



60<sup>th</sup>  
Annual Meeting

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August 5-7, 2018

*Grand Hotel*  
Mackinac Island, Michigan

The Midwest Surgical Association would like to thank the following organization for their marketing support of the 2018 Annual Meeting:

## **Amgen | Gold Sponsor**

The Midwest Surgical Association would like to thank the following exhibiting companies for their generous support:

**Amgen**

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**Veteran Health Indiana**

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# Officers, Councilors, & Past Presidents

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## OFFICERS

William C. Cirocco, MD | President

Nicholas J. Zyromski, MD | President Elect

Constantine Godellas, MD | Secretary

David Farley, MD | Treasurer

Jeffrey Hardacre, MD | Recorder

## ACS REPRESENTATIVES

Donn Schroder, MD | ACS Board of Governors

Christopher R. McHenry, MD | ACS Advisory Council for Surgery

## COUNCILORS

Alfred Baylor, MD

Richard Berri, MD

Arthur Carlin, MD

Heather Dolman, MD

Peter Ekeh, MD

Nicole Kennedy, MD

Ashraf Mansour, MD

Jonathon Saxe, MD

Scott Wilhelm, MD

## PAST PRESIDENTS

James G. Tyburski, MD | 2015

Conor P. Delaney, MD, MCh, PhD | 2016

Margo C. Shoup, MD | 2017

# Committees

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## AUDIT

Martin Luchtefeld, MD  
Ronald Waits, MD

## EDITORIAL

Jeffrey Hardacre, MD | Chair / Recorder  
Roderich E. Schwarz, MD  
James Madura, MD  
Marshall Baker, MD  
Maggie Brandt, MD

## MEMBERSHIP

Carlos Rodriguez, MD | Chair  
William C. Cirocco, MD | Ex-Officio  
Constantine Godellas, MD | Ex-Officio  
Todd Brandon, MD  
Heather Dolman, MD  
Joshua Mammen, MD  
Jonathan Myers, MD  
Amber Traugott, MD  
Michael Valente, MD

## PROGRAM

Theodor Asgeirsson, MD | Chair  
William C. Cirocco, MD | Ex-Officio  
Constantine Godellas, MD | Ex-Officio  
Jeffrey Hardacre, MD | Ex-Officio  
Jonathon Saxe, MD | Past Program Chair  
Allan Ladd, MD  
James Ouellette, MD  
Scott Steele, MD

## Objectives

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### **Upon completion of this activity, participants should be able to:**

1. Discuss information presented on the research activities of the association's members and make clinical decisions based on current evidence within their practices.
2. Apply information gained through broad view, collaborative research into future basic and clinical research activities which may in turn benefit the next cycle of members.
3. Utilize research results to initiate optimization of the educational experience to maximally benefit resident training within the framework of work hour restrictions.

### **Specific Topics for Discussion using these guidelines for learning objectives:**

1. Spectacular Problems Session will allow learners to gain experience on the following topics:
  - a. Management of complex surgical problems in the acute phase of surgery and postoperative settings. This session features the management of difficult events in Trauma surgery and Vascular surgery as well as challenging complications in the General surgery arena.
  - b. Participants will gain insight into the management of complex cardiac and vascular injuries in Trauma and understand some of the latest techniques both operative and non-operative to manage these events.

## Objectives

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- c. Participants will be able to recognize complications associated with renal transplantation and the diagnostic radiographic tools that may assist with the correct diagnosis.
  - d. Participants will learn about unique complications associated with acute pancreatitis and pancreatic resections including Vascular and other intestinal injuries that can arise in these situations.
2. General Scientific Sessions
- a. Sessions are broad based covering the topics of Endocrine, Vascular, Colorectal, Hepatobiliary, and General surgery. Participants will be updated in new techniques and surgical management practices based on outcomes and basic science research in these and other fields.
  - b. We are also showcasing presentations on resident training strategies and surgical quality. The Presidential address features the topic of “Chasing Surgical Value” which will examine both quality and safety outcomes in patient care along with balancing the concept of cost-effective medicine. The purpose of this conference is to provide a vehicle for the distribution of peer-reviewed basic and clinical science research and to provide an opportunity for dialogue concerning topics of interest to the members of the Midwest Surgical Association. The target audience is surgeons.

## **Disclosure Information**

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In compliance with the ACCME Accreditation Criteria, the American College of Surgeons, as the accredited provider of this activity, must ensure that anyone in a position to control the content of the educational activity has disclosed all relevant financial relationships with any commercial interest. All reported conflicts are managed by a designated official to ensure a bias-free presentation. Please reference the list at the registration desk for the final disclosure list.

## CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

### Accreditation

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American College of Surgeons and the Midwest Surgical Association. The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

### AMA PRA Category 1 Credits™

#### Annual Meeting

The American College of Surgeons designates this live activity for a maximum of **11.25** AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Of the AMA PRA Category 1 Credits™ listed above, a maximum of **9.25** credits meet the requirements for Self-Assessment.



100+ years

AMERICAN COLLEGE OF SURGEONS  
Inspiring Quality:  
Highest Standards, Better Outcomes



AMERICAN COLLEGE OF SURGEONS  
DIVISION OF EDUCATION  
Accredited with Commendation by the  
Accreditation Council for Continuing Medical Education

## Past Presidents of the MSA

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Margo C. Shoup, MD, Chicago, IL, 2017 (CSA/MSA)  
Conor P. Delaney, MD, MCh, PhD, Mackinac Island, MI, 2016  
James Tyburski, MD, Lake Geneva, WI, 2015  
Raymond P. Onders, MD, Mackinac Island, MI, 2014  
Stephen F. Sener, MD, Acme, MI, 2013  
Richard A. Berg, MD, Mackinac Island, MI, 2012  
Roxie M. Albrecht, MD, Galena, IL, 2011  
Donn M. Schroder, MD, Mackinac Island, MI, 2010  
Jerry M. Hardacre, II, MD, Lake Geneva, WI, 2009  
James R. DeBord, MD, Mackinac Island, MI, 2008  
Anthony Senagore, MD, Farmington, PA, 2007  
Christopher McHenry, MD, Mackinac Island, MI, 2006  
Steven A. De Jong, MD, Niagara-on-the-Lake, Ontario,  
Canada, 2005  
Donald W. Moorman, MD, Mackinac Island, MI, 2004  
John P. Hoffman, MD, Galena, IL, 2003  
Larry R. Lloyd, MD, Mackinac Island, MI, 2002  
Donald J. Scholten, MD, Lake Geneva, WI, 2001  
Thomas A. Stellato, MD, Mackinac Island, MI, 2000  
Norman C. Estes, MD, Galena, IL, 1999  
Darrell A. Campbell, Jr., MD, Mackinac Island, MI, 1998  
Richard A. Prinz, MD, Sawmill Creek, OH, 1997  
Thomas A. Broadie, MD, Mackinac Island, MI, 1996  
Jason H. Bodzin, MD, Grand Traverse, MI, 1995  
Willard S. Stawski, MD, Mackinac Island, MI, 1994  
Gerard V. Aranha, MD, Lincolnshire, IL, 1993  
William C. Boyd, MD, Mackinac Island, MI, 1992  
Douglas B. Dorner, MD, Grand Traverse, MI, 1991  
John L. Glover, MD, Mackinac Island, MI, 1990  
Jack Pickleman, MD, Kohler, WI, 1989

## Past Presidents of the MSA

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Samuel D. Porter, MD, Mackinac Island, MI, 1988  
William H. Baker, MD, Lake Geneva, WI, 1987  
Scott W. Woods, MD, Mackinac Island, MI, 1986  
Angelos A. Kambouris, MD, Lake Geneva, WI, 1985  
Richard E. Dean, MD, Mackinac Island, MI, 1984  
Anna M. Ledgerwood, MD, Sawmill Creek, OH, 1983  
Robert T. Soper, MD, Mackinac Island, MI, 1982  
G. Howard Glassford, MD, Lake Geneva, WI, 1981  
Clark Herrington, MD, Mackinac Island, MI, 1980  
Kenneth J. Printen, MD, Lincolnshire, IL, 1979  
Robert D. Allaben, MD, Mackinac Island, MI, 1978  
Richard S. Webb, MD, Itasca, IL, 1977  
Charles E. Lucas, MD, Mackinac Island, MI, 1976  
Frank A. Folk, MD, Itasca, IL, 1975  
Robert F. Wilson, MD, Mackinac Island, MI, 1974  
William H. Marshall, MD, Oakbrook, IL, 1973  
Ernest M. Berkas, MD, Mackinac Island, MI, 1972  
Wendell J. Schmidtke, MD, Valparaiso, IN, 1971  
Robert J. Freeark, MD, Kalamazoo, MI, 1970  
Robert A. De Bord, MD, Peoria, IL, 1969  
Vernon L. Guynn, MD, Lake Geneva, WI, 1968  
Jack C. Cooley, MD, Champaign-Urbana, IL, 1967  
Robert P. Hohf, MD, St. Charles, IL, 1966  
Douglas R. Morton, MD, St. Charles, IL, 1965  
William H. Harridge, MD, St. Charles, IL, 1964  
John B. Moore, III, MD, Champaign-Urbana, IL, 1963  
Peter V. Moulder, MD, Genoa City, WI, 1962  
Thomas W. Samuels, Jr., MD, Chicago, IL, 1961  
James Cross, MD, Rockton, IL, 1960  
Loring S. Helfrich, MD, Rockton, IL, 1959  
Loring S. Helfrich, MD, Rockton, IL, 1958

## **Mission Statement**

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The Midwest Surgical Association is a surgical organization made up of surgeons who have established reputations as practitioners, authors, teachers, and/or original investigators. The objective of this society is to exemplify and promote the highest standards of surgical practice, especially among young surgeons in the Midwest. The annual meeting is held in late July/early August each year in different locations throughout the Midwest and consists of a stimulating scientific program of the highest quality and a social program planned with children and families in mind.

### **MIDWEST SURGICAL ASSOCIATION**

2625 West 51st Terrace  
Westwood, KS 66205

913-402-7102  
msa@lp-etc.com  
www.midwestsurg.org

## **New Members**

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**Congratulations and welcome to the following  
New Members elected at the 2017 Annual Meeting:**

### **ASSOCIATE**

David Hobbs MD, MBS | Grand Rapids, MI

### **ACTIVE**

Robin Alley MD | Peoria, IL

Murwarid Assifi MD | Grand Rapids, MI

John Kevin Bailey MD | Columbus, OH

Jeremy Ciullo MD | Detroit, MI

Eric Cox MD | Galesburg, IL

Luke Durling MD | Grand Rapids, MI

Gregory English MD | Erie, PA

Chadrick Evans MD | Morton, IL

Charles Gibson MD | Grand Rapids, MI

Leonard Henry MD | Goshen, IN

Anthony Iacco MD | Royal Oak, MI

Thomas Martin MD | Grand Rapids, MI

Gitonga Munene MD | Kalamazoo, MI

Timothy Pawlik MD, MPH, PhD | Columbus, OH

Javeria Qureshi MD, MPH | Chicago, IL

Lisa Whitty Bradley MD | Oak Park, IL

## **Midwest Surgical Association Foundation**

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The Midwest Surgical Association Foundation funding will be used solely for research awards, programming, special lectureship honorariums, and other appropriate scientific, research, or educational purposes.

The Midwest Surgical Association Foundation is a non-profit organization that is committed to exemplify, support, and promote the highest standards of surgical practice, especially among young surgeons of the Midwest. The Foundation has been organized to pursue exclusively charitable, educational, scientific, benevolent, and eleemosynary purposes including the promotion of surgical education and research that qualifies it as an exempt organization under Section 501(c)3 of the Internal Revenue Code of 1986 and exempt from taxation under Section 501(a).

The Foundation may engage directly in charitable, educational, scientific, benevolent, or eleemosynary activities, including activities to promote surgical education and research. With increased support, these key arenas will strengthen the Association.

Not everyone has the time to participate in all Midwest Surgical Association activities and conferences, but by donating to the Foundation you are able to help support current activities, conferences, research, and lectureships as well as future projects.

The Foundation is now able to accept donations from members or nonmembers. If you would like to support

# Midwest Surgical Association Foundation

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the Association through its Foundation, both current and deferred gifts may be made. These donations are tax deductible and should be made out directly to:

**Midwest Surgical Association Foundation**

2625 West 51st Terrace  
Westwood, KS 66205

913-402-7102  
msa@lp-etc.com  
www.midwestsurg.org

Federal Tax I.D. Number: 20-8529483

You may also make donations on our web site using your Visa, MasterCard, Discover, or American Express credit card: **www.midwestsurg.org**, under MSA Foundation and select Make a Donation.

If you have any questions, please contact MSA Headquarters at **913-402-7102**.

## Schedule At-a-Glance

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### SUNDAY, AUGUST 5

- 12Noon - 6:00pm     **MSA Registration** | Theatre Foyer
- 2:00pm - 4:00pm     **Executive Council Meeting**  
Frank J. Kelley Conference Room
- 5:30pm - 6:00pm     **New Member Reception**  
West Front Porch
- 6:00pm - 7:00pm     **Welcome Reception**  
West Front Porch
- 7:00pm - 8:45pm     **Dinner Seating** (on own) | Dining Hall
- 8:00pm - 10:00pm    **Children's Movie Presentation**  
Headquarters of the Capitol Club
- 9:00pm - 11:00pm    **Spectacular Problems in Surgery**  
Theatre
- 11:00pm                **President's Nightcap**  
Theatre

### MONDAY, AUGUST 6

- 7:00am - 8:00am     **5K Fun Run** | Tennis Courts
- 7:00am - 1:00pm     **MSA Registration** | Theatre Foyer
- 7:00am - 8:00am     **Featured Posters** | Theatre
- 8:00am - 8:15am     **Welcome & Introductions** | Theatre
- 8:15am - 9:15am     **Scientific Session I** | Theatre
- 9:15am - 9:45am     **Scott Woods Memorial Lecture**  
Theatre

## Schedule At-a-Glance

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9:45am - 10:00am	<b>Morning Break, Exhibits &amp; Posters</b> Theatre Foyer & Art Gallery
10:00am - 10:15am	<b>ACS Update</b>   Ajit Sachdeva, MD, FACS Theatre
10:15am - 12:30pm	<b>Scientific Session II</b>   Theatre
10:00am - 11:00am	<b>Spouse Program: Cooking Demonstration</b> Grand Pavilion
12:30pm - 1:00pm	<b>William H. Harridge Memorial Lecture</b> Theatre
1:30pm	<b>Shotgun Start   Golf Tournament</b> The Jewel Course
1:30pm	<b>Tennis Tournament</b>   Tennis Courts
6:00pm - 7:00pm	<b>Cocktail Reception</b>   West Front Porch
6:45pm	<b>MSA Past Presidents Photo</b> West Front Porch Steps
7:00pm - 10:30pm	<b>MSA Nonie Lowry Dinner Dance</b> Theatre

### **TUESDAY, AUGUST 7**

7:00am - 8:00am	<b>Industry Sponsored Breakfast Symposium   Thank You Amgen!</b> Cottage Restaurant
7:00am - 1:00pm	<b>MSA Registration</b>   Theatre Foyer
8:05am - 8:15am	<b>Welcome &amp; Introductions</b>   Theatre
8:15am - 10:15am	<b>Scientific Session III</b>   Theatre

## Schedule At-a-Glance

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10:00am - 11:00am	<b>Spouse Program: Mackinac State Historic Parks Walking Tour</b> Front Porch-West End
10:15am - 10:30am	<b>Morning Break, Exhibits &amp; Posters</b> Theatre Foyer & Art Gallery
10:30am - 12:15pm	<b>Scientific Session IV</b>   Theatre
12:15pm - 1:00pm	<b>Presidential Address</b>   Theatre
1:00pm - 1:30pm	<b>MSA Annual Business Meeting</b> Theatre
2:00pm - 3:00pm	<b>Optional Activity: Stable Tour</b>   Stables
5:00pm - 6:45pm	<b>Early Dining Option</b> (Casual attire for Fort Reception attendees) Pavilion (back of dining hall)
6:30pm	<b>Board Coaches to Fort Mackinac</b> Hotel East Entrance
7:00pm - 8:45pm	<b>Dinner Seating</b> (on own for those not going to Fort Reception)   Dining Hall
7:00pm - 9:45pm	<b>Fort Mackinac Reception</b> Fort Mackinac
9:30pm	<b>Coaches Return to Hotel</b> Fort Mackinac

### WEDNESDAY, AUGUST 8

9:30am - 11:30am	<b>Governors Mansion Tours</b> Open to Public
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## Family Program

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### SUNDAY, AUGUST 5

- 12Noon – 6:00pm     **MSA Registration**  
Garden Terrace
- 5:30pm – 6:00pm     **New Member Reception**  
West Front Porch
- 6:00pm – 7:00pm     **Welcome Reception**  
West Front Porch
- 8:00pm – 10:00pm     **Children’s Movie Presentation**  
Headquarters of the Capitol Club
- 9:00pm – 11:00pm     **Spectacular Problems in Surgery**  
Theatre

### MONDAY, AUGUST 6

- 7:00am – 8:00am     **Annual 5k Fun Run** | Tennis Courts
- 7:00am – 1:00pm     **MSA Registration**  
Theatre Foyer
- 10:00am – 12Noon     **MSA Spouse Program: Grand Hotel  
Cooking Demonstration** | Grand Pavilion
- 1:30pm     **Shotgun Start | Golf Tournament**  
The Jewel Course
- 1:30pm     **MSA Tennis Tournament**  
Tennis Courts
- 6:00pm – 7:00pm     **Cocktail Reception**  
West Front Porch
- 6:45pm     **MSA Past Presidents Photo**  
West Front Porch Steps
- 7:00pm – 11:30pm     **MSA Nonie Lowry Dinner Dance**  
Theatre

# Family Program

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## TUESDAY, AUGUST 7

- 7:00am - 1:30pm **MSA Registration**  
Theatre Foyer
- 10:00am - 12Noon **Spouse Program: Walking Tour presented by the Michigan State Historic Parks**  
Front Porch - West End
- 12:15pm - 1:00pm **MSA Presidential Address** | Theatre
- 2:00pm - 3:00pm **Optional Activity: Stable Tour**  
Stables
- 5:00pm - 6:45pm **Early Dining Option** (Casual attire for Fort Reception attendees)  
Pavilion (back of dining hall)
- 6:30pm **Board Coaches to Fort Mackinac**  
Hotel East Entrance
- 7:00pm - 8:45pm **Dinner Seating** (on own for those not going to Fort Reception) | Dining Hall
- 7:00pm - 9:45pm **Fort Mackinac Reception**  
Fort Mackinac
- 9:30pm **Coaches Return to Hotel**  
Fort Mackinac

## WEDNESDAY, AUGUST 8

- 9:30am - 11:30am **Governors Mansion Tours**  
Open to Public

### Guest Departures

Note: Children are welcome at all social events.

Note: See MSA Registration Desk for additional details on recreational activities



# SCIENTIFIC PROGRAM



*Surgeon in Training Award Qualifiers*



*Best Paper by a New Member Award Qualifiers*



*Featured Posters*

## SUNDAY, AUGUST 5

12Noon - 6:00pm

### **MSA Registration**

*Theatre Foyer*

2:00pm - 4:00pm

### **Executive Council Meeting**

*Frank J. Kelley Conference Room*

5:30pm - 6:00pm

### **New Member Reception**

*West Front Porch*

6:00pm - 7:00pm

### **Welcome Reception**

*West Front Porch*

7:00pm - 8:45pm

### **Dinner Seating (on own)**

*Dining Hall*

8:00pm - 10:00pm

### **Children's Movie Presentation**

*Headquarters of The Capitol Club*

9:00pm - 11:00pm

## **Spectacular Problems in Surgery**

*Theatre*

**Moderator:** Scott Steele MD | Cleveland Clinic Foundation

9:00pm - 9:15pm

### **SP1. IT'S NOT ALL HOT AIR: SIGNIFICANT PNEUMOPERITONEUM WITHOUT ABDOMINAL INJURY**

Presenter: Cressilee Butler MD | University of Oklahoma Health Sciences Center

9:15pm - 9:30pm

### **SP2. RESECTION OF LEIOMYOSARCOMA OF THE RETROHEPATIC INFERIOR VENA CAVA (IVC) WITH VASCULAR RECONSTRUCTION**

Presenter: Malcolm Squires MD, MS | The Ohio State University

9:30pm - 9:45pm

### **SP3. COLON CANCER PRESENTING AS AN INCARCERATED INGUINAL HERNIA**

Presenter: Kathryn Harris MD | St. Vincent Hospital

9:45pm - 10:00pm

### **SP4. CHOLECYSTITIS AFTER CHOLECYSTECTOMY: A CASE REPORT ON DUPLICATE GALLBLADDER**

Presenter: Samuel J Pera MD | University of Illinois College of Medicine at Peoria

10:00pm - 10:15pm

### **SP5. A TALE OF A WAYFARING ORGAN**

Presenter: Theodor Asgeirsson MD | Metro Health University of Michigan Health

10:15pm - 10:30pm

**SP6. MASSIVE DEFECT FROM NECROTIZING  
SOFT TISSUE INFECTION INVOLVING THE LOWER  
ABDOMEN AND PERINEUM: IS FECAL DIVERSION  
A NECESSITY OR NICETY?**

Presenter: Annaliese Seidel MS | The Ohio State  
University

10:30pm - 10:45pm

**SP7. MASSIVE FACIAL MELANOMA INVADING  
MULTIPLE SURROUNDING STRUCTURES: A CASE  
REPORT FOR PALLIATION OF NEGLECTED TUMOR**

Presenter: David Tetrake MD | Wright State University

10:45pm - 11:00pm

**SP8. TRAUMATIC MESOCOLIC INTERNAL HERNIA  
WITH STRANGULATION AND SMALL BOWEL  
OBSTRUCTION: A REPORT OF TWO CASES**

Presenter: Gabie Ong MD | St. Vincent Hospital

11:00pm

**President's Nightcap**

*Theatre*

**The Christmas Miracle of 1809: How A 'Backwoods'  
Kentucky Surgeon Became the Father of Abdominal  
Surgery**

William C. Cirocco, MD | The Ohio State University

## MONDAY, AUGUST 6

7:00am - 8:00am

### **5K Fun Run**

*Tennis Courts*

7:00am - 1:00pm

### **MSA Registration**

*Theatre Foyer*

7:00am - 8:00am

### **Featured Posters**

*Theatre*

**Moderator:** Theodor Asgeirsson MD | Spectrum Health



**P1. IMPACT OF NO TREATMENT VS OTHER  
NON-SURGICAL TREATMENTS IN PANCREATIC  
ADENOCARCINOMA- NATIONAL CANCER  
DATABASE: 2004-2014**

Presenter: Sukamal Saha MD | McLaren Flint



**P2. FACTORS ASSOCIATED WITH NON-COMPLETE  
MESORECTAL EXCISION FOLLOWING SURGERY  
FOR RECTAL ADENOCARCINOMA**

Presenter: Ipek Sapci MD | Cleveland Clinic Foundation



**P3. THE TIMING OF KOCK POUCH  
COMPLICATIONS: DO THEY FIT A PATTERN?**

Presenter: Awad Jarrar MD | Cleveland Clinic  
Foundation



**P4. CONVERSION TO OPEN FROM LAPAROSCOPIC COLON RESECTION IS A MARKER FOR WORSE ONCOLOGIC OUTCOMES IN COLON CANCER**

Presenter: Leonardo Duraes MD, PhD | Cleveland Clinic Foundation



**P5. THE ORIGINAL IVOR LEWIS TWO STAGE ESOPHAGECTOMY REVISITED IN THE ERA OF MINIMALLY INVASIVE SURGERY**

Presenter: Kathryn Rock MD | St. John Hospital and Medical Center

**P6. DOES PREOPERATIVE ORAL ANTIBIOTIC OR MECHANICAL BOWEL PREPARATION INCREASE CLOSTRIDIUM DIFFICILE COLITIS AFTER COLORECTAL SURGERY? AN ASSESSMENT FROM ACS-NSQIP PROCEDURE-TARGETED DATABASE**

Presenter: Cigdem Benlice MD | Cleveland Clinic Foundation

**P7. DIDACTIC VS VIDEO VS EXPERIMENTAL TEACHING: WHAT IS THE BEST WAY TO TEACH GENERAL SURGERY INTERNS? A PILOT STUDY**

Presenter: Yazan AlJamal MD | Mayo Clinic - Rochester

**P8. INTEGRATION OF A TECHNICAL SKILLS CURRICULUM: PROSPECTIVE BENEFITS FOR SURGICAL RESIDENCY APPLICANTS**

Presenter: Clayton Theleman MD | University of Illinois College of Medicine

**P9. CYTOREDUCTIVE SURGERY (CRS)  
WITH HYPERTHERMIC INTRAPERITONEAL  
CHEMOTHERAPY (HIPEC): A SINGLE INSTITUTION  
EXPERIENCE**

