

Western Surgical Association

2020 ANNUAL SCIENTIFIC SESSION



November 9, 2020 | Live Virtual Meeting

November 2 – December 31, 2020
On-Demand Presentations and Discussion

128th Scientific Session of the Western Surgical Association

SAVE THE DATE



Western Surgical Association 129th Scientific Session
2021 ANNUAL MEETING

November 6 – 9, 2021
Renaissance Indian Wells Resort & Spa
Indian Wells, CA

MEETING OBJECTIVES

1. Delineate the importance of new diagnostic and therapeutic modalities in surgery.
2. Prioritize treatment of surgical diseases with new operative and non-operative technologies and treatment options.
3. Develop an increased knowledge of surgical disease and treatment.

CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

Accreditation

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American College of Surgeons and Western 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 **7.5 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 **7.5** credits meet the requirements for Self-Assessment.



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DISCLOSURE STATEMENT

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

SPEAKERS / MODERATORS / DISCUSSANTS	NOTHING TO DISCLOSE	DISCLOSURE		
		COMPANY	ROLE	RECEIVED
Mohamed Abd El Aziz	x			
Amro Abdelrahman	x			
Ola Ahmed	x			
Amanda Arrington	x			
Avo Artinyan, MD MS	x			
Yazan Ashouri	x			
SAMER ASMAR	x			
Mikhail Attaar	x			
Tara Barry	x			
Cherisse Berry	x			
David Borgstrom	x			
Carlos Brown	x			
Sara Buckman	x			
Corinne Bunn	x			
Anees Chagpar		Protean Diagnostics	Board member	Honorarium
Mohamad Chehab	x			
Vincent Cheng	x			
James Choi	x			
Amalia Cochran		UptoDate / JAMA Surgery	Section Editor / Web & SoMe Editor	Salary / Salary
Daniel deLahunta	x			
Navpreet Dhillon	x			
David Farley		Am College of Surgeons / FundamentalVR	Education consultant / Educational consultant	Salary / Honorarium

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David Farley		Am College of Surgeons / FundamentalVR	Education consultant / Educational consultant	Salary / Honorarium
James Fleshman		Cambridge Medical Robotics	Clinical Events Committee	zero
Marc Fromer	x			
Andrea Geddes	x			
Melanie Goldfarb	x			
Mohammad Hamidi	x			
Nora Hansen	x			
Melissa hogg		Intuitive	Proctor, Observation, Course Teaching	Unrestricted Ed Grant
Maseray Kamara	x			
Krista Kaups	x			
Muhammad Khurram	x			
Erika Krall	x			
Sujay Kulshrestha	x			
Christina Lee	x			
Jordan Lilienstein	x			
Charles Lucas	x			
Ajay Maker	x			
Daniel Margulies	x			
Meredith Mason	x			
Erin Maynard	x			
Kelvin Memeh	x			
Katherine Morris	x			
Ninh Nguyen		endogastric solutions / Olympus	speaking / speaking	honorarium / honorarium
Lauren Perry	x			
Morgan Pfeiffer	x			
Amanda Phares	x			
Harry Sax	x			
Rachel Seiler	x			

SPEAKERS / MODERATORS / DISCUSSANTS	NOTHING TO DISCLOSE	DISCLOSURE		
		COMPANY	ROLE	RECEIVED
Asim Shabbir	x			
mazhar soufi	x			
Erika Tay	x			
Liana Tsikitis	x			
Jamie Tung	x			
Maria Urdaneta Perez	x			
David Vanderpool	x			
Navin Vigneshwar	x			
Ming-Li Wang	x			
Nabil Wasif	x			
Christina Weed	x			
Jason Wiseman	x			
Jennifer Yonkus	x			
Jennifer Yu	x			
Victor Zaydfudim	x			
PLANNING COMMITTEE	NOTHING TO DISCLOSE	DISCLOSURE		
		COMPANY	ROLE	RECEIVED
Joseph Bellal	x			
Karen Brasel	x			
David Farley		Am College of Surgeons / FundamentalVR	Education consultant / Educational consultant	Salary / Honorarium
Constantine Godellas	x			
Mary Hawa	x			
James Jakub	x			
Jeffrey Lee	x			
Leigh Neumayer	x			
Michael Ujiki	x			

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Live Virtual Meeting Schedule

Monday, November 9, 2020

4:00pm – 5:20pm PST | WSA Top Papers

4:00pm – 4:20pm PST

1. AN ANALYSIS OF SEXUAL DIMORPHISM IN THE TUMOR MICROENVIRONMENT OF COLORECTAL CANCER

AE Geddes, AL Ray, RA Nofchissey, A Esmaceli, A Saunders, M Khan, S Aravindan, JT Abrendsen, M Li, MG Urdaneta, KM Fung, M Jayaraman, J Yang, KK Booth, GD Dunn, SN Carter, KT Morris

Presenter: Andrea Geddes MD, MS | University of Oklahoma Health Sciences Center

Member Closer: Katherine Morris MD | University of Oklahoma Health Sciences Center

Invited Discussant: Ajay Maker MD | University of Illinois at Chicago

4:20pm – 4:40pm PST

2. THE ROBOTIC APPROACH TO DIAPHRAGMATIC HERNIA REPAIR IS ASSOCIATED WITH INCREASED COST AND PROLONGED LENGTH OF STAY

S Kulshrestha, H Janjua, C Bunn, M Rogers, C DuCoin, F Luchette, P Kuo, M Baker

Presenter: Sujay Kulshrestha MD | Loyola University Medical Center

Member Closer: Marshall Baker MD | Loyola University Medical Center

Invited Discussant: Ninh Nguyen MD | University of California Irvine Medical Center

4:40pm – 5:00pm PST

3. ASSOCIATION OF US NEWS AND WORLD REPORT RANKING OF BEST HOSPITALS IN GASTROENTEROLOGY AND GASTROINTESTINAL SURGERY WITH PATIENT OUTCOMES IN COMPLEX GASTROINTESTINAL SURGERY FOR MALIGNANCY

E Tay, S Gambhir, S Hohmann, B Smith, S Stopenski, S Daly, M Hinojosa, N Nguyen

Presenter: Erika Tay MD | University of California Irvine Medical Center

Member Closer: Ninh Nguyen MD | University of California Irvine Medical Center

Invited Discussant: Amanda Arrington MD, MHM | University of Arizona

5:00pm – 5:20pm PST

4. IMPACT OF TRIMESTER ON CLINICAL OUTCOMES FOLLOWING LAPAROSCOPIC CHOLECYSTECTOMY DURING PREGNANCY

V Cheng, K Matsushima, M Ashbrook, K Matsuo, M Schellenberg, K Inaba, K Sandhu

Presenter: Vincent Cheng MD | Los Angeles County + University of Southern California Medical Center

Member Closer: Kulmeet Sandhu MD | University of Southern California Medical Center

Invited Discussant: Krista Kaups MD | UCSF Fresno

5:20pm – 5:40pm PST | WSA Presidential Address

Introduction: Sherry Wren MD | Stanford University

Presidential Address | Make NO Assumptions. Give Lots of Tests!

David R. Farley MD | Tower, MN



5:45pm – 6:15pm PST | WSA Business Meeting (Members Only)



On-Demand Meeting Schedule

November 2 – December 31, 2020

WSA is pleased to host “on-demand” presentations that will feature over 40 pre-recorded videos accompanied by individual discussion boards that will be transcribed and submitted to JACS.

Please visit the [WSA 2020 On-Demand website](#) for access to participate.

Breast

6. DOES LOCALIZATION TECHNIQUE MATTER FOR NON-PALPABLE TUMORS?

AB Chagpar, C Garcia-Cantu, MM Howard-McNatt, JS Gass, E Levine, A Chiba, SS Lum, R Martinez, E Brown, KK Gallagher, AI Willis, S Pandya, M Murray, A Fenton, V Haddad, N Livingstone Solomon, DW Ollila, M Senthil, E Dupont, on behalf of the SHAVE2 authors

Presenter/Member Closer: Anees Chagpar MD, MSc, MPH, MA, MBA | Yale University School of Medicine

Invited Discussant: Nora Hansen MD | Northwestern University

Colorectal

7. EVALUATING THE VARIATION IN PERIOPERATIVE OPTIMIZATION FOR COLORECTAL SURGERY: A REPORT FROM THE SURGICAL CARE OUTCOMES ASSESSMENT PROGRAM

C Weed, G Bernier, D Christante, T Feldmann, D Flum, J Kaplan, R Moonka, R Thirlby, V Simianu

Presenter: Christina Weed MD, MPH | Virginia Mason Medical Center

Member Closer: Val Simianu MD | Virginia Mason Medical Center

Invited Discussant: James Fleshman MD | Baylor University Medical Center Dallas

8. DOES THE APPROACH AND EXTENT OF COLORECTAL RESECTION AFFECT THE SHORT TERM OUTCOMES IN PATIENTS WITH ULCERATIVE COLITIS?

