rupture.

The Role of Genetic and Molecular Markers

Table 1. Somatic Alterations in Primary and Metastatic AMTs

Primary AMTs					
Classification	Studies (n)	Samples (n)	KRAS (%)	GNAS (%)	TP53 (%)
Low-grade					
LAMNs	6	81	62/81 (76.5)	19/42 (45.2)	2/7 (28.6)
MAC – LG	2	20	11/20 (55.0)	1/3 (33.3)	2/3 (66.7)
(Total LG)	7	101	73/101 (72.3)	20/45 (44.4)	4/10 (40.0)
High-grade					
MAC – HG	5	331	183/276 (66.3)	27/83 (32.5)	21/83 (25.3)
MAC – SRC	1	43	3/41 (7.3)	0/14 (0)	2/13 (15.4)
GCC	4	63	0/52 (0)	-	9/27 (33.3)
(Total HG)	8	437	186/369 (50.4)	27/97 (27.8)	32/123 (26.0)
TOTAL	11	538	259/470 (55.1)	47/142 (33.1)	36/133 (27.1)
AMTs with Peritoneal Metastases					
PMP – LG	14	261	177/238 (74.4)	57/101 (56.4)	3/31 (9.7)
PMP – HG	12	232	110/200 (55.0)	21/60 (35.0)	5/19 (26.3)
Low + high –grade PMP (NOS)	2	68	44/58 (75.9)	25/47 (53.2)	3/47 (6.4)
TOTAL	16	561	331/496 (66.7)	103/208 (49.5)	11/97 (11.3)

AMT – Appendiceal Mucinous Tumors, LAMNs low-grade appendiceal mucinous neoplasms, MAC – LG low-grade mucinous adenocarcinomas, MAC – HG high-grade mucinous adenocarcinomas, MAC – SRC mucinous adenocarcinomas with signet ring cells, GCC goblet cell carcinoids, PMP pseudomyxoma peritonei, NOS not otherwise specified.

consensus guidelines, these tumors were reclassified as low- and high-grade primary as well as metastatic tumors (Table 1). Mutations in the KRAS gene which codes for a GTPase protein involved in the RAS/MAPK pathway that helps regulate the cell-cycle, replication and proliferation, were identified with high frequency in low-grade primary (76.5%) and metastatic (74.4%) AMTs. High-grade AMTs also demonstrated a high rate of KRAS in both primary (50.4%) and metastatic (55%) subtypes, albeit lower than its low-grade counterpart. GNAS, which encodes the alpha-subunit of the G-protein complex, increases adenylate cyclase activity and intracellular cAMP levels and is implicated in mucin production, was relatively frequently mutated in low-grade primary (42%) and metastatic (56%) AMTs but was noted with much lower frequency in high-grade primary (27.8%) and metastatic (35%) AMTs. High-grade tumors demonstrated a higher incidence of TP53 mutations for both primary (26%) and metastatic (26.3%) subtypes. These mutations lead to altered expression of the p53 protein, which is involved in DNA repair within the cell cycle, increased protein stability and accumulation in the nucleus, and a higher mutational rate with subsequent malignant transformation.

The overall high rate of KRAS mutations in low- and high-grade AMTs could provide a potential explanation for tumor initiation, progression and chemoresistance.⁹ Similarly, targeted therapies such as anti-EGFR agents, which are frequently used in patients with metastatic colon cancers not only fail to improve outcomes but also possibly worsen survival in patients with KRAS mutated AMTs.¹⁰ GNAS mutations play a role in mucin production and therefore provide a possible therapeutic target in management of disseminated mucinous tumors.¹¹ Given its increased frequency in high-grade AMTs, TP53 portends aggressive biological phenotype with poorer prognosis and could potentially be utilized in clinical scenarios where there is a discordance between morphological grade and clinical behavior.¹² While this analysis provides valuable insights into variability in tumor biology, most of the studies to date are small, single-institution analyses. Additionally, there is limited data on the prognostic relevance of these mutational alterations in AMTs. While KRAS and GNAS mutations have been demonstrated to decrease progression-free survival, none of the studies have analyzed the association of these mutations to

CONTINUED ON PAGE 8

METASTATIC APPENDICEAL CANCERS CONTINUED FROM PAGE 7

survival independent of pathological type.^{13,14} Larger studies from multi-institutional consortiums utilizing a uniform classification system with objectively evaluable survival data may help obviate these limitations. Our team is involved in a multi-institutional collaborative and we hope to obtain additional insights into the role of these mutations in prognosis and thereby improve their clinical applicability. •

FOR ADDITIONAL INFORMATION on this topic, see references, visit mcw.edu/surgery, or contact Dr. Mogal, 414-955-1451, hmogal@mcw.edu.

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Philanthropy at the “Heart” of Progress in Cardiovascular Care

By: Alex Krouse, MBA, MA

Content Lead, Office of Communications

Thomas Smallwood understands the power of philanthropy to transform the health of patients and families in Wisconsin. For decades, as executor of the Milwaukee-based Evan and Marion Helfaer Foundation, he has supported initiatives and programs at the Medical College of Wisconsin and Froedtert Hospital that have improved patient care and advanced medical discovery.

In 2011 and 2018, Smallwood designated gifts from the Helfaer Foundation totaling \$1 million to expand the Froedtert & the Medical College of Wisconsin Adult Heart Transplant Program into a world-class destination for adults with advanced heart failure. Funds from the grant were designated for MCW’s department of medicine to recruit medical and surgical specialists in advanced heart failure and heart transplant to grow the program to become a leader regionally and nationally.