Presenter: Kimberly Coughlin MD | St. John Hospital  
and Medical Center

**P10. CLOSTRIDIUM SEPTICUM ASSOCIATED  
COLON CANCER**

Presenter: Kody Wyant DO | St. Vincent Hospital

**P11. DETERMINING PREVENTION PRIORITIES  
USING TRAUMA REGISTRY DATA**

Presenter: Samik Patel MD | St. Joseph Mercy,  
Ann Arbor

**P12. EVALUATION OF MESH PLACEMENT  
TECHNIQUE ON RECURRENCE RATE IN  
LAPAROSCOPIC TRANS-ABDOMINAL PRE-  
PERITONEAL INGUINAL HERNIA REPAIR (TAPP):  
A LIFETIME EXPERIENCE**

Presenter: Michael Thorpe MD | St. John Hospital and  
Medical Center

**P13. IMPACT OF DERMATOPATHOLOGY SECOND  
OPINION ON SURGICAL MANAGEMENT OF  
MALIGNANT MELANOMA AT A COMMUNITY  
SKIN CANCER CENTER**

Presenter: Laurence McCahill MD | Metro Health  
University of Michigan Health

## **P14. ENDOBRONCHIAL VALVE UTILIZATION IN THE MANAGEMENT OF BRONCHOPLEURAL FISTULAS**

Presenter: Jordan Wilkerson MD | St. Vincent Hospital

## **P15. IMPACT OF PATIENT CHARACTERISTICS AND PREFERENCES ON TIME FROM BREAST CANCER DIAGNOSIS TO FIRST SURGICAL CONSULTATION AND DEFINITIVE TREATMENT**

Presenter: Stephanie Valente MD | Cleveland Clinic Foundation

## **P16. ROBOTIC VERSUS LAPAROSCOPY IN ABDOMINOPERINEAL RESECTION: CASE-MATCHED COMPARISON OF PERIOPERATIVE OUTCOMES AND COSTS**

Presenter: Turgut Bora Cengiz MD | Cleveland Clinic Foundation

## **P17. ANALYSIS OF FUNCTION AND SURVIVAL IN ALS PATIENTS WITH DIAPHRAGM PACING USING VIRTUAL CONTROLS**

Presenter: Raymond Onders MD | University Hospitals Cleveland Medical Center

## **P18. MENTAL SKILLS USE LEADS TO MORE CONSISTENT PERFORMANCE DURING LAPAROSCOPIC SUTURING TRAINING ON SIMULATORS**

Presenter: Nicholas Anton MS | Indiana University School of Medicine

**P19. PROGNOSTIC IMPLICATIONS OF LYMPH NODE METASTASIS IN ADVANCED OVARIAN CANCER: ANALYSIS OF NATIONAL CANCER DATABASE. 2004-2014**

Presenter: Sukamal Saha MD | McLaren Flint

**P20. IMPACT OF NEOADJUVANT CHEMOTHERAPY 30-DAY MORBIDITY IN PATIENTS UNDERGOING COLECTOMY FOR LOCALLY ADVANCED COLON CANCER**

Presenter: Gautam Sharma MD | Cleveland Clinic Foundation

**P21. MODIFIED FRAILTY INDEX PREDICTS HIGH-RISK PATIENTS FOR READMISSION AFTER COLORECTAL SURGERY FOR CANCER**

Presenter: Emre Gorgun MD | Cleveland Clinic Foundation

**P22. TRANS-ANAL TOTAL MESORECTAL EXCISION (TATME) FOR RECTAL CANCER: A COST COMPARATIVE ANALYSIS**

Presenter: Alireza Yazdi MD MD | Cleveland Clinic Foundation

**P23. STOP THE BLEEDING: A SINGLE-INSTITUTION EXPERIENCE OF SERIAL HEMOGLOBIN MEASUREMENT IN BLUNT SPLENIC TRAUMA**

Presenter: Alessandra Landmann MD | University of Oklahoma Health Sciences Center

## **P24. THE CONCEPT OF OBESITY YEARS: OUTCOMES VARIATION BY AGE AMONG MORBIDLY OBESE PATIENTS UNDERGOING LAPAROSCOPIC SLEEVE GASTRECTOMY**

Presenter: Kevin Engledow DO | Inspira Health  
Network

## **P25. THE IMPACT OF OBESITY ON TRAUMA OUTCOMES IN SOUTH EAST MICHIGAN**

Presenter: Kathryn Rock MD, MPH | St. John Hospital  
and Medical Center

8:00am - 8:15am

### **Welcome & Introductions**

*Theatre*

8:15am - 9:15am

### **Scientific Session I**

*Theatre*

**Moderator:** William C. Cirocco MD | The Ohio State  
University

8:15am - 8:30am



### **1. PATTERNS OF READMISSION AMONG THE ELDERLY AFTER HEPATOPANCREATOBILIARY SURGERY**

Presenter: Anghela Paredes MD, MS | The Ohio State  
University

*Invited Discussant:* Scott Steele MD | Cleveland Clinic  
Foundation

8:30am - 8:45am



**2. A TARGETED INITIATIVE TO DISCHARGE SURGICAL PATIENTS EARLIER IN THE DAY IS ASSOCIATED WITH DECREASED LENGTH OF STAY AND IMPROVED HOSPITAL THROUGHPUT**

Presenter: Joshua Lyons MD | University Hospitals  
Cleveland Medical Center

*Invited Discussant: Peter Hallowell MD | University of  
Virginia Medical Center*

8:45am - 9:00am



**3. A SIMPLE ALGORITHM TO IMPROVE QUALITY WHILE REDUCING RESOURCE UTILIZATION IN EVALUATION OF SUSPECTED APPENDICITIS**

Presenter: Joseph Esparaz MD | University of Illinois  
College of Medicine

*Invited Discussant: Mark Nolan Hill MD | The Chicago  
Medical School*

9:00am - 9:15am



**4. THE EMERGENCY SURGICAL AIRWAY: BRIDGING THE GAP FROM QUALITY OUTCOME TO PERFORMANCE IMPROVEMENT THROUGH A NOVEL SIMULATION BASED CURRICULUM**

Presenter: Benjamin Veenstra MD | Rush University  
Medical Center

*Invited Discussant: Michael Valente DO | Cleveland Clinic  
Foundation*

**9:15am - 9:45am**

**Scott W. Woods Memorial Lecture**

*Theatre*

**Understanding Patient Expectations Around  
Therapeutic Benefits, Risks, and the Chance for Cure**

Timothy M. Pawlik, MD, MPH, PhD | The Ohio State  
University

**9:45am - 10:00am**

**Morning Break, Exhibits & Poster Viewing**

*Theatre Foyer & Art Gallery*

**10:00am - 10:15am**

**ACS Update | Ajit Sachdeva, MD, FACS**

*Theatre*

**Training and Retraining of Practicing Surgeons**

Ajit Sachdeva, MD, FACS | American College of  
Surgeons

**10:15am - 12:30pm**

**Scientific Session II**

*Theatre*

**Moderator:** Theodor Asgeirsson MD | Spectrum Health



10:15am - 10:30am

**5. RESPONSE TO NEOADJUVANT TREATMENT  
FOR BREAST CANCER IN INVASIVE DUCTAL  
CARCINOMA VS. INVASIVE LOBULAR  
CARCINOMA**

Presenter: Linda Qu MD | Loyola University Medical Center  
*Invited Discussant: Stephanie Valente MD | Cleveland  
Clinic Foundation*

10:30am - 10:45am



**6. THE URBAN SEVERITY SCORE (UISS)  
BETTER PREDICTS MORTALITY FOLLOWING  
PENETRATING GUNSHOT WOUNDS (GSW)**

Presenter: Miguel Tobon MD | Wayne State University  
*Invited Discussant: Chadrick Evans MD | University of  
Illinois College of Medicine at Peoria*

10:45am - 11:00am

**7. IMPACT OF EXTRACTION-SITE LOCATION ON  
WOUND INFECTION RATES AFTER LAPAROSCOPIC  
COLORECTAL RESECTION**

Presenter: Cigdem Benlice MD | Cleveland Clinic  
Foundation  
*Invited Discussant: L. Matthew Deppe MD | Mayo Clinic*

11:00am - 11:15am



**8. BICYCLE TRAUMA PREVENTION - ARE WE  
TARGETING THE WRONG AUDIENCE?**

Presenter: Samik Patel MD | St. Joseph Mercy Medical  
Center, Ann Arbor  
*Invited Discussant: Carlos Rodriguez MD | Spectrum Health*

11:15am - 11:30am

**9. RECTAL RESECTION FOLLOWING  
NEOADJUVANT THERAPY IN A MIDWEST  
COMMUNITY HOSPITAL SETTING: THE CASE FOR  
STANDARDIZATION OVER CENTRALIZATION  
AS THE MEANS TO OPTIMIZE RECTAL CANCER  
OUTCOMES IN THE UNITED STATES**

Presenter: William C. Cirocco MD | The Ohio State  
University  
*Invited Discussant: Conor Delaney MD, MCh, PhD |  
Cleveland Clinic Foundation*



11:30am - 11:45am

## **10. QUALITY THAT YOU CANNOT BELIEVE**

Presenter: Leonard Henry MD, MBA | The Goshen Center for Cancer Care

*Invited Discussant: TBD*



11:45am - 12Noon

## **11. DEGREE OF HYPERCALCEMIA CORRELATES WITH PARATHYROIDECTOMY BUT NOT WITH SYMPTOMS**

Presenter: Huan Yan MD | NorthShore University HealthSystem

*Invited Discussant: James Ouellette DO | Wright State University*

12Noon - 12:15pm

## **12. THE DANGER ZONE: INJURIES AND CONDITIONS ASSOCIATED WITH IMMEDIATELY FATAL MOTORCYCLE COLLISIONS IN THE STATE OF MICHIGAN**

Presenter: Rachel Saunders MD | Spectrum Health Hospitals

*Invited Discussant: Allan Lamb DO | Beaumont Hospital - Trenton*



12:15 - 12:30pm

## **13. COMPARISON OF COST AND OUTCOMES IN PATIENTS RECEIVING THORACIC EPIDURAL VERSUS LIPOSOMAL BUPIVACAINE FOR VIDEO-ASSISTED THORACOSCOPIC PULMONARY RESECTION**

Presenter: Melissa Medina MD | University of Illinois College of Medicine

*Invited Discussant: Charles Lucas MD | Wayne State University School of Medicine*

10:00am - 11:00am

**Spouse Program: Cooking Demonstration**

*Grand Pavilion*

12:30pm - 1:00pm

**William H. Harridge Memorial Lecture**

*Theatre*

Ian C. Lavery, MD | Cleveland Clinic Foundation

1:30pm

**Shotgun Start | Golf Tournament**

*The Jewel Course*

1:30pm

**Tennis Tournament**

*Tennis Courts*

6:00pm - 7:00pm

**Cocktail Reception**

*West Front Porch*

6:45pm

**MSA Past Presidents Photo**

*West Front Porch Steps*

7:00pm - 10:30pm

**MSA Nonie Lowry Dinner Dance**

*Theatre*

## TUESDAY, AUGUST 7

7:00am - 1:00pm

### **MSA Registration**

*Theatre Foyer*

7:00am - 8:00am

### **Industry Sponsored Breakfast Symposium - Thank You Amgen!**

*Cottage Restaurant*

8:05am - 8:15am

### **Welcome & Introductions**

*Theatre*

8:15am - 10:15am

### **Scientific Session III**

*Theatre*

**Moderator:** Constantine Godellas MD | Loyola University

8:15am - 8:30am



### **14. A RANDOMIZED DOUBLE-BLINDED STUDY TO DETERMINE THE EFFECTIVENESS OF UTILIZING INTRAPERITONEAL BUPIVACAINE: DOES IT REDUCE POST-OPERATIVE OPIOID USE FOLLOWING LAPAROSCOPIC APPENDECTOMY?**

Presenter: Clayton Miller DO | Metro Health University  
of Michigan Health

*Invited Discussant: Saad Shebrain MBBCh, MMM |  
Western Michigan University School of Medicine*

8:30am - 8:45am



**15. CANCEL THAT PICC LINE ORDER;  
CHOLECYSTOSTOMY TUBE AND SHORT COURSE  
OF ANTIBIOTICS**

Presenter: Charles Walker MD | *Geisinger Medical Center*

*Invited Discussant: M Ashraf Mansour MD | Spectrum Health - MSU*

8:45am - 9:00am



**16. THE IMPACT OF OBESITY ON TREATMENT  
CHOICES AND OUTCOMES IN OPERABLE BREAST  
CANCER**

Presenter: Erica Burkheimer MD | Grand Rapids Medical Education Partners

*Invited Discussant: Faaiza Vaince MD | Loyola University Medical Center*

9:00am - 9:15am

**17. DOES A FRACTURE LIAISON SERVICE  
PROGRAM MINIMIZE RECURRENT FRAGILITY  
FRACTURES IN THE ELDERLY WITH  
OSTEOPOROTIC VERTEBRAL COMPRESSION  
FRACTURES?**

Presenter: Tarik Wasfie MD | Genesys Regional Medical Center

*Invited Discussant: TBD*

9:15am - 9:30am

**18. DO CONTRADICTIONS IN TQIP MEASURES AFFECT PERCEPTIONS OF QUALITY? AN ANALYSIS OF TQIP DEFINITIONS ON QUALITY OUTCOMES FOR PLACEMENT OF ICP MONITORING AT A SINGLE LEVEL ONE TRAUMA CENTER**

Presenter: Jonathan Saxe MD | St. Vincent Hospital

*Invited Discussant: Maggie Brandt MD, MHSA | St. Joseph Mercy Ann Arbor*

9:30am - 9:45am



**19. CIRCULATING THROMBOSPONDIN-2 ENHANCES PREDICTION OF MALIGNANT INTRADUCTAL PAPILLARY MUCINOUS NEOPLASM**

Presenter: Rachel Simpson MD | Indiana University School of Medicine

*Invited Discussant: TBD*

9:45am - 10:00am



**20. PANCREATICOUDUODENECTOMY AND PLACEMENT OF OPERATIVE ENTERAL ACCESS: BETTER OR WORSE?**

Presenter: Amy Li MD | Henry Ford Health System

*Invited Discussant: Margo Shoup MD | Northwestern Medicine*

10:00am - 10:15am

**21. SCREENING COLONOSCOPY PERFORMED BY COLORECTAL SURGEONS: HIGH-QUALITY REGARDLESS OF SPECIALTY**

Presenter: Ipek Sapci MD | Cleveland Clinic Foundation

*Invited Discussant: Anthony Senagore MD | Borgess Medical Center*

10:00am - 11:00am

**Spouse Program: Mackinac State Historic Parks  
Walking Tour**

*Front Porch - West End*

10:15am - 10:30am

**Morning Break and Poster Viewing**

*Theatre Foyer & Art Gallery*

10:30am - 12:15pm

**Scientific Session IV**

*Theatre*

**Moderator:** Jonathan Saxe MD | St. Vincent Hospital

10:30am - 10:45am



**22. A DECADE OF EXPERIENCE WITH  
LAPAROSCOPIC VENTRAL HERNIA REPAIRS**

Presenter: Sarah Lund BS | Mayo Clinic - Rochester

*Invited Discussant: TBD*

10:45am - 11:00am



**23. DID WE PRIORITIZE QUALITY IMPROVEMENT  
IN GENERAL SURGERY: TIME FOR A FOCUS ON  
OUTCOMES AND ENHANCED RECOVERY CARE  
PLANS**

Presenter: Byron Hughes MD, MPH | University of  
Texas Medical Branch - Galveston

*Invited Discussant: Theodor Asgeirsson MD | St Mary's  
Mercy Health*

11:00am - 11:15am

### **24. LAPAROSCOPIC PLACEMENT OF THE LINX SYSTEM IN MANAGEMENT OF SEVERE REFLUX AFTER SLEEVE GASTRECTOMY**

Presenter: Abdelkader Hawasli MD | St. John Hospital and Medical Center

*Invited Discussant: Jonathan Myers MD | Rush University Medical Center*

11:15am - 11:30am

### **25. MELANOMA: IMPROVEMENT IN GUIDELINE BASED CARE USING A QUALITY MONITORING PROGRAM. COMPARISON OF MELANOMA CARE OUTCOMES IN A COMMUNITY-BASED TEACHING HOSPITAL**

Presenter: Barrett Kielhorn DO | Metro Health University of Michigan Health

*Invited Discussant: Leonard Henry MD, MBA | Goshen Center for Cancer Care*

11:30am - 11:45am

### **26. IMPACT OF NODAL AND MARGIN STATUS IN PANCREATIC CANCER PATIENTS UNDERGOING SURGERY AND CHEMOTHERAPY: A NATIONAL CANCER DATABASE ANALYSIS 2004-2014**

Presenter: Sukamal Saha MD | McLaren Flint

*Invited Discussant: Laurence McCahill MD | Metro Health-University Michigan Health*



11:45am - 12Noon

## **27. THE ROLE OF ACADEMIC ACHIEVEMENTS AND PSYCHOMETRIC MEASURES IN THE RANKING PROCESS**

Presenter: Mohamed-Omar Arafeh MD | *Western Michigan University*

Invited Discussant: Benjamin Veenstra MD | *Rush University Medical Center*

12Noon - 12:15pm

## **28. EFFECT OF WOUND COMPLICATIONS FOLLOWING MASTECTOMY WITH RECONSTRUCTION ON BREAST CANCER RECURRENCE**

Presenter: Debra Pratt MD | *Cleveland Clinic Foundation*

Invited Discussant: Sukamal Saha MD | *Michigan State University, McLaren Flint*

12:15pm - 1:00pm

### **Presidential Address**

*Theatre*

### **Celebrating 60 Years of the Midwest Surgical Association: Reflections on 'Testa Dura', Old Men, Football and La Famiglia!**

William C. Cirocco, MD | *The Ohio State University*

1:00pm - 1:30pm

### **MSA Annual Business Meeting**

*Theatre*

## **Scientific Program** Tuesday, August 7 - Wednesday, August 8

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2:00pm - 3:00pm

### **Optional Activity | Stable Tour**

*Stables*

5:00pm - 6:45pm

### **Early Dining Option Dinner Seating**

*(casual attire for Fort Reception attendees)*

*Pavilion (back of dining hall)*

6:30pm

### **Coaches to Fort Mackinac**

*Hotel East Entrance*

7:00pm - 8:45pm

### **Dinner Seating**

*(on own for those not going to Fort Reception)*

*Dining Hall*

7:00pm - 9:45pm

### **Fort Mackinac Reception**

*Fort Mackinac*

9:30pm

### **Load Coaches to Return to Hotel**

*Fort Mackinac*

## **WEDNESDAY, AUGUST 8**

9:30am - 11:30am

### **Governors Mansion Tours - Open to Public**



# ORAL PAPER ABSTRACTS

## Oral Paper Abstracts

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### **1. PATTERNS OF READMISSION AMONG THE ELDERLY AFTER HEPATOPANCREATOBILIARY SURGERY**

*AZ Paredes, EW Beal, F Bagante, ME Dillhoff, JM Cloyd, TM Pawlik*  
The Ohio State University

**Objective:** The objective of this study was to examine risk factors and outcomes of hospital readmission following complex hepatopancreatobiliary (HPB) among the elderly.

**Methods:** The Nationwide Readmissions Database was queried for patients > 60 years who underwent HPB surgery during 2010 - 2015.

**Results:** The incidence of 30- and 90-day readmission was similar among patients 60-74 vs.  $\geq 75$  ( $P > 0.05$ ). Patients age 60-74 years with > 2 comorbidities had an increased odds of 30-day (OR 1.13,  $p = 0.021$ ) and 90-day (OR 1.13,  $p = 0.005$ ) readmission. Patients > 75 years with > 2 comorbidities had the highest in-hospital mortality (5%) whereas patients 60-74 years with 0 or 1 comorbidity had the lowest in-hospital mortality on readmission (3%).

**Conclusion:** Focus on physiologic age is important when counseling the elderly patient for surgical intervention, as patients with an increased number of medical comorbidities were more likely to experience an in-hospital mortality.

## Oral Paper Abstracts

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### **2. A TARGETED INITIATIVE TO DISCHARGE SURGICAL PATIENTS EARLIER IN THE DAY IS ASSOCIATED WITH DECREASED LENGTH OF STAY AND IMPROVED HOSPITAL THROUGHPUT**

*JL Lyons, LA McCaulley, NC Maronian, JM Hardacre*

University Hospitals Cleveland Medical Center

**Objective:** The timing of inpatient discharges impact hospital throughput with later discharges leading to decreased patient satisfaction, increased length of stay (LOS), and longer boarding times in the emergency department (ED), intensive care units (ICUs), and post-anesthesia care unit (PACU). Along with increased length of stay, longer boarding times have been identified as a safety concern and can impact the quality of patient care. Therefore, efforts should be made to shift discharges to earlier in the day.

**Methods:** Over a 12-month period at an academic medical center, a targeted intervention to improve the proportion of patients discharged before noon was implemented across all surgical inpatient services. The intervention included pre-hospital as well as in-hospital components focusing primarily on education and process improvement for patients and providers. The primary outcome was the proportion of patients discharged by noon, and secondary outcomes included measures of hospital throughput such as LOS and boarding times in the ED, ICUs, and PACU. Data were analyzed comparing the 12 months of the intervention to the 12 months prior to the intervention.

**Results:** There were 12,055 discharges across all surgical services during the initiative. Discharge by noon rates increased from 14.3% for the 12 months prior to implementation to 21.5% during the 12-month initiative ( $p < 0.01$ ). The case mix index adjusted LOS (aLOS) decreased from 2.17 to 2.02 ( $p < 0.01$ ). ED, PACU, and ICU boarding times were all significantly lower during the initiative with average improvements of approximately 1.25 hours ( $p < 0.01$ ,  $p < 0.01$ ,  $p = 0.03$  respectively). Case mix index and 30-day readmission rates were unchanged during the initiative ( $p = 0.1$  and  $0.8$ ).

**Conclusion:** A targeted initiative to discharge surgical patients earlier resulted in a 50% increase in the proportion of patients discharged by noon. Associated with this finding were improvements in hospital throughput as measured by aLOS and boarding times in the ED, ICUs, and PACU.

## Oral Paper Abstracts

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### 3. A SIMPLE ALGORITHM TO IMPROVE QUALITY WHILE REDUCING RESOURCE UTILIZATION IN EVALUATION OF SUSPECTED APPENDICITIS

JR Esparaz, GC McGovern, RN DiSomma, BM Elger, JM Dexter,  
JS McGarvey, RH Pearl, CJ Aprahamian

University of Illinois College of Medicine

**Objective:** With the increased safety and equivalent effectiveness of ultrasonography (US), we have replaced CT scanning with US for diagnosing appendicitis in children. An unexpected consequence has been substantial overutilization of US. The purpose of this study was to establish measures that could help prevent the overuse of ultrasonography.

**Methods:** A retrospective chart review of 327 consecutive pediatric patients at single institution evaluated for suspected appendicitis between October 2014 and September 2015 was performed. Data on clinical and radiographic evaluation as well as corresponding operative and histopathology findings were reviewed. Diagnostic accuracy of ultrasound and WBC was determined by analyzing sensitivity, specificity, positive and negative predictive value. Subsequently, an algorithm was created.

**Results:** A WBC of  $10,000/\times L$  was determined to be a primary discriminant for management and for decreasing US utilization. When a male presents with a WBC  $\hat{\text{a}}\text{¥} 10,000/\times L$  and RLQ focal tenderness, the pediatric surgery team should be called, as an ultrasound may not be necessary. If a female has a WBC  $\geq 10,000/\times L$  with RLQ focal tenderness, the pediatric surgery team should be called, as an ultrasound may be necessary. If a male or female patient presents with a WBC  $< 10,000/\times L$  and RLQ focal tenderness, observation should be considered or follow-up in the outpatient clinic the next day. In the retrospective review, 327 (100%) patients received an ultrasound. If a WBC  $\geq 10,000/\times L$  was utilized as a filter before ultrasonography, 49.5% fewer patients would have received an ultrasound and 94% of the appendicitis cases captured by ultrasound alone would still have been identified. The NPV of a WBC  $\geq 10,000/\times L$  was 97.0%, when combined with ultrasound NPV was 91.4%. Only five patients had a WBC  $< 10,000/\times L$  and required an appendectomy - three were established clinically and two by ultrasound.

**Conclusion:** Integration of a clinical exam, WBC count, and surgery consultation prior to ultrasonography can eliminate overutilization of ultrasound. A prospective study is now underway to provide definitive proof of these cost reductions, improved resource utilization, and expedited care.