M Abd El Aziz, W Perry, F Grass, K Mathis, A Merchea, K Behm

Presenter: Mohamed Abd El Aziz MBBCh | Mayo Clinic Rochester

Member Closer: Amit Merchea MD | Mayo Clinic Florida

Invited Discussant: Vasiliki Liana Tsikitis MD, MBA, MCR | Oregon Health & Science University

Q 1. THE EFFECT OF POSTOPERATIVE OPIOID USE ON DISCHARGE OPIOID PRESCRIBING IN THE SETTING OF ERAS

DP deLahunta, JM Eberhardt, LM Knab, MA Singer

Presenter: Daniel deLahunta MD | Loyola University Medical Center

Education

Q 2. CAREER ADVANCEMENT FOR SURGEON-EDUCATORS: FINDINGS FROM A MODIFIED DELPHI PROCESS

A Cochran, L Neumayer, D Scott, M Klingensmith, J Mellinger, G Dunnington, K Brasel

Presenter: Amalia Cochran MD | (*on sabbatical*)

Endocrine

5. TOTAL THYROIDECTOMY VS. THYROID LOBECTOMY FOR LOCALIZED PAPILLARY THYROID CANCER IN CHILDREN: A PROPENSITY-SCORE MATCHED SURVIVAL ANALYSIS

K Memeh, B Ruble, S Alsafran, T Vaghaiwalla, P Angelos, X Keutgen

Presenter: Kelvin Memeh MD | University of Chicago

Member Closer: Peter Angelos MD, PhD | University of Chicago

Invited Discussant: Melanie Goldfarb MD | John Wayne Cancer Institute at Providence Saint John's Health Center

Q 3. MARGIN POSITIVITY AFFECTS SURVIVAL FOR PAPILLARY THYROID MICROCARCINOMA: AN ANALYSIS OF 13,648 PATIENTS

CI Lee, O Kutlu, ZF Khan, O Picado, RS Handelsman, BW Whitfield, JC Farra, JI Lew

Presenter: Christina Lee BS | University of Miami Miller School of Medicine

General

9. HERNIA MESH IS SAFE: 10-YEAR EXPERIENCE WITH OVER 6000 PATIENTS

M Attaar, B Forester, S Chirayil, B Su, H Wong, K Kuchta, J Linn, W Denham, S Haggerty, M Ujiki

Presenter: Mikhail Attaar MD | NorthShore University HealthSystem

Member Closer: Michael Ujiki MD | NorthShore University HealthSystem

Invited Discussant: Daniel Vargo MD | University of Utah School of Medicine

10. DIRECTED CUTANEOUS NEURECTOMY FOR REFRACTORY POST-TRAUMATIC AND POSTOPERATIVE PAIN

CE Lucas, AM Ledgerwood

Presenter/Member Closer: Charles Lucas MD | Wayne State University School of Medicine, Detroit Medical Center

Invited Discussant: Carlos Brown MD | Dell Medical School, University of Texas at Austin



11. TEACHING EFFECTIVE INFORMED CONSENT COMMUNICATION SKILLS IN THE VIRTUAL SURGICAL CLERKSHIP

M Wang, B Pickett, E Finlay, S Fortner

Presenter/Member Closer: Ming-Li Wang MD | University of New Mexico

Invited Discussant: David Borgstrom MD | West Virginia University

Q 4. TECHNIQUES AND OUTCOMES OF COMPLEX ABDOMINAL WALL RECONSTRUCTION IN CIRRHOTIC PATIENTS WITH ASCITES: INITIAL RESULTS OF A PROSPECTIVE STUDY

R Latifi, J Choi, S Gogna, R Bodin, A Rojas, M Gachabayov, A Smiley, G Veillette, S Nishida

Presenter: James Choi MD, MA | Westchester Medical Center



GI/Hepatobiliary

12. MOLECULAR PERITONEAL STAGING (MUTANT KRAS DNA) IN PANCREATIC ADENOCARCINOMA: RESULTS FROM A PROSPECTIVE TRIAL

J Yonkus, A Abdelrahman, A Schneider, M Kendrick, D Nagorney, R Smoot, S Cleary, T Grotz, J Voss, G Keeney, B Kipp, M Truty

Presenter: Jennifer Yonkus MD | Mayo Clinic Rochester

Member Closer: Mark Truty MD, MS | Mayo Clinic Rochester

Invited Discussant: Melissa Hogg MD, MS | NorthShore University HealthSystem

13. PRELIMINARY ANALYSIS OF LIQUID BIOPSY AFTER HEPATECTOMY FOR COLORECTAL LIVER METASTASES

YS Chun, MC Mason, HS Tran Cao, CWD Tzeng, TA Aloia, JN Vauthey

Presenter: Meredith Mason MD | The University of Texas MD Anderson Cancer Center

Member Closer: Yun Shin Chun MD | The University of Texas MD Anderson Cancer Center

Invited Discussant: Katherine Morris MD | University of Oklahoma Health Sciences Center

14. DIURESIS DOES MAKE A DIFFERENCE IN MAJOR HEPATECTOMY

M Soufi, K Flick, TK Nguyen, CM Schmidt, NJ Zyromski, A Nakeeb, MG House, EP Ceppa

Presenter: Mazhar Soufi MD | Indiana University School of Medicine

Member Closer: Eugene Ceppa MD | Indiana University School of Medicine

Invited Discussant: Harry Sax MD | Cedars-Sinai Medical Center

Q 5. ASSOCIATION OF A NON-INVASIVE FIBROSIS MARKER AND POST-OPERATIVE LIVER FAILURE AFTER RESECTION OF COLORECTAL LIVER METASTASIS

Y Ashouri, M Hamidi, M El Ghouayel, R Turk, L Konstantinidis, F Maegawa, V Nfonsam

Presenter: Yazan Ashouri MBBS | University of Arizona

Minimally Invasive

15. DOES ADOPTION OF NEW TECHNOLOGY INCREASE SURGICAL VOLUME? THE ROBOTIC INGUINAL HERNIA REPAIR MODEL

T Barry, C DuCoin, E Eguia, E Cousin-Peterson, P Kuo, H Janjua

Presenter: Tara Barry MD | University of South Florida

Member Closer: Paul Kuo MD | University of South Florida

Invited Discussant: David Vanderpool MD | Dallas, TX

Oncology

16. IS THE IMPROVED SURVIVAL IN EARLY-STAGE PANCREATIC CANCER WORTH THE EXTRA COST AT HIGH-VOLUME CENTERS?

L Perry, S Bateni, R Bold, J Hoch

Presenter: Lauren Perry MD | University of California Davis

Member Closer: Gregory Jurkovich MD | University of California Davis

Invited Discussant: Victor Zaydfudim MD, MPH | University of Virginia



17. SURVIVAL AFTER MARGIN POSITIVE RESECTION IN THE ERA OF MODERN CHEMOTHERAPY FOR PANCREATIC CANCER: DO PATIENTS STILL BENEFIT?

AK Arrington, P Hsu, M Schaefer, C O'Grady, M Khreiss, TS Riall

Presenter/Member Closer: Amanda Arrington MD, MHM |
University of Arizona

Invited Discussant: Nabil Wasif MD, MPH | Mayo Clinic Arizona

Q 6. PRE-SURGICAL POSITRON EMISSION TOMOGRAPHY IMAGING PREDICTS POST-NEOADJUVANT CHEMOTHERAPY PATHOLOGICAL RESPONSE IN PANCREATIC DUCTAL ADENOCARCINOMA

A Abdelrahman, J Yonkus, M Kendrick, D Nagorney, R Smoot, S Cleary, T Grotz, A Goenka, M Truty

Presenter: Amro Abdelrahman MBBS | Mayo Clinic Rochester

Outcomes

18. PATIENT PERSPECTIVES ON DEFINING TEXTBOOK OUTCOMES FOLLOWING MAJOR ABDOMINAL SURGERY

JT Wiseman, A Sarna, CE Wills, J Beane, V Grignol, A Ejaz, TM Pawlik, N Ikoma, JM Cloyd

Presenter: Jason Wiseman MD, MSPH | The University of Texas MD Anderson Cancer Center

Member Closer: Naruhiko Ikoma MD, MS | The University of Texas MD Anderson Cancer Center

Invited Discussant: David R. Farley MD | Tower, MN



Q 7. NON-OPERATIVE MANAGEMENT OF ACUTE CALCULOUS CHOLECYSTITIS IN CIRRHOTIC PATIENTS: IS IT THE RIGHT WAY TO GO?

*M Chehab, L Bible, S Asmar, M Douglas, M Ditillo, L Castanon,
M Khurram, A Tang, L Gries, B Joseph*

Presenter: Mohamad Chehab MD | University of Arizona

Q 11. CHOOSING WHAT VARIABLES MATTER IN RISK STRATIFICATION FOR HEPATECTOMIES USING A MACHINE LEARNING TECHNIQUE

MG Urdaneta, T Garwe, K Stewart, Z Sarwar, KT Morris

Presenter: Maria Urdaneta Perez MD | Oklahoma University College
of Medicine

Transplant

19. A NOVEL METHOD OF EVALUATING LIVER TRANSPLANT SURGERY FELLOWS USING OBJECTIVE MEASURES OF OPERATIVE EFFICIENCY AND SURGICAL OUTCOMES

*J Yu, N Vachharajani, O Ahmed, J Wellen, S Shenoy, W Chapman,
M Doyle, A Khan*

Presenter: Jennifer Yu MD | Washington University in Saint Louis

Member Closer: Adeel Khan MD | Washington University in
Saint Louis

Invited Discussant: Erin Maynard MD | Oregon Health & Science
University

Q 8. PORTAL VEIN FLOW AND THE DEVELOPMENT OF POST-TRANSPLANT ASCITES

M Pfeiffer, N Vachharajani, T Subramanian, O Ahmed, A Khan, J Wellen, S Shenoy, W Chapman, M Doyle

Presenter: Morgan Pfeiffer BS | Washington University in Saint Louis

Q 9. THE IMPACT OF CANDIDATE AGE ON ACCESS TO LIVER TRANSPLANTATION FOR HEPATOCELLULAR CARCINOMA

O Ahmed, N Vachharajani, SH Chang, Y Park, AS Khan, WC Chapman, MB Doyle

Presenter: Ola Ahmed MD | Washington University in Saint Louis

Trauma/Critical Care

20. A LEG TO STAND ON: TRAUMA CENTER DESIGNATION IS ASSOCIATED WITH THE RATE OF LIMB SALVAGE IN PATIENTS SUFFERING SEVERE LOWER EXTREMITY INJURY

C Bunn, S Kulshrestha, B DiChario, U Maduekwe, FA Luchette, MS Baker, SP Agnew

Presenter: Corinne Bunn MD | Loyola University Medical Center

Member Closer: Fred Luchette MD, MSc | Loyola University Medical Center

Invited Discussant: Daniel Margulies MD | Cedars-Sinai Medical Center

21. IMPROVING SEPSIS SCREENING IN TRAUMA PATIENTS: DEACTIVATING SIRS ALERTS FOR 48 HOURS POST-INJURY

A Phares, A Marrufo, CM Theodorou, G McGlynn, L Errecart, GJ Jurkovich

Presenter: Amanda Phares MD | University of California Davis

Member Closer: Gregory Jurkovich MD | University of California Davis

Invited Discussant: Sara Buckman MD, PharmD | Washington University in St. Louis

22. ARE URINARY TRACT INFECTIONS RESPONSIBLE FOR ELDERLY GROUND LEVEL FALLS OR FOUND DOWN DIAGNOSES?

N Dhillon, S Toscano, G Conde, S Perepa, L Lill, G Barmparas, E Ley

Presenter: Navpreet Dhillon MD | Cedars-Sinai Medical Center

Member Closer: Eric Ley MD | Cedars-Sinai Medical Center

Invited Discussant: Harry Sax MD | Cedars-Sinai Medical Center

Q 10. PRE-HOSPITAL ADMINISTRATION OF OPIOIDS IN TRAUMA PATIENTS: DOES DOSE EFFECTS OUTCOMES?

