CSA/MSA 2017
COMBINED
ANNUAL MEETING

July 29 – August 1, 2017

Westin Chicago River North Hotel
Chicago, IL

CSA PRESIDENTIAL ADDRESS

W. SCOTT MELVIN, MD

CSA PRESIDENT

MSA PRESIDENTIAL ADDRESS

MARGO SHOUP, MD

MSA PRESIDENT

SPECIAL LECTURE

TOM RICKETTS

OWNER OF THE CHICAGO CUBS

How to Form a Great Team

WILLIAM HARRIDGE LECTURE

ANEES CHAGPAR, MD, MSc, MA, MPH, MBA

YALE UNIVERSITY

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The above list of sponsors and exhibitors is as of the print date of the Final Program. For a complete list, please refer to the signage outside the exhibit hall.

2017 CSA & MSA COMBINED ANNUAL MEETING

Westin Chicago River North
July 30 – August 1, 2017

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Jonathan M. Saxe, MD	Program Chair
Carlos H. Rodriguez, MD	Membership Chair
Steven A. De Jong, MD	Local Arrangements
Marshall B. Baker, MD	IT Chair

Meeting Information

OBJECTIVES

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

1. Develop an increased knowledge of surgical disease and treatment.
2. Be able to analyze the clinical results of new approaches or techniques for managing surgical disease.
3. Have improved ability to examine new concepts and techniques in surgical science.
4. Appreciate advances in clinical knowledge gained from analyzing outcomes in large clinical databases.

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. The program has been selected from abstracts submitted by the membership of both associations. The subject matter selected is a cross-section of the cutting edge of surgical practice today. The target audience is surgeons.

DISCLOSURE INFORMATION

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. The list on the following page contains disclosure information for participants as of the print date of the Final Program. Any changes will be reflected on the final list at the registration desk.

Disclosures

NAME	RELATIONSHIP
Raymond Onders, MD	Synapse Biomedical/Intellectual Property, Equity-Founder, Chief Medical Officer
Nicholas Anton, MD	Agency for Healthcare Research and Quality/ Grant funding-Financial support
Donald Fry, MD	IrriMax Corp/Becton Dickenson/Prescient Surgical/ Consultant, Clinical Research, Speaker
Roderich Schwarz, MD	Genentech/Speaker
Frederick Lane, MD	Merck/Speaker
Michael Jacobs, MD	JET Surgical/Owner, Device Development

Meeting Information continued

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, Central Surgical Association, and 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™

The American College of Surgeons designates this live activity for a maximum of **15.75** *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 **14.25** credits meet the requirements for Self-Assessment.

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Future Meetings

New Members 2016

Congratulations and welcome to the following New Members elected at the 2016 Annual Meeting:

CENTRAL SURGICAL ASSOCIATION

ACTIVE MEMBERS

Rajesh Aggarwal	Montreal, Quebec
Salman Ahmad	Colombia, MO
Amin Andalib	Montreal, Quebec
Krishna Athota	Cincinnati, OH
Jonathan Bath	Cincinnati, OH
Andrew Beckett	Montreal, Quebec
Marylise Boutros	Montreal, Quebec
Casey Calkins	Milwaukee, WI
Prosant Chaudhury	Monteal, Quebec
Bill Chiu	Chicago, IL
Madison Cuffy	Cincinnati, OH
Peter Deveaux	Louisville, KY
Shannon Fraser	Montreal, Quebec
Michael Goodman	Cincinnati, OH
David Gourlay	Milwaukee, WI
Raymon Grogan	Chicago, IL
Julian Guitron-Roig	Cincinnati, OH
Karen Ho	Chicago, IL
Fabian Johnston	Milwaukee, WI
Jaime Lewis	Cincinnati, OH
Benjamin Li	Cleveland, OH
Aditi Madabhushi	Cincinnati, OH
Amy Makley	Cincinnati, OH
Paul McBeth	Calgary, Alberta
Sarkis Meterissian	Montreal, Quebec
Carmen Mueller	Montreal, Quebec
Steven Paraskevas	Montreal, Quebec
Flavio Paterno	Cincinnati, OH
Steven Schwaitzberg	Buffalo, NY
Petra Warner	Cincinnati, OH

ASSOCIATE MEMBER

G. Paul Wright Grand Rapids, MI

MIDWEST SURGICAL ASSOCIATION

ACTIVE MEMBERS

Jeffrey Gawel	Grand Rapids, MI
Jeffrey Johnson	Detroit, MI
Brian Kim	Rochester, MN
Matt Kroh	Cleveland, OH
Amy Spencer	Grand Rapids, MI
Scott Steele	Cleveland, OH
Alexander Stoffan	Grand Rapids, MI
Michael Valente	Cleveland, OH
Benjamin Veenstra	Chicago, IL
Laura Wharry	Toledo, OH
Amanda Yang	Grand Rapids, MI

ASSOCIATE MEMBER

Alistair Chapman Grand Rapids, MI

Schedule at a Glance

SATURDAY, JULY 29

2:00pm - 5:30pm	**Registration Open** | Grand Court
2:00pm - 3:00pm	**CSA Foundation Meeting** | Executive Room
3:00pm - 5:000pm	**CSA Council Meeting** | Executive Room
3:00pm - 5:00pm	**MSA Council Meeting** | Rogers Park
5:30pm - 7:00pm	**Welcome Reception & New Member Recognition** | Riverfront Room
Evening	**Dinner on Own**
7:30pm – 11:30pm	**Transportation to/from Navy Pier, Fireworks at 10:15pm**

SUNDAY, JULY 30

7:00am - 1:00pm	**Registration Open** | Grand Court
7:00am - 8:00am	**5K Run** | Meet at 320 River Bar
7:30am- 9:00am	**Continental Breakfast, ePoster & Exhibit Viewing** | Promenade Ballroom ABC
8:15am - 9:45am	**Opening Plenary Session** | Grand Ballroom AB
9:45am - 10:15am	**William Harridge Lecture | Anees Chagpar, MD, MSc, MA, MPH, MBA, Yale University** | Grand Ballroom AB
10:15am - 10:30am	**Refreshment Break, Exhibits & ePoster Viewing** | Promenade Ballroom ABC
10:30am - 12:30pm	**Parallel Scientific Sessions IA** | Grand Ballroom AB
10:30am - 12:30pm	**Parallel Scientific Sessions IB** | Grand Ballroom C
12:30pm – 1:30pm	**Overview of Lifelong Learning and Certification** | Grand Ballroom AB
5:00pm - 7:00pm	**Reception** | 10Pin - Offsite
8:00pm - 10:00pm	**Spectacular Problems in Surgery** | Grand Ballroom AB
8:00pm - 10:00pm	**Kids Movie** | Executive Boardroom

MONDAY, JULY 31

7:00am - 1:00pm	**Registration Open** | Grand Court
7:00am - 8:30am	**Continental Breakfast, ePoster & Exhibit Viewing** | Promenade Ballroom ABC
7:30am - 9:30am	**Parallel Scientific Session IIA** | Grand Ballroom AB
7:30am - 9:30am	**Parallel Scientific Session IIB** | Grand Ballroom C
9:30am - 10:15am	**Special Speaker - Tom Ricketts, Chairman of Chicago Cubs** | Grand Ballroom AB
10:15am - 10:30am	**Refreshment Break, Exhibits & ePoster Viewing** | Promenade Ballroom ABC
10:30am - 11:30am	**Scientific Session III** | Grand Ballroom AB
11:30am - 12:15pm	**CSA Presidential Address** | **W. Scott Melvin, MD** | Grand Ballroom AB
12:15pm - 1:15pm	**CSA Business Meeting** | Grand Ballroom AB
12:15pm - 1:15pm	**MSA ePoster Presentations** | Promenade Ballroom ABC
7:30pm - 10:00pm	**Nonie Lowry Dinner Dance** | Grand Ballroom Court/ Foyer

TUESDAY, AUGUST 1

7:00am - 1:00pm	**Registration Open** | Grand Court
7:00am - 9:00am	**Continental Breakfast** | Grand Court
7:30am - 9:15am	**Parallel Scientific Sessions IV A** | Grand Ballroom AB
7:30am - 9:15am	**Parallel Scientific Sessions IV B** | Grand Ballroom C
9:15am - 9:30am	**Refreshment Break** | Grand Court
9:30am - 10:30am	**Scientific Session V** | Grand Ballroom AB
10:30am - 11:15am	**MSA Presidential Address** | **Margo Shoup, MD** | Grand Ballroom AB
11:15am - 11:30am	**Refreshment Break** | Grand Court
11:30am - 1:00pm	**Parallel Scientific Sessions VI A** | Grand Ballroom AB
11:30am - 1:00pm	**Parallel Scientific Sessions VI B** | Grand Ballroom C
1:00pm - 2:00pm	**MSA Business Meeting** | Grand Ballroom AB

Family Program

SATURDAY, JULY 29, 2017

5:30pm – 7:00pm **Welcome Reception & New Member Recognition**

7:30pm – 11:30pm **Navy Pier & Fireworks**

SUNDAY, JULY 30, 2017

7:00am – 8:00am **5K Run**

7:30am – 9:00am **Physician & Guest Continental Breakfast**

Afternoon Suggested Activities

Shedd Aquarium

http://www.sheddaquarium.org/plan-a-visit-tickets/pyv-path/#/calendar

Museum of Science & Industry

https://www.msichicago.org/ticketing/#/ticketing/visitors/nonmember

5:00pm – 7:00pm **Dinner & Bowling | 10Pin Bowling Lounge**
(Pre-registration required)

8:00pm – 10:00pm **Kids Movie at Westin Chicago River North Hotel**

MONDAY, JULY 31, 2017

7:00am – 8:30am **Physician & Guest Continental Breakfast**

2:00pm **Architectural Boat Tour** *(Pre-registration required)*

7:30pm – 10:00pm **Nonie Lowry Dinner Dance**

TUESDAY, AUGUST 1, 2017

7:00am – 9:00am **Physician & Guest Continental Breakfast**

SCIENTIFIC PROGRAM

★ *MSA Best New Member Paper*

✔ *CSA Best New Member Paper*

✦ *MSA Best Surgeon in Training Paper*

SUNDAY, JULY 30, 2017

Opening Session

8:15am – 9:45am

Moderators: W. Scott Melvin MD; Margo Shoup MD
Grand Ballroom AB

8:15am - 8:30am

1. RELATIONSHIP OF PROCEDURAL NUMBERS WITH OPERATIVE AUTONOMY LEVELS IN GENERAL SURGERY RESIDENTS

HP Stride MS, BC George MD, RG Williams PhD, JT Bohnen MD, MJ Eaton DO, MC Schuller MSEd, L Zhao PhD, A Yang MS, SL Meyerson MD, GL Dunnington MD, L Torbeck PhD, JT Mullen MD, E Auyang MD, J Chipman MD, J Choi MD, A Meier MD, D Smink MD, KP Terhune MD, P Wise MD, D DaRosa PhD, N Soper MD, JB Zwischenberger MD, K Lillemoe MD, JP Fryer MD
Northwestern University
Presenter: Jonathan Fryer MD
Invited Discussant: Peter Angelos MD, PhD, University of Chicago
Society: CSA

8:30am - 8:45am

2. IMPLEMENTATION OF PROSPECTIVE SURGEON-DRIVEN RISK BASED PATHWAY FOR PANCREATODUODENECTOMY RESULTS IN IMPROVED CLINICAL OUTCOMES AND FIRST YEAR COST SAVINGS OF $1 MILLION

CR Shubert MD MHA, EB Habermann PhD MPH, FG Que MD, AE Glasgow MHA, RL Smoot MD, DM Nagorney MD, MB Farnell MD, MJ Truty MD, ML Kendrick MD
Mayo Clinic, Rochester
Presenter: Christopher Shubert MD, MHA
Invited Discussant: C Max Schmidt MD, PhD, MBA, Indiana University School of Medicine
Society: CSA

8:45am - 9:00am

3. PERIOPERATIVE EMERGENCY DEPARTMENT UTILIZATION IN INPATIENT AND OUTPATIENT MEDICARE LAPAROSCOPIC CHOLECYSTECTOMY

SM Nedza MD, Fry DE, Chen P
MPA Healthcare Solutions
Presenter: Susan Nedza MD
Invited Discussant: Gerard Abood MD, Loyola University Medical Center
Society: MSA

9:00am - 9:15am

✢ 4. THE BENEFITS OF A LOW DOSE COMPLEX CARBOHYDRATE/CITRULLINE ELECTROLYTE SOLUTION FOR PREOPERATIVE CARBOHYDRATE LOADING: FOCUS ON GLYCEMIC VARIABILITY

BA Kielhorn DO, AJ Senagore MD, T Asgeirsson MD
Metro Health Hospital - University of Michigan Health System
Presenter: Barrett Kielhorn DO
Invited Discussant: Roderich Schwarz MD, Indiana University School of Medicine, South Bend
Society: MSA

9:15am - 9:30am

5. SINGLE STAGE LAPAROSCOPIC MANAGEMENT OF CHOLEDOCHOLITHIASIS: AN ANALYSIS AFTER IMPLEMENTATION OF A MASTERY LEARNING RESIDENT CURRICULUM

B Schwab MD, NJ Soper MD, JH Barsuk MD, MS, ES Hungness MD
Northwestern University
Presenter: Ben Schwab MD
Invited Discussant: J. Stephen Marshall MD, University of Illinois at Peoria
Society: CSA

9:30am - 9:45am

★ 6. ENDOSCOPIC AND HISTOPATHOLOGICAL ANALYSIS OF INCIDENTAL FOCAL COLORECTAL 18 F-FLUORODEOXYGLUCOSE UPTAKE IN PET/CT SCAN: COLONOSCOPIC EVALUATION IS WARRANTED

Valente MA
Cleveland Clinic Foundation
Presenter: Michael A. Valente DO
Invited Discussant: Joshua Mammen MD, PhD, University of Kansas
Society: MSA

9:45am – 10:15am

William Harridge Lecture
"On Baseball and Breast Cancer"
Anees Chagpar, MD, MSc, MA, MPA, MBA
Yale University
Grand Ballroom AB

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

Parallel Scientific Session 1A

10:30am – 12:30pm

Moderators: Tara Breslin MD; Alan Ladd MD
Grand Ballroom AB

10:30am - 10:45am

★ ✢ **7. SURGICAL RESECTION IMPROVES MEDIAN BUT NOT LONG-TERM OVERALL SURVIVAL WHEN COMPARED WITH RADIOTHERAPY IN MERKEL CELL CARCINOMA: A PROPENSITY SCORE MATCHED ANALYSIS OF THE NCDB**

GP Wright MD, MP Holtzman MD
University of Pittsburgh Medical Center
Presenter: G. Paul Wright MD
Invited Discussant: Adam Kabaker MD, Loyola University Medical Center
Society: MSA

10:45am - 11:00am

✢ **8. CAN PARATHYROID HYPERPLASIA BE PREDICTED PREOPERATIVELY?**

HH Shi BS, CR McHenry MD
MetroHealth Medical Center
Presenter: Helen Shi BS
Invited Discussant: Steven De Jong MD, Loyola University Medical Center
Society: MSA

11:00am - 11:15am

9. SURGICAL SKILLS EVALUATION: DOES IT MANDATE A MEDICAL BACKGROUND?

Muhammad Zeb, Apram Jyot MBBS, Eduardo Abbott MD, Miguel Gomez MD, Nimesh Naik MD, Baloul Mohamed MBBS, David Farley MD
Mayo Clinic
Presenter: Muhammad Zeb MBBS
Invited Discussant: David Scheeres MD, Michigan State University/ College of Human Medicine; Spectrum Health Medical Group
Society: MSA

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

11:15am - 11:30am

10. COMBINATION OF EXTREMELY LOW DOSE CHEMOTHERAPY WITH ATTENUATED SALMONELLA ENTERICA TYPHIMURIUM SIGNFICANTLY DECREASES TUMOR BURDEN IN AN AUTOCHTHONOUS MODEL OF MURINE BREAST CANCER

DA Saltzman MD PhD, L Augustin PhD, M Mertensotto BS, AS Leonard MD PhD, J Schottel PhD
University of Minnesota
Presenter: Daniel Saltzman MD PhD
Invited Discussant: Benjamin Li MD, MetroHealth/Case Western Reserve University
Society: CSA

11:30am - 11:45am

✢ **11. CAPITAL PURCHASES AND THE DOWNSTREAM EFFECTS; A PILOT STUDY OF BREAST CANCER SURGERY INTRA-OPERATIVE SPECIMEN IMAGING.**

HW Kornfeld BA, TL Spivey MD, A Madrigrano MD, KA Kopkash MD
Rush University Medical Center
Presenter: Hannah Kornfeld BA
Invited Discussant: David Linz MD, MSA
Society: MSA

11:45am - 12:00pm

✢ **12. A NOVEL MODALITY FOR INTRAOPERATIVE MARGIN ASSESSMENT AND ITS IMPACT ON RE-EXCISION RATES IN BREAST CONSERVING SURGERY**

AR Kupstas MD, W Ibrar MD, D Ockner MD, RD Hayward PhD, CA Wesen MD, J Falk MD
St John Hospital and Medical Center
Presenter: Amanda Kupstas MD
Invited Discussant: David Farley MD, Mayo Clinic
Society: MSA

12:00pm - 12:15pm

13. A THIRD OF SENTINEL NODE TUMOR POSITIVE MASTECTOMY PATIENTS ARE NOT UNDERGOING COMPLETION AXILLARY NODE DISSECTION

SA Gaines MD, N Suss BS, E Barrera MD, K Yao MD
NorthShore University HealthSystem
Presenter: Sara Gaines MD
Invited Discussant: Tina Hieken MD, Mayo Clinic

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

Society: CSA
12:15pm - 12:30pm
✔ **14. STAGING BREAST CANCER BY SENTINEL NODE BIOPSY: DO PATIENTS WITH A SINGLE NEGATIVE SENTINEL NODE EXPERIENCE WORSE OUTCOMES THAN THOSE WITH MULTIPLE NEGATIVE SENTINEL NODES?**
AD Wikerson BA, BJ Averbook MD, NE Joseph, MD, SM Sharpe MD, BD Li MD
MetroHealth Medical Center
Presenter: Avia Wilkerson BA
Invited Discussant: Sarkis Meterissian MD, McGill University
Society: CSA

Parallel Scientific Session 1B

10:30am - 12:30pm

Moderators: Paul Kuo MD; Jonathan Saxe MD
Grand Ballroom C

10:30am - 10:45am
15. PRACTICE PATTERN VARIATION IN TRACHEOSTOMY AND GASTROSTOMY TUBE PLACEMENT IN TRAUMA PATIENTS: A POTENTIAL FOR QUALITY IMPROVEMENT
LA Gil BS, AN Kothari MD, RP Gonzalez MD, HH Ton That MD, MJ Anstadt MD
Loyola University Medical Center
Presenter: Lindsay Gil BA, BS
Invited Discussant: Jason Smith MD, PhD, University of Louisville
Society: CSA

10:45am - 11:00am
✢ **16. COAGULATION PROFILE FOLLOWING LIVER RESECTION; DOES LIVER CIRRHOSIS AFFECT THROMBELASTOGRAPHY?**
B TANNER MD, R KHATRI MD, G.ZERVOUDAKIS MS, G. MUNENE MD
Western Michigan University Homer Stryker MD School of Medicine
Presenter: Brandon Tanner MD
Invited Discussant: Matthew Chung MD, Spectrum Health Medical Group
Society: MSA

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

11:00am - 11:15am

✔ 17. THE PATIENT PROTECTION AND AFFORDABLE CARE ACT: IMPACTS ON AN OHIO LEVEL I TRAUMA CENTER THREE YEARS AFTER IMPLEMENTATION

JL Miller BA, KE Acus BS, MC McCarthy MD, K Herzing BSN
Wright State University Boonshoft School of Medicine
Presenter: Kirstin Acus
Invited Discussant: Jonathan Saxe MD, St. Vincent
Society: CSA

11:15am - 11:30am

✢ 18. SEEING THE FOREST BEYOND THE TREES: PREDICTING SURVIVAL IN BURN PATIENTS WITH MACHINE LEARNING

AN Cobb MD, W Daungjaiboon BE, SA Brownlee BS, AJ Baldea MD, AP Sanford MD, MJ Mosier MD, PC Kuo MD
Loyola University Medical Center
Presenter: Adrienne Cobb MD
Invited Discussant: Christopher Brandt MD, MetroHealth Medical Center
Society: MSA

11:30am - 11:45am

19. IS IT SAFE TO DISCHARGE GERIATRIC TRAUMA PATIENTS WITH ANEMIA?

N Jaisingh BS, AW Ong MD, DA Lapham DO, S Butler RN, CRNP, A Sigal MD, FB Fernandez MD
Reading Health System
Presenter: Nick Jaisingh BS
Invited Discussant: William Cirocco MD, The Ohio State University
Society: MSA

11:45am - 12:00pm

✢ 20. EVALUATING THE REPEAL OF MICHIGAN'S UNIVERSAL HELMET LAW ON TRAUMATIC BRAIN INJURY

RN Saunders MD, NS Adams MD, AT Davis PhD, AJ Chapman MD, LT Durling MD, GA Iskander MD, JA Girotto MD
Grand Rapids Medical Education Partners
Presenter: Rachel Saunders MD
Invited Discussant: Charles Lucas MD, Wayne State University
Society: MSA

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

12:00pm - 12:15pm

21. CAN ENHANCED RECOVERY IN EMERGENCY CASES PROTECT AGAINST POST-OPERATIVE PNEUMONIA AND LOWER THE RATE OF RE-INTUBATION?

J Chen PhD, S Fogel MD
Carilion Roanoke Memorial Hospital
Presenter: Jing Chen PhD
Invited Discussant: Stephen Barnes MD, University of Missouri
Society: CSA

12:15pm - 12:30pm

22. EMERGENCY DEPARTMENT THORACOTOMY IN TRAUMA PATIENTS: HOW OLD IS TOO OLD?

LA Gil, MJ Anstadt MD, AN Kothari MD, RP Gonzalez MD, FA Luchette MD
Loyola University Medical Center
Presenter: Lindsay Gil BA, BS
Invited Discussant: Salman Ahmad MD, University of Missouri
Society: CSA

Spectacular Problems in Surgery

8:00pm – 10:00pm

Moderators: Margo Shoup MD; William Cirocco MD
Grand Ballroom AB

8:00pm - 8:15pm

SP1. TREATMENT OF CHALLENGING, PERSISTENT SPONTANEOUS PNEUMOTHORAX WITH ENDOBRONCHIAL VALVES

GK Ong MD, JM Saxe MD, RS Mahidhara MD
St. Vincent Hospital
Presenter: Gabie Ong MD

8:15pm - 8:30pm

SP2. IT DOESN'T END WHEN YOU CLOSE THE ABDOMEN: MANAGEMENT OF BILIARY-BRONCHOPLEURAL FISTULA (BBPF) IN HIGH-GRADE LIVER TRAUMA

Landmann A, Albrecht RM, Reinersman JM, Bonds MM, Patel A, Lees JS
University of Oklahoma Health Sciences Center
Presenter: Alessandra Landmann MD

8:30pm - 8:45pm

SP3. FIRST REPORT OF STENT GRAFT TREATMENT OF A PORTAL VEIN PSEUDOANEURYSM WITH PORTOENTERIC FISTULA AFTER PANCREATICODUODENECTOMY

SJ Pera MD, N Hafezi MS, JS Marshall MD, MJ Scheidt MD
University of Illinois College of Medicine
Presenter: Samuel J. Pera MD

8:45pm - 9:00pm

SP4. TWO-STAGE PALLIATIVE MULTIVISCERAL RETROPERITONEAL RESECTION TO CONTROL UNMANAGEABLE DUODENAL BLEED DUE TO RECURRENT PARAGANGLIOMA

LR Smucker MS, AN Hardy MD, RE Schwarz MD
IU School of Medicine
Presenter: Levi Smucker MS

9:00pm - 9:15pm

SP5. TWO CASES OF SMALL BOWEL OBSTRUCTION CAUSED BY ENTEROLITHS FORMED FROM SMALL BOWEL DIVERTICULAR DISEASE

TM Shaker MD, AW Wilkes MD, AR Spencer MD
Grand Rapids Medical Education Partners
Presenter: Tamer Shaker MD

9:15pm - 9:30pm

SP6. A CHILLING REMINDER OF WINTER RECREATIONAL INJURIES: LACERATION OF THE INTERNAL JUGULAR AT AN ICE HOCKEY GAME

AJ Choudhry MBBS, MD Ray-Zack MBBS, M Younis MBBS, MC Hernandez MD, JA Aho MD, DC Cullinane MD, MD Zielinski MD
Mayo Clinic
Presenter: Mohamed D Ray-Zack, MBBS

9:30pm - 9:45pm

SP7. CARDIAC RUPTURE FOLLOWING MOTOR VEHICLE COLLISION

D Kang MD, T Xu MD, C Fredericks MD, M Kaminsky MD, F Bokhari MD, SK Gupta MD
Rush University Medical Center
Presenter: Danby Kang MD

9:45pm - 10:00pm

SP8. A LUMPECTOMY THE SIZE OF A MASTECTOMY: A FOUR POUND LUMPECTOMY SPECIMEN!

LT Qu MD, S Lo MD, DK Vandevender MD, FT Vaince MD
Loyola University Medical Center
Presenter: Linda Qu MD

MONDAY, JULY 31, 2017

Parallel Scientific Session 2A

7:30am – 9:30am

Moderators: L. Michael Brunt MD; Theodore Asgeirsson MD
Grand Ballroom AB

7:30am - 7:45am

23. RISK-ADJUSTED REGIONAL OUTCOMES IN ELECTIVE MEDICARE C OLON SURGERY

DE Fry MD, SM Nedza MD, M Pine MD, A Reband BS, C-J Huang PhD, G Pine BA
MPA Healthcare Solutions
Presenter: Donald Fry, MD
Invited Discussant: Matthew Chung MD, Spectrum Health Medical Group
Society: MSA

7:45am - 8:00am

24. HOW COST EFFECTIVE IS ENDOSCOPIC SUBMUCOSAL DISSECTION IN REMOVING LARGE COLORECTAL POLYPS? A COMPARISON WITH LAPAROSCOPIC COLECTOMY

MM Gamaleldin MD, C Delaney MD, E Gorgun MD
Cleveland Clinic Foundation
Presenter: Maysoon Gamaleldin MD
Invited Discussant: Ian Paquette, MD, UC Health
Society: CSA

8:00am - 8:15am

25. OUTCOMES OF RECTAL RESECTION FOLLOWING NEOADJUVANT THERAPY IN THE 'ELDERLY': CAN RECTAL CANCER PATIENTS BE TOO OLD FOR A NEOADJUVANT APPROACH?

WC Cirocco, MD
The Ohio State University
Presenter: William Cirocco MD
Invited Discussant: Frederick Lane MD, Kendrick Colon and Rectal Center
Society: MSA

8:15am - 8:30am

26. DO BIOLOGICS INCREASE THE INCIDENCE OF DYSPLASIA AND CANCER IN PATIENTS WITH CHRONIC ULCERATIVE COLITIS?

TM HASSAN MD, J CHURCH MD, G OZUNER MD, M KALADY MD, L STOCCHI MD, T HULL MD, M ABBAS MD, E GORGUN MD

Cleveland Clinic Foundation

Presenter: Tareq Hassan MD

Invited Discussant: Scott Strong MD, Northwestern Medicine

Society: CSA

8:30am - 8:45am

27. MODIFIED FRAILTY INDEX PREDICTS MORBIDITY AND MORTALITY IN PROCTECTOMY AND CYSTECTOMY PATIENTS: A RETROSPECTIVE STUDY

SL McChesney MD, AL Klinger MD, HJ Green MS, DJ Canter MD, DA Margolin MD

The Ochsner Clinic Foundation

Presenter: Shannon McChesney MD

Invited Discussant: Lin Yip MD, University of Pittsburgh

Society: CSA

8:45am - 9:00am

28. WHICH BOWEL PREPARATION STRATEGY IS MOST EFFECTIVE IN REDUCING COMPLICATIONS FOLLOWING ELECTIVE COLECTOMY?

EF Midura MD, A Jung MD, V Dhar MD, D Hanseman PHD, S Shah MD, I Paquette MD

University of Cincinnati

Presenter: Andrew Jung MD

Invited Discussant: Jan Rakinic MD, Southern Illinois University

Society: CSA

9:00am - 9:15am

29. LONG TERM OUTCOMES FOLLOWING ILEAL POUCH-ANAL ANASTOMOSIS IN PATIENTS WITH INDETERMINATE COLITIS

NJ Galbraith MBChB, U Netz MD, JV Carter MBChB, S Manek BS, S Galandiuk MD

University of Louisville

Presenter: Jane Carter MBChB MRCS PhD

Invited Discussant: William Cirocco MD, The Ohio State University

Society: CSA

9:15am - 9:30am

★ ✢ **30. INDIVIDUAL SURGEON FACTOR IS THE MOST IMPORTANT PIECE INFLUENCING DIVERTING ILEOSTOMY CREATION FOR PATIENTS UNDERGOING SIGMOID COLECTOMY FOR DIVERTICULAR DISEASE**

C Benlice MD, C Delaney MD, D Liska MD, J Hrabe MD, S Steele MD, E Gorgun MD
Cleveland Clinic Foundation
Presenter: Emre Gorgun MD
Invited Discussant: Roxie Albrecht MD, University of Oklahoma
Society: MSA

Parallel Scientific Session 2B

7:30am – 9:30am

Moderators: Shimul Shah MD, MHCM; Constantine Godellas MD
Grand Ballroom C

7:30am - 7:45am

✢ **31. DO NOT BREAK UP THE SURGICAL TEAM! FAMILIARITY AND EXPERTISE AFFECT OPERATIVE TIME IN COMPLEX SURGERY**

EJ Finnesgard BA, T Pandian MD MPH, ML Kendrick MD, DR Farley MD
Mayo Clinic
Presenter: Eric Finnesgard BA
Invited Discussant: Jeffrey Hardacre MD, University Hospitals Cleveland Medical Center
Society: MSA

7:45am - 8:00am

32. DAILY REVIEW OF AHRQ PATIENT SAFETY INDICATORS HAS SIGNIFICANT FINANCIAL IMPACT ON VALUE BASED PURCHASING REIMBURSEMENT AND HOSPITAL QUALITY RANKING

M Nguyen MD, MPH, S Moffatt-Bruce MD, PhD, MBA, T Latimer RN, MS, A VanBuren MPH, I Gonsenhauser MD, MBA, D Eiferman MD, MBA
The Ohio State University
Presenter: Michelle Nguyen MD, MPH
Invited Discussant: Maggie Brandt MD, MHSA, St. Joseph Mercy Ann Arbor
Society: CSA

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

8:00am - 8:15am

33. MANAGEMENT OF PEDIATRIC OVARIAN TORSION: EVIDENCE OF FOLLICULAR DEVELOPMENT AFTER OVARIAN PRESERVATION

SK Walker MD, DR Lal MD, KP Boyd DO, TT Sato MD
Medical College of Wisconsin
Presenter: Sarah Walker MD
Invited Discussant: Suresh Agarwal MD, University of Wisconsin
Society: CSA

8:15am - 8:30am

34. IMPACT OF THE AGING POPULATION AND CANCER INCIDENCE ON FUTURE GENERAL SURGICAL WORKFORCE PROJECTIONS

E. Christopher Ellison MD, Timothy M. Pawlik MD, Bhagwan Satiani MD, David P. Way MEd, Thomas E. Williams Jr MD
The Ohio State University
Presenter: E Christopher Ellison MD
Invited Discussant: Jan Rakinic MD, Southern Illinois University
Society: CSA

8:30am - 8:45am

35. DEVELOPING A ROBUST SUTURING ASSESSMENT: VALIDITY EVIDENCE FOR THE INTRACORPOREAL SUTURING ASSESSMENT TOOL (ISAT)

NE Anton MS, JM Sawyer BA, JR Korndorffer Jr MD, MPHE, C DuCoin MD, G McRary BS, LR Timsina PhD, D Stefanidis MD, PhD
Indiana University School of Medicine
Presenter: Nicholas Anton MS
Invited Discussant: John Mellinger MD, Southern Illinois University
Society: CSA

8:45am - 9:00am

✔36. BENEFIT OF SOCIAL MEDIA ON PATIENT ENGAGEMENT AND SATISFACTION: RESULTS OF A 6-MONTH PILOT STUDY USING FACEBOOK

VK Dhar, Y Kim, AD Jung, SA Shah
University of Cincinnati
Presenter: Vikrom Dhar MD
Invited Discussant: Anees Chagpar MD, MSc, MPH, MA, MBA, Yale University
Society: CSA

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

9:00am - 9:15am

✦ **37. DECREASING LENGTH OF STAY IN BARIATRIC SURGERY: THE POWER OF SUGGESTION**

James A Madura MD, Ryan W Day MD, Kristi Harold MD, Judy Tiede MSN, Tonya Benjamin CNP

Mayo Clinic in Arizona

Presenter: William Sheaffer MD

Invited Discussant: TBD

Society: MSA

9:15am - 9:30am

38. WHAT MATTERS AFTER SLEEVE GASTRECTOMY: PATIENT CHARACTERISTICS OR SURGICAL TECHNIQUE?

VK Dhar MD, DJ Hanseman PhD, BM Watkins MD, IM Paquette MD, SA Shah MD, JR Thompson MD

University of Cincinnati

Presenter: Vikrom Dhar MD

Invited Discussant: Peter Hallowell MD, University of Virginia

Society: CSA

9:30am – 10:15am

Special Speaker

"How to Form a Great Team"

Tom Ricketts, Chairman, Chicago Cubs

Grand Ballroom AB

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✦ *MSA Best Surgeon in Training Paper*

Scientific Session 3

10:30am – 11:30am

Moderators: Fred Luchette MD, MSc; William Cirocco MD
Grand Ballroom AB

10:30am - 10:45am
✦ **39. OUTCOMES IN COMPLEX VENTRAL HERNIA REPAIR WITH COMPONENT SEPARATION IN CLASS III OBESITY PATIENTS**
R Jacobson MD, M Thaqi MD, KW Millikan MD
Rush University Medical Center
Presenter: Jill Smolevitz MD
Invited Discussant: Saad Shebrain MD, MMM, Western Michigan University
Society: MSA

10:45am - 11:00am
✦ **40. ROBOTIC AND HYBRID ROBOTIC TRANSVERSUS ABDOMINIS RELEASE MAY BE PERFORMED WITH LOW LENGTH OF STAY AND WOUND MORBIDITY**
A Iacco MD, R Janczyk MD, A Vasyluk MD
Beaumont Hospital, Royal Oak, MI USA
Presenter: Andrew Vasyluk MD
Invited Discussant: Amber Traugott MD, The Ohio State University
Society: MSA

11:00am - 11:15am
41. EFFICACY OF PRIMARY DEFECT CLOSURE IN MESH REINFORCED LAPAROSCOPIC VENTRAL HERNIA REPAIR
F DeAsis BS, M Leong BS, M Gitelis BS, K Kuchta MS, Z Butt PhD, J G Linn MD, S P Haggerty MD, W Denham MD, M Ujiki MD
NorthShore University HealthSystem
Presenter: Tyler Hall BA
Invited Discussant: Roland Vega MD, University of Wisconsin
Society: CSA

11:15am - 11:30am
42. PREOPERATIVE PAIN PREDICTS INGUINAL HERNIA LONG-TERM QUALITY OF LIFE
NJ Mier BS, MC Helm BS, AS Kastenmeier MD, JC Gould MD, MI Goldblatt MD
Medical College of Wisconsin
Presenter: Neil Mier BS
Invited Discussant: Jose Velasco MD, Rush University
Society: CSA

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✦ *MSA Best Surgeon in Training Paper*

Poster Presentations

11:30am – 12:15pm
CSA Presidential Address
"The Anatomy of Change"
W. Scott Melvin, MD
Montefiore Medical Center
Grand Ballroom AB

MSA Poster Presentations

12:15pm – 1:15pm

Moderator: Jonathan Saxe, MD
Promenade Ballroom ABC

12:15pm - 1:15pm

P2. ARE WE STAYING CLASSY? AN EFFORT TO IMPROVE THE ACCURACY OF DOCUMENTED SURGICAL WOUND CLASSIFICATIONS
RE CHUPP MD, E EDHAYAN MD
St John Hospital and Medical Center
Presenter: Tianli Du M.D.

P3. A NEW OPTION TO OVERCOME DIAPHRAGM ATROPHY WHEN ON MECHANICAL VENTILATION: COMPLETED FDA FEASIBILITY TRIAL OF SURGICALLY PLACED TEMPORARY DIAPHRAGM PACING ELECTRODES
R Onders MD, A Markowitz MD, J Hardacre MD, A Prabhu MD, Y Novitsky MD, H Nearman MD, M Elmo ACNP
University Hospitals Cleveland Medical Center
Presenter: Raymond Onders MD

P4. CANCER HISTORY: A PREDICTOR OF IPMN SUBTYPE AND DYSPLASTIC STATUS
RA Carr MD, BA Kiel BS, AM Roch MD, RE Simpson MD, EP Ceppa MD, MG House MD, NJ Zyromski MD, A Nakeeb MD, CM Schmidt MD PhD MBA
Indiana University School of Medicine
Presenter: Rosalie Carr MD

P5. EVOLVING TREATMENT OF NECROTIZING PANCREATITIS
AM Roch MD MS, RA Carr MD, MG House MD, A Nakeeb MD, EP Ceppa MD, CM Schmidt MD PhD MBA, JJ Easler MD, NJ Zyromski MD
Indiana University School of Medicine
Presenter: Alexandra Roch MD, MS

Featured ePoster Presentations

Poster Presentations continued

P6. WHAT TO CONSIDER IN DECIDING WHETHER TO ATTEMPT A SENTINEL LYMPH NODE BIOPSY ON BREAST CANCER PATIENTS WHO HAD BIOPSY PROVEN AXILLARY METASTASIS PRIOR TO UNDERGOING NEOADJUVANT TREATMENT

T Qu MD, A Rugino, AN Cobb MD, S Peters MD, CB Perez MD, CV Godellas MD, FT Vaince MD

Loyola University Medical Center

Presenter: Linda Qu MD

P7. THE IMPACT OF SOCIOECONOMICS ON IN-HOSPITAL TRAUMA MORTALITY IN THE DETROIT METROPOLITAN AREA

JA Loberg MD, RD Hayward PhD, M Fessler BA, E Edhayan MD

St John Hospital and Medical Center

Presenter: Jacey Loberg MD

P8. ELEVATED GALLBLADDER EJECTION FRACTION: DOES THE "HYPER-DYNAMIC GALLBLADDER" EXIST?

G Gooding MD, J Wilkerson MD, G Roberts MD, K Harris MD, D Kaderabek MD, M Edwards MD, T Glass MD, T Tigges MD, J Isch MD, J Meyer MD, J Saxe MD

St. Vincent Hospital

Presenter: Gerirose Gooding MD

P10. POST-TRAUMATIC INFECTIONS: THE EFFECT OF MAJOR ABDOMINAL VASCULAR INJURY

JG Tyburski, J Ciullo, HS Dolman, L Hall Zimmerman, NM Sykes, AE Baylor, TT Lavery, RF Wilson

Wayne State University - Detroit Receiving Hospital

Presenter: James Tyburksi MD

P11. MINIMALLY INVASIVE TRANSHIATAL ESOPHAGECTOMY: FAVORABLE OUTCOMES IN A COMMUNITY HOSPITAL SETTING

J Burns MD, AW Tsang MD, MC Engoren MD, RE Redfern PhD, JJ Sferra MD

ProMedica Toledo Hospital

Presenter: Jessica Burns MD

P12. THERE'S AN APP FOR THAT! IS THERE A ROLE FOR SMARTPHONE APPLICATIONS IN LEARNING SURGICAL SKILLS?