“It’s incredibly important to have top talent here in the region to care for patients and conduct research,” Smallwood says. “Cardiovascular diseases are a leading cause of death in Wisconsin, and in many cases, early diagnosis and treatment is all that stands between a chance for a long and healthy life and a preventable tragedy.”

With support from the Helfaer Foundation, MCW and Froedtert Hospital have significantly moved the heart program forward by recruiting a team of pioneering cardiovascular and cardiothoracic surgical specialists – thus positioning Milwaukee and the state of Wisconsin as a hub for some of the top such talent in the country.

“Tom’s enthusiasm for growing our program has been critical to our recent growth,” notes Roy Silverstein, MD, the Linda and John Mellows Professor and Chair of the MCW Department of Medicine. “The gifts from the Helfaer Foundation have helped elevate our program and attracted some eminent candidates to join us.”

Mitchell Saltzberg, MD, Professor of Medicine (Division of Cardiology) was one of the first faculty recruitments to the program. Dr. Saltzberg is a nationally-known expert in advanced heart failure and transplant and brought a large portfolio of sponsored clinical trials to MCW.

In March 2017, Paul Pearson, MD, PhD, a Mayo-trained heart surgeon, joined MCW as Professor of Surgery and Chief of the Department’s Division of Cardiothoracic Surgery. Since coming onboard, he has been a catalyst for expanding the program’s team of transplant surgeons. Dr. Pearson was instrumental in recruiting Lyle Joyce, MD, PhD, an international expert in transplant and heart failure, and his son, David Joyce, MD, a rising star in the same field.

In July 2018, Jorge Saucedo, MD, MBA, joined MCW as Professor of Medicine, Chief of the Division of Cardiovascular Medicine and an MCW Eminent Scholar. “Dr. Saucedo is an accomplished and highly productive cardiologist,” Dr. Silverstein shares.

Support from the Helfaer Foundation dates back to 1969, when Evan Helfaer made grants in urological research to MCW’s predecessor institution, the Marquette University School of Medicine. The Helfaer Foundation has provided contributions to MCW in each succeeding decade.

Smallwood also has played a substantial leadership role at both MCW and Froedtert Hospital, where he served on both boards and has been deeply involved in establishing sound business practices aimed at ensuring patients and families with the highest quality care.

“I’ve been fortunate to carry out the Helfaers’ vision for a thriving community, and I’m pleased to be able to invest in improving the healthcare I believe our community deserves. I’m looking forward to seeing Dr. Silverstein and his team achieve new heights in cardiovascular care,” Smallwood adds. ●



Lyle Joyce, MD, PhD (right), an international expert in transplant and heart failure, and his son, David Joyce, MD, a rising star in the same field.



Evan and Marion Helfaer

FOR ADDITIONAL INFORMATION, contact Meg Bilicki, 414-955-1841, mbilicki@mcw.edu or Alex Krouse, 414-955-5825, akrouse@mcw.edu.

A Tiered Approach to Optimize Outcomes of P



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Appendicitis is the most common surgical diagnosis in children, resulting in approximately 70,000 pediatric appendectomies performed in the US annually.^[1] With a mean hospital cost of \$9,000, appendicitis is responsible for 30% of the cumulative cost of all pediatric general surgical conditions and accounts for the greatest percentage of cumulative cost variation when considering all pediatric surgical diagnoses.^[1,2]

The need for a cost-conscious approach to the management of pediatric appendicitis is obvious. The relatively recent introduction of single-incision laparoscopic surgery (SILS) into the practice of appendectomy has brought with it the possibility of a lower-cost, minimally-invasive approach to pediatric appendicitis management. There have been a few retrospective and prospective studies that have sought to compare pediatric outcomes of SILS appendectomy to standard three-incision laparoscopic surgery (TILS) in areas such as operative time, safety, and cost. Most studies support equivalent outcomes in terms of operative times, early complication rates, and hospital length of stay while maintaining overall lower cost in the SILS cohorts.^[3-5] No studies, however, have looked at the potential hospital cost savings when SILS appendectomy is incorporated into an established pediatric surgical practice.

We sought to compare cost and outcomes between SILS, DILS (an intermediate dual-incision laparoscopic surgical technique), and standard TILS appendectomy at the Children's Hospital of Wisconsin (CHW), a high-

volume Level 1 Children's Surgery Center. The adoption of SILS and DILS appendectomy approaches by a select few of our group's 10 pediatric surgeons has occurred rather recently and is an example of the dynamic nature of a modern academic surgical practice. The operative technique chosen for a specific case is dependent on surgeon preference alone and is not dictated by any specific preoperative findings. We hypothesized that the incorporation of SILS and DILS appendectomy techniques into a historically TILS-only practice would afford equal outcomes at lower cost. Further, we sought to use this data to model a tiered approach to appendectomy, which we define as starting all cases as SILS with additional incisions and disposable instruments added as necessary based on operative difficulty and surgeon experience. With this model, we hoped to estimate potential hospital cost savings based on utilization of a tiered surgical approach.