M Khurrrum, M Chehab, M Douglas, S Asmar, M Ditillo, L Bible, L Gries, B Joseph

Presenter: Muhammad Khurrrum MD | University of Arizona

Q 12. IT ALL COMES OUT IN THE WASH: AUTOTRANSFUSION IS SAFE DESPITE ENTERIC CONTAMINATION

J Lilienstein, M Kochubey, L Garcia, R Dirks, J Davis

Presenter: Jordan Lilienstein MD | University of California San Francisco, Fresno

Q 13. REBOA PROVIDES A SAFE AND EFFECTIVE ALTERNATIVE TO EMERGENCY DEPARTMENT THORACOTOMY IN THE TIMES OF COVID-19

N Vigneshwar, E Moore, A Sauaia, J Morrison, T Scalea, L Moore, J Podbielski, J Cannon, M Seamon, K Inaba, A Piccinini, C Fox, D Kauwar, V Baggenstoss, C Spalding, D Turay, J Dubose

Presenter: Navin Vigneshwar MD | University of Colorado School of Medicine

Vascular

23. OPEN VS. ENDOVASCULAR TREATMENT OF TRAUMATIC PERIPHERAL ARTERIAL INJURIES: A PROPENSITY MATCHED ANALYSIS

S Asmar, L Bible, M Chehab, L Castanon, M Khurram, M Ditillo, A Tang, M Douglas, B Joseph

Presenter: Samer Asmar MD | University of Arizona

Member Closer: Bellal Joseph MD | University of Arizona

Invited Discussant: Cherisse Berry MD | New York University School of Medicine

ePoster Gallery

P 1. ORGAN SPACE SURGICAL SITE INFECTION AFTER COLORECTAL SURGERY IN VETERANS

M Kamara, A Shahait, K Girten, K Saleh, D Weaver, S Gruber, G Mostafa

Presenter: Maseray Kamara MD | Wayne State University School of Medicine, Detroit Medical Center

P 2. MINIMALLY INVASIVE ILEAL POUCH ANAL ANATOMOSIS FOR PATIENTS WITH OBESITY: A PROPENSITY SCORE MATCHED ANALYSIS

D Larson, M Abd El Aziz, F Grass, S Shawki, K Mathis

Presenter: Mohamed Abd El Aziz MBCh | Mayo Clinic Rochester

P 3. FACTORS CONTRIBUTING TO UNPLANNED READMISSION FOLLOWING COLECTOMY FOR MALIGNANT COLON CANCER

E Krall, J Lee, M Hamidi, M Chehab, R Silva, E Pefok, V Nfonso, T Jerome, H Jecius

Presenter: Erika Krall | University of Arizona

P 4. TEACHING ENDOSCOPIC UPPER GASTROINTESTINAL BLEEDING CONTROL TO PRACTICING SURGEONS: AN “INTO THE FIRE” APPROACH TO SIMULATION

H Wong, M Attaar, B Su, K Kuchta, J Linn, S Haggerty, W Denham, M Ujiki

Presenter: Harry Wong MD | NorthShore University HealthSystem

P 5. DOES PRE-OPERATIVE ESTIMATED GLOMERULAR FILTRATION RATE (EGFR) PREDICT SHORT-TERM SURGICAL OUTCOMES IN PATIENTS UNDERGOING PANCREATIC RESECTIONS?

M Hamidi, C O’Grady, A Arrington, L Morris-Wiseman, TS Riall, M Khreiss

Presenter: Mohammad Hamidi MD | University of Arizona

P 6. PREDICTING EARLY RECURRENCE AFTER MAJOR HEPATECTOMY FOR METASTATIC COLORECTAL CANCER

MW Fromer, CR Scoggins, ME Egger, P Philips, CH O'Neill, KM McMasters, RCG Martin

Presenter: Marc Fromer MD | University of Louisville

P 7. PREOPERATIVE CHEMOTHERAPY IS ASSOCIATED WITH WORSE OVERALL SURVIVAL IN OPERABLE COLON CANCER

A Artinyan, Y Nasser, R Zhu, I Stettler, W Shen, F Alemi, J Cohen, N Seiser

Presenter: Avo Artinyan MD, MS | Adventist Health, Glendale

P 8. MICROBIAL DYSBIOSIS IS ASSOCIATED WITH ADENOMATOUS POLYPS

KM Watson, S Anand, IH Gardner, K Siemens, EN Dewey, CA Gaulke, VL Tsikitis

Presenter: Vasiliki Liana Tsikitis MD, MBA, MCR | Oregon Health & Science University

P 9. POSTOPERATIVE OUTCOMES IN THE PLAIN COMMUNITY PATIENT POPULATION: A SINGLE INSTITUTION RETROSPECTIVE STUDY IN WISCONSIN

R Seiler, K Kallies, A Borgert, B Jarman

Presenter: Rachel Seiler MD | Gundersen Health System

P 10. IS NUTRITIONAL STATUS ASSOCIATED WITH PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG) COMPLICATIONS IN TRAUMA PATIENTS?

J Tung, KL Kaups, A Saraswat, RC Dirks, LP Sue

Presenter: Jamie Tung MD | University of California San Francisco, Fresno

**P 11. TOTAL ENDOVASCULAR REPAIR OF A RUPTURED
ABERRANT RIGHT SUBCLAVIAN ARTERY ANEURYSM**

A Shabbir, E Kerby, S Hans

Presenter: Asim Shabbir DO | Henry Ford Macomb Hospital

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James Jakub

Mary Hawn

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WELCOME NEW MEMBERS

Elected to Membership at the Annual Meeting in 2019

Salman Khan Aslafran MD, MBbch | Kuwait

Faran Bokhari MD, MBA | Chicago, IL

Steven Robert Bonomo, MD | Chicago, IL

Jeff Borut DO | Maplewood, MN

Charles Herschel Chesnut, III DO | Las Vegas, NV

Jorge Con MD | Valhalla, NY

Trevan Fischer MD | Santa Monica, CA

Sean Goodwin MD | Holland, MI

Janie Grumley MD | Santa Monica, CA

Melissa Ellen Hogg MD, MS | Evanston, IL

Naruhiko Ikoma MD, MS | Houston, TX

Lawrence Mark Knab MD | Maywood, IL

Kartik Prabhakaran MD, MHS | Valhalla, NY

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Mitchell Brett Sally MD | Portland, OR

Christopher P. Scally MD | Houston, TX

Scott William Schimpke MD | Chicago, IL

Deborah Michelle Stein MD, MPH | San Francisco, CA

Timucin Taner MD, PhD | Rochester, MN

Amy Jacqueline Wagner MD | Milwaukee, WI

Ming-Li Wang MD | Albuquerque, NM

PAST PRESIDENTS & MEETING LOCATIONS

PRESIDENT	PLACE	YEAR
S.S. Todd*	Topeka	1891
Milo B. Ward*	Kansas City	1892
Milo B. Ward*	Des Moines	1893
Lewis Schooler*	Omaha	1894
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Joseph Eastman*	Denver	1897
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Alexander H. Ferguson*	Denver	1903
Charles H. Mayo*	Milwaukee	1904
Harvey D. Niles*	Kansas City	1905
Malcolm L. Harris*	Salt Lake City	1906
Charles W. Oviatt*	St. Louis	1907
William W. Grant*	Minneapolis	1908
Arthur L. Wright*	Omaha	1909
John P. Lord*	Chicago	1910
Amos W. Abbott*	Kansas City	1911
Lewis L. McArthur*	Cincinnati	1912
Jabez N. Jackson*	St. Louis	1913
Bryon B. Davis*	Denver	1914
Joseph R. Eastman*	Des Moines	1915
Lawrence W. Littig*	St. Paul	1916
Leonard Freeman*	Omaha	1917
James F. Percy*	Chicago	1918
Roland Hill*	Kansas City	1919
Arthur T. Mann*	Los Angeles	1920
Charles D. Lockwood*	St. Louis	1921
Miles F. Porter*	Minneapolis	1922
Horace G. Wetherill*	Colorado Springs	1923
Donald Macrae, Jr.*	French Lick Springs	1924
Willard D. Haines*	Wichita	1925
Robert C. Coffey*	Duluth	1926