BR Veenstra MD, J Smolevitz MD, JM Velasco MD

Rush University Medical Center

Presenter: Jill Smolevitz MD

Poster Presentations continued

P13. MANDATORY DELAY BEFORE BARIATRIC SURGERY IS A BARRIER TO CARE AND LEADS TO SUBOPTIMAL WEIGHT LOSS
MD Watson BS, JH Mehaffey MD, BJ Goudreau MD, FE Turrentine PhD RN, BD Schirmer MD, PT Hallowell MD
University of Virginia, Charlottesville
Presenter: Michael Watson MD

P14. UNPLANNED REMOVAL OF INVASIVE DEVICES IN TRAUMA PATIENTS: IDENTIFYING RISK FACTORS AND OPPORTUNITIES FOR PREVENTION
RJ Markert PhD, AP Ekeh MD, MC McCarthy MD
Wright State University
Presenter: Riyad Tayim MD, MS

P15. INTRACORPOREAL ROBOTIC HAND-SEWN ANASTOMOSIS VS STAPLED ANASTOMOSIS IN COLORECTAL SURGERY - EARLY EXPERIENCE AND OUTCOMES IN A COMMUNITY-BASED MODERATE VOLUME GENERAL SURGERY PRACTICE
W Mata MD, K Harris MD, G Arevalo MD, T Glass MD, K Singh MD, J Saxe MD
St. Vincent Hospital
Presenter: Wilmer Mata MD

P16. ROBOTIC COLORECTAL SURGERY – EARLY EXPERIENCE AND OUTCOMES IN A COMMUNITY-BASED MODERATE VOLUME GENERAL SURGERY PRACTICE
K Harris MD, W Mata MD, G Ong MD, G Arevalo MD, T Glass MD, J Saxe MD
St. Vincent Hospital
Presenter: Kathryn Harris MD

P17. FLEXIBLE ENDOSCOPIC ZENKER'S DIVERTICULOTOMY IN THE HANDS OF A GENERAL SURGEON
GM Zambito MD, AL Banks-Venegoni MD
Grand Rapids Medical Education Partners
Presenter: Giuseppe Zambito MD

P18. PREDICTING DEATH IN NECROTIZING FASCITIS
AN Cobb MD; M Cheung BS , SA Brownlee BA, PC Kuo, MD
Loyola University Medical Center
Presenter: Matthew Cheung BS

Poster Presentations continued

P20. CYTOREDUCTIVE SURGERY (CRS) WITH HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY (HIPEC): A SINGLE INSTITUTION EXPERIENCE

J Ford MD, J Morreale MD, J Chores CCP A Boston ANP-BC, K Hagglund MS, K Coughlin MD, M Desgrandchamps, CRNA, R Berri MD
St John Hospital and Medical Center
Presenter: Jennifer Ford MD

P21. ESTABLISHING AN HPB PROGRAM IN A UNIVERSITY AFFILIATED COMMUNITY HOSPITAL: APPRAISAL ON SHORT-TERM OUTCOMES AND IMPACT ON SURGICAL EDUCATION.

S Lu DO, R Khatri MD, B Tanner MD, S Shebrain MD, G Munene MD
Western Michigan University Homer Stryker MD School of Medicine
Presenter: Steven Lu DO, MPH

P22. A NOVEL ENDOSCOPIC GRADING SYSTEM FOR PREDICTION OF DISEASE RELATED OUTCOMES IN PATIENTS WITH DIVERTICULOSIS

M Dean, MD J Church, MD M Valente, DO K Ritter, MD J Valentino, MD
Cleveland Clinic Foundation
Presenter: Meara Dean MD MPH

P23. WHAT ARE PREDICTORS THAT CAN HELP IDENITFY SAFE REMOVAL OF DRAINS FOLLOWING PANCREATICODUODENECTOMY?

E Eguia MD, AE Hwalek MD, GV Aranha MD
Loyola University Medical Center
Presenter: Emanuel Eguia MD, MHA

P24. THE ANATOMY OF TRANSANAL MINIMALLY INVASIVE SURGERY: TIME FOR A NEW ANGLE??

M Dean MD J Church MD M Valente DO
Cleveland Clinic Foundation
Presenter: Meara Dean MD MPH

P25. CLINICAL TRENDS AND EFFECTS ON QUALITY METRICS FOR SURGICAL GASTROESOPHAGEAL CANCER CARE WITHIN A SURGICAL ONCOLOGY PRACTICE

RE Schwarz MD
Indiana University School of Medicine
Presenter: Roderich Schwarz MD

Scientific Program

TUESDAY, AUGUST 1, 2017

Parallel Scientific Session 4A

7:30am – 9:15am

Moderators: Timothy Pritts MD, PhD; James Ouellette DO
Grand Ballroom AB

7:30am - 7:45am

43. LIVER TRANSPLANT OFFERS A SURVIVAL BENEFIT OVER MARGIN NEGATIVE RESECTION IN PATIENTS WITH SMALL UNIFOCAL HCC AND PRESERVED LIVER FUNCTION

AJ Benjamin MD, NR Suss BS, TB Baker MD, AS Bodzin MD, AB Schneider MD, KK Roggin MD, DJ Bentrem MD, MS Talamonti MD, MS Baker MD
NorthShore University HealthSystem
Presenter: Andrew Benjamin MD
Invited Discussant: Joseph Buell MD, MBA, Tulane University
Society: CSA

7:45am - 8:00am

44. EFFICACY AND SAFETY OF YTRRIUM-90 IN THE TREATMENT OF INTRAHEPATIC CHOLANGIOCARCINOMA

TM Shaker MD, C Chung, MK Varma MD, MG Doherty MD, AM Wolf MD, MH Chung MD, MM Assifi MD
Grand Rapids Medical Education Partners
Presenter: Tamer Shaker MD
Invited Discussant: Mike Jacobs MD, Clinical Professor of Surgery, Ascension St. John Providence-Michigan State University CHM
Society: MSA

8:00am - 8:15am

45. SPORADIC ZOLLINGER ELLISON SYNDROME - A FIVE DECADE PROSPECTIVE STUDY:TUMOR LOCATION PREDICTS DIFFERENT BIOLOGICAL BEHAVIOR FOR DUODENAL WALL GASTRINOMA VS. PANCREATIC GASTRINOMA

SD Wilson MD, KK Christians MD, EJ Quebbeman MD, SG Pappas MD, TC Clark MD, DB Evans MD
Medical College of Wisconsin
Presenter: Stuart Wilson MD
Invited Discussant: Herb Chen MD, University of Alabama at Birmingham
Society: CSA

Scientific Program continued

8:15am - 8:30am

46. MINIMALLY INVASIVE PANCREATICODUODENECTOMY: IS THE INCIDENCE OF POSTOPERATIVE CLINICALLY RELEVENT FISTULA COMPARABLE TO THAT FOLLOWING OPEN PANCREATICODUODENECTOMY?

O Kantor MD MS, MS Talamonti MD, KK Roggin MD, D Bentrem MD, RA Prinz MD, MS Baker MD MBA
University of Chicago
Presenter: Olga Kantor MD, MS
Invited Discussant: Margo Shoup MD, Northwestern Medicine
Society: CSA

8:30am - 8:45am

★ ✢ **47. THE DIAGNOSIS AND STAGING OF PANCREATIC CANCER: A COMPARISON OF ENDOSCOPIC ULTRASOUND AND COMPUTED TOMOGRAPHY WITH PANCREAS PROTOCOL.**

T Du MD, K Bill MS, J Ford MD, M BARAWI MD, RN Berri MD
St John Hospital and Medical Center
Presenter: Tianli Du MD
Invited Discussant: Jeffrey Wayne MD, Northwestern Medicine
Society: MSA

8:45am - 9:00am

48. TAILORED SURGICAL TREATMENT OF DUODENAL POLYPOSIS IN FAMILIAL ADENOMATOUS POLYPOSIS SYNDROME.

T Augustin MD MPH, M Moslim MD, A Tang MD, RM Walsh MD
Cleveland Clinic Foundation
Presenter: Toms Augustin MD,MPH
Invited Discussant: Scott Strong MD, Northwestern Medicine
Society: CSA

9:00am - 9:15am

49. PANCREATIC CYST FLUID GLUCOSE: RAPID, INEXPENSIVE, AND ACCURATE DIAGNOSIS OF MUCINOUS PANCREATIC CYSTS

MT Yip-Schneider PhD, S Dolejs MD, H Wu BS, RE Simpson MD, EP Ceppa MD, W Park MD, CM Schmidt MD PhD MBA
Indiana University School of Medicine
Presenter: Rosalie Carr MD
Invited Discussant: Juan Sanabria MD, MSc, Case & Marshall University
Society: CSA

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

Parallel Scientific Session 4B

7:30am – 9:15am

Moderators: Peter Angelos MD, PhD; David Farley MD
Grand Ballroom C

7:30am - 7:45am
✢ **50. UTILITY OF SEQUENTIAL ORGAN FAILURE ASSESSMENT SCORE IN PREDICTING BACTEREMIA IN CRITICALLY ILL BURN PATIENTS**
HA Ladhani MD, N Sajankila BS, BM Zosa MD, JC He MD, CJ Yowler MD, JA Claridge MD, AK Khandelwal MD
MetroHealth Medical Center
Presenter: Husayn Ladhani MD
Invited Discussant: A. Peter Ekeh MD, MPH, Wright State University
Society: MSA

7:45am - 8:00am
51. COMMERCIAL QUALITY "AWARDS" ARE NOT A SURROGATE FOR IMPROVED PATIENT OUTCOMES
AN Cobb MD, TR Erickson BS, AN Kothari MD, SA Brownlee BS, W Yao BS, H Choi BS, V Greenberg BS, J Mboya BS, M Voss BS, DS Raicu PhD, PC Kuo MD, R Settimi-Woods PhD
Loyola University Medical Center
Presenter: Adrienne Cobb MD
Invited Discussant: Donald Fry MD, MPA Healthcare Solutions
Society: CSA

8:00am - 8:15am
52. RISK-ADJUSTED HOSPITAL OUTCOMES IN MEDICARE CAROTID ARTERY SURGERY
DE Fry MD, SM Nedza, MD, M Pine MD, AM Reband BS, C-J Huang PhD, G Pine BA
MPA Healthcare Solutions
Presenter: Donald Fry MD
Invited Discussant: James DeBord MD, University of Illinois at Peoria
Society: CSA

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

Scientific Program continued

8:15am - 8:30am

53. RACIAL AND REGIONAL DISPARITY IN LIVER TRANSPLANT ALLOCATION

D Monlezum PhD MPH, M Darden PhD, P Friedlander MD, L Balart MD, Parker G, JF Buell MD MBA

Tulane University

Presenter: Joseph Buell MD,MBA

Invited Discussant: Paul Kuo MD, Loyola University Medical Center

Society: CSA

8:30am - 8:45am

54. POST-OPERATIVE COMPLICATIONS IN DELAYED APPENDECTOMY

K Seudeal MD, H Hasnain MD, S Shebrain MD MMM

Western Michigan University Homer Stryker MD School of Medicine

Presenter: Hira Abidi MD

Invited Discussant: Mark Hill MD, The Chicago Medical School/North Shore Surgical Associates

Society: MSA

8:45am - 9:00am

55. THE BUNDLE: NOT THE ENTIRE ANSWER TO MITIGATION OF SURGICAL SITE INFECTIONS

DJ Hess Jr MD PhD MBA, M Skube MD, C Statz MPH PHN RN, M Hanlon MA APRN, DA Saltzman MD PhD and University of Minnesota Masonic Children's Hospital Surgical Site Infection Reduction Task Force

University of Minnesota

Presenter: Donavon Hess MD PhD

Invited Discussant: Donald Fry MD, MPA Healthcare Solutions

Society: CSA

9:00am - 9:15am

56. COST VARIATION AND OPPORTUNITIES FOR COST REDUCTION FOR LAPAROSCOPIC CHOLECYSTECTOMY

KL Grimes MD, C Scott MBA, CR McHenry MD

MetroHealth Medical Center

Presenter: Kevin Grimes MD

Invited Discussant: Anthony Senagore MD, MS, MBA, UTMB at Galveston

Society: CSA

Scientific Session 5

9:30am – 10:30am

Moderators: Christopher McHenry MD; Steven De Jong MD
Grand Ballroom AB

9:30am - 9:45am

57. COMPARING SURGICAL TECHNIQUE AND THE DEVELOPMENT OF MARGINAL ULCER SYMPTOMS IN PATIENTS UNDERGOING LAPAROSCOPIC GASTRIC BYPASS.

D Podolsky MD, G Basishvili BA, A Novikova MD, D Kenawy BSE, E Surgan BA, E Moran Atkin MD, J Choi MD, WS Melvin MD, D Camacho MD
Montefiore Medical Center
Presenter: Dina Podolsky MD
Invited Discussant: Guilherme Campos MD, Virginia Commonwealth University
Society: CSA

9:45am - 10:00am

58. HELLER MYOTOMY FOR ACHALASIA AND EPIPHRENIC DIVERTICULA, A SINGLE INSTITUTION EXPERIENCE AND APPRAISAL OF PATIENTS CHARACTERISTICS AND OUTCOMES

JD McDonald MD, JE Richter MD, V Velanovich MD
University of South Florida
Presenter: James McDonald MD
Invited Discussant: David Scheeres MD, Michigan State University/College of Human Medicine; Spectrum Health Medical Group
Society: CSA

10:00am - 10:15am

59. EFFECT OF INTRA-OPERATIVE SINGLE DOSE OF DEXAMETHASONE FOR CONTROL OF POST-OPERATIVE NAUSEA ON MANAGEMENT OF BLOOD GLUCOSE LEVELS IN DIABETIC PATIENTS

T Wasfie MD, A Tabatabai DO, T Knisely MPH, R Yapchai RN MS, L Hollern NP, K Barber PhD, R Hedni MD, B Shapiro MD
Genesys Regional Medical Center
Presenter: Anthony Tabatabai DO
Invited Discussant: Heather Dolman MD, Wayne State University
Society: MSA

10:15am - 10:30am

60. DRG MIGRATION: A NOVEL MEASURE OF INEFFICIENT SURGICAL CARE IN A VALUE BASED WORLD

HB Mehta PhD
Universtiy of Texas Medical Branch at Galveston
Presenter: Anthony Senagore MD, MS, MBA
Invited Discussant: Tom Stellato MD, MBA, Cleveland VA Medical Center, Case Western Reserve University School of Medicine
Society: MSA

10:30am – 11:15am

MSA Presidential Address
"Building a Successful Cancer Program- my community experience"
Margo Shoup, MD
Northwestern Medicine
Grand Ballroom AB

Scientific Session 6A

11:30am – 1:00pm

Moderators: Tina W.F. Yen MD, MS; Amber Traugott MD
Grand Ballroom AB

11:30am - 11:45am

✢ **61. EFFICACY AND SAFETY OF TRANSVERSUS ABDOMINIS PLANE BLOCK VERSUS THORACIC EPIDURAL ANESTHESIA IN PATIENTS UNDERGOING MAJOR ABDOMINAL ONCOLOGIC RESECTIONS: A PROSPECTIVE, RANDOMIZED CONTROLLED TRIAL**

TM Shaker MD, JT Carroll MD, MH Chung MD
Grand Rapids Medical Education Partners
Presenter: Tamer Shaker MD
Invited Discussant: Jeff Johnson MD, Henry Ford Hospital
Society: MSA

11:45am - 12:00pm

62. LAPAROSCOPIC-GUIDED ABDOMINAL WALL NERVE BLOCKS IN THE PEDIATRIC POPULATION: A NOVEL TECHNIQUE WITH COMPARISON TO ULTRASOUND-GUIDED BLOCKS AND LOCAL WOUND INFILTRATION ALONE

A Landmann MD, M Visoiu MD, MM Malek MD
Children's Hospital of Pittsburgh of the University of Pittsburgh Medical Center
Presenter: Alessandra Landmann MD
Invited Discussant: Casey Calkins MD, The Medical College of Wisconsin/ The Childrens Hospital of Wisconsin
Society: CSA

12:00pm - 12:15pm

★ ✢ **63. DO PSOAS MUSCLE AREA AND VOLUME CORRELATE WITH POSTOPERATIVE COMPLICATIONS IN PATIENTS UNDERGOING RECTAL CANCER RESECTION?**

AL Womer BS, JT Brady MD, K Kalisz MD, ND Patel BS, RM Paspulati MD, HL Reynolds MD, TM Pawlik MD, SR Steele MD
University Hospitals Cleveland Medical Center
Presenter: Aaron Womer Medical Student
Invited Discussant: Donald Fry MD, MPA Healthcare Solutions
Society: MSA

12:15pm - 12:30pm

64. PROTHROMBIN COMPLEX CONCENTRATE TO CORRECT HEMORRHAGE-INDUCED COAGULOPATHY IN ACUTE CARE SURGERY

AC Ruf BS, JB Hadley BS, JM Shellenberger MD, JC Hedgcorth PharmD, SL Barnes MD, JA Quick MD
University of Missouri
Presenter: Ashly Ruf MD
Invited Discussant: Ashraf Mansour MD, Michigan State University
Society: CSA

12:30pm - 12:40pm

QS1. AGE AND LOCATION OF RIB FRACTURES NEED TO BE EVALUATED WHEN RISK STRATIFYING PATIENTS

KL Haines DO, T Zens MD, M Beems MD, D Edwarda BS, C Warner-Hillard MPH, HS Jung MD, S Agarwal MD
University of Wisconsin School of Medicine and Public Health
Presenter: Krista Haines DO

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

12:40pm - 12:50pm

QS2. RESULTS OF OPEN ABDOMINAL AORTIC ANUERYSM REPAIR IN PATIENTS NOT SUITABLE FOR ENDOVASCULAR REPAIR

SS Hans MD
Henry Ford Macomb Hospital
Presenter: Sachinder Hans MD

12:50pm - 1:00pm

QS3. DIAPHRAGM PACING AS SUCCESSFUL SALVAGE THERAPY IN FAILURE TO WEAN PATIENTS: IMPROVING DIAPHRAGM MUSCLE STRENGTH

R Onders MD, M Elmo, C Kaplan, H Nearman, R. Schilz
University Hospitals Cleveland Medical Center
Presenter: Raymond Onders MD

Scientific Session 6B

11:30am – 1:00pm

Moderators: Stephen Barnes MD; Nicholas Zyromski MD
Grand Ballroom C

11:30am - 11:45am

✢ **65. NEOADJUVANT SYSTEMIC THERAPY IN INVASIVE LOBULAR BREAST CANCER: IS IT INDICATED?**

K Tsung BA, SR Grobmyer MD, C Tu MS, J Abraham MD, T Budd MD, SA Valente MD
Cleveland Clinic Foundation
Presenter: Karen Tsung BA
Invited Discussant: Stephen Sener MD, University of Southern California
Society: MSA

11:45am - 12:00pm

66. INHIBITION OF IL-10 IN TUMOR MICROENVIRONMENT CAN RESTORE MESOTHELIN CHIMERIC ANTIGEN RECEPTOR (CAR) T-CELL ACTIVITY IN PANCREATIC CANCER

RB Batchu PhD, OV Gruzdyn BS, EM Mahmud BS, F Chukr BS, R Dachepalli MS, SK Manmari MD, G Mostafa MD, DW Weaver MD, SA Gruber MD PhD MBA
Wayne State University
Presenter: Oksana Gruzdyn BS
Invited Discussant: Joshua Mammen MD, PhD, University of Kansas
Society: CSA

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

12:00pm - 12:15pm

✔ 67. PERIOPERATIVE HEMODYNAMIC EVALUATION USING FOCUSED ECHOCARDIOGRAPHY: A QUALITY IMPROVEMENT STUDY

Paul B. McBeth MD, Leonard Mason MD, Louis Magnotti MD, Martin Croce MD, Timothy C. Fabian MD

University of Tennessee Health Science Center

Presenter: Paul McBeth MD

Invited Discussant: TBD

Society: CSA

12:15pm - 12:30pm

68. SUCCESSFUL PARATHYROIDECTOMY GUIDED BY INTRAOPERATIVE PARATHORMONE MONITORING FOR PRIMARY HYPERPARATHYROIDISM IS PRESERVED IN MILD AND MODERATE RENAL INSUFFICIENCY

R Teo BS, W Ouyang BS, AM Franco BS, SE Bressler BS, AR Marcadis MD, ET Amdemichael MD, JC Farrá MD, JI Lew MD

University of Miami

Presenter: Andrea Marcadis MD

Invited Discussant: Tara Breslin MD, St. Joseph Mercy Health System, Ann Arbor

Society: CSA

12:30pm - 12:40pm

QS4. OUTCOMES OF SURGICAL MANAGEMENT OF ATHLETIC PUBALGIA: A SIXTEEN-YEAR, INDIVIDUALIZED SINGLE-CENTER EXPERIENCE

WH Tan MD, S Feaman MA, CCRP, T Maxim BS, LG Kahan BS, JM McAllister MD, M Quasebarth RN, LM Brunt MD

Washington University in St. Louis School of Medicine

Presenter: Wen Hui Tan MD

12:40pm - 12:50pm

QS5. SESTAMIBI SPECT/CT VERSUS SPECT ONLY FOR PREOPERATIVE LOCALIZATION IN PRIMARY HYPERPARATHYROIDISM: A SINGLE INSTITUTION 8 YEAR ANALYSIS

AG Ghodadra, TG Hiremath, A Albarano, JM Joyce, L Yip, SE Carty, A Muthukrishnan, KL McCoy

University of Pittsburgh

Presenter: Kelly McCoy MD

12:50pm - 1:00pm

QS6. WIDE VARIATION IN COST OF SURGICAL CARE BY PROVIDERS FOR PARATHYROIDECTOMY: IS THERE A NEED FOR STANDARDIZATION OF PRACTICE?

S Jang BSA, CJ Balentine MD, Z Aburjania MD, H Chen MD
University of Alabama-Birmingham
Presenter: Samuel Jang BSA

ORAL ABSTRACTS

★ *MSA Best New Member Paper*

✔ *CSA Best New Member Paper*

✦ *MSA Best Surgeon in Training Paper*

Oral Abstracts

1. RELATIONSHIP OF PROCEDURAL NUMBERS WITH OPERATIVE AUTONOMY LEVELS IN GENERAL SURGERY RESIDENTS

HP Stride MS, BC George MD, RG Williams PhD, JT Bohnen MD, MJ Eaton DO, MC Schuller MSEd, L Zhao PhD, A Yang MS, SL Meyerson MD, GL Dunnington MD, L Torbeck PhD, JT Mullen MD, E Auyang MD, J Chipman MD, J Choi MD, A Meier MD, D Smink MD, KP Terhune MD, P Wise MD, D DaRosa PhD, N Soper MD, JB Zwischenberger MD, K Lillemoe MD, JP Fryer MD
Northwestern University
Society: CSA

Purpose: To be eligible for certification, surgical residents are required to perform a minimum number of surgical procedures within a variety of defined procedural categories. The premise of this requirement is to ensure trainees perform enough procedures to become competent, yet there is little empiric data to support these standards. We evaluated the correlation between mean number of procedures performed by residents and the autonomy levels they achieved in three of the most common core general surgery procedures: laparoscopic cholecystectomy, open inguinal hernia repair, and laparoscopic appendectomy.

Methods: This study was performed at 14 general surgery residency programs between 10/1/2015 and 6/30/2016. 5876 resident OR performance evaluations were completed by 368 supervising surgical faculty on 411 surgical residents. For each procedure evaluated, residents were assigned an autonomy level by their supervising surgeon. Autonomy levels were based on the Zwisch scale of progressive autonomy using SIMPL, a smart phone based procedural assessment tool. Numerical scores were used for individual Zwisch levels (Show and Tell=1; Active Help=2; Passive Help=3, Supervision Only=4). Mean autonomy scores were determined for each resident during this time period for each of the three procedures evaluated. ACGME case logs were used to determine the number of the three procedures completed by the end of the study period by each resident. Mean autonomy was correlated with the total number of logged procedures. Residents with < 3 SIMPL evaluations for any procedure were excluded from analysis for that procedure. Pearson's correlation coefficient was calculated for this analysis.

Results: The number of procedures required for 50%, 75%, and 90% of residents to achieve the highest levels of autonomy (i.e. Passive Help, Supervision Only) for the majority of their operative performance evaluations were determined. Higher procedure numbers correlated with higher percentages of residents with mean autonomy scores ≥ 3 (see Table 1). Inadequate number of residents achieving mean autonomy scores ≥ 3 limited analysis with open inguinal repair.

Conclusion: These data demonstrate increased autonomy among surgical trainees with increasing case volumes for commonly performed general surgery procedures. Further research is needed to define the number of other less frequently performed core general surgical procedures required to achieve these highest autonomy levels and to determine the number of procedures needed to progress from one Zwisch level to the next.

2. IMPLEMENTATION OF PROSPECTIVE SURGEON-DRIVEN RISK BASED PATHWAY FOR PANCREATODUODENECTOMY RESULTS IN IMPROVED CLINICAL OUTCOMES AND FIRST YEAR COST SAVINGS OF $1 MILLION

CR Shubert MD MHA, EB Habermann PhD MPH, FG Que MD, AE Glasgow MHA, RL Smoot MD, DM Nagorney MD, MB Farnell MD, MJ Truty MD, ML Kendrick MD
Mayo Clinic, Rochester
Society: CSA

Purpose: Overall morbidity following pancreatoduodenectomy (PD) remains 30-50%, largely driven by postoperative pancreatic fistula (POPF). Non-modifiable risk factors for POPF are well established and along with subsequent complications, greatly affect total costs of care. In September 2014, our institution implemented a Risk Based Pathway for all PD (RBP-PD). Our aim here is to review the clinical and cost implications of this novel prospective care model in comparison to our historical standardized practice.

Methods: Prospective clinical and cost outcomes for our RBP-PD cohort treated from 9/2014-9/2015 were compared to a previously published historical cohort of PDs from 1/2007-2/2014. POPF risk was calculated as per previously validated clinical risk score (CRS-POPF). POPF grade was assessed per ISGPF criteria. RBP-PD patients were treated as per Table 1. Student's t, chi-squared, Fisher's exact, and multivariable logistic regression statistical tests were utilized.

Results: 128 RBP-PD were compared to 808 historical PD. There were no differences in age, sex, proportion of laparoscopic PD, proportion with soft gland texture, proportion with high risk pathology or proportion of patients with <5mm duct size(all $p>0.05$). There were fewer patients with estimated blood loss >400mL ($p<0.01$). Median CRS-POPF total score was not different, 4.0 versus 3.5 ($p=0.18$). Overall POPF rate did not change, 23.6% historically versus 27.1% prospectively, $p=0.38$. POPF severity decreased as there were more Grade A POPF (3.8% vs 12.5%, $p<0.001$). Grade B and C POPF decreased but was not statistically significant, 14.2% vs 10.9% ($p=0.41$) and 5.6% vs 3.8% ($p=0.53$), respectively, for a combined rate 19.8% vs 14.8% ($p=0.23$). Average length of stay (LOS) decreased from 12 to 10 days, $p<0.001$, despite an unchanged readmission rate. Rate of any postsurgical interventional radiology (IR) procedure decreased from 26.4% to 18.0%, $p=0.048$. Monitored care utilization and LOS decreased from 35.6% to 23.4%, $p<0.01$ and from 3 to 1 day, $p<0.01$. Multivariable analysis revealed RBP-PD to be independently associated with decreased odds of having a higher grade POPF, requiring monitored care, and prolonged length of stay. Adjusted average inpatient cost of care decreased by $6,387(-11.1%) per patient, $p=0.016$. High risk patients' adjusted cost of care decreased by $17,307 (-21.1%) per patient, $p<0.01$. Total 30 day costs decreased by $8,565(-13.7%) per patient ($p=0.01$); representing a total 30 day cost reduction of $1.1 M.

Conclusion: Our recently implemented RBP-PD, focused on stratifying PD patients via CRS-POPF and treating them with risk-based standardized care models. This novel approach has led to significantly improved patient outcomes and decreased costs of care. This, objective, standardized approach can be implemented in a prospective surgeon driven manner and likely has implications and applicability for surgical care beyond PD.

3. PERIOPERATIVE EMERGENCY DEPARTMENT UTILIZATION IN INPATIENT AND OUTPATIENT MEDICARE LAPAROSCOPIC CHOLECYSTECTOMY

SM Nedza MD, Fry DE, Chen P
MPA Healthcare Solutions
Society: MSA

Objective: Emergency Department (ED) visits represent a potential adverse outcome and a pathway for readmission following laparoscopic cholecystectomy. A better understanding of perioperative ED visits will facilitate better management of outcomes in Alternative Payment Models (APMs).

Methods: We used Medicare LDS data for 2011-2014 to identify Medicare beneficiaries age ≥ 65, who underwent elective laparoscopic cholecystectomy in the inpatient (ILC) or outpatient (OLC) setting and survived 30-days following discharge. Preoperative ED visits for 30-days before and 30 days following discharge were studied. Preoperative ED visits with hospitalization for the index ILC were excluded. Reasons for preoperative and postoperative ED visits were detailed by Major Diagnostic Category (MDC). Statistical associations were evaluated between preoperative and postoperative ED visits.

Results: A total of 129,377 ILCs and 225,339 OLCs were identified. For ILCs, 20,021 patients(15.5%) were 30-day preoperative visits, and 7,259 preoperative ED patients were hospitalized but then discharged before ILC. There were 19,927(15.4%) patients seen one or more times in the ED postoperatively of which 10,697(53.7%) were readmitted. Of total preoperative ED patients, 4,631 were seen in the ED postoperatively, of which 1,836 had been 30-day preoperative inpatients. Postoperative ED patients more commonly had MDCs of kidney/urinary tract, respiratory system, and injuries/drug toxicity(P<0.01) when compared to preoperative visits. Patients with any ED visit preoperatively had an Odds Ratio (OR) predicting a post-discharge ED visit of 1.85(95% CI= 1.78-1.92; P<0.0001); 30-day preoperative ED visit and hospitalization predicted post-discharge ED visits of OR=2.11(95% CI= 2.00-2.23; P<0.0001); and 30-day preoperative visit without hospitalization had an OR= 1.71(95% CI=1.63-1.79; P<0.0001). For OLCs, 52,025 patients(22.1%) were seen for 60,735 visits, of which 9,984 preoperative ED patients were hospitalized and discharged before the OLC. There were 28,862 patients(12.3%) seen one or more times in the ED postoperatively. Of total preoperative ED patients, 8,290 were seen in the ED postoperatively, of which 1,507 were hospitalized. Postoperative ED patients were most commonly seen for the MDCs of kidney/urinary tract, respiratory system, and injuries/toxic drug toxicity when compared to preoperative ED visits(P<0.01). OIC patients with any 30-day ED visit preoperatively had an OR for post-discharge ED visit of 1.50(95% CI=1.46-1.54; P<0.0001); a 30-day preoperative ED visit with hospitalization OR= 1.41(95% CI=1.33-1.49; P<0.0001); and 30-day preoperative visit with other ED disposition OR=1.52(95% CI=1.48-1.57; P<0.0001).

Conclusion: ED visits in the 30-day prior and the 30-days following ILC and OLC are frequent events. Preoperative ED visits predict post-discharge ED visits. Surgeons must recognize this high-risk population for special management in the era of APMs.

✢ 4. THE BENEFITS OF A LOW DOSE COMPLEX CARBOHYDRATE/CITRULLINE ELECTROLYTE SOLUTION FOR PREOPERATIVE CARBOHYDRATE LOADING: FOCUS ON GLYCEMIC VARIABILITY

BA Kielhorn DO, AJ Senagore MD, T Asgeirsson MD
Metro Health Hospital - University of Michigan Health System
Society: MSA

Objective: Hyperglycemia is associated with significant morbidity and mortality in patients undergoing major surgery. Enhanced recovery programs (ERPs) aim to mitigate the perioperative hyper-metabolic stress response. We sought to assess the effect of preoperative maltodextrin/citrulline based electrolyte solution on perioperative glycemic levels in a colorectal ERP.

Methods: A retrospective chart review was performed including all elective non-diabetic segmental colectomies from January 2016 – February 2017. Study groups included a simple carbohydrate cohort (SIM) and a complex carbohydrate cohort (COM). Glycemic variability was defined by the number of patient days with a serum glucose >140mg/dl. Statistical analysis was performed with paired t-test and Fishers exact test with significance set at 0.05

Results: 74 patients were included (41 SIM, 33 COM). Gender and DRG did not differ between cohorts (p=0.64). SIM group was older (61.8 vs 50.8 p=0.004) Glycemic variability was significantly less in the COM group (9% vs 15% P=0.04). The frequency of patients with significant hyperglycemia was higher in the SIM group (24/42 vs 9/30, p=0.03). Length of stay trended lower in the COM group (3.9 vs 2.9 days, p=0.079).

Conclusion: These are the first data demonstrating significant improvement in the rate of surgical stress induced glycemic variation with maltodextrin based carbohydrate loading. The use of this solution did not induce preoperative hyperglycemia and is likely better to protect from hyperglycemic episodes in elective colorectal surgical patients than simple sugar based carbohydrate loading.

5. SINGLE STAGE LAPAROSCOPIC MANAGEMENT OF CHOLEDOCHOLITHIASIS: AN ANALYSIS AFTER IMPLEMENTATION OF A MASTERY LEARNING RESIDENT CURRICULUM

B Schwab MD, NJ Soper MD, JH Barsuk MD, MS, ES Hungness MD
Northwestern University
Society: CSA

Purpose: The optimal management of choledocholithiasis remains controversial with the majority of patients currently undergoing laparoscopic cholecystectomy (LC) and endoscopic retrograde cholangiopancreatography (ERCP). In contrast, the use of laparoscopic common bile duct exploration (LCBDE) continues to decline despite evidence demonstrating equivalent efficacy and reduced hospital length of stay compared to ERCP. We evaluated the impact of an LCBDE simulation-based mastery learning (SBML) curriculum on the clinical use of LCBDE and compared clinical outcomes and cost savings for patients who underwent LC+LCBDE compared to LC+ERCP. We also calculated the return-on-investment (ROI) from the SBML curriculum.

Methods: We trained all senior surgery residents using the SBML LCBDE curriculum at Northwestern Memorial Hospital (NMH), a tertiary care academic medical center in Chicago, from June 2012 to June 2015. We calculated the costs associated with the curriculum including simulator construction, equipment, and faculty salary support. Subsequently, we performed a chart review of all patients admitted to NMH with an ICD-9 code for choledocholithiasis requiring treatment from June 2008 to June 2015. We collected demographic and clinical data including patient age, sex, American Society of Anesthesiologists (ASA) class, body-mass index (BMI), admission white blood cell count and total/direct bilirubin levels, hospital costs, morbidity (readmissions or reoperation within 30 days), 30-day mortality, and whether the patient underwent LC+ERCP or LC+LCBDE. We compared hospital length-of-stay and total costs between patients who underwent LC+ERCP and LC+LCBDE.

Results: Since 2012, we trained 15 residents at an annual cost of approximately $3400. Prior to curriculum implementation in 2012, an average of 1.7 LCBDEs were performed each year which increased to 8.4 cases per year after curriculum implementation. All patients who underwent LC+LCBDE had procedures performed by SBML-trained residents after 2012. Over the study period, 155 patients were admitted with choledocholithiasis with 31 patients undergoing LC+LCBDE (7 males, 24 females) and 124 patients undergoing LC+ERCP (33 males, 91 females). No significant differences in demographic or clinical data were noted between groups. LC+LCBDE resulted in a significant reduction in hospital length of stay (2.52 d 4 1.81 vs. 4.32 d 4 2.18, p <0.0001) and average patient costs ($12987 4 3286 vs. $15022 4 4613, p = 0.01) compared with LC+ERCP. Morbidity and mortality were equivalent between groups. Cost savings from teaching residents to perform LC+LCBDE was over $38,000, resulting in a 3.8 to 1 ROI from the SBML curriculum.

Conclusion: Implementation of a SBML curriculum resulted in a significant increase in the clinical use of LCBDE. LC+LCBDE was shown to be more cost effective with a significantly shorter hospital stay compared to LC+ERCP. Institutional adoption of SBML results in significant ROI.

★ 6. ENDOSCOPIC AND HISTOPATHOLOGICAL ANALYSIS OF INCIDENTAL FOCAL COLORECTAL 18 F-FLUORODEOXYGLUCOSE UPTAKE IN PET/CT SCAN: COLONOSCOPIC EVALUATION IS WARRANTED

Valente MA
Cleveland Clinic Foundation
Society: MSA

Objective: Unexpected focal colorectal 18 F-fluorodeoxyglucose uptake has become a common clinical dilemma with the increased use of PET/CT scans for various malignancies. The aim of this study was to identify the clinical significance of incidentally detected colorectal lesions on PET/CT scan for non-colorectal indications by comparing positive PET/CT findings with endoscopic and histopathological analysis.

Methods: A retrospective analysis of a prospectively maintained colonoscopy database at a tertiary referral center was reviewed from February 2011 to November 2016. All patients that underwent a colonoscopy secondary to focal incidental uptake in the colon and rectum on PET/CT were evaluated. Incidental colorectal PET/CT findings were correlated with endoscopic and histopathological results.

Results: A total of 111 patients that underwent colonoscopy secondary to incidental focal colorectal uptake on PET/CT were identified. A total of 27 patients were excluded from the analysis due to a prior diagnosis of colorectal carcinoma (n=14), diffuse 18 F-fluorodeoxyglucose uptake (n=9), missing PET/CT data (n=3), and incomplete colonoscopy (n=1). Correlative endoscopic and histological findings were available in 84 patients. Thirty-one patients (37%), underwent their first colonoscopy. A total of 63 patients had an endoscopic and histological confirmation of the area of abnormality on PET/CT, for a positive predictive value of 75%. Of the 63 patients with a confirmed colorectal lesion, 63 were in the anatomic location suggested by PET/CT. Newly diagnosed colorectal carcinoma was discovered in 13 patients (15.4%). Forty-four patients (52.3%) were discovered to have a premalignant adenomatous lesion that corresponded to focal uptake on PET/CT. In addition, 6 patients (0.7%) were found to have an inflammatory condition of the colorectum (diverticulitis, n = 4; Crohn's disease, n=2). An additional 61 advanced adenomatous lesions were identified in 23 patients that were not visible on PET/CT. In 21 of 84 patients (25%), PET/CT was false-positive, showing normal findings in subsequent endoscopic examinations.

Conclusion: Incidental focal colorectal uptake of 18 F-fluorodeoxyglucose is associated with a substantial risk of underlying neoplastic colorectal lesions. Colonoscopy should be recommended on the PET/CT report and should be performed judiciously in patients suitable for further treatment. Early identification of these lesions may alter patient management and treatment plans.

★ ✢ 7. SURGICAL RESECTION IMPROVES MEDIAN BUT NOT LONG-TERM OVERALL SURVIVAL WHEN COMPARED WITH RADIOTHERAPY IN MERKEL CELL CARCINOMA: A PROPENSITY SCORE MATCHED ANALYSIS OF THE NCDB

GP Wright MD, MP Holtzman MD
University of Pittsburgh Medical Center
Society: MSA

Objective: Radiotherapy has been suggested as a viable treatment alternative to radical surgical resection in merkel cell carcinoma. We sought to compare the outcomes between radiation monotherapy and surgical resection using a population-based analysis.

Methods: Patients from the National Cancer Database (NCDB) 2014 Participant Use File with Merkel Cell Carcinoma were identified. Patients with distant metastatic disease at diagnosis were excluded. The primary treatment modality was identified and coded as a binary variable. Logistic regression was used to generate propensity score estimates accounting for age, Charlson-Deyo score, grade, and AJCC stage. Patients with missing data for any of the propensity score matching variables were excluded. Surgical controls were then matched to radiotherapy patients using a 1:1 closest neighbor schema. Based on the a priori study design submitted to the NCDB, stratified analyses were performed by presence or absence of clinical lymph node metastases.