This study was a retrospective review of all laparoscopic appendectomies performed for appendicitis at CHW from January 2015 to December 2017. We stratified appendectomy technique and appendicitis severity (uncomplicated, acute appendicitis versus perforated, complex appendicitis) against the primary outcomes of cost, operative time, and postoperative complications. Cost data were obtained from CHW's financial database and consisted of Operative (OR) Direct Variable (DV) and Admission DV costs. OR DV cost was composed of all expenses directly related to the appendectomy procedure including OR time, labor, equipment, and disposable instruments. Admission DV cost included all expenses related to the patient's initial appendicitis hospitalization. We did not

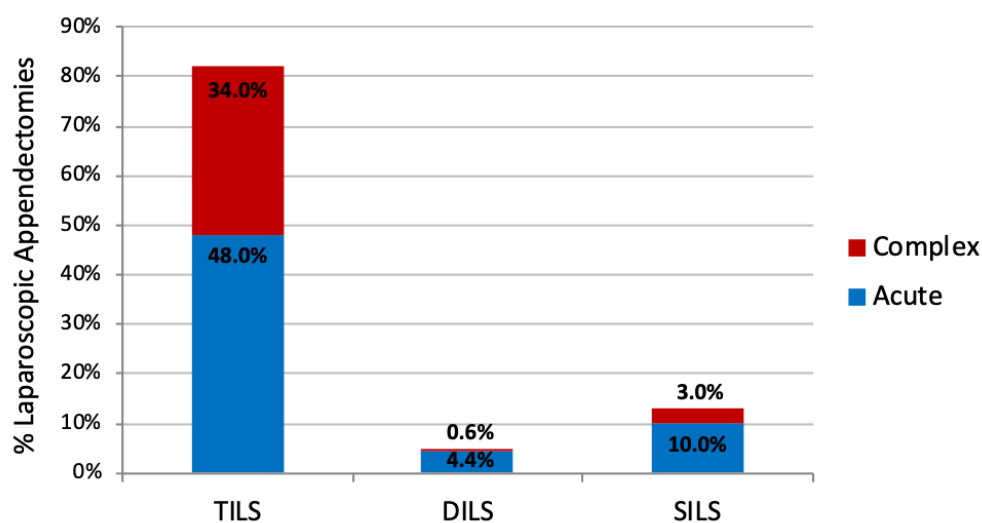


Figure 1: Percentage of total laparoscopic appendectomies (N=942) stratified by operative technique and appendicitis severity.

pediatric Laparoscopic Appendectomy

Table 1. 30-Day Postoperative Outcomes

All Patients (N=942)	Acute Appendicitis				Complex Appendicitis		
	TILS (N=451)	DILS (N=43)	SILS (N=94)	p-value	TILS (N=317)	DILS+SILS (N=37)	p-value
LOS*, hrs (mean ± SD)	24.3±13.9	17.1±8.8	23.2±9.8	0.003	121.6±82.1	103.1±93.2	0.20
Superficial SSI ^{***} , no. (%)	8 (1.8)	1 (2.3)	0	0.45	8 (2.5)	2 (5.4)	0.61
Organ Space SSI ^{**} , no. (%)	11 (2.4)	0	0	0.22	69 (21.8)	6 (16.2)	0.55
Percutaneous drain, no. (%)	6 (1.3)	0	0	0.37	41 (12.9)	3 (8.1)	0.45
Return to OR, no. (%)	4 (0.9)	1 (2.3)	0	0.35	24 (7.6)	5 (13.5)	0.34
ED visit, no. (%)	45 (10.0)	2 (4.7)	4 (4.3)	0.13	55 (17.4)	4 (10.8)	0.31
Unscheduled clinic visit, no. (%)	16 (3.5)	0	1 (1.1)	0.23	15 (4.7)	2 (5.9)	1
Readmission, no. (%)	21 (4.7)	1 (2.3)	2 (2.1)	0.48	45 (14.2)	5 (13.5)	0.8

*LOS = postoperative length of stay

**SSI = surgical site infection

include charges to the patient in our analyses, as they would be confounded by multiple indirect cost components and therefore not representative.

We found that, out of 942 laparoscopic appendectomies, 62% (N=588) were performed for acute appendicitis and 38% (N=354) for complex appendicitis. The TILS approach represented 82% (N=768) of all cases, SILS 13% (N=125), and DILS 5% (N=49). Overall, the TILS cohort had a higher proportion of complex appendicitis cases (60% acute, 40% complex) compared to the DILS (89% acute, 11% complex) and SILS (75% acute, 25% complex) cohorts (Figure 1).

Regardless of appendicitis severity, we found no differences in any postoperative outcomes at 30 days between operative techniques, except for hospital length of stay in the acute appendicitis group (Table 1). A significant trend toward shorter postoperative length of stay was noted in the acute appendicitis DILS cohort (p = 0.003); however, all cohorts in the acute appendicitis population had a mean length of stay ≤ 24 hours (Table 1). Other postoperative outcomes included surgical site infection (superficial and organ space), placement of a percutaneous abdominal drain, return to the OR, readmission, early clinic visit, and return to the Emergency Department.

Mean OR DV and Admission DV costs were significantly lower for the SILS and DILS cohorts compared to TILS, and these savings were maintained in both acute and complex appendicitis