PAST PRESIDENTS & MEETING LOCATIONS

Lewis H. McKinnie*	Omaha	1927
Kellog Speed*	Chicago	1928
E. Starr Judd*	Del Monte	1929
Carl E. Black*	Kansas City	1930
Clarence G. Toland*	Denver	1931
Harry P. Ritchie*	Madison	1932
Samuel C. Plummer*	Cincinnati	1933
Frank R. Teachenor*	St. Louis	1934
Reginald H. Jackson*	Rochester	1935
Thomas G. Orr*	Kansas City	1936
Fred W. Bailey*	Indianapolis	1937
Casper F. Hegner*	Omaha	1938
Vernon C. David*	Los Angeles	1939
Alfred Brown*	Topeka	1940
Albert H. Montgomery*	St. Paul	1941
Willis C. Gatch*	No General Meeting	1942
Willis D. Gatch*	No General Meeting	1943
Willis D. Gatch*	Chicago	1944
James C. Masson*	Chicago	1945
Arthur R. Metz*	Memphis	1946
William M. Mills*	Colorado Springs	1947
Harry B. Zimmerman*	St. Louis	1948
Robert L. Sanders*	Santa Barbara	1949
Warren H. Cole*	Minneapolis	1950
Erwin R. Schmidt*	Colorado Springs	1951
George B. Packard*	Houston	1952
Lawrence Chaffin*	Chicago	1953
Herbert H. Davis*	Colorado Springs	1954
Michael L. Mason*	Seattle	1955
Charles G. Johnston*	Cincinnati	1956
Everett P. Coleman*	Salt Lake City	1957
James B. Brown*	Rochester	1958
James T. Priestley*	Colorado Springs	1959
Caleb S. Stone, Jr.*	Detroit	1960
John T. Reynolds*	San Francisco	1961
Jacob K. Berman*	St. Louis	1962
Charles W. Mayo*	Galveston	1963

PAST PRESIDENTS & MEETING LOCATIONS

Eugene A. Osius*	Colorado Springs 1	1964
Arthur J. Hunnicutt*	Omaha	1965
Walter W. Carroll*	Phoenix	1966
O. Theron Claggett*	Los Angeles	1967
Merle M. Musselman*	Chicago	1968
Arthur C. Pattison*	Dallas	1969
Kenneth C. Sawyer*	Colorado Springs	1970
Raleigh R. White*	Portland	1971
Carl P. Schlicke*	Rochester	1972
Tom D. Throckmorton*	Houston	1973
Darrell A. Campbell*	San Francisco	1974
Chester B. McVay*	Colorado Springs	1975
William P. Mikkelsen*	Coronado	1976
Allen M. Boyden*	Las Vegas	1977
D. Emirick Szilagyi*	Scottsdale	1978
Harvey R. Butcher, Jr.*	Colorado Springs	1979
William H. ReMine*	Salt Lake City	1980
Paul E. Hodgson*	Albuquerque	1981
James J. Berens*	Kansas City	1982
Robert E. McCurdy*	Monterey	1983
George L. Jordan, Jr.*	Colorado Springs	1984
Martin A. Adson*	Rochester	1985
R. Dale Liechty*	Detroit	1986
Alexander J. Walt*	Dallas	1987
Melvin A. Block	Coronado	1988
J. Bradley Aust*	St. Louis	1989
David G. Ashbaugh	Scottsdale	1990
John L. Glover*	Colorado Springs	1991
Arthur J. Donovan	San Antonio	1992
George E. Block*	Seattle	1993
Basil A. Pruitt, Jr.*	Palm Desert	1994
Norman W. Thompson*	Chicago	1995
Jon A. van Heerden	Portland	1996
Jack R. Pickleman	Colorado Springs	1997
Jay L. Grosfeld*	Indianapolis	1998
Thomas V. Berne	Santa Fe	1999
Amilu S. Rothhammer	Dana Point	2000

PAST PRESIDENTS & MEETING LOCATIONS

J. David Richardson	San Antonio	2001
Claude H. Organ*	Vancouver, British Columbia	2002
Richard A. Prinz	Tucson	2003
Fabrizio Michelassi	Las Vegas, Nevada	2004
Arthur S. McFee*	Rancho Mirage, CA	2005
Richard C. Thirlby	Los Cabos, México	2006
Merril T. Dayton	Colorado Springs, CO	2007
Bruce L. Gewertz	Santa Fe, NM	2008
Wayne H. Schwesinger	San Antonio, TX	2009
Michael B. Farnell	Chicago, IL	2010
Gregory J. Jurkovich	Tucson, AZ	2011
Raymond J. Joehl	Colorado Springs, CO	2012
Clive S. Grant	Salt Lake City, UT	2013
Steven C. Stain	Indian Wells, CA	2014
William C. Chapman	Napa, California	2015
R. James Valentine	Coronado, CA	2016
Kelly McMasters	Paradise Valley	2017
Mark S Talamonti	San Jose del Cabo, Mexico	2018
M. Ashraf Mansour	Las Vegas, NV	2019

**Deceased*

J. BRADLEY AUST, JR. PAST RECIPIENTS

The WSA J. Bradley Aust award was established in honor of WSA Past President (1989), Dr. J. Bradley Aust, Jr., who was a loyal devotee and attended nearly every meeting. The WSA J. Bradley Aust award is given in recognition of the best paper by a new member (within the first three years of membership).

Honorable Past Recipients

1998	R. Stephen Smith
1999	William C. Chapman
2000	M. Ashraf Mansour
2001	Kelly M. McMasters
2002	Mark S. Talamonti
2003	Nora Hansen
2004	Samuel K. Syder
2005	Donald E. Low
2006	Frank R. Arko
2007	Jason B. Fleming
2008	Mark Faries
2009	Karen Borman
2010	Thomas Robinson
2011	MB Majella Doyle
2012	Thomas A. Aloia
2013	James W. Jakub
2014	Brian Badgwell
2015	Jason W. Smith
2016	John Morton
2017	Nabil Wasif
2018	Valentine Nfonsam
2019	Mark S. Truty



Scientific Abstracts

1. AN ANALYSIS OF SEXUAL DIMORPHISM IN THE TUMOR MICROENVIRONMENT OF COLORECTAL CANCER

Presenter: Andrea Geddes MD, MS | University of Oklahoma Health Sciences Center
KT Morris, AE Geddes, AL Ray, RA Nofchissey, A Esmaeili, A Saunders, M Khan, S Aravindan, JT Ahrendsen, M Li, MG Urdaneta, KM Fung, M Jayaraman, J Yang, KK Booth, GD Dunn, SN Carter

Background: Women with colorectal cancer (CRC) have a survival advantage over men, yet the mechanisms underlying this are unclear. T-cell infiltration within the CRC tumor microenvironment (TME) correlates strongly with survival. We hypothesized that women with CRC have a different immune response than men, with increased T-cell infiltration and differential gene expression within the TME.

Methods: Tissue microarrays were created using primary tumor, tumor infiltrated lymph nodes, and uninvolved colon from 101 CRC patients. CD4-positive (CD4+) and CD8-positive (CD8+) cells were identified by immunohistochemistry and digitally counted. Genetic expression within the TME of primary and metastatic CRC tumors from 33 other patients was analyzed using the NanoStringIO360 panel. Immune and cancer related gene expression was quantified and compared between men and women.

Results: Patient age, tumor stage, and tumor location were not different between the sexes in either patient cohort. CD4+ cell counts were higher in women in the tumor (22.04% vs. 10.26%, $p = 0.002$) and lymph nodes (39.54% vs. 8.56%, $p = 0.001$). Interestingly, CD4+ was increased in tumor from women >55 years old vs. younger (40.2% vs. 23.4%, $p = 0.029$). There was no difference in survival of patients in the top CD4+ tertile compared to the bottom tertile. CD8+ infiltration was increased in uninvolved colon of women vs. men (47.4% vs. 34.6%, $p = 0.015$), and in tumor from stages I/II CRC versus III/IV (37% vs. 23.9%, $p = 0.009$). Increased survival was seen in patients in the top CD8+ tertile compared to the bottom tertile, likely due to co-association of higher CD8+ counts with lower stage (43.9 months vs. 25.3 months, $p = 0.007$). Differential genetic expression between men and women was noted, specifically regarding interferon signaling, immune cell adhesion/migration, and cytotoxicity pathways. In addition, expression was increased in women in genes related to T-cell signaling and chemotherapy response. Sexual dimorphism in gene expression was more pronounced in metastatic samples compared to primary tumor samples.

Conclusion: We demonstrate significant sexual dimorphism in the immune response to CRC that could contribute to the survival advantage seen in women. Investigation of the mechanisms behind this difference may reveal additional therapeutic targets.

2. THE ROBOTIC APPROACH TO DIAPHRAGMATIC HERNIA REPAIR IS ASSOCIATED WITH INCREASED COST AND PROLONGED LENGTH OF STAY

Presenter: Sujay Kulshrestha MD | Loyola University Medical Center
S Kulshrestha, H Janjua, C Bunn, M Rogers, C DuCoin, F Luchette, P Kuo, M Baker

Background: An increasing number of minimally invasive (MIS) diaphragmatic hernia repairs (DHR) are performed using robotic assistance. Few studies evaluate the impact of robotic assistance on clinical outcomes and costs of care in DHR. We examine the association between surgical approach and the index length of stay (LOS), rates of postoperative readmission, need for revisional endoscopy and surgery, and overall cost of care.

Methods: The Healthcare Cost and Utilization Project (HCUP) State Inpatient Database for Florida was queried to identify patients undergoing transabdominal open, laparoscopic, or robotic DHR between 2011 and 2015. Inpatient records were linked to the HCUP State Ambulatory Surgery and Services Database to identify related inpatient and outpatient readmissions occurring within 12 months of the index DHR. Patients undergoing robotic DHR were propensity score matched 1:1 for demographics, comorbid disease, facility type, facility volume, and procedure priority to those undergoing either open or laparoscopic DHR. Complication and readmission rates, index LOS and hospital costs, and total charges associated with readmission and interventional care for matched cohorts were compared.

Results: 4,747 patients underwent DHR. 3,257 (69%) were performed laparoscopically, 1,015 (21%) open, and 475 (10%) robotically. Utilization of robotic assistance increased from 5% in 2011 to 13% in 2015. On univariate comparison, patients undergoing laparoscopic and robotic DHR were slightly younger (open: 67.9 +/- 14.4, laparoscopic: 64.5 +/- 13.6, robotic: 66.5 +/- 13.1 years; $p < 0.01$), more likely to have private insurance (21% vs. 30% vs. 25%; $p < 0.001$) and to undergo DHR on an elective basis (52% vs. 86% vs. 85%; $p < 0.001$) than those undergoing open DHR. 567 patients (12%) had at least one related inpatient or outpatient readmission within a year of the index procedure. The most common reason was for interventional endoscopy (68%). There were no statistical differences in the rate of or reason for readmission between surgical approaches.