Results: There were 24,548 patients with local or regional merkel cell carcinoma identified. The median overall survival for localized (AJCC Stage I or II) disease was 132 months (95% CI = 128-137) and 46 months (95% CI = 43-49) for stage III disease. There were 1227 patients who were treated with radiation monotherapy and a matched pair surgical resection patient was achieved for each after propensity score matching. There were no differences between age, Charlson-Deyo score, and grade for the matched groups. For patients with localized disease, median overall survival was 20 months (95% CI = 16-23) in the radiation monotherapy group compared to 30 months (95% CI = 28-32) in the surgical resection group (p=0.430). Five-year overall survival was 15% vs. 8% in the radiation monotherapy and surgical resection groups, respectively. For patients with stage III disease, median overall survival was 13 months (95% CI = 12-14) in the radiation monotherapy group compared with 25 months (95% CI = 23-27) in the surgical resection group (p=0.001). Five-year overall survival was 8% and 3% in the radiation monotherapy and surgical resection groups, respectively.

Conclusion: Surgical resection was associated with improved median but not long-term overall survival when compared with radiation monotherapy in a propensity score-matched population-based analysis.

✢ 8. CAN PARATHYROID HYPERPLASIA BE PREDICTED PREOPERATIVELY?

HH Shi BS, CR McHenry MD
MetroHealth Medical Center
Society: MSA

Objective: Making a diagnosis of parathyroid hyperplasia in patients with primary hyperparathyroidism (HPT) is challenging because localization studies lack sensitivity and intraoperative determination can be problematic. The purpose of this study was to determine if there are clinical features that can raise suspicion for hyperplasia and help ensure appropriate treatment.

Methods: A retrospective review of patients with primary HPT who underwent parathyroidectomy from 1991-2017 was completed. A comparative analysis of age, sex, preoperative calcium and PTH levels, and ultrasound (US) and sestamibi results was completed for patients with hyperplasia and patients with an adenoma.

Results: 570 patients with primary HPT underwent parathyroidectomy, 478 (84%) with an adenoma, 45 (8%) with double adenoma, 44 (8%) with hyperplasia, and 3 (1%) with cancer. Patients with hyperplasia had a lower preoperative calcium level (11.2 4 1.1 vs. 11.5 4 0.9, p=0.049) and lower gland weights (613 4 1000 mg for the largest gland) than patients with an adenoma (1451 4 1915) (p<0.001). 83% of patients with hyperplasia had a negative sestamibi scan compared to 22% of patients with an adenoma (p<0.001). Similarly, US was negative in 93% of patients with hyperplasia compared to 12% of patients with an adenoma (p<0.001). Both studies were negative in 84% of patients with hyperplasia compared to 2% of patients with an adenoma (p<0.001).

Conclusion: Parathyroid hyperplasia should be suspected in patients with mild hypercalcemia, lower gland weights and negative imaging. The likelihood of parathyroid hyperplasia is greatest when both US and sestamibi are negative.

9. SURGICAL SKILLS EVALUATION: DOES IT MANDATE A MEDICAL BACKGROUND?

Muhammad Zeb, Apram Jyot MBBS, Eduardo Abbott MD, Miguel Gomez MD, Nimesh Naik MD, Baloul Mohamed MBBS, David Farley MD
Mayo Clinic
Society: MSA

Objective: At our institution, Surgical Olympics – a biannual assessment of the surgical residents is a key event where residents get an opportunity to receive feedback from the evaluators. From our 10 year-experience of generating and implementing OSCE style assessment scenarios for general surgery residents, we hypothesize that scoring is not affected by the evaluator's experience and medical background.

Methods: A prospective collection of quantitative scoring data by medical graduates (MD or an equivalent) and college students was compared. Each participant underwent training by watching an instructional video on how to score two skills (chest tube insertion and cricothyrotomy) on validated models followed by description of the station models. The participants then watched three videos of actors performing in each of the two stations and scored them. We compared the participants' scoring using two-tailed T-test and non-parametric Wilcoxon signed rank test.

Results: Twelve college students and 16 medical graduates were enrolled. There was no difference in the mean scores between the two groups of each station (chest tube insertion p=0.8, cricothyrotomy p=0.7). For cricothyrotomy, college students gave a mean score of 6.0 4 2.3 vs medical graduates who gave a mean score of 6.1 4 2.2. For chest tube insertion, both college students and medical graduates gave a mean score of 3.6 4 1.9.

Conclusion: No difference in scoring surgical stations exists between the evaluators with and without a medical background. Given the limited availability of attending surgeons for trainee assessments, use of validated, easy to use checklists can be proficiently done by evaluators with minimal medical experience.

10. COMBINATION OF EXTREMELY LOW DOSE CHEMOTHERAPY WITH ATTENUATED SALMONELLA ENTERICA TYPHIMURIUM SIGNFICANTLY DECREASES TUMOR BURDEN IN AN AUTOCHTHONOUS MODEL OF MURINE BREAST CANCER

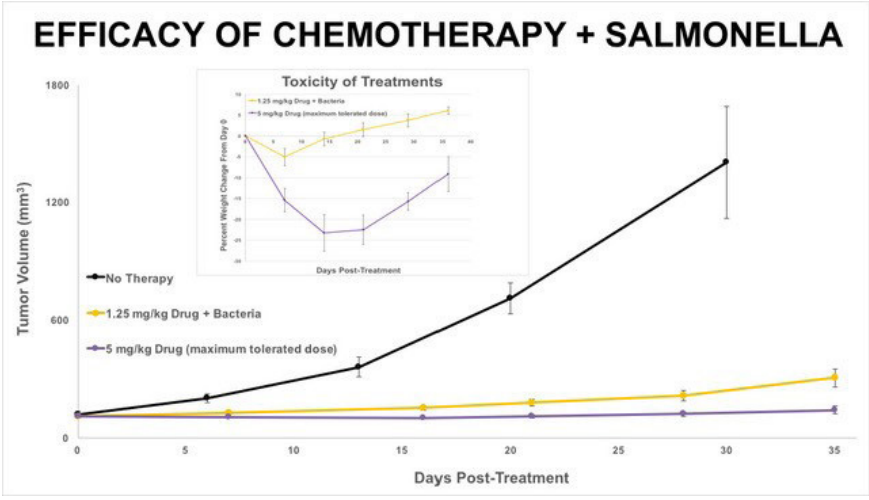
DA Saltzman MD PhD, L Augustin PhD, M Mertensotto BS, AS Leonard MD PhD, J Schottel PhD
University of Minnesota
Society: CSA

Purpose: The mainstay of cancer treatment is chemotherapy with the aim of curing or controlling this disease when using the maximum tolerated dose (MTD). In the last several years, the development of immunotherapies has demonstrated significant promise in this field. However, toxicities and tumor resistance have presented limits to the use of both chemotherapeutic and immunologic agents. Given the recent preclinical evidence for potential synergy of immunotherapy with other treatment modalities, there is significant interest in a combinatorial approach where side effects can be limited with maximal therapeutic outcomes. Our goal is to determine if a combinatorial treatment of a genetically engineered strain of attenuated Salmonella enterica typhimurium (S. Typhimurium) with a reduced amount of chemotherapeutic drug will be as efficacious but less toxic than conventional chemotherapy in an established preclinical tumor model.

Methods: A breeding colony of the BALB-neuT mice was established. This is a genetically engineered mouse model of invasive breast cancer on the BALB/c background that expresses a constitutively active rat Her2 receptor (neu). Breast cancer develops over several months in females and these tumors closely resemble the aggressive Her2-driven cancer found in humans. When tumors became palpable (approximately 16 weeks of age), an attenuated strain of S. Typhimurium was used in combination with doxorubicin at a low dose of 1.25 mg/kg for comparison to S. Typhimurium alone or to doxorubicin alone at 1.25 mg/kg or a high dose of 5mg/kg (MTD). Experiments consisted of IV administration of S. Typhimurium on Day 0 and doxorubicin on Days 0, 7, and 14. To ascertain therapeutic effectiveness, tumors were measured twice weekly and to ascertain toxicity, mice were weighed weekly. Experiments were concluded on day 35.

Results: In untreated mice, tumor size increase 12-fold (1200%) in 30 days and required euthanasia. Administration of MTD doxorubicin demonstrated only 30% tumor growth over the course of the experiment, but there was a nearly 25% weight loss by day 14 revealing severe toxicity (Figure 1). Three doses of low-dose doxorubicin or a single dose of Salmonella limited tumor growth to approximately 50% by Day 16 but increased 4 to 5 fold by day 35. When Salmonella was combined with low dose of doxorubicin, tumor growth was limited to 40% at Day 16 and less than a 3 fold increase by Day 35. Importantly, little or no toxicity was seen with this combination (Figure 1). Heat-killed S. Typhimurium, alone or in combination with low dose doxorubicin, was significantly less effective at reducing tumor burden when compared to the use of live bacteria in combination with low dose doxorubicin.

Conclusion: Genetically Modified S. Typhimurium combined with low dose chemotherapy significantly reduced tumor burden when compared to either treatment alone and was significantly less toxic than MTD chemotherapy in an established murine model of breast cancer.



Demonstration of synergistic effect of Attenuated Salmonella with a 75% reduction in doxorubicin is statistically as effective as MTD doxorubicin when compared to controls. Insert: Toxicity of treatment as indicated by weight loss demonstrating significant weight loss with MTD doxorubicin compared to combination of Attenuated Salmonella with 75% reduction in doxorubicin.

✢ 11. CAPITAL PURCHASES AND THE DOWNSTREAM EFFECTS; A PILOT STUDY OF BREAST CANCER SURGERY INTRA-OPERATIVE SPECIMEN IMAGING

HW Kornfeld BA, TL Spivey MD, A Madrigrano MD, KA Kopkash MD
Rush University Medical Center
Society: MSA

Objective: Capital purchases for the operating room (OR) require significant investment and collaboration between surgeons and the financial officers of the hospital. Rush University Medical Center recently purchased the Kubtec Mozart system for three-dimensional intra-operative breast specimen imaging and is in the process of evaluating data to determine cost savings and patient outcomes. Prior to this purchase, breast specimens were imaged in breast diagnostic radiology with the results called in to the surgeon from the radiologist. This new technology allows breast surgeons to perform a smaller volume of excision with more accurate shave margins owing to immediate analysis of the specimen. The average cost of operating room time is $15 to $20 per minute while the average charge is $62 per minute based on data from U.S. hospitals [1]. Technologies that can improve surgery and safely decrease OR time provide benefit to the patient as well as the institution by providing the highest quality procedure at a reduced cost.

Methods: This pilot study was performed to assess operative times and potential cost savings since implementing the Kubtec Mozart system for intraoperative imaging. A chart review from 2015-2016 for non-palpable lesions requiring wire-localization was used as a comparison group. The type of imaging was investigated as a predictor of OR time.

Results: Table 1: Mean (SD) of OR time (min) by imaging type. Wire localized segmental mastectomy + sentinel lymph node biopsy (N=95) Diagnostic Radiology (N=76) 101.3 (51.4) Mozart (N=19) 93.7 (26.5) Table 2: Mean (SD) of surgical time (min) by imaging type. Wire localized segmental mastectomy + sentinel lymph node biopsy (N=95) Diagnostic Radiology (N=76) 63.3 (20.3) Mozart (N=19) 58.8 (19.0) Table 3: Time saved (min). OR time difference between Diagnostic Radiology and Mozart Wire localized segmental mastectomy + sentinel lymph node biopsy 7.6 minutes

Conclusion: Intraoperative breast specimen imaging decreases operative time when compared to conventional specimen imaging performed in diagnostic radiology. Wire-localized segmental mastectomy with sentinel lymph node biopsy using the Kubtec Mozart system has saved 7.6 minutes per surgery since its implementation at our institution 6 months ago. This time reduction translates into estimated OR cost savings of $114 - $152 per case and a decrease in OR charges to the patient of $471.20 per case based on average national OR cost data [1]. We are encouraged by these early results and anticipate further reduction in OR time as familiarity with the system increases. 3-D intraoperative imaging allows the surgeon to make a more accurate decision regarding targeted shave margins, therefore removing a lower volume of breast tissue which improves cosmesis. We will continue to evaluate our data and anticipate a decrease in re-excision rate using this system. Intraoperative 3-D breast specimen imaging saves money while giving surgeons the highest confidence in their cancer resection, an immeasurable benefit.

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

✢ 12. A NOVEL MODALITY FOR INTRAOPERATIVE MARGIN ASSESSMENT AND ITS IMPACT ON RE-EXCISION RATES IN BREAST CONSERVING SURGERY

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Objective: Negative margins are an important prognostic factor for local recurrence after lumpectomy. Re-excision rates vary substantially however the recently reported average across mulitple instutitions was approximately 25%. A novel device (MarginProbe, Dune Medical) that uses radiofrequency spectrosocopy to algorithmically analyze tissues and differentiate between normal and malignant tissue has been approved for use. The purpose of this study was to compare the re-excision rate before and after the use of the device at our institution. Other topics investigated were the size of the specimen and the number of additional shavings taken to further define the device's impact on the surgery.

Methods: A single center retrospective chart review was preformed. An a priori power analysis was preformed and revelaed a requirement of 240 patients in order to appreciate a signficant change. A consecutive 120 cases prior to and 120 cases after initiation of the probe's use were evaluated. The reliability of the device was determined by comparing post operative pathology reports. Patients included were over 18 years of age, were all candidates for breast conservation therapy, and had not recieved neo-adjuvant therapy.

Results: The two patient populations were similar with respect to the patient's age, tumor pathologic characteristics, and the extent of disease. In the control group twenty-three of 120 patients underent additional surgery for postiive margins. There were nineteen re-excision lumpectomies (15%) and four mastectomies (3.3%). In the device arm eleven out of 120 patients underwent additional surgery for positive margins. There were seven re-excision lumpectomies (5.8%) and four mastectomies (3.3%). In the device arm there was a 61% reduction in re-excisions which reached statistical significance (p=0.033) with an average of 1.5 additional shavings and no difference in the volume of the specimen.

Conclusion: The use of the MarginProbe device with all other modalities employed in intra-operative decision making during a lumpectomy allowed the surgeons to better refine the specimen. In this single institution study we achieved a statistically significant decrease in the number of patients requiring a second surgery. The reduction in re-excision surgeries not only has a profound impact on the patient experience and outcomes but also offsets the cost of the device and could potentially lower the cost of care for this population. More and more data is being collected to further validate the device several studies have been done in the United States since the initial trials. Application of the device in patients with neoadjuvant therapy is yet to be investigated. Also we intend to follow the long term impact of the device by following recurrence rates in this population.

13. A THIRD OF SENTINEL NODE TUMOR POSITIVE MASTECTOMY PATIENTS ARE NOT UNDERGOING COMPLETION AXILLARY NODE DISSECTION

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Purpose: Several randomized controlled trials have demonstrated equivalent survival outcomes in early stage breast cancer patients treated with sentinel lymph node biopsy (SLNB) alone versus axillary lymph node dissection (ALND) but mastectomy patients were either not included or constituted a small percentage of patients. We hypothesized that surgeons are routinely omitting a completion ALND in mastectomy patients with tumor positive sentinel nodes (SNs).

Methods: Using the National Cancer Data Base (NCDB), we analyzed patients with clinical T1/T2 and N0 disease that had 1-3 lymph nodes with micro- or macrometastases that were treated with mastectomy. Nodal dissection was categorized according to FORDS scope of lymph node coding as SLNB, as upfront ALND, SLNB followed by ALND during a single operation or SLNB followed by ALND during a second procedure in 2013-2014. A multivariable logistic regression model was used to identify independent predictors associated with the utilization of SLNB alone in patients with node positive disease.

Results: We identified 6,907 patients who were treated with mastectomy that met the inclusion criteria. 2,134 (30.9%) underwent SLNB alone, while 4,773 (69.1%) underwent ALND. Of those patients who received an ALND, 3,026 (63.4%) underwent ALND at the time of SLNB, 441 (9.2%) underwent ALND with a delay following SLNB, and 1,306 (27.4%) underwent upfront ALND. Of patients with micrometastases, 57.3% underwent SNB alone versus 22.6% of patients with macrometastases ($p<0.001$). 1,808 (84.7%) patients with one positive lymph node received SLNB, compared to 63 (3.0%) patients with three tumor positive nodes ($p<0.001$). 1072 (29.4%) of patients with one tumor positive node with macrometastases had SLNB alone. On multivariable analysis, patients with micrometastases (pN1mi) were significantly more likely to undergo SLNB alone compared to those with macrometastases (pN1) (OR 5.61; 95% CI 4.90-6.42). Increasing number of positive nodes was independently associated with a decreased likelihood of having SLNB alone compared to those with one positive node (OR 0.33; 95% CI 0.28-0.38 for 2 positive nodes; OR 0.16; 95% CI 0.12-0.21 for 3 positive nodes). Older patients were significantly more likely to undergo SLNB alone compared younger patients (OR 1.93; 95% CI 1.27-2.93 for 60-69yo; OR 2.03; 95% CI 1.29-3.19 for 70-79yo), as were patients who received radiation (OR 1.82; 95% CI 1.60-2.08). Patients treated at facilities located outside of New England were significantly less likely to receive SLNB.

Conclusion: A third of mastectomy patients with node positive disease are undergoing SLNB alone; approximately a fifth of patients with macrometastases undergo SLNB alone. Pathologic factors were the strongest independent predictors of SNB alone and facility location was the second strongest factor. These data demonstrate the wide variability in practice patterns for SLNB for node positive mastectomy patients and can inform future clinical trials for this group of patients.

✔14. STAGING BREAST CANCER BY SENTINEL NODE BIOPSY: DO PATIENTS WITH A SINGLE NEGATIVE SENTINEL NODE EXPERIENCE WORSE OUTCOMES THAN THOSE WITH MULTIPLE NEGATIVE SENTINEL NODES?

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Purpose: Sentinel lymph node biopsy (SLNB) for breast cancer has replaced routine axillary node dissection, as SLNB has demonstrated equivalence in clinical efficacy for early breast cancer. Some concern for false negative nodes and associated risks for understaging and under treatment remains. We sought to evaluate whether breast cancer patients with a single negative sentinel node (N=1) removed during SLNB experience worse recurrence-free and/or overall survival compared to patients with two or more negative sentinel nodes (N>1).

Methods: This is an IRB approved retrospective review of 730 women with clinically node-negative breast cancer at a single major institution. The study comprised of 524 patients with greater than one negative SLN (N>1) and 206 patients with only one negative SLN (N=1) who underwent SLNB between 1998 and 2014. Clinicopathologic and demographic data were evaluated with chi square test and multivariate analysis using the Cox Model. Recurrence-free and overall survival were analyzed using the Kaplan Meier method and the log-rank test.

Results: The median follow up for this study was 57 months. There were no statistically significant differences in recurrence-free and overall survival between patients in the N=1 versus N>1 groups (log rank test, p=0.75 and p=0.51, respectively). There was also no difference between the N=1 and N>1 groups in local and distant recurrences (5[2.4%] versus 11[1.9%], p=0.70, 4[1.9%] v 12[2.2%], p=.77), or in cancer-specific death rates (10[4.9%] v 23[4.4%], p=0.86). On multivariate analysis, there was no statistically significant difference in risk of recurrence or death in the N=1 versus N>1 group based on tumor size, histology, race, insurance status, age, and hormone receptor status. There was a statistically significant association between increased tumor size and the finding of more than one SLN intraoperatively (N>1) (chi-square, p=.01).

Conclusion: In staging of the axilla by SLNB, a single negative node did not portend a worse disease-free or overall survival when compared to multiple negative sentinel nodes. Single negative node disease also did not result in more local or distant recurrences. Although removing all identifiable sentinel nodes remains important, it appears that a single negative node is not a harbinger of a worse clinical outcome due to potential for understaging and under treatment.

15. PRACTICE PATTERN VARIATION IN TRACHEOSTOMY AND GASTROSTOMY TUBE PLACEMENT IN TRAUMA PATIENTS: A POTENTIAL FOR QUALITY IMPROVEMENT

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Purpose: Tracheostomy performed in trauma patients is often associated with the need to provide long-term enteral access via gastrostomy tube for nutritional support. The objective of this study was to identify practice pattern variations across hospitals in the frequency of performing simultaneous tracheostomy and gastrostomy tube placement. A secondary aim was to estimate the number of patients that underwent delayed gastrostomy tube placement that could have undergone simultaneous tracheostomy/gastrostomy.

Methods: Using the Healthcare Cost and Utilization Project State Inpatient Database for California (2006-2011), Florida (2006-2013), New York (2008-2013), and Iowa (2009-2013), patients who underwent tracheostomy were identified using ICD-9-CM procedure codes and classified into 3 groups: tracheostomy only, simultaneous tracheostomy/gastrostomy, and delayed gastrostomy. Patient-level data was merged to the American Hospital Association Annual Survey database and practice pattern variation was determined using Chi-squared analysis. The National Trauma Data Bank (NTDB) for years 2006-2011 was utilized to investigate patient-level factors that influence practice patterns using the same inclusion criteria. Recursive partitioning and regression trees were used to create predictive models.

Results: In HCUP SID, 133,980 observations met our inclusion criteria at 350 hospitals. A significant difference ($P=0.04$) in the utilization of a simultaneous tracheostomy/gastrostomy strategy was seen across hospitals. Using NTDB, 47,126 observations were identified, 22,497 were tracheostomy only, 15,209 were simultaneous tracheostomy/gastrostomy, and 7,146 were delayed gastrostomy. Patients undergoing simultaneous tracheostomy/gastrostomy had shorter lengths of stay (31.4 vs. 37.0 days, $P<0.001$) and fewer ICU days (20.1 vs. 23.1 days, $P<0.001$) than those with delayed gastrostomy. A total GCS $\leq$ 12, blunt mechanism of injury and a systolic blood pressure > 120 mmHg were the most influential factors in models predicting patients that could receive a simultaneous tracheostomy/gastrostomy (63% accuracy, 76% sensitivity, and 42% specificity). This model estimated that 2,702 (38%) patients that underwent delayed gastrostomy could have undergone simultaneous tracheostomy/gastrostomy tube placement.

Conclusion: Significant variation exists across hospitals in the use of simultaneous tracheostomy/gastrostomy tube placement in trauma patients. Of patients that received a delayed gastrostomy tube, over 1/3 may have been eligible for a simultaneous operation. Increasing the use of simultaneous tracheostomy/gastrostomy in selected patients is a potential quality improvement target.

✢ 16. COAGULATION PROFILE FOLLOWING LIVER RESECTION; DOES LIVER CIRRHOSIS AFFECT THROMBELASTOGRAPHY?

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Objective: HEPATECTOMY IS OFTEN ASSOCIATED WITH AN ELEVATED PROTHROMBIN TIME-INTERNATIONAL NORMALIZED RATIO. HOWEVER IT IS UNCLEAR IF THIS REPRESENTS A COAGULOPATHY. THROMBELASTOGRAPHY MONITORS BOTH INTRINSIC AND EXTRINSIC PATHWAYS AND THEREFORE PROVIDES A FUNCTIONAL ASSSESMENT OF THE CLOTTING CASCADE. THE OBJECTIVE OF THE STUDY WAS TO DETERMINE THE TEG PROFILE FOLLOWING LIVER RESECTION IN NORMAL AND CIRRHOTIC LIVERS.

Methods: Patients undergoing liver resection were prospectively enrolled in the study. Perioperative variables were obtained and the TEG AND PT/INR were obtained preoperatively, post-operatively (POD 0), and on POD 1,3 and 5.

Results: Nineteen patients were enrolled with a median age of 61, 7 patients had cirrhosis (36%), 40% underwent major hepatectomy, median EBL was 275ml, and the median length of stay was 6 days, with a major morbidity of 15% and no mortality. Postoperatively the TEG profile demonstrated a hypercoagulable profile in 80%, 50 %, 50% and 72% of patients on POD 0, 1, 3 and 5 respectively. There was no difference between patients with cirrhosis and those without underlying liver disease. Despite multiple elevations in PT/INR in all the time points there was no concordance with the TEG profile.

Conclusion: The TEG profile demonstrated a hypercoagulable profile in majority of patients undergoing liver resection despite an elevated PT/INR. Patients with cirrhosis appear to have a similar hypercoagulable profile after liver resection

✔17. THE PATIENT PROTECTION AND AFFORDABLE CARE ACT: IMPACTS ON AN OHIO LEVEL I TRAUMA CENTER THREE YEARS AFTER IMPLEMENTATION

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Purpose: The purpose of this study is to analyze how the insurance coverage for the population and reimbursement rates at an Ohio Level 1 trauma center have been affected since before the PPACA was implemented in 2014 until 2016. It will build upon previous work from the trauma center. This study is particularly pertinent within a political background where the feasibility of the PPACA and whether it will be fully or partially replaced is currently being debated. This study analyzes direct patient charges versus reimbursement rates to the hospital by payer type (commercial, Medicare, Medicaid, other governmental insurance, and uninsured) to see how trends in insurance coverage as well as reimbursement changed in the past five years.

Methods: This study abstracted the trauma center charges, reimbursement rates, and case numbers for an Ohio level 1 trauma center from fiscal year 2012 through June of 2016. Patients were grouped into commercial, Medicaid, Medicare, other government insurance, and self-pay/charity. Charges, reimbursement rates, and changing trends in payer type were compared over a five year patient cohort (2012-2016). All patients admitted to the trauma department at the level 1 trauma center were included (a total of 16,462 patients over five years). Data was collected with the Transition Systems Inc. accounting system and analyzed with IBM SPSS Statistics.

Results: For trauma cases, the percentage of self-pay/charity patients decreased from the 2012 to 2016 period (15.1%, to 4.0%), while the percentage of Medicaid increased from 2012 to 2016 (15.4%, to 26.5%). The percentage of commercially insured patients decreased from 2012 to 2016 (34.2 to 28.9). Uninsured charges decreased notably (approximately $22.5 million and $21 million for 2012-2013 to approximately $8.6 million, $7.1 million, and $5.1 million for 2014, 2015, and 2016, respectively). Medicaid charges decreased from 2012-2013 but were followed by a large increase from 2014-2016 ($54.3 million, $57.9 million, and $61.6 million for 2014, 2015, and 2016, respectively). Over this same period, the percentage of total charges for self-pay/charity decreased by 7%, while the percentage of total charges for Medicaid increased by 6%. Mean Medicaid reimbursement per patient additionally decreased $8,000 from 2012-2016.

Conclusion: This trauma center's self-pay/charity charges decreased dramatically in the 2 years following the implementation of the PPACA, and Medicaid charges increased substantially. It is worth noting that the number of commercially insured patients decreased by approximately 5.3% from 2012 to 2016. Although representing data from only one Level 1 trauma center, this study could be used to build a more comprehensive understanding of the financial impact the PPACA has on America's hospitals.

✢ 18. SEEING THE FOREST BEYOND THE TREES: PREDICTING SURVIVAL IN BURN PATIENTS WITH MACHINE LEARNING

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Objective: Burn patients require complex care involving a delicate balance between resuscitation, stabilization and rehabilitation. While multiple studies have explored the factors predicting mortality, our study aims to identify predictors of survival at the patient and hospital level using advanced machine learning techniques.

Methods: The Healthcare Cost and Utilization Project (HCUP) State Inpatient Database (SID) for California, Florida and New York was used to identify patients admitted to the hospital with a burn diagnosis. These data were merged with hospital data from the 2011 American Hospital Association (AHA) Annual Survey. Random forest sampling, stochastic gradient boosting, and logistic regression models were used to identify predictors of survival. Model performance was assessed using sensitivity, specificity, and area under the Receiver Operator curve. Patient and hospital predictors of survival were determined from the highest performing model.

Results: We analyzed 31,350 patients from 670 hospitals, finding stochastic gradient boosting (AUC .93) and random forest (AUC .82) best identified patient and hospital predictors of survival respectively. Age, length of stay, and absence of coagulopathy or electrolyte abnormalities predicted survival in this population (all with $p<0.001$). Hospital predictors of survival included higher number of full time residents ($p<0.001$), full time registered nurses ($p=0.004$), high inpatient surgical operations ($p=0.022$), high total admissions, and number of ICU beds ($p=0.0002$).

Conclusion: Both patient and hospital factors are predictive of survival in the burn population. While it is often difficult to control patient level factors, hospital factors can inform decisions about where burn patients should be treated, as hospitals with these factors are better equipped to successfully care for burn patients with subsequent favorable outcomes.

19. IS IT SAFE TO DISCHARGE GERIATRIC TRAUMA PATIENTS WITH ANEMIA?

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Objective: Although a restrictive approach to blood transfusion is an accepted practice in critically ill patients, we sought to determine whether discharging anemic geriatric trauma patients had adverse consequences.

Methods: Patients ≥ 65 years were reviewed retrospectively in a 10-month period. The following were recorded: admissions in the preceding six months, admission hemoglobin (HbA), discharge hemoglobin (HbD), blood loss magnitude (HbD-HbA), and the difference between the lowest hemoglobin (HbL) and HbA (HbL-HbA). Severity of anemia (g/dl) was categorized as mild (>10.0), moderate (≤10.0, >8.5) and severe (≤8.5). The primary and secondary outcomes were respectively, death and any unplanned admission occurring up to 60 days after discharge. Multivariable regression was used to evaluate if anemia predicted outcomes.

Results: 547 patients (median age 82 years) were enrolled. The primary outcome occurred in 11% and the secondary outcome in 18%. Both HbD (mild, 24/332 [7%] vs moderate, 24/162 [15%] vs severe, 11/53 [21%], p=0.002) and HbA (mild, 42/471 [9%] vs moderate, 10/58 [17%] vs severe, 7/18 [39%], p=0.0001) correlated with the primary outcome, but not (HbD-HbA) or (HbL-HbA). Similarly, HbA and HbD, but not (HbL-HbA) or (HbD-HbA) were associated with the secondary outcome. HbA predicted the primary outcome (odds ratio 0.81), but not HbD. Admission in the preceding 6 months but not HgA or HbD predicted the secondary outcome.

Conclusion: Severity of anemia at discharge and the degree of blood loss did not predict adverse outcomes, while anemia at admission and recent admission did. Efforts should be targeted at optimizing underlying comorbidities rather than correcting anemia at discharge.

✦ 20. EVALUATING THE REPEAL OF MICHIGAN'S UNIVERSAL HELMET LAW ON TRAUMATIC BRAIN INJURY

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Objective: In April of 2012, Michigan repealed its 35-year-old mandatory motorcycle helmet law in favor of a partial helmet law. The objective of this study is to evaluate the clinical impact of this legislative change on traumatic brain injury (TBI) and mortality in the state of Michigan.

Methods: The Michigan Trauma Quality Improvement Program's (MTQIP) trauma database was queried for motorcycle crash patients between January 1, 2009 and April 12, 2012 (before the legislative change) and between April 13, 2012 and December 31, 2014 (after the legislative change). Data from 29 level 1 and 2 trauma centers from the state of Michigan was included. ICD-9CM diagnosis codes, Glasgow coma scale (GCS), and Abbreviated injury scores – head and neck (AIS-HN) were used to identify TBI patients. Primary payor source was also determined.

Results: A total of 4,643 motorcycle trauma patients were identified. One thousand nine hundred seventy motorcycle trauma patients were included in the pre-repeal analysis (1/1/09 – 4/12/12) and 2,673 patients were included in the post-repeal analysis (4/13/12 – 12/31/14). Demographic data were similar between the two groups. Following the helmet law repeal, the proportion of unhelmeted motorcycle trauma patients increased, from 20% to 44% ($p<0.001$). The proportion of patients with TBI increased significantly after the law was repealed. There was an increase in TBIs based off ICD-9 CM codes (RR 1.2, $p<0.001$). There was also an increase in the moderate to unsurvivable AIS-HN scores (AIS-HN 2-6) (RR 1.1, $p=0.025$). Patients presenting to trauma centers after repeal of the universal helmet law were more likely to require neurosurgical intervention (RR 1.4, $p=0.011$) than those presenting before the helmet law repeal. External ventricular drains and intracranial pressure monitors were analyzed individually, and their placement was found to be significantly higher after repeal (RR 1.4, $p=0.029$). There was no significant difference in hospital mortality between the two groups (RR 1.0, $p=0.838$). Patients presenting after the repeal were less likely to have commercial insurance ($p=0.035$) and were more likely to be uninsured ($p<0.001$).

Conclusion: Following the repeal of the Michigan universal helmet law, there has been a significant increase in traumatic brain injuries and neurosurgical interventions for TBI patients in our state. This analysis highlights another detrimental impact of the repeal of the universal helmet law. We urge legislators to evaluate the impact of this legislation on human life as they identify opportunities to protect our citizens and make our roads safer.

21. CAN ENHANCED RECOVERY IN EMERGENCY CASES PROTECT AGAINST POST-OPERATIVE PNEUMONIA AND LOWER THE RATE OF RE-INTUBATION?

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Purpose: The purposes of this study were to identify the patient-related risk factors for re-intubations and observe the effect of Enhanced Recovery Protocols (ERPs) on post-op pneumonia and post-op re-intubations.

Methods: Patients that underwent surgery at CRMH between 04/01/12 and 03/31/14 and were selected for inclusion in NSQIP were gathered to identify the risk factors for re-intubation. Data included demographics, comorbidities, operative factors, and 30-day post-op outcomes. Forward stepwise selection logistic regression was performed to identify risk factors. To investigate the effect of ERPs on re-intubation, a control group consisting NSQIP patients between 09/01/12 and 08/31/13 (prior to the introduction of ERPs) was compared to an experimental group consiting NSQIP patients between 08/01/15 and 10/31/16. Patients were further divided into four groups: emergent non-ERP (E-NER), emergent ERP (E-ER), non-emergent non-ERP (NE-NER), and non-emergent ERP (NE-ER). Occurrence of post-op pneumonia and re-intubation among the four groups were compared using the Fisher's Exact Test.

Results: Post-op pneumonia (OR = 12.1), ventilation > 48 hours (OR = 53.4), and cardiac arrest requiring CPR (OR = 33.5) were associated with re-intubation. Variables such as COPD, pulmonary embolus and sepsis had no significant association. The number of patients in the E-NER, E-ER, NE-NER, and NE-ER groups were 228, 6, 2680, and 154, respectively. The post-op pneumonia rates for emergency procedures in non-ERP patients were 10.0% vs 0% in ERP patients (chi-square = 1 at $p < 0.05$). For elective patients the rates were 1.0% vs 0% (chi-square = 0.63 at $p < 0.05$). The re-intubation rate was similarly reduced for emergency ERP patients to 1.0% vs 10% for non-ERP patients (chi-square = 1 at $p < 0.05$). There was no difference in the elective patients at 1.0% in each group (chi-square = 0.36 at $p < 0.05$).

Conclusion: Most re-intubations were in the E-NER group. Post-op pneumonia, ventilation > 48 hours, and cardiac arrest requiring CPR were associated with re-intubations. Our data suggest the potentially beneficial effect of ERPs on pneumonia and re-intubation in the emergency population. More data are needed to have an adequate sample size to verify the benefits.

22. EMERGENCY DEPARTMENT THORACOTOMY IN TRAUMA PATIENTS: HOW OLD IS TOO OLD?

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Purpose: There is ongoing controversy surrounding the practice of emergency department (ED) thoracotomies in trauma patients, with an overall low survival rate and risk of injury to the healthcare team. We hypothesized that mortality rate increases with age and that at some age, the chance of survival will reach zero.

Methods: Using the National Trauma Data Bank (NTDB) for years 2008-2012, observations with ICD-9-CM procedure codes for exploratory thoracotomy and penetrating mechanism were identified. ED thoracotomies were defined as any observation that occurred at a time to procedure less than the total time spent in the ED, and within 15 minutes of arrival. Observations were stratified by decade (<18 years, 18-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80-89) and mortality rates were calculated for each age group.

Results: 11,380 observations with ICD-9-CM procedure codes for thoracotomy were identified. Of these observations, 2,651 were Emergency Department thoracotomies, and 2,091 observations were identified as having penetrating mechanisms of injury. 139 observations were identified as <18 years of age, 1,041 as 18-29 of age, 458 as 30-39 years of age, 251 as 40-49 years of age, 137 as 50-59 years of age, 47 as 60-69 years of age, 12 as 70-79 years of age, and 5 as 80-89 years of age. Mortality rates for each age group were 94.2% for <18 years of age, 91.7% for 18-29 of age, 92.1% for 30-39 years of age, 91.2% for 40-49 years of age, 92% for 50-59 years of age, and 100% for all observations 60 years of age and older.

Conclusion: The mortality rate for emergency department thoracotomy in trauma patients with penetrating mechanisms of injury reaches 100% at age 60 and above. This suggests that ED thoracotomies in this population confer no benefit and should not be performed.

23. RISK-ADJUSTED REGIONAL OUTCOMES IN ELECTIVE MEDICARE COLON SURGERY

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Objective: Census regions are used now for pricing alternative payment models by the Centers for Medicare and Medicaid Services (CMS) based upon historical payments. Variations in outcomes of care in the recent past will influence pricing strategies in prospective bundled payments for each surgical or medical category.

Methods: We used the CMS Limited dataset for 2012-14 for elective colorectal CR) surgery to define logistic prediction models for the Adverse Outcomes (AOs) of inpatient mortality, 3-sigma prolonged length-of-stay outliers, 90-day post-discharge deaths without readmission, and 90-day readmissions after unrelated readmissions were excluded. These predictive models were applied to each of the nine Census Regions of U.S: Region 1 (New England); Region 2 (Middle Atlantic); Region 3 (South Atlantic); Region 4 (East South Central); Region 5 (West South Central); Region 6 (East North Central [Illinois, Indiana, Michigan, Ohio, Wisconsin]); Region 7 (West North Central); Region 8 (Mountain); and Region 9 (Pacific). Total Observed and Predicted Adverse Outcomes were identified in each region, and region-specific standard deviations of predicted values were determined to permit calculation of variation from national norms (z-scores) for each region. Risk-adjusted AO rates were then computed by multiplication of the (national AO rates) times (observed AOs divided by predicted AOs) for each Region.Results: The national sample identified 86,624 CR patients from 1,497 hospitals. The national AO rate for all patients was 24.3%. Region 3 had the most patients (n=19,912) and the most hospitals (n=315). Region 8 had the least number of patients (n=3,640) and the fewest hospitals (n=71). The best z-scores were in Region 9 (-3.06) and Region 6 (-1.75). The poorest z-scores were in Region 1 (+1.84), Region 4 (+1.68) and Region 3 (+1.25). The best risk-adjusted AO rate was Region 9 (22.9%); the poorest risk-adjusted AO rate was in Region 1 (25.4%).

Conclusion: Nearly a 5-standard deviation variability exists in risk-adjusted AO rates among the Regions of the U.S. for Medicare elective colorectal surgery. Differences in historical expenditures by region will likely parallel differences in AO rates. Strategies in prospective bundled payments will need to equitably redistribute payments to correct for potential over-payments in Regions with suboptimal outcomes performance.

24. HOW COST EFFECTIVE IS ENDOSCOPIC SUBMUCOSAL DISSECTION IN REMOVING LARGE COLORECTAL POLYPS? A COMPARISON WITH LAPAROSCOPIC COLECTOMY

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Purpose: Colonoscopic polypectomy is the most cost effective way of controlling colorectal neoplasia. However, some polyps are not suitable for conventional colonoscopic techniques. Previously such patients underwent colorectal resection but recently advanced endoscopic techniques such as combined endoscopic and laparoscopic surgery and endoscopic submucosal dissection (ESD) have been used. Because of the costs involved, the relative effectiveness of the options has been called into question. The aim of our study is to compare the outcomes of patients who underwent ESD with those of patients who underwent laparoscopic colectomy for benign colorectal polyps not amenable to conventional endoscopic removal.