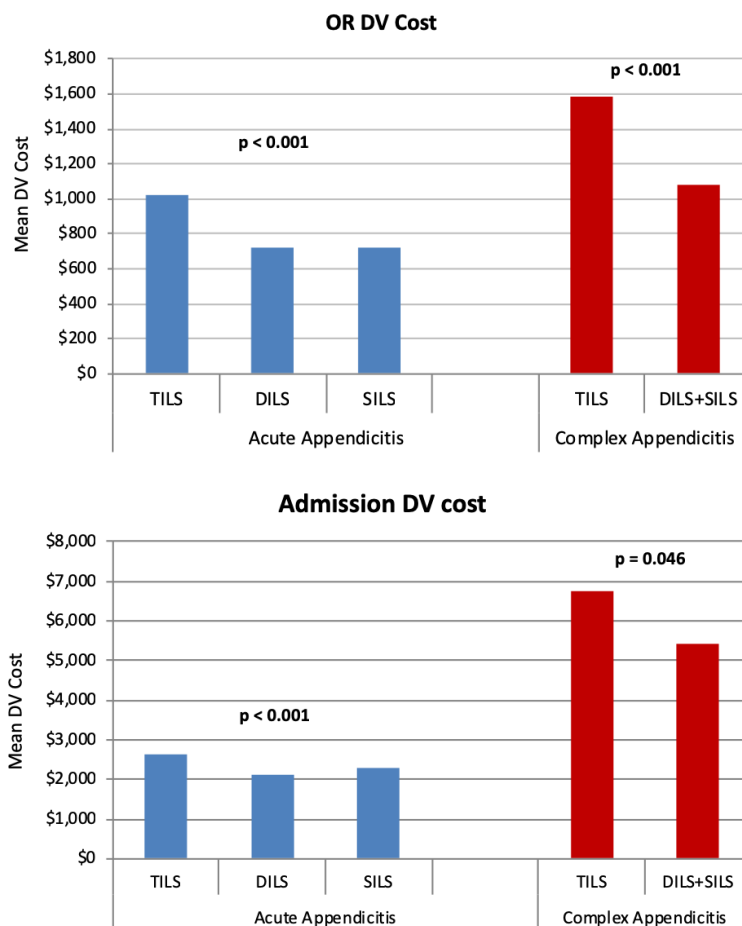


Figure 2: Mean OR and Admission DV costs stratified by operative technique and appendicitis severity.

CONTINUED ON PAGE 12

PEDIATRIC LAPAROSCOPIC APPENDECTOMY OUTCOMES
CONTINUED FROM PAGE 11

(Figure 2). Admission DV costs were around three times higher than OR DV costs for acute appendicitis, and five to six times higher for complex appendicitis. Similarly, operative times were somewhat shorter for SILS and DILS compared to TILS regardless of appendicitis severity (acute: 47 min SILS vs 32 min DILS vs 54 min TILS, $p < 0.001$; complex: 61 min SILS+DILS vs 67 min TILS, $p = 0.035$).

To estimate the annual OR direct variable cost savings at our institution based on a tiered approach to appendectomy, we applied a cost saving model using data from a single surgeon who currently practices using a tiered approach (Figure 3a). An analysis of this subgroup provided the frequency of each operative technique dependent on appendicitis severity. These frequencies were then multiplied by the mean costs of each technique derived from the total population and added together to yield a composite cost per patient. After multiplying the composite cost by the average appendectomy case load at our institution, the annual expenditure of a tiered approach was compared to that of a purely TILS practice. Based on our data, the estimated average annual OR DV cost savings using a tiered approach to appendectomy would be \$74,580, which represents 19% of a TILS-only model (Figure 3b).

This is the largest study to date that fully characterizes the experience of a single tertiary care children’s hospital following the incorporation of SILS appendectomy into a standard TILS practice. Currently, two surgeons within our group are utilizing a SILS approach in select cases, and another two surgeons are performing DILS appendectomies with comparable outcomes. SILS appendectomy is a versatile procedure that can be safely, effectively, and inexpensively used as a primary operative technique, or can be easily converted to DILS or TILS with the addition of one or two extra working incisions depending on surgeon comfort and operative difficulty.