Propensity matching resulted in three cohorts of 475 patients. There were no statistical differences between matched cohorts with regard to rates of inpatient and outpatient readmission (open: 13%; laparoscopic: 11%; robotic: 14%; $p = 0.27$), revisional surgery (open 3%; laparoscopic: < 2%; robotic: 2%; $p = 0.49$), or postoperative endoscopy (open: 8%; laparoscopic: 8%; robotic: 12%; $p = 0.12$). The mean index LOS for laparoscopic DHR was, however, statistically shorter than

that for both open and robotic DHR (3.63 +/- 4.62 days vs. 9.60 +/- 8.83 and 5.18 +/- 7.28 days respectively, all $p < 0.001$). Index hospitalization costs for laparoscopic DHR were also significantly less than those for open or robotic DHR (\$15,554 +/- 14,878 vs. \$23,875 +/- 23,565 and \$24,487 +/- 22,316 respectively, both $p < 0.001$). Index hospitalization costs for robotic DHR were statistically identical to those for open DHR ($p = 0.68$), and aggregated one-year inpatient and outpatient charges were highest for those undergoing a robotic DHR (\$233,730 +/- 257,603 vs. open: \$202,604 +/- 210,673 and laparoscopic: \$134,500 +/- 134,574, all $p < 0.05$).

Conclusion: For patients undergoing an MIS approach DHR, use of robotic assistance is associated with increased LOS, index hospital costs and overall procedure-related charges. Laparoscopic DHR is the most cost-effective approach to DHR.

3. ASSOCIATION OF US NEWS AND WORLD REPORT RANKING OF BEST HOSPITALS IN GASTROENTEROLOGY AND GASTROINTESTINAL SURGERY WITH PATIENT OUTCOMES IN COMPLEX GASTROINTESTINAL SURGERY FOR MALIGNANCY

Presenter: Erika Tay MD | University of California Irvine Medical Center
E Tay, S Gambhir, S Hohmann, B Smith, S Stopenksi, S Daly, M Hinojosa, N Nguyen

Background: The US News & World Report (USNWR) annually ranks the best hospitals for Gastroenterology & Gastrointestinal Surgery to provide guidance for referral of complex medical and surgical gastrointestinal (GI) conditions. The objective of this study was to examine the outcome of complex GI surgery performed for malignancy at top 50 US News & World Report ranking hospitals (RHs) versus non-ranking hospitals (NRHs) and their affiliates.

Methods: We analyzed the 2018 Vizient database for patients who underwent esophagectomy, gastrectomy, and pancreatectomy for malignancy performed at RHs vs. NRHs. Operative cases were identified by ICD-10 diagnosis and procedural codes. Outcome measures included length of stay (LOS), mortality, mortality index (observed-to-expected mortality ratio), serious morbidity, and costs. A secondary analysis was performed for patients who developed serious complications post-intervention at RHs vs. NRHs with the same outcome measures applied.

Results: There were 3,012 complex GI operations performed for malignancy at 41 RHs and 3,580 operations performed at 310 NRHs. The mean annual case volume for complex GI surgery was higher at RHs compared to NRHs (72 cases/center vs 12 cases/center, respectively). In-hospital mortality (0.9% vs 2.2% $p < 0.001$) and mortality index (0.7 vs 1.5) were lower at RHs compared with NRHs. There were no significant differences in LOS ($P = 0.40$), direct cost ($P = 0.076$), or serious morbidity (9.7% vs. 11.1%, $p = 0.067$) between groups. Secondary analysis of patients who developed serious morbidity showed that compared to NRHs, RHs are more likely to rescue the patient as observed with a lower in-hospital mortality (8.9% at RHs vs 16.7% at NRHs, $p = 0.0014$).

Conclusion: Within the context of academic centers and their affiliates, USNWR RHs performed 6-fold higher case volume of complex GI surgery for malignancy compared to NRHs and associated with a lower risk of in-hospital mortality. In an event when a serious complication develops, RHs are more likely to rescue the patient than NRHs. When logistically feasible, consideration should be given to direct patients requiring complex GI surgery for malignancy to RHs.

4. IMPACT OF TRIMESTER ON CLINICAL OUTCOMES FOLLOWING LAPAROSCOPIC CHOLECYSTECTOMY DURING PREGNANCY

Presenter: Vincent Cheng MD | Los Angeles County + University of Southern California Medical Center

V Cheng, K Matsushima, M Ashbrook, K Matsuo, M Schellenberg, K Inaba, K Sandhu

Background: Laparoscopic cholecystectomy during pregnancy has been shown to be both safe and effective. Conventional philosophy promotes the second trimester as the ideal time for surgical intervention. However, literature supporting this belief is sparse. The purpose of the present study is to examine the impact of trimester on clinical outcomes following laparoscopic cholecystectomy during pregnancy.

Methods: The National Inpatient Sample was queried for all pregnant women who underwent laparoscopic cholecystectomy between October 2015 and December 2017. Patients were categorized by trimester using the International Classification of Diseases (Tenth Revision) codes. Univariate analysis was used to compare baseline patient and hospital characteristics. Multivariate regression analysis adjusted for differences in baseline patient and hospital characteristics to quantify the impact of trimester on clinical outcomes.

Results: A total of 780 pregnant women who underwent laparoscopic cholecystectomy satisfied inclusion criteria. Of these patients, 210 (26.9%) women underwent cholecystectomy during the first trimester while 373 (47.8%) and 197 (25.2%) underwent cholecystectomy during the second and third trimesters, respectively. The median age of all patients was 27 years (interquartile range 23-31). Compared to cholecystectomy during the second trimester, cholecystectomy during the first trimester was not associated with higher rates of maternal or fetal complications (odds ratio [OR] 0.831, $p=0.568$). However, cholecystectomy during the third trimester was associated with a higher rate of preterm delivery (OR 41.908, $p<0.001$) and overall complications (2.902, $p<0.001$). Similarly, no difference between the first and second trimesters was identified for total hospital charges (regression coefficient [RC] 0.042, $p=0.154$), but the third trimester was associated with higher total hospital charges (RC 0.094, $p=0.001$).

Conclusion: Our data suggest that laparoscopic cholecystectomy can be performed in the first trimester without an increased risk of postoperative maternal and fetal complications. In contrast, laparoscopic cholecystectomy during pregnancy should not be delayed until the third trimester.

5. TOTAL THYROIDECTOMY VS. THYROID LOBECTOMY FOR LOCALIZED PAPILLARY THYROID CANCER IN CHILDREN: A PROPENSITY-SCORE MATCHED SURVIVAL ANALYSIS

Presenter: Kelvin Memeh MD | University of Chicago
K Memeh, B Ruble, S Alsafran, T Vaghaiwalla, P Angelos, X Keutgen

Background: Current guidelines recommend total thyroidectomy (TT) and radioablation for most papillary thyroid cancer (PTC) in children. This recommendation has been criticized as being very aggressive, especially for early-stage PTC, as it likely does not influence patient survival, increases the risk for surgical complications, and requires children to undergo life-long thyroid hormone replacement therapy. There currently are limited data in support of thyroid lobectomy (TL) for PTC in children. We, therefore, sought to study whether the extent of thyroidectomy (TL vs TT) influences overall and disease-specific survival in pediatric patients with localized PTC using two large national databases.

Methods: Both the National Cancer Database (NCDB) and the Surveillance, Epidemiology, and End Results (SEER) registry were used for this analysis. Pediatric patients (≤ 17 years old) with localized PTC (defined as unifocal tumors < 4 cm, with no distant or extrathyroidal disease), were included between 2004 and 2016. Patients with multifocal, extrathyroidal, and/or distant disease were excluded from the analysis. Patients who underwent TT for PTC were identified and matched with a similar cohort of patients who underwent TL. Both groups were matched in a 1:1 ratio using propensity score matching for age, sex, race, year of diagnosis, and tumor size of < 2 cm. Primary endpoints for this study were overall survival (OS) (from NCDB and SEER) and disease-specific survival (DSS) (from SEER).

Results: 15,705 patients with PTC were identified in both databases and 1331 patients were pediatric patients with tumors < 4 cm in size. Of those 324 patients were selected and matched using a 1:1 propensity score matching. 162 patients (143 females) with a mean age of 16(13- 17) had TT. 162 patients (139 females) with a mean age of 16(14- 17), had TL. Median follow up was 55 months (IQR 27 -89) for both groups. We did not find any statistically significant difference in OS or DSS in patients with PTC < 4 cm regardless of whether patients underwent a TT or TL. $p=0.32$ and $p= 0.92$ in NCDB and SEER database respectively.

Conclusion: This study suggests that the extent of thyroidectomy does not influence survival for pediatric patients with early-stage PTC and therefore that TL may be an appropriate therapy in this patient population.

6. DOES LOCALIZATION TECHNIQUE MATTER FOR NON-PALPABLE TUMORS?

Presenter: Anees Chagpar MD, MSc, MPH, MA, MBA | Yale University School of Medicine

AB Chagpar, C Garcia-Cantu, MM Howard-McNatt, JS Gass, E Levine, A Chiba, SS Lum, R Martinez, E Brown, KK Gallagher, AI Willis, S Pandya, M Murray, A Fenton, V Haddad, N Livingstone Solomon, DW Ollila, M Senthil, E Dupont, on behalf of the SHAVE2 authors

Background: The majority of breast cancers diagnosed in the US are non-palpable, requiring a localization technique to guide breast conserving surgery. There are several techniques for localization (including wires, seeds, etc), but there has not been robust comparisons of these techniques in terms of margin positivity and volume of tissue resected.