Methods: Patients with an endoscopically benign colorectal polyp deemed inappropriate for conventional endoscopic removal and underwent ESD or colectomy between 2011 and 2016 were identified from an institutional review board approved prospectively maintained, cancer and outcomes database. Patients were case matched for age, gender, BMI, ASA, polyp size and location. Clinical outcomes and cost data were compared. Polyps at and proximal to the splenic flexure were deemed right-sided and polyps distal to the splenic flexure were deemed leftsided. Cost analysis included direct costs for the procedure and all procedure-related issues (hospital stay, complications).

Results: We identified 144 patients in the laparoscopic resection group (Group A) and 111 patients in the ESD group (Group B): 48 patients were matched (Table 1). All polyps were initially diagnosed as benign. Two patients in Group A had adenocarcinoma on final pathology. In Group B, 5 patients required surgical resection(10.4%). 2 had intraoperative full thickness defects, 1 had an intraoperative frozen section positive for adenocarcinoma, one was not amenable to ESD resection and one patient on follow up colonoscopy 9 months later was found to have serrated polyposis. Mean length of stay in Group A was 5.2 (42.4) days vs. 1.5 (41.4) in Group B ($p:<0.001$). Mean operative time for Group A was 136 minutes (445) vs. 132.9 (472.7) minutes for Group B ($p>0.05$). In Group A, 6 patients had follow up colonoscopy within a year vs. 22 patients in Group B. In Group A 10/48 (21%) had complications vs. 7/48 (15%) in Group B ($p>0.05$). Complications in Group A included small bowel obstruction(SBO), intrabdominal abscess and bleeding not requiring re-operation, while in group B, complications included a contained perforation managed conservatively, SBO, post procedural bleeding, and full thickness perforations managed intra-operatively. ESD had a 43% cost reduction advantage over laparoscopic colectomy with a 44% and 39% cost advantage for right and left sided lesions respectively.

Conclusion: ESD is more cost effective than conventional segmental resection, and can be offered as a colon preserving procedure.

Table 1: Matching Criteria			
	ESD (n = 48)	Laparoscopic (n = 48)	*p*
Age	65.44 (±9.52)	65.81 (±8.57)	0.8
Gender (n (%))			1.0
Male	27 (56.2%)	27 (56.2%)	
Female	21 (43.8%)	21 (43.8%)	
BMI	28.52 (5.13)	28.81 (5.29)	0.7
ASA			1.0
I	0 (0.0%)	0 (0.0%)	
II	15 (31.2%)	15 (31.2%)	
III	32 (66.7%)	32 (66.7%)	
IV	1 (2.1%)	1 (2.1%)	
Polyp Location			1.0
Right Colon	41 (85.4%)	41 (85.4%)	
Left Colon	7 (14.6%)	7 (14.6%)	
Polyp Size (cm)	2.78 (±0.91)	2.88 (±0.98)	0.6

25. OUTCOMES OF RECTAL RESECTION FOLLOWING NEOADJUVANT THERAPY IN THE 'ELDERLY': CAN RECTAL CANCER PATIENTS BE TOO OLD FOR A NEOADJUVANT APPROACH?

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Objective: Neoadjuvant therapy has improved outcomes of resection for rectal cancer including increased sphincter preservation (SP) and decreased local recurrence (LR), however, there is little published data regarding outcomes in an 'elderly' population of patients, defined as greater than or equal to 70 years of age.

Methods: A retrospective review of 109 consecutive patients , 74 patients < 70 years of age (Group 1) vs 35 'elderly' patients (Group 2), who underwent neoadjuvant therapy for rectal carcinoma followed by open resection of the rectum between 1999 and 2010. Neoadjuvant therapy was completed by 103/109 total patients: Group 1- 73/74 patients (99%) and Group 2- 30/35 patients (86%). Group 1 patients had a lower American Society of Anesthesiologists (ASA) classification (Group 1- 60% ASA I/II vs Group 2- 75% ASA III/IV).Results: The mean tumor distance from the anal verge, time for operation, time to tolerating diet , hospital length of stay and readmission rate were not statistically significantly different between the 2 groups. Group 1 patients had an increased rate of pathologic complete response (CR) or TNM stage ypT0N0M0 (Group 1-27%, Group 2- 6%, p= 0.003), increased SP (Group 1- 64% vs Group 2- 40%) and decreased 30 day operative mortality (Group 1- 1%, Group 2- 11%, p= 0.02). Surgery-specific complications occurred in 22% of Group 1 patients vs 6% of Group 2 patients (p= 0.04). R0 resection was accomplished in 94% (Group 1- 96% vs Group 2- 91%). For patients who underwent a R0 resection, the overall recurrence rate for Group 1 was 12% (LR- 1%, distant recurrence- 11%) vs Group 2 at 9% (LR- 6%, distant recurrence- 3%). Overall survival (OS) for Group 1 was 85% and disease-free survival (DFS) was 80% vs 63% and 60%, respectively, for Group 2. Kaplan-Meier analysis revealed a statistically significant increase in OS for Group 1. The median length of follow-up was 6.3 years.

Conclusion: Neoadjuvant therapy for 'elderly' patients with adenocarcinoma of the rectum was safely administered with similar rates of R0 resection and LR, however, the younger patient population had an increased SP rate and a statistically significant increase in OS and pathologic CR rate along with decreased 30-day operative mortality. Measures to diminish the potentially negative consequences of neoadjuvant therapy imposed on an 'elderly' population of patients, such as varying neoadjuvant therapy (e.g. radiotherapy alone) and expectant postoperative management of dehydration for patients with SP including a diverting ileostomy (the most common reason for 30 day readmission), warrant further study.

26. DO BIOLOGICS INCREASE THE INCIDENCE OF DYSPLASIA AND CANCER IN PATIENTS WITH CHRONIC ULCERATIVE COLITIS?

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Purpose: Chronic ulcerative colitis (UC) is associated with an increased risk of dysplasia and colorectal carcinoma (CRC). Biological therapy has emerged as an option for selected cases in induction and maintenance of treatment in UC since 2005. Concern has been raised about a possible associated of biologic use with risk of neoplasia. The aim of this study was to evaluate the effects of biologics on dysplasia and CRC rates before and after the use of biologics.

Methods: Data on all patients with UC who underwent surgery from 2005 to 2015 were evaluated from a prospectively maintained institutional database. Patients who received biologics and those who did not receive biologics were analyzed and dysplasia associated colitis rates were compared. Patients with UC and preoperative diagnosis of CRC, Crohn's disease, indeterminate colitis were excluded.

Results: There were total of 640 patients; with an overall male predominance of 58.0%, mean age of 40.9 4 14.1 years. 300 patients (46.9%) received biologics and 340 patients (53.1%) did not receive biologics. Out of 300 patients who received biologics, 75.0% were on Infliximab, 23.3% were on Adalimumab, 1.4% on Vedolizumab and 0.3% on Certolizumab ($p<0.001$). Preoperative high grade dysplasia (HGD) was 24.1% vs. 41.4%, low grade dysplasia (LGD) 69.0% vs. 56.9%, and indefinite dysplasia was 6.9% vs. 1.7% for those who received biologics vs. who did not ($p=0.19$). Patients who received biologics were found to have significantly lower rates of cancer, HGD, LGD (Table). The mean number of years until the diagnosis of dysplasia from initial UC diagnosis was 10.53 4 6.25 in patients who received biologics vs. 15.45 4 10.85 in patients who did not, ($p=0.023$).

Conclusion: Use of biologics was associated with lower rates of dysplasia and cancer. This tends to quell concerns about more aggressive neoplasia in these patients, although duration of disease was shorter in the biologic group. Longer follow-up is needed.

27. MODIFIED FRAILTY INDEX PREDICTS MORBIDITY AND MORTALITY IN PROCTECTOMY AND CYSTECTOMY PATIENTS: A RETROSPECTIVE STUDY

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Purpose: Patients undergoing pelvic surgery such as proctectomy or cystectomy are at risk of experiencing a variety of complications. Preoperative frailty may render patients more vulnerable to adverse events. We hypothesize that increased frailty, measured preoperatively using a validated scoring system, correlates with increased likelihood of experiencing adverse post-operative outcomes including Clavien Dindo grade IV complications and 30-day mortality, and thus may be used as a predictive model for patients undergoing pelvic surgery.Methods: The National Surgery Quality Improvement Program database was queried to identify patients who underwent proctectomy or cystectomy from 2008-2012 using Current Procedural Terminology codes. Preoperative frailty was calculated using the validated 11-point modified frailty index (MFI), derived from the Canadian Study of Health and Aging. Patients were given a score of out of 11 for presence of indicators and categorized into two groups; patients with scores less than 3 and patients with scores of 3 or greater. Major postoperative morbidities were identified in each group, and a statistical analysis was performed.Results: A total of 10,048 proctectomy and cystectomy patients were identified. Patients with ASA class V, preoperative sepsis, coma, ventilator dependency, or disseminated cancer were excluded. Patients who had a previous operation within 30 days or were transferred from an outside facility were also excluded, as were any patients undergoing an emergent operation. Baseline patient factors of age, sex, race, ASA classification, BMI, >10% weight loss, chronic steroid use, alcohol use, and preoperative labs including albumin, creatinine, hematocrit, white blood cell count were identified. In comparing the two groups, patients with MFI score of three or greater were found to have significantly more unplanned intubations (OR 3.5095, 95%CI 2.2793-5.437, p<0.0001), failure to wean off the ventilator (OR 4.3577, 95%CI 2.8357-6.6966, p<0.0001), renal failure (OR 2.7284, 95%CI 1.1642-6.3940, p=0.0209), myocardial infarction (OR 3.807, 95%CI 2.0521 to 7.0626, p<0.0001), and septic shock (OR 1.97, 95%CI 1.0562 - 3.6745, p=0.033). Patients with an MFI of three or greater also had significantly higher rates of 30 day mortality (OR 4.0751, 95% CI 2.5098 - 6.6168, p<0.0001).

Conclusion: An MFI score of 3 or greater is associated with increased risk of serious complications and 30-day mortality, and may be of use as a predictive model in patients undergoing pelvic surgery such as proctectomy and cystectomy. With an aging population, providers should be encouraged to calculate frailty preoperatively to predict potential serious adverse outcomes.

Clavien Dindo IV/V complications	OR	95% CI	*p* value
Unplanned intubation	3.5095	2.2793 to 5.437	<0.0001
Failure to wean	4.3577	2.8357 to 6.6966	<0.0001
Renal failure	2.7284	1.1642 to 6.3940	0.0209
Myocardial infarction	3.807	2.0521 to 7.0626	<0.0001
Septic Shock	1.97	1.0562 to 3.6745	0.033
30 day mortality	4.0751	2.5098 to 6.6168	<0.0001

28. WHICH BOWEL PREPARATION STRATEGY IS MOST EFFECTIVE IN REDUCING COMPLICATIONS FOLLOWING ELECTIVE COLECTOMY?

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Purpose: The optimal strategy for bowel preparation prior to elective colectomy remains heavily debated. Many surgeons advocate for a full mechanical bowel preparation with oral antibiotics to reduce colonic bacterial load. However, modern enhanced recovery protocols discourage the use of mechanical bowel prep. Additionally, the differing bowel preparation strategies have not been investigated in right vs. left colectomy procedures. Four strategies of preparation are available: 1: no mechanical or oral antibiotic prep (NP), 2: mechanical prep without oral antibiotics (MP), 3: oral antibiotics without a mechanical prep (PO), 4: oral antibiotics and mechanical bowel preparation (PO/MP). We sought to investigate whether the choice of bowel preparation impacts surgical site infection and anastomotic leak following elective colectomy.

Methods: A retrospective review of elective colectomies with anastomoses from the NSQIP colectomy database from 2012-2015 was performed. Patients were divided into right, segmental (not otherwise specified), and left colectomy groups using CPT codes and univariate and multivariate logistic regressions were performed to determine predictors of surgical site infection (SSI) and anastomotic leak including patient factors, operative approach and pre-operative bowel preparation strategy. SSI was defined as any superficial, deep, or organ space surgical site infection. Anastomotic leak was any anastomotic leak requiring intervention with either percutaneous drainage, or return to the OR.

Results: A total of 45,436 patients were studied. Overall, older, male patients with more comorbidities who underwent open operations were at higher risk for both wound infections and leaks. When controlling for confounding factors with multivariate regression, regardless of whether a right colectomy, segmental colectomy, or left colectomy was performed, the strategy of oral antibiotics and mechanical prep (PO/MP) resulted in the lowest incidence of both anastomotic leak and surgical site infection ($p<0.01$). (Figure).

Conclusion: This study demonstrates that the strategy of preoperative oral antibiotics with full mechanical bowel preparation reduces both surgical site infection and anastomotic leak compared to all other preparation strategies. This relationship was consistent regardless of which segment of colon was removed. This data strongly suggests that oral antibiotics with mechanical bowel preparation is the optimal form of bowel preparation for elective colectomy.

29. LONG TERM OUTCOMES FOLLOWING ILEAL POUCH-ANAL ANASTOMOSIS IN PATIENTS WITH INDETERMINATE COLITIS

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Purpose: Indeterminate colitis (IC) is present in up to 15% of colectomy specimens for inflammatory bowel disease (IBD) when pathology cannot clearly differentiate between ulcerative colitis (UC) and Crohn's colitis. Surgeons are challenged regarding the advisability of ileal pouch anal anastomosis (IPAA). Our aim was to determine long-term outcomes in IC patients who underwent IPAA, including the need for reoperation, development of Crohns-like symptoms, pouch function and quality of life (QOL).

Methods: Consecutive IC patients who underwent colectomy for presumed UC from 1984-2014, diagnosed by a specialist GI pathologist based on the colectomy specimen, were followed in a prospectively maintained database. Long-term behavior was defined as "Crohn's disease (CD)-like" in cases that developed clear signs of CD such as fistulas and fibrostenosing disease, and "ulcerative colitis (UC)-like", according to the most recent clinician assessment. Long-term function was assessed using the Cleveland Quality of Life Score (CQLS) and the Pouch Functional Score (PFS).

Results: Fifty-six patients were included, with a mean of 14 (SD 47) years follow-up. Thirty-nine percent of patients developed CD-like behavior, and 61% had UC-like behavior (Table). Both groups experienced a high rate of pouchitis (57%). CD-like patients required more immunosuppressive medications for symptom control (95% vs 18%, $p<0.001$), dilatations for afferent limb strictures (41% vs 0%, $p<0.001$), and pouch re-operations (32% vs 6%, $p=0.02$). Four patients required pouch excision, all with CD-like behavior. In the 33/56 patients with an intact pouch who responded as to their current functional status, the mean PFS was 10.7 (SD 5.1) of a maximum of 30 [worst function], and did not differ between the two groups.

Conclusion: The majority of patients diagnosed with IC have good long-term function following IPAA. About 40% will eventually exhibit CD-like behavior, necessitating additional treatment. However, even among these patients the majority will have acceptable function and QOL. Given these results, even with the ambiguity of IC, surgeons should not hesitate offering IPAA to their patients with severe colonic IBD.

Outcome		Total Patients N = 56		UC-like Behavior N = 34		CD-like Behavior N = 22		*p-value
Pouch complications								
		No.	%	No.	%	No.	%	
Pouchitis – Recurrent/Chronic	Yes	32	57	19	56	13	59	0.968
	No	24	43	15	44	9	41	
Afferent limb stricture (requiring dilatation)	Yes	9	16	0	0	9	41	**<0.001**
	No	47	84	34	100	13	59	
Pouch re-operation (revision or excision)	Yes	9	16	2	6	7	32	0.022
	No	47	84	32	94	15	68	
Long-term requirement for anti-inflammatory/immunomodulatory medications following IPAA								
Any medication	Yes	26	48	6	18	20	95	**<0.001**
	No	28	52	27	82	1	5	
5-ASA	Yes	4	7	2	6	2	10	0.638
	No	50	93	31	94	19	90	
Steroids	Yes	7	13	3	9	4	19	0.408
	No	47	87	30	91	17	81	
Anti-metabolite	Yes	5	9	1	3	4	19	0.069
	No	49	91	32	97	17	81	
Anti-TNF-α therapy	Yes	18	33	0	0	18	86	**<0.001**
	No	36	67	33	100	3	14	
Anti-integrin therapy	Yes	1	2	0	0	1	5	0.389
	No	53	98	33	100	20	95	
Physician assessment at last clinic appointment								
J-pouch in continuity – good function		32	57	23	68	9	41	**0.009**
J-pouch in continuity – bad function		16	29	10	29	6	27	
Diverted – stoma		8	14	1	3	7	32	
Patient-reported current status of function and quality of life**								
		Total Patients N = 33		**UC-like Behavior N = 23**		**CD-like Behavior N = 10**		***p-value**
Pouch functional score *Mean ± SD; 0 [Best function] – 30 [Worst function]*		10.7	±5.1	11.0	±5.0	10.2	±5.7	0.576
Cleveland Quality of Life Score *Mean ± SD; 0 [Worst QOL] – 1 [Best QOL]*		0.76	±0.12	0.73	±0.12	0.83	±0.01	**0.031**

**Chi-square and Fisher's exact test when appropriate, comparing UC-like and CD-like groups. Mann-Whitney-U test was used to compare pouch functional score and Cleveland quality of life score between UC-like and CD-like groups.*

*** Patients who were diverted (non-functioning pouch) at the time of long term assessment were excluded from the pouch functional score and quality of life score.*

Table. Long-term clinical behavior following IPAA for indeterminate colitis.

★ ✢ 30. INDIVIDUAL SURGEON FACTOR IS THE MOST IMPORTANT PIECE INFLUENCING DIVERTING ILEOSTOMY CREATION FOR PATIENTS UNDERGOING SIGMOID COLECTOMY FOR DIVERTICULAR DISEASE

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Objective: Incidence and predicting factors for the creation of diverting ileostomy in patients undergoing sigmoid colectomy for diverticular disease is not known. In this study, we aimed to identify factors associated with diverting ileostomy creation in patients undergoing sigmoid colectomy for diverticular disease in a high volume colorectal unit and to obtain information for better preoperative patient counselling.

Methods: Patients who underwent sigmoid colectomy with colorectal anastomosis with or without diverting loop ileostomy for diverticular disease between 01/1994-12/2014 were identified from the prospectively collected outcome database. Demographics, comorbidities, intraoperative and 30-day postoperative outcomes were compared between patients who had ileostomy created versus not. Additionally; study time periods, surgeon factor, surgeon practice years after fellowship were assessed. Multivariate logistic regression analysis was conducted to assess independent factors associated with diverting ileostomy creation.

Results: A total of 1320 patients were identified during the study period and diverting loop ileostomy creation was in 204 (15.4%) patients. Patients with perforation (25.5% vs. 13.5%), stricture (19.2% vs 13.8%), any type of intra-abdominal fistula (17.4% vs. 12.8%), or higher Hinchey class had a higher chance to receive an ileostomy. Demographics and patient characteristics summarized in the Table. While ileostomy creation rates did not vary over the years during the study period or with increased surgeons' experience, distinctive surgeons had significant impact on ileostomy creation (Rate range 6.8-60.7%, $p<0.001$). After covariate risk adjustment analysis, overall 30-day morbidity (OR: 2.4, $p<0.001$), readmission (OR: 2.3, $p<0.001$), postoperative ileus (OR: 1.5, $p=0.04$, and dehydration rates (OR: 25.6, $p<0.001$) were significantly higher in patients with ileostomy, while other specific complications including organ-space surgical site infection (3.4% vs 3.7%, $p>0.05$) and anastomotic leaks (3.9% vs. 3.3%, $p>0.05$) were comparable.

Conclusion: Diverting ileostomy after sigmoid colon resection for diverticular disease may be associated with increased length of stay and renal morbidities. In addition to patient related and intraoperative findings, individual surgeon factor is the most important piece influencing diverting ileostomy creation for patients undergoing sigmoid colectomy for diverticular disease.

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

✦ 31. DO NOT BREAK UP THE SURGICAL TEAM! FAMILIARITY AND EXPERTISE AFFECT OPERATIVE TIME IN COMPLEX SURGERY

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Objective: We aimed to determine whether the retirement and replacement of a surgeon's tenured surgical assistant (SA) affected the operative time (OT) or estimated blood loss (EBL) of a series of Laparoscopic Pancreatoduodenectomy (LPD) procedures.

Methods: Consecutive LPD procedures performed by a single surgeon before and after SA replacement were retrospectively studied. Segmented-time multivariate regression was used to estimate replacement effects on OT and EBL.

Results: The last 100 cases performed with the tenured SA and first 100 cases performed with the new SA were included. Patient characteristics, indication for LPD, and intra-operative findings were similar between groups. Pre-replacement OT and EBL (Mean4SE) were 34849 minutes and 367432 cc, respectively per case. Unadjusted segmented-time regression estimated a 69426 minute increase in OT (p=0.008) associated with SA replacement and no significant effect on EBL (1344104 cc; p=0.2). After adjustment for factors contributing to case difficulty and complexity, the replacement increase in OT was estimated to be 40420 minutes (p=0.04) with no change in estimated effect on EBL (27492 cc; p=0.8). Adjusted trends estimated the new surgeon/assistant pair OT decreased, on average, by 0.1940.4 minutes per case. Based on these trends, approximately 200 cases would be required to offset the replacement-associated increase in OT.

Conclusion: The replacement of a dedicated SA was associated with longer operative times; new surgical assistants require extensive case repetitions to overturn this outcome. Despite confinement to a single surgeon's experience and procedure, these results suggest what all surgeons know: great help is priceless.

32. DAILY REVIEW OF AHRQ PATIENT SAFETY INDICATORS HAS SIGNIFICANT FINANCIAL IMPACT ON VALUE BASED PURCHASING REIMBURSEMENT AND HOSPITAL QUALITY RANKING

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Purpose: The Agency for Healthcare Research and Quality's (AHRQ) Patient Safety Indicators (PSI) Composite measure (PSI-90) is used in the Hospital Value-based Purchasing (HVBP) Program to determine payment for Medicare hospitalizations based on achievement and improvement performance scores. PSI identified by AHRQ software have been shown to have low positive predictive values. Because scores can impact hospital reimbursement and ranking, our institution has designed a rigorous review process to ensure accurate data.

Methods: A multidisciplinary team of physicians, quality assurance nurses, and coding specialists was assembled to perform daily reviews of all PSI identified by AHRQ software. Cases were analyzed and corrected for accurate coding, documentation, and fulfillment of inclusion and exclusion criteria. Each PSI identified was confirmed or refuted prior to billing and subsequent data analysis by Medicare. The positive predictive value of software identified PSI was calculated and used to adjust the PSI-90 specific impact on HVBP.

Results: 1711 cases were flagged for PSI over a 2-year period of review. The most common PSI identified by the software was PSI 12 for Postoperative Pulmonary Embolism or Deep Vein Thrombosis (22.8%), followed by PSI 11 for Postoperative Respiratory Failure (16.4%) and PSI 9 for Postoperative Hemorrhage or Hematoma (14.1%). Overall, 32% of all PSI identified were refuted; 39% for PSI 12, 20% for PSI 11, and 37% for PSI 9. Adjusting for a 68% positive predictive value resulted in approximately $470,000 decrease in HVBP penalties and increase in average PSI-90 VBP quality score from 4 to 10.

Conclusion: Multidisciplinary review processes are practical and effective in identifying false positive PSI. The process significantly impacts hospital performance, rankings, and Medicare reimbursements and can easily be implemented widely.

33. MANAGEMENT OF PEDIATRIC OVARIAN TORSION: EVIDENCE OF FOLLICULAR DEVELOPMENT AFTER OVARIAN PRESERVATION

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Purpose: This study reviews contemporary management and clinical follow up of pediatric ovarian torsion.

Methods: This is an IRB-approved, retrospective case series of pediatric patients from birth to 19 years of age undergoing operative management of ovarian torsion over a 4.75 year period (January 2012 to November 2016) at a freestanding children's hospital. Eligible patients were identified in a prospective database that captures case demographics, comorbidities, and complications.

Results: Forty-three girls underwent 51 operations (range 1-4) for management of ovarian torsion. The median patient age was 8.3 years with an interquartile range (IQR) of 4.1, 13.6. Ultrasound was used to diagnose torsion in 27/29 patients (93%) at our institution. In contrast, CT was used in 8 cases (57%) in children imaged at non-children's hospitals prior to transfer. Initial operation for ovarian torsion was completed laparoscopically in 38 (88%) and open in 5 (11%). Open operations were performed based upon lesion size (>20cm), suspicion of malignancy, and in a newborn infant with rapid ovarian growth. Seven infants (age 3 days to 4 months) with torsion presented with a cystic abdominal mass; six (86%) were prenatally diagnosed. Overall, ovarian preservation was performed in 37 (86%) patients, while 6 (13%) underwent oophorectomy. Indications for oophorectomy included 5 infants with in utero torsion (median age 95 (IQR 76,95) and an 18-year-old with a suspected malignancy that proved to be a > 20 cm serous cystadenoma. For acute ovarian torsion, the oophorectomy rate was reduced to 2%. Pathology included 10 (23%) simple ovarian and parafollicular cysts, 5 (12%) mature teratomas, 2 (5%) serous cystadenomas, and 1 (2%) mucinous cystadenoma. There were no malignancies. Overall, one patient developed postoperative small bowel obstruction requiring operation after laparoscopic ovarian detorsion. There were no surgical site infections, wound complications or pulmonary emboli. Recurrent ipsilateral torsion occurred in two patients (at 4 and 7 months) and one patient developed contralateral ovarian torsion. Thirty-four patients underwent postoperative ovarian imaging at a median of 131 days. Twenty-five (73.5%) had follicles visualized in the previously torsed ovary indicative of function.

Conclusion: Diagnostic imaging of torsion using ultrasound over CT is more common at a children's hospital. Ovarian sparing operations for acute torsion are safe and result in ovarian salvage and preservation of function in over 70% of children and adolescents. Malignancy is rare, and therefore should not be a justification for oophorectomy.

34. IMPACT OF THE AGING POPULATION AND CANCER INCIDENCE ON FUTURE GENERAL SURGICAL WORKFORCE PROJECTIONS

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Purpose: The general surgical (GS) workforce is targeted to maintain a surgeon/ population ratio of 6.5-7.5/100,000 irrespective of population-based health care needs. To assess the potential increase demand for GS cancer care (CC) with an aging population we examined population and age associated cancer incidence to estimate the number of GS needed to provide CC in the future.

Methods: To estimate the number of cancer cases for 2035, we consulted the Census Bureau figures for 2010 and projections for 2035. To estimate the cancer cases for GS we examined the projected incidence of the ten cancers cared for by GS using data found in the ACS Cancer Facts & Figures 2010, and SEER: Stat Facts from the NIH for age distribution. An example of one of the calculations follows: [Number of cases 2010 X Population Increase % X Age Distribution] = Number of Cases in 2035 Breast cancer under 65 years [207,090 X 1.155 X 0.58]= 138,730 Breast cancer 65 years and over [207,090 X 1.928 X 0.42] = 167,693 Total Breast Cancer Cases 2035 = 306,423 The projected surgical workforce estimates were based on current training numbers for GS. To estimate the projected change in GS to provide CC, we determined the number of GS to maintain the same cancer caseload as in 2010.

Results: In 2010, we had a population of 310,233,000 of which 40,229,000 were 65 and older. In 2035, we will have a population of 389,531,000 of which 77,543,000 will be 65 and older, an increase of 92.8%.In the population 64 or younger, that increase will be 15.5%. In Table 1 cancer caseloads for GS will go up from 31% for thyroid cancers to 88% for pancreatic cancers, an average of 56% of the 10 of cancer sites included in Table 1. There were only 21,875 surgeons who could do the 511,450 cases in 2010; a caseload of about 23 per surgeon. By 2035 the caseload will go to 798,070 with 25,500 general surgeons available to meet this challenge. The caseload will go up to 31 per general surgeon, an increase of 34%. In order to maintain a case-load comparable to that noted in 2010, 34,698 GS would be needed in 2035 an increase of over 9,000 trained GS.

Conclusion: Planning future delivery of accessible and high quality surgical cancer care is complex and should include assessment of the population and age associated incidence. In order to maintain a case-load comparable to that noted in 2010, 34,698 GS would be needed in 2035 – which would far exceed the current capacity of GS training programs.Considering the limitations of GS training numbers, lifestyle considerations, distribution of cancers, and the volume - quality relationship, perhaps geographic regionalization of cancer care may be the best option for provision of cancer related surgical services in the future.

Projected Change in Cancer Case Volume from 2010-2035

Table 1.

GENERAL SURGERY	NUMBER OF CASES 2010	NUMBER OF CASES 2035	PER CENT INCREASE
BREAST	207,090	306,423	48%
THYROID	44,670	58,500	31%
ESOPHAGEAL CASES	16,640	27,323	64%
STOMACH	21,000	34,157	63%
SMALL INTESTINE	6,960	10,836	56%
COLON & RECTUM	142,570	235,708	65%
ANAL	5,260	7,702	46%
LIVER AND BILE DUCT	24,120	36,249	50%
PANCREAS	43,140	81,173	88%
TOTAL	511,450	798,070	56%

35. DEVELOPING A ROBUST SUTURING ASSESSMENT: VALIDITY EVIDENCE FOR THE INTRACORPOREAL SUTURING ASSESSMENT TOOL (ISAT)

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Society: CSA

Purpose: Assessment tools specific to intracorporeal suturing are lacking. The purpose of this study was to obtain validity evidence for a novel, task-specific Intracorporeal Suturing Assessment Tool (ISAT) by comparing it to existing generic assessment tools and objective measures of suturing performance that have shown validity evidence.

Methods: Videos of novices, residents, and experienced surgeons performing laparoscopic intracorporeal suturing on a live porcine model were assessed by 3 blinded laparoscopic experts. Assessors used the validated Global Operative Assessment of Laparoscopic Skills (GOALS) scale and the ISAT for performance assessment. Pearson's correlations and weighted Kappa tests between the ISAT and GOALS were calculated. Using a sensitivity analysis both tools were compared to an objective laparoscopic suturing score (based on time and errors) of each video. A factor analysis was also performed on the ISAT ratings.

Results: Compared to objective scores the accuracy of ISAT ratings to distinguish between suturing performance in different quartiles ranged from 59.09 to 88.64 and was comparable to the GOALS ratings (range 58.73 to 85.71). The ISAT and GOALS ratings were significantly correlated with the objective suturing score ($r=0.64$ and 0.61, respectively; $p<0.0001$), and with each other ($r=0.92$, $p<0.0001$). The Kappa tests demonstrated a significantly higher agreement than expected between these instruments and the objective suturing score ($p<0.0001$, see table 1). All ISAT items had a factor loading above 0.50.

Conclusion: The ISAT displayed validity evidence based on relationship to other variables and validity evidence based on content to accurately assess laparoscopic suturing skill. ISAT performed similar to and was highly correlated with GOALS, which is frequently used for laparoscopic performance assessment. Unlike the generic information obtained from GOALS assessments, however, ISAT includes intracorporeal suturing-specific information that can be used for feedback on trainee suturing ability and targeted performance improvements. ISAT may therefore provide a better alternative for intracorporeal suturing assessment.

✔36. BENEFIT OF SOCIAL MEDIA ON PATIENT ENGAGEMENT AND SATISFACTION: RESULTS OF A 6-MONTH PILOT STUDY USING FACEBOOK

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Society: CSA

Purpose: Growth of social media (SM) has led to an alarmingly swift change in the way patients obtain health care information and interact with health care providers (HCPs). Despite the potential benefits of these outlets, surgeons are hesitant to engage with patients through SM sites due to concerns over privacy and professionalism. We aim to explore how implementation of a SM support group using Facebook may impact patient engagement and satisfaction.

Methods: In September 2016, following approval from hospital administration, a Facebook support group page was created for liver transplant (LT) patients to use as a virtual community forum. Users requesting access to the group required approval from a site administrator, but were given unrestricted posting privileges once approved. Data including user demographics and group activity were reviewed for the first 6 months. A survey was conducted evaluating SM users' perceptions regarding participation in the Facebook group.

Results: Over a period of 6 months, 250 unique users (40% LT patients, 34% caregivers/friends, 26% HCPs) contributed 187 posts, 732 comments, and 2614 likes to the group. 96% of posts were reacted to or commented on by other group members. The average response time to a post or comment was 2 hours and 55 minutes. Patients were the most active users compared to HCPs and caregivers, contributing 53% of posts (vs. 34% vs. 13%), 52% of likes (vs. 31% vs. 17%), and 79% of comments (vs. 8% vs. 13%). 100% of survey respondents reported that joining the group had a positive impact on their care, 97% reported that their main motivation for joining was to provide support to other patients, and 75% reported checking the group page at least once per day. Interestingly, 22% of participants reported they were ambivalent to HCPs reviewing and responding to posts or comments; their primary interest was interacting with other patients.

Conclusion: This novel pilot study demonstrates that integration of SM into a clinical practice can empower HCPs, especially surgeons, to effectively synthesize a patient support community that enhances patient engagement and satisfaction. Improving the perception and implementation of SM in clinical use may augment "patient centered" delivery of surgical care in the future.

✢ 37. DECREASING LENGTH OF STAY IN BARIATRIC SURGERY: THE POWER OF SUGGESTION

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Society: MSA

Objective: Enhanced recovery and fast track protocols have been utilized to decrease the length of stay and the cost of bariatric surgery. In addition to standardization of post-operative management, we have recently focused efforts on pre-operative education with regards to discharge on the first post-operative day. The aim of this study was to determine the effectiveness of pre-operative education on post-operative discharge timing and readmission rate.

Methods: A retrospective chart review study was conducted from June 2014 to June 2016, one year before and one year after revising discharge expectation education of all patients undergoing laparoscopic bariatric operations. The patients were divided into pre and post intervention groups. Patients undergoing laparoscopic roux-en-Y gastric bypass and laparoscopic sleeve gastrectomy were included. Exclusion criteria included open operations, revision operations, or prior foregut operation. Data collected included demographics, comorbidities, intra-operative factors, length of stay, complications and 30-day readmission rates. Early group education focused on average patient stay of 2 postoperative days. Revised education informed patients they could go home on the first post-operative day. Patients were informed of these expectations on at least three separate occasions during their pre-operative programming. No other programmatic or educational changes were made during this study period.

Results: There were 125 patients who underwent a laparoscopic bariatric operation during the study period. There were 54 patients (43.2%) in the control group and 71 patients (56.8%) in the intervention group. Demographics were similar between groups except for a higher BMI (44.4 v 41.7 , p=0.017) in the intervention group. The implementation of pre-operative education was associated with a decrease in length of stay (1.8 v 2.3 days, p-value=<0.001). The intervention group had a greater percentage of patients discharged on post-op day 1 (48% v 15% p=<0.001) without affecting the rate of readmission (7.5% vs. 8.8%, p=1.000). There was no difference in post-operative complications between the groups (11.1% vs. 11.3%, p=0.978). On multivariate analysis, patients who had a length of stay greater than 1 day were more likely to be diabetic (58.5% vs 34.1%, p-value=0.021, OR 2.75, 95% CI 1.24 - 5.94).

Conclusion: The utilization of expectation management has decreased our length of stay in laparoscopic bariatric surgery patients without an increase in complications or readmission rates. Effective pre-operative education can decrease length of stay for laparoscopic sleeve gastrectomy and roux-en-y gastric bypass patients. Additionally, further efforts to optimize peri-operative management of diabetic patients may further decrease length of stay.

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

38. WHAT MATTERS AFTER SLEEVE GASTRECTOMY: PATIENT CHARACTERISTICS OR SURGICAL TECHNIQUE?

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Purpose: While the impact of different surgical techniques on outcomes in laparoscopic sleeve gastrectomy (LSG) has previously been described, the relative importance of patient characteristics on these outcomes remains unknown. We aim to characterize variability in operative technique for LSG at the national level and to determine whether patient-specific factors are more critical to predicting outcomes.

Methods: The Metabolic and Bariatric Surgery Accrediation and Quality Improvement Program (MBSAQIP) database was queried for all LSGs performed in 2015 (n=88,845). Univariate analyses and logistic regression models were used to determine predictors of outcomes following LSG.

Results: In 2015, over 460 variations of LSG were performed based on unique combinations of bougie size (BS), distance from the pylorus (PD), use of staple line reinforcement (SLR), and oversewing of the staple line (OSL). Despite significant variability in technique, none of these variants were predictive of outcomes after LSG including perioperative morbidity, leak, bleeding, reoperation, readmission, or need for additional intervention (all p>0.05). Instead, preoperative patient characteristics including hypertension, diabetes, history of DVT, history of PE, history of GERD, and chronic steroid use were found to be more predictive of these outcomes (Table). Only history of GERD (OR 1.44, 95% CI 1.08-1.91) was associated with leak following LSG.

Conclusion: Significant variability exists in operative technique among surgeons nationally, but patient characteristics are more predictive of adverse outcomes following LSG. Bundled payments plans and reimbursement policies should account for these patient-specific factors in addition to surgical accreditation and volume thresholds when deciding appropriate risk-adjustment strategies.

Table. Stepwise logistic regression for predictors of morbidity, leak, bleeding, reoperation, readmission, and need for additional intervention in patients undergoing LSG.

Variable	Morbidity OR 95% CI	Leak OR 95% CI	Bleeding OR 95% CI	Reoperation OR 95% CI	Readmission OR 95% CI	Additional Intervention OR 95% CI
Hypertension	1.34 (1.04-1.72)				1.18 (1.07-1.30)	
Diabetes	1.64 (1.19-2.27)		2.34 (1.56-3.51)	1.68 (1.30-2.17)	1.54 (1.33-1.78)	1.58 (1.24-2.00)
DVT	3.90 (2.58-5.89)			2.60 (1.76-3.83)	1.98 (1.53-2.55)	1.73 (1.13-2.65)
PE			5.32 (3.00-9.42)		1.63 (1.21-2.21)	2.35 (1.50-3.67)
GERD		1.44 (1.08-1.91)		1.23 (1.04-1.45)	1.27 (1.16-1.39)	1.27 (1.09-1.48)
Chronic Steroids					1.65 (1.28-2.13)	
Albumin	0.69 (0.53-0.91)				0.85 (0.76-0.95)	0.81 (0.67-0.98)

Bougie size (BS), distance from pylorus (PD), staple line reinforcement (SLR), and oversewing of staple line (OSL) were not found to be significant predictors.

✢ 39. OUTCOMES IN COMPLEX VENTRAL HERNIA REPAIR WITH COMPONENT SEPARATION IN CLASS III OBESITY PATIENTS

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Society: MSA

Objective: Obesity is known to correlate with increased rates of surgical and perioperative complications. Consensus guidelines recommend against performing elective hernia repairs in patients with BMI >30 without preoperative weight loss interventions. Our institution routinely performs ventral hernia repair (VHR) in obese patients. In this analysis, we aim to compare hernia recurrence and perioperative complications in VHR utilizing component separation (CS) in patients with class III obesity.

Methods: A retrospective review of patients undergoing VHR with CS was performed. The primary endpoint was hernia recurrence; secondary endpoints were wound complications (including skin necrosis, wound infections, wound dehiscence and seroma) and postoperative medical complications.

Results: A total of 187 consecutive patients were identified over the course of an eight year period, from 2008-2016. The overall hernia recurrence rate was 4%; recurrence in patients with BMI >40 was 6.9% versus 2.4% in patients with BMI <40 (p=0.21). The overall rate of wound complications was 50.9%; the rate of wound complications in patients with BMI >40 was 58.6% versus 47.2% in patients with BMI <40 (p=0.16). The rates of subgroups of wound complications were not significantly different between groups. The overall rate of postoperative complications was 30.3%; (39.7% BMI >40, 26% BMI <40, p=0.08).

Conclusion: This study demonstrates no difference in complication rates in class III obesity patient undergoing elective ventral hernia repair compared to patients with BMI less than 40. Hernia recurrence rates for both groups are low compared to historically reported data. While the rate of wound complications is relatively high, there was no difference between groups, and many of these wound complications can be managed non-operatively. In addition, class III obesity patients did not have significantly greater rates of perioperative complications. There is a paucity of published evidence regarding the safety and efficacy of elective ventral hernia repair in patients with BMI of 30 to 50. By examining a cohort of patients stratified by BMI of 40, this study helps to clarify that gray zone.