The significant cost savings identified with SILS and DILS

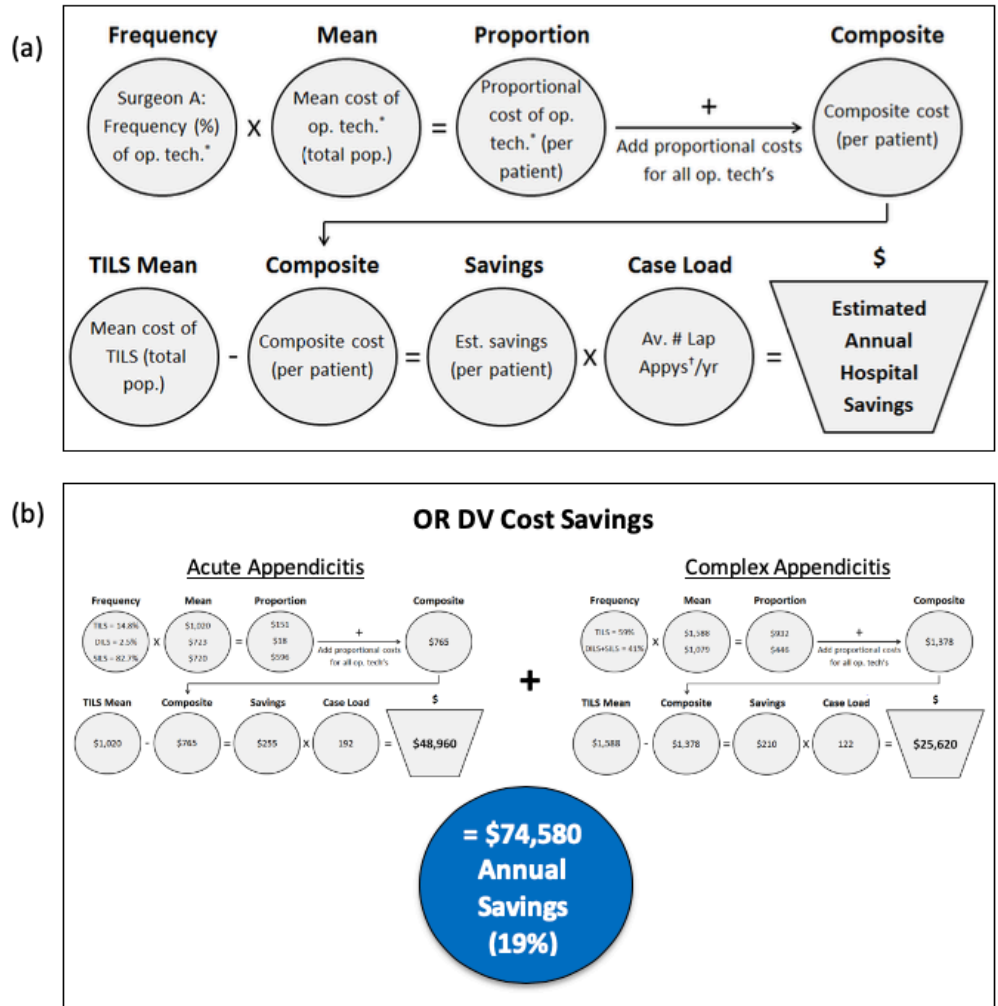


Figure 3: Cost saving model. (a) Bubble diagram illustrating the construction of a hospital DV cost saving model. (b) Example of the model being used to calculate annual OR DV cost savings based on an average annual laparoscopic appendectomy case load of 314. *Op. tech. = operative technique, † Lap Appys = laparoscopic appendectomies.

appendectomy approaches in our study are likely due to two main factors. First, operative time is somewhat shorter with these approaches compared to TILS, which factors into DV costs. Second, and probably most importantly, is the limited use of disposable instruments in SILS and DILS cases. The SILS technique uses at maximum one disposable trocar and one disposable instrument – one surgeon in this study does not place any trocars and instead inserts insufflation tubing, a laparoscope, and an instrument directly through the single umbilical incision. In contrast, there is significant

variability in the number and type of disposables used for the TILS technique, and this mostly depends on surgeon preference. For example, there is variability in the number of disposable trocars used, the use of Endoloops® (Ethicon, Cincinnati, OH) versus staplers to divide the appendix, whether an EndoCatch® (Covidien, Minneapolis, MN) device is used to extract the appendix, and whether a disposable suction/irrigator device is opened during the operation.

The experience of our pediatric surgical practice – which is diverse in both career stage and MIS skill level – demonstrates that the introduction of new surgical techniques over time is necessary to provide the most cost-effective and innovative care to our patients. We advocate for a tiered approach to laparoscopic appendectomy in this setting in which all operations for appendicitis are started as SILS and extra incisions and disposable instruments are added as needed to safely complete the operation.

FOR ADDITIONAL INFORMATION on this topic, see references, visit mcw.edu/surgery, or contact Dr. Densmore, 414-266-6553, jdensmore@mcw.edu.

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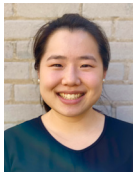
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The Impact of Nausea on Post-Operative



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Obesity is a chronic medical condition and an epidemic that is increasing worldwide.¹ Bariatric surgery has been shown to be the most effective long-term intervention for metabolic control and weight loss in obese patients.²⁻⁴ Many centers of excellence participate in an enhanced recovery pathway, in an attempt to decrease length of stay and optimize post-operative outcomes. The administration of pre- and post-operative anti-emetics are a component of this pathway, but an optimal standardized regimen has yet to be identified.

Post-operative nausea and vomiting (PONV) can occur in up to 65% of patients after bariatric surgery.⁶ Patients cannot be discharged home until they have adequate oral intake, which can be limited in those with PONV. PONV can lead to dehydration and electrolyte imbalances, as well as potentially increased length of stay and more frequent readmissions. Factors identified in the general surgery literature that are predictors of PONV include female gender, history of motion sickness or PONV, non-smoking status, and the use of post-operative opioids.⁷ However, specific risk factors in bariatric surgery patients have not been identified, nor has the effect of PONV on post-operative outcomes. Therefore, the objective of this study

was to identify the impact of PONV on post-operative outcomes in bariatric surgery patients.

The Metabolic and Bariatric Surgery Accreditation and Quality Improvement Program (MBSAQIP) database was used to identify patients at a single institution who underwent a primary laparoscopic Roux-en-Y gastric bypass (LRYGB) or sleeve gastrectomy (LSG) between 2014 and 2017. Data was supplemented from the institution's electronic medical record system. Patients' charts were reviewed to determine if they experienced significant PONV and perioperative quality outcomes, including overall complications, length of stay, readmissions and reoperations.

In total, 449 patients underwent primary bariatric surgery, 197 (43.9%) LRYGB and 252 (56.1%) LSG. Of these patients, 160 (35.6%) had documented post-operative nausea. Demographic factors that contributed to post-operative nausea included non-white race and undergoing a LSG ($p = 0.007$ and $p = 0.001$, respectively) (Table 1). Patients who underwent a LSG had a 2.0 times increased risk of post-operative nausea compared to LRYGB ($p = 0.001$). Patients with nausea had a statistically significant increased length of stay (2.4 ± 1.9 days vs 1.6 ± 1.0 days; $p < 0.0001$). They were also more likely to have an upper endoscopy and Emergency Department (ED) visit within 30 days post-operatively ($p = 0.007$ and $p = 0.02$, respectively) (Table 2).

The results of this study demonstrate that bariatric surgery patients have a high incidence of PONV, moreso for LSG compared to LRYGB. In patients who experience PONV, this leads to increased length of stay, ED visits and endoscopic interventions. Given these results, it is critical to identify and implement standardized quality initiatives to optimize post-operative outcomes for bariatric surgery patients.