Methods: Between 2011-2013 and 2016-2018, two randomized controlled trials involving 10 centers across the US accrued 631 patients with stage 0-3 breast cancer, all of whom underwent breast conserving surgery. Of these, 566 (89.7%) had non-palpable tumors for which localization was required; of these 44 (7.7%) had no further tumor at the time of surgery. The remaining 522 patients formed the cohort of interest. The localization technique was left to the discretion of the individual surgeon. We compared margin positivity and volume of tissue resected between various localization techniques.

Results: The majority of the patients (n = 465; 89.1%) had wire localization (WL); 50 (9.6%) had radioactive seed (RS) localization, and 7 (1.3%) had Savi-Scout (SS) localization. Patient age (p = 0.160) and presence of DCIS (p = 0.630) was similar across the groups, although tumor size tended to be larger in wire localized specimens (median 1.6 cm vs. 1.3 cm vs. 0.8 cm for WL, RS, and SS groups respectively, p = 0.002). Surgeons were permitted to take selective margins as they saw fit after resecting the initial specimen; this was less frequent in the WL group (43.9% vs. 66.0%, 71.4% in WL, RS, and SS groups, respectively, p = 0.005). The volume of tissue removed (including selective margins, where taken) was not significantly different between the three groups (73.1 cm³ vs. 78.9 cm³ vs. 70.5 cm³ for the WL, RS and SS groups respectively, p = 0.340), nor was there a difference in terms of margin positivity on bivariate analysis (37.8% vs. 28.0% vs. 28.6% for the WL, RS, and SS groups respectively, p = 0.339). On multivariate analysis, margin status was affected by tumor size (OR = 1.288; 95% CI: 1.124-1.477, p < 0.001), but not by type of localization (p = 0.658).

Conclusion: While there are a number of methods for tumor localization, choice of technique does not seem to influence volume of tissue resected nor margin status.

7. EVALUATING THE VARIATION IN PERIOPERATIVE OPTIMIZATION FOR COLORECTAL SURGERY: A REPORT FROM THE SURGICAL CARE OUTCOMES ASSESSMENT PROGRAM

Presenter: Christina Weed MD, MPH | Virginia Mason Medical Center
C Weed, G Bernier, D Christante, T Feldmann, D Flum, J Kaplan, R Moonka, R Thirlby, V Simianu

Background: Robust data including meta-analyses of randomized control trials demonstrate that enhanced recovery protocols (ERPs) decrease length of stay, complications, and cost. However, little is known about reasons for variation in compliance with ERPs including the patient-, surgeon-, and hospital- factors driving delivery of ERP components. Our purpose was to confirm the efficacy of ERPs in a broadly generalizable regional network, and to determine factors that are associated with ERP delivery in diverse hospital settings.

Methods: A cohort of patients was created by prospectively recording all elective colorectal operations at hospitals in the Surgical Care Outcomes Assessment Program (SCOAP). Delivery of 12 ERP components is tracked at all SCOAP sites, spanning the entire perioperative care experience. These include preoperative components (receipt of oral antibiotics with bowel prep, carbohydrate loading, immunonutrition, three types of non-narcotic preoperative analgesia and regional anesthesia) and postoperative components (three types of non-narcotic postoperative analgesia, nasogastric tube removal in the operating room, and early diet advancement). Composite of total components delivered was described at all sites, and factors associated with differences in ERP component delivery and impact on outcomes were reported. We designated “3+ components not available” as a variable of interest to track quality of missing data. In addition, hospitals participating in SCOAP received continuous feedback on their performance, and trends in ERP component delivery were reported over time.

Results: From 2016 to 2019, 9,274 elective colorectal operations (mean age 61 years, 55% female) were performed at 36 hospitals. Indications were 48% (n=4404) cancer, 23% (n=2169) diverticulitis, and 8% (n=737) inflammatory bowel disease. Minimally invasive surgery was used in 71% (laparoscopy in 52% and robotics in 19%). While every component is not indicated in every case, the proportion of cases with 6 or more components received increased from 23% in 2016 to 50% in 2019 (p<0.001). Rates of poor adherence (3+ components missing) were more frequent in open surgery vs MIS (49% vs 34%, p<0.001), cases done in the abdomen vs pelvis (43% vs 33%, p<0.001), and at hospitals performing fewer than 100 colectomies per year (53% vs 34% at hospitals with 100+ cases/year, p<0.001). After risk adjustment, an incremental increase in delivered components was associated with a lower likelihood of prolonged length of stay (OR 0.91, 95%CI 0.85-0.97, p=0.006), combined adverse events (OR

0.84, 95%CI 0.77-0.94, $p=0.001$) and re-interventions (OR 0.85, 95%CI 0.77-0.94, $p=0.001$).

Conclusion: At SCOAP hospitals, delivery of increasing numbers of ERP components was associated with improved perioperative outcomes and decreased complications after elective colorectal surgery, confirming efficacy across our network. The variation in delivery of these evidence-based components in particular subsets of our cohort indicates an important opportunity for quality improvement initiatives within this network.

8. DOES THE APPROACH AND EXTENT OF COLORECTAL RESECTION AFFECT THE SHORT TERM OUTCOMES IN PATIENTS WITH ULCERATIVE COLITIS?

Presenter: Mohamed Abd El Aziz MBBCh | Mayo Clinic Rochester
K Behm, M Abd El Aziz, W Perry, F Grass, K Mathis

Background: Minimally invasive techniques have improved short term surgical outcomes in patients with ulcerative colitis (UC). Despite this, there is limited literature on the true impact of extent of resection. Anecdotally we observed prolonged length of stays for patients undergoing minimally invasive total proctocolectomy (TPC) when compared to minimally invasive subtotal colectomy (STC). The aim of this study is to better understand the impact of surgical approach and extent of resection on short term outcomes for patients undergoing TPC and STC for ulcerative colitis.

Methods: Patients diagnosed with UC who underwent elective TPC or STC were captured from the ACS-NSQIP® 2011–2018 patient-user files. They were divided into four cohorts according to the operative approach and the extent of resection: Open TPC (O-TPC), Laparoscopic TPC (L-STC), Open STC (O-STC), and Laparoscopic STC (L-STC). Baseline demographic, anthropometric, and perioperative variables were compared between the four groups alongside 30-day mortality and 30-day complication rates.

Results: Of 3387 patients, 368 (10.9%) underwent O-STC, 406 (12%) underwent O-TPC, 1958 (58%) underwent L-STC, and 655 (19%) underwent L-TPC. Overall rate of LOS > 6 days was 27%: O-STC 39.9%, O-TPC = 48.4%, L-STC = 18.8%, and L-TPC = 31.4% ($p < 0.0001$). Overall rate of blood transfusions was 8.8%. Laparoscopic approaches had longer operative times compared to open, as did TPC compared to STC. Those who had more comorbid conditions, including DM, COPD, hypertension, and ASA class ≥ 3 were more likely to undergo an open approach or TPC.

Extent of Surgery: There was no significant difference in the risk of complications between open TPC or open STC. Patients who had L-TPC has a higher risk of urinary tract infection (UTI) (3.5% vs. 1.3%, $p < 0.0001$; adjusted OR: 2.46; $p < 0.05$) and LOS > 6 days (31.4% vs. 18.8%, $p < 0.0001$; adjusted OR: 1.3; $p < 0.05$) comparing to patients who had L-STC .

Operative approach: Patients who had open surgery had a higher risk of postoperative complications including superficial SSI (O-TPC 7.1% vs L-TPC 4.7%, $p < 0.0001$; adjusted OR: 1.581; $p < 0.05$ and O-STC 5.4% vs L-STC 2.8%, $p < 0.0001$; adjusted OR: 2.317; $p < 0.05$), need for blood transfusion (O-TPC 13.3% vs L-TPC 9.8%, $p < 0.0001$; adjusted OR: 1.574; $p < 0.05$ and O-STC 10.6% vs L-STC 7.2%, $p < 0.0001$;

adjusted OR: 1.638; $p < 0.05$), and LOS > 6 days (O-TPC 48.4% vs L-TPC 31.4%, $p < 0.0001$; adjusted OR: 2.201; $p < 0.05$ and O-STC 39.9% vs L-STC 18.8%, $p < 0.0001$; adjusted OR: 2.877; $p < 0.05$).

Interactions: Patients who had O-STC had a higher risk of LOS > 6 days compared to L-TPC (39.9% vs. 31.4%, $p < 0.0001$; adjusted OR: 1.9; $p < 0.05$) but there was no significant difference between the two groups regarding SSI, need for blood transfusion, and UTI.

Conclusion: Overall, surgery for ulcerative colitis is associated with high rates of prolonged length of stay and blood transfusion. Short term outcomes and length of stay are more impacted by the operative approach than the extent of resection. Patients have better outcomes with a laparoscopic approach when compared to their open counterparts, and in fact, laparoscopic TPC may have a shorter length of stay than open STC.

9. HERNIA MESH IS SAFE: 10-YEAR EXPERIENCE WITH OVER 6000 PATIENTS

Presenter: Mikhail Attaar MD | NorthShore University HealthSystem
M Attaar, B Forester, S Chirayil, B Su, H Wong, K Kuchta, J Linn, W Denham, S Haggerty, M Ujiki

Background: The use of mesh in hernia repair has faced intense media scrutiny, leading patients to become fearful of its use despite its benefits in reducing the risk of recurrence and the excellent safety profile of most brands currently on the market. In this study, we report a single institutional experience in performing hernia repair with mesh in terms of hernia-specific outcomes, mesh-related complications and patient reported quality of life up to five years postoperatively.

Methods: Patients who underwent any type of abdominal wall hernia repair with mesh at a single institution were identified from a prospectively maintained quality database. Demographic, perioperative and postoperative complication data were analyzed. Health related quality of life surveys, including the Surgical Outcomes Measurement System (SOMS) and Carolinas Comfort Scale (CCS), were administered pre- and postoperatively at 3 weeks, 6 months, 1, 3 and 5 years.