## Oral Paper Abstracts

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### 4. THE EMERGENCY SURGICAL AIRWAY: BRIDGING THE GAP FROM QUALITY OUTCOME TO PERFORMANCE IMPROVEMENT THROUGH A NOVEL SIMULATION BASED CURRICULUM

*BR Veenstra, AK Wojtowicz, ND Walsh, JM Velasco*  
Rush University Medical Center

**Objective:** The Institutional Quality Committee (QA) identified emergency surgical airway, a low frequency, high risk clinical scenario as an opportunity for improvement. Securing the airway is a critical step to master in caring for emergency airway compromise. Noting the shift in surgical education from “See One, Do One, Teach One” to a more active, contextualized process of constructing knowledge and entrusting task performance, we postulated that the development of a simulation-based curriculum could bridge the gap in surgical training.

**Methods:** We implemented a syllabus as part of our proficiency based training, with the ultimate goal of improving patient safety. General Surgery residents and student nurse anesthetists were enrolled. Objectives included: identifying indications and contraindications for needle and open cricothyroidotomy, demonstrating anatomical landmarks for insertion of both, discussing short term and long term complication management, and ultimately performing the procedures safely on both inanimate and pig larynx models. Initially, participants reviewed an online didactic component which included video demonstrations, as well as a procedure checklist, and a pretest. Participants then practiced the procedure on a simulated model, before a final test. The effectiveness of training was documented via performance checklists, global assessment tool for surgical trainees, and a post-training survey.

**Results:** In total, 87 participants successfully completed the identified steps in the check list to mastery within the allotted time (300 seconds). Participants included 12 senior surgical residents, 12 junior surgical residents, 19 interns, and 44 student nurse anesthetists. The junior residents and student nurse anesthetists had no prior experience performing emergency surgical airway while senior residents had limited exposure. Using the global assessment tool, 11 senior and 8 junior residents achieved a 5 on the OSATS scale for open cricothyroidotomies. All 24 residents obtained 5 on the OSATS for needle cricothyroidotomies. Trainees agreed that the curriculum provided the cognitive and psychomotor skills necessary to perform both an open and a needle cricothyroidotomy.

**Conclusion:** In the age of increased QA concerns and safety measures, performance improvement initiatives can serve as a driver for simulation based training curricula, with particular focus on individualized, active learning. We implemented a mandatory surgical airway course for General Surgery residents and student nurse anesthetists, with the goal of mastering skills necessary to perform both an open and needle cricothyroidotomy as a step towards achieving autonomy. We expect that this course will translate into enhanced and safe patient outcomes.

## Oral Paper Abstracts

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### 5. RESPONSE TO NEOADJUVANT TREATMENT FOR BREAST CANCER IN INVASIVE DUCTAL CARCINOMA VS. INVASIVE LOBULAR CARCINOMA

*LT Qu, CV Godellas, CB Perez, FT Vaince*

Loyola University Medical Center

**Objective:** Neoadjuvant systemic treatment (NAT) for breast cancer can downstage disease prior to surgery. Much attention has been given to the variable response rates to treatment depending on tumor biology. Less has been studied in regards to the variable response rate in relation to tumor histology. In practice, it is suspected that lobular carcinoma (ILCA) has a significantly less robust response to NAT than does ductal carcinoma (IDCA) and as such, NAT is less likely to be pursued in ILCA patients. Through a cohort of patients that received neoadjuvant treatment in the modern era of systemic treatment, this study aims to compare the response rates of the primary tumors between the two groups.

**Methods:** A retrospective chart review was conducted on breast cancer patients who underwent NAT followed by surgery at an academic institution between September 2013 through February 2018. Of the 206 patients identified for review, 176 patients (85%) had IDCA while 30 patients (15%) had ILCA. These two cohorts were compared with specific attention to tumor biology and response of the primary tumor burden to NAT. Fisher's Exact Test was used for statistical analyses.

**Results:** Of the 176 IDCA patients, 73 patients (41%) had a pathologic complete response (pCR) following NAT while only 1 out of the 30 ILCA (3%) patients had pCR ( $p < .00001$ ). Of the IDCA patients, 109 patients (62%) had either triple negative (TN) or Her2 positive (Her2+) disease, and of these, 56/109 patients (51%) had a pCR. Of the ILCA patients, only 4/30 patients (13%) had TN or her2+ disease. Of the IDCA patients, the mean (and median) preNAT and postNAT size of largest tumor foci in IDCA patients was 3.8 (3.2) cm and 1.36 (0.6) cm respectively, with a mean 64% decrease in size. The mean (and median) preNAT and postNAT size of largest tumor foci in ILCA patients was 4.5 (4.1) cm and 2.8 (2.1) cm respectively, with a mean 39% decrease in size. Response rates in the estrogen receptor positive (ER+)/Her2 negative (Her2-) subgroups were comparable between the two groups with a mean percent decrease in tumor size of 51% in the IDCA group vs 42% in the ILCA group. Of the ILCA patients, 15/30 (50%) had multifocal or multicentric tumors, while 73/176 (41%) of the IDCA patients had multifocal or multicentric tumors

**Conclusion:** Patients with IDCA are significantly more likely to achieve a pCR than are patients with ILCA. This is likely heavily dependent on tumor biology given that the vast majority of ILCA patients are ER+ /Her2-. However there is a comparable decrease in size of the primary tumor burden between the two groups when comparing the ER+/her2- subgroups. As such the decision to pursue NAT should remain more dependent on tumor biology and extent of tumor burden. Though not a pCR, a clinical and pathologic response to NAT can be anticipated in ILCA tumors and can thereby downstage disease, and as such a neoadjuvant approach to ILCA tumors should not be dismissed on histology alone.

## Oral Paper Abstracts

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### 6. THE URBAN SEVERITY SCORE (UISS) BETTER PREDICTS MORTALITY FOLLOWING PENETRATING GUNSHOT WOUNDS (GSW)

*CE Lucas, M Tobon, AM Ledgerwood*

Wayne State University

**Objective:** The Injury Severity Score (ISS), designed for blunt trauma, underscores penetrating (P) wounds. The New ISS (NISS), allowing two organs in one cavity to be graded, reduces but does not eliminate this underscoring. This study assesses the Urban ISS (UISS) which incorporates all injuries for the total injury score.

**Methods:** All trauma program registry (TPR) data and complete chart analyses were performed on 585 patients (pts) admitted to an inner-city hospital over 28 months, this included 98 pts with superficial wounds, low ISS (1-2), and early discharge from the ED; 47 pts arriving with shock requiring pre-hospital or ED CPR followed by death in the OR; and 442 pts admitted after ED and OR therapy. Factors analyzed included Abbreviated Injury Score (AIS), age, gender, ISS, NISS, UISS, intent of wound (assault vs accidental), race (African American/AA, Caucasian/C, Latino/L, Other/O), number GSW, weapon (pistol, rifle, shotgun), length-of-stay (LOS), and mortality. All AIS were calculated by one person and often differed from TPR scores.

**Results:** The ISS, NISS, and UISS correlated significantly ( $p < 0.005$ ) with number GSW, assault, death, and LOS. Death and LOS were significantly higher after assault versus accident. The increased mortality rate in AA (84.3%) versus non-AA (15.6%) with a  $p$  of 0.000, reflected assault and number GSW. UISS was a better predictor of death ( $p < 0.001$ ) than NISS or ISS.

**Conclusion:** Death and LOS is best reflected by intent to injury (assault) and number GSW. UISS provides a significantly better correlate for death than ISS or NISS. Data reporting on injury severity should incorporate intent to injure, number of GSW, and UISS.

## Oral Paper Abstracts

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### 7. IMPACT OF EXTRACTION-SITE LOCATION ON WOUND INFECTION RATES AFTER LAPAROSCOPIC COLORECTAL RESECTION

*C Benlice, L Stocchi, I Sapci, E Gorgun, H Kessler, D Liska, SR Steele, CP Delaney*

Cleveland Clinic Foundation

**Objective:** The purpose of this study was to test the hypothesis that the specimen extraction-site location is associated with the wound infection rate after laparoscopic colorectal surgery, as compared to other potentially contributing factors.

**Methods:** All patients undergoing elective laparoscopic colorectal resection in a single specialized colorectal surgery department from 2000 through 2011 were identified from a prospectively maintained institutional database. The 30-day postoperative wound infection rate was determined based on clinical examination by a physician. Specific extraction-sites and other relevant factors associated with wound infection rates were evaluated with univariate and multivariate analyses. Converted cases, defined as operating through a formal midline incision to complete the operation, were retained in an intent-to-treat analysis.

**Results:** A total of 2801 patients with a mean age of 51.0 (417.9) years, 51.2% females underwent specimen extraction using the following site locations: infraumbilical midline (N=657), right lower quadrant (RLQ)/left lower quadrant (LLQ) (N=388), stoma site (N=58), periumbilical midline (N=629), Pfannenstiel (N=789) and midline (converted) (N=280). When considering all patients combined, the overall wound infection rate was 10% (N=281). In particular, the extraction sites associated with the highest wound infection rates were midline incision used for conversion to open surgery (N=41, 14.6%) and Pfannenstiel (N=90, 11.4%), while the lowest rates were associated with RLQ/LLQ (N=13, 3.3%) and ostomy site (n=3, 5.1%). Independent factors associated with wound infection were increased body mass index (OR 1.2,  $p < 0.001$ ), extraction site location ( $p = 0.006$ ), surgical procedure ( $p = 0.020$ ), particularly left-sided colectomy and total proctocolectomy), diagnosis ( $p < 0.001$ , particularly sigmoid diverticulitis and inflammatory bowel disease), intraabdominal adhesions (OR: 1.4,  $p = 0.033$ ) and intra-abdominal rather than pelvic procedure (OR: 2.9,  $p = 0.005$ ).

**Conclusion:** Use of the RLQ/LLQ site or ostomy site when applicable for specimen extraction in laparoscopic colorectal surgery minimizes the risk of wound infection.

## Oral Paper Abstracts

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### **8. BICYCLE TRAUMA PREVENTION - ARE WE TARGETING THE WRONG AUDIENCE?**

*S Patel, T Knapik, D Tommelein, C Corpron, K Kralovich*  
St. Joseph Mercy, Ann Arbor

**Objective:** In the United States 87% of bicyclist deaths are persons over 20 years of age, in a majority of bicyclist deaths, the most serious injuries are to the head, highlighting the importance of wearing a bicycle helmet. Helmet use has been estimated to reduce the odds of head injury by 50 percent, and the odds of head, face, or neck injury by 33 percent.

**Methods:** We retrospectively reviewed our Trauma Registry for injured adult bicyclist presenting to our Level 1 trauma center in Southeastern Michigan from July 1, 2014 - December 31, 2017. We included the following variables: demographics, age, ED disposition, date of injury, AIS and ISS scores, LOS, injury diagnosis, disposition, mortality and helmet use.

**Results:** Of the total 80 injured bicyclists evaluated 40 percent (32) were between 40-59 years of age, while 30 percent (23) were between 60-80 years of age. In these two cohorts only 50% reported helmet use. The average AIS and ISS scores of the helmeted vs non-helmeted cyclist were 2.1 and 7.8 vs 2.6 and 11.4 respectively.

**Conclusion:** In Michigan only 4 cities have ordinances regulating helmet use despite that the odds that a bicyclist will wear a helmet is 4 times higher after a helmet law is enacted. Targeting an older population for bicycle safety training, including helmet use, prior to the peak bicycle use periods, has the potential to decrease injury and health care costs in our patient population.

## Oral Paper Abstracts

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### **9. RECTAL RESECTION FOLLOWING NEOADJUVANT THERAPY IN A MIDWEST COMMUNITY HOSPITAL SETTING: THE CASE FOR STANDARDIZATION OVER CENTRALIZATION AS THE MEANS TO OPTIMIZE RECTAL CANCER OUTCOMES IN THE UNITED STATES**

WC Cirocco

The Ohio State University

**Objective:** The majority of rectal cancer is managed in “low volume” community hospitals, however, the only outcomes data from this setting are extrapolated from incomplete and flawed national databases, revealing a striking difference in outcomes versus “high volume” centers. In an attempt to fill this void, outcomes of rectal resection following neoadjuvant therapy by a “high volume” surgeon in a “low volume” Midwest community hospital setting are reported in the context of recent calls to centralize rectal cancer care to “centers of excellence”.

**Methods:** A review of 109 consecutive patients (68 men, 41 women) with adenocarcinoma of the rectum who underwent neoadjuvant therapy followed by open resection by a “high volume” surgeon in 14 Midwest community hospitals (range 55 - 623 licensed beds) between 1999 and 2010 with outcomes compared to contemporary studies from tertiary care institutions.

**Results:** Of 109 patients (mean age 61 years), 48 patients required a permanent stoma and 61 patients underwent primary anastomosis. The mean tumor distance from the dentate line was 5.2 cm. An R0 resection was achieved in 94% of patients. Surgery-specific complications occurred in 17% and the 30-day mortality rate was 5%. The mean follow-up period was 6.3 years. Overall survival was 78% and disease-free survival (DFS) was 73%. DFS by pathologic stage: stage 0 (complete response)- 100%, stage I- 88%, stage II- 68%, stage III- 50% and stage IV- 0%. The recurrence rate was 11% (local recurrence (LR) - 3%, distant recurrence- 8%). Overall, outcomes were comparable to contemporary studies from tertiary care centers (e.g. ACOSOG Z6051) including rates of: R0 resection, lymph node (LN) harvest, anastomotic leak, complications, hospital length of stay (LOS), readmission, LR and 5-year DFS.

**Conclusion:** Outcomes of rectal cancer resection following neoadjuvant therapy by a “high volume” surgeon in a “low volume” Midwest community hospital setting were comparable to contemporary studies from tertiary care institutions with similar rates of R0 resection, LN harvest, LR and DFS. Geographic location and hospital capacity matter less than access to multispecialty expertise in ongoing efforts to optimize outcomes of rectal cancer treatment in the United States.

## Oral Paper Abstracts

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### 10. QUALITY THAT YOU CANNOT BELIEVE

LR Henry, MJ Minarich, R Griffin, UW von Holzen, AN Hardy, H Fornalik, RE Schwarz

The Goshen Center for Cancer Care

**Objective:** Administrative data are used by payers and others as determinants of quality of surgical performance, although the definitions of major complications used by both parties are different. We compared coding and billing data of surgical complications to surgeon-determined quality outcomes of a surgical oncology division over a 19 month period.

**Methods:** A retrospective review of monthly morbidity and mortality conference reports was compared to a report over the same time period generated from hospital coding and billing data. Correlations ( $r$  value) between any complication, major complication (Clavien-Dindo grade 3-5), and mortality were compared. The sensitivity, specificity, positive and negative predictive values of coding data for identifying major surgical complications was determined.

**Results:** The review included 807 sequential operations. Physician derived data compared to administrative data identified any complication in 205 (25.4%) versus 111 (13.8%) cases ( $r=0.39$ ), and major complications in 68 (8.4%) versus 46 (5.7%) cases ( $r=0.36$ ); a lethal outcome was identified in 4 (0.5%) each ( $r=0.75$ ). Major complications as determined by physicians or by administrative data were assigned to 92 patients. Review of administrative data for these patient complications identified a total of 35 false negatives, 52 false positives, and only 23 true positive designations. Overall sensitivity, specificity, positive and negative predictive values, and accuracy for administrative data in correctly identifying major complications was 0.40, 0.93, 0.31, 0.90, and 0.89 respectively.

**Conclusion:** The correlation between physician determined and administrative data with regard to identifying complications after operations is poor. Regarding major complications, administrative data are particularly insensitive and lack positive predictive value. Quality-designated surgical scorecards determining major complications from administrative data are likely not accurately reflective of true events.

## Oral Paper Abstracts

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### 11. DEGREE OF HYPERCALCEMIA CORRELATES WITH PARATHYROIDECTOMY BUT NOT WITH SYMPTOMS

H Yan, TA Moo-Young, DJ Winchester, RA Prinz  
NorthShore University HealthSystem

**Objective:** Many patients with primary hyperparathyroidism (HPT) do not receive surgery because the condition is underdiagnosed with nonspecific symptoms. The purpose of this study is to determine if the degree of hypercalcemia correlates with prevalence of complications and rates of surgical treatment in patients with primary HPT.

**Methods:** Patients treated in a university-affiliated hospital system between 2006 and 2015 with serum calcium (Ca) >10.0 mg/dL and parathyroid hormone level (PTH) >65 pg/mL were identified. End-stage renal disease patients were excluded. Patients were separated into groups based on calcium: 10.0-10.3, 10.4-11.2, and  $\geq 11.3$  mg/dL. Clinical variables and rates of surgery were compared between the three groups.

**Results:** A total of 2,266 patients were identified: 303 (13%) with normocalcemia (Ca 10.0-10.3 mg/dL), 1513 (67%) with Ca 10.4-11.2, and 450 (20%) with Ca  $\geq 11.3$ . Mean age was 63.3 years and was similar across the 3 groups ( $p = 0.39$ ). Mean pre-operative PTH value was higher in the Ca  $\geq 11.3$  group than in the Ca 10.4-11.2 and 10.0-10.3 groups (163 vs. 112 vs. 115 pg/mL, respectively) ( $p < 0.01$ ). Nephrolithiasis was present in 14% (318) of the patients, and its prevalence was similar across the 3 groups ( $p = 0.10$ ). Rates of osteoporosis (3.4% prevalence) and renal insufficiency (38% prevalence) were also similar across the three groups ( $p = 0.82$  and  $p = 0.06$ , respectively). Assuming all patients were asymptomatic, 1442 (64%) patients would have met at least one 2013 consensus criteria for surgery: 66% of Ca 10.0-10.3 patients, 59% of Ca 10.4-11.2, and 100% of Ca  $\geq 11.3$ . Only 652 (29%) patients underwent parathyroidectomy. Patients with higher calcium levels were significantly more likely to undergo surgery: 12% of Ca 10.0-10.3, 27% of Ca 10.4-11.2, and 46% of Ca  $\geq 11.3$  ( $p < 0.01$ ).

**Conclusion:** The prevalence of complications from primary HPT does not correlate with serum calcium level. Patients with normal and moderately high calcium are equally likely to have a surgical indication, but normocalcemic patients are much less likely to receive surgery. This implies under-recognition of the disease and its complications.

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## 12. THE DANGER ZONE: INJURIES AND CONDITIONS ASSOCIATED WITH IMMEDIATELY FATAL MOTORCYCLE COLLISIONS IN THE STATE OF MICHIGAN

*MB Dull, RN Saunders, JM Regan, AT Davis, TJ Koehler, CJ Gibson, GA Iskander, CH Rodriguez, SD Cohle, AJ Chapman*  
Spectrum Health Hospitals

**Objective:** The injuries sustained by victims of immediately fatal motorcycle crashes have not been well described. This novel autopsy study catalogues the injuries of motorcycle crash fatalities and assesses the impact of crash conditions on injury patterns.

**Methods:** The Coroner's Office autopsy records from Kent County, MI were queried for motorcyclists declared dead on scene between January 1, 2007 and December 31, 2016. All cases were reviewed with a forensic pathologist to determine injuries present, as well as the injury most directly responsible for the death of each victim. For each incident, publicly searchable police reports were queried for data pertaining to the circumstances of the collision.

**Results:** A total of 71 autopsies from on-scene motorcycle collision deaths were identified from 13 counties within Michigan. Police reports were available for 64 of these crashes. The average age was 41.1 years and 84.5% were male. 93.8% of crashes occurred on dry roads, 57.8% during daylight hours and almost 60% occurred in 55 mph zones. Motorcycle loss of control accounted for 40% of the crashes and 40% were caused by turning vehicles. In 64% of cases, a hazard action was noted for the involved motorcycle. The three most prevalent injuries were traumatic brain injury (TBI; 84.5%), rib and/or sternum fractures (80.3%), and lung lacerations and/or contusions (73%). The top three causes of death were TBI (42%), hemorrhage (26.8%) and blunt neck injury (22.5%). TBIs were more common in those who struck turning vehicles than in those who lost control of their motorcycle or had another cause of their crash ( $p=0.018$ ). Posted speed limit did not correlate with the presence of any specific type of injury ( $p>0.05$ ). Presence of a neck injury or pelvic fracture was associated with increased age ( $p<0.05$ ), while TBI was associated with a younger age ( $P<0.05$ ). Presence of a recorded hazard action or mechanism of the crash were not correlated with age.

**Conclusion:** This study provides important descriptive information about the injury patterns in immediately fatal motorcycle collisions and is the first to utilize autopsy data and police reports to correlate injury patterns to crash environment. The data demonstrates that motorcycle fatalities are the result of irreversible injury. It also demonstrates that many of these crashes occur during what is considered optimal driving conditions. Frequently, fatal crashes are not the fault of the motorcyclist. Advocacy efforts that highlight the risks associated with motorcycle riding and that promote safe riding practices and safety gear are warranted, as is further research into crash causes and prevention.

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### **13. COMPARISON OF COST AND OUTCOMES IN PATIENTS RECEIVING THORACIC EPIDURAL VERSUS LIPOSOMAL BUPIVACAINE FOR VIDEO-ASSISTED THORACOSCOPIC PULMONARY RESECTION**

*RC Anderson, DK Mueller, SR Foiles, M Francois, M Medina, C Asche, J Ren*  
University of Illinois College of Medicine

**Objective:** Epidural has long been the standard of care for post-operative pain management in general thoracic surgery. We present liposomal bupivacaine (LB) as an alternative method for pain control and compare it to the standard.

**Methods:** We performed a retrospective analysis comparing patients that underwent video-assisted thoracoscopic pulmonary resection (VATS-R) at our institution. Patients received either continuous thoracic epidural bupivacaine hydrochloride (BH) or intraoperative LB at a predetermined dose. A total of 243 patients received epidural BH from April 2010 to March 2014 and 144 patients received LB from April 2014 to March 2016. After propensity matching, 95 patients in each group were found to have similar demographics and clinical characteristics including gender, age, race, American Society of Anesthesia (ASA) classification, Zubrod scores, and FEV1 and DLCO percent predicted measurements. Outcome measures included hospital costs, length of stay (LOS), adverse events, postoperative opioid medication use, and pain scores.

**Results:** Compared to the epidural group, the LB group had significantly lower pain scores (average visual analogue scale the day of surgery: 3.9 versus 4.5,  $p < 0.05$ ), less postoperative opioid medication use (morphine equivalent dose during the first 3 days: 344.5 versus 269.5,  $p < 0.05$ ), and lower total and direct hospital costs (\$2906 and \$1865 respectively,  $p < 0.05$ ). Although a shorter LOS in the LB group was not statistically significant (4.3 versus 5.1 days,  $p = 0.156$ ), more patients in the LB group were discharged directly home than the control group (44.2% versus 28.4%,  $p < 0.05$ ). There was no difference in overall adverse events between the two groups including 30-day readmissions.

**Conclusion:** LB is a viable alternative for pain management in patients undergoing VATS-R. With the recent scrutiny on healthcare costs and the opioid epidemic these results are encouraging and should be further investigated.

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### **14. A RANDOMIZED DOUBLE-BLINDED STUDY TO DETERMINE THE EFFECTIVENESS OF UTILIZING INTRAPERITONEAL BUPIVACAINE: DOES IT REDUCE POST-OPERATIVE OPIOID USE FOLLOWING LAPAROSCOPIC APPENDECTOMY?**

*KE Sevensma, CS Miller, CJ Schwickerath, TA Schleichert, AL Shoemaker*  
Metro Health University of Michigan Health

**Objective:** Laparoscopic appendectomy is one of the most common non-elective procedures performed in the US, with around three hundred thousand procedures performed annually. Introducing processes that can improve postoperative pain may lead to improved outcomes in this patient population. The authors of this study hypothesized that instilling intraperitoneal bupivacaine at the cecal base following laparoscopic appendectomy would improve postoperative pain scores, and decrease post-operative opioid use and length of stay.

**Methods:** This study was designed as a double-blinded, placebo-controlled prospective study. Adult patients with acute appendicitis were enrolled. Patients were randomized to receive either 20mL of 0.05% bupivacaine or normal saline instilled intraperitoneally at the appendectomy site prior to closure. Post-operative pain scores at 1 hour, 2 hours, 4 hours and 12 hours were recorded. The amount of opioid medication administered pre-operatively and post-operatively was converted into equivalent IV morphine sulfate dose. Group differences on categorical variables were compared using a Chi-square test, and continuous variables using ANOVA.

**Results:** One hundred one patients were enrolled: 53 patients were randomized to the bupivacaine group and 48 were randomized to the placebo group. No significant differences were found between the two groups in regards to gender, race, BMI, procedure time, estimated blood loss and pre-operative opioid use. No complications of bupivacaine were noted. Pain scores at one hour were found to be significantly improved in the bupivacaine versus the saline group (mean 2.5 SD 2.2 vs 3.8 SD 2.9;  $p=0.014$ ). Post-operative length of stay was found to be significantly improved in the bupivacaine versus the saline group (mean 683.2 minutes SD 413.8 vs 1372 minutes SD 2122;  $p=0.023$ ). Post-operative opioid use was significantly improved in the bupivacaine versus the saline group (mean 7.4mg SD 8.3 vs 16.9mg SD 23.8;  $p=0.007$ ).