Our current anti-emetic protocol involves the administration of a pre-op TAPP block to minimize the usage of narcotics, a pre-op scopolamine patch, Emend, only for patients with a significant history of anesthesia related PONV (due to its high cost), and one dose of IV Decadron intra-operatively

per anesthesia. Post-operatively, we administer Reglan, Zofran, and Compazine for patients as needed. Modification of this protocol to a scheduled, as opposed to as needed, medication administration could impact PONV among bariatric surgery patients at our institution. This would allow for an opportunity to prevent the onset of PONV rather than provide anti-emetics to patients as rescue medication when symptoms develop.

Pre-operative carbohydrate loading could serve as an additional quality improvement intervention to impact PONV in these patients. Patients currently undergo a two-week high protein liquid diet which puts their body in a

Table 1: Demographic variables in patients with and without documented nausea.

	No documented nausea (n=289)	Documented nausea (n=160)	p-value
Age (years)	44.8 ± 12.3	41.1 ± 12.4	0.27
Body mass index (kg/m ²)	48.6 ± 14.4	52.1 ± 13.7	0.71
Sex - female	218 (75.4%)	130 (81.3%)	0.16
Race - non-white	67 (23.2%)	56 (35%)	0.007*
History of post-operative nausea and vomiting	45 (15.5%)	27 (16.9%)	0.72
Pre-op scopolamine patch	107 (37%)	68 (42.5%)	0.26
Procedure type			0.001*
Laparoscopic Roux-en-Y gastric bypass (n=197)	144 (49.8%)	53 (33.1%)	
Laparoscopic sleeve gastrectomy (n=252)	145 (50.2%)	107 (66.9%)	

Asterisk (*) indicates statistical significance ($p \leq 0.05$)

Outcomes in Bariatric Surgery Patients

Table 2: Perioperative outcomes in patients with and without documented nausea.

	No documented nausea (n=289)	Documented nausea (n=160)	p-value
Length of stay (days)	1.6 ± 1.0	2.4 ± 1.9	<0.0001*
Operating room time (mins)	133.8 ± 55.2	124.4 ± 66.9	0.01*
Amount of 24-hour oral intake (mL)	895.8 ± 619.7	699.6 ± 475.5	<0.0001*
Number of antiemetic doses	2.3 ± 2.2	5.8 ± 4.3	<0.0001*
Administration of outpatient intravenous fluids	20 (6.9%)	17 (10.6%)	0.17
Emergency department visit	28 (9.7%)	28 (17.5%)	0.02*
Post-operative intervention (upper endoscopy)	0 (0%)	4 (2.5%)	0.007*

Asterisk (*) indicates statistical significance ($p \leq 0.05$)

fasting state and depletes their glycogen stores. Carbohydrate loading in bariatric patients pre-operatively has been found to reduce opioid usage, post-operative nausea, and ED visits within 30 days of the procedure⁸. We are currently enrolling patients in a randomized study where we provide a high-carbohydrate, low-sugar drink the night before and two hours pre-operatively to determine the impact on nausea and blood sugar control.

One of the limitations of this study was the lack of a standardized nausea scale scoring system, such as one that exists for pain. Nursing and physician documentation were utilized to identify the presence of PONV, so patients could have been misclassified if there were inconsistencies in documentation. Nausea is subjective and difficult to measure in a standardized way across all patients. The utilization of a standardized validated nausea scale could serve as an objective metric for quantifying PONV in patients. We are exploring the usage of a validated nausea questionnaire in our carbohydrate loading project to determine if this scale can help to better quantify clinically significant nausea.

As we move forward with this project and explore mechanisms to reduce the incidence of nausea among the bariatric surgery patient population, we hope to implement validated and effective techniques for improving quality outcomes for patients not only at Froedtert and MCW but also at other institutions around the country. ●

FOR ADDITIONAL INFORMATION on this topic, see references, see references, visit mcw.edu/surgery, or contact Dr. Higgins, 414-955-1772, rhiggins@mcw.edu.

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Management of Juxtahepatic Venous Injury in Trauma:



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Injuries to juxtahepatic veins, defined here as the retrohepatic vena cava and major hepatic veins¹, are one of the most difficult injury patterns to treat in trauma. They have a high mortality of 50-80%, owing primarily to rapid exsanguination from the injury site and difficulty with intra-operative exposure.^{1, 2} Management strategies in these patients involve early operative intervention with the goal of hemorrhage control and aggressive fluid resuscitation.³ The following case report describes the use of an atriocaval shunt to aid in repair of a juxtahepatic vena cava injury.

CASE REPORT

A 22-year-old African American male sustained a gunshot wound to the left chest. He was combative with initial GCS 9, heart rate of 127 and BP 60/0; his injury was located medial to the left nipple and radiographic imaging during his primary survey demonstrated the retained missile located in his right upper abdominal quadrant (Figure 1). Massive transfusion protocol was initiated and he was taken emergently to the operating room, his initial ABG 6.88/62/154/11/-21.7 and lactic acid 19.9.