✢ 40. ROBOTIC AND HYBRID ROBOTIC TRANSVERSUS ABDOMINIS RELEASE MAY BE PERFORMED WITH LOW LENGTH OF STAY AND WOUND MORBIDITY

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Objective: Robotic Retromuscular Transversus Abdominis Release (rTAR) allows minimally invasive repair of complex ventral hernias with short length of stay (LOS) and low wound morbidity. Hybrid rTAR (hrTAR), partial open intervention via incision through the overlying hernia sac, may be required to accomplish effective repair of large defects. We hypothesize that addition of a limited open component during hrTAR will not increase LOS or wound morbidity.

Methods: rTAR and hrTAR performed by two surgeons from November 2015 - February 2017 were reviewed. Data contained in the Americas Hernia Society Quality Collaborative and hospital medical records were analyzed.

Results: 50 rTAR patients and 22 hrTAR patients were analyzed. Age, BMI (33.8 vs. 34.2, p= .83), HTN, DM, smoking, and proportion of recurrent hernia were not significantly different. Clean contaminated cases were similar (6% vs 4.6%, p=1). Hernia width (9.2 vs. 14.0 cm, p= .001) and length (36 vs 42cm , p=.004) was larger for hrTAR. Mesh size was larger for hrTAR (36x32cm vs. 42x38cm, p= .001). Operative times were similar (321 vs 353 minutes p=.29). Surgical site occurrences requiring intervention included 1 superficial wound infection with packing in each group. 3 patients with either infected seroma or hematoma requiring operative debridement were present in the rTAR group. Surgical site occurences were not significantly different (8% vs 4.5% p=1.0). LOS was also not significantly different (2.9 vs 3.6 p=.18).

Conclusion: The addition of an open surgical component to the minimally invasive rTAR allows placement of large retromuscular prosthesis without additional wound morbidity or LOS.

41. EFFICACY OF PRIMARY DEFECT CLOSURE IN MESH REINFORCED LAPAROSCOPIC VENTRAL HERNIA REPAIR

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Society: CSA

Purpose: Despite being a commonly performed surgical procedure, no consensus exists regarding the efficacy of primary defect closure when performing mesh reinforced laparoscopic ventral hernia repair (LVHR). This study compares outcomes between patients who did and did not receive primary defect closure while undergoing LVHR.

Methods: A retrospective review of a prospectively maintained database identified 220 patients who underwent LVHR between 2009 - 2015. All cases were performed by four surgeons at a single institution. Charts were queried using electronic medical records and patients were divided into two cohorts: primary closure with mesh reinforcement (n= 106) and mesh reinforcement without defect closure (n= 114). Comparisons between cohorts were made using Fisher's Exact and Wilcoxon Rank-Sum tests.

Results: A cohort of 220 patients underwent elective LVHR in the defined time period. The primary closure with mesh reinforcement cohort (PC) and mesh reinforcement without defect closure (NPC) cohorts exhibited no significant demographic differences. Patient age, BMI, gender, history of smoking, and history of hernia repair were all similar. Additionally, hernia size and mesh implant size were similar between groups. Median length of stay was shorter for primary closure patients (0 vs. 1 day, $p = 0.005$). Likewise, recurrence rates were significantly lower for the primary closure cohort (1.9% vs. 11.4%, $p = 0.006$). Surgical complication rates, pain score at discharge, days of postoperative narcotic use, and days before returning to activities of daily living were all similar.

Conclusion: Performing primary defect closure as part of mesh-reinforced LVHR did not increase pain at discharge or surgical complication rates. Additionally, primary defect closure was found to lower recurrence rates and shorten length of stay when compared to LVHR .

42. PREOPERATIVE PAIN PREDICTS INGUINAL HERNIA LONG-TERM QUALITY OF LIFE

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Society: CSA

Purpose: Patients presenting for inguinal hernia repair report a wide range of preoperative pain. While some patients are highly satisfied following their repair, others suffer from long-term pain, which is thought to be a strong risk factor for chronic pain following surgery. The purpose of this study was to determine the influence of preoperative pain on long-term quality of life (QOL) following inguinal hernia repair. We hypothesized that patients presenting with lower surgical pain scores would experience a greater improvement in long-term QOL following inguinal hernia repair.

Methods: A total of 54 patients undergoing either laparoscopic or open inguinal hernia repair and completed the Short-Form 12 (SF-12) survey preoperatively, as well as 6-12 months following their inguinal hernia repair. The physical (PCS) and mental (MCS) component scores were calculated from the SF-12. Patients also completed an analog surgical pain scale (ASPS). A paired t-test and analysis of covariance (ANCOVA) were used. Preoperative ASPS of >12 was representative of moderate/severe pain.

Results: Regardless of preoperative pain, there was a significant improvement in long-term PCS QOL (45.4 4 11.3 vs. 50.1 4 9.1; p<0.0001), which was not observed when assessing MCS QOL (55.0 4 8.3 vs. 54.7 4 9.4; p = 0.76). Using ANCOVA, patients who reported no or low preoperative pain experienced significantly improved PCS QOL compared to patients who reported moderate/severe preoperative pain (p = 0.048), when adjusting for preoperative PCS QOL (see table). This was not observed with MCS.

Conclusion: The findings of this study indicate that patients presenting for inguinal hernia repair with no or low pain are likely to experience significantly improved physical function QOL as a result of surgery, regardless of operative approach. This study suggests that inguinal hernia patients experience improved long-term QOL following surgical repair, patients with moderate/severe preoperative pain experience less improvement of PCS QOL when compared to no/low pain patients, and preoperative pain is a predictor of long-term QOL following inguinal hernia repair.

	PCS		MCS	
	No/Low Pain n=30	Moderate/High Pain n=24	No/Low Pain n=30	Moderate/High Pain n=24
Pre-operative	47.7 ± 10.9	43.1 ± 11.6	56.4 ± 6.2	53.0 ± 10.5
Post-operative	52.2 ± 7.2	46.9 ±10.9	56.3 ± 6.2	52.8 ± 11.6

43. LIVER TRANSPLANT OFFERS A SURVIVAL BENEFIT OVER MARGIN NEGATIVE RESECTION IN PATIENTS WITH SMALL UNIFOCAL HCC AND PRESERVED LIVER FUNCTION

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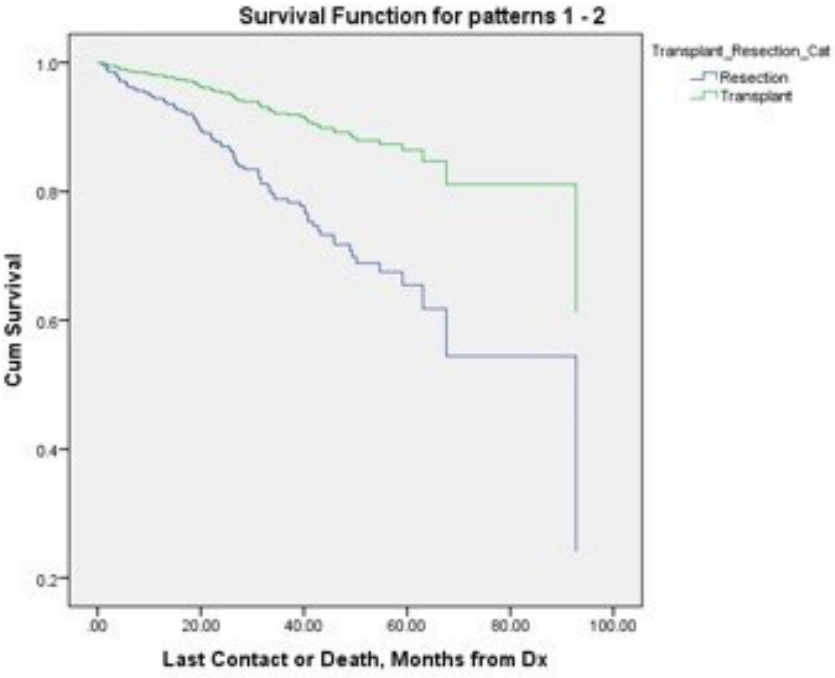
Society: CSA

Purpose: Prior studies comparing long-term survival following orthotopic liver transplantation (OLT) to that following margin negative resection in patients with small unifocal hepatocellular carcinoma (HCC) have generally been retrospective case series with limited numbers of patients and have not been well controlled for severity of underlying cirrhosis.

Methods: We queried the National Cancer Database to identify patients with preserved liver function (defined as a MELD score ≤12) who underwent operative management for pre-treatment clinical stage I-II solitary HCC lesions <3 cm between 2004 and 2013. Multivariate logistic regression models were constructed to compare patients who underwent OLT to those undergoing margin negative resection. Multivariate Cox regression models controlling for age, demographics, comorbid disease burden, MELD score, clinical stage, and operative treatment were used to compare overall survival between cohorts. Patients with missing MELD scores, metastatic disease and those with positive surgical margins were excluded from analysis.

Results: 512 patients with preserved liver function underwent operative management for solitary HCC <3 cm. 271 (53%) patients underwent OLT and 241 (47%) underwent liver resection. On multivariable logistic regression controlling for age, demographics, comorbid disease burden, MELD score and clinical stage, patients having a charlson comorbidity index score ≥2 were more likely to undergo OLT, (OR 2.886, [1.723, 4.834], p<0.001) whereas patients of Asian Pacific decent (OR of OLT 0.245, [0.137, 0.438], p<0.001), African American race (OR 0.330, [0.173, 0.628], p=0.001), and advanced age 66-75 years (OR 0.307, [0.159, 0.593], p<0.001) were more likely to undergo resection. There was no difference in pre-treatment clinical stage and post-explant/resection pathologic stage between the two cohorts. Overall survival varied by treatment type with patients undergoing OLT demonstrating a mean overall survival of 97.4 months whereas those undergoing resection demonstrated a mean overall survival of 63.84 months (Figure 1). Multivariable Cox regression analysis identified surgical procedure as the only independent determinant of survival with resection conferring a nearly three fold increased risk of death relative to OLT (HR 2.902 [1.750, 4.812], p<0.001).

Conclusion: Liver transplantation may offer a significant survival advantage relative to margin negative surgical resection for patients with small unifocal HCC and preserved liver function. These results suggest a need to reconsider allocation policies, potentially prioritizing specific HCC patients with small unifocal lesions when considering regional allocation of available liver allografts.


Survival Function for patterns 1 - 2
Transplant_Resection_Cat
Resection
Transplant
Cum Survival
1.0
0.8
0.6
0.4
0.2
.00
20.00
40.00
60.00
80.00
100.00
Last Contact or Death, Months from Dx

44. EFFICACY AND SAFETY OF YTRRIUM-90 IN THE TREATMENT OF INTRAHEPATIC CHOLANGIOCARCINOMA

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Society: MSA

Objective: Treatment for unresectable Intrahepatic Chloangiocarcinoma (ICC) has focused on liver transplantation. However, overall survival after liver transplantation alone is less than 30% at 5 years. Selective internal radiation therapy (SIRT) with Ytrrium-90 (Y-90) has been used to treat multiple hepatic malignancies with success. This study focuses on the efficacy and safety of Y-90 in the treatment of locally advanced ICC.

Methods: A single-institution retrospective case review was performed for patients with unresectable ICC treated with Y-90 between 2006 and 2016. Data regarding patient demographics, treatment-related and oncologic outcomes were gathered. Patients were treated with either TheraSphere® or SIR-Spheres® using the standard treatment doses.

Results: Seventeen patients underwent 21 treatments with Y-90. The median age was 69, (M:F 0.7:1). All patients had biopsy proven ICC. Four patients had undergone prior liver resection, and 6 patients had extrahepatic disease at the time of treatment. The median number of Y-90 treatments was 1. The majority of patients had stable disease (62.5%), and 1 patient underwent margin negative liver resection after a single treatment. Post-treatment morbidity was appreciated in 2 cases, including right hepatic artery laceration and gastric artery branch dissection. Median survival from diagnosis was 33.6 months. Progression free survival at 1 year was 43.8%; median time to progression was 4 months after treatment.

Conclusion: Treatment of ICC using Y-90 is a safe and effective procedure. It has been used as an adjuvant and a neoadjuvant therapy, but further research is needed to clarify its role.

45. SPORADIC ZOLLINGER ELLISON SYNDROME - A FIVE DECADE PROSPECTIVE STUDY:TUMOR LOCATION PREDICTS DIFFERENT BIOLOGICAL BEHAVIOR FOR DUODENAL WALL GASTRINOMA VS. PANCREATIC GASTRINOMA

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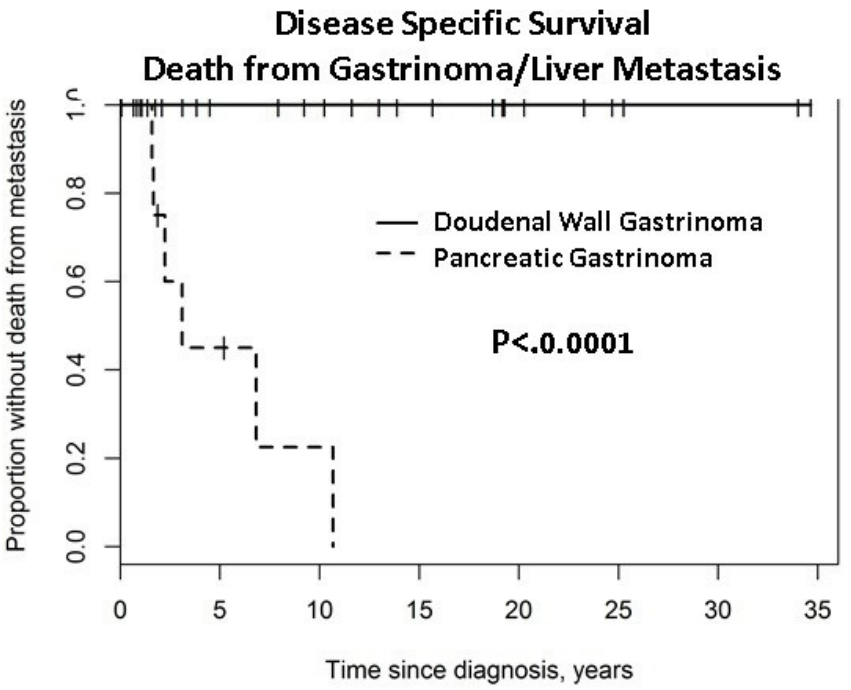
Society: CSA

Purpose: Observations of Zollinger-Ellison patients entered into a tumor registry intiatied in 1962 suggested differences in biolgical behavior of duodenal wall gastrinomas (DWG) vs pancreatic gastrinomas (PG). Our aim was to better define long-term outcome differences.

Methods: Forty-eight prospectively registered sporadic Zollinger–Ellison (ZE) tumor patients from one center were followed from 1962 thru 2016. Patients were divided into 2 groups based on tumor location. Thirty-eight patients with extrapancreatic gastrinomas in the duodenal wall and/or paraduodenal lymph nodes were assigned to the DWG group. Nine patients with primary pancreatic gastrinomas were assigned to the PG group. One patient with a prepyloric antral wall gastrinoma was considered separately.

Results: There was no difference at diagnosis in age, basal acid output, or serum gastrin in DWG vs.PG patients. There were more males than females (25 vs.13) in the DWG group. A significant history of alcohol abuse (>50 g/day) in ZE patients with DWG but not with PG was documented, a risk factor previously reported. Management strategies continue to evolve. Total gastrectomy was most common in the era (1962-1979) before the advent of effective acid suppression medication. Subsequent operations have attempted to cure DWG by local excision with lymphadenectomy. Only one patient in the DWG group had liver metastases documented. Pancreatic gastrinomas were resected when appropriate; however, 8 of 9 PG patients had liver metastases at presentation. Six of the 9 PG patients died early (median 2.6 years) from tumor progression in the liver. Remarkably, none of the 38 DWG patients died from tumor progression even when tumor excision was not curative and hypergastrinemia persisted in 23 patients. All patients with any residual stomach and hypergastrinemia have required life-long acid suppression therapy. Overall median survival for DWG vs. PG was 15.7 vs. 3.1 years. Disease specific survival shows no tumor deaths in the DWG group (see graph).

Conclusion: This study supports the concept that DWG and PG tumors, despite similar clinical presentation, are distinct entities with different biologic behavior. ZE patients with DWG tend to be long lived whereas patients with PG die earlier with progression of liver metastasis. Management strategies should be different.


Disease Specific Survival
Death from Gastrinoma/Liver Metastasis
Proportion without death from metastasis
0.0
0.2
0.4
0.6
0.8
1.0
Doudenal Wall Gastrinoma
Pancreatic Gastrinoma
P<.0.0001
0
5
10
15
20
25
30
35
Time since diagnosis, years

46. MINIMALLY INVASIVE PANCREATICODUODENECTOMY: IS THE INCIDENCE OF POSTOPERATIVE CLINICALLY RELEVENT FISTULA COMPARABLE TO THAT FOLLOWING OPEN PANCREATICODUODENECTOMY?

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Society: CSA

Purpose: Most prior studies evaluating the safety and efficacy of minimally invasive approaches to pancreaticoduodenectomy (MIS-PD) have been single institutional or small multi-institutional retrospective series and have had limited ability to compare outcomes of MIS-PD to those for open pancreaticodudoenctomy (OPD).

Methods: We queried the NSQIP 2014 and 2015 pancreas procedure targeted datasets to identify patients undergoing pancreaticoduodenectomy (PD) for any indication. An intention to treat analysis was performed. All minimally invasive, hybrid approaches and unplanned conversions from laparoscopic or robotic to open pancreaticoduodenectomy were included in the MIS-PD group. Standard statistical methods were used compare outcomes for patients undergoing MIS-PD to those undergoing OPD. Clinically relevant pancreatic fistula (CR-POPF) was defined as a pancreatic fistula associated with prolonged hospital stay (>14 days), sepsis, shock, single or multi-system organ failure or any deep space organ infection requiring reoperation or percutaneous drain placement.

Results: 7907 patients underwent PD. 1277 (16.1%) underwent a minimally invasive pancreaticoduodenectomy: 776 (9.8%) had a robotic or laparoscopic PD, 304 (3.8%) had a hybrid approach, and 197 (2.5%) had an unplanned conversion from MIS-PD to open. There were no differences between groups with regard to patient demographics or comorbid disease states. Patients undergoing MIS-PD were less likely to have pancreatic ductal adenocarcinoma (31.1% vs 53.9%, $p<0.01$), more likely to have a small pancreatic duct <3mm (47.4% vs 31.7%, $p<0.01$), and more likely to have a soft gland (62.2% vs 47.4%, $p<0.01$) than those undergoing OPD. Rates of overall morbidity (51.8% vs 50.3%, $p=0.34$), 30-day mortality (2.4% vs 2.0%, $p=0.33$), and mean length of stay (11.3 +/- 8.9 vs 11.2 +/- 8.5 days, $p=0.81$) were identical between groups. Patients undergoing MIS-PD demonstrated rates of CR-POPF that were statistically higher than those undergoing OPD (15.3% vs 13.0%, $p=0.03$). This difference appeared to be more marked in 2014 (20.0% vs. 12.9%) than in 2015 (14.3% vs 13.1%). The difference appeared to be due primarily to case selection. On multivariate analysis adjusted for gender, race, pathology and recognized risk factors for CR-POPF including pancreatic duct size, and pancreatic gland texture; MIS-PD was not an independent risk factor for CR-POPF (OR 0.98, 95% CI 0.92-1.04) [Table 1].

Conclusion: Minimally invasive approaches to PD afford rates of postoperative morbidity and 30-day mortality similar to those for open PD. In this study of a nationally accruing dataset, rates of CR-POPF are slightly higher in patients undergoing MIS-PD than in patients undergoing OPD but this increased risk appears to be related to case selection bias and not to risk inherent to minimally invasive approaches to PD.

Table 1. Multivariate Regression Predicting CR-POPF

Variable	OR (95% CI)	P-value
MIS PD (vs open PD)	0.98 (0.92-1.04)	0.44
Male (vs female)	1.19 (1.06-1.)	0.01
BMI ≥30 (vs 18.5-25)	1.31 (1.03-1.37)	0.02
Intraoperative drains (vs none)	1.93 (1.49-2.51)	<0.01
Benign pathology besides chronic pancreatitis (vs PDAC)	1.48 (1.17-1.88)	<0.01
Pancreatic duct <3mm (vs >6mm) Pancreatic duct 3-6mm (vs >6mm)	2.20 (1.60-3.01) 1.63 (1.19-2.21)	<0.01 <0.01
Soft gland texture (vs firm gland)	1.96 (1.59-2.41)	<0.01

*Adjusted for surgical approach, age, gender, race, BMI, preoperative weight loss, pathology, intraoperative drains, pancreatic duct size, pancreatic gland texture

★ ✢ 47. THE DIAGNOSIS AND STAGING OF PANCREATIC CANCER: A COMPARISON OF ENDOSCOPIC ULTRASOUND AND COMPUTED TOMOGRAPHY WITH PANCREAS PROTOCOL.

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Objective: Pancreatic cancer is the fourth leading cause of cancer-related death in United States. Computed tomography (CT) and endoscopic ultrasound (EUS) are currently being utilized across the country as valuable imaging tests to diagnose and stage pancreatic cancer, with varying accuracy reported. (1) Currently, there is limited research comparing the newly developed CT pancreas protocol with EUS in diagnosing and staging pancreatic cancer. There is no consensus on the optimal imaging choice for patients suspected to have pancreatic cancer. In this study, we compared the correlation between CT with pancreas protocol and EUS in terms of mass detection, mass size, vascular involvement and lymph node involvement.

Methods: We retrospectively evaluated 93 patients who underwent both CT with pancreas protocol and EUS for clinically suspected pancreatic cancer from 6/2012 to 10/2016. Concordance between imaging results based on CT and EUS for pancreatic mass was assessed using a retrospective chart review and statistical analysis. In all patients, CT with pancreas protocol and EUS were performed less than 6 months apart.

Results: CT with pancreas protocol and EUS shows agreement on mass detection on 82.2% of the cases. In 67.3% of the cases, CT scan and EUS correlate for size within less than 1 cm. In terms of vascular invasion of the SMA, SMV, celiac or hepatic arteries, CT and EUS agreed in 73.8% of cases about presence or absence of vascular involvement. Both image modalities also agree on 81.8% of cases in presence or absence of lymph node involvement. However, agreement was poor with respect to identification of specific forms of vascular or lymph node involvement, only 11.8% and 28.6%. The concordance of these three categories was statistically analyzed and showed a Cohen's kappa of 0.70 for mass size, 0.42 for vascular involvement, and 0.54 for lymph nodes, indicating the substantially reliable concordance of mass size, and the moderately reliable concordance of vascular and lymph node involvement.

Conclusion: The combination of both CT with pancreas protocol and EUS provides surgeons with more information about diagnosis and staging of pancreatic cancer than either test alone. Our study suggests that both tests should be used to assess mass size, vascular involvement and lymph node involvement in the multimodality staging of pancreatic cancer.

48. TAILORED SURGICAL TREATMENT OF DUODENAL POLYPOSIS IN FAMILIAL ADENOMATOUS POLYPOSIS SYNDROME.

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Purpose: To describe the Cleveland Clinic experience in patients undergoing surgery for duodenal polyposis associated with Familial Adenomatous Polyposis (DPFAP) with an emphasis on selection of operative approach.

Methods: Data on patients undergoing surgery for DPFAP were retrospectively collected. Patients with duodenal cancer were excluded.

Results: 54 patients DPFAP underwent surgery from 1997 to 2016. Forty patients (77%) underwent pancreas sparing duodenectomy (PSD) (group 1), 9 (17.3%) underwent Whipple (group 2) and 3 (6%) underwent segmental resection not including resection of the ampulla (group 3; SR). Gender distribution, age and BMI were statistically comparable between the groups. Asymptomatic presentation was noted in 75% of PSD, 100% of Whipple and 44% of SR patients (p value 0.09). Spigelman staging was significantly different between the groups with PSD and SR patients having a higher percentage of Stage III and IV patients compared to Whipple (p 0.012). Interval from first scope to surgery was comparable across groups (4.5 vs. 4.8 vs. 4.3 years). There was no statistically significant difference between the groups with regard to pancreatic fistula, biliary fistula, delayed gastric emptying or anastomotic leak. There were no 30-day mortalities. Mean length of stay was shortest in the SR group (14.3 days for PSD group, 12.9 days for Whipple and 8.7 days for SR group, p 0.01). Final pathology revealed no statistically significant difference in percent with high-grade dysplasia (HGD) between groups (37% vs. 71 % vs. 0%, p 0.08). Long term follow-up (FU) greater than 18 months and was available for 88% of patients. There was only one patient noted to have progression of disease in duodenum or jejunum requiring additional resection. However disease progression to HGD in stomach was noted in 1(3%) of PSD, 2(29%) of Whipple and 1(33%) of SR patients (p 0.03). There were 2 patients with disease progression to gastric cancer in the PSD group (6%) and 1 patient in the Whipple group (14%) with none in the SR group (p 0.68). Overall survival was comparable across groups (p 0.09).

Conclusion: While majority of patients with DPFAP undergo PSD for Spigelman IV disease; whipple, ampullectomy and SR are also selectively appropriate based on anatomy, concern of malignancy, and location of dominant polyp location. Disease progression after surgery is most noted in stomach and should be the focus of surveillance. In appropriately selected patients survival is not dependent on type of surgery.

49. PANCREATIC CYST FLUID GLUCOSE: RAPID, INEXPENSIVE, AND ACCURATE DIAGNOSIS OF MUCINOUS PANCREATIC CYSTS

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Purpose: The gold standard biochemical test for preoperative differentiation of mucinous from benign, non-mucinous pancreatic cysts is cyst fluid carcinoembryonic antigen (CEA). However, depending upon the cut-off value, the diagnostic accuracy of CEA ranges from 70-86%. Based on previously published findings, we hypothesize that pancreatic cyst fluid glucose can accurately detect mucinous pancreatic cysts and may be an attractive alternative to CEA. We aim to compare the accuracy of pancreatic cyst fluid glucose and CEA for the diagnosis of mucinous pancreatic cysts.

Methods: Pancreatic cyst fluid was prospectively collected at the time of endoscopic or operative intervention from 153 consenting patients between 2003 and 2016. All diagnoses were pathologically confirmed. Glucose was measured with a standard patient glucometer. CEA was measured with an automated analyzer and/or ELISA. Sensitivity, specificity, and accuracy were calculated for glucose and CEA using previously published threshold values of 50 mg/dL and 192 ng/mL, respectively.

Results: Of the 153 pancreatic cyst fluid patient samples collected, 47 were non-mucinous (21 serous cystic neoplasm, 9 cystic neuroendocrine tumor, 14 pseudocyst, and 3 solid pseudopapillary neoplasm) and 106 were mucinous cysts (25 mucinous cystic neoplasm, 77 intraductal papillary mucinous neoplasm, 4 ductal adenocarcinoma). Median pancreatic cyst fluid glucose level was significantly lower in mucinous cysts than in non-mucinous cysts (19 vs 96 mg/dL; $p<0.0001$). With a threshold of <50 mg/dL, cyst fluid glucose was 92% sensitive, 87% specific, and 90% accurate in diagnosing mucinous pancreatic cysts. In comparison, cyst fluid CEA with a threshold of >192 ng/ml was 58% sensitive, 96% specific, and 69% accurate.

Conclusion: Pancreatic cyst fluid glucose is a more accurate test for diagnosing mucinous cysts than CEA. Furthermore, glucose measured using a patient glucometer is rapid, inexpensive, and requires minimal cyst fluid volume. Cyst fluid glucose should therefore be considered for use as a routine diagnostic test for pancreatic mucinous cysts.

✢ 50. UTILITY OF SEQUENTIAL ORGAN FAILURE ASSESSMENT SCORE IN PREDICTING BACTEREMIA IN CRITICALLY ILL BURN PATIENTS

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Objective: There is currently no reliable criteria to identify sepsis in critically ill burn patients. The Sepsis-3 guidelines defined sepsis as life-threatening organ dysfunction caused by a dysregulated host response to infection, and emphasized using Sequential Organ Failure Assessment (SOFA) score to quantify the degree of organ dysfunction. SOFA score has been shown to correlate with mortality in critically ill burn patients, however, its utility in predicting bacteremia is unclear.

Methods: Patients age ≥ 15 with burns ≥ 15% total body surface area (TBSA), who were admitted to an ABA-verified burn center between 1/2008 to 7/2015, and had at least one blood culture obtained were included. Days on which blood cultures were drawn were reviewed and categorized as either positive or negative blood culture days. Days with a positive culture from sources other than blood (urine, wound, respiratory) were excluded. SOFA and quick SOFA (qSOFA) scores were calculated on the day of and one day prior to the day of culture. Bivariate analysis was performed to determine which scoring system performed better at predicting bacteremia.

Results: A total of 68 patients were included with mean age of 45 years and mean TBSA burn of 33%. Majority of the patients were male (77%) and flame burn (85%) was the most common mechanism of injury. Eighteen patients (26%) had inhalational injury. Mean revised Baux score was 83 and median ISS was 13. Mortality was 12%. There were a total of 140 blood culture days of which 29 were positive and 111 were negative. There was no difference between positive and negative blood culture days in terms of age, sex, mechanism of injury, presence of inhalational injury, % TBSA, APACHE II score, revised Baux score, hospital length of stay, ventilator days, and mortality. There was no difference in the rate of meeting qSOFA ≥ 2 between positive and negative blood culture days, either on the day of culture or the day prior. There was also no difference in total SOFA score or individual components of the score, as well as the absolute increase in SOFA score (SOFA) from day prior to day of culture. The sensitivities and specificities of qSOFA and SOFA score ≥ 2 were calculated. Both had high sensitivity but low specificity in predicting bacteremia on the day of and day prior to culture; although, specificity was higher for qSOFA on both days. Sensitivities and specificities of SOFA ≥ 2 and SOFA ≥ 5 were also calculated and a trend towards increasing specificity was noted with increasing SOFA (78% for SOFA ≥ 2 vs. 97% for SOFA ≥ 5).

Conclusion: SOFA and qSOFA scores both have high sensitivity but poor specificity for identifying bacteremia in critically ill burn patients. Increase in SOFA score from day prior to day of culture is highly specific, particularly for SOFA ≥ 5. These results highlight the continued need for an improved system to predict bacteremia in critically ill burn patients.

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

51. COMMERCIAL QUALITY "AWARDS" ARE NOT A SURROGATE FOR IMPROVED PATIENT OUTCOMES

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Purpose: With the advent of public reporting of hospital data, the quality industry has become very robust. Millions of patients rely upon publicized hospital-ranking systems to guide their healthcare decisions, however it is unclear how well these systems truly reflect hospital quality. This study aims to evaluate the validity of publicized hospital-ranking systems in assessing surgical quality.

Methods: Using the Healthcare Cost and Utilization Project (HCUP) State Inpatient Database (SID) for Florida and New York 2011-2012, patients undergoing one of nine procedures (gastric bypass, lap cholecystectomy, pulmonary lobectomy, mastectomy, open AAA, pancreatectomy, prostatectomy, total knee or hip replacement) were identified. This was merged with hospital data from the AHA Health Survey. A priori, we selected nine quality "awards": Truven/ Cardiac, Health Grades, Joint Commission Distinguished, Beckers, US News and World Report, Medicare Hospital Compare and Nursing Magnet on which to complete our analysis. Length of stay, mortality, complications and procedure volumes were z-score normalized and labeled as Good (z-score +) OK (z-score 0), or Bad (z-score -). The quality score was binary. Decision tree analysis, support vector machine and regression analyses were examined for predictors of mortality. An aggregate complication ratio was calculated using hospital level data. Mann-Whitney-U test were used to compare complication ratios between hospitals with total rankings 0-5. A more in-depth analysis of patient level, procedure-specific data was completed to determine which procedural outcomes were impacted by hospital rank using machine learning techniques such as cross-validated logistic regression along with decision tree analysis.

Results: We identified 13,520 patients within 187 hospitals. A hospital's overall surgical mortality was best modeled using the decision tree approach (accuracy 0.83; kappa 0.71; $p<0.001$). Top 5 variables associated with low surgical mortality (relative impact) were Hospital Compare (42), total procedure volume (16), Joint Commission Distinguished (12), and Beckers (10). Nursing Magnet (12) status and total complications (3) were associated with high surgical mortality. Modeling of hospital overall surgical complications paralleled the mortality model. The mean complication ratios for hospitals with varied rankings were not statistically different. In the secondary decision tree model, total hip replacement was associated with a decreased complication ratio when performed at high ranking hospitals (3-5 designations). Two surgeries, total hip replacement and mastectomy, selected "ranking" as an important feature with 41.9% and 17.1% importance respectively.

Conclusion: Hospital quality ranking awards are not guaranteed surrogates of quality surgical care. Hospitals may need to consider a reallocation of resources away from acquiring these designations to more advantageous areas of quality and safety improvement.

52. RISK-ADJUSTED HOSPITAL OUTCOMES IN MEDICARE CAROTID ARTERY SURGERY

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Purpose: Carotid artery surgery (CAS) for the prevention of stroke is proven to be highly effective. This study will examine the risk-adjusted outcomes of CAS that is inclusive of inpatient and 90-day post-discharge adverse outcomes (AOs). Differences between best and suboptimal performing hospitals will define the opportunity for care improvement.

Methods: This study used the 2012-2014 Medicare Inpatient LDS dataset and were then applied to define comparative performances among U.S. hospitals with 25 or more qualifying cases for the study period. Risk-adjusted logistic prediction models for the four AOs of inpatient deaths (IpD), 3-sigma prolonged length of stay outliers (prLOS), 90-day post-discharge deaths (PD-90) without readmission, and 90-day post-discharge readmissions after removal of non-associated readmissions (RA-90) were designed. A patient was considered to have an AO if they experienced one or more of the four individual AO events. Standard deviations (SDs) of predicted overall AOs were computed for each hospital that were individualized to the risk profile of each facilities patients. Z-scores for each hospital were computed by dividing differences between observed and predicted outcomes for each hospital by its specific SD. Risk-adjusted AOs were calculated for each hospital by the formula: (Overall Average AO Rate)*(Hospital Observed AO rate/Hospital-specific Predicted AO rate).

Results: There were 75,930 CAS patients from 923 hospitals. Among these patients, there were 189 IpDs (0.25%), 4,366 prLOS (5.75%), 448 PD-90s (0.6%), and 7,840 RA-90 (10.3%) patients. In the RA-90 patients, an additional 553 patients died after readmission for a total mortality rate from inpatient/90-day post-discharge care of 1,190 (1.6%). There were 11,744 (15.5%) patients with one or more of these AOs. There were 30 best-performing hospitals (3.3%) that had z-scores of -2.0 or less ($P<0.05$). These best-performing hospitals had a median risk-adjusted AO rate of 7.2%. There were 142 hospitals (15.4%) with z-scores of -1.0 to -1.99. These facilities had a median risk-adjusted AO rate of 10.0%. A total of 62 suboptimal hospitals had z-scores of +2.0 or greater ($P<0.05$) and had a median risk-adjusted AO rate of 26.3%. There were 127 hospitals with z-scores of +1.0 to +1.99 and they had a median risk-adjusted AO rate of 22.1%. The z-scores for all study hospitals ranged from -3.09 to +4.33, and risk-adjusted AO rates ranged from 4.1% to 30.9%. The most dramatic differences in overall performance were in the 90-day post-discharge AO rates.

Conclusion: Hospital Risk-adjusted AO rates for CAS are highly variable when the full continuum of care is evaluated including 90-days following discharge. Comparative effectiveness research among best and poorest performing hospitals can inform can improvement initiatives. Hospitals must know their risk-adjusted outcomes, and benchmark them against national performance standards to improve care.

53. RACIAL AND REGIONAL DISPARITY IN LIVER TRANSPLANT ALLOCATION

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Purpose: Modern medicine has been forced to become introspective about quality outcomes, distribution of rare resources and their parity in distribution. No question is more political and contested then liver allocation with concerns of both racial and regional disparity.

Methods: Fixed affects multivariate logistic regression of transplanted compared to listed patients using United Network for Organ Sharing (UNOS) Standard Transplant Analysis and Research (STAR) database ('85-'16) was performed using correlation matrix and variance inflation for multi-collinearity and Hosmer-Lemeshow's goodness-of-fit in the final models using STATA 14.2.

Results: Data was adjusted for age, race, insurance, diabetes, prior malignancy, prior surgery, SBP, blood type, albumin, MELD, functional status, primary diagnosis, wait list time, UNOS region, post-Share-35 (June '13), and time invariant unobserved traits (i.e. cultural trends or health policies). Multivariable logistic regression for racial disparity in transplantation from the wait list disparities using CA as a reference identified OR: AA 1.14 (1.09-1.19; p<0.001), Hispanic 1.05 (1.01-1.09; p=0.011) and other 1.14 (1.08-1.20; p<0.001). Other variables included: age 0.99 (0.99-1.00; p<0.001) female gender 0.80 (0.78-0.83; p<0.001) insurance 0.97 (0.96-0.98; p<0.001) and malignancy 1.22 (1.18-1.27; p<0.001). Significant racial disparities by region was performed using CA in region 7 as a reference identified OR: Hispanic Region 9 (NY) 1.58 (1.07-2.33; p=0.022), Hispanic Region 6 (Pacific NW) 2.02 (1.07-3.78; p=0.029) and Asian Region 2(PA, MD, KY) 0.51 (0.30-0.87).

Conclusion: Over the last two decades Health and Human Services (HHS) and Organ and Procurement and Transplantation Network (OPTN) have made numerous adjustments to organ allocation including MELD, share 35 and the recent failed attempt at redistricting. Our current evaluation of the post share 35 distribution system identified overweighting liver transplant for malignancy and racial disparity in limited Regions. This data would suggest in the current system there is a need for reevaluation of exception points for malignancy and local regional redistribution.

	Still Waiting	Transplanted	p-value
Race Caucasian (CA)	82,247 (71.10%)	103,591 (72.48%)	< 0.001
African American (AA)	9,718 (8.40%)	13,604 (9.52%)	
Hispanic (H)	17,005 (14.70%)	18,145 (12.70%)	
Other (Asian, Native Amer)	6,702 (5.79%)	7,590 (5.31%)	
Age years, mean (SD)	49.43 (15.65)	46.46 (17.84)	< 0.001
Female Gender, no. (%)	46,799 (40.46%)	53,375 (37.34%)	< 0.001
BMI, mean (SD)	31 (959.40)	27 (77.88)	< 0.001
Spontaneous bacterial peritonitis	5,936 (5.78%)	8,028 (6.67%)	< 0.001
Ascites	26,801 (66.18%)	33,045 (68.50%)	< 0.001
Malignancy	8,662 (8.48%)	11,882 (9.87%)	< 0.001
MELD median (range)	14 (10, 20)	17 (11, 24)	< 0.001

54. POST-OPERATIVE COMPLICATIONS IN DELAYED APPENDECTOMY

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Objective: Over the last two decades, there has been a controversy on the optimal timing for performing an appendectomy. The aim of this study is to evaluate the outcome in delayed appendectomy patients. We hypothesized that there is no significant increase in complications and length of stay (LOS) with delayed appendectomy compared to early appendectomy in patients presenting with appendicitis

Methods: A retrospective review of electronic medical records (EPIC) of patients presented with acute appendicitis to a university-affiliated community hospital over one year period (March 2015, March 2016). Outcome measures were hospital length of stay (LOS), complication rate, and readmission within 30 days.