**Conclusion:** Instilling Bupivacaine at the conclusion of laparoscopic appendectomy has a statistically significant effect on reducing both post-operative pain scores and post-operative opioid use. This practice should be considered as a process measure to improve care in patients undergoing appendectomy.

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### 15. CANCEL THAT PICC LINE ORDER; CHOLECYSTOSTOMY TUBE AND SHORT COURSE OF ANTIBIOTICS

*C Walker, N Molacek, J Dove, M Fluck, M Hunsinger, K Widom, J Gregory J Wild*

Geisinger Medical Center

**Objective:** Antibiotic duration in complicated intra-abdominal infections continues to be debated. Recent literature has shown that a shorter course of antibiotics is adequate following abdominal source control. One multicenter trial (STOP-IT) found that patients managed with 4 days of antibiotics had similar outcomes as longer courses of antibiotics following abdominal source control. A subgroup analysis of patients managed with percutaneous drainage as source control found similar outcomes. The purpose of this study is to determine if there are differences in outcomes when comparing a short course of antibiotics to a longer course following placement of cholecystostomy tube as source control for cholecystitis.

**Methods:** This is a retrospective study of patients from a tertiary care facility who underwent placement of a cholecystostomy tube between January 1 of 2007 and July 1 of 2015. The data was obtained through chart review from the electronic medical record. The inclusion criteria were patients who underwent placement of a cholecystostomy and completed a course of antibiotics. Patients were separated into 2 groups based on the duration of antibiotics. In-hospital mortalities were excluded.

**Results:** There were 112 patients included in the final cohort. The two groups were similar in size and the only difference was age, with the younger patients receiving more than 7 days of antibiotics (69.3 4 15.3 vs 75.3 4 11.8,  $p=0.016$ ). Systemic signs of infection and inflammation (WBC count, Lactate, Pulse, and Temperature) were compared between the two groups and no difference was found in their baseline values. Kaplan Meier curve demonstrated that the short antibiotic group's WBC returned to normal more quickly. The duration of antibiotics after cholecystostomy placement was significantly different ( $p < 0.0001$ ) with an average of 3.7 days for the short course and 14.1 days for the long course. There was no difference in readmission rates between the two groups at 30 and 90 days. The long antibiotic group did have a significantly longer hospital and ICU stay.

**Conclusion:** Cholecystostomy has been shown to be a serviceable alternative for patients who are too systemically ill to undergo an operation. As well, cholecystostomy is at times considered preferred management of acute cholecystitis in high risk surgical patients. Recent research has suggested that a short course of antibiotics combined with adequate source control has been effective treatment for intra-abdominal infections. This study supports the use of a shorter course of antibiotics following cholecystostomy placement.

## Oral Paper Abstracts

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### 16. THE IMPACT OF OBESITY ON TREATMENT CHOICES AND OUTCOMES IN OPERABLE BREAST CANCER

*EL Burkheimer, L Starks, M Khan, LD Oostendorp, MK Melnik, MH Chung, GP Wright*

Grand Rapids Medical Education Partners

**Objective:** Obesity has been associated with negative oncologic outcomes in breast cancer. We sought to investigate the impact of obesity on treatment choices and outcomes in patients with operable breast cancer.

**Methods:** The study was designed as a retrospective review of consecutive female patients with operable breast cancer at a single institution from 2009-2012. Patients with carcinoma in situ or distant metastatic disease were excluded. Variables gathered included demographics, co-morbidities, utilization of MRI, surgical treatment, perioperative, and long-term oncologic outcomes. Patients were divided into groups for analysis by body mass index (BMI) with a cutoff of 30 kg/m<sup>2</sup> to define obesity. The primary outcome measure was rate of breast conserving surgery. Secondary outcomes included rate of MRI utilization, contralateral prophylactic mastectomy, and perioperative outcomes.

**Results:** There were 1424 consecutive patients included for study, 544 (38%) of whom were obese. Obese patients were older (median age 62 vs 60,  $p=0.018$ ) and had higher incidence of hypertension (61% vs 38%,  $p<0.001$ ), diabetes mellitus (22% vs 8%,  $p<0.001$ ), hyperlipidemia (41% vs 30%,  $p<0.001$ ), and hypothyroidism (19% vs 14%,  $p=0.013$ ). MRI was utilized less frequently in obese patients (51% vs 62%,  $p<0.001$ ). Breast conserving surgery was performed more frequently in obese patients (59% vs 53%,  $p=0.013$ ). Among patients undergoing mastectomy, contralateral prophylactic mastectomy was performed less frequently in obese patients (13% vs 20%,  $p=0.004$ ). There was no difference in rates of post-mastectomy reconstruction between groups (51% vs 56%,  $p=0.203$ ). The rate of close or positive margins was lower in obese patients (24% vs 30%,  $p=0.002$ ). Perioperative outcomes were inferior in obese patients including incidence of surgical site infection (11% vs 6%,  $p=0.001$ ), return to the emergency department (5% vs 3%,  $p=0.046$ ), and hospital readmission (3% vs 1%,  $p=0.042$ ).

**Conclusion:** Obese patients with operable breast cancer receive different treatment than non-obese patients. Further investigation regarding the decision-making process for patients and surgeons is warranted in this population.

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### **17. DOES A FRACTURE LIAISON SERVICE PROGRAM MINIMIZE RECURRENT FRAGILITY FRACTURES IN THE ELDERLY WITH OSTEOPOROTIC VERTEBRAL COMPRESSION FRACTURES?**

*T Wasfie, A Jackson, C Brock, S Galovska, K Grundman, M Smalley*  
Genesys Regional Medical Center

**Objective:** There are currently a great proportion of elderly, both men and women, with fragility fractures (approximately 2 million fractures per year). Falls from standing height and minor trauma being the leading mechanism of injury. Only a small fraction of those patients (about 20%) will receive a bone mineral density test or receive osteoporosis-treating medication in the 6-month period following the fracture, with resulting high recurrent fracture rate (about 50%). We implemented the fracture liaison service program, as a care system in 2015 to help ensure osteoporotic patients receive a continuous and close follow up to reduce the rate of recurrent fragility fractures and further readmission.

**Methods:** A retrospective analysis of 74 patients seen between January 2012 and December 2014 with vertebral compression fractures, was compared to 95 patients seen from January 2015 thru December 2016 who were enrolled in a Fracture Liaison Service (FLS) program. The patients were analyzed according to age, sex, co-morbid conditions, Calcium, Vitamin D levels, DXA scan, and re-fracture rate.

**Results:** The charts of a total of 169 patients with vertebral compression fractures were reviewed, dating from January 2012 thru December 2016. They were separated into two groups. Group A were those seen from January 2012 through December 2014 (prior to initiation of FLS program) and group B were those seen from January 2015 through December 2016 (after initiation of FLS program). Group A: There were 32 (43%) males and 42 (57%) females, with mean age of 81. Fifteen patients (20%) had 4 or more co-morbid conditions. Mean Calcium level was 9.4 and Vitamin D was 33.3. Average DXA scores were -1.78 for the spine and -1.9 for left femoral neck. Re-fracture rate for Group A was 32/169 (22%). Group B: There were 27 (28.4%) males and 68 (71.6%) females, with a mean age of 75. 34 patients (35.8%) had 4 or more co-morbidities. Mean Calcium level was 9.5 and Vitamin D 44.2. Average DXA scores were -1.26 for spine and -2.04 for left femoral neck. Re-fracture rate for Group B was 22/169 (13%).

**Conclusion:** The fracture liaison service program, for follow ups and support of osteoporotic patients with fragility fractures, reduces the re-fracture rate and potential decrease of re-admission rate. Significant reduction in the health care costs is thereby assumed.

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### **18. DO CONTRADICTIONS IN TQIP MEASURES AFFECT PERCEPTIONS OF QUALITY? AN ANALYSIS OF TQIP DEFINITIONS ON QUALITY OUTCOMES FOR PLACEMENT OF ICP MONITORING AT A SINGLE LEVEL ONE TRAUMA CENTER**

*J Weyerbacher, J Williams, L Jacobson, J Saxe*

St. Vincent Hospital

**Objective:** TQIP quality measures as currently defined on occasion provide discordant conclusions. A recent TQIP report of an urban level one-trauma center suggested a low employment of ICP monitoring while also demonstrating aggressive implementation of ICP monitoring (ave. within 90 minutes of arrival). This apparent contradiction leads to the question; Does TQIP define correctly the patient cohort who would most benefit from ICP monitoring?

**Methods:** A retrospective IRB approved review of all patients reported to TQIP with severe TBI was performed at an ACS verified level one trauma center. All patients admitted to the TS during the TQIP study period were reviewed. Demographic data as well as AIS, ISS, GCS, injury type and outcomes were reviewed. Data were reported as aggregate.

**Results:** Trauma registry review determined 108 patients met the TQIP definition for severe TBI. Analysis of these patients revealed only 58%(63) met clinical criteria for severe TBI. In this group 45.4%(49) suffered non-survivable TBI. ICP monitoring was not initiated in this subgroup of patients. 42%(45) of the patients were determined to have mild to moderate TBI. In this cohort the initial GCS reported in the trauma registry overestimated the severity of the TBI in 19.4%(21) of the patients. ICP monitoring was initiated 29%(31) patients. The analysis would indicate 13%(14) would have benefited from ICP monitoring indicating an 15%(16) over utilization. The majority of these patients sustained meaningful neurologic recovery indicating a better-defined criterion may be necessary to determine when ICP monitoring is a quality indicator.

**Conclusion:** This study indicates the current TQIP definition used to justify ICP monitoring appears to overestimate the number of patients who would benefit from ICP monitoring. The corrected quality analysis indicates an overutilization rather than an underutilization of ICP monitoring.

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### 19. CIRCULATING THROMBOSPONDIN-2 ENHANCES PREDICTION OF MALIGNANT INTRADUCTAL PAPILLARY MUCINOUS NEOPLASM

*RE Simpson, MT Yip-Schneider, H Wu, H Fan, Z Liu, M Korc, J Zhang, CM Schmidt*

Indiana University School of Medicine

**Objective:** Intraductal papillary mucinous neoplasms (IPMN) are known premalignant cystic lesions of the pancreas. Predicting the natural history and risk of malignant progression of individual IPMN is difficult, despite often extensive radiographic, endoscopic, and cytologic evaluation.

Thrombospondin-2 (THBS2) is an endogenous, anti-angiogenic matrix glycoprotein that has been reported to modulate tumor progression. We sought to determine if circulating levels of THBS2 in combination with circulating levels of CA19-9 and established clinical variables could aid in preoperative prediction of malignant IPMN and thus improve clinical decision-making.

**Methods:** Preoperative serum or plasma samples were procured from patients undergoing pancreatic resection. IPMN diagnosis and dysplastic grade were confirmed by surgical pathology. Circulating levels of THBS2 were measured using enzyme-linked immunoassay. Our prospectively maintained database was reviewed for clinical data and preoperative circulating levels of CA19-9 for use in the analysis of receiver operating characteristic (ROC) curves and area under the curve (AUC).

**Results:** A total of 164 patients underwent THBS2 testing (100 Low/Moderate-Grade IPMN; 64 High-Grade/Invasive IPMN). Circulating THBS2 levels (mean 4 SD) were significantly greater in patients with High-Grade/Invasive IPMN than those with Low/Moderate-Grade IPMN (26.6 4 12.7ng/mL vs. 20.4 4 8.2ng/mL;  $P < 0.001$ ). THBS2 alone out-performed CA19-9 ( $n=203$ ), with AUC 0.65 vs. 0.62; THBS2 + CA19-9 ( $n=144$ ) yielded an AUC of 0.66. The addition of radiographic main duct involvement and main pancreatic duct diameter to the model composed of THBS2 + CA19-9 (AUC 0.81;  $n=137$ ), followed by the addition of age, sex, and BMI (AUC 0.83;  $n=137$ ), provided a good prediction model for dysplastic grade of IPMN.

**Conclusion:** Circulating levels of THBS2 overall increase with dysplastic grade of IPMN. THBS2 alone was not a strong predictor of IPMN grade. In general, THBS2 strengthened prediction models for malignant IPMN when combined with other clinical and biomarker data, and may aid the clinician in managing this challenging disease.

## Oral Paper Abstracts

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### 20. PANCREATODUODENECTOMY AND PLACEMENT OF OPERATIVE ENTERAL ACCESS: BETTER OR WORSE?

AY Li, DS Kwon, Z Al Adas, Y Kavousi, Q Kawaji, S Dulchavsky  
Henry Ford Health System

**Objective:** Standard of care for operable pancreatic head masses is pancreaticoduodenectomy (PD). Despite advances in surgical technology and management, morbidity remains significantly high. It is unclear whether placement of operative enteral access (OEA) and early enteral supplementation correlates to decreased morbidity and outcome. We sought to evaluate whether placement of OEA at the time of PD is associated with improvement in morbidity and outcomes.

**Methods:** A retrospective chart review was performed on patients undergoing PD at a single surgical center with and without OEA placement between January 2016 and February 2018. All patients with OEA were initiated on tube feeding on postoperative day one, whereas patients without OEA were started on oral nutrition when deemed appropriate. Outcomes including postoperative pancreatic fistula (POPF), infectious complications, delayed gastric emptying (DGE), superficial surgical site infection (SSI), length of stay, readmission at 30 and 90 days, and need for total parenteral nutrition (TPN) were examined.

**Results:** 63 patients underwent PD with 33 patients receiving OEA, whereas 30 patients did not. There were no significant differences in POPF rates (16.7% without vs. 21.2% with,  $p = 0.646$ ) or superficial SSI (10% without vs. 12.5% with,  $p = 0.999$ ). Analysis revealed no difference in DGE between groups ( $p = 0.56$ ). There was a trend toward decreased length of stay for patients without OEA (9 vs. 11 days,  $p = 0.081$ ). There were no significant differences in hospital readmission at 30 days (10% without vs. 15.2% with,  $p = 0.71$ ) and 90 days (15% without vs 21.9% with,  $p = 0.722$ ). Need for TPN did not differ between the two groups (16.7% without vs 6.1% with,  $p = 0.243$ ).

**Conclusion:** OEA placement at the time of PD is not necessarily associated with improved perioperative morbidity and outcomes. Additionally, there is a trend towards increased length of stay with OEA placement. It is suggestive that placement of enteral feeding access may not be necessary during PD, with need to potentially direct attention toward preoperative nutritional optimization. Further study is warranted to examine whether there is an association between OEA omission and recovery of nutritional status after PD.

## Oral Paper Abstracts

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### 21. SCREENING COLONOSCOPY PERFORMED BY COLORECTAL SURGEONS: HIGH-QUALITY REGARDLESS OF SPECIALTY

*I Sapci, A Aiello, E Gorgun, M Rizk, CP Delaney, SR Steele, MA Valente*  
Cleveland Clinic Foundation

**Objective:** Data suggests that screening colonoscopy performed by non-gastroenterologists are lower quality and pose an increase in interval cancer risk due to inferior adenoma detection rates (ADR). We hypothesized that screening colonoscopy performed by specialty-trained colorectal surgeons (CRS) meet national quality benchmarks (ADR: 25% total, 30% male, 20% female). The aim of this study was to investigate the effect of the colonoscopist's specialty on quality parameters in screening colonoscopy.

**Methods:** Screening colonoscopies performed at a tertiary level hospital system between January 2016 and June 2017 were queried from a prospectively maintained institutional colonoscopy database. Quality parameters including overall ADR, gender-specific ADR, total examination time, cecal intubation rate, withdrawal time, and procedural complications were compared between gastroenterology (GI) and CRS. Univariate analyses were conducted and Pearson's chi-square or Fisher's exact test was used.

**Results:** A total of 15,276 patients were included in the study (mean age 60.3 ± 8; 52.4% female). Overall, 11,339 (74.2%) of the colonoscopies were performed by GI, and 3,937 (25.7 %) were by CRS. Withdrawal time (10.146.5 vs. 10.646.2,  $p < 0.001$ ) and total scope time (19.149.3 vs. 21.9410.2,  $p < 0.001$ ) were shorter in the GI group. Cecal intubation rate (99.4% vs 99.2%,  $p = 0.29$ ) was comparable. Overall adenoma detection rate (31% vs 25.3%),  $p < 0.001$ , female adenoma detection rate (25.3% vs. 20.8%,  $p < 0.001$ ) and male adenoma detection rate (37.7% vs. 30.2%,  $p < 0.001$ ) were higher in the GI group and both groups met national quality benchmarks. There were no immediate major complications in the groups.

**Conclusion:** Both CRS and GI specialists achieve appropriate quality metrics for screening colonoscopy, with GI having a higher ADR. Prospectively evaluating each endoscopist's outcomes regardless of specialty training is an important tool for ongoing quality improvement towards better patient outcomes.

## Oral Paper Abstracts

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### **22. A DECADE OF EXPERIENCE WITH LAPAROSCOPIC VENTRAL HERNIA REPAIRS**

*SR Lund, DR Farley*  
Mayo Clinic - Rochester

**Objective:** Laparoscopic ventral hernia repair (LVHR) has become a mainstay of treatment for abdominal hernias. Few studies have evaluated surgical outcomes for patients undergoing LVHR in long-term follow-up.

**Methods:** A retrospective review of a large tertiary medical center's experience with LVHR was undertaken with the primary goal to investigate long-term (10 + years) outcomes. We collected data on consecutive patients who underwent LVHR between 2002 and 2005.

**Results:** Sixty-three patients (F: 26, M: 37; mean age = 63 years [range: 32 - 80] and mean BMI = 32.6) underwent LVHR at our institution. Recurrent hernias made up 41% of repairs. Mean operative time was 164 minutes (range: 50 - 439). Mean hospital stay was 3.7 days (range: 0 - 22). Short term (ileus [5], pneumonia [2], complication of concurrent procedure [2], adrenal insufficiency [1], small bowel obstruction [2]) and long-term (hernia recurrence, mesh infection, small bowel obstruction, seroma) complications occurred in 19% and 44% of patients respectively. With a mean follow-up of 149 months (range: 114 - 179), recurrent hernias were noted in 15 patients (23%). Seroma formation occurred in 14 patients (22%). Small bowel obstruction occurred in 10 patients (16%). Five patients developed a mesh infection (8%). The use of PTFE mesh, longer operative time, and having a larger hernia defect were risk factors for mesh infection ( $p < 0.05$ ). Four patients underwent re-operation for mesh infection, with mesh removed in all four. Operating on recurrent hernias was a risk factor for future hernia recurrence ( $p < 0.05$ ). Differing methods of fixation and obesity were not risk factors for long-term complications.

**Conclusion:** Long-term outcomes (10+ years) for patients undergoing LVHR is fraught with complications (44%) and a considerable risk of hernia recurrence (23%).

## Oral Paper Abstracts

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### **23. DID WE PRIORITIZE QUALITY IMPROVEMENT IN GENERAL SURGERY: TIME FOR A FOCUS ON OUTCOMES AND ENHANCED RECOVERY CARE PLANS**

*BD Hughes, HB Mehta, EW Sieloff, Y Shan, AJ Senagore*

University of Texas Medical Branch - Galveston

**Objective:** Schilling et al using the 2005-06 National Surgical Quality Improvement Program (NSQIP) identified specific groups of surgical procedures which disproportionately accounted for higher morbidities and mortality to prioritize quality improvement in general surgery. Since that time, there has been widespread adoption of quality reporting, a shift towards minimally invasive procedures and extensive evaluation of a variety of enhanced recovery processes of care. This study aimed to re-assess the current performance in general surgery after nearly a decade of efforts using the same process of analysis.

**Methods:** Data from the 2015 NSQIP was used in this study. To enable direct comparison with Schilling et al., 36 general surgery procedure groups were created using Current Procedural Terminology codes. Of 409,230 patients identified undergoing general surgery, 369,911(90%) were matched with our procedure grouping. Adverse event rates were analyzed for each procedure.

**Results:** Ten procedure groups represent 62% of cases and account for 80% of the adverse events. Interestingly, colectomy (34%) and appendectomy (7.46%) have actually increased the respective proportionate shares of surgical morbidity, with ventral hernia (6.87%) rounding out the top 3 categories. These cases have also increased relative positions in terms of volume. Of additional concern, is the fact that cholecystectomy (outpatient has moved up the morbidity list (1.5% vs 4.9%) compared to the original report.

**Conclusion:** These data suggest that despite the identification of a priority list of "at risk" general surgical procedures, a broader implementation of minimally invasive options, and advocacy for enhanced recovery protocols there are worrisome trends in surgical outcomes from 2005 to 2015. Greater efforts are needed to drive comprehensive system-level adoption of evidence-based components of care to improve surgical outcomes both with respect to technical issues and processes of care.

## Oral Paper Abstracts

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### **24. LAPAROSCOPIC PLACEMENT OF THE LINX SYSTEM IN MANAGEMENT OF SEVERE REFLUX AFTER SLEEVE GASTRECTOMY**

*A Hawasli, A Meguid, M Dean, B Hawasli, M Sadoun*

St. John Hospital and Medical Center

**Objective:** Management of severe reflux after sleeve gastrectomy is often done by conversion to Roux-en-y gastric bypass. The introduction of the LINX system can be a viable alternative to correct this problem.

**Methods:** Between January 2015 and December 2017, 13 patients with severe reflux after sleeve gastrectomy were offered the placement of the LINX system to manage their reflux as an alternative to the conversion to RYGB. All patients had a barium swallow, endoscopy with Bravo capsule pH monitor and esophageal motility.

**Results:** Ten females and three males with an average age of 49+13 yrs. Eleven patients had reflux before the sleeve. Initial weight before the sleeve was 268.8+49.7 lbs. and BMI of 46.3+7.5 kg/m<sup>2</sup>. All patients lost weight. Their weight before placement of the LINX system was 193 + 45 lbs. and BMI of 32.5+6.2 kg/m<sup>2</sup>. The average time between the sleeve and the placement of the LINX system was 43.1+19.3 months. All patients had 2 cm hiatal hernia or less with Bravo pH score of 46.2+25.7. Five patients had esophagitis. The operative time was 79.4+23.4 min. and hospital stay was 1 day. There were no intra-operative complications. All patients had mild dysphagia but felt better control of their reflux except one who had severe dysphagia and demanded removal of the LINX system after 18 days of its placement. The average follow-up was 13.9+9.6. The GERD-HRQL score in 6 patients who completed the pre and post operative survey showed a drop from 46.2/75+19.8/75 to 7.67/75+5.4/75.

**Conclusion:** The laparoscopic placement of the LINX system for management of severe reflux after sleeve gastrectomy can be offered as an alternative to the conversion to Roux-en-Y gastric bypass.

## Oral Paper Abstracts

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### **25. MELANOMA: IMPROVEMENT IN GUIDELINE BASED CARE USING A QUALITY MONITORING PROGRAM. COMPARISON OF MELANOMA CARE OUTCOMES IN A COMMUNITY-BASED TEACHING HOSPITAL**

*BA Kielhorn, JB Jantz, MS Kosten, SS Phillips, SC Khandavalli, LE McCahill*  
Metro Health University of Michigan Health

**Objective:** Adherence to guideline-based care for patients with melanoma remains suboptimal despite availability of consensus guidelines. A comprehensive melanoma quality monitoring program was developed, implementing sustained measurement of compliance with published clinical guidelines. This study compares the quality of melanoma care rendered in a community-based teaching hospital before and after implementation of the monitoring program.

**Methods:** Thirty metrics based on published, expert panel recommendations for melanoma quality were adopted. A data abstraction tool, 31-page abstraction manual and electronic database were developed. Data was abstracted by medically trained personnel. Outcomes were analyzed quarterly with multi-disciplinary collaboration between surgical, oncology, and pathology teams from September 1, 2013 to December 31, 2017 (late group). Outcomes were shared at surgical meetings and posted on the hospital website. These outcomes are compared to the quality of melanoma care for patients treated from January 1, 2008 to August 31, 2013 (early group).

**Results:** A total of 311 patients were treated from 2008 to 2017. 284 patients in the late group and 27 patients in the early group. Overall M:F ratio was 172:139 with mean age 60.3 years (range 18-92 years). Demographic data were similar between the two groups. Surgical process measures had greater compliance following implementation of the quality monitoring program than those treated prior to its development. Only 21.7% of patients in the early group had clinical stage (TNM) documented prior to surgery compared to 100% after program implementation. 86.9% of patients in the early group had surgical margins documented in the operative report compared to 100% thereafter. Appropriate surgical margins were obtained in 85.7% of the early group compared to 99.5% in the late group. Appropriate utilization of sentinel lymph node biopsy did not differ between groups. Pathology processes were standardized and revised through regular outcome analysis and interdisciplinary meetings. Reporting of peripheral margin & deep margin status, satellitosis, regression and mitotic rates improved from ~60% prior to September 2013 to > 92% thereafter. Multidisciplinary process metrics including adjuvant therapy discussion for patients with stage III or recurrent disease as well as discussion of stage specific follow-up improved from ~ 80% in the early group to > 96% in the late group. Structural metrics examined included surgeon board certification and stage specific follow-up discussion which did not differ between groups.