We began his exploration with an abdominal laparotomy and packing of his abdomen. At this time, it was noted that he had active bleeding from a diaphragmatic injury, so a median sternotomy was performed, revealing an injury at the apex of the left ventricle, which was repaired primarily with sutures. Upon removal of his abdominal packing, there was continuous bleeding noted under the left lobes of the liver. A Pringle maneuver was carried out without any cessation of the bleeding. It was also noted that most of this bleeding was coming through the defect of hepatogastric ligament and could be momentarily controlled with direct pressure. However, this prevented visualization of the area of injury but controlled the bleeding enough to perform medial rotation of the right colon and duodenum to expose the suprarenal vena cava revealing that the site of injury was still superior to this. With continued difficulty visualizing the area of injury due to hemorrhage and inadequate exposure, the decision was made to perform an atriocaval shunt utilizing a 32 Fr chest tube inserted into the right atrium. This controlled the bleeding enough to visualize injury to the caudate lobe of the liver and a 1 centimeter injury to the medial IVC behind the caudate lobe. This was repaired primarily, the shunt removed, the chest and abdomen were left open, and the patient was taken to the surgical intensive care unit for further resuscitation. The patient received a total of 41 units PRBC, 32 units FFP, 10 units Cryoprecipitate, 5 units Platelets, 2 L cell saver, and 2 L Albumin; on arrival to the SICU, his labs showed ABG 7.29/50/137/23/-3.2 and lactic acid 3.2.

His hospital course involved further returns to the operating room for closure of his chest, creation of bowel anastomoses for his bowel injuries, and closure of his abdomen. He did have complications involving right

atrial thrombus, DVT and PE requiring IVC filter placement and need for anticoagulation. He was discharged to home after a 25-day stay and will be on anticoagulation for approximately six months.

DISCUSSION

Due to advances in pre-hospital care, most patients with juxtahepatic venous injuries are able to make it to the hospital.² However, they arrive in profound shock, so operative intervention is undertaken usually without the knowledge that this injury pattern exists in the patient. Diagnosis of the problem is most likely present when performing the Pringle maneuver fails to control hemorrhage from within or around the liver.^{4, 5, 6} Management strategies include hepatic packing, vascular isolation modalities to facilitate direct vascular repair and, at the most extreme end, consideration for liver transplantation.

In patients who, at the time of surgical intervention, present already hypothermic, coagulopathic and acidotic, damage control methodology involving perihepatic packing is preferred.² Perihepatic packing provides a means to ensure acute tamponade of bleeding for the purposes of taking them to the intensive care unit for further resuscitation before planning take-back for definitive management. In these cases, gauze packs are used to manually compress the liver in addition to closure of fascia or skin to aid in tamponade.² Operative take-back is usually performed within 36-72 hours of initial packing, and this was shown to decrease re-bleeding risk when the packs were removed as well as the risk of perihepatic sepsis.^{2, 10}

Schrock et al. first described vascular isolation using the atriocaval shunt in 1968; here they discussed interruption of flow at three distinct points, including the porta hepatis and inferior vena cava both above and below the liver. In order to do this, they introduced a 34-38 Fr catheter, with side holes at the tip and an additional side hole created 20 centimeter distal, into the right atrium and occluded the vena cava both above the renal veins and also within the pericardium so as to preferentially shunt blood via the catheter to aid in repair of the injury.⁷ In their original description of the procedure, they also performed a right hepatectomy to fully expose the juxtahepatic vasculature to facilitate repair. This technique was also preferentially described for repair of blunt hepatic injury, as this has a higher mortality compared to penetrating injury due to deceleration forces.^{4, 10} Unfortunately, despite initial success, this method has been fraught with many complications including risk of air embolism or injury to relevant vascular structures during insertion. Additionally,

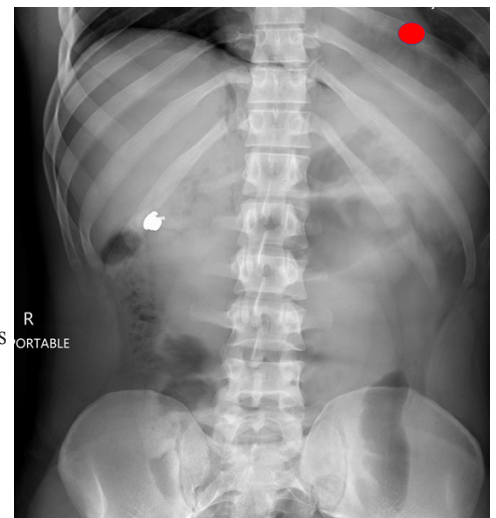


Figure 1: Plain radiograph showing site of entry and retained missile.

A Case Report of a Rare but Deadly Problem

a low survivor rate of 19-22% was still encountered due to the need for quick decision-making to utilize the shunt before hypothermia, acidosis, and coagulopathy become irreversible.^{2,8,9} Due to this high mortality, other methods of hepatic vascular isolation were evaluated, including use of balloon shunts inserted via the femoral vein to bypass the area of injury; the balloon is inflated and shunts infra-renal blood to the atrium via side ports. While this option avoided a sternotomy, it still ran the risk of being dislodged, placing the patient at risk for forming a thrombus.² Another vascular isolation technique involves placing clamps on the portal triad, either with or without clamping of the supra-renal and supra-hepatic inferior vena cava; this method achieves the same isolation as an atriocaval shunt without the complications, but it does have a risk of arrhythmias and cardiac arrest as well as not being well-tolerated in patients who are in extremis.^{2,8}

Other less well-studied methods to treat juxtahepatic injuries in trauma patients include utilizing extracorporeal circulation during repair, orthotopic liver transplantation, or auto transplantation of the liver after extracorporeal repair. Unfortunately, these methods can rarely be applied in the acute setting, and the numbers of performed procedures are so small that there has been no well-documented success or safety associated with any of them.⁶

CONCLUSION

Juxtahepatic venous injuries are a rarely-seen injury pattern in trauma with a high mortality rate. Tenets of management for this patient group involve early recognition of the problem, quick decision-making and implementation of a treatment plan. Additionally, aggressive resuscitation with blood products to prevent coagulopathy, acidosis and hypothermia is very important. Lastly, deciding when to transition to damage control mode and take the patient to the ICU for further resuscitation is essential. Historically, patient survival after use of an atriocaval shunt is rare, with mortality ranging from 70-90%.^{2,8,9} Hence, the case report presented above, where the patient recovered neurologically intact after sustaining the injuries he did, is quite remarkable. The collaborative teamwork among surgery, anesthesia, and operating room teams was invaluable in providing this patient with a successful outcome. ●

FOR ADDITIONAL INFORMATION on this topic, see references, visit mcw.edu/surgery, or contact Dr. Elegbede, 414-955-1730, aelegbede@mcw.edu.