Results: One hundred sixteen patients met the inclusion criteria and were enrolled in this study. Sixty-three were males (54%).The mean (4SD) age was 42 417.5 years, and the mean body mass index (BMI) was 2946.7 Kg/m2 . The time from onset of symptoms (37.55442 hours), the time from arrival at hospital to incision (8.2 +-10.2 hours), the length of procedure (0.95 40.43 hours), and the length of stay (474 59 hours). Two groups were assigned; group A who underwent surgery within 6 hours from arrival to ED, and group B who had surgery after 6 hours. No impact on LOS in those who had surgery within 6 hours. However, LOS was longer in those who underwent surgery between 6-12 hours (p0.026), and after 12 hours (p:0.02). On average, LOS for those who had symptoms for more than 48 hours was longer (95%CI 1.13, 3.52) than the length of stay for those who had symptoms for less than 24 hours. There was a correlation between LOS and procedure duration (0.36, p<.0001), the age of the patient (0.26, p=.0053) and WBC (0.23, p0.015). Complication and 30-day readmission rates were 6.7% and 3.4% respectively.

Conclusion: Delayed appendectomy more than 8 hours from arrival to the ED is associated with increased LOS and procedure time, which are potential for increased cost and complications.

55. THE BUNDLE: NOT THE ENTIRE ANSWER TO MITIGATION OF SURGICAL SITE INFECTIONS

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Purpose: Surgical Site Infections (SSI) are a significant cause of morbidity, mortality, higher cost, and longer hospital stay for patients. In an effort to reduce SSIs, our hospital instituted a bundle of evidence-based infection prevention measures. Our bundle was based on the Children's Hospitals' Solutions for Patient Safety (SPS) prevention bundles, and included a night-before preoperative bath, no use of razors, preoperative chlorhexidine wipes, and appropriate antibiotic dosing. We developed a robust system of monitoring all patients with SSIs including compliance with the bundle elements. We hypothesized that institution of SPS bundle elements would significantly reduce SSI in our institution. In adition, we determined whether infections were "preventable," indicating non-compliance with bundle measures, or "non-preventable," indicating compliance with bundle elements.

Methods: Approximately, 3 years ago, we formed a Surgical Site Infection Reduction Task Force after reviewing our performance relative to other children's hospitals that were part of the Pediatric National Surgical Quality Improvement Program from the American College of Surgeons. At that time, we decided to implement the SPS bundle elements as an effort to mitigate SSI's. After implementation of these policies and developing a robust method to track and follow all surgical patients regarding bundle compliance, we elected to study our past year's performance. A retrospective review was conducted of SSI monitoring data for all patients undergoing a surgical procedure at our children's hospital from 1/1/16 to 12/31/16. Infection rates and bundle compliance were monitored. Infection rates were compared by Chi-squared test with significance at $p<0.05$.

Results: The SSI rate prior to bundle implementation was significantly higher than after bundle implementation (2.71% vs. 1.84%, $p<0.05$). In the study period, 1,791 surgical procedures were performed with an overall surgical site infeciton rate of 1.84% . Bundle compliance for cases in which SSI was present was 64%. Non-compliance with bundle elements was present in 36% (10/28) of SSIs; one of four bundle components was missed in 80% of cases with infection, two of four bundle components were missed in 20% of cases with infection.

Conclusion: Institution of the SPS SSI prevention bundle significantly reduced the incidence of SSI in our hospital. Bundle compliance was present in over half of cases in which an SSI was recorded (64%); these infections were deemed "non-preventable." In our rubric, 36% of SSI were "preventable," indicating lack of compliance with one or more bundle elements. Implementation of an SSI prevention bundle, while helpful, does not eliminate all SSIs, indicating that a portion of SSIs are either "non-preventable" stochastic events, or that other factors, in addition to these bundle elements, are responsible for SSIs.

56. COST VARIATION AND OPPORTUNITIES FOR COST REDUCTION FOR LAPAROSCOPIC CHOLECYSTECTOMY

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Purpose: One hundred sixty three laparoscopic cholecystectomies were performed at our institution during the third quarter (July 1 – Sept. 30) of 2016 with a direct cost/case that varied from $524 – $1022 among 14 surgeons. Because of this wide variation in cost/case and the large number of cases performed, laparoscopic cholecystectomy was identified as a potential opportunity for significant cost reduction. The purpose of this study was to obtain the costs for individual instruments and supplies, determine the reasons for cost variation among high and low cost surgeons, and identify opportunities for cost reduction.

Methods: Average direct cost per case was examined for laparoscopic cholecystectomy performed by 14 surgeons during a recent 6-month period (June 1 – Nov. 30, 2016). Two groups were created, with the 4 highest-cost surgeons comprising group A and the 2 lowest-cost surgeons comprising group B. The line-item cost for each specific item was identified, and utilization was compared between groups.

Results: The average supply cost/case in group A was substantially higher than in group B ($930 vs. $518) despite a higher average risk-adjusted severity level in group B (2.14 vs. 1.50). Higher cost instruments were utilized with increased frequency in group A, including a 5 mm clip applier (100% vs. 47%), a disposable Hasson cannula (100% vs. 16%), a 5 mm optical port (24% vs. 2%), and Dermabond for skin closure (100% vs. 19%). In cases where Endoloops were utilized, group A deployed 2 loops/case, while group B deployed only 1 loop/case.

Conclusion: Significant variation in direct cost exists between surgeons performing laparoscopic cholecystectomy. Much of the cost difference can be accounted for by a relatively small number of high-cost instruments. We identified areas for cost savings by substituting lower cost alternatives, without compromising the quality of patient care. Specific recommendations include the use of one Endoloop rather than two in cases where a loop is required ($135.31 savings per case), use of a 10 mm clip applier rather than a 5 mm clip applier ($91.86 savings per case), use of a reusable rather than a disposable Hasson cannula ($33.91 savings per case), use of Mastisol and Steri-strips rather than Dermabond ($16.34 savings per case), and avoidance of the 5 mm optical port ($42.91 savings per case).

57. COMPARING SURGICAL TECHNIQUE AND THE DEVELOPMENT OF MARGINAL ULCER SYMPTOMS IN PATIENTS UNDERGOING LAPAROSCOPIC GASTRIC BYPASS.

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Purpose: To examine if surgical technique is associated with the development of marginal ulcer symptoms in patients undergoing laparoscopic gastric bypass (LGB).

Methods: This was a retrospective chart review of all LGB completed between January 1st, 2012 and December 30th, 2015, at Montefiore Medical Center. Data was analyzed to assess factors associated with symptoms with SAS v9.4. Categorical variables were analyzed using Chi-square tests and continuous variables with t-test. A multivariate logistic regression analysis was used to estimate adjusted odds ratio and 95% CI for technique for the outcome of marginal ulcer symptoms after adjusting for H. Pylori and comorbidities.

Results: A total of 1209 patients were included in this review. Our analysis is based on the subset of patients (n=885 or 73%) with at least one follow-up. Within this subset, 340 (38%) were in the circular stapler (CS) group, 334 (38%) in the hand-sewn (HS) group and 211 (24%) in the linear stapler (LS) group. The presence of marginal ulcer symptoms was found in 42 (12%) patients in the CS group, 68 (20%) patients in the HS group, and 33 (16%) patients in the LS group (p=0.02). A pre-operative H. Pylori diagnosis was associated with the development of marginal ulcer symptoms (p=<.001). A logistic regression analysis was conducted. Surgical technique remained significantly associated with the development of symptoms even after adjusting for the H. Pylori; compared to the CS group, both the HS technique (OR 2.83; 95% CI 1.76 to 4.54;) and the LS technique (OR 2.72, 95% CI1.52 to 4.86; P<0.05) were associated with a greater rate of marginal ulcer symptoms.

Conclusion: The circular-stapler technique is associated with a significantly lower rate of marginal ulcer symptoms in patients undergoing LGB as compared to either the hand-sewn or linear-stapler technique, even after adjusting for the presence of H. Pylori.

Table 1

	All Pts	Ulcer Sx	No Ulcer Sx	P	OR
Technique, n (%)					
CS	340 (38)	42 (12)	298 (88)	0.018	
HS	334 (38)	68 (20)	266 (80)		2.83[a]
LS	211 (24)	33 (16)	178 (84)		2.72[b]
Total	885 (100)	143 (16)	742 (84)		
H. Pylori Status, n (%)					
Positive	168 (19)	47 (28)	121 (72)	<.001	4.03[c]
Negative	717 (81)	96 (13)	621 (87)		
Total	885 (100)	143 (16)	742 (84)		
Age, mean (+/- SD)		42.5 +/- 10.7	43 +/- 11.1	0.69	
BMI, mean (+/- SD)		44.6 +/- 7.1	46.2 +/- 8.1	0.03	0.97[d]
Gender, n (%)					
Female	769 (87)	120 (16)	649 (84)	0.25	
Male	116 (13)	23 (20)	93 (80)		
Alcohol Use, n (%)	284 (32)	53 (19)	231 (81)	0.16	
Tobacco Use, n (%)	65 (7)	12 (18)	53 (82)	0.60	
Co-morbidities, n (%)					
DM	308 (35)	50 (16)	258 (84)	0.96	
HTN	442 (50)	69 (16)	373 (84)	0.66	
Severe COPD	20 (2)	5 (25)	15 (75)	0.35	
GERD	219 (25)	43 (20)	176 (80)	0.11	

CS: circular-stapler, HS: hand-sewn, LS: linear stapler, H. Pylori: Helicobacter Pylori, DM: diabetes mellitus, HTN: hypertension, COPD: chronic obstructive pulmonary disease, GERD: gastro-esophageal reflux disease, P-value < 0.05, OR: odds ratio, 95% Confidence Interval (CI), a: CI 1.76 to 4.54, b: CI 1.53 to 4.86, c: CI 2.50 to 6.52, d: CI 0.98 to 0.10

58. HELLER MYOTOMY FOR ACHALASIA AND EPIPHRENIC DIVERTICULA, A SINGLE INSTITUTION EXPERIENCE AND APPRAISAL OF PATIENTS CHARACTERISTICS AND OUTCOMES

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Purpose: To perform a global evaluation of patients who underwent Heller myotomy for achalasia alone compared to those who underwent Heller myotomy for achalasia and epiphrenic diverticulum focusing on demographics, symptoms, prior interventions, operation, and outcomes.

Methods: A retrospectively collected, single institution case series of patients who underwent Heller myotomy for achalasia alone and those who underwent Heller myotomy for achalasia with associated epiphrenic diverticulum. Collected date included patient demographics, presenting symptoms, prior intervention; surgery performed with rate of laparoscopic, conversion to open, and open procedures; postoperative complications, and symptom resolution.

Results: There were a total of 137 patients with achalasia only and 21 with epiphrenic diverticula. 51% of achalasia patients were men, compared to 33% of epiphrenic diverticula patients. The average age of the diverticula patients was 68 years, compared to 52 years for the achalasia patients. Diverticula patients has a similar rate of dysphagia (100% vs 99%), were more likely to have regurgitation (90% vs. 73%), but less likely to have weight loss (52% vs. 65%). All diverticula patients underwent excision of the diverticulum with a Heller myotomy and Dor fundoplication, while achalasia patients all underwent a Heller myotomy and Dor fundoplication. Diverticula patients were less likely to undergo preoperative dilations (29% vs. 56%), but more likely to have prior surgery (24% vs. 15%). They were less likely to have a laparoscopic operation (48% vs. 86%), and more likely to be converted to an open operation (38% vs. 8%). They were more likely to have postoperative complications (33% vs. 9%), athough postoperative leaks were similar (10% vs. 6%). They were less likely to have symptomatic improvement (80% vs. 92%).

Conclusion: This is one of the largest single series of patients with epiphrenic diverticula treated sugically. Patients who underwent a Heller myotomy for achalasia compared with epiphrenic diverticulum were similar in dysphagia, but not weight loss or regurgitation. Diverticula patients were on average 15years older and more likely to have undergone prior operations. The group who underwent Heller myotomy for achalasia alone had excellent outcomes in terms of resolution of symptoms and improvement in dysphagia. However, when performed for achalasia and epiphrenic diverticulum a lower percentage of patients reported partial or complete resolution of symptoms compared to those without epiphrenic diverticulum. The diverticula group converted from a laparoscopic approach to open, and planned open cases. Additionally, there was increased incidence of post-operative complications and post-operative leak. The differences are likely the result of older patient age and history of prior surgical intervention resulting to more technically difficult cases and increased risk of complication.

59. EFFECT OF INTRA-OPERATIVE SINGLE DOSE OF DEXAMETHASONE FOR CONTROL OF POST-OPERATIVE NAUSEA ON MANAGEMENT OF BLOOD GLUCOSE LEVELS IN DIABETIC PATIENTS

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Objective: Post-operative glycemic control in diabetic patients is challenging. The use of dexamethasone intra-operatively by anesthesiologists to reduce post-operative nausea and vomiting adds to the challenge. It also may complicate patient care if there is an association between intra-operative dexamethasone and blood glucose levels. This study examined whether there is a relationship between post-operative glycemic control and intra-operative dexamethasone in diabetic patients undergoing surgery.

Methods: We analyzed retrospectively 354 diabetic patients who underwent general anesthesia for various surgical procedures and hospitalized post-operatively for at least 24 hours between January 2015 and June 2016. Patients were classified into two groups – those who received dexamethasone intra-operatively and those who did not. The groups were analyzed for blood glucose changes during and following their procedure. A multiple regression analysis was conducted to determine the association between the use of dexamethasone and blood glucose changes. The analysis adjusted for demographic, clinical, and operative differences such as baseline glucose level and the administration of insulin. A total of 350 patients were examined and significance was set at $p<0.05$.

Results: A total of 354 diabetic patients (119 in dexamethasone group; 235 in control group) were included. The dexamethasone group had significantly lower preoperative blood glucose (135.5mmol/L) compared to the control group (144.4mmol/L) ($p=0.04$) and significantly lower proportion of patients who had received insulin during surgery (14.9%) compared to the control group (23.4%) ($p=0.04$). No differences were observed for gender, steroids, age, BMI, or surgery time. Overall, glucose levels declined from pre-op to post-op day 1 by 9.6 (62.9) ($p=0.007$). Among patients receiving insulin, the dexamethasone group demonstrated a significant increase in glucose (64mmol/L increase) compared to controls (14mmol/L decline) ($p=0.006$). Among patients without insulin, the dexamethasone group also demonstrated a significant increase in glucose (33mmol/L increase) compared to controls (2mmol/L increase) ($p=0.0001$).

Conclusion: Diabetic patients receiving dexamethasone for nausea during surgery may be at greater risk of rising blood glucose levels during surgery than those receiving other medications for nausea.

60. DRG MIGRATION: A NOVEL MEASURE OF INEFFICIENT SURGICAL CARE IN A VALUE BASED WORLD

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Objective: DRG migration is defined by the impact of post admission CC's (comorbidity or complication) moving a colectomy patient from DRG 331 to 330. This transition is associated with a doubling of cost to payers, and defines potentially inefficient care at the provider level. Importantly, thiis method of evaluation assesses the impact of the perioperative care plan without need for risk adjustment due to the absence of any preadmission CC's. The aim of this study was to assess the frequency and impact of DRG migration for colectomy.

Methods: We assessed the 5% national Medicare data set for colectomy (DRG's 331/330), excluding present on admission CC's and selecting only patients with one or more CC's post-admission to define the impact on payments, cost and length of stay (LOS).

Results: The incidence of DRG migration was 7.4%. Incidence/Payment/Cost/LOS results were: 1) DRG 331- 100%/$48,065/$6,988/4.7; 2) DRG 330 a) Ileus- 44%/$69,333/$12,071/8.4 days; b) other digestive system complications-31%/$73,383/$12,188/9.1; c) acute posthemorrhagic anemia-21%/$73,653/$11,579/7.6 days; d) accidental puncture or laceration-10.0%/$57,608/$11,124/6.6 days; e) pulmonary collapse-8.9%/$76,768/$11,254/8.4 days; f) urinary tract infection-7.1%/$93,306/$14,730/10 days; g) acute kidney failure-6.0%/$82,232/$11,890/8.1 days; h) hyposmolality and/or hyponatremia-/6.0%/$55,408/$11,415/5.9 days. The increases in payments, hospital cost, and LOS were all statistically significant in the DRG migrated patients.

Conclusion: DRG migration significantly increased projected CMS cost by $24 million, hospital costs by $109 million, and hospital day by 15,740 for patients admitted as DRG 331. Because these patients were admitted as DRG 331 the negative outcomes are related only to processes of postoperative care. This economic concept defines inefficient surgical care with easily accessible data and confirms that increased resource consumption outstrips the additional reimbursement. Therefore, both payors and providers can use this simple assessment to design and compare value based quality improvement programs and associated outcomes.

✢ 61. EFFICACY AND SAFETY OF TRANSVERSUS ABDOMINIS PLANE BLOCK VERSUS THORACIC EPIDURAL ANESTHESIA IN PATIENTS UNDERGOING MAJOR ABDOMINAL ONCOLOGIC RESECTIONS: A PROSPECTIVE, RANDOMIZED CONTROLLED TRIAL

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Objective: Thoracic epidural anesthesia (TEA) and transversus abdominus plane (TAP) blocks are acceptable methods of post-operative pain control in major abdominal surgeries. The purpose of this study was to compare the clinical outcomes of these techniques.

Methods: A prospective, randomized trial was performed for 75 patients that underwent major abdominal oncologic surgeries. Patients were randomized to either the TEA or TAP group. A survey was performed to assess patient's perception of their pain control.

Results: A total of 75 patients were enrolled, with 67 patients completing the study. There were 32 patients in the TAP group and 35 patients in the TEA group. There was no difference in 24 or 48 hour fluid balance between the groups. The TEA group demonstrated increased episodes of hypotension in the first 24 hours compared with the TAP group (3.0 v 0.6, p=0.02). There was increase in length of patient controlled analgesia (PCA) use in the TAP group (4.1 days v. 2.3, p=0.03). There was no difference in ICU length of stay and indwelling catheter time. The post-operative survey did not demonstrate any difference in subjective pain between the TAP and TEA groups (5.9 v 5.6 p=0.346). The majority of patients (89%) were satisfied with their pain control. There was no attributable morbidity associated with either technique.

Conclusion: The use of TAP block for postoperative analgesia is related to a decrease in episodes of postoperative hypotension on post-operative day 1, while necessitating longer use of a PCA. Pain control was equivalent between the two methods without adverse effects.

62. LAPAROSCOPIC-GUIDED ABDOMINAL WALL NERVE BLOCKS IN THE PEDIATRIC POPULATION: A NOVEL TECHNIQUE WITH COMPARISON TO ULTRASOUND-GUIDED BLOCKS AND LOCAL WOUND INFILTRATION ALONE

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Purpose: Abdominal wall nerve blocks (AWNB) have been gaining popularity for the treatment of perioperative pain in children. These blocks are typically performed under ultrasound guidance by a pain management physician or an anesthesiologist with training in nerve blocks. We aim to compare a technique of surgeon-performed laparoscopic AWNB to anesthesia-placed ultrasound-guided AWNB and the current standard, local wound infiltration.

Methods: After IRB approval was obtained, a retrospective chart review was performed of pediatric patients treated at a single institution over a two-year period. Included in this study are patients who underwent laparoscopic appendectomy, cholecystectomy, and ovarian cystectomy and simultaneously received an ultrasound-guided AWNB, a laparoscopic-guided AWNB or local wound infiltration of port sites. Bilateral rectus sheath block or bilateral transversus abdominus plane blocks were utilized. Demographic information obtained included age, weight, operation, and gender. Outcome measures recorded included pain scores in the first 8 postoperative hours, hospital length-of-stay (LOS), narcotic usage, operative time, operating room utilization, and total time under anesthesia. Statistics were calculated using ANOVA with post-hoc Bonferonni t-tests for pair-wise comparisons. All analyses were performed using SAS v9.3.

Results: Included in this study were 380 patients, who received ultrasound-guided AWNB (n=125), laparoscopic-guided AWNB (n=88), and local wound infiltration (n=117). Results are demonstrated in Table 1. Groups were well matched for age, gender, and weight. There was no significant difference in pain scores within the first 8 hours or narcotic usage between groups. In terms of operating room utilization, time under anesthesia and operative time, local wound infiltration demonstrated the shortest overall time required to perform ($p<0.0001$). Laparoscopic-guided and ultrasound-guided blocks require essentially the same amount of operating room time. Patients that received a surgeon-performed AWNB demonstrated a shorter LOS when compared to the other groups, and this difference was significant ($p=0.02$) when compared to the local infiltration group.

Conclusion: Our study has demonstrated that laparoscopic-guided AWNBs show similar efficacy to ultrasound-guided nerve blocks performed by pain management physicians without increasing time in the operating room. This finding could lead to a dramatic increase in access to AWNBs in the pediatric population as the surgeon performing the operation can administer the nerve block without the need of special equipment or additional physicians that may not be available in certain hospitals or at certain times of day. In addition, although the early pain scores were not different, the shorter LOS in the laparoscopic AWNB group compared with the local infiltration group suggests the nerve block leads to more durable anesthesia allowing for earlier discharge.

	Ultrasound-Guided Block n=125	Laparoscopic-Guided Block n=88	Local Wound Infiltration n=117	p-value
Male (%)	41.6	45.5	42.7%	0.85
Age (yrs)	12.1	11.3	11.0	0.06
Weight (kg)	53.5	53.5	48.3	0.16
BMI	22.7	23.4	22.1	0.48
LOS (hrs)	43.9	33.1*	53.7*	**0.02**
Operative time (min)	51.0	57.6*	45.4*	**0.002**
Anesthesia time (min)	88.2*	83.3*	67.4*	**< 0.0001**
Operating Room time, (min)	97.5*	97.8*	80.4*	**< 0.0001**
Early Pain Scores, < 2h, (Scale 1-10)	2.9	2.9	2.7	0.82
Late Pain Scores, 5-8h, (Scale 1-10)	3.6	4.2	4.0	0.27
Post-op Narcotic Usage, (morphine equivalent/kg)	0.23	0.20	0.26	0.24

*significant difference on post-hoc Bonferonni t-test

Table 1. Comparison of Ultrasound-Guided, Laparoscopic-Guided and Local Wound Infiltration

★ ✢ 63. DO PSOAS MUSCLE AREA AND VOLUME CORRELATE WITH POSTOPERATIVE COMPLICATIONS IN PATIENTS UNDERGOING RECTAL CANCER RESECTION?

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Objective: Increasingly, patients with multiple co-morbidities undergo major abdominal surgery. Consequently, accurate preoperative measures to assess patient risk for postoperative complications are required. While several indices are in place to assess for frailty, evaluating skeletal muscle mass for sarcopenia is a potential measure. As rectal cancer patients routinely undergo radiographic staging, and often re-staging, CT scans allow for preoperative evaluation of skeletal muscle mass. Our aim was to evaluate if psoas muscle cross-sectional area and volume, as measures for sarcopenia, correlated with short-term patient outcomes.

Methods: We performed a retrospective review of all patients undergoing curative rectal cancer resection at a tertiary medical center (2007–2015). Variables collected included demographics, co-morbidities and postoperative complications. Total psoas area (TPA) was measured by outlining both psoas muscles manually at 3 levels: the 3rd lumbar vertebrae superior endplate, and at 2 cm and 4 cm intervals inferiorly. Total psoas volume (TPV) was calculated by multiplying the mean TPA by the distance measured (cm). Both values were normalized to patient height (m2). Postoperative complications were graded using the Clavien-Dindo Classification system (Major=Grade 3–5; Minor=Grade 1–2).

Results: We identified 180 patients (58.3% male, mean age 62.7 years). 18.3% of patients had diabetes, 50.6% were smokers, 5.6% had COPD, and 4.4% were malnourished (serum albumin <3 or >10% weight loss). Mean time from CT scan to surgery was 82 days. The overall complication rate was 44.4% (n=80) of which 62.5% (n=50) were major complications. There was no significant difference in median TPA or TPV with or without height normalization between patients with and without postoperative complications (All P>0.5). The median TPA and TPV were smaller in patients with major compared to minor complications (respectively, 13.2 vs. 17.9 cm2, P=0.048; 55.8 vs. 71.6 cm3, P=0.04). This difference was not significant when normalized to height (Both P>0.05). When evaluating only patients with CT scans within 90 days of surgery, patients who had major postoperative complications had a significantly smaller median TPA (11.3 vs. 18.4 cm2, P=0.01) and median TPA/m2 (6.7 vs. 10.6 cm2/m2, P=0.03) compared to patients who had minor complications. The median TPV (55.3 vs. 73.8 cm3, P=0.01) and median TPV/m2 (26.7 vs. 42.0 cm3/m2, P=0.03) were also lower in the major complication than minor complication group. In malnourished patients, regardless of time from CT scan to surgery, median TPA/m2 and TPV/m2 were significantly smaller (6.4 vs. 9.5 cm2/m2, P=0.004; 25.8 vs. 38.1 cm3/m2, P=0.005).

Conclusion: Patients who had major complications had significantly smaller TPA and TPV, suggestive of sarcopenia, compared to patients with minor complications. There is more utility for preoperative CT scans for rectal cancer staging that surgeons may use to help anticipate the potential for postoperative complications.

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

64. PROTHROMBIN COMPLEX CONCENTRATE TO CORRECT HEMORRHAGE-INDUCED COAGULOPATHY IN ACUTE CARE SURGERY

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Society: CSA

Purpose: Hemorrhage-induced coagulopathy presents a unique challenge in acute care surgery. Prothrombin complex concentrates (PCC), have gained favor for emergent coagulopathy correction, however limited data exists to support its use. We aimed to determine the efficacy of PCC in non-anticoagulated patients who developed coagulopathy secondary to hemorrhage or injury.

Methods: 54 consecutive acute care surgery patients (29 trauma, 25 non-trauma) admitted with an INR > 1.5 and not taking anticoagulants, who received PCC for the reversal of coagulopathy due to hemorrhage were retrospectively reviewed. Subgroup analysis was performed on patients that received PCC only (PCC-only) and those transfused plasma and PCC (FFP+PCC) during the first 24 hours after admission. Demographics, PCC dosing, and transfusion data were analyzed. We analyzed coagulation parameters at admission, 12-hours post-PCC and 24-hours post-PCC.

Results: The 54 reviewed patients had a mean age of 56 years and underwent a mean of 1 operation within the first 24 hours. 89% (48) survived the first 24 hours, and had a mean ICU length of stay of 9.8 days, and mean hospital stay of 13.6 days. Admission mean base deficit was 7.9. Mean admission INR decreased from 2.6 to 1.6 ($p < 0.001$, 95% CI 0.5, 1.5) 12 hours after PCC administration, and remained lower at 24 hours (INR 1.9, p 0.007, 95% CI 0.2, 1.3). Mean per/kg dose of PCC was 18.5 IU/kg. Red blood cell (RBC) mean transfusion within the first 24-hours was 1207 mL, and mean plasma transfusion was 1180 mL. In comparing trauma (29, 54%) and non-trauma (25, 46%) acute care surgical patients, no differences were seen between age (53 vs. 59 years), mean number of operations at 24 hours (1 vs. 0.9), 24-hour survivor ICU length of stay (11 vs. 9 days) or hospital length of stay (14 vs. 13 days). Mean admission base deficits did not differ between trauma and non-trauma patients (7.3 vs. 8.6). Mean admission INR values were similar between trauma and non-trauma patients (2.5 vs. 2.8). Mean 12-hour INR values were lower in the trauma group (1.4 vs. 1.9, p 0.004, 95% CI -0.9, -0.2). At 24-hours, mean INR values were similar in both groups (1.8 vs. 1.9). Trauma patients received a higher per/kg dose of PCC (20.7 vs. 15.9 IU/kg, p 0.03, 95% CI 0.6, 8.9). No differences were identified with 24-hour transfusion requirements of RBC (1329 mL vs. 1064 mL) or plasma (1187 mL vs. 1173 mL) between the two groups. Subgroup analysis between PCC-only and FFP+PCC groups is shown in Table 1.

Conclusion: PCC effectively corrects hemorrhage-induced coagulopathy in acute care surgical patients, independent of plasma transfusion. The decision to use PCC as a sole agent during resuscitation of acutely ill or injured patients may be guided by base deficit, age and need for volume administration.

Table 1: Subset analysis between patients receiving PCC-Only and FFP+PCC

	Trauma Patients			Non-trauma Patients			All Patients		
	PCC-Only	FFP+PCC	p	PCC-Only	FFP+PCC	p	PCC-Only	FFP+PCC	p
n	12	17	-	7	18	-	19	35	-
Age (years)	62.3	46.9	NS	65.3	56	NS	63	52	0.02
Operations in first 24 hours	0.8	1.2	NS	1	0.9	NS	0.9	1.0	NS
ICU Length of Stay (days)	8.8	12.2	NS	10.7	8.0	NS	10	10	NS
Length of Stay (days)	12.3	14.8	NS	20.3	10.5	NS	15	13	NS
Admission Base Deficit	2.7	9.4	<0.001	6.0	9.2	NS	3.8	9.3	0.002
Admission INR	2.9	2.2	NS	2.6	2.9	NS	2.7	2.6	NS
12-hour INR	1.5	1.3	NS	1.7	2.0	NS	1.6	1.6	NS
24-hour INR	1.8	1.8	NS	2.0	1.9	NS	1.9	1.8	NS
PCC dose (IU/kg)	21.6	20.1	NS	13.9	16.7	NS	18.8	18.4	NS
24hr RBC Transfusion (mL)	292	2062	0.04	0	1478	<0.001	184	1762	<0.001
24hr FFP Transfusion (mL)	0	2024	0.003	0	1629	<0.001	0	1821	<0.001

Values are expressed as means. Lengths of stay expressed for those surviving the first 24 hours after admission. RBC: red blood cells; FFP: fresh frozen plasma.

✢ 65. NEOADJUVANT SYSTEMIC THERAPY IN INVASIVE LOBULAR BREAST CANCER: IS IT INDICATED?

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Objective: The recent trend in treatment of breast cancer is use of neoadjuvant systemic therapy (NAST) for nodal downstaging and to achieve breast-conserving surgery. Traditionally, invasive lobular cancer (ILC) is known to respond less favorably to NAST when compared to invasive ductal carcinoma. This study looks at NAST given to ILC patients to determine if NAST should be recommended.

Methods: A retrospective cohort study was performed on patients treated at our institution with stage I-III ILC between 2006-2015. Patient demographics, tumor biology, cancer stage pre-treatment and post-treatment, and the timing of systemic therapy were collected. Tumor and lymph node (LN) response to NAST was evaluated; analysis was performed to determine factors associated with response. A response to NAST was defined as pathological complete response (pCR) if there was no evidence of residual tumor at time of surgery, partial response (pPR) if there was at least a 50% tumor size reduction (calculated using pretherapy imaging and final pathologic size) or incomplete/no response (pNR) if there was no change or less than 50% tumor reduction.

Results: A total of 560 women with ILC were identified, with a median age of 61.6 years old. At presentation clinical Tumor stage was T1, 59.2%; T2, 28.6% T3, 10.9%; and T4, 1.3%. Additionally, 89 patients (15.9%) had clinical ≥ N1 disease. The majority of tumors were estrogen receptor (ER) positive (95.7%), HER 2 negative (89.5%), and low grade (83.4%). NAST was given to 77 (13.8%) patients. In this group, average tumor size was 4.93cm and 28 (36.4%) had clinically positive LNs. A total of 51 patients received neoadjuvant chemotherapy (NAC), 11 received neoadjuvant hormonal therapy (NAH), and 15 received both (NACH). In the NAC group, pCR was seen in 8 patients (15.7%), pPR in 26 (51.0%) and pNR in 17 (33.3%). In the NAH group, pCR was seen in 1 (9.1%) patient, pPR in 5 (45.5%) and pNR in 5 (45.5%). In the NACH group, pCR was seen in 3 (20%) patients, pPR in 8 (53.3%), and pNR in 4 (26.7%). When assessing LN downstaging, 4 out of 28 (14.3%) patients with clinically positive LNs downstaged to N0 on NAST. We did not identify any factors (size, receptor status, tumor grade) that were significantly associated with tumor or LN response to NAST. In patients who had NAST, 12 (15.6%) subsequently underwent lumpectomy and 65 (84.4%) had mastectomy. In patients who had surgery first (n=482), average pathologic tumor size was 2.07cm, 222 (46.1%) underwent lumpectomy and 260 (53.9%) had mastectomy.

Conclusion: The majority of patients with ILC present with clinical T1, low grade, ER positive tumors and LN negative disease. Despite efforts for NAST to downsize tumors or nodal burden, only a minority actually achieves pCR or LN downstaging. Additionally, even with NAST, the majority of patients still undergo mastectomy and therefore the benefit of NAST in ILC appears limited.

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

66. INHIBITION OF IL-10 IN TUMOR MICROENVIRONMENT CAN RESTORE MESOTHELIN CHIMERIC ANTIGEN RECEPTOR (CAR) T-CELL ACTIVITY IN PANCREATIC CANCER

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Purpose: The chemoresistance of pancreatic cancer has spurred research into novel immunotherapeutic approaches such as CAR T-cells targeting tumor-specific antigen (TSA). Mesothelin is a differentiating TSA that is overexpressed in pancreatic cancer. We have previously demonstrated that ex vivo interaction of T-cells bearing anti-mesothelin- CAR with mesothelin-positive tumors results in the secretion of the proinflammatory cytokine IFN- and apoptosis inducing granzyme B. However, pancreatic tumors are known to shield themselves from immunosurveillance by secreting immune inhibitory cytokines such as IL-10. In this study, we assess the effect of the tumor microenvironment and its reversal via depletion of IL-10 on mesothelin-CAR cytotoxic T-cell activity against a human pancreatic cancer cell line.

Methods: The mesothelin-positive pancreatic cancer cell line BxPC-3 was cultured in DMEM medium and replaced with fresh serum-free (conditioned) medium to simulate the tumor microenvironment. Effector (E) human T-cells from PBMC propagated with OKT3 antibody and BxPC-3 target (T) cells were co-cultured at various E:T ratios. T-cells were transduced with lentiviruses encoding mesothelin-CAR at a multiplicity of infection of 50 followed by selection with puromycin until lysis of mock-transduced cells at 2 weeks. BxPC-3-conditioned medium was pretreated with 5 mg/mL of anti-IL-10 blocking antibody for 30 min before addition to co-cultures.

Results: When compared with co-culture supernatant alone, ELISA assays for co-culture supernatants of conditioned medium displayed significant inhibition of IFN- (Fig. 1A; $p < 0.05$) and granzyme B (Fig. 1B; $p < 0.05$) secretion, both of which are crucial for rapid initiation and induction of target cell cytotoxicity. In contrast, this inhibition was significantly restored to basline when conditioned medium was IL-10 depleted ($p<0.05$ for both IFN- and granzyme B). In addition, we observed reduction of mesothelin-CAR T-cell-induced cytotoxicity of BxPC-3 target cells in the presence of conditioned medium at an E:T ratio of 10:1 (28.7% reduction in target cell lysis) and a more pronounced effect at an E:T ratio of 20:1 (34.8% reduction) (Fig. 1C). Further, in line with our ELISA assays, we observed a substantial blunting of this inhibition when IL-10 was depleted from the conditioned medium (only 13.5% and 14.2% reductions from baseline at E:T ratios of 10:1 and 20:1, respectively).

Conclusion: Significant reversal of tumor-derived immunosuppression may be achieved by blocking IL-10 in the tumor microenvironment, allowing for more effective cytotoxicity of mesothelin-engrafted CAR T-cells and enhancing the potential for clinical application.

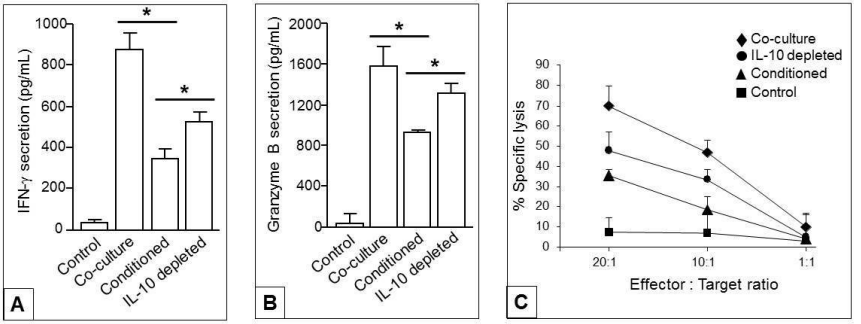

Fig. 1. Co-cultures of mesothelin-CAR T-cells and BxPC-3 cell line: A. IFN-γ secretion, B. Granzyme B secretion, and C. Cytotoxicity assays. Data is representative of 3 separate experiments. *$p<0.05$

✔ 67. PERIOPERATIVE HEMODYNAMIC EVALUATION USING FOCUSED ECHOCARDIOGRAPHY: A QUALITY IMPROVEMENT STUDY

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Society: CSA

Purpose: Perioperative volume status evaluation is often difficult in trauma patients. Traditional measures including: central venous pressure (CVP), pulmonary artery occlusion pressure and physical exam are generally poor tools in the critically ill and ventilated populations. Echocardiography has become more widely accessible and more routinely used in the critical care setting as a tool to evaluate the hemodynamics of patients. The purpose of this observational study is to evaluate our experiences using peri-operative transthoracic echocardiography in critically injured patients with the intent to help identify those trauma patients who require careful fluid management.

Methods: Formal assessment of hemodynamics in the peri-operative period of patients admitted to the Trauma ICU (TICU) was conducted over a six-month period. New admissions to the TICU with and without operative management were screened for examination. Each examination included review of laboratory values, physical exam of the patient, a limited TTE (defined as standard parasternal long- and short-axis, apical 4-chamber, and subcostal views with color-flow Doppler), and interrogation of invasive monitoring (Arterial Pressure, Pulse Pressure Variation, Systolic Pressure Variation). Data was prospectively collected and retrospectively evaluated. Relevant information was provided the on-call physician with a recommendation for fluid and inotropic management based on the volume status and cardiac contractility.Results: During the six-month time period 433 patients were admitted to a TICU. Of those patients 302 (70%) underwent a hemodynamic evaluation (HDE). The mean age of patients undergoing evaluation was 39.9 (SD:18.3) years. The male:female ratio was 5M:2F. The average TICU LOS was 6.2 (SD:6.7) days. Of those who received a hemodynamic evaluation, 65.9% were intubated, 44.7% were post-op patients, 59.2% HDE's were completed with 6 hrs of admission to the TICU. The mean time from admission to assessment was 5.9 hrs. The average time for each procedure was 15.7 min. Based on US and HD evaluation 146 patients received fluid boluses. Of those, 136 had a favorable hemodynamic response to fluid bolus and 9 were non-responders. Inotropic support was initiated in 16 patients following fluid boluses and and 22 patients who had not receive additional fluid following TTE guided hemodynamic assessment. There were no documented cases of fluid removal initiation based on TTE results.

Conclusion: Limited echocardiography and hemodynamic evaluation can be easily accomplished at the bedside and can immediately provide the treating team with objective evidence to guide fluid and inotropic management based on the volume status and contractility.

★ *MSA Best New Member Paper* ✔ *CSA Best New Member Paper* ✢ *MSA Best Surgeon in Training Paper*

68. SUCCESSFUL PARATHYROIDECTOMY GUIDED BY INTRAOPERATIVE PARATHORMONE MONITORING FOR PRIMARY HYPERPARATHYROIDISM IS PRESERVED IN MILD AND MODERATE RENAL INSUFFICIENCY

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Society: CSA

Purpose: The onset of secondary hyperparathyroidism in renal insufficiency is attributed to factors such as parathyroid hormone (PTH) resistance, decreased expression of calcium and vitamin D receptors, and hyperphosphatemia among others. The effect of altered PTH metabolism in progressive renal insufficiency on intraoperative parathormone (ioPTH) monitoring during parathyroidectomy (PTX) is not well studied. This study evaluates the operative outcomes in patients undergoing PTX for primary hyperparathyroidism (pHPT) in mild and moderate renal insufficiency.