**Conclusion:** A comprehensive melanoma quality monitoring program has resulted in significant improvement in guideline-based multidisciplinary care of patients with melanoma. Broader implementation of this program offers an opportunity to improve regional melanoma patient care.

## Oral Paper Abstracts

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### **26. IMPACT OF NODAL AND MARGIN STATUS IN PANCREATIC CANCER PATIENTS UNDERGOING SURGERY AND CHEMOTHERAPY: A NATIONAL CANCER DATABASE ANALYSIS 2004-2014**

*S Saha, M Elgamal, S Mukkamala, M Cherry, D Livert, S Pentapati, D Wiese, K Devisetty, J Nettleton, H Gayar, SS Grewal, DS Eilender, T Singh, ML Arora McLaren Flint*

**Objective:** Pancreatic adenocarcinoma patients have dismal survival with surgery alone; hence chemotherapy has been used often in addition to surgery. We analyzed the role of lymph node (LN) and margin status after neoadjuvant vs adjuvant vs neoadjuvant + adjuvant chemotherapy in pancreatic adenocarcinoma patients

**Methods:** Data was obtained from the National Cancer Database from 2004-2014 for pancreatic adenocarcinoma patients undergoing surgery along with neoadjuvant (gp A) or adjuvant (gp B) or neoadjuvant + adjuvant (gp C) chemotherapy. Survival analysis for 1, 2 and 3 years (yrs) was done in patients stratified by LN and margin status using Pearson chi-squared test for significance.

**Results:** Of the 26,083 surgical pancreatic adenocarcinoma patients with available LN and margin status, there were 3106 pts in gp A (Neoadjuvant), 21,638 pts in gp B (Adjuvant) and 1339 pts in gp C (Neoadjuvant + adjuvant). Patients with pathologically +ve LN and margin in gp A were (42% and 17%), in gp B (70% and 25%) and in gp C (56% and 20%) respectively. According to LN and margin status, survival rate was as follows: i) 1yr survival was best in gp C with -ve LN & -ve margin (93%), worst in gp B with +ve LN & +ve margin (64%) ii) 2 yrs survival was best in gp C with -ve LN & -ve margin (59%), worst in gp B with +ve LN & +ve margin (28%) iii) 3 yrs survival was best in gp B with -ve LN & -ve margin (36%), worst in gp A with +ve LN & +ve margin (13%). Survival rate without considering LN or margin status in 1,2 and 3 yrs respectively was as follows: i) gp A 80%, 46%, 24% ii) gp B 75%, 42%, 23% iii) gp C 88%, 49%, 25%.

**Conclusion:** Highest incidence of -ve lymph node & margin status was seen in neoadjuvant therapy (group A), whereas highest incidence of +ve lymph node & margin status was seen in adjuvant therapy (group B). Use of neoadjuvant + adjuvant therapy provides the best 1, 2 and 3 years survival. Best overall survival for all 3 years was seen after neoadjuvant + adjuvant therapy in group C. Hence, whenever possible neoadjuvant and adjuvant therapy should be offered with surgery in resectable pancreatic adenocarcinoma patients for best survival. A multi institutional prospective trial based on these principles should be done to further confirm these results.

## Oral Paper Abstracts

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### 27. THE ROLE OF ACADEMIC ACHIEVEMENTS AND PSYCHOMETRIC MEASURES IN THE RANKING PROCESS

*S Shebrain, D Schutter, G Munene, C Shattuck, S Lu*  
Western Michigan University

**Objective:** The Electronic Residency Application Service® (ERAS®) provides a centralized and flexible solution to the residency application and documents distribution process, thereby facilitating the interview selection process for both the applicant and the residency program. However, ranking the candidates is challenging. We hypothesize that applicant academic achievements and performance during the interview day are equally important in the ranking process.

**Methods:** This is a retrospective study of prospectively collected data for candidates ranked during the 2017-2018 academic year. Of 53 candidates interviewed in five groups, 44 (83%) were ranked for five PGY1 surgery positions. Candidates were interviewed by the Program Director, Chairman, three faculty, and three senior residents. Each candidate was scored from 1-5 (1 the lowest, 5 the highest) in each of the following categories: USMLE Step 1 and USMLE Step 2 scores (USMLE1, USMLE2), strength of letters of recommendation (LOR), personal statement (PS), research and extra-curricular activities (RS), the way the candidate represented him/herself (RP), the candidate's interest in the area (IN), the candidate's answer to a standardized question (SQ), and the degree of connection between the candidate and the interviewer (CN). Three parameters represent academic performance (USMLE1, USMLE2, RS) were objectively assessed. Five parameters (LOR, PS, RP, IN, and SQ) were subjectively assessed by the interviewer.

**Results:** Correlation and multiple regression analyses were conducted to examine the relationship between the final rank of candidates and potential predictors in the ranking process. Results indicated positive correlation between ranking the candidates and USMLE2 ( $r=0.14$ ,  $p=0.364$ ), LOR ( $r=0.513$ ,  $p<0.001$ ), PS ( $r=0.414$ ,  $p=0.006$ ), RP ( $r=0.485$ ,  $p=0.001$ ), CN ( $r=0.591$ ,  $p<0.001$ ), IN ( $r=0.349$ ,  $p=0.022$ ), and SQ ( $r=0.493$ ,  $p=0.001$ ). Additionally, there is weak positive correlation between candidate ranking and USMLE1 ( $r=0.036$ ,  $p=0.838$ ) and RS ( $r=0.008$ ,  $p=0.96$ ). The multiple regression model with all predictors produced  $R^2 = 0.52$ ,  $p = 0.002$ . However, after controlling for the other variables in the model, the only predictor with statistical significance was the degree of connection between the candidate and the interviewer ( $p=0.033$ ).

**Conclusion:** Ranking candidates for surgery residency is very challenging. Although candidates' academic achievement is an important factor for selecting and inviting candidates to interview, candidate interactions and psychometric measures during the interview are important factors in the ranking process.

# Oral Paper Abstracts

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## 28. EFFECT OF WOUND COMPLICATIONS FOLLOWING MASTECTOMY WITH RECONSTRUCTION ON BREAST CANCER RECURRENCE

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Cleveland Clinic Foundation

**Objective:** Rates of reconstruction following mastectomy for breast cancer have increased over recent years with 55-60% of patients receiving immediate reconstruction. The incidence of complications with immediate reconstruction is reported to be up to 35%. There is concern that wound complications following mastectomy and reconstruction may delay cancer treatment, which could increase risk of breast cancer recurrence. The aim of this study was to determine whether wound complications are associated with prolonged time to receipt of adjuvant therapy and subsequent increased risk of recurrence.

**Methods:** A retrospective review was performed on an institutional database of women diagnosed with breast cancer between 2005-2010. Patients with Stage I-III breast cancer who underwent mastectomy with immediate reconstruction were included. Patient demographics, tumor type, treatment regimen and timing, as well as surgery and reconstruction type were recorded. Sixty-day wound complications and additional procedures (office-based and operating room) were documented. Overall recurrence was recorded, and association with complications was compared using multivariate analysis.

**Results:** A total of 458 women were identified with a mean follow up time of 7.6 years. Immediate reconstruction was performed using immediate tissue expanders (76%) or autologous reconstruction (21%). Twenty-three percent of patients received adjuvant radiation and 50% had adjuvant chemotherapy. Sixty-day wound complications occurred in 22% of patients, with some patients experiencing more than one complication. About 20% of patients with tissue expanders had complications compared to 27% of patients with flaps. Complications included seromas (7%), hematomas (2%), infection (7%), delayed wound healing (5%), flap necrosis (6%), and implant or flap loss (3%). A total of 10% of patients had minor office procedures and 12% returned to the OR for surgical revision. Obese patients had increased risk of developing wound complications, particularly with regards to delayed wound healing ( $p = 0.007$ ). There was no significant delay from time of surgery to adjuvant therapy between patients who developed wound complications and those who did not (48 vs 42 days,  $p = 0.21$ ). Overall, there were 42 recurrences (9.2%) with no significant difference between groups with and without complications ( $p = 0.5$ ).

**Conclusion:** Breast cancer patients who undergo mastectomy are increasingly electing for immediate reconstruction. This study demonstrates that complications occur in 22% of women, but are not associated with delays in adjuvant treatment or increased rates of recurrence. Women who elect for mastectomy with reconstruction should be counseled on the incidence of complication risks, but reassured that oncologic outcomes do not appear to be compromised.





# **SPECTACULAR PROBLEMS IN SURGERY ABSTRACTS**

# Spectacular Problems in Surgery Abstracts

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## **SP1. IT'S NOT ALL HOT AIR: SIGNIFICANT PNEUMOPERITONEUM WITHOUT ABDOMINAL INJURY**

*C Butler, FC Wood, J Conner, AM Scifres, RM Albrecht, JS Lees*  
University of Oklahoma Health Sciences Center

**Objective:** While blunt thoracic trauma is relatively common among trauma patients, it is rarely associated with pneumoperitoneum.

**Methods:** We present a case of a 41 year-old restrained female who sustained a motor vehicle collision with prolonged extrication. The patient arrived at our ACS verified level 1 trauma center with a temporary airway in place and a Glasgow Coma Scale of 3T. Primary survey revealed a right pneumothorax for which a chest tube was placed. CT imaging demonstrated a left pneumothorax as well, with extension into the left thoracoabdominal wall and significant pneumoperitoneum. She underwent diagnostic laparoscopy where lacerations to her peritoneum from blunt trauma were found. The peritoneal injury facilitated the decompression of the tension pneumothorax into the abdominal cavity and likely lessened the degree of pneumothorax on her left side. Inspection revealed no injury to the diaphragm or viscera.

**Results:** Numerous mechanisms can create pneumoperitoneum- both benign and life-threatening. Most commonly, pneumoperitoneum following trauma indicates the presence of a perforated hollow-viscus and need for urgent laparotomy. Other causes of free intraperitoneal gas include air entry through the abdominal wall, diaphragm, or retroperitoneum. To our knowledge, this is the first described case of pneumoperitoneum secondary to decompression of a pneumothorax through a laceration in the peritoneum which resulted from tearing of the peritoneum from the costal margin.

**Conclusion:** While one must have a high degree of suspicion for hollow viscus injuries in the setting of pneumoperitoneum, one must acknowledge there also exists benign etiologies for the presence of free intraperitoneal gas.

# Spectacular Problems in Surgery Abstracts

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## **SP2. RESECTION OF LEIOMYOSARCOMA OF THE RETROHEPATIC INFERIOR VENA CAVA (IVC) WITH VASCULAR RECONSTRUCTION**

*MH Squires, J Chakedis, CR Schmidt, JL Chen, VP Grignol, ME Dillhoff*  
The Ohio State University

**Objective:** Leiomyosarcoma of the IVC is a rare malignancy that poses significant surgical challenges. En-bloc resection of adjacent organs is often required and if the retro- or suprahepatic IVC is involved, resection may require clamping of the hepatic veins, total vascular isolation of the liver, or venovenous bypass to achieve margin negative resection and caval reconstruction.

**Methods:** A 61-year old male presented with 6 weeks of intractable right shoulder pain. Imaging revealed a 10cm retroperitoneal mass in the right upper quadrant, displacing the IVC and abutting the liver and portal vein. A CT-guided biopsy demonstrated high-grade leiomyosarcoma, felt to be arising from the IVC. He had no evidence of metastatic disease but was deemed initially unresectable, and thus was started on neoadjuvant adriamycin and ifosfamide. He completed 7 cycles of chemotherapy with a marked radiographic response, prompting consideration for operative exploration.

**Results:** Intraoperatively, the patient was prepped for potential veno-venous bypass. On exploration, the tumor arose from the retrohepatic IVC and extended superiorly from just below the level of the hepatic veins to the level of the renal veins inferiorly. The tumor involved the caudate lobe and left lobe of the liver and abutted the right portal vein. A Kocher maneuver exposed the infrahepatic IVC and left and right renal veins. The right liver lobe was mobilized off the IVC, and the right portal vein, right hepatic duct, and right hepatic vein were dissected free of tumor. After mobilizing the left liver lobe also, a hanging maneuver was performed prior to transecting the left hepatic artery and portal vein. The hepatic parenchyma was divided, and the caudate lobe was resected given tumor involvement. After clamping the IVC proximally just below the hepatic veins and distally at the level of the renal veins, the retroperitoneal dissection of the tumor was completed. The right renal artery and vein were ligated due to tumor involvement. Resection of the tumor was completed with en-bloc left hepatectomy, right adrenalectomy, and segmental IVC resection. Due to involvement of the right renal vasculature, a right nephrectomy was then performed. The 10cm long segment of the IVC was reconstructed with a 20mm PTFE graft in an end-to-end fashion. The left renal vein had been ligated flush with the IVC due to tumor thrombus within the cava near the os, and was then reimplanted distal to the reconstruction into the native IVC with an 8mm PTFE jump graft. Excellent flow within both grafts was obtained.

**Conclusion:** Pathology demonstrated an 11x9x9cm intermediate grade leiomyosarcoma with 20% tumor necrosis and negative IVC and liver margins. His postoperative course was uneventful and he was discharged home in stable condition on POD10. His postoperative creatinine has remained stable at 1.80 mg/dL. His surveillance scans 6 months after resection showed no evidence of disease and he remains clinically well.

# Spectacular Problems in Surgery Abstracts

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## SP3. COLON CANCER PRESENTING AS AN INCARCERATED INGUINAL HERNIA

*K Harris, T Tigges, J Saxe*  
St. Vincent Hospital

**Objective:** This an unusual expression of a colon cancer presenting as an incarcerated hernia. A late middle-aged gentleman presented to our surgical service with weakness and fatigue and a hemoglobin of 3.6. Exam demonstrated a large incarcerated right inguinal hernia that the patient stated was present for several years. He denied any obstructive symptoms. He was treated with blood transfusion and was referred for general surgical consultation. A CT scan was obtained which revealed an incarcerated cecal mass in the right sided hernia. The patient was taken to the operating room, where an open right inguinal hernia repair was performed. The hernia sac contained a large >10 cm ascending colon mass which had perforated into the adjacent small bowel. A right hemicolectomy was performed through a right oblique inguinal incision and subsequently reduced the remaining bowel into the abdominal cavity. A Lichtenstein hernia repair was performed which included mesh. We feel this case is illustrative of several controversial treatment choices. Should mesh be used to repair a hernia in the face of a bowel resection and anastomosis? Should a chronically obstructed colon undergo resection with primary anastomosis?

# Spectacular Problems in Surgery Abstracts

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## SP4. CHOLECYSTITIS AFTER CHOLECYSTECTOMY: A CASE REPORT ON DUPLICATE GALLBLADDER

SJ Pera. ZM Khazi. ST Orcutt

University of Illinois College of Medicine at Peoria

**Objective:** Duplicate gallbladder (DG) is a rare congenital anomaly that results from embryologic defect in the 5th and 6th pharyngeal pouches, with an incidence of 1 in 4000 births. Often, the diagnosis of a duplicate gallbladder is missed preoperatively.

Appropriate diagnosis of this anomaly is important to avoid reoperation or surgical complications because of anatomic variations of the cystic duct and right hepatic artery. Preoperative diagnosis can be established with oral cholecystography, endoscopic retrograde cholangiopancreatography, transcutaneous cholangiography or magnetic resonance cholangiopancreatography.

**Methods:** A 46 year old female with past surgical history of laparoscopic cholecystectomy 3 years ago, Roux-en-Y gastric bypass surgery 1 year ago presents with right upper quadrant pain that is intermittent and associated with meals. She notes that these symptoms are similar to the pain she experienced prior to her cholecystectomy.

**Results:** MRCP showed "cystic structure in the gallbladder fossa with simple fluid signal that appears to connect to the cystic duct in turn with the common bile duct. Without history of of cholecystectomy, the appearance of this structure is identical to a native gallbladder". She was taken to the operating room and underwent laparoscopic cholecystectomy. During this dissection, clips from a prior cholecystectomy were seen and the DG was noted to have its own cystic duct. Final pathology noted gallbladder tissue with mild chronic inflammation.

**Conclusion:** In the 1920s, Boyden proposed a simple classification system. He differentiated DG based on how the two gallbladders drained bile into the common bile duct. He named 3 different anatomic variants: a double gallbladder with a common cystic duct, a double gallbladder with two distinct cystic ducts that merge before draining into the common bile duct, and a double gallbladder with two distinct cystic duct that drain separately into the common bile duct. In 1977 Harlaftis proposed that DG be classified into two groups based on embryogenesis. Type 1 DG is when the cystic primordium has a septum or a split during embryogenesis such that both gallbladders share the same cystic duct. Type 2 DG is when there is an accessory gallbladder that arises from a separate primordium during embryogenesis where each has its own cystic duct that drains into the biliary tree. Our patient had a Type 2 DG. Management of DG begins with appropriate preoperative workup that includes imaging. ERCP is the gold standard at diagnosing the presence of DG. If a patient with a history of cholecystectomy who presents with signs and symptoms of cholecystitis or choledocholithiasis should be worked up for a DG. Surgical treatment for DG can be achieved by laparoscopic cholecystectomy with careful attention given to locating the common bile duct and the right hepatic artery to prevent complications. Removal of an asymptomatic duplicate gallbladder remains controversial.

# Spectacular Problems in Surgery Abstracts

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## SP5. A TALE OF A WAYFARING ORGAN

*ES Schafer, T Asgeirsson, RA Titus*

Metro Health University of Michigan Health

**Objective:** The wandering spleen is a rare entity with an unknown incidence. The pathophysiology of this condition is not fully understood, but is thought to be due to a developmental failure of the splenic suspensory ligaments. The typical anatomy described of a wandering spleen is suspension only by the vascular pedicle comprised of the splenic artery and vein. Surgical intervention is recommended due to the concern of torsion. Here we present a case of a young female with abdominal pain and an incidental finding of a wandering spleen suspended by an elongated gastrosplenic ligament with vascular supply from the short gastrics. To date, we have been unable to identify a similar published anatomic description.

**Results:** A 19yo female with history of severe anxiety, mixed-type IBS, and chronic intermittent abdominal pain and a BMI of 15 presented to her gynecologist for a new onset of abnormal uterine bleeding. Workup included a CT scan, which incidentally revealed a wandering spleen. The spleen was located within her pelvis with a vascular pedicle supplied by enlarged, tortuous short gastric vessels. The spleen measured greater than 11cm. The patient had no abnormalities on her laboratory work. Prior to surgical consultation the patient developed sudden severe abdominal pain and was admitted with concerns for torsion. On exam, the patient had a palpable mass in her lower abdomen with voluntary guarding but hemodynamics were stable. Laparoscopic splenectomy was performed which demonstrated abnormal vasculature arising from engorged short gastrics within a broad-based, fatty attachment to the stomach, presumably the gastrosplenic ligament. On postoperative examination, the patient's already-thin abdomen had a divot appearance to the low abdomen. The patient tolerated splenectomy well and was discharged home on postoperative day one. Pathology revealed moderate splenomegaly with congestion of the red pulp.

**Conclusion:** The wandering spleen is a rare clinical condition. It is recommended that symptomatic patients be offered splenectomy secondary to risk of torsion. Most case reports anatomically describe the spleen suspended by its primary vascular pedicle without additional ligamentous attachments. As such, the pedicle is ligated high and the spleen removed for a classic splenectomy. Other techniques for splenic salvage have been described in treatment of wandering spleen including a Vicryl mesh hammock, splenic gastropexy, and a retroperitoneal pocket. Our patient presented with concerning exam for torsion and underwent surgical resection. This is the first case report that describes a wandering spleen in the pelvis with a vascular supply predominantly from the short gastric arteries.

## Spectacular Problems in Surgery Abstracts

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### **SP6. MASSIVE DEFECT FROM NECROTIZING SOFT TISSUE INFECTION INVOLVING THE LOWER ABDOMEN AND PERINEUM: IS FECAL DIVERSION A NECESSITY OR NICETY?**

*AG Seidel, DE Vazquez, WC Cirocco, JK Bailey*  
The Ohio State University

**Objective:** Patient DC is a 57-year-old woman who presented to the Acute Care Surgery (ACS) service with extensive necrotizing soft tissue infection of her anterior abdominal wall, perineum, and medial thighs. She presented to our institution 24 hours after initial debridement at an outside hospital.

**Methods:** On hospital day 1, she underwent additional debridement down to fascia with a resulting soft tissue defect measuring 10 cm x 80 cm of upper abdominal wall and 50 cm x 60 cm of lower abdominal wall. On HD# 2 she had a final debridement. The patient's fecal and urinary streams were controlled with a rectal tube and Foley catheter. Once the patient had adequate source control of the infection, the ACS service consulted Plastic Surgery for assistance with tissue reconstruction, and the recommendations included a request for fecal and urinary diversion prior to any reconstruction attempts. ACS also consulted the Burn Surgery service HD#17 for additional recommendations. The Burn Surgery Service assessment included the plan to proceed with coverage efforts without surgical diversion of the fecal stream. On HD #22 she was taken to the OR for temporary coverage of the 1601 cm<sup>2</sup> defect with xenograft. The patient returned to the OR for split-thickness autologous skin grafting of the involved area on HD# 30.

**Results:** This case highlights strength of a multidisciplinary approach to the management of critically ill patients with necrotizing soft tissue infections and the controversy of diversion in the management of soft tissue defects of the perineum.

**Conclusion:** Surgical diversion has significant risks and, may not be mandated for optimal outcomes.

# Spectacular Problems in Surgery Abstracts

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## **SP7. MASSIVE FACIAL MELANOMA INVADING MULTIPLE SURROUNDING STRUCTURES: A CASE REPORT FOR PALLIATION OF NEGLECTED TUMOR**

*DJ Testrake, JR Ouellette*  
Wright State University

**Objective:** In modern industrial countries, most melanomas of the face are recognized and treated relatively early. Rarely do healthcare providers encounter advanced disease in the developed world. Occasionally, patients will not seek care for a obvious disease and will allow extensive progression outside the norm. It has been hypothesized that this is part of the denial process similar to the entity previously described as 'neglected breast cancer.' In this case, a patient neglected a massive facial melanoma, refusing chemotherapy and radiation for more than a year. Unlike the described neglected tumor syndrome pattern, he was frank about his probable cancer diagnosis and impending demise but had been refusing medical care to instead treat the tumor with prayer.

**Methods:** Neglected facial melanomas present a unique challenge both for resection and reconstruction. In this patient's case, physical exam and CT scanning showed invasion of the central facial bones, the left maxillary and ethmoid sinuses, and the left cornea with globe rupture. He had worsening symptoms of bleeding from the mass and loss of left-sided vision. The mass had obvious necrosis with foul odor impeding his activities of daily living. Staging CT scans identified multiple pulmonary metastases. He once again refused chemotherapy or immune therapy. Given the lifestyle limitations from his massive facial tumor, he was offered a palliative resection followed by a skin graft the following day by plastic surgery to minimize major surgery. He was discharged home with significant resolution of symptoms with his only difficulty being controlling nasal secretions.

**Results:** He resumed normal activities within several days and continued to refuse adjuvant therapy.

**Conclusion:** Neglected massive facial melanomas are rare entities and create significant difficulties in resection and reconstruction options. Palliative resections can be considered with minimal morbidity to improve patient comfort.

# Spectacular Problems in Surgery Abstracts

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## **SP8. TRAUMATIC MESOCOLIC INTERNAL HERNIA WITH STRANGULATION AND SMALL BOWEL OBSTRUCTION: A REPORT OF TWO CASES**

*GK Ong, JK Schulte, JA Isch, MG Rowe, JM Saxe*

St. Vincent Hospital

**Objective:** Internal hernias are rare and account for 0.6-6.0% of all small bowel obstructions. They often result in strangulation and ischemia, requiring emergency surgery. Acquired internal hernias are mostly encountered after previous abdominal surgeries that necessitate creation of a mesenteric defect, as with the Roux-en-Y. Traumatic internal hernias however, remain rare and represent an even smaller proportion. We present two such cases.

**Methods:** A 22 year old female presents after motor vehicle crash with prolonged extrication. Multiple injuries included unstable pelvic fractures, open right tibial fracture and extensive abdominal wall abrasions. Initial chest, abdominal and pelvis CT did not reveal any intra-abdominal injuries. Emergent pelvic stabilization was performed followed by delayed repair of right transverse acetabular fracture and left sacroiliac joint percutaneous fixation. Patient remained stable, awaiting physical rehabilitation placement. On day eleven, she developed peritonitis, bilious emesis and leukocytosis. Abdominal and pelvic CT documents mesenteric stranding, increased pelvic free fluid and interval development of abnormally thickened loops of small bowel. Emergent laparotomy revealed a large traumatic sigmoid mesenteric tear with incarcerated small bowel. Reduction of traumatic small bowel hernia and repair of mesenteric tear was performed and small bowel remained viable. Post-operatively, patient was discharged to a rehabilitation facility on a regular diet and return of bowel function.