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MS3 Students Win at Foxconn Smart Cities Smart Futures

InfiniMED, a project developed by MCW MS3 students **Devashish Joshi**, **Michelle Botts**, and **Adhitya Ramamurthi** won Foxconn's Smart Cities Smart Futures competition this April. In working with Dr. David Joyce and Barb Alivo from our Division of Cardiothoracic Surgery, this winning team's project proposes creating virtual reality (VR) modules for medical students and residents to assist in their education and medical exposure. It also aims to bring VR modules to medical employee training for emergency protocols and to patients to ease anxiety about certain procedures.



Leading the Way

HONORS AND AWARDS

MCW CONVOCATION CEREMONY Teaching Pins

The Curriculum and Evaluation Committee (CEC) annually awards the MCW Outstanding Medical Student Teacher recognition pins. The CEC wishes to “recognize and affirm those individuals who, through their teaching excellence, advance student learning and provide added value to students’ required medical training.” Pins are awarded to faculty and residents for contributions in courses, clerkships, pathways, acting internships, or electives. The 2017-2018 Outstanding Medical Student Teacher Pin recipients from the Department of Surgery include the following individuals:

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Sam Thalji, MD
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The Thoracic Surgery Foundation (TSF) Announces New Grants

The 24 new grants totaling \$916,500 will be given in support of research and education programs in cardiothoracic surgery. These grants will help advance treatment options for patients with heart and lung diseases and offer much-needed assistance to underserved patients in developing countries, including Kenya, Mongolia, Nepal, Nigeria, Rwanda, and Uganda. The results from these projects will help us understand more about the biology and treatment of heart and lung diseases, and the contributions of these award recipients to cardiothoracic surgery and our patients will be significant. Many worthy funding applications were received, and 24 rose to the top, including one from our very own **Lyle D. Joyce, MD, PhD** (Division of Cardiothoracic Surgery), for his project, “Meeting the Challenge of Rheumatic Valve Disease in Kenya.” His project was awarded \$35,000 with the TSF Every Heartbeat Matters Award.

Career Development Award



Tammy Kindel, MD, PhD (Division of General Surgery) was awarded an NIH K08 career development award, funded by the NHLBI, in January 2019. The award was funded for four years, totaling more than \$600,000. Her project is entitled “The role of GLP-1 in cardiac recovery after bariatric surgery in obesity-induced heart failure.” Obesity cardiomyopathy is heart failure caused by obesity. Bariatric surgery is the only known surgical intervention to reverse obesity cardiomyopathy, but the mechanism is not understood. This project will lead to an understanding of how bariatric surgery improves heart function in patients with obesity cardiomyopathy and lead to the development of new surgical and non-surgical therapies for this disease.

Ernest O. Henschel Clinical Teaching Award



Thomas Carver, MD (Division of Trauma and Acute Care Surgery) was selected across all clinical faculty by the MCW senior class for the 2019 Ernest O. Henschel Clinical Teaching Award. He was awarded in May in recognition of his clinical teaching excellence.

NEW FACULTY

Research



Young-In Chi, PhD, Assistant Professor, recently joined us from Kyungpook National University Medical Center in Daegu, Korea where he was a Research Professor in the Center for Drug Discovery and Development for Diabetes and Metabolic Disease.

Dr. Chi earned his Ph.D. in X-ray crystallography and biophysics from Purdue University and completed a postdoctoral fellowship at the University of California at Berkeley. He then went to Harvard Medical School for a research fellowship at the Joslin Diabetes Center. Upon completion of his research fellowship in 2003, Dr. Chi joined the Department of Molecular and Cellular Biochemistry at the University of Kentucky as an Assistant Professor. In 2011, he went to the Hormel Institute at the University of Minnesota as an Assistant Professor and then to the Kyungpook National University Medical Center in 2017 under a visiting scholar program.

Dr. Chi is a member of Dr. Raul Urrutia’s team in the Genomic Sciences and Precision Medicine Center and will be conducting basic science research in the areas of molecular modeling, variant analysis, and precision medicine of pancreatic cancer.

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JUNE 26: Knowledge Saving Life

JULY 10: Robert Fisher, MD, Adams Visiting Professor and Solid Organ Transplantation Symposium – MCW

JULY 26: MD Anderson & MCW Endocrine Surgery Symposium – Saint Kate Arts Hotel

SEPTEMBER 4: Knowledge Saving Life

SEPTEMBER 27: Surgical Site Infection Summit – Wilderness Hotel, Wisconsin Dells

OCTOBER 5: Atlanta Pancreas Symposium – Atlanta, GA

OCTOBER 23: John Waldhausen, MD, Schroeder Visiting Professor

OCTOBER 25: MCW Pancreatic Cancer Translational Science Forum – MCW

NOVEMBER: 13: Brian Dunkin, MD, Mendeloff Visiting Professor

NOVEMBER 22: MCW Survivorship Symposium, celebrating Dr. Alonzo Walker's Career – Crowne Plaza Milwaukee West

DECEMBER 7: Minimally Invasive General Surgery Symposium – MCW-Green Bay Campus

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