Results: Between 2010 and 2020, a total of 6387 patients underwent abdominal hernia repair with mesh. Inguinal hernia repairs made up the majority (65%) of the operations and 63.6% of cases were performed laparoscopically. The overall rate of recurrence was 2.8%. In terms of complications, 1.0% of patients experienced a surgical site infection within 30 days and 0.2% of patients suffered from a mesh infection at any time point postoperatively. Domains on SOMS of Pain Impact, Pain Quality, Pain Visual Analog Scale and Physical Functioning were all significantly improved from baseline at each time point postoperatively (all $p < 0.05$). The percentage of patients reporting “no symptoms” or “mild but not bothersome symptoms” on the CCS total score at 1, 2 and 5 years postoperatively were 83.6%, 81.3% and 84% of patients, respectively. Only 2.9%, 3.3% and 4.4% of patients reported severe or disabling symptoms postoperatively at 1, 2 and 5 years, respectively.

Conclusion: Hernia repair with mesh is safe, resulting in a low rate of hernia recurrence and a minimal rate of mesh-related complications. Patients report excellent long-term quality of life across multiple domains with only a small percentage of patients experiencing severe or disabling symptoms at long-term follow up.

10. DIRECTED CUTANEOUS NEURECTOMY FOR REFRACTORY POST-TRAUMATIC AND POSTOPERATIVE PAIN

Presenter: Charles Lucas MD | Wayne State University School of Medicine, Detroit Medical Center

CE Lucas, AM Ledgerwood

Background: The current recommendations for the treatment of refractory post-surgical and post-traumatic cutaneous neuralgia (CN) include proximal truncal neurectomy with or without mesh removal. A prior preliminary report suggested that directed cutaneous neurectomy (DCN) without truncal neurectomy or mesh removal gave excellent results. These observations led to a creation of a prospective DCN registry to further evaluate this approach.

Methods: During ten years, ending March 2020, DCN was performed 84 times in 76 pts not previously reported. Criteria for DCN included complete temporary relief of CN by percutaneous anesthetic blockade performed proximal to the refractory pain. Patients having complete relief of pain were scheduled for DNC, at which time the same blockade was performed with blue dye added to the injectate. Following complete relief of pain, a small incision was made, and all of the blue-stained tissue was excised. The DNC was performed in the groin (34 pts), mid-abdomen (35 pts), or following trauma with fracture of ribs (9 pts), long-bone (4pts), or cranium (2 pts). Mesh was present in 32 pts. Relief was judged to be permanent (P), none (N), or temporary (T). None of the pts had truncal neurectomy or mesh removal.

Results: Pain was deemed P in 65 pts (61±14 mo), N in 7 pts, and T in 12 pts (18±20 mo); 7 of the 12 pts with T relief had a second resection resulting in P relief in 5 pts. Wound healing was normal (69 pts), had seroma (13 pts), or superficial infection (2 pts). Tiny nerve fibers were seen microscopically in 47 pts; there was no correlation with presence of microscopic nerve fibers and results. Reasons for N relief were unknown (3 pts), due to pre-blockade analgesia (2 pts), followed radiation neuritis (1 pt), and poor post-blockade patient-physician communication (1 pt).

Conclusion: Refractory CN is caused by small cutaneous nerve fibers. DCN, by removing only small cutaneous fibers that enervate the skin, yields better results than blind total proximal truncal neurectomy for postoperative and post-traumatic refractory CN. Proximal truncal neurectomy and excision of associated mesh are technically more difficult and unnecessary.



11. TEACHING EFFECTIVE INFORMED CONSENT COMMUNICATION SKILLS IN THE VIRTUAL SURGICAL CLERKSHIP

Presenter: Ming-Li Wang MD | University of New Mexico
M Wang, B Pickett, E Finlay, S Fortner

Background: The disruption occasioned by the COVID-19 pandemic allowed for a “natural” experiment to assess the impact of virtual curricular innovations in the surgery clerkship. We implemented a novel informed consent activity module with standardized patients to improve competence of communication skills. The virtual curriculum was designed with synchronous and asynchronous components, including a zoom session with standardized patients and faculty coaches. In this cohort study, we seek 1) to improve student competence in communication skills related to informed consent and 2) to explore advantages and shortcomings of a virtual communication curriculum.

Methods: All third year medical students who participated in the virtual surgery clerkship were recruited to participate in a retrospective survey about the informed consent module. Students who participated in the study completed a survey about competence related to informed consent communication skills before and after the activity. At the end of the virtual clerkship block, data was collected from small focus groups of students about their virtual curricular experience.

Results: After the first virtual surgery clerkship block, 16 out of the 52 students participated in the study (30% of cohort). Based on the survey, students who participated reported increased competence in communication skills related to informed consent. All student who participated in the study rated satisfactory or above for competence in identifying elements of an informed consent and common communication challenges. The students who participated in the focus group reported the informed consent activity as a positive experience.

Conclusion: We found that using a virtual module of standardized patients and faculty communication coaches improved students’ competence in communication skills related to informed consent. Due to the COVID pandemic, a ‘split’ clerkship curriculum is a novel approach to the traditional third year medical school curriculum. This communication module can be useful in a virtual curricular structure for both current and future medical students in pandemic environment.



12. MOLECULAR PERITONEAL STAGING (MUTANT KRAS DNA) IN PANCREATIC ADENOCARCINOMA: RESULTS FROM A PROSPECTIVE TRIAL

Presenter: Jennifer Yonkus MD | Mayo Clinic Rochester

J Yonkus, A Abdelrahman, A Schneider, M Kendrick, D Nagorney, R Smoot, S Cleary, T Grotz, J Voss, G Keeney, B Kipp, M Truty

Background: Pancreatic ductal adenocarcinoma (PDAC) is an aggressive malignancy requiring accurate staging for appropriate treatment recommendations. Standard imaging (CT/MRI) fails to detect synchronous peritoneal dissemination (PD) in 1/3 of patients. Addition of laparoscopic exploration and peritoneal lavage (PL) with cytology may increase PD detection, but is limited by cellular yield and low sensitivity. Since 1/2018, we have used a ddPCR cell-free DNA assay to detect mutant KRAS (mKRAS) in peripheral blood, as >90% of PDAC tumors harbor mKRAS. This assay has successfully identified patients at high risk of occult hematogenous metastases. Given the yield of our clinically available blood assay, we aimed to determine the ability and utility of mKRAS detection in PL fluid via a prospective peritoneal staging trial.

Methods: Patients with non-metastatic PDAC after initial imaging undergoing staging laparoscopy with PL by a single-surgeon under an IRB-approved prospective trial were included. Gross metastases identified on laparoscopy were biopsied for pathologic review. PL was performed with instillation of 1000ml saline which was agitated, aspirated, and sent for cytologic examination, CA19-9/CEA levels, and mKRAS DNA assay. PL fluid was spun, pelleted, and DNA was extracted. ddPCR was used to detect mKRAS copies. Results were considered positive if mKRAS copies were present. Clinically positive laparoscopy was defined as gross metastases or positive cytology. PL fluid mKRAS status was compared to gross findings, CA19-9/CEA levels, and cytology.

Results: Sixty-five patients were prospectively studied with median follow-up of 6.5 months. In total 18/65 (28%) patients had clinically positive laparoscopy. This did not correlate with elevated serum CA19-9, present in 43 (66%) patients. Cytology was positive in 10 (15%) patients and 11 (17%) patients had gross metastatic disease at laparoscopy. Of patients with gross disease only 3/11 (27%) had correlative positive cytology. PL fluid CA19-9 or CEA levels were elevated in 24/65 (37%) patients and this associated with clinically positive laparoscopy findings ($p=0.021$). 29 (45%) patients had mKRAS detected in PL fluid with a mean of 56 mutant copies/20uL. Positive mKRAS was associated with clinically positive laparoscopy (67% vs 33%, $p=0.034$), with higher copy numbers in clinically positive patients (295 vs 6, $p=0.030$). Peritoneal mKRAS was positive in an additional 17 clinically negative patients (36%) with only 3/17 (18%) demonstrating elevated PL fluid CA19-9/CEA levels.

Conclusion: This is the only study assessing mKRAS DNA in peritoneal fluid of patients undergoing staging laparoscopy for PDAC and shows that a high proportion of patients have detectable mKRAS. In our study, standard clinical peritoneal staging identified 1/3 of patients with synchronous PD however cytologic examination had poor sensitivity. There was high correlation with PL fluid CA19-9/CEA elevation and mKRAS with clinically positive findings. However, a significant proportion of clinically negative laparoscopy patients have detectable mKRAS suggesting that current standard peritoneal staging is likely too insensitive and the addition of mKRAS PL fluid staging may improve detection rates of occult PD. Longer follow up for correlation with peritoneal recurrence and disease progression is necessary to fully elucidate the power of this assay, however the current findings are provocative and deserve additional study.

13. PRELIMINARY ANALYSIS OF LIQUID BIOPSY AFTER HEPATECTOMY FOR COLORECTAL LIVER METASTASES

Presenter: Meredith Mason MD | The University of Texas MD Anderson Cancer Center

YS Chun, MC Mason, HS Tran Cao, CWD Tzeng, TA Aloia, JN Vauthey

Background: Liquid biopsy represents a non-invasive modality for analyzing tumor biology in patients with circulating tumor cells. Its use in patients with colorectal liver metastases (CLM) is relatively new, and its potential diagnostic, surveillance, and therapeutic applications are not yet well-defined. We sought to describe the genetic information gained from liquid biopsy, examine the correlation of positive liquid biopsy with CT imaging and CEA, and study the impact on overall survival (OS) after CLM resection.

Methods: This is a retrospective cohort study of patients at a single institution with CLM from 2016-2018. All patients underwent CLM resection and had plasma drawn postoperatively for liquid biopsy analysis, in addition to associated surveillance imaging and CEA. A next-generation sequencing-based analysis was performed on plasma to detect somatic mutations in 70 genes. Standard descriptive statistics were used to describe the cohort. Chi-square was used to compare categorical variables. Patients were stratified by number of mutations on liquid biopsy. Overall survival (OS) was estimated using the Kaplan-Meier method.