**Results:** A 34 year old male presented with crush injury after being pinned between a semi-truck and loading dock. An open book pelvic fracture with significant diastases of the pubic symphysis and abnormal widening of the left sacroiliac joint was seen on pelvic X-ray. CT of the chest, abdomen and pelvis only revealed small amount of free fluid within the pelvis. Clinically, patient progressively developed severe peritonitis. Emergent laparotomy findings included ileal mesentery bucket handle injury with total transection of a portion of small bowel, large circumferential sigmoid colon avulsion and sigmoid mesenteric defect with herniation of small bowel. Portion of ileum was resected with primary anastomosis, reduction of small bowel hernia and repair of sigmoid mesenteric defect as well as Hartmann's and end colostomy were performed. Orthopedic surgery followed with pelvic stabilization. Diet was advanced with ostomy function and patient was subsequently discharged to rehabilitation facility.

**Conclusion:** Internal hernias as a result of traumatic injury are extremely rare and unusual. Reliance on serial abdominal exams and clinical presentation often take precedence as initial imaging frequently misses such injuries. High suspicion for surgical intervention should be considered as reduction of the hernia in a timely fashion is critical in achieving a favorable outcome.





# POSTER ABSTRACTS

## Poster Abstracts

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### **P1. IMPACT OF NO TREATMENT VS OTHER NON-SURGICAL TREATMENTS IN PANCREATIC ADENOCARCINOMA- NATIONAL CANCER DATABASE: 2004-2014**

*S Saha, S Mukkamala, M Cherry, M Elgamal, D Livert, S Pentapati, K Devisetty, H Gayar, SS Grewal, DS Eilender, T Singh, D Wiese, J Nettleton, ML Arora  
McLaren Flint*

**Objective:** Surgery remains the only curative treatment option in Pancreatic adenocarcinoma, yet in more than 50% of the patients the disease is too advanced, or patients are at very high risk and considered inoperable. They are either managed with no treatment or other non-surgical methods. Hence, we analyzed a large cohort of Pancreatic adenocarcinoma patients undergoing No treatment vs Chemotherapy only vs Radiation therapy only or Chemo-radiation therapy to determine their impact on survival.

**Methods:** Only Pancreatic adenocarcinoma patients who had no surgery in the National Cancer Database from 2004-2014 were included. Patients were then stratified into 4 groups namely Chemotherapy only, Radiation therapy only, Chemo-radiation therapy and No Treatment. Overall 1, 2 and 3 years survival was calculated using Pearson Chi Square method.

**Results:** Of the total 309,709 patients, 146,569 patients (47%) underwent no surgical resection and met the inclusion criteria. Of these patients, 59,034 (40%) received Chemotherapy only, 3061 (2%) received Radiation only, 19864 (14%) received Chemo-radiation and 64610 (44%) received No Treatment. Overall best 1-year survival was found to be in Chemo-radiation group (41.8%) vs 24.4% in Chemotherapy group, 15% in Radiation therapy group and 9.6% in No Treatment group. Overall survival for all 3 years was best in Chemo-radiation group and worst in No treatment group. Overall only 22% of patients were alive at 1 year compared to 6% at the end of 2 years and only 2% survived beyond 3 years. The difference in survival rates between groups were statistically significant with a P-value being statistically significant (<0.000) for all 3 years.

**Conclusion:** Survival in Pancreatic adenocarcinoma patients remains dismal without surgery. Best Survival in non-surgical patients was seen after combination Chemo-radiation therapy and worst survival in No Treatment group. Hence, whenever possible, combination Chemo-radiation should be offered even as palliation in non-surgical Pancreatic adenocarcinoma patients.

## Poster Abstracts

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### **P2. FACTORS ASSOCIATED WITH NON-COMPLETE MESORECTAL EXCISION FOLLOWING SURGERY FOR RECTAL ADENOCARCINOMA**

*I Sapci, J Silva Velazco, X Xhaja, E Gorgun, L Stocchi, SR Steele, MA Valente*  
Cleveland Clinic Foundation

**Objective:** The completeness of the resected mesorectum is a quality metric in rectal cancer surgery and has been related to oncological outcomes. We hypothesized there are patient, disease and surgeon-related factors that are associated with a non-complete mesorectum. Our aim was to identify variables associated with non-complete mesorectal excision and determine any effect on overall survival.

**Methods:** All patients who underwent curative intent resections for middle and distal third rectal adenocarcinoma (2009-2016) were identified from a prospectively-maintained institutional database. Patients were categorized into three previously defined groups according to their mesorectal grading: complete, near-complete and incomplete. Separate analyses were also performed by combining near complete and incomplete mesorectal grading into non-complete mesorectum. Multivariate analysis was performed to identify the association between various patient, disease and surgeon-related characteristics and mesorectal grading. Log-rank tests were used to evaluate any difference in overall survival between the groups.

**Results:** 689 patients (mean age 58.7; 65.8% male; median follow-up 41 months) met inclusion criteria. Overall, 90% (622/689) of mesorectum specimens were complete, 6% (40/689) near-complete and 4% (27/689) incomplete. Body mass index (BMI), age, gender, blood loss (EBL), and length of surgery were not associated with the non-complete mesorectal grade. Additionally, clinical and pathologic TNM staging, the utilization of neoadjuvant therapy or operative approach (open vs. laparoscopic vs. robotic) were not associated with a non-complete mesorectal grade.

On multivariate analysis, distal third tumors, non-restorative procedure, and involved circumferential resection margin (CRM) were significantly associated with non-complete mesorectum in both the 2-group and 3-group comparisons (Table). Patients undergoing an abdominal perineal resection were five-fold more likely to have non-complete grading compared to patients undergoing a low anterior resection [OR: 0.20 (CI: 0.11, 0.38)]. Additionally, patients with a positive CRM had a higher rate of non-completeness compared to a negative CRM [OR: 2.5 (CI: 1.05, 6.1)]. Finally, patients with non-complete mesorectal grading have approximately twice the hazard of death compared to those with complete mesorectal grading [HR: 2.0 (CI: 1.2, 3.3)].

**Conclusion:** Several patient, disease, and surgeon-related variables were associated with a non-complete mesorectum in middle and low rectal adenocarcinoma. Additionally, decreased overall survival is associated with a non-complete mesorectal excision. These factors should be considered when caring for patients with rectal cancer.

## Poster Abstracts

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### **P3. THE TIMING OF KOCK POUCH COMPLICATIONS: DO THEY FIT A PATTERN?**

*AM Jarrar, D Vitello, O Lavryk, D Schwartzberg, S Shawki,*

*C Delaney, SR. Steele*

Cleveland Clinic Foundation

**Objective:** Kock pouch (i.e., Continent ileostomy) remains an alternative to restorative proctocolectomy in select cases. Despite their utility, a major limitation is the increased potential for postoperative complications. We hypothesized that the morbidity profile differed based on the timing of their development. The aim of this study was to evaluate the period from construction to development of pouch-related complications, and to determine if certain complications correlated with timing.

**Methods:** Following IRB approval, we identified patients undergoing Kock pouch creation between 1991 and 2016. Patient demographics, underlying disease, and details regarding Kock pouch surgery, complications and their timing, and necessity for revision or excision were documented. The primary metric was postoperative complication.

**Results:** Overall, 209 patients were identified (131 women; mean age of 44 years). The mean follow-up was 10.4 ± 10 years. The most common indications were ulcerative colitis (56%), Crohn's disease (14%), indeterminate colitis (12%), familial adenomatous polyposis (5%). A total of 117 (56%) patients had a total of 207 procedures including revisions. The mean interval for pouch revision was 4.5 ± 9.4 years after pouch creation, with a mean of 1.7 revisions per patient. Ultimately, 43 (21%) patients had their pouch excised, at a mean interval of 8.5 ± 11.4 years after pouch creation. 26 (60%) out of 43 patients had prior revision surgeries with a mean interval of 6.2 ± 5.5 years between the last revision surgery and pouch excision. Indications for pouch excision were valve slippage (n=9), malfunctioning pouch (n=9), pouch fistula (n=6), non-specific inflammation of the mucosa (n=2), parastomal ulcers (n=1), pouch stricture (n=1), pouch ischemia (n=1), leakage and sepsis (n=1), recurrent obstruction (n=1), parastomal hernia (n=1), and other (n=11). There was no statistically significant difference in terms of complication rates and time to complications when stratified by underlying diagnosis. Valve slippage remained the most common complication after K pouch creation and tended to occur later (6.8 ± 12.4 years), while prolapse (mean 3.6 ± 45.1 years) and incontinence (mean 3.8 ± 48.2 years) were earlier complications.

**Conclusion:** Most complications following Kock pouch occur several years following surgery. While there remains a risk of pouch-related complications, they tend to be manageable, and independent of the underlying diagnosis. For many patients, it represents a valuable surgical option.

## Poster Abstracts

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### **P 4. CONVERSION TO OPEN FROM LAPAROSCOPIC COLON RESECTION IS A MARKER FOR WORSE ONCOLOGIC OUTCOMES IN COLON CANCER**

*LC Duraes, SR Steele, MGM Camargo, E Gorgun, MF Kalady, M Valente, A Bham, CP Delaney*

Cleveland Clinic Foundation

**Objective:** A laparoscopic approach has been shown to have improved short-term outcomes compared to both open and converted patients undergoing colorectal surgery. However, few reports have examined the impact of conversion from laparoscopic to open colectomy on oncologic outcomes for colon cancer. We hypothesized that conversion is associated with worse oncological outcomes. The aim of this study was to evaluate the oncological outcomes of conversion in patients undergoing resection for colon cancer.

**Methods:** Patients with stages I-III colon adenocarcinoma operated with curative intent between 2000-2012 were included. Exclusion criteria were emergency surgery, concomitant inflammatory bowel disease, and hereditary colorectal neoplasia. Patients were initially stratified by surgical approach (laparoscopy vs. open). A secondary analysis was performed comparing patients who required conversion to open with laparoscopic only.

**Results:** We identified 1196 patients meeting inclusion criteria, including 340 (28%) patients undergoing a laparoscopic approach and 856 (72%) open. Overall, 43 (13%) laparoscopic cases were converted to open. No difference was observed in 5-year overall survival (OS) (71% vs. 69%,  $p=0.258$ ), disease-free survival (DFS) (65% vs. 63%,  $p=0.070$ ), cancer-specific survival (CSS) (90% vs. 88%,  $p=0.207$ ) or recurrence (16% vs. 17%,  $p=0.216$ ) between laparoscopy and open, respectively. However, patients with conversion had worse OS (53% vs. 75%,  $p=0.010$ ) and DFS (42% vs. 69%,  $p=0.006$ ) when compared to laparoscopic only. By pathologic stage, conversion was associated with worse survival outcomes in Stage II (OS 50% vs. 79%,  $p=0.041$ ; DFS 40% vs. 72%,  $p=0.066$ ), and Stage III (OS 32% vs. 65%,  $p=0.033$ ; DFS 22% vs. 59%,  $p=0.017$ ) disease. No difference was observed on CSS (90% vs. 94%,  $p=0.693$ ) or recurrence (15% vs. 18%,  $p=0.567$ ). The reasons for conversion included: late conversion due to technical difficulties (53%), tumor size (19%), early conversion (16%), and intraoperative complications (12%)-- none of which were associated with OS ( $p=0.937$ ), DFS ( $p=0.621$ ), CSS ( $p=0.219$ ), or recurrence ( $p=0.437$ ).

**Conclusion:** Overall, laparoscopic and open colon cancer cases have similar oncological outcomes. For cases attempted laparoscopically, conversion to open is associated with worse oncologic survival outcomes, independently of the reason for conversion, and is a marker of adverse overall survival. Further work is needed to define the exact reason for the worse outcome.

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### **P 5. THE ORIGINAL IVOR LEWIS TWO STAGE ESOPHAGECTOMY REVISITED IN THE ERA OF MINIMALLY INVASIVE SURGERY**

*G Ambrosi, A Hawasil, D Demos, L Camero*

St. John Hospital and Medical Center

**Objective:** The incidence of cardio-pulmonary complications after Esophagectomy can reach 58%. The combination of the abdominal and thoracic procedures with the long operative time, requiring post-operative ventilator support, may be the biggest factor in this incidence. The original Ivor-Lewis Esophagectomy in 1944 was a two stage procedure. We revisited this approach with the first stage being done laparoscopically. Our goal was to evaluate the effect of this divided approach on these cardio-pulmonary complications.

**Methods:** Thirty-five consecutive patients with esophageal cancer were operated on. Six were aborted due to un-resectable or metastatic disease. Twenty-nine patients underwent laparoscopic mobilization of the stomach with pyloromyotomy. Eleven patients had feeding jejunostomy. All patients had open right trans-thoracic esophagectomy within two days.

**Results:** Twenty-six males and three females were studied. The mean age was 62.1+9 years. The mean operative times for stage one and stage two were 108.48+17.94 and 225.72+62.63 minutes respectively. All patients were extubated post-operatively. Epidural catheters were placed in 24 patients. The ICU stay after the second stage was 1.83 4 1.67 days. The mean hospital length of stay (LOS) was 11.59 4 4.46 days excluding two patients who died, one after a stroke and one from esophageal leak. Cardio-pulmonary complications occurred in 2 (6%) patients. One patient had atrial fibrillation and one patient had pneumonia. Eight (27%) patients had non cardiopulmonary complications including a leak from a pulled feeding jejunostomy (1), gastroparesis (2), chyle leak (2), wound infection (1), stroke (1), and an anastomotic leak (1).

**Conclusion:** Two stage Esophagectomy divides a lengthy operation into two shorter ones allowing the patient to be extubated after each procedure, hence decreasing the cardio-pulmonary complications. The laparoscopic mobilization of the stomach allows a faster use of the gut contributing to decrease in postoperative LOS. The two-stage Esophagectomy may be considered as an alternative to the traditional one stage Esophagectomy to decrease its high risk post-op cardiopulmonary complications.

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### **P6. DOES PREOPERATIVE ORAL ANTIBIOTIC OR MECHANICAL BOWEL PREPARATION INCREASE CLOSTRIDIUM DIFFICILE COLITIS AFTER COLORECTAL SURGERY? AN ASSESSMENT FROM ACS-NSQIP PROCEDURE-TARGETED DATABASE**

*C Benlice, TB Cengiz, L Stocchi, M Valente, TL Hull, SR Steele, IE Gorgun*  
Cleveland Clinic Foundation

**Objective:** Despite the recent literature suggesting that combined use of preoperative oral antibiotic (POAP) and mechanical bowel preparation (MBP) decrease surgical site infectious after colorectal surgery, there are concerns that their use resulting in decreased bacterial load could contribute to an increased incidence of hospital-acquired *Clostridium difficile* colitis (CDC). This study aimed to identify the risk factors for postoperative CDC in patients undergoing colectomy and determine whether preoperative oral antibiotic or mechanical bowel preparation increase the risk of CDC.

**Methods:** Data regarding patients undergoing elective colectomy were retrieved from the 2015-2016 American College of Surgeons National Surgical Quality Improvement Program (ACS- NSQIP) procedure-targeted database. Univariate and multivariate regression analyses were conducted to determine predictor variables associated with CDC after colectomy. Variables were selected into the final model using a logistic regression selection procedure with  $\alpha=0.05$  stay criteria. A univariate analysis was conducted assessing the possible relationship between 34 NSQIP preoperative and operative variables and the rates of CDC. Patients with preoperative diagnosis of CDC or undergoing emergent surgery were excluded from the analysis.

**Results:** A total of 43668 patients met the inclusion criteria. The overall rate of CDC after colectomy was 1.45% (N=633). On univariate analysis, patients with CDC were significantly less likely to undergo POAP, MBP or combined preoperative bowel preparation (Table). After multivariate logistic regression analysis with 14 variables, older age (OR: 2.1,  $p=0.005$ ), dependent functional status (OR: 1.8,  $p=0.004$ ), preoperative ascites, preoperative steroid use (OR: 1.5,  $p=0.008$ ), COPD (OR: 1.5,  $p=0.008$ ), diagnosis of sigmoid diverticulitis, ( $p<0.001$ ) and performance of right hemicolectomy ( $p<0.001$ ) were significantly associated with postoperative CDC. When tested separately, both OBP and MBP lost their statistically significant association with a reduced risk of CDC ( $p=0.34$  and  $p=0.0054$ , respectively).

**Conclusion:** Neither oral antibiotics nor mechanical bowel preparation increase the risk for *Clostridium difficile* colitis after colectomy. Based on the detailed analysis of this nationwide cohort, both should be used when appropriate.

## Poster Abstracts

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### **P 7. DIDACTIC VS VIDEO VS EXPERIMENTAL TEACHING: WHAT IS THE BEST WAY TO TEACH GENERAL SURGERY INTERNS? A PILOT STUDY**

*Y AlJamal, N Prabhakar, H Saleem, M Baloul, D Farley*  
Mayo Clinic - Rochester

**Objective:** We sought to compare didactic session, instructional video and low-cost low-fidelity model in teaching the general surgery interns a side-to-side, 2-layered, hand-sewn small bowel anastomosis (HSBA).

**Methods:** Nineteen general surgery interns participated in a prospective randomized study. Participants were asked to write down the steps for performing a side-to-side, 2-layered HSBA (pretest). They then were divided into three groups and learned the steps of a side-to-side, 2-layered HSBA in a didactic session (Group 1), an instructional video (Group 2) or low-cost low-fidelity model (Group 3). A post-test (identical to pretest) concluded the session. The maximum test score was 12 points. 3 weeks later a retention test was administered. Participants were surveyed anonymously regarding the degree to which teaching models were educationally effective. Pretest, post-test, and retention test scores were compared among the groups.

**Results:** No differences were found in the trainees' pretest scores (mean [SD], G1=0.8 [1.3], G2 =0.3 [0.8], G3 =0.5 [0.8],  $p>0.05$ ). All groups of trainees scored higher on the post-test (G1; 5 [1.7], G2; 6 [0.9], G3; 10.14 [1],  $p<0.05$ ). G3 outperformed G1 and G2 on the post-test ( $p<0.0001$ ). Retention test scores were higher among G3 (7.8 [0.8]) compared with G1 and G2 (2.8 [1.9], 1.7 [1.2] respectively,  $p=0.0002$ ). No significant differences were found in the trainees' preference among the three teaching methods (G1; 3 [3.4], G2; 5.2 [1.5], G3; 6.4 [1.3],  $p=0.1$ ).

**Conclusion:** Low-cost, low-fidelity models are more effective for learning for general surgery interns in comparison with video and didactic sessions. This effect remained stable over 3 weeks. The information gained from this study suggests experimental hands- on learning improves the educational effectiveness of the sessions. Further studies with larger numbers are needed to confirm the findings of this study.

## Poster Abstracts

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### **P8. INTEGRATION OF A TECHNICAL SKILLS CURRICULUM: PROSPECTIVE BENEFITS FOR SURGICAL RESIDENCY APPLICANTS**

*AM Dwyer, CL Theleman, RC Anderson, LS Conlee*  
University of Illinois College of Medicine

**Objective:** Beyond required clinical rotations, few institutions have implemented a technical surgical skills curriculum for medical students. Studies have demonstrated the direct correlation between early technical skills examinations and higher pass rates on in-training evaluations.<sup>1</sup> Additionally, independent preparedness rates for graduating surgical residents are 12.3% at first year level to 77.1% at fifth year level, based on training level appropriate cases.<sup>2</sup> Our goal was to evaluate the advancements of medical students within a technical skills based curriculum.

**Methods:** Thirty four sub-internship students applying to general surgery residency were examined. Utilizing laparoscopic box trainers, the students performed a series of technical tasks that include; peg transfer, bean drop, pattern cut, running the bowel, and square knot. Initial and final attempt times were recorded to evaluate efficiency after one month of daily practice sessions.

**Results:** A two-tailed t-test was performed. For the peg transfer, 34 students were evaluated, with a mean reduction time of 89.15 seconds,  $P < 0.0001$ , 95% CI from 67.33 to 110.97. Bean drop, 34 students were evaluated, with a mean reduction time of 84.32 seconds,  $P < 0.0001$ , 95% CI from 58.07 to 110.58. Pattern cut, 32 students were evaluated, with a mean reduction time of 163.69 seconds,  $P < 0.0001$ , 95% CI from 118.36 to 209.01. Running the bowel, 32 students were evaluated, with a mean reduction time of 48.88 seconds,  $P < 0.0001$ , 95% CI from 41.02 to 56.73. Square knot, 32 students were evaluated, with a mean reduction time of 360.69 seconds,  $P < 0.0001$ , 95% CI from 268.16 to 453.22.

**Conclusion:** This research demonstrates, students applying to general surgery residencies have statistically significant advancements in laparoscopic techniques and technical skills with a standardized curriculum aimed at early exposure to instrumentation.

## Poster Abstracts

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### **P9. CYTOREDUCTIVE SURGERY (CRS) WITH HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY (HIPEC): A SINGLE INSTITUTION EXPERIENCE**

*K Coughlin, V Simmons, J Morreale, J Chores, A Boston, KHaglund, MJames, R Berri*

St. John Hospital and Medical Center

**Objective:** Cytoreductive surgery (CRS) with hyperthermic intraperitoneal chemotherapy (HIPEC) can be used for peritoneal dissemination from various primary malignancies. Historically CRS + HIPEC experienced high morbidity and mortality: reported Clavien-Dindo grade III complication rates of 26-33% and grade IV of 12-26%. Our study evaluated morbidity, mortality and outcomes after 212 consecutive CRS + HIPEC performed at a community hospital by a single surgeon.

**Methods:** From October 2011 to September 2017, 212 consecutive patients underwent CRS + HIPEC, we analyzed the first 193 patients. Using an institutional review board approved study a comprehensive database of all patients was developed.

**Results:** The average age was 54.4 years; 73% were female. The most common diagnosis was mucinous appendiceal carcinoma (N=107), followed by colorectal cancer (N=50). Mean length of stay was 9.9 days, 30 day readmission rate was 10.9%. Rate of grade III Clavien-Dindo complications was 19% and grade IV complications was 4.7%. There was no inpatient or 90-day postoperative mortality. For Appendiceal patients with complete CRS, OS at 5 years was 70%, with a disease free survival of 56%. For patients with colorectal cancer (N=50) after CRS + HIPEC, OS at 5 years was 63.1% with 5 year disease free survival of 33%.

**Conclusion:** Our study demonstrates that this procedure can be safely performed in the community setting with low morbidity and no mortality. This is made possible if a surgeon led multidisciplinary team is assembled and provides high quality multidisciplinary care.

## Poster Abstracts

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### **P. 10. CLOSTRIDIUM SEPTICUM ASSOCIATED COLON CANCER**

*K Harris, K Wyant, M Edwards, J Saxe*

St. Vincent Hospital

**Objective:** This is an unusual presentation of a case of a delayed diagnosis of colonic malignancy. An elderly gentleman with a previous history of aortic resection for aortitis with an axillary bi-femoral reconstruction presented to our facility with a one-day history of hematochezia. Nine months prior to this admission, he underwent an aortic resection with axillary bi-femoral bypass secondary to aortitis with cultures positive for *Clostridium septicum*. *Clostridium* infection has been associated with colonic malignancies, but no work up was done post operatively to isolate any colonic source. A CT done as a part of his latest admission was concerning when a large complex mass within the mid transverse colon was found. A colonoscopy revealed a large, ulcerated, non-obstructing mass in the mid-transverse colon. Biopsies of the mass were positive for adenocarcinoma. He underwent an exploratory laparotomy, extensive enterolysis, segmental transverse colon resection with en bloc jejunal resection, and primary colonic and jejunal anastomoses. Pathology showed 4.2 cm mixed adenoneuroendocrine carcinoma with the majority of the tumor containing large cell neuroendocrine carcinoma and a smaller component of moderately differentiated adenocarcinoma. Six of 17 lymph nodes were positive for metastatic carcinoma. He had an uneventful post-operative course and was discharged to home in stable condition on post-operative day 7.

## Poster Abstracts

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### **P. 11. DETERMINING PREVENTION PRIORITIES USING TRAUMA REGISTRY DATA**

*S Patel, M Budd, MW Jackson, D Tommelein, C Corpron, K Kralovich*  
St. Joseph Mercy, Ann Arbor

**Objective:** Trauma centers have a responsibility to promote community health via injury prevention programs. An optimally designed and targeted community program requires objective evaluation of the trauma burden ranked by mechanism. The Injury Prevention Priority Score (IPPS) is a standardized objective method to compare mechanisms of injury and their severity. It has been previously validated in pediatric populations. This study aims to validate this method in the Washtenaw county adult population presenting to Saint Joseph Mercy, Ann Arbor to improve future trauma prevention initiatives.

**Methods:** Review of the Saint Joseph Mercy, Ann Arbor Trauma Registry from 7/1/2014 to 12/31/2017. Patients >14 years with Trauma Service admissions were included. IPPS scores were calculated by calculating the mean and standard deviation (SD) for all mechanisms on all presentations. These were standardized to Z-scores and converted to T-scores for ranking.