Methods: A retrospective review of prospectively collected data in 604 patients undergoing PTX guided by ioPTH monitoring for pHPT was performed. All patients had biochemical confirmation with elevated calcium and PTH. All patients had ≥6 months of follow up with a mean follow up of 45 months. Glomerular filtration rate (GFR) was estimated with the Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equation. The National Kidney Disease Outcomes Quality Initiative (KDIGO) staging was used to define the stages of CKD based on estimated GFR (eGFR): Stage I with normal or high GFR (GFR>90 ml/min), Stage II Mild CKD (GFR=60-89 ml/min), Stage III Moderate CKD (GFR=45-59 ml/min). Patients with overt secondary hyperparathyroidism (CKD Stage IV and V) were excluded. Operative outcomes including the rates of operative success, failure, recurrence, bilateral neck exploration (BNE) and multiglandular disease (MGD) were compared across the three groups.

Results: Of the 604 patients, 38% (230/604) of the patients had Stage I CKD, 44% (268/604) had Stage II CKD, and 18% (106/604) had Stage III CKD. Patients that were older, male sex, and non-black were associated with advanced renal insufficiency. With increasing severity of renal insufficiency, there was a significant elevation of the pre- and post-operative calcium and PTH levels ($p<0.05$). Overall, there were no differences in the rates of BNE and MGD, in operative success, failure or disease recurrence, across all three stages.

Conclusion: In conclusion, PTX with ioPTH monitoring is performed with the highest operative success uniformly in pHPT patients in mild and moderate renal insufficiency. Furthermore, patients with pHPT and higher stages of renal insufficiency do not have higher recurrence rates, and can be managed in a similar manner to patients with pHPT and normal renal function.

Comparison of biochemical profiles and operative outcomes by stages of CKD

Parameters	Stage I CKD n = 230 (38%)	Stage II CKD n = 268 (44%)	Stage III CKD n = 106 (18%)	p-value
eGFR (ml/min/1.72m^2)	109 ± 17	75 ± 9	49 ± 8	-
Pre-operative calcium (mg/dl)	11.5 ± 0.9	11.6 ± 0.9	12.1 ± 1.7	<0.001
Pre-operative PTH (pg/ml)	174 ± 175	165 ± 106	247 ± 359	0.001
Post-operative calcium (mg/dl)	9.2 ± 0.7	9.2 ± 0.7	9.6 ± 0.7	<0.001
Post-operative PTH (pg/ml)	53 ± 27	55 ± 33	79 ± 71	<0.001
BNE	13.0%	12.7%	6.6%	NS
MGD	8.3%	6.3%	7.6%	NS
Success	97.8%	97.8%	95.3%	NS
Failure	2.2%	2.2%	4.7%	NS
Recurrence	0.4%	1.1%	1.9%	NS

Table 1: Comparison of biochemical profiles and operative outcomes by stages of CKD.
Values expressed as mean ± standard deviation
eGFR estimated glomerular filtration rate, *PTH* parathyroid hormone, *BNE* bilateral neck exploration, *MGD* multiglandular disease

QUICK SHOT ABSTRACTS

Quick Shot Abstracts

QS1. AGE AND LOCATION OF RIB FRACTURES NEED TO BE EVALUATED WHEN RISK STRATIFYING PATIENTS

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Purpose: The number of rib fractures has been proven to be an independent predictor of mortality. However, the interaction between the number of rib fractures and the location of the fractures has not been evaluated.

Methods: A retrospective review of all adult patients with rib fractures and chest CT scans at an ACS verified level-one trauma center from January 2013 to April 2015 was performed. 681 patients were reviewed. The location of individual fractures were grouped into anterior, lateral, posterior, as well as rib levels grouped into superior, middle, and inferior. The number of fractures in each of those groups was recorded. Logistic regression with odds ratios (OR) was used to evaluate the relationship between the number of rib fractures, location of fractures, and mortality.

Results: Controlling for age, gender, and Injury Severity Score (ISS), for each additional lateral rib fracture the odds of mortalityare 1.13 times higher (p=0.001). A logistic regression model of patients with posterior rib fractures found that these fractures did not affect mortality unless there were 3 or more and the patient was 45 years or older. (OR;12,p=0.044). In patients less than 45 years old, posterior rib fractures had no significant effect on mortality. The rib level groups did not have an effect on any of these results.

Conclusion: Lateral rib fractures increase risk of death for all patients. For patients older than 45, three or more rib fractures significantly affects mortality. Location of rib fractures and age are important risk factors for rib fracture associated mortality.

QS2. RESULTS OF OPEN ABDOMINAL AORTIC ANUERYSM REPAIR IN PATIENTS NOT SUITABLE FOR ENDOVASCULAR REPAIR

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Purpose: With increasing use of endovascular aneurysm repair (EVAR), open repair of abdominal aortic aneurysm (AAA) has abated. However, patients requiring open repair pose unique technical challenges with potential increase in perioperative complications. This study compares open repair in patients who were not suitable for EVAR to repair in patients who were candidates for EVAR but instead underwent open repair.

Methods: Patients undergoing open AAA repair for unruptured AAA from 1999 to 2016 were studied in a retrospective analysis and divided into two groups. Mandatory open AAA repair (Group A) in patients with: A) Juxtarenal AAA, B) Severe angulation of aortic neck (greater than 60°), C) Renal artery/arteries arising from AAA, D) Severely narrow or occluded iliac arteries, E) Bilateral common iliac and hypogastric aneurysms, F) Narrow distal abdominal aorta (<16 mm). Group B consisted of patients who were candidates for EVAR but underwent open repair at the discretion of the patient and the surgeon.

Results: All patients (n192) underwent transperitoneal open AAA repair except six patients underwent retroperitoneal repair (Four in Group A and two in Group B). Group A (n77) had 51 males (mean age 72 4 8 years). Group B (n115) had 85 males (mean age 70 4 6 years) (p= ns). In group A, the indication for open repair was juxtarenal AAA in 36, renal arteries arising from AAA in two, severe angulation of aortic neck in six, severe iliac artery occlusive disease in 18, distal narrow aorta in two, bilateral common iliac and or hypogastric aneurysm in 13. Both groups had similar incidence of medical comorbidities such as coronary artery disease, hypertension, diabetes mellitus, nicotine abuse, renal failure and hyperlipidemia. In Group A, 32 patients had ligation of left renal vein and had proximal aortic clamp above the renal arteries in 27 and interrenal in five patients. All patients in Group B had proximal clamp below the renal arteries (p=.0009). In Group A, four patients had renal artery revascularization (two patients had left aorto renal bypass and two patients had reimplantation of renal arteries). Operating time was 340 4 60 minutes in Group A and 230 4 40 minutes in Group B (p=.0001). Length of stay (LOS) was 13 4 6 days in Group A and 8 4 3 days in Group B (p=0.6). Post operative complications are depicted in the table.

Conclusion: Open AAA repair in patients who are unsuitable for EVAR is associated with greater operating time, postoperative respiratory failure and greater need for ligation of left renal vein to obtain proximal control. However, Perioperative mortality was similar in both groups.

Post Operative Complications	Group A (77)	Group B (115)	P value
POST OP Renal Failure			
A) Temporary	10 (13%, *HD 4)	8 (7%)	ns
B) Permanent	2 (2.6%, HD 1)	-	ns
Cardiac Complications	5 (6.5%)	8 (7%)	ns
Respiratory Failure	16 (21%)	4 (3.5%)	0.007
Sigmoid Ischemia/Infarction	1 (1.3%)	-	ns
Encephalopathy	7 (10.4%)	8 (7%)	ns
DVT - Lower Extremity	1 (1.3%)	-	ns
Mortality	5 (6.5%)	3 (2.6%)	ns

*Hemodialysis

QS3. DIAPHRAGM PACING AS SUCCESSFUL SALVAGE THERAPY IN FAILURE TO WEAN PATIENTS: IMPROVING DIAPHRAGM MUSCLE STRENGTH

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Purpose: Sepsis, medications and metabolic derangements are causes of diaphragm muscle weakness, however, prolonged mechanical ventilation (PMV) is thought to be the leading contributor of diaphragm muscle weakness and failure to wean off mechanical ventilation. PMV is associated with very high mortality, poor functional outcomes and extraordinary cost. This reports utilization of diaphragm pacing (DP) in a series of patients to overcome diaphragm muscle weakness who have failed to wean (FTW) from mechanical ventilation with all standard weaning option reviewed or already failed.

Methods: A retrospective review of compassionate off label use of an FDA approved device and under IRB approval (#02-10-18). With DP, an electric stimulus is delivered to the diaphragm via laparoscopically placed intramuscular electrodes. DP use began immediately post op to begin diaphragm strengthening with subsequent weaning from mechanical ventilation.

Results: Sixteen patients, 7 males were implanted with no complications. Ages ranged from 19 to 81 years old (mean 64.2). Underlying diagnosis preceding PMV was: median sternotomy in 10 (2 heart transplant, 2 left ventricular assist device, 4 CABG and/or valve, 1 aortic dissection, 1 atrial myxoma, 3 liver transplant, 1 intra-abdominal sepsis, 1 aspiration pneumonia and 1 idiopathic. Eight of the sternotomy patients had phrenic nerve injury as a contributing factor in FTW. Mean duration of positive pressure mechanical ventilation prior to DP was 49.9 days (range 4-160, median 39). Thirteen used invasive ventilation and 3 were dependent on continuous non-invasive ventilation with oxygen. All 16 were successfully weaned. Mean time to wean from invasive ventilation was 14.33 days (range 1 to 35 days). Nine of the 11 tracheostomy patients have been decannulated. There were 2 non respiratory deaths. The average survival is 27.34 months (1.7-73.7). Twelve of the 16 are beyond 1 year post implant and their average survival is 34.5 months (14.4-73.7). Thirteen of the patients live at home and are at or near their pre respiratory failure function. DP electrodes were used to monitor diaphragm electromyography (dEMG) to assess for recovery. All patients had substantially improved diaphragm burst activity with DP therapy providing evidence of improvement. Recovery seen by dEMG was used to guide removal of percutaneous pacing wires.

Conclusion: This report demonstrates DP can be used as a therapy to treat FTW. Using dEMG, this report demonstrates DP does improve diaphragm muscle strength. DP can have a significant role when the phrenic nerve is injured causing FTW which presently has no other therapeutic options. The long-term survival and functionality of this group is significantly better than typical reports of PMV patients. There was no cross contamination in the patient with intra-abdominal abscess. Three patients implanted early avoided tracheostomy suggesting that DP could alter the paradigm of PMV and should be studied more extensively in select groups of patients.

QS4. OUTCOMES OF SURGICAL MANAGEMENT OF ATHLETIC PUBALGIA: A SIXTEEN-YEAR, INDIVIDUALIZED SINGLE-CENTER EXPERIENCE

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Purpose: Athletic pubalgia ("sports hernia") is an injury to the groin region resulting in chronic exertional pain. We evaluated outcomes to determine the rate of return to sport and pain level out to one year follow-up in a consecutive series of patients treated surgically.

Methods: A prospective series of patients who failed conservative management were surgically treated for athletic pubalgia from 2000-2016. Patients underwent inguinal floor repair with mesh 4 adductor release and a standardized postoperative physical therapy regimen. Primary outcome was return to sport at one year; secondary outcomes were level of play compared to pre-injury and level of groin pain at rest and sport (1-100 scale).

Results: 282 patients were treated: mean age 28.0 years, 94.3% male, 66.4% professional/collegiate athletes. Mean duration of symptoms was 10.4 months. A weak inguinal floor (80.1%), focal tenderness (79.4%), and pain with resisted adduction (67.4%) were the most common findings preoperatively. Operative approach was open in 87.2%, laparoscopic in 12.8%: 175 athletes underwent floor repair only (62.1%), 14 had an adductor release only (5.0%), 93 underwent both (33.0%). Common operative findings were a weak posterior inguinal floor (90.1%) and attenuated external oblique (76.6%). At 11.6 months mean follow-up, 93.6% of respondents had returned to sport. Mean level of play was 88.5419.7% of pre-injury level. Mean level of groin pain at rest and play was 2.1410.0 and 5.8416.7 (1-100 scale), respectively. Twelve patients (4.3%) required reoperation for persistent/recurrent symptoms.

Conclusion: Surgical treatment for chronic athletic pubalgia results in a high rate of return to sport and low incidence of residual groin pain.

QS5. SESTAMIBI SPECT/CT VERSUS SPECT ONLY FOR PREOPERATIVE LOCALIZATION IN PRIMARY HYPERPARATHYROIDISM: A SINGLE INSTITUTION 8 YEAR ANALYSIS

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Purpose: Primary hyperparathyroidism (PHP) is usually caused by a single hyperfunctioning parathyroid gland and surgery is the only curative treatment. Today, many experts employ minimally invasive techniques that rely on preoperative localization and intraoperative parathyroid hormone results to identify multi-glandular disease (MGD). Our aim in this study was to determine whether the addition of CT acquisition/fusion on a hybrid scanner (SPECT/CT) to traditional dual phase single photon emission tomography (SPECT) improves both localization accuracy and identification of MGD for PHP patients undergoing initial surgery.

Methods: With institutional approval, a prospectively collected parathyroid database was queried for all sporadic PHP patients who had initial parathyroid exploration from January 2006-March 2014 with >6 month follow up. All patients had preoperative thyroid ultrasound. Patients prior to 2010 had SPECT, and patients after 2010 had SPECT/CT. Patients with incomplete data for analysis were excluded. Demographic, imaging, clinico-pathologic and outcome data were reviewed. Imaging was categorized as positive or negative based on nuclear medicine interpretation, and concordant or discordant based on operative findings and clinical outcome at ≥6 months. Concordance rates were compared between imaged groups using Pearson Chi-square test.

Results: In 1388 sporadic PHP patients, rates of single gland disease (SGD) (86% v 85%, p= 0.8) and bilateral neck exploration (28% vs 30%, p=0.4) were equivalent between the SPECT/CT and SPECT cohorts. Overall, 633 had SPECT imaging and 755 had SPECT/CT. Imaging was negative in 145 patients and this rate did not differ significantly between SPECT and SPECT/CT groups (11% vs 9.7%, p=0.33). In the 1186 patients who had SGD confirmed by cure at 6 months, and positive imaging, the PPV of SPECT/CT for the correct side of the adenoma was 90% (534/592) compared to 85% (414/489) for SPECT alone (p<0.01) and sensitivity was 96% vs 91%, respectively. SPECT/CT (534/647, 83%) was more accurate than SPECT (414/539, 77%) in localizing the abnormal gland in patients with SGD (p=0.02). In 202 patients with MGD, 20% had negative imaging and this did not change by imaging type (SPECT 23% v SPECT/CT 17%, p=0.3). However, to identify MGD preoperatively, SPECT/CT was more accurate (39/108, 36%) compared to SPECT only (21/94, 22%) (p=0.04).

Conclusion: In this large sequential cohort study of patients who had parathyroidectomy for sporadic hyperparathyroidism with long-term follow-up, positive imaging with SPECT/CT provides more reliable surgical guidance than SPECT for gland lateralization in patients with PHP due to a single adenoma. Although both imaging techniques are inadequate predictors of MGD, SPECT/CT is 60% more accurate than SPECT alone.

QS6. WIDE VARIATION IN COST OF SURGICAL CARE BY PROVIDERS FOR PARATHYROIDECTOMY: IS THERE A NEED FOR STANDARDIZATION OF PRACTICE?

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Purpose: Identifying hospital and provider variation in surgical cost is a potent method for controlling rising healthcare expenditure and delivering cost-effective care. Despite clear indications for parathyroidectomy and low rates of complications, provider-level variation in costs of parathyroidectomy has not been well examined. The purpose of this study was to examine the variation of hospital cost by providers for parathyroidectomy in a single academic institution.

Methods: We retrospectively evaluated 899 consecutive cases under 9 surgeons in our institution between September 2011 and July 2016 coded as complete parathyroidectomy, parathyroidectomy or exploration of parathyroid, or other parathyroidectomy using ICD-9 and 10 procedure codes. Total length of stay and cost were evaluated using the Mann-Whitney U and the Kruskal-Wallis tests.

Results: Median patient age was 60 years (range 13-93), 76% were females, 66% were Caucasians, and 83% were outpatients. The mean total hospital cost for parathyroidectomy was $5,531.55 4 4,113.11, but the median costs per provider varied widely from $4,522.30 to $12,072.87 (P < 0.001). The mean length of stay was 0.61d 4 2.06 and also demonstrated a wide variation in median length of stay among providers (0d to 5d), which expectedly correlated with their respective total hospital costs (r2 = 0.94). Providers whose hospital cost exceeded the institutional mean demonstrated a significantly higher ICU admission rate (P < 0.001). Despite the variation, only 2% of the study population was readmitted after discharge with no patient mortality. However, readmission was associated with previous longer hospitalization (1.4d vs 0.6d, P = 0.02), higher hospital cost ($6,905.67 vs. $5,500.28, P = 0.49), and younger age (46.3yo vs. 59.5yo, P < 0.001).

Conclusion: We found substantial variation in hospital cost among providers for parathyroidectomy despite practicing in the same academic institution, with some surgeons spending 4x more for the same operation. Implementing institutional standards of practice could be a method to decrease variation and the costs of surgical care.

ePOSTER ABSTRACTS

P2. ARE WE STAYING CLASSY? AN EFFORT TO IMPROVE THE ACCURACY OF DOCUMENTED SURGICAL WOUND CLASSIFICATIONS

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Objective: The surgical wound classification system is a proven method for predicting postoperative surgical site infections. Discordance between circulating nurse- and surgeon diagnosis-based wound classifications may lead to erroneous risk-adjusted rates of surgical site infections with effects on inter-hospital rating, reimbursement, and public perceptions regarding quality of care. We hypothesized the wound class was often inaccurately documented and an educational intervention would improve accuracy of the documented wound class.

Methods: An audit of general surgery and trauma operations was performed over a two month period. The nurse-documented wound classification was compared to wound classes determined from review of the surgeon's dictated operative note - this served as a baseline. A reference algorithm for determining wound classifications was placed in every operating room and educational instruction was provided to the nursing staff. An audit was repeated for a two month period after this intervention. Statistical analysis of the whole and subgroup analysis was performed.

Results: In the pre-intervention group, a total of 300 cases were reviewed with 70 cases (23.3%) found to be discordant. In the post-intervention group, a total of 483 cases were reviewed and 79 of those cases (16.4%) were discordant. This difference was statistically significant ($\chi 2[1] = 5.85$, $p = .016$). Subgroup analysis demonstrated a dramatic drop in discordance for appendectomies from 80.0% pre-intervention to 30.4% post-intervention ($\chi 2[1] = 10.56$, $p = .001$).

Conclusion: Although our intervention imparted a significant improvement in the accuracy of the documented surgical wound classes, there remains considerable room for improvement. As we trend towards a pay-for-performance model, health care systems should review their internal controls on documenting surgical wound classes.

P3. A NEW OPTION TO OVERCOME DIAPHRAGM ATROPHY WHEN ON MECHANICAL VENTILATION: COMPLETED FDA FEASIBILITY TRIAL OF SURGICALLY PLACED TEMPORARY DIAPHRAGM PACING ELECTRODES

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Objective: Etiologies contributing to failure to wean(FTW) resulting in long term mechanical ventilation(LTMV) are multiple. LTMV has a 20-50% 1-year mortality rate, poor functional outcomes and a median cost $306,000.00. The number of LTMV patients is growing at 5.5% annually. It is estimated there will be 605,000 patients requiring LTMV by 2020 at a cost of 64 billion dollars making prevention and treatment of FTW a priority. Diaphragm Pacing(DP) is presently used in spinal cord injury and amyotrophic lateral sclerosis to either replace or delay LTMV. This reports use of a new temporary DP electrode that will identify and treat respiratory compromise.

Methods: A prospective FDA(IDE #G150040); IRB approved(#4-15-03) and listed on clinicaltrial.gov(NCT 02410798) trial evaluated the feasibility of temporary diaphragm electrodes to provide ventilation with stimulation and monitor respiration through diaphragm electromyography(dEMG). At the end of the subject's primary surgical procedure, two electrodes were placed intramuscularly in each hemi-diaphragm at the expected motor point where with stimulation diffuse diaphragm contraction will occur because of close location to phrenic nerve.

Results: There were 8 males and 4 females who underwent 3 different approaches: 4 median sternotomy, 4 laparoscopic and 4 laparotomy. Subjects had multiple comorbidities with ASA of 2-4 (2.9 average). Subjects ages ranged from 41 years to 84 years (62.25 average) with BMI's from 22 – 43 (average of 32.3). In all patients electrode stimulation exceeded ideal tidal volumes by an average of 37%(0% – 95%). There was no significant cardiac interference while stimulating the diaphragm at maximum settings. Daily dEMG was obtained to analyze respiratory function and confirming stability of placement until removal. The dEMG analyses showed diaphragm hypoventilation in one patient leading to hypercarbia that was not recognized with usual post-operative assessments. The dEMG monitoring also provided visual recovery of diaphragm breathing prior to extubation in post operative cardiac patients. There were no complications with the placement of the electrodes and all 48 study electrodes remained in place until removal prior to discharge. There was complete intact removal of all 48 electrodes at the bedside.

Conclusion: This trial demonstrates the ease of placement, removal, functionality and safety of temporary DP electrodes. These electrodes not only have the ability to monitor for respiratory failure but also provide a novel adjunctive therapy stimulating the diaphragm to maintain diaphragm muscle strength translating to decrease ventilator wean times and potentially reducing LTMV.

P4. CANCER HISTORY: A PREDICTOR OF IPMN SUBTYPE AND DYSPLASTIC STATUS

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Objective: The role of a past medical history (PMH) and family history (FH) of cancer in intraductal papillary mucinous neoplasm (IPMN) patients is unclear. The aim of this study was to determine the association of FH and PMH of pancreatic (PDAC) and non-pancreatic cancers with IPMN malignant risk stratification.

Methods: A retrospective review of a prospective database of IPMN patients undergoing resection at a single institution was performed (1992-2015). FH, PMH, IPMN dysplasia, and duct involvement were assessed.

Results: FH of PDAC was present in 13% of 362 included patients. Of these, 8% had at least one first degree relative with PDAC. The rate of PDAC positive FH in non-invasive versus invasive IPMN patients was 13.9% and 8.3%, respectively (p=0.3). Neither the number nor the degree of relatives with PDAC affected invasive IPMN rate. Similarly, FH (and PMH) of non-pancreatic cancers did not affect invasive IPMN rate. Interestingly, FH (43.6% vs 28.9% with first-degree relatives, p=0.004) and PMH (15.6% vs 6.3%, p=0.008) of non-pancreatic cancers was more common in main duct (MD) IPMN, the high risk IPMN subtype, compared to branch duct IPMN patients. On multivariable analysis, PMH of non-pancreatic cancer was independently associated with MD-IPMN (p=0.02).

Conclusion: FH of PDAC is not associated with IPMN malignant progression. PMH of non-pancreatic cancer is associated with MD-IPMN. Since this is the IPMN subtype with the highest rate of invasive transformation, these data may have relevance for IPMN malignant risk stratification. Additionally, heightened surveillance of non-pancreatic cancers in the main duct IPMN subtype may be warranted.

P5. EVOLVING TREATMENT OF NECROTIZING PANCREATITIS

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Objective: Over the past decade, the treatment of necrotizing pancreatitis (NP) has incorporated greater use of percutaneous drainage and endoscopic debridement. No study has yet compared outcomes of patients treated with all available techniques. We sought to define the evolution of NP treatment at our high volume pancreas center.

Methods: Treatment strategy of NP patients at a single academic medical center between 2005 and 2014 was reviewed. Definitive management of pancreatic necrosis was categorized as: 1) medical treatment only; 2) surgical only; 3) interventional radiology (IR) only; 4) endoscopic only; and 5) combination (Surgery+/-IR+/-Endoscopy).

Results: 512 NP patients included biliary (45%), alcohol (17%), and idiopathic (20%) etiology. Select patients were managed exclusively by medical, IR, or endoscopic treatment; use of these therapies remained relatively consistent over time. A combination of therapies was used in about 30% of patients. Over time, the percentage of NP patients managed without operation increased from 28% to 41%. 247 (47%) of patients had operation as the only NP treatment; an additional 143 (27%) required surgery as part of a multidisciplinary management.

Conclusion: Select NP patients may be managed exclusively by medical, IR, or endoscopic treatment. Combination treatment is necessary in many NP patients, and surgical treatment continues to play an important role in the definitive therapy of necrotizing pancreatitis patients.

P6. WHAT TO CONSIDER IN DECIDING WHETHER TO ATTEMPT A SENTINEL LYMPH NODE BIOPSY ON BREAST CANCER PATIENTS WHO HAD BIOPSY PROVEN AXILLARY METASTASIS PRIOR TO UNDERGOING NEOADJUVANT TREATMENT

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Objective: Axillary disease can be downstaged with neoadjuvant (NAT) treatment for breast cancer. This study evaluates potential factors to consider when making the decision to proceed with sentinel lymph node biopsy (SLNB) at the time of surgery in patients with biopsy proven axillary metastases (cN+) pror to NAT.

Methods: An IRB approved retrospective chart review was conducted on breast cancer patients at a single tertiary care center who underwent NAT followed by surgery between 9/2013 and 2/2017 (n =142). Patients with cN+ disease prior to NAT were selected for further evaluation. Fischer's Exact Test was utilized for statistical analyses.

Results: Of 59 patients with cN+ disease prior to NAT, 28 (48%) were downstaged to node negative (ypN0) disease. Of these 28 patients, 54% underwent a SLNB at the time of surgery versus an ALND. In comparison to the patients who remained node positive (ypN+), the ypN0 patients were more likely to be her2+ (43%, $p < 0.1$) or triple negative (39%, $p < .05$). The ypN+ patients were more likely to be ER+/PR+ (71%, $p<0.01$). On preoperative breast MRI, the ypN0 patients versus the ypN+ patients were more likely to demonstrate complete clinical response of their primary tumor (62% vs 22%, $p < 0.01$) and axilla (46% vs 22 %, $p < 0.1$).

Conclusion: Tumor biology and the clinical response noted on breast MRI can help guide the surgical approach to the axilla at the time of surgery in patients who had axillary node positive disease prior to undergoing neoadjuvant treatment.

P7. THE IMPACT OF SOCIOECONOMICS ON IN-HOSPITAL TRAUMA MORTALITY IN THE DETROIT METROPOLITAN AREA

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Objective: The impact of socio-economic status (SES) on in hospital mortality on trauma patients has not been studied. Care for all patients should be the same in a hospital, thus SES should not affect mortality. Our study aims to look for associations between hospital trauma mortality and SES.

Methods: Patient-level data on trauma discharges in the metropolitan Detroit area was obtained from the AHRQ's Healthcare Cost and Utilization Project (HCUP) database. This data was merged at the level of patient ZIP code with annual sociodemographic and economic data from the US Census Bureau. The study period was from 2006 to 2014. Analyses was conducted using generalized linear mixed modeling (GLMM) framework, applying a binary response distribution. By applying a covariance matrix including a random intercept effect for patient ZIP code, we were able to account for shared variance in mortality at the neighborhood level.

Results: Our statistical models for this database indicate that black trauma patients have a 13% higher mortality than white patients. This difference is primarily explained by the severity of trauma that black patients suffer when compared to white patients. When compared for socio-economic status, our models showed a 1% increase in trauma mortality for every 1% increase in poverty rate. Medicare patients (25% increased risk) and Medicaid patients (57% increased risk) had higher mortality risk than privately insured patients. Of note when controlling for poverty and mechanism of injury, white patients had a slightly higher mortality than black patients. A poor white gunshot victim had a higher mortality than a poor black gunshot victim.

Conclusion: These results suggest that both socioeconomic disparities and differences in the epidemiology of traumatic injury affect racial disparities in mortality outcomes among trauma patients.

P8. ELEVATED GALLBLADDER EJECTION FRACTION: DOES THE "HYPER-DYNAMIC GALLBLADDER" EXIST? GOODING, GERIROSE; WILKERSON, JORDAN; ROBERTS, GREG; HARRIS, KATHRYN; KADERABEK, DOUGLAS; EDWARDS, MARK; GLASS, TIMOTHY; TIGGES, THOMAS; ISCH, JOHN; MEYER, JULIANA; SAXE, JONATHAN

G Gooding MD, J Wilkerson MD, G Roberts MD, K Harris MD, D Kaderabek MD, M Edwards MD, T Glass MD, T Tigges MD, J Isch MD, J Meyer MD, J Saxe MD
St. Vincent Hospital

Objective: Gallbladder disease is a very common disease process in the American healthcare system. Patients with biliary dyskinesia who have ejection fractions of less than 35% on HIDA scan evaluation have been found to have improvement in symptoms after cholecystectomy. There appears to be another subgroup of patients with symptoms consistent with biliary colic with what appears as hyper-dynamic studies on HIDA scanning which some believe would be inconsistent with biliary disease. The purpose of this study was to determine the efficacy of cholecystectomy in patients with symptoms and hyper-dynamic studies and pre-operative symptoms consistent with biliary colic.

Methods: A retrospective review of all patients from January 2012 – December 2013 with CPT codes 47562, 47563, 47600, and 47605 were reviewed. Data collected included: demographics including sex, age, co-morbid conditions, Ultrasound findings, HIDA results, pathology, pre-operative, and post-operative symptoms.

Results: A total of 1176 were reviewed. 147 (12.5%) patients were identified with an ejection fraction 70% or higher. 17 patients were excluded from the group due to US findings of gallstones. The review of 130 patients found pre-operative symptoms of right upper quadrant pain associated with nausea and vomiting in all 130 patients. 104 (80%) of the patients had resolution of symptoms at the two week follow up.

Conclusion: A small group of patients will present to surgeons with biliary type symptoms and no apparent cause other than a high ejection fraction on HIDA scan. 80% of these patients appear to improved with cholecystectomy. This study would substantiate the notion of the "hyper-dynamic gallbladder". Surgical intervention may benefit this patient cohort.

P10. POST-TRAUMATIC INFECTIONS: THE EFFECT OF MAJOR ABDOMINAL VASCULAR INJURY

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Objective: The objective of this study was to evaluate the factors associated with infections and mortality in patients with abdominal vascular trauma.

Methods: This is a retrospective study of 291 patients with major abdominal vascular injury requiring emergency surgery at a Level 1 Trauma Center over a 30 years span (1980–2010). Mortality rates (MR) was stratified into early deaths (less than 48 hours) and late deaths (greater than 48 hours after admission). Baseline characteristics, concomitant injuries, emergency department (ED), operating room (OR) and laboratory data were also evaluated. Infections evaluated were pneumonia (PNA), bacteremia (BSI), intraabdominal abscess/peritonitis (IAI), urinary tract infection (UTI), or surgical wound infection (SWI). Statistical analysis was performed with the appropriate tests and a p-value less than 0.05 was considered signficant.

Results: Of the 291 patients, the mean age was 32412 years with an mean Injury Severity Score (ISS) of 22411, and 230 (79%) had penetrating trauma. Of the 291 patients evaluated, 114 (39%) died ≤ 48 hours, but 19 (6%) died later primarily due to infection (13/19, 69%), head injury (5/19, 26%), or multi-organ failure (2/19, 11%). There where 134 infections in 65 (36%) of the 177 patients surviving > 48 hours. These included 42 PNA, 36 IAI, 29 BSI, 26 SWI, 22 UTI). Overall, mortality rate (MR) was 44% (129/291). Vascular trauma associated with an increase in mortality rate included 29 portal vein injuries (MR=76%, p=0.0003), 42 aorta injuries (MR=71%, p=0.0001), 99 IVC injuries (MR=53%, p=0.04) and 160 any arterial injuries (MR=52%, p=0.004). The risk factors associated with infections include pancreatic head injury, 49% of 41 patients, p=0.0001, colon resection with ostomy creation, 45% of 31 patients, p=0.001 and blood transfusions, 43% in 149 patients, p=0.004. A higher severity of injury as reflected by the Revised Trauma Score (RTS) associated with infections, 6.641.2 RTS vs 5.3 4 2.6 without infections, p<0.0001. Of the 36 patients with IAI [MR 8/36 (22%), p=0.01], 36 (100%) had blood transfusions, p=0.01, 9 (25%) had colon resection with ostomy, p=0.003, and 12 (33%) had pancreatic head injury, p=0.002. In the 42 patients with pneumonia [MR 8/42 (19%), p=0.04], 41 (97%) had blood transfusion, p=0.03 and 16 (38%) had pancreatic head injury, p=0.0003. In the 29 patients with bacteremia [MR 7/29 (24%), p=0.01], 29 (100%) had blood transfusions, p=0.03, 7 (24%) had colon resection with ostomy, p=0.01, and 11 (38%) had pancreatic head injury, p=0.001. Mortality rates were not significant with UTI or SWI.

Conclusion: Abdominal vascular injury is associated with a high mortality and morbidity. Three precipitating injuries associated with mortality included aortic, inferior vena cava and any arterial injury. Factors associated with infections were blood transfusions especially massive transfusion, concomitant pancreatic head injury and colon resection with ostomy creation.

P11. MINIMALLY INVASIVE TRANSHIATAL ESOPHAGECTOMY: FAVORABLE OUTCOMES IN A COMMUNITY HOSPITAL SETTING

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ProMedica Toledo Hospital

Objective: Esophageal cancer is uncommon, and the treatment is associated with significant morbidity and mortality. The objective of this study was to demonstrate the safety and effectiveness of minimally invasive transhiatal esophagectomy (THE) approach for the treatment of esophageal cancer, performed in a community teaching hospital.

Methods: Retrospective review of patients who underwent minimally invasive THE between 2010 and 2016 in a single, low-volume community hospital. Postoperative complications, relevant morbidities, and survival were obtained.

Results: 37 cases were identified and included in analysis. The majority of patients were male with stage IIA/B or IIIA/B (32% and 36%, respectively) adenocarcinoma (92%), who underwent preoperative neoadjuvant chemo or radiation therapy (70%), and were ASA class 3 (81%). In most cases, a jejunostomy tube was placed intraoperatively (70%) and pathologically negative margins were achieved (95%). Median operative time was 198 mins (IQ 180-244 mins), estimated blood loss was 125 mL (IQ 100-287) with a median of 1 ventilator days (IQ 0-3 days). Twenty-one (57%) patients experienced pleural effusion, 4 (11%) cervical anastomotic leak, and 1 (3%) had transient recurrent laryngeal nerve injury. Median survival after surgery was 931 days (S.E. 274 days) with 15 (41%, 95%CI 25-56%) dead at late follow up and a 27% recurrence rate. No intraoperative, 30-, or 90-day deaths occurred.

Conclusion: Operative morbidity remains significant with this approach. However, perioperative mortality did not occur in this cohort. Minimally invasive THE can be safely incorporated in a low volume community center.

P12. THERE'S AN APP FOR THAT! IS THERE A ROLE FOR SMARTPHONE APPLICATIONS IN LEARNING SURGICAL SKILLS?

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Rush University Medical Center

Objective: Novel educational paradigms aim to center on the educational needs of learners. Simulation based training offers a range of models from inanimate to virtual reality to training boxes, but these can be expensive and restrictive in terms of location and accessibility. Surgical training applications via phone or tablet ("apps") may provide an opportunity for acquiring the skills necessary for proficiency in laparoscopic surgery.

Methods: We used an application, Quiro, designed by Ludopia, to facilitate learning and to practice the use of a laparoscopic camera. Multiple game levels, some functioning as tutorials and others as timed challenges allow progression into more advanced stages. Several modules, with multiple sub-levels, are available: black box, knee arthroscopy, and abdominal laparoscopy. Users choose the angle and entry port of the scope, and the app screen displays toggles for the scope's control: rotation, pivoting, insertion or retraction. This app was made available to third and fourth year medical students rotating on general surgery, as well as first and second year general surgery residents. Attending surgeons participated as a control group. The users downloaded the app to their smartphone or tablet and were asked to complete the levels as instructed. Self-reported pre and post questionnaires were administered to assess the application on a 5-point Likert scale

Results: Results are displayed at the end of all non-tutorial levels. Measured results include efficiency, speed, collision avoidance, overall score, and best score for each level. Four attending physicians used the app. Eighteen medical students and residents used the app (though not all completed every level). Degree of comfort with camera driving was measured pre- and post-app utilization on a 5-point Likert scale (1-5: very uncomfortable, uncomfortable, neutral, comfortable, very comfortable). The median score overall pre-test was 3 (neutral), and the median score overall post-test was 4 (comfortable). Medical students' median score improved from 3 to 4, while residents' median score remained unchanged at 4 pre- and post-completion.

Conclusion: Unlike traditional simulation training methods, this smartphone-based app was easily accessible and allowed trainees to learn at their own pace on their own schedule. Based on the self-reported questionnaire, user confidence in laparoscopic camera driving increased after utilization of the app for medical students, but not for residents. This suggests that the task may have been too simple for residents. In the future, we plan to examine the efficacy of this app by quantifying the duration of app use with improvement in skill, assessed subjectively (as it was in this study) and objectively. Beyond this particular platform, apps that are tailored to certain procedures (i.e. laparoscopic inguinal hernia repair, laparoscopic cholecystectomy) may prove beneficial for the resident cohort.

P13. MANDATORY DELAY BEFORE BARIATRIC SURGERY IS A BARRIER TO CARE AND LEADS TO SUBOPTIMAL WEIGHT LOSS

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Objective: Bariatric surgery is the gold standard for weight loss and comorbidity resolution in obese patients, however some patients have a mandated waiting period before surgery despite little evidence of benefit. We hypothesized that a mandated one-year waiting period is a barrier to care and leads to suboptimal outcomes.

Methods: Patients evaluated for bariatric surgery with required one-year waiting period before bariatric surgery between 1/1/2010 and 8/1/2016 were identified. Patient specific data from initial evaluation through most recent follow-up was collected from retrospective chart review.

Results: 92 of the 1475 (6.2%) patients evaluated for bariatric surgery had a one-year mandatory waiting period. Of these 92 patients (69 female), 46.7% progressed to surgery with average wait time of 11.1 months. Before surgery, both groups had similar BMI (50.848.7 vs 48.849.1; p=0.288) and comorbidity index (CI) (3.3041.7 vs 2.6141.8; p=0.067). At most recent follow-up, surgical patients had lower BMI (39.248.6 vs 48.948.9; p<0.0001), greater reduction in CI (–1.50 vs +0.12; p<0.0001), and greater weight loss (-31.7 kg vs +2.2; p<0.0001). Compared to all patients undergoing surgery at our institution, patients with mandatory delay had lower %EBMIL (45.6%427.5% vs. 74.7%422.7%; p<0.001), longer wait times before surgery (11.1 months vs 5.8 months; p<0.0001) and trended towards lower progression to surgery (46.74% vs 56.07%; p=0.061).

Conclusion: One-year delay before bariatric surgery is a barrier to care, resulting in longer wait times and a potentially lower rate of progression to surgery. This delay also resulted in suboptimal outcomes, as patients had significantly reduced weight loss.

P14. UNPLANNED REMOVAL OF INVASIVE DEVICES IN TRAUMA PATIENTS: IDENTIFYING RISK FACTORS AND OPPORTUNITIES FOR PREVENTION

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Wright State University

Objective: The placement and securement of invasive devices are paramount to patient care and safety. The securement methods of endotracheal tubes and other invasive devices has been reported. Evaluating risk factors for unplanned invasive device removal in trauma patients remains an important quality improvement and safety consideration.

Methods: Records from a Level 1 Trauma Center identified all unplanned device removals over a two-year period. Patients with unplanned events (n=161) were compared to 161 matched patients without unplanned events on sex, age, head injury, admission GCS, presence of restraints, length of stay, and survival. Univariate analysis identified differences between groups, and logistic regression identified independent predictors of an unplanned event.

Results: Patients with an unplanned event were more likely to be younger, male, have a longer LOS, and survive. Only male sex was an independent risk factor for an unplanned event (adjusted OR = 1.93 [95%CI=1.17-3.19]). ETT and NG/OG tubes were 65% of inadvertent device removal events, and self-removal was the most frequent occurrence (85%).