**Results:** A total of 4643 patients were reviewed of which 48% were male. The mean age was 63.5 years (SD = 22.7 years) with mean Injury Severity Score 8.5 (SD=6.7). The age of presentation was 14-25 (9%), 26-45 (12%), 46-65 (21%), and >65 (57%). The most frequent mechanisms of injury were falls (n=2970, 64%), motor vehicles (n=656, 14%), and motor cycles (n=182, 4%). Rankings were as follows: falls (IPPS=84), motor vehicles (IPPS=56), pedestrian vs. vehicle (IPPS=54), and motorcycles (IPPS=53).

**Conclusion:** The IPPS ranking of the adult population demonstrates the trauma burden in Washtenaw County. It allows demographic specific review of mechanisms of injury and objective information for development of community oriented trauma prevention programs and highlights the disproportionate presentation of elderly patients.

## Poster Abstracts

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### **P12. EVALUATION OF MESH PLACEMENT TECHNIQUE ON RECURRENCE RATE IN LAPAROSCOPIC TRANS-ABDOMINAL PRE-PERITONEAL INGUINAL HERNIA REPAIR (TAPP): A LIFETIME EXPERIENCE**

*M Thorpe, R Constantine, A Meguid, A Hawasli*

St. John Hospital and Medical Center

**Objective:** The laparoscopic trans-abdominal pre-peritoneal inguinal hernia repair (TAPP) was introduced in early 90's. Due to difficulty in closing the peritoneum and violating the abdominal cavity, many surgeons departed to the Total Extra-Peritoneal repair (TEP). However, in the recent years there has been a renewed interest in going back to the TAPP technique using the Robotic approach. We are bringing our life time experience in the TAPP technique to evaluate the effect of the method of mesh placement on recurrence rate.

**Methods:** A retrospective review of the charts of all patients undergoing TAPP for primary inguinal hernia repair from 1991-2005 by one surgeon was performed. The patients were divided into two groups; Group-1: (1991-1997) were patients who had the mesh placement over the cord structures, and Group-2: (1997-2005) were patients who had a lateral slit in the mesh to encircle the cord structures. The patients were offered a free yearly visit for five years, to increase follow-up rate, and evaluate their potential for recurrence.

**Results:** 1328 patients with 92.4% males and total of 1413 primary hernias were included (6.4% bilateral). The size and type of the hernia were recorded. There were total of 8 (0.49%) recurrences. All recurrences were indirect. These were 6 recurrences in 632 hernias with a recurrence rate of 0.95% in group-1, and 2 recurrences of 781 hernias with a recurrence rate of 0.26% in group-2 ( $p=.084$ ). There were no intra-operative complications. Post operative complication were hematoma in 77 (5.45%) of hernia sites, seromas in 76 (5.37%) sites, nerve pain in 17 (1.2%) sites, and significant urinary retention in 16 (1.2%) patients.

**Conclusion:** The addition of the lateral slit technique to the mesh and encircling the cord structures during laparoscopic TAPP inguinal hernia repair resulted in more than 72% decrease in recurrence rate. This did not reach statistical significance due to small number of recurrences, however, it did show a trend toward less recurrence rate.

## Poster Abstracts

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### **P13. IMPACT OF DERMATOPATHOLOGY SECOND OPINION ON SURGICAL MANAGEMENT OF MALIGNANT MELANOMA AT A COMMUNITY SKIN CANCER CENTER**

*LE McCahill, M Kosten*

Metro Health University of Michigan Health

**Objective:** Surgical management of melanoma is highly dependent on specific pathology features (Breslow depth, mitotic rate, ulceration) that determine the clinically estimated stage for surgery, and determine both the extent of surgical margins as well as the necessity of performing a sentinel node (SLN) biopsy. We sought to assess the impact of dermatopathology second opinion on surgical decision making for patients with newly diagnosed melanoma.

**Methods:** For patients referred for surgical management of newly diagnosed melanoma, pathology reports and slides from referring physicians were routinely sent for re-evaluation to our tertiary care dermatopathology group for secondary analysis. Changes in clinical stage as well as changes in surgical management were assessed. Changes in stage were based on AJCC 7th edition.

**Results:** In 2017 there were 101 secondary pathology reviews among 80 patients with a diagnosis of invasive melanoma or melanoma in situ (MIS) for whom secondary review of pathology was requested. Initial diagnostic skin biopsy was reviewed in 80 and for 21 a secondary review was also performed on pathology from surgical excision +/- SLN biopsy. There were 50 men and 30 women, mean age 62. Overall a significant change in the pathology report occurred in 24 (23.7%), with a change in clinical or pathologic stage in 19 (18.8%), and a decision to change therapy in 16 (15.8%). Among 80 patients evaluated for primary excision +/- SLN biopsy, secondary pathologic interpretation led to significant changes in the pathology report in 19 (23.7%). A change in initial clinical stage occurred in 15 (19%; 4 upstaged and 11 downstaged), and a change in planned surgical treatment occurred in 11 (14%). In 8 cases the pathology re-interpretation led to a change in the plan regarding SLN biopsy: 5 patients for whom SLN biopsy was planned were changed to wide excision only and in 3 patients for whom SLN biopsy was not originally planned were changed to include a SLN. For 3 other patients the diagnosis of melanoma was downstaged to either atypical nevus or MIS, decreasing planned margins of surgical excision in 2, and for one increasing planned margins of excision. Among 21 patients for whom pathology after primary excision +/- SLN was sent for second opinion, a meaningful change occurred in 5 (24%) leading to change in planned therapy in all 5 patients. A decision for re-excision was changed in 2, and a decision for additional SLN or lymphadenectomy/adjuvant therapy was changed in 3.

**Conclusion:** Surgeons need to have tremendous awareness of the challenges of pathologic interpretation of melanoma and other pigmented lesions and should have a low threshold for secondary interpretation of biopsies and excisions. Decisions regarding surgical therapy including margins, necessity of SLN and subsequent lymphadenectomy and adjuvant therapy may all be significantly impacted.

## Poster Abstracts

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### **P14. ENDOBRONCHIAL VALVE UTILIZATION IN THE MANAGEMENT OF BRONCHOPLEURAL FISTULAS**

*J Wilkerson, G Ong, C Banashack, R Mahidhara*  
St. Vincent Hospital

**Objective:** Persistent air leaks (PALs) secondary to bronchopleural fistulas represent a significant clinical problem that is associated with increased morbidity, increased healthcare costs, and prolonged hospital stay. Current guidelines for the treatment of PALs support the use of tube thoracostomy drainage; however, these therapies often prove ineffective. Our objective is to describe the usage of endobronchial valves (EBVs); bronchoscopically positioned one-way valves that prevent ventilation of occluded bronchial segments, for treatment of persistent air leaks. Originally studied for use in the treatment of severe emphysema, endobronchial valves (EBVs) represent an increasingly utilized alternative and less invasive modality in the treatment of persistent air leaks. We present the results of a consecutive case series treating PALs with bronchoscopically placed EBVs to help accelerate air leak resolution.

**Methods:** A retrospective review was conducted to identify all patients undergoing EBV placement for persistent air leaks at our single-center institution from January 2015 to October 2017. All patients included in the review underwent bronchoscopy with balloon occlusion prior to valve placement to identify all contributing airways that would benefit from treatment.

**Results:** During a two-year period, ten patients were identified (7 men; mean age 54.5 years) that underwent a total of 15 procedures for EBV placement for persistent air leaks. All patients had prior drainage procedures performed. The etiologies of the persistent air leaks included post-surgical (n=4), pyothorax (n=4), bullous emphysema (n=1), and iatrogenic (n=1). Seven of the ten patients had complete resolution of their air leak following EBV placement (70%), two patients had no response (20%), and one patient's treatment is ongoing. An average of 3 valves were placed per patient. The mean time to chest tube removal following EBV placement was 19.6 days, although three patients were excluded for either ongoing or failed treatment.

**Conclusion:** Endobronchial valves represent a safe and effective alternative technique for the treatment of patients with a persistent pulmonary air leaks and, as such, should be considered a useful adjunct in the management of bronchopleural fistulas.

## Poster Abstracts

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### **P15. IMPACT OF PATIENT CHARACTERISTICS AND PREFERENCES ON TIME FROM BREAST CANCER DIAGNOSIS TO FIRST SURGICAL CONSULTATION AND DEFINITIVE TREATMENT**

*Y Liu, S Valente, N Greve, L Park, A Simpson, SR Grobmyer*  
Cleveland Clinic Foundation

**Objective:** Studies have shown increasing times from breast cancer diagnosis to treatment over recent years with concern that such delays may worsen oncologic outcomes. Included in time to treat is the interval to initial surgical consultation (SC). We sought to identify patient-related explanations for time to initial SC, and how this interval affects total time to treatment (TTT).

**Methods:** A prospective database of women diagnosed with breast cancer at our institution from 2015-2016 was reviewed. Time from diagnosis to SC and preferences regarding the appointment were gathered using a nurse navigation tool. TTT was collected from electronic medical records. Variables such as age, race, marriage, children, employment, breast history and cancer type were analyzed using multivariate analysis.

**Results:** A total of 564 women identified as newly diagnosed with breast cancer at our institution were surveyed under our nurse navigator-driven protocol. Of these, 154 (26.8%) women opted for the earliest appointment while 410 (73.2%) chose a later date. The average time to SC was 7 +/- 4.8 days. Patients who accepted a first available appointment waited an average of 5.7 +/- 3.4 days, while those who deferred waited 9.6 +/- 4.8 days, ( $p < 0.001$ ). The primary reasons for deferral were location (52.8%), surgeon (30.6%), day of week (6.9%), travel plans (2.8%), gender (1.6%) and "other" (5.7%). Significant characteristics prolonging time to SC included older age and women without children ( $p < 0.05$ ). Race, marital status, employment, breast history and tumor type did not have an impact on time to SC. Patients with longer time to SC also had longer TTT ( $p < 0.05$ ). Women with children and those diagnosed with DCIS tended to have increased TTT. There was no significant difference in time to first SC or TTT based on the type of initial treatment or surgery offered.

**Conclusion:** Among new breast cancer patients, there is a substantial population that defers the first available surgical consultation. These patients are also more likely to have prolonged time to treat. Patient factors and preferences are important when evaluating quality metrics for breast cancer, and these should be considered in efforts to optimize patient-centered care. Follow-up is necessary to determine the significance of such delays on breast cancer outcomes and overall survival.

## Poster Abstracts

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### **P16. ROBOTIC VERSUS LAPAROSCOPY IN ABDOMINOPERINEAL RESECTION: CASE-MATCHED COMPARISON OF PERIOPERATIVE OUTCOMES AND COSTS**

*TB Cengiz, M Kalady, SR Steele, E Gorgun*  
Cleveland Clinic Foundation

**Objective:** While robotic abdominoperineal resection (APR) for rectal cancer has been previously described in the literature, there remains a paucity of comparative data on minimally invasive approaches. We hypothesize that perioperative, economic and survival outcomes of robotic APR would be equivalent to laparoscopic approach.

**Methods:** Patients who underwent APR for adenocarcinoma or small cell carcinoma of rectum between 01/2008 and 04/2017 were identified from the prospectively maintained IRB-approved database. Patients who had emergency surgery, malignant melanoma and American Society of Anesthesiologists (ASA) Score 5 were excluded from the study. Patients were subsequently stratified into two groups, patients who had laparoscopic abdominoperineal resection (LAPR) or robotic abdominoperineal resection (RAPR). Univariate analysis was performed for patient demographics, and RAPR patients were case-matched with their LAPR counterparts in 1:1 fashion based on age 45, gender and body mass index 43 parameters.

**Results:** 68 patients were enrolled and both groups contained 34 patients. Mean age was 66.1 411.3, 73.5% of the patients were male, mean BMI was 26.6 43.9 kg/m<sup>2</sup> and ASA Score of 3 or 4 was 82.4% vs. 70.6% (p=0.25) in LAPR and RAPR groups, respectively. Tumor distance from the anal verge (3.1 vs. 3.4 cm), previous abdominal operations (38.2% vs. 29.4%), neoadjuvant chemoradiotherapy (82.4 vs. 76.5), adjuvant chemotherapy rates (41.2% vs. 38.2%), operative time (308 vs. 319 minutes), estimated blood loss (333 vs. 324 mL), intraoperative complications and conversions (17.6% vs. 14.7%) did not differ between LAPR and RAPR, respectively. On pathologic examination, stage, harvested lymph nodes, completeness of mesorectal excision, circumferential radial margin involvement parameters were found similar. Postoperative complications (37% vs. 39%), days until first flatus, surgery-related readmission rates (13.2% vs. 17.3%) and total direct costs of the LAPR and RAPR were not statistically different, respectively. Overall survival (Hazard ratio: 0.6, p=0.48) and disease-free survival rates after an average of 26 months follow-up showed similar results and mean follow-up periods were not different between groups. There was no reoperation in both groups.

**Conclusion:** RAPR depicted similar perioperative outcomes, survival characteristics and economic outcomes when compared to LAPR. The robotic platform may offer advantages regarding ergonomics at the surgeon's frontier.

## Poster Abstracts

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### **P17. ANALYSIS OF FUNCTION AND SURVIVAL IN ALS PATIENTS WITH DIAPHRAGM PACING USING VIRTUAL CONTROLS**

*RP Onders, D Ennist, A Taylor, R Miller*

University Hospitals Cleveland Medical Center

**Objective:** The diaphragm pacing system (DP), implanted through a laparoscopy, has been approved by the FDA for treating amyotrophic lateral sclerosis (ALS) patients with hypoventilation and stimuable diaphragms. Additional studies are ongoing to improve the class of evidence and help select patients that would be expected to benefit. With an approved device, enrollment in a randomized trial and interpretation of results on small samples is difficult. To that end, we developed predictive model-based comparators using the large Pooled Resource Open-Access ALS Clinical Trials (PRO-ACT) dataset to analyze survival and function in DP implanted ALS patients and sub-cohorts.

**Methods:** The PRO-ACT ALS database was used to develop a random forest (RF) model to predict disease progression as measured by ALSFRS-R and a gradient boosting model (GBM) survival model to predict survival at time points up to fifteen months into the future. The RF model to predict function was trained on 1100 records in PRO-ACT containing complete records for ALSFRS-R and FVC. Variables used included baseline ALSFRS and slope, subscores, time since disease onset and diagnosis, baseline FVC and slope, weight, age, bulbar/limb onset, study arm, gender, and Riluzole use. Model performance was assessed via K-fold internal cross validation, external validation, and comparison and RMSD among other candidate models. The GBM survival model was built using 4633 PRO-ACT records, including 1427 deaths, that contained both FVC and either ALSFRS or ALSFRS-R. Concordance index and Brier scores were used to compare candidate survival models including Cox proportional hazards and random survival forest models against internal and external validation datasets. Finally, functional and survival predictions were made from the time of DP implantation for the 106 patients in the DP trial and used to generate virtual control groups against which the actual observations were compared.

**Results:** The ensemble ALSFRS-R disease progression model chosen did not detect a significant difference in total ALSFRS-R score between predictions and observations in DP patients. In contrast, we observed a significant improvement when we compared fifteen months predicted survival of DP implanted patients, 40% survival probability, to their observed Kaplan-Meier curves, 80% survival probability ( $p < 1 \times 10^{-5}$ ).

**Conclusion:** DP improves survival while having a minimal effect on patient functional capabilities as measured by total ALSFRS-R. Additional studies of sub-cohorts will provide further evidence of DP responders to aid in clinical selection of patients. These studies may be aided by using the GBM predictive model as a virtual control arm.

## Poster Abstracts

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### **P18. MENTAL SKILLS USE LEADS TO MORE CONSISTENT PERFORMANCE DURING LAPAROSCOPIC SUTURING TRAINING ON SIMULATORS**

*NE Anton, JR Martin, L Timsina, D Stefanidis*  
Indiana University School of Medicine

**Objective:** Performance consistency is an important characteristic of expert surgical performance and is a significant endpoint to consider during skill acquisition of surgical novices on simulators. Mental skills, such as mental imagery, goal setting, and attention management to name a few, are psychological techniques that help performers consistently perform their best by achieving their ideal mental state for practice and performance. The purpose of this study was to assess the relationship between mental skills use and surgical novices' performance variability during laparoscopic simulator training.

**Methods:** Pre-medical students (n=55) participated in proficiency-based Fundamentals of Laparoscopic Surgery (FLS) suturing training. Task performance between repetitions was scored according to a previously published, expert-derived formula that takes into account completion time, knot security, and accuracy. Coefficient of variations (standard deviation divided by the mean of performance scores) was calculated for each participant to determine participants' variability in training performance. To assess mental skills use, the Test of Performance Strategies (TOPS) was administered to each participant at the end of training. A linear regression was used to assess whether reported mental skills use during training would predict variability in performance during training.

**Results:** For each unit increase in overall use of mental skills by students at post-test, the performance variability during suturing training dropped by 18% [95% CI: -0.36,-0.01, p=0.04]. For each unit increase in use of emotional control strategies and ability to achieve automaticity during practice, students' suturing variability dropped by 8% [95% CI: -14.44, -0.79, p=0.02] and 10% [95% CI: -13.54, -5.52, p=0.0005] respectively.

**Conclusion:** Increased mental skills use by surgical novices, specifically better emotional control and improved ability to perform automatically, was predictive of more consistent performance from repetition to repetition of laparoscopic suturing on simulators. These findings suggest that use of mental skills during training may be important for increasing consistency and robust acquisition of laparoscopic surgical skills on simulators. Further study assessing the impact of mental skills use on more advanced surgical trainees' practice performance is warranted.

## Poster Abstracts

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### **P19. PROGNOSTIC IMPLICATIONS OF LYMPH NODE METASTASIS IN ADVANCED OVARIAN CANCER: ANALYSIS OF NATIONAL CANCER DATABASE. 2004-2014**

*S Saha, S Pentapati, S Mukkamala, M Cherry, M Elgamal, T Singh, S Grewal, D Eilender, D Wiese, ML Arora*

**Objective:** During debulking surgery for advanced ovarian cancer, lymph node (LN) sampling is not routinely performed. Hence, prognostic implications of LN involvement following debulking surgery and chemotherapy were analyzed from National Cancer Database (NCDB).

**Methods:** Only Stage III and Stage IV patients from 2004-2014 NCDB data undergoing debulking surgery and chemotherapy were included. Group A included patients with debulking surgery without bowel resection; Group B patients with debulking surgery and major bowel resection. Patients were further subdivided according to the use of NeoAdjuvant, Adjuvant, NeoAdjuvant + Adjuvant Chemotherapy. 5 years Survival analysis was done based on -ve or +ve LN status using Pearson Chi Square testing.

**Results:** Out of 10,316 Stage III and 2,925 Stage IV pts, there were 6828 in Group A, 6413 in Group B. 5 years overall survival (OS) for all patients in Stage III with LN -ve vs LN +ve was 59.9% vs 53.9% ( $p < 0.001$ ) and Stage IV was 48.7% vs 41.2% ( $p < 0.001$ ). In both Group A and Group B, the 5 years OS was better in LN -ve than LN +ve patients. The OS for both LN -ve and LN +ve groups were better in Adjuvant group. OS also was slightly better in Stage III vs stage IV. # 5 years OS for 10,316 Stage III pts --> Grp A (5,492 pts) LN-ve (p value  $< 0.001$ ) vs. LN+ve analysis (p value  $< 0.001$ ) - NeoAdjuvant(%) - 46.0 and 46.8 - Adjuvant(%) - 63.0 and 58.8 - NeoAdjuvant and Adjuvant (%) - 57.8 and 42.0 --> Grp B (4,824 pts) LN-ve (p value  $< 0.001$ ) vs. LN+ve analysis (p value 0.051) - NeoAdjuvant(%) - 50.4 and 41.2 - Adjuvant(%) - 60.0 and 51.8 - NeoAdjuvant and Adjuvant (%) - 45.0 and 48.9 # 5 years OS for 2,925 Stage IV pts --> Grp A (1,336 pts) LN-ve (p value 0.232) vs. LN+ve analysis (p value 0.150) - NeoAdjuvant(%) - 44.8 and 33.1 - Adjuvant(%) - 45.5 and 42.4 - NeoAdjuvant and Adjuvant (%) - 54.1 and 42.4 --> Grp B (1,589 pts) LN-ve (p value 0.334) vs. LN+ve analysis (p value 0.083) - NeoAdjuvant(%) - 42.1 and 33.3 - Adjuvant(%) - 50.0 and 42.4 - NeoAdjuvant and Adjuvant (%) - 54.0 and 35.8

**Conclusion:** Even though LN dissection are not routinely performed during debulking surgery, patients with LN metastasis do worse than LN -ve irrespective of the timing of chemotherapy. Hence, LN sampling during debulking surgery should be strongly considered that may provide important prognostic information.

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### **P20. IMPACT OF NEOADJUVANT CHEMOTHERAPY 30-DAY MORBIDITY IN PATIENTS UNDERGOING COLECTOMY FOR LOCALLY ADVANCED COLON CANCER**

*G Sharma, AT Strong, A Aiello, J Lipman, L Stocchi, E Gorgun*  
Cleveland Clinic Foundation

**Objective:** Neoadjuvant chemotherapy for locally advanced colon cancer (LACC) may downstage tumors, and make R0 resection more likely. However the impact neoadjuvant chemotherapy has on 30-day morbidity following elective colectomy for LACC has not been well investigated outside of clinical trials.

**Methods:** Patients who underwent elective colectomy for LACC (T4/T4a/T4b or M1/M1a/M1b) were extracted from American College of Surgeons - National Surgical Quality Improvement Program (ACS-NSQIP) 2012 to 2016 dataset. Neoadjuvant chemotherapy was the primary exposure variable, and all-cause morbidity was the primary outcome, with incidence of specific complications considered as secondary outcomes.

**Results:** In total, 499 patients met inclusion criteria, of whom 84 patients (16.8%) received neoadjuvant chemotherapy. The group undergoing neoadjuvant chemotherapy included a larger proportion of male patients (68% vs 46%;  $p < 0.001$ ), patients with known metastatic disease (87% vs 60%;  $p < 0.001$ ) medication with corticosteroids (11% vs 1%;  $p < 0.001$ ), and patients with American Society of Anesthesiologists Class 3 (73% vs 57%;  $p = 0.009$ ), but were similar in all other preoperative characteristics. Open approaches appeared to be favored over laparoscopic surgeries for patients with neoadjuvant chemotherapy ( $p = 0.33$  for surgical approach). Patients in the neoadjuvant group more commonly had concurrent procedures performed at the time of resection (36% vs 21%;  $p = 0.004$ ), which likely contributed to the greater observed mean operative time (265 vs 178 minutes;  $p < 0.001$ ). There was no difference in positive resection margin, or final pathologic stage after resection. In unadjusted analysis, neoadjuvant chemotherapy was associated with a higher incidence of all-cause morbidity within 30 days (51% vs 26%;  $p < 0.001$ ), serious morbidity (12% vs 3%;  $p < 0.001$ ), reoperation within 30 days (8% vs 3%;  $p = 0.017$ ), greater postoperative length of stay (8.3 vs 6.1 days;  $p < 0.001$ ), superficial surgical site infection (10% vs 4%;  $p = 0.018$ ) and prolonged ileus (31% vs 13%;  $p < 0.001$ ) and a higher incidence of anastomotic leak (6% vs 1%;  $p = 0.01$ ). Multivariable logistic regression models demonstrated neoadjuvant chemotherapy was associated with increased odds of all-cause morbidity (OR: 3.0,  $p < 0.001$ ), serious morbidity (OR: 2.7,  $p = 0.028$ ), prolonged postoperative ileus (OR: 2.7,  $p < 0.01$ ) and reoperation within 30 days (OR: 3.7,  $p = 0.01$ ).

**Conclusion:** Neoadjuvant chemotherapy prior to elective colectomy for LACC does not appear to affect rates of R0 resection. However, neoadjuvant chemotherapy is associated with a greater risk of all-cause morbidity, and specifically associated with an increased risk of prolonged ileus, surgical site infection, reoperation within 30 days and anastomotic leak. Survival benefits of neoadjuvant chemotherapy must be balanced against this perioperative risks.

## Poster Abstracts

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### **P21. MODIFIED FRAILTY INDEX PREDICTS HIGH-RISK PATIENTS FOR READMISSION AFTER COLORECTAL SURGERY FOR CANCER**

*C Benlice, CP Delaney, S Holubar, S Steele, E Gorgun*  
Cleveland Clinic Foundation

**Objective:** Readmission following colorectal surgery occurs frequently and causes a significant financial burden on the healthcare system. Modified frailty index (mFI) has been proposed as a reliable tool in predicting postoperative outcomes after surgery. This study aims to evaluate whether mFI could be utilized to predict readmissions after colorectal resection for patients with cancer by using nationwide cohort.