Conclusion: Male sex and younger age were risk factors for an unplanned event. Also, those with an unplanned event had a longer LOS but were more likely to survive. ETT, NG or OG tubes were the most frequently removed devices, and patient self-removal was a high percentage of unplanned events. Staff availability may contribute to unplanned device removal, as most cases occurred during 6pm to 12am. Consequently, quality assurance education to ensure security of invasive devices in critically ill patients is recommended.

P15. INTRACORPOREAL ROBOTIC HAND-SEWN ANASTOMOSIS VS STAPLED ANASTOMOSIS IN COLORECTAL SURGERY - EARLY EXPERIENCE AND OUTCOMES IN A COMMUNITY-BASED MODERATE VOLUME GENERAL SURGERY PRACTICE

W Mata MD, K Harris MD, G Arevalo MD, T Glass MD, K Singh MD, J Saxe MD
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Objective: Robotic and MIS surgery represent a new challenges for operative techniques. The purpose of this study is to evaluate difference in outcomes between intra-corporeal robotic hand-sewn anastomosis and stapled anastomosis.

Methods: A retrospective review of robotic colorectal cases performed from January 2013 to January 2015 was performed. Data collected included demographic data: age, sex, and procedural data including: indication, procedure, conversion rate, type of anastomosis, complications, and LOS.

Results: Seventy eight cases were reviewed. 55 (70.5%) cases were for benign disease and 23 (29.5%) for malignant disease. Procedures included: 10 LAR, 37 Sigmoidectomies, 5 left colectomies, 22 right colectomies and 4 ileocecectomies. From this cases, 51.28% cases (group A) were stapled anatamosis. In 30.77% (Group B) a combination of stapler and intracorporeally robotic hand sewn technique was used. 12.82% (Group C) the anastomosis was created exclusively by robotic hand sewn technique. In 5% (Group D/E) an extra-corporeally anastomosis was performed. Total complication rate was 24.36%: Group A (17.5%), Group B (20.83%), Group C (30%), Group D & E (100%). The most common complications were: ileus (7.6%), urinary retention (3.84%), C. diff. (2.56%), cecal perforation (1.28%) and SBO (2.56%). Only one mortality (D) and one leak (A).

Conclusion: This study does not demonstrate any significant difference between techniques. There was a trend towards increased complications in the hand sewn group. Further study is necessary to determine factors, which affect complications in robotic colonic anastomosis.

P16. ROBOTIC COLORECTAL SURGERY – EARLY EXPERIENCE AND OUTCOMES IN A COMMUNITY-BASED MODERATE VOLUME GENERAL SURGERY PRACTICE

K Harris MD, W Mata MD, G Ong MD, G Arevalo MD, T Glass MD, J Saxe MD
St. Vincent Hospital

Objective: Robotic colorectal surgery has been shown to have short-term benefits when compared to the open surgical approach. Robotic-assisted MIS exceeds standard laparoscopy in the ability to complete colorectal surgeries without conversion to laparotomy. Recent data has reported a greater compliance rate and shorter time to initial adjuvant chemotherapy in patients treated with MIS. We analyzed our experience with robotic colorectal surgery to assess complications and evaluate outcomes.

Methods: A retrospective review was performed for all robotic colorectal surgeries performed by a single general surgeon at a community-based teaching institution from January 2013 to January 2017. Data collected included age, sex, indication, procedure, conversion rate, operative time, complications, return to OR, and readmission rates. Data was compared to recently published results to evaluate complications and to assess outcomes.

Results: Ninety-five patients were available for analysis. Indications included: diverticulitis (n=35), cancer (n=24), polyps (n=19), and ostomy-takedown (n=11). Total complications were 18% and mortality of 1%. Major complications included: bladder injury (n=1), SSI (n=3), fistula (n=1), stricture (n=2), anastomotic leak (n=1), mortality (n=1). Overall, average LOS was 5.4 days – in 2013-2014, 6.7 days compared to 2015-2016, 4.7 days. Two cases were converted to open. Two patients returned to the OR for protective ostomy revision and anastomotic leak. Readmissions (n=2) occurred for anastomotic leak and SBO.

Conclusion: Robotic colorectal surgery can be performed safely in a moderate volume community-based general surgery practice. Complications are not increased compared to laparoscopic and open surgical approaches. Robotic colorectal surgery offers low leak rates, return to OR, readmission rates, and LOS.

P17. FLEXIBLE ENDOSCOPIC ZENKER'S DIVERTICULOTOMY IN THE HANDS OF A GENERAL SURGEON

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The traditional treatment for symptomatic Zenker's Diverticulum includes open surgical myotomy with lengthy hospital stays and prolonged time to PO intake. A minimally invasive, transoral approach that utilizes a rigid stapler to divide the cricopharyngeus is currently the mainstay of treatment performed by otolaryngologists. High recurrence rates and cervical rigidity are limiting factors in this approach that may still predispose patients to undergo open diverticultectomy.
A flexible endoscopic approach is being used by interventional gastroenterologists which does not appear to have the limitations or recurrence rates rigid endoscopy. We report the experience of successful flexible endoscopic diverticulotomy performed by a community general surgeon.

We present two patients that underwent flexible endoscopic diverticulotomy with the use of a needle knife and mucosal clipping. The first patient presented with typical symptoms of reflux and regurgitation; the second after having failed an open diverticulectomy. The first patient was discharged home on POD 1 and the second on POD 0. At follow up appointments both patients had complete symptom resolution. Endoscopic approaches have become more prevalent in the management of ZD in recent years secondary to their decrease length of hospitalization, earlier diet introductions, and decrease in complication rates when compared to open surgical techniques. Though rigid endoscopy has been the mainstay of treatment for years, the flexible endoscopic approach is proving to be as successful with fewer limitations and morbidity. A general surgeon with advanced endoscopic training can safely and effectively perform flexible endoscopic diverticulotomy for the treatment of ZD in all ages.

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A general surgeon with advanced endoscopic training can safely and effectively perform flexible endoscopic diverticulotomy for the treatment of ZD in all ages.

P18. PREDICTING DEATH IN NECROTIZING FASCITIS

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Loyola University Medical Center

Objective: Necrotizing fasciitis is a devastating disease with high associated morbidity and mortality. This study aims to identify those patient and hospital characteristics associated with death following necrotizing fasciitis using Big Data nonlinear classification approaches to predictive modeling.

Methods: The Healthcare Cost and Utilization Project (HCUP) State Inpatient Database (SID) for California in the years 2006-2011 was queried for patients carrying a diagnosis of necrotizing fasciitis. Hospital level data for these patients was acquired by merging data from the American Health Association (AHA) Health survey. Baseline patient characteristics were obtained using descriptive statistics with proportions for categorical variables and means with standard deviation for continuous variables. Both decision tree model and K nearest neighbors algorithms were run using selected patient and hospital level variables to determine those factors that predict mortality in patients with necrotizing fasciitis. Continuous variables were binned prior to analysis. With mortality as the primary endpoint, variables synonymous with death, such as DNR were excluded from the analysis. Accuracy was used to select the optimal model using the largest value. The final value used for the model was k = 21.

Results: We identified 9,907 patients that met our inclusion criteria. The study population was 60% male, with the highest proportion of patients between the ages of 25-45. The K nearest neighbors algorithm performed the best with 87% accuracy, 99% sensitivity, 87% and 75% positive and negative predictive value respectively. Of the patient level and hospital level variables included the top five most important factors in predicting mortality in necrotizing fasciitis include the presence of coagulopathy, carrying a major diagnosis category (MDC) of 18 or" Infectious and Parasitic Diagnoses", the presence of electrolyte disturbances, increasing age, and MDC of 8 or Diseases and Disorders of the Musculoskeletal System And Connective Tissue (p=0.04).

Conclusion: Necrotizing fasciitis portends high morbidity and mortality. Identifying specific areas that can be targeted to reduce mortality are important. Special attention should be given to the correction of coagulopathy, electrolyte imbalances, and control of infectious processes, as well as specific consideration for the aging population.

P20. CYTOREDUCTIVE SURGERY (CRS) WITH HYPERTHERMIC INTRAPERITONEAL CHEMOTHERAPY (HIPEC): A SINGLE INSTITUTION EXPERIENCE

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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 180 consecutive CRS + HIPEC performed at a 770 bed community hospital by a single surgeon (RB).

Methods: From October 2011 to December 2016, 180 consecutive patients successfully underwent CRS + HIPEC. Using an institutional review board approved study a comprehensive database of all patients was developed. A paired t test was used to analyze survival outcome with a statistical significance ($p<0.05$).

Results: The average age was 52.2 years; 62% were female and 38% male. The most common diagnosis was mucinous appendiceal adenocarcinoma. Average length of stay was 9.6 days, 30 day readmission rate was 8.9%. Rate of grade III Clavien-Dindo complications was 11% and grade IV complications was 2.0%. There was no inpatient or 90-day postoperative mortality. For patients without complete CRS, OS at 1 year was 83%, 2 years 72% and 3 years 64%. For patients with CRS + HIPEC, OS at 1 year was 97%, 2 years 85% and 3 years 70%. This was statistically significant $p=0.048$.

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.

P21. ESTABLISHING AN HPB PROGRAM IN A UNIVERSITY AFFILIATED COMMUNITY HOSPITAL: APPRAISAL ON SHORT-TERM OUTCOMES AND IMPACT ON SURGICAL EDUCATION.

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Objective: In hepato-pancreato-biliary (HPB) surgery higher hospital and surgeon volumes have been associated with improved perioperative and oncologic outcomes; however, there are limitations to regionalization of HPB including a potential impact on resident education. Here we report our experience in a newly established HPB program at a university-affiliated community hospital.

Methods: This is a retrospective review of a prospectively maintained database of patients who underwent HPB surgery. Graduating chief residents' HPB case logs were collected and analyzed.

Results: During the first year of the program, 36 pancreatic resections and 40 hepatic resections were performed. The morbidity, 60-day mortality and the median length of stay following pancreatic resections were 27%, 2.7%, and 9 days, respectively. The morbidity, 90-day mortality, and median length of stay following hepatic resections were 25%, 2.5%, and 7 days, respectively. The readmission rate following pancreatic and hepatic resections was 22% and 11%, respectively. The median pancreatic and liver case volumes for graduating chief residents increased from 7 and 8 to 16 and 16, respectively ($p<0.005$), after the establishment of an HPB program.

Conclusion: Our study demonstrates short-term outcomes comparable to high volume centers. Development of an HPB program at a university-affiliated community program had a positive impact on resident operative experience.

P22. A NOVEL ENDOSCOPIC GRADING SYSTEM FOR PREDICTION OF DISEASE RELATED OUTCOMES IN PATIENTS WITH DIVERTICULOSIS

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Cleveland Clinic Foundation

Objective: The muscular hypertrophy, rigidity and narrowing associated with severe, chronic diverticulosis may produce a relative obstruction in the distal sigmoid that predisposes to acute diverticulitis. We have used a simple endoscopic grading system of diverticular disease for the assessment of disease severity and prediction of outcomes. We hypothesized that patients with severe diverticular disease or acute diverticulitis endoscopically will be more likely to have subsequent surgery related to diverticular disease.

Methods: Analysis of an Institutional Review Board-approved colonoscopy database was performed for patients undergoing endoscopy from 1985-2014. A single endoscopist had prospectively graded diverticular disease according to the number and size of diverticula, and the degree of muscular hypertrophy and rigidity of the sigmoid colon. Mild: scattered small diverticulae, colon otherwise normal (excluded from this study) Moderate: multiple diverticulae of any size, minimal muscular hypertrophy, some tortuosity Severe: multiple, mainly large diverticulae, rigid colon, intrusive muscular hypertrophy and significant tortuosity Acute: pus passing from diverticular opening The primary endpoint was need for surgery for diverticular disease. Secondary end points were difficulty of endoscopy and subsequent occurrence of diverticulitis or diverticular bleeding requiring hospital admission.

Results: 850 patients had mild disease and were not further analyzed. 1128 patients had moderate/severe diverticulosis or endoscopic signs of diverticulitis. We excluded 366 for incomplete data. Patients with acute disease were younger (moderate 71 years, severe 74 years and acute 69 years ($p < 0.001$) but there was no significant difference in gender between groups. Mean follow up was 11 years. Indications for colonoscopy were polyp surveillance (43%), screening (19%), rectal bleeding (9%), cancer surveillance (9%), abdominal pain (6%), constipation (3%), anaemia (2%) and diarrhea (2%). The table shows outcomes by grade of diverticulosis. Patients with abdominal pain as an indication were significantly more likely to have acute (40%) or severe (11%) vs. moderate (5%) diverticulosis ($p < 0.001$) but none had a prior diagnosis of diverticulitis. During follow-up 28 patients had a sigmoid resection: 24 had a primary anastomosis (3 laparoscopic, 2 with diverting loop ileostomy) and 4 patients had an open Hartmann procedure. End points are shown in the table.

Conclusion: The grading system should be prospectively validated in a large cohort of patients, but the results of such a study will be delayed by the necessary follow up period. Until such data are available, surgeons should consider using endoscopic grading as an adjunct to clinical management decisions.

P23. WHAT ARE PREDICTORS THAT CAN HELP IDENITFY SAFE REMOVAL OF DRAINS FOLLOWING PANCREATICODUODENECTOMY?

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Objective: The management of a drain after Pancreaticoduodenectomy (PD) remains a controversial issue. Our aim in this study is to define a safe time for drain removal after PD based on three predictors: pancreatic remnant texture, duct size, and drain amylase.

Methods: A retrospective review of patients who underwent a PD at two tertiary care institutions by a single surgeon. Data was analyzed included patient's demographics, pancreatic remnant texture, duct size, drain amylase levels and the presence of post-operative fistulae.

Results: A total of a 180 patients underwent PD, of these, 98 were male (53%) and 82 female (44%). A total of 17 patients developed fistulas (9.4%), of these, 70.6% developed in soft pancreatic remnants vs. 29.4% in firm pancreatic remnants. 94% of fistulas developed in patients with small ducts and 6% of fistulas developed in patients with large ducts. Patients who did not develop fistulas had an amylase level less than 400 on POD#3. Patients who developed fistulas had amylase levels greater than 4,000 on POD#3.

Conclusion: Pancreatic texture, duct size, and drain amylase are predictors of the presence or absence of fistulas after PD. Patients with firm pancreatic texture and large ducts are less likely to develop fistulas than those with soft pancreatic texture and small ducts. A drain amylase level less than 400 on POD #3 is predictive of not developing fistulas and drains may be safely removed.

P24. THE ANATOMY OF TRANSANAL MINIMALLY INVASIVE SURGERY: TIME FOR A NEW ANGLE??

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Cleveland Clinic Foundation

Objective: The recent wave of interest in transanal, minimally invasive proctectomy has highlighted the importance of understanding the anatomy in this area. We applied data from an anatomical study of the perineum in normal patients to the concept of transanal minimally invasive surgery.

Methods: A consecutive series of patients undergoing colonoscopy was approached for consent to measure dimensions and angles of the perineum before the examination. With the patients in left lateral position the distances from the posterior margin of the anus to the coccyx, and the anterior margin of the anus to the posterior edge of the scrotum or introitus were measured. Then, using a pediatric proctoscope and a protractor the anoperineal angle and the recto perineal angles were measured. From these measurements we derived an anorectal angle. Data are means and standard deviations.

Results: Measurements were obtained from 106 patients undergoing elective colonoscopy for average risk screening with no history of defecatory disorder. Posterior perineal length was similar in both sexes (4.5cm + 0.9 in women and 4.6cm +0.7 in men) but the anterior perineum was significantly shorter in women (2.5cm + 0.8). The mean anoperineal angle was 93.1 degrees (+9.0), and mean rectoperineal angle was 73.0 degrees (+8.9). These angles varied significantly between the sexes (see table). The mean anorectal angle (derived) was 159.9 degrees (+8.8), and did not differ significantly between the sexes. There was no correlation between the posterior perineal length and ano perineal, recto perineal or anorectal angles.

Conclusion: Because anoperineal and recto perineal differ significantly between the sexes, surgeons using transanal minimally invasive techniques should expect to alter the alignment of their dissection accordingly. This study shows the magnitude of the differences that can exist.

P25. CLINICAL TRENDS AND EFFECTS ON QUALITY METRICS FOR SURGICAL GASTROESOPHAGEAL CANCER CARE WITHIN A SURGICAL ONCOLOGY PRACTICE

RE Schwarz MD
Indiana University School of Medicine

Objective: Surgical therapy of mid-stage gastric cancer (GC) and other conditions requiring gastric resection remains at the center of curative outcomes, while epidemiologic changes and multimodality treatment options have evolved rapidly. Putative quality metrics for gastrectomy such as R0 rate, total lymph node (LN) count or postoperative morbidity may depend partly on changing disease and treatment patterns, and deserve evaluation under various practice conditions.

Methods: Data within a U.S.-based single surgical oncologist's practice over 15 years were prospectively recorded and retrospectively analyzed for clinicopathologic factors, operative treatment aspects and outcomes. Trends and spectrum changes over 3 time intervals were analyzed with contingency analysis and continuous data comparative statistics.

Results: Of 179 patients undergoing gastric resection, 119 were male and 60 female, with a median age of 63 years (range: 24-98). Resections included 56 total, 56 subtotal/distal, 30 proximal and 37 segmental gastrectomies. Diagnoses included 103 GCs, 24 GE junction cancers, 21 GI stromal tumors, and 31 other conditions. Significant trends from first towards last time interval were observed for resection type (16 to 32% proximal, 9 to 30% segmental, $p=0.0003$), curative intent (66 to 95%, $p=0.0004$), diagnosis (0 to 42% GEJ cancer, $p<0.0001$) and preoperative therapy use (0 to 58%, $p<0.0001$), among others. Intraoperative aspects showed significantly reduced blood loss (median: 500 to 150 ml) and transfusion requirements (40 to 0%), and an increased use of minimally invasive techniques over time (all at $p<0.001$). Among patients undergoing curative intent GC resection with LN dissection, total LN counts remained steady (mean: 26), while the number of involved LNs decreased (9 to 3.7, $p=0.0003$) and the R0 resection rate increased from 74 to 85% ($p=0.05$). The number of specimens with >15 LNs examined increased from 69 to 93% ($p=0.02$). At the same time, spleen preservation rate (94% overall) and major morbidity (16%) remained unchanged throughout. Postoperative length of stay decreased from a median of 12 to 8 days ($p<0.0001$).

Conclusion: This experience represents some significantly changing practice patterns within a different clinicopathologic spectrum of gastroesophageal diseases during only 15 years. Postoperative or oncologic quality metrics have been sustained or did improve, which would support their utility for various practice settings; they compare favorably to other published U.S. experiences during the same time period.

SPECTACULAR PROBLEMS IN SURGERY ABSTRACTS

SP1. TREATMENT OF CHALLENGING, PERSISTENT SPONTANEOUS PNEUMOTHORAX WITH ENDOBRONCHIAL VALVES

GK Ong MD, JM Saxe MD, RS Mahidhara MD
St. Vincent Hospital

Persistent, non-resolving air leak from spontaneous pneumothorax is a challenging entity with high morbidity. Many fail to resolve even after surgical intervention due to underlying emphysema. Our objective is to describe usage of endobronchial valves (EBV); bronchoscopically positioned one way valves that prevent ventilation of occluded bronchial segments, for treatment of persistent spontaneous pneumothorax.

A 60 year old male with a 50 year pack per day smoking history presented with a spontaneous pneumothorax (PTX) and COPD exacerbation. Tube thoracostomy re-expanded the lung and chest CT demonstrated severe bullous emphysema. Persistent air leak and lung collapse were noted when the pleural drainage system was placed on water seal. On day two, a left video-assisted thoracoscopy (VATS) with left upper lobe blebectomy and talc pleurodesis was performed. Prolonged post-operative air leak persisted and on day eleven, he underwent repeat left VATS, pleural tent and repeat talc pleurodesis. The bronchial-alveolar fistula continued. On day eighteen, EBVs were placed in the left upper lobe segments after balloon occlusion of upper lobe airways demonstrated resolution of the air leak. The air leak and pneumothorax resolved, and chest tube was removed. He was discharged home in stable condition. Two weeks later, the valves were removed in an outpatient procedure. Persistent air leak after spontaneous pneumothorax in patients with severe emphysema are challenging. EBV have recently emerged as a safe and minimally-invasive method for treatment of persistent air leaks. Endobronchial valves should be considered and included as part of our armamentarium for treatment of persistent spontaneous pneumothoraces.

SP2. IT DOESN'T END WHEN YOU CLOSE THE ABDOMEN: MANAGEMENT OF BILIARY-BRONCHOPLEURAL FISTULA (BBPF) IN HIGH-GRADE LIVER TRAUMA

Landmann A, Albrecht RM, Reinersman JM, Bonds MM, Patel A, Lees JS
University of Oklahoma Health Sciences Center

We present two unique trauma cases. Our first patient is a 18-year-old male who presented after an ATV accident. He was found to have right rib fractures and hemopneumothorax requiring tube thoracostomy and grade V liver injury. He was admitted to the ICU and on day two he developed bile peritonitis. Exploratory laparotomy revealed bile and blood products. He improved and his abdomen was closed with drains. He was re-admitted several times with vague complaints and symptoms including, a foul taste when coughing. Nuclear medicine study demonstrated concerns for extravasation of bile and on ERCP he was found to have a BBPF. He was managed with stent placement which controlled his bile leak and he gradually improved. Our second patient is a 26-year-old male who sustained a tangential gunshot wound. At operation was found to have a right hemothorax, diaphragm laceration, high-grade liver injury, and multiple hollow viscus injuries. During his first week, his abdomen was closed, he was extubated and transferred out of the ICU. He was discharged and re-admitted multiple times for persistent fever, leukocytosis and cough. He underwent multiple CT scans, drain placements and an eventual a nuclear medicine study demonstrated a BBPF. Attempts at controlling the fistula output with ERCP and stent placement failed and he required a lobectomy. BBPF are rare and difficult to diagnose, as demonstrated in our patients. Cases of non-operative management of BBPF with drainage and stenting has been reported; however, most will require a surgical intervention. Early involvement of gastroenterology with ERCP and stenting allows for control of biliary output and allowing for avoidance of a repeat operation. Here, we highlight the difficulty in managing biliary fistulas and the multi-disciplinary approach to treatment.

SP3. FIRST REPORT OF STENT GRAFT TREATMENT OF A PORTAL VEIN PSEUDOANEURYSM WITH PORTOENTERIC FISTULA AFTER PANCREATICODUODENECTOMY

SJ Pera MD, N Hafezi MS, JS Marshall MD, MJ Scheidt MD
University of Illinois College of Medicine

Delayed hemorrhage from pseudoaneurysm rupture is an under-recognized and often fatal complication following pancreaticoduodenectomy1. Occurring most frequently in patients with intra-abdominal infections and anastomotic leaks, pseudoaneurysms are mostly arterial, and best managed by endovascular approaches2. Venous pseudoaneurysms are an even less common cause of hemorrhage, and in one series treated surgically; however, there are no series describing treatment of venous pseudoaneurysm in a post-surgical patient3. We present here a 64-year-old male with massive gastrointestinal bleeding post-pancreaticoduodenectomy due to a portal vein pseudoaneurysm with portoenteric fistula, and the first reported successful outcome of definitive treatment with covered stent placement.

SP4. TWO-STAGE PALLIATIVE MULTIVISCERAL RETROPERITONEAL RESECTION TO CONTROL UNMANAGEABLE DUODENAL BLEED DUE TO RECURRENT PARAGANGLIOMA

LR Smucker MS, AN Hardy MD, RE Schwarz MD
IU School of Medicine

A 40-year old man was transferred 10 years after diagnosis of metastatic paraganglioma and radioactive iodine-MIBG therapy with uncontrollable duodenal bleeding that had failed two embolization attempts. The tumor was originating in the aortocaval subhepatic space with intimate vascular relationships to hepatic artery, inferior vena cava, portal vein and renal veins; parenchymal involvement was suspected at the lower liver edge. An attempt at resection with mere palliation, life-saving intent was deemed appropriate. Abdominal exploration showed a hypervascular retroperitoneal mass with duodenal, liver and retroperitoneal pericaval extent including dense pericaval fibrosis requiring en-bloc pancreatoduodenectomy for sufficient control. After a lengthy and challenging mobilization with the need to commit to resection through transection of stomach, hepatic duct and pancreas, the procedure had to be terminated due to the development of severe acidosis and coagulopathy. After ICU resuscitation over night, completion of resection and reconstruction were successfully performed. The postoperative course was complicated by gastroduodenal artery stump bleeding requiring interventional radiographic stenting, but the patient recovered to a fully functional status by postoperative week 4. He is currently symptom-free and has a normal performance status more than 2 months after the resection. Several specific challenges regarding indication, operative management, postoperative morbidity and resource utilization relevant to this unusual case appear worthwhile to discuss.

SP5. TWO CASES OF SMALL BOWEL OBSTRUCTION CAUSED BY ENTEROLITHS FORMED FROM SMALL BOWEL DIVERTICULAR DISEASE

TM Shaker MD, AW Wilkes MD, AR Spencer MD
Grand Rapids Medical Education Partners

Enteroliths originating from small bowel diverticula or Meckel's diverticula are rare, as are small bowel obstructions secondary to such enteroliths. We present 2 cases of enteroliths causing a small bowel obstruction (SBO). The first case is of a 58 year old male with recently discovered jejunal diverticula, who presented with a small bowel obstruction secondary to an enterolith derived from one of the jejunal diverticula. The second case is of an 80 year old female presenting with 2 days of abdominal pain, nausea, and vomiting. She was found to have abdominal tenderness, tachycardia and leukocytosis; imaging revealed a calcified object obstructing the small bowel lumen. This was compared to a computed tomography (CT) scan from 5 years prior, where a calcified object appeared to be lodged in the patient's Meckel's diverticulum. Both patients underwent exploratory laparotomy and enterolith extracted through an enterotomy with resolution of their obstructions. SBO is frequently encountered in clinical practice; typically, they result from adhesions, neoplasms or hernias. A rare cause of SBO is that of enteroliths from small bowel or Meckel's diverticula. Because this is a rare condition, there are no established clinical guidelines for management of this disease entity. However, review of literature demonstrates that SBO from enteroliths are usually diagnosed by CT scan, and nonoperative management infrequently works. The operative strategy recommended is enterotomy with extraction of the enterolith. There is no data regarding recurrence of enterolith formation or SBOs due to enteroliths.

SP6. A CHILLING REMINDER OF WINTER RECREATIONAL INJURIES: LACERATION OF THE INTERNAL JUGULAR AT AN ICE HOCKEY GAME

AJ Choudhry MBBS, M Younis MBBS, MC Hernandez MD, JA Aho MD, MD Ray-Zack MBBS, DC Cullinane MD, MD Zielinski MD
Mayo Clinic

We present the rare case of a 17 year old male who sustained a 4-cm unilateral hockey skate laceration to Zone II of his neck. On admission, the patient demonstrated hard signs of vascular injury. Active hemorrhage was clearly visible. The patient was taken to the operating room emergently. Upon exploration of the neck, profound uncontrolled bleeding was encountered. There was significant anatomical alteration of tissue planes distorting the visual field. Surrounding structures were mobilized, which allowed for temporary control of bleeding. A 2-cm longitudinal laceration of the internal jugular vein was then identified and found to be the source of active bleeding. Primary rather than a patch repair was performed. An intraoperative Doppler ultrasound demonstrated a narrowing at the site of repair with adequate flow. Later that day, a follow-up ultrasound demonstrated a thrombus at the site of primary repair; which was managed conservatively.

SP7. CARDIAC RUPTURE FOLLOWING MOTOR VEHICLE COLLISION

D Kang MD, T Xu MD, C Fredericks MD, M Kaminsky MD, F Bokhari MD, SK Gupta MD
Rush University Medical Center

A 24-year old woman presented to the emergency department following a head-on high-speed motor vehicle collision with a brick wall. She was a restrained driver with a prolonged extrication. On arrival, her airway, breathing, and circulation was intact with a Glasgow Coma Scale score of 15. She was hypotensive and tachycardic with a blood pressure of 71/56 and a heart rate of 118 beats/min. Initial chest radiograph was negative for pneumothorax, hemothorax, rib fractures, or a widened mediastinum. Electrocardiography showed sinus tachycardia. FAST scan showed no free fluid in the abdomen or pelvis. However, the pericardial view on ultrasound demonstrated a large effusion with tamponade physiology. She was taken emergently to the operating room for a pericardial window. A tense pericardium was opened with release of hemopericardium. To identify the cardiac injury, a median sternotomy was performed with additional blood evacuated from the pericardium. An isolated 1 cm grade IV blunt cardiac injury to the right atrial appendage with active bleeding was identified. The laceration was repaired using 3-0 pledgeted Prolene sutures. No other injuries were identified in the chest or mediastinum. Two mediastinal chest tubes were placed. Post-operatively, she did well and was discharged on postoperative day eight.

SP8. A LUMPECTOMY THE SIZE OF A MASTECTOMY: A FOUR POUND LUMPECTOMY SPECIMEN!

LT Qu MD, S Lo MD, DK Vandevender MD, FT Vaince MD
Loyola University Medical Center

A 55 y/o woman presented with leg pain that on workup was consistent with a pathologic left femur lesion. She was also noted to have a large palpable 12 cm mass in the left breast with inflammatory skin changes. She was diagnosed with stage 4 breast cancer, ER+PR+Her2+ with metastasis to the axilla and femur. She subsequently underwent prophylactic left femur fixation and radiotherapy to the femur. Over the course of 18 months, she was treated systemically with chemotherapy and antihormonal therapy. She had a significant clinical response to her medical treatment, whereby her bone lesion remained stable on imaging, her axillary adenopathy regressed on imaging, the breast mass was no longer palpable, and the inflammatory skin changes in the breast had resolved. She was evaluated for surgical intervention in the setting of stage 4 disease. To note she had significant symptomatic macromastia. As such, she underwent a large central lumpectomy followed by an oncoplastic mammoplasty of the left breast and a reduction mammoplasty of the right breast for symmetry. The very large lumpectomy specimen weighed 4 pounds and measured 28 cm in greatest dimension. The final pathology demonstrated a complete pathologic response of the primary tumor, with the fibrotic residual tumor bed measuring 9.3 cm x 7.5 cm x 2.3 cm. She had an excellent cosmetic result and a significant improvement in her quality of life. This case highlights a great treatment response and an alternative approach to surgical intervention in the setting of metastatic breast cancer.

LECTURES

CSA Presidential Lecture

"The Anatomy of Change"

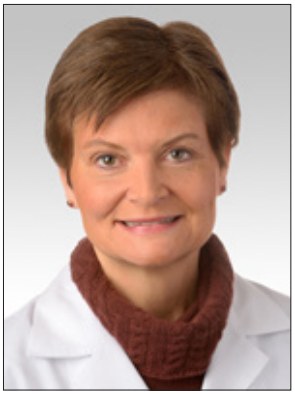
Monday, July 31, 2017
11:30am – 12:15pm

W. Scott Melvin, MD

Montefiore Medical Center | Bronx, New York

Dr. Melvin is an internationally recognized expert in General Surgery, GI surgery, Minimally Invasive Surgery, and new technology development. He is also a renowned surgical innovator. Dr. Melvin is a past President of the Society of American Gastrointestinal and Endoscopic Surgery (SAGES), which is the largest society of gastrointestinal surgeons in North America, with over 6,000 members. He is the current President of the Central Surgical Association. After training at the University of Maryland, Dr. Melvin completed a Fellowship at Ohio State University, where he then joined the faculty. Dr. Melvin was recruited to Montefiore Medical Center in 2014 from Ohio State, where he held many leadership appointments including Professor of Surgery, Executive Vice Chairman of Surgery, Chief of the Division of General and Gastrointestinal Surgery, and Director of the Center for Minimally Invasive Surgery, which he founded. Dr. Melvin is currently the Vice Chair of Surgery and the Director of the Division of General Surgery at Montefiore Medical Center and the Albert Einstein School of Medicine. He directs a division of over 20 specialists dealing with all aspects of general and oncological surgery. Dr. Melvin remains a busy clinical surgeon, specializing in foregut disease and minimally invasive approaches to the management of these diseases. He has authored over 120 peer reviewed articles and 20 book chapters. Dr. Melvin serves on multiple editorial boards and is Editor in Chief for The Journal of Surgery Laparoscopy and Endoscopic and Percutaneous Techniques. In addition to being a recognized educator, Dr. Melvin is the recipient of multiple educational awards from both the department and the college. His reputation has resulted in hundreds of invitations for National and International lectures as well as a National and International presence in the field of Surgery.

MSA Presidential Lecture



"Building a Successful Cancer Program- My Community Experience"

Tuesday, August 1, 2017
10:30am – 11:15am

Margo C. Shoup, MD

Northwestern Medicine | Warrenville, Illinois

Dr. Margo Shoup is a nationally recognized expert in Surgical Oncology with a focus on GI Oncology. Dr. Shoup received her medical degree from Northwestern University, Feinberg School of Medicine in Chicago, IL. She then followed with her general surgery residency and research fellowship at Loyola University in Maywood, IL and a surgical oncology fellowship at Memorial Sloan-Kettering Cancer Center in New York City, New York. After finishing her training Dr. Shoup returned to Loyola University Medical Center from 2002 until 2012 where she held the titles of Professor of Surgery, Chief of the Division of Surgical Oncology, Vice Chairman for Clinical Outcomes Research in the Department of Surgery and the Assistant Dean for Clinical and Translational Research for the Stritch School of Medicine. In 2012 Dr. Shoup became the Medical Leader for Oncology at Cadence Health in the west suburbs of Chicago, where she oversees the Oncology program for Central DuPage Hospital in Winfield, IL and Delnor Community Hospital in Geneva, IL. In 2014 when Cadence Health merged with Northwestern and became Northwestern Medicine Dr. Shoup continued in her role as Medical Leader of Oncology for Northwestern Medicine cancer program in the west suburbs and in addition, now oversees the cancer programs at Kishwaukee Hospital in Dekalb and Valley West Hospital in Sandwich, IL. Dr. Shoup is the current President of the Midwest Surgical Association and has held many national and regional leadership positions in other surgical societies. Dr. Shoup has been a Director with the American Board of Surgery since 2012. She is a fellow of the American College of Surgeons, and a past Treasurer of the Central Surgical Association, and is a member of the Society of University Surgeons, the Western Surgical Association and the Southern Surgical Association.

William Hunter Harridge, 1919–1971

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.

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.

2017 William Hunter Harridge Memorial Lecture

On Baseball and Breast Cancer

Sunday, July 30, 2017
9:45am - 10:15am

Featuring

Anees B. Chagpar, MD, MSc, MPH, MA, MBA

Associate Professor, Department of Surgery

Director, The Breast Center — Smilow Cancer Hospital at Yale-New Haven

Assistant Director — Global Oncology, Yale Comprehensive Cancer Center

Yale University School of Medicine

Anees currently is the Director of the Breast Center — Smilow Cancer Hospital at Yale-New Haven, an Associate Professor in the Department of Surgery, Yale School of Medicine, and the Assistant Director for Global Oncology at Yale Comprehensive Cancer Center. Born and raised in Canada, she completed her BSc in Honors Biochemistry and MD with Honors in Research at the University of Alberta, and her general surgery residency training and MSc at the University of Saskatchewan. She went on to become the inaugural Susan G. Komen Interdisciplinary Breast Fellow at the University of Texas M. D. Anderson Cancer Center, prior to joining the University of Louisville as an Assistant Professor of Surgery. She then completed her MPH in Clinical Effectiveness at the Harvard School of Public Health and an MA in Bioethics and Medical Humanities at the University of Louisville. She rose rapidly through the ranks to become an Associate Professor with tenure and an Academic Advisory Dean. She built the first nationally accredited Breast Center in Kentucky at the James Graham Brown Cancer Center prior to being recruited to Yale where she led the effort for Yale to become the first NCI designated Comprehensive Cancer Center in the Northeast to have a nationally, and internationally, accredited breast center. She is a busy breast surgical oncologist who participates in investigator-initiated and cooperative group clinical trials, as well as translational and clinical research. She enjoys teaching and mentoring students, residents, fellows and junior faculty, and is passionate about leadership in academic medicine, having most recently completed an MBA for Executives with a focus on Leadership in Healthcare at Yale's School of Management.

William Hunter Harridge Lecturers

John J. Fung, MD, PhD	2016
Richard A. Santucci, MD	2015
Jeffrey L. Ponsky, MD	2014
Fred A. Weaver, MD, MMM	2013
Daniel B. Michael, MD, PhD	2012
Leigh Neumayer, MD	2011
Kirby I. Bland, MD	2010
Jay L. Grosfeld, MD	2009
Douglas J. Mathisen, MD	2008
Terry Hicks, MD	2007
George I. Irvin, III, MD	2006
J. David Richardson, MD	2005
Josef E. Fischer, MD	2004
Stephen D. Leach, MD	2003
Charles E. Lucas, MD	2002
J. Wayne Meredith, MD	2001
Michael W. L. Gauderer, MD	2000
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
Robert E. Hermann, MD	1983
Ward O. Griffen, MD	1982
Robert Condon, MD	1981
Robert J. Freeark, MD	1980
John Glover, MD	1979
Robert Bartlett, MD	1978
J. Wesley Alexander, MD	1977
Raymond Read, MD	1976
*Hushang Javid, MD	1975
Alexander J. Walt, MD	1974
Warren H. Cole, MD	1973
Lester R. Dragstedt, MD	1972
Allan M. Lansing, MD	1971
Lester R. Dragstedt, MD	1962
Warren H. Cole, MD	1960

**First official Harridge Lecturer*

Special Speaker

Thomas Ricketts

Chairman, Chicago Cubs

Monday, July 31, 2017
9:30am - 10:15am

Tom Ricketts is the Chairman of the Chicago Cubs and longtime fan of the team. In 2009, he led his family's acquisition of the team from the Tribune Company. When Tom and his family were introduced as the new owners of the Chicago Cubs, he outlined three goals for the organization: win the World Series; preserve and improve Wrigley Field for future generations; and to be good neighbors, giving back to the city and the team's North Side neighborhood.

The Chicago Cubs won the 2016 World Series and were named by Baseball America as the 2016 Organization of the Year. Tom is on the Executive Council of Major League Baseball.

Tom is also the Chairman of Incapital LLC, which he co-founded in 1999. Incapital is an investment bank with underwriting and distribution expertise in a wide range of securities. Incapital has underwritten over $400 billion of securities including corporate bonds, U.S. Agencies, preferred stock, certificates of deposit, mortgage-backed, structured notes and market linked investments.

In 2010, Tom was named Ernst & Young's Midwest Finance Entrepreneur of the Year for his work with Incapital LLC and was on several occasions named by Institutional Investor Magazine as one the 40 most influential leaders in electronic finance. Tom is on the boards of Meijer, Inc., NorthShore University HealthSystem, Choose Chicago, the Field Museum, the Executive's Club of Chicago, the Economic Club of Chicago and the Wood Family Foundation.

Prior to Incapital, Tom worked at ABN AMRO, The Chicago Corporation and Mesirow Financial. He was a market maker on the Chicago Board Options Exchange from 1988 through 1994.

Tom has an AB in Economics and an MBA in Finance from the University of Chicago. He was named the Business School's Young Alumnus of the Year in 2005. Tom and his wife, Cecelia, live in the Chicago area with their five children.

In Remembrance

CSA

Carl H. Almond
Columbia, SC

Melvin A. Block
San Diego, CA

Mark Lowry Friedell
Kansas City, MO

Jay L. Grosfeld
Indianapolis, IN

James A. Hunter
Chicago, IL

Hugh B. Lynn
Winchester, VA

MSA

Jay L. Grosfeld
Indianapolis, IN

Arnold W. Kunkler
Indianapolis, IN

SAVE THE DATE

CSA 2018 Annual Meeting

March 15 – 17, 2018

Hilton Columbus Downtown | Columbus, OH

SAVE THE DATE

MSA 2018 Annual Meeting

August 5 – 7, 2018

Grand Hotel | Mackinac Island, MI