**Methods:** Patients undergoing elective abdominal colorectal resection for colorectal cancer were reviewed from the American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) procedure-targeted database (2010-2012) according to their primary procedure Current Procedural Terminology (CPT) codes. A previously described modified frailty index (mFI) was calculated based on available NSQIP variables, with a higher index suggesting more frail patients. Demographics, comorbidities, 30-day postoperative complications were evaluated and compared between patients who were readmitted or not after surgery. Univariate and multivariate analyses using logistic regression analysis were conducted for predicting factors for readmission. Pearson's chi square or Fisher's exact test were used for categorical variables and ANOVA was used for continuous variables. MFI score was divided into two groups (low and high) at a cutoff value assigned for each outcome which maximized the odds ratio of mFI.

**Results:** A total of 7337 patients were identified with a mean age of 65.8 (413.6) years [3524 (48.1%) female]. Eight hundred seventy-one (11.8%) patients were readmitted at least once within 30 days. While age ( $p=0.25$ ), gender ( $p=0.81$ ), BMI ( $p=0.21$ ), and other comorbidities ( $p<0.05$ ) were comparable between the groups; ASA score, mFI, preoperative smoking, bleeding disorder, preoperative dyspnea, disseminated cancer, preoperative chemo/radiotherapy, type of surgical procedure and approach (Table). After multivariate logistic regression analysis, open approach, current smoking, mFI ( $>3/11$ ), disseminating cancer, bleeding disorder and longer operative time were found to independently associated with readmission.

**Conclusion:** An 11-point modified frailty index as measured in NSQIP predicts readmissions after colorectal resection in patients with colon and rectal cancer. Routine clinical use of mFI may be an adjunct to enhanced recovery after surgery protocols.

## Poster Abstracts

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### **P22. TRANS-ANAL TOTAL MESORECTAL EXCISION (TATME) FOR RECTAL CANCER: A COST COMPARATIVE ANALYSIS**

AA Yazdi, A Jarrar, S Shawki, E Gorgun, M Kalady, CP Delaney, TB Cengiz, S Steele

Cleveland Clinic Foundation

**Objective:** In addition to quality, cost considerations are paramount with rectal cancer surgery, highlighted by the ongoing debate with robotic surgery. Trans-anal Total Mesorectal Excision (TaTME) is a relatively new minimally invasive surgical approach for proctectomy. To date, taTME direct costs of care have not been compared with other surgical approaches for proctectomy. We aimed to compare the direct costs of hospitalization in patients with rectal cancer undergoing proctectomy by 3 approaches: taTME, open surgery (OS), and robotic proctectomy (RP).

**Methods:** All primary rectal cancer patients who underwent taTME between 2016 and 2018, and a select comparative cohort of consecutive patients who underwent OS and RP with curative intent by high volume surgeons between 2011 and 2014 were included. We compared clinical and demographic characteristics, pathology and surgical outcomes, and institutional costs of resection hospitalization. The direct costs of approaches were reported as relative percentages to the taTME group.

**Results:** A total of 119 patients were evaluated; 30 were men (25.2%), with an average age of 58.2 years (range: 29-90), and BMI of 29.4  $\pm$  5.9 kg/cm<sup>2</sup>. The three groups were similar in terms of demographics, BMI, and preclinical staging. TaTME patients had a significantly lower tumors compared to RP and OS ( $P = 0.001$ , mean distance from anal verge in cm; TaTME 5.7  $\pm$  3.3, OS 8.1  $\pm$  4.1, and RP 9.8  $\pm$  4.1). Operative and anesthesia time, intra-operative estimated blood loss (EBL), and length of stay (LOS) were significantly different between groups. While operative time was longest in the taTME, the EBL and LOS were higher in OS.

Total Direct Costs of hospitalization were smallest in taTME (100%), and largest in OS (116%), with RP (107%) in between, but that difference was not statistically significant ( $P = 0.52$ ). The total direct costs became even more similar after removing two outliers with disproportionately higher LOS in OS (new  $P = 0.75$ ) which resulted in OS no more being the largest cost (new OS costs=106%). In spite of that similarity, we observed that Technical portion of direct costs constituted a larger share of Total Direct Costs in RP than OS and TaTME (76% in RP, vs. 66-67% in OS and TaTME).

**Conclusion:** Our study suggests that the direct costs of hospitalization in taTME approach is similar, if not less than OS and RP. Future studies should account for the effect of influencing factors such as comorbidities on costs of taTME compared to other proctectomy approaches.

## Poster Abstracts

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### **P23. STOP THE BLEEDING: A SINGLE-INSTITUTION EXPERIENCE OF SERIAL HEMOGLOBIN MEASUREMENT IN BLUNT SPLENIC TRAUMA**

*A Landmann, M Read, JS Lees, RM Albrecht, RO Kennedy, A Celii, AM Scifres, AM Cross*

University of Oklahoma Health Sciences Center

**Objective:** Selective non-operative management of blunt spleen injury has become standard practice. Patients are admitted to monitored beds where they are managed with hemodynamic monitoring and serial laboratory evaluation. The aim of this review was to study the association between serial hemoglobin measurement as a marker of failure of non-operative management.

**Methods:** After IRB approval, a retrospective chart review was performed at a single institution of all trauma patients diagnosed with blunt splenic injury. Data was collected from the medical record including injury severity, serial laboratory values, vital signs and operative intervention.

**Results:** From January 2015-June 2017, 342 patients were admitted with blunt splenic injury. Eighty-five patients were immediately taken to the operating room. The remaining 257 patients were candidates for non-operative management. On average, those patients had 3.7 labs in the first 24 hours. This cohort had over 3000 labs draws on injury day one, the equivalent of 107 units of blood. At a cost of \$250 each and 60,000 minutes of laboratory time, this represents significant expense to the medical system. The average patient was discharged having checked their hemoglobin 12.7 times. Failure of non-operative management occurred in 11 patients (4%), on injury day 4.7 on average. Three patients from this cohort were discharged prior to failure and returned with an acute abdomen. For all that failed, clinical status change was evident and guided decision making.

**Conclusion:** In our cohort, serial hemoglobin measurement in the non-operative management of blunt splenic trauma has no predictive value for identifying failure. We propose management decisions be driven by clinical parameters including tachycardia or change in abdominal exam. We suggest that in order to conserve blood and hospital resources, serial hemoglobin measurement should not be part of the standard admission order set.

## Poster Abstracts

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### **P24. THE CONCEPT OF OBESITY YEARS: OUTCOMES VARIATION BY AGE AMONG MORBIDLY OBESE PATIENTS UNDERGOING LAPAROSCOPIC SLEEVE GASTRECTOMY**

*KL Engledow, VG Forero, GJ Slotman*  
Inspira Health Network

**Objective:** While results after bariatric surgery in older patients are known, a comprehensive analysis of BMI and obesity related comorbidities by age after laparoscopic sleeve gastrectomy (SG) has not been reported. Objective: To identify variation in post-operative BMI and resolution of obesity comorbidities along a spectrum of age groups among patients undergoing SG.

**Methods:** Data from 8,966 Surgical Review Corporation BOLD database adult patients who underwent SG was analyzed retrospectively in six age groups: <30 (n=922), 30-40 (n=2224), 40-50 (n=2560), 50-60 (n=2322), 60-70 (n=816), and >70 (n=52). Clinical information was collected at pre-operative baseline and at 2, 6, 12, 18, 24, and 36 months after SG. Data included Body Mass Index (BMI) and 30 weight-related comorbidities, diagnosed by BOLD clinical definitions (DeMaria, SOARD 6 (2010) 347-355). Outcomes analysis was by ANOVA for continuous variables and a general linear model for dichotomous variables, including baseline and post-operative data modified for binomial distribution.

**Results:** 12 months post-SG, BMI ranged from 33.47 (60-70 years) to 35.46-17 (40-50, 50-60, >70)( $p<0.01$ ) and 35.47 to 36.49 at 24 months ( $p<0.05$  only 30-40 v 60-70). Abdominal hernia, congestive heart failure, diabetes, hypertension, obstructive sleep apnea, dyslipidemia, musculoskeletal pain, stress urinary incontinence ( $p<0.0001$ ) impaired functional status ( $p<0.01$ ) back pain, lower extremity edema and pulmonary hypertension ( $p<0.05$ ) varied significantly by age ( $p<0.05$ ,  $n=12$ ) at 12 months, with increasing incidence/decreasing comorbidity resolution as age increased. Conversely, persistence of mental health diagnosis, polycystic ovarian syndrome and substance/tobacco abuse varied inversely, decreasing in incidence with advancing age ( $p<0.05$ ,  $n=4$ ). At 24 months, diabetes, hypertension, dyslipidemia, lower extremity edema and musculoskeletal pain still varied directly with age, affecting older patients more frequently versus younger groups ( $p<0.05$ ,  $n=5$ ). Cholelithiasis, GERD, liver disease, obesity hypoventilation syndrome, panniculitis, angina, asthma, depression, gout, peripheral vascular disease, pseudotumor cerebri, psychological impairment and support group attendance did not vary by age.

**Conclusion:** Following SG, statistical variation by age in BMI is not clinically important. Nevertheless, resolution of 12 weight-related comorbidities was inversely proportional to age at 12 months, while 4 resolved better in older patients. Key comorbidities, diabetes, hypertension, dyslipidemia, musculoskeletal pain and leg edema, persisted with increasing age at 24 months. These results suggest a concept of "obesity years" in which obesity comorbidities become entrenched in older patients who were obese the longest. One might speculate that this advance in knowledge could facilitate patient selection for SG.

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### **P25. THE IMPACT OF OBESITY ON TRAUMA OUTCOMES IN SOUTH EAST MICHIGAN**

*K. Rock, RD Hayward, E Edhayan*  
St. John Hospital and Medical Center

**Objective:** Obesity is a significant and growing public health concern that affects more than a third of the US population. Comorbid obesity may put trauma patients at risk for complications that lead to negative clinical outcomes.

**Methods:** Data on all hospital admissions due to traumatic injury in the Detroit metropolitan area between 2006 and 2014 were obtained from the Michigan State Inpatient Database. Generalized linear modeling was used to compare obese and non-obese patients on three outcomes: mortality, length of hospital stay, and total cost of care.

**Results:** After adjusting for patient demographics, comorbid obesity was related to 26% longer hospitalization among trauma patients. Adjusting for demographics and length of stay, total costs were 8% higher for obese trauma patients. Obesity was not related to increased risk of mortality among trauma patients. Adding interaction effects to the model indicated that obesity had a bigger impact on length of hospital stay among younger adults, whereas its effect on average total cost emerged only among older adults.

**Conclusion:** Patient obesity has significant clinical implications for trauma care. Demands for trauma care resources, as well as the cost of providing that care, may be likely to increase as the ongoing obesity epidemic continues to expand.



# LECTURES

MACKINAC ISLAND, MI • AUGUST 5-7, 2018

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## Presidential Address

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### ***Celebrating 60 Years of the Midwest Surgical Association: Reflections on 'Testa Dura', Old Men, Football and La Famiglia!***

**Tuesday, August 7, 2018**

**12:15pm - 1:00pm**

Featuring:

#### **William C. Cirocco, MD**

The Ohio State University Wexner Medical Center

Dr. Cirocco is Professor of Clinical Surgery and Program Director of the Colon & Rectal Surgery Residency at The Ohio State University (OSU). He obtained his undergraduate and medical degrees from Wayne State University (Detroit, MI), completed General Surgery Residency at St. John Hospital (Detroit, MI) and Colorectal Surgery Residency at St. Vincent Health Center (Erie, PA). He started his career in academic surgery in New York City at the State University of New York - Health Sciences Center at Brooklyn (SUNY-Downstate Medical Center) where he was involved in early attempts at preoperative staging of rectal cancer using transrectal ultrasound as part of a multidisciplinary approach that included neoadjuvant chemoradiotherapy. This multidisciplinary neoadjuvant approach to rectal

## Presidential Address

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cancer combined with advanced surgical techniques (Total Mesorectal Excision) has resulted in improved outcomes of rectal cancer resection worldwide. After nearly 20 years in the private sector, he returned to an academic setting at OSU in 2013, joining the Division of Colon & Rectal Surgery to initiate and become Program Director of the OSU Colon & Rectal Surgery Residency which was recently granted full 10 year ACGME accreditation to 2028. He is involved in regional surgical societies (Secretary/Treasurer of the Ohio Valley Society of Colon & Rectal Surgeons) and national surgical societies, including Member-at-Large of the American Society of Colon and Rectal Surgeons (ASCRS) Executive Council and ASCRS Credentials Committee. He is an Associate Editor of the ASCRS' official organ, Diseases of the Colon and Rectum (DCR). He was the first recipient of the ASCRS' Victor W. Fazio, MB, MS Award for Editorial Excellence and was named DCR "Star Reviewer" in both 2017 and 2018. Dr. Cirocco also is a Senior Examiner for the American Board of Colon & Rectal Surgery (ABCRS) and an Associate Member of the ABCRS' Written Examination Committee.

## Scott Warner Woods, 1927-2003

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When attending a Midwest Surgical Association meeting, it takes little effort to almost believe that the haunting notes of a bagpipe still echo in the air. For many years, that sound accompanied the sight of a kilt-clad Scott Warner Woods as he stood wearing his trademark hand-tied tartan bow tie and played to announce the beginning of another annual meeting.

Scott W. Woods, except for his brief stint in Korea with the U.S. Army at the end of World War II, was a life-long Michiganiaan. He was born in Detroit and in 1950 he received his undergraduate degree from the University of Michigan. He then attended Wayne State University College of Medicine and graduated in 1954. After an internship at Wayne County General Hospital, he completed a surgical residency at Wayne State University in 1960. That same year, he achieved his second greatest accomplishment when he established his first solo practice in Ypsilanti, MI. By 1964, he managed to attain his life's greatest accomplishment when he married his beloved Bette.

Second only to his family, Scott loved the Midwest Surgical Association best and served it tirelessly. He was Treasurer of the Association for a decade before ascending to its presidency in 1986. He championed the controversial decision to bring the Annual Meeting to Mackinac Island. Widely questioned at the time due to the island's remoteness and perceived inaccessibility, this location has easily become the best attended and most well-loved site for the annual conference. In 1987, after a long and successful surgical career as a private practitioner and as Clinical Associate Professor of Surgery at Wayne State University, Scott retired from active surgical practice in 1987 due to complications from arthritis. Scott and Bette remained together in Ypsilanti for the rest of his life.

## Scott Warner Woods, 1927-2003

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Scott viewed retirement as a chance to cut back to only 50 or 60 hours of work each week. He remained an important part of his community in Ypsilanti, where he served on the city council, the board of the Ypsilanti Savings Bank, the Chamber of Commerce (including a term as president), with the Lions Club and as a trustee of Cleary College. He reviewed disability claims for the state and worked for the Michigan Peer Review Organization. Scott received many honors and awards from the numerous professional organizations that were proud to call him a member. These organizations included the American College of Surgeons, the Academy of Surgery of Detroit and the Detroit Surgical Association. He was awarded an honorary doctorate from Cleary College for his years of service. His highest accolade occurred in 1995 when both Scott and Bette were selected to receive the Distinguished Philanthropist Award from the American College of Surgeons.

Surgeon, teacher, community leader, philanthropist, husband, father and friend—Scott's death left an empty place in the hearts of all who knew him. He gave selflessly during life and will continue to give in death. Gone is the man, but not the memory.

## 2018 Scott Warner Woods Memorial Lecture

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### ***Understanding Patient Expectations around Therapeutic Benefits, Risks, and the Chance for Cure***

**Monday, August 6, 2018**

**9:15am - 9:45am**

Introduction: William C. Cirocco, MD

Featuring:

**Timothy M. Pawlik, MD, MPH, PhD**

The Ohio State University Wexner Medical Center

Dr. Pawlik received his undergraduate degree from Georgetown University and his medical degree from Tufts University School of Medicine. Dr. Pawlik completed surgical training at the University of Michigan Hospital and spent two years at the Massachusetts General Hospital as a surgical oncology research fellow. He went on for advanced training in surgical oncology at M. D. Anderson Cancer Center. Dr. Pawlik completed a fellowship in medical ethics at the Harvard School of Public Health, as well as a Masters in Theology from Harvard Divinity School in Boston. Dr. Pawlik was the recipient of a Clinical and Translational Science Award (CTSA) KL2 Research Scholar Award and received a PhD from the Johns Hopkins Bloomberg School of Public Health in Clinical Investigations.

## **2018 Scott Warner Woods Memorial Lecture**

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Dr. Pawlik currently is the Chair of Surgery at The Ohio State University Wexner Medical Center where he holds The Urban Meyer III and Shelley Meyer Chair for Cancer Research. Dr. Pawlik also serves as the Treasurer / Secretary of The Ohio State University Practice Plan, as well as the Surgeon-in-Chief of the Wexner Medical Center. Dr. Pawlik has given over 400 invited talks both nationally and internationally in 25 different countries. Dr. Pawlik has published over 800 peer reviewed articles and 75 book chapters, in addition to editing six surgical textbooks. Dr. Pawlik is Editor-in-Chief of Journal of Gastrointestinal Surgery, Deputy Editor of JAMA Surgery, as well as an Associate Editor for Annals of Surgical Oncology. Dr. Pawlik is past-President of the Association for Academic Surgery. Dr. Pawlik's international contributions have been recognized through his honorary memberships in the Royal Australasian College of Surgeons, Brazilian Society of Surgical Oncology, as well as the Society of General Surgeons of Perú. Dr. Pawlik has consistently been recognized by Castle Connolly as one of America's "Top Docs."

## Scott Warner Woods Memorial Lecture

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CSA/MSA Combined Meeting - N/A	2017
R. Matthew Walsh, MD	2016
Rahul Vaidya, MD	2015
David B. Hoyt, MD	2014
Christy A. Russell, MD	2013
O. Willian Brown, MD, JD	2012
David B. Hoyt, MD	2011
David B. Hoyt, MD	2010

## William Hunter Harridge, 1919-1971

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Bill Harridge was a man of uncommon energy, integrity, and honesty. His personal enthusiasm, as well as his organizational abilities, made him an outstanding leader of men and organizations. This was evident early in his life as he served with distinction as a company commander of an Army tank unit. In 1945, he suffered a severe open-chest wound in France causing his discharge from the Army with the rank of major.

In 1963, after much discussion and thought, a decision was made to disband the Midwest Surgical Society. Fortunately for our present Society, Bill was persuaded to assume the Presidency for the coming year. Under his leadership, the Society was resurrected, its geographical base was expanded, and it has flourished ever since.

With the exception of his father, Will Harridge, Sr., who was the President of the American Baseball League, Bill's relationship with Dr. Warren Cole was the most important in his life. Dr. Cole writes: "Bill had good judgment, sincerity, determination, willingness to discipline himself...he had complete honesty and integrity... compassion, a characteristic so necessary if one is to become a fine physician."

Bill graduated from the University of Illinois College of Medicine in 1950 and served his internship and residency under Dr. Cole from 1950 to 1956. While he entered private practice in Evanston, Illinois, he maintained an active clinical affiliation with the University and was promoted to the rank of Clinical Professor. In May of 1970, he received the Distinguished Service Award in recognition of his contribution to the Department of Surgery.

## **William Hunter Harridge, 1919-1971**

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Bill was a strong advocate of doctors determining their own professional organizations. He was a Diplomat of the American Board of Surgery and belonged to the Warren H. Cole Society (President 1968-69), Midwest Surgical Association (President 1964-65), North Suburban Branch of the Chicago Medical Society (President 1969-70), Chicago Surgical Society (Recorder 1967-70), The Western Surgical Association, The Illinois Surgical Society, The Society for Surgery of the Alimentary Tract, North Shore Chapter American Cancer Society (President 1966-68), The Institute of Medicine of Chicago and the American College of Surgeons. His many contributions to the surgical literature were primarily related to peripheral vascular and biliary tract disease.

Beloved by his patients and respected for his abilities by his surgical colleagues, Bill Harridge is most remembered for his rigid adherence to the principle of fairness, honesty, and forthrightness in all situations.

## William Hunter Harridge Memorial Lecture

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**Monday, August 6, 2018**

**12:30pm - 1:00pm**

Introduction: William C. Cirocco, MD

Featuring:

**Ian C. Lavery, MD**

Cleveland Clinic Foundation

Ian C. Lavery, MD, is a Staff Physician in the Department of Colorectal Surgery at Cleveland Clinic. His specialty interests include carcinoma of the small bowel and large bowel, inflammatory bowel disease, sphincter-saving operations, stoma surgery and pediatric gastrointestinal surgery.

After training in Australia and the United States, he joined Cleveland Clinic in 1976 with board- certification. He served on the Board of Trustees and the Board of Governors at Cleveland Clinic as well as numerous boards associated with national organizations. Dr. Lavery has authored or co-authored more than 200 publications as well as book chapters used as learning criteria for the specialty of colon and rectal surgery.

## William Hunter Harridge Memorial Lecture

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Anees B. Chagpar, MD, MSc, MPH, MA, MBA	2017	Robert E. Hermann, MD	1983
John J. Fung, MD, PhD	2016	Ward O. Griffen, MD	1982
Richard A. Santucci, MD	2015	Robert Condon, MD	1981
Jeffrey L. Ponsky, MD	2014	Robert J. Freeark, MD	1980
Fred A. Weaver, MD, MMM	2013	John Glover, MD	1979
Daniel B. Michael, MD, PhD	2012	Robert Bartlett, MD	1978
Leigh Neumayer, MD	2011	J. Wesley Alexander, MD	1977
Kirby I. Bland, MD	2010	Raymond Read, MD	1976
Jay L. Grosfeld, MD	2009	Hushang Javid, MD	1975
Douglas J. Mathisen, MD	2008	*Alexander J. Walt, MD	1974
Terry Hicks, MD	2007	Warren H. Cole, MD	1973
George I. Irvin, III, MD	2006	Lester R. Dragstedt, MD	1972
J. David Richardson, MD	2005	Allan M. Lansing, MD	1971
Josef E. Fischer, MD	2004	Lester R. Dragstedt, MD	1962
Stephen D. Leach, MD	2003	Warren H. Cole, MD	1960
Charles E. Lucas, MD	2002		
J. Wayne Meredith, MD	2001		
Michael W. L. Gauderer, MD	2000	<i>*First official Harridge Lecturer</i>	
Glenn D. Steele, Jr., MD, PhD	1999		
Layton F. Rikkers, MD	1998		
Gregorio A. Sicard, MD	1997		
John P. Delaney, MD, PhD	1996		
Keith A. Kelly, MD	1995		
Robert E. McAfee, MD	1994		
Richard L. Simmons, MD	1993		
David S. Mulder, MD	1992		
Donald D. Trunkey, MD	1991		
Lazer Greenfield, MD	1990		
Erwin R. Thal, MD	1989		
J. Patrick O'Leary, MD	1988		
Robert W. Barnes, MD	1987		
Jeremiah G. Turcotte, MD	1986		
Steven G. Economou, MD	1985		
Jerry M. Shuck, MD	1984		



### ***Training and Retraining of Practicing Surgeons***

**Monday, August 6, 2018**

**10:00am - 10:15am**

Introduction: William C. Cirocco, MD

Featuring:

### **Ajit Sachdeva, MD, FRCSC, FACS**

American College of Surgeons

Ajit K. Sachdeva, MD, FRCSC, FACS, is Founding Director of the Division of Education at the American College of Surgeons, and is Adjunct Professor of Surgery at the Feinberg School of Medicine, Northwestern University.

Dr. Sachdeva is Past President of the Society for Academic CME, Association for Surgical Education, American Association for Cancer Education, Alliance for Clinical Education, and the Council of Medical Specialty Societies. Dr. Sachdeva has served on the Boards of the ACCME and ACGME. His leadership efforts to enhance quality of surgical care through education have spanned three decades.

## **In Memoriam**

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**Robert Dewitt Allaben, MD**

(MSA Past President, 1978)

Gaylord, MI

**Roger A. Ott, Sr., MD**

Dubuque, IA

## Notice of Change

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Please make the following changes to my listing:

NAME

SPOUSE'S NAME

ADDRESS

ADDRESS

ADDRESS

CITY, STATE, ZIP

PHONE

FAX

E-MAIL

SURGICAL SPECIALTY

YEAR OF INDUCTION INTO MSA MEMBERSHIP

Send to: **Midwest Surgical Association**

2625 West 51st Terrace  
Westwood, KS 66205

913-402-7102  
msa@lp-etc.com  
www.midwestsurg.org

# Notice of Death

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NAME

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DATE

Send to: **Midwest Surgical Association**

2625 West 51st Terrace  
Westwood, KS 66205

913-402-7102

[msa@lp-etc.com](mailto:msa@lp-etc.com)

[www.midwestsurg.org](http://www.midwestsurg.org)

## Notes

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## Notes

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MIDWEST SURGICAL ASSOCIATION

2019

# Annual Meeting



SAVE THE DATE

July 28-30, 2019

French Lick, IN | French Lick Springs Hotel



2625 West 51st Terrace  
Westwood, KS 66205

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