Results: A total of 55 patients (58.2% male) underwent liver resection and had at least one liquid biopsy with genetic analysis. Of the 55 first liquid biopsies, 16 patients (29.1%) had no mutations, 9 (16.4%) had 1 mutation, 14 (25.5%) had 2-3 mutations, and 16 (29.1%) had ≥ 4 mutations. The most frequent mutations among positive biopsies were APC (88%), TP53 (82%), and KRAS (45%). A total of 80 liquid biopsies with matched serum CEA and CT scan results were available for analysis, as 12 of the 55 patients underwent serial liquid biopsies. Disease progression was identified on 63 CT scans, which correlated with positive liquid biopsy and CEA >3 ng/ml in 84% and 65% of samples, respectively (both $P < 0.001$). Among the 12 patients who had a second liquid biopsy, 5 (41.7%) showed a change in mutational status over time. Unadjusted OS at two years was significantly worse in patients with positive liquid biopsy (71% vs. 100% with negative biopsy, log-rank $p = 0.005$). When further stratified, two-year OS was significantly worse with ≥ 4 mutations (47%, log-rank $p < 0.001$).

Conclusion: Liquid biopsy provides additional genetic mutational information in patients with CLM. Positive liquid biopsy is associated with worse survival, especially when multiple genes are mutated. Liquid biopsy may be used in addition to standard imaging and CEA as a non-invasive modality to augment surveillance in patients with CLM and may be useful for informing prognosis and potentially directing future therapies.

14. DIURESIS DOES MAKE A DIFFERENCE IN MAJOR HEPATECTOMY

Presenter: Mazhar Soufi MD | Indiana University School of Medicine

M Soufi, K Flick, TK Nguyen, CM Schmidt, NJ Zyromski, A Nakeeb, MG House, EP Ceppa

Background: Although the judicious use of intravenous fluids after hepatectomy is recommended by the society of enhanced recovery after surgery (ERAS), the role of routine diuretic use after major hepatectomy (MH) is controversial, and the effect on outcomes has not been studied before. The study presents the effect of diuretics administration on outcomes after major hepatectomy (MH).

Methods: We used a prospective database in identifying major hepatectomy performed from 2013-2018. The databased was then augmented using extensive review of medical records. MH was defined by the conventional right or left hemihepatectomy, extended hepatectomy, right posterior sectionectomy, or any consecutive three-segment resection. A total of 287 cases met the inclusion criteria, and were performed by one of five operating surgeons. Patients were nearly equally distributed between the two groups. Diuretics used (DU) (n=145, 50.05%), and no diuretics use (NDU) (n=142, 49.50%). 31 patients (22% of diuretics group) were diuretics dependent preoperatively. For each patient we examined diuretic agents, dosage, intravenous fluids, urine output, as well as total body fluid volume. Regression-based techniques were used to assess the effect of diuretics on outcomes, adjusting for variables was performed where applicable.

Results: The variables at baseline were comparable as follow: Intra-operative colloid volume (0.8 vs 0.9 L; p=0.15), intra-op crystalloid (2.5 vs 2.9 L; p=0.58), intra-op blood transfusion (20 vs 20%; p=0.88), total crystalloids administered within 24 hours after surgery (3.4 vs 3.9; p=0.26). The administration of diuretics resulted in an elimination of an average of (1.7) liter of excess body fluid; p<0.001. The average net body fluid balance by the end of the hospitalization course was (+1 and -1) liter, for NDU & DR; respectively; p<0.001. On univariable analysis the two groups demonstrated comparable outcomes: superficial SSI (6 vs. 2%; p=0.08), deep organ infection (10 vs. 12 %, p=0.7), LOS (9 vs. 8;p=0.24), readmission (9 vs. 16%; p=0.07), biliary fistula (10 vs. 11%, p=0.84), liver failure (11 vs. 17%, p=0.17), mortality (2 vs. 2 %, p=1.0). Multivariate analysis revealed that patients who received diuretics were three times less likely to develop superficial SSI (OR 0.27; p=0.045) and found to have a reduction in length of stay (LOS) (OR 0.87, p<0.001).

Conclusion: Administration of diuretics following MH in this dataset was safe and was associated with a decreased rate of superficial SSI and shortened LOS. Specific assessment of routine vs. no diuretic use following MH should be studied in prospective fashion to validate these findings.

15. DOES ADOPTION OF NEW TECHNOLOGY INCREASE SURGICAL VOLUME? THE ROBOTIC INGUINAL HERNIA REPAIR MODEL

Presenter: Tara Barry MD | University of South Florida
T Barry, C DuCoin, E Eguia, E Cousin-Peterson, P Kuo, H Janjua

Background: Robotic surgery is an appealing option for patients undergoing elective surgery. However given the high startup, maintenance and operating costs, it is unknown whether robotic technology increases operative volume for specific diagnoses. Our hypothesis is that the hospital adoption of robotic technology increases the total volume of inguinal hernia repairs as compared to non-robotic hospitals.

Methods: The 2010-2018 Florida Agency for Health Care Administration Ambulatory Patient data was queried for Open, Laparoscopic and Robotic inguinal hernia repairs. A combination of ICD9, ICD10 and CPT codes were used to maximize the number of cases included. Total annual volume of hospital specific inguinal hernia repairs was calculated. Using Poisson regression based difference in difference (DID) technique, differences of the total hernia volume of robotic hospital pre and post adoption of robotic technology was compared to difference of total hernia volume of non-robotic hospitals. In addition, hospitals that were early adopters of robotic technology were compared to their surrounding non robotic competitor hospitals in the same geographic region. Incident Rate Ratios- IRR, from the difference in difference analysis determined the significance of robotic technology. Hospital and patient demographic data were evaluated and chi square tests were used to determine statistical significance, $p < 0.05$ was considered significant.

Results: There were 258,785 inguinal hernia repairs (5,774 Robotic, 88,265 Laparoscopic and 164,746 Open) performed at 398 hospitals, 94 had robotic capabilities. 90% of the procedures were primary inguinal hernia repairs. The majority of patients were white non-Hispanic or Latino males (85%, 84%, 92%), aged 51-70(46%), holding commercial health insurance (43%), with minimal comorbidities as defined by their Charlson Comorbidity index category 1(82%). 99% of robotic facilities were designated as hospitals, while 65% of non-robotic hospitals were ambulatory surgery centers or other hospital types. Robotic hospitals experienced a 9.5% increase in total volume of inguinal hernia repairs after the introduction of robotic technology (Incident Rate Ratios- IRR 1.095, p value < 0.0001). A significantly greater increase in total hernia volume was observed for the early adopter hospitals with the IRR(s) ranging 1.20-2.51(all p values < 0.0001).

Conclusion: Hospital adoption of robotic technology increases overall volume of inguinal hernia repairs. Analysis of additional procedures is required to validate the generalizability of these findings and provide insight into the clinical and financial implications for hospitals considering robotic platforms at their facilities.

16. IS THE IMPROVED SURVIVAL IN EARLY-STAGE PANCREATIC CANCER WORTH THE EXTRA COST AT HIGH-VOLUME CENTERS?

Presenter: Lauren Perry MD | University of California Davis
L Perry, S Bateni, R Bold, J Hoch

Background: An important factor associated with improved survival for early-stage pancreatic cancer is the receipt of surgical care at high- versus low-volume surgery centers. When considering the improved survival at high-volume centers, it is also important to understand the additional healthcare costs compared to low-volume centers. The cost-effectiveness analysis of high- versus low-volume centers performing pancreatic cancer surgery has not yet been studied. We hypothesized that the improved survival at high-volume centers was economically attractive (i.e., the value of the extra survival outweighs the extra costs).

Methods: This retrospective cohort study used data from the California Cancer Registry linked to the Office of Statewide Health Planning and Development database from January 1, 2004 through December 31, 2012. The dataset included patients presenting with stages I to II pancreatic cancer and who underwent resection across 157 licensed hospitals in California. Multivariable linear regression analyses estimated overall survival and 30-day costs for patients receiving care at high versus low-volume pancreatic surgery centers, while controlling for demographic and clinicopathologic differences. The incremental cost-effectiveness ratio (ICER) was then estimated from the results. Lastly, net benefit regression was used to produce estimates of the incremental net benefit and characterize the statistical uncertainty in the cost-effectiveness analysis.

Results: Of 2,786 patients, 1,297 (46.5%) were treated at high-volume centers and 1,489 (53.5%) at low-volume centers. Among 157 hospitals, 73 (46.6%) performed 20 or more pancreatic cancer surgeries per year and were considered high-volume, and 84 (53.4%) were considered low-volume. The mean 30-day costs of pancreatic cancer surgery at high- and low-volume centers were \$62,561 and \$59,525, respectively. The mean overall survival times at high- and low-volume centers were 2.49 and 2.15 years, respectively. When adjusting for potential confounders, multivariable regression analyses showed a 0.38-year (4.62 months) survival benefit (95% CI 0.19-0.58, $p < 0.0001$) and a \$6,176 extra cost associated with receiving surgery at a high-volume center (95% CI \$1206-\$11,146, $p < 0.0001$). The ICER was \$16,048 for an additional year of survival (95% CI \$785-45,502). This result and the 95% CI were confirmed using an incremental net benefit versus willingness to pay plot including both the incremental net benefit estimate and the upper and lower 95% CIs.

Conclusion: Although healthcare costs were greater at high-volume centers (\$6,176 more), patients undergoing pancreatic surgery at high-volume centers experienced

a greater survival benefit (4.62 additional months). Consequently, the ICER was \$16,048 per additional year, implying a fairly minimal additional cost expended at high-volume centers treating pancreatic cancer for improved survival. This is economically attractive by many oncology standards; for example, screening mammography has an ICER of approximately \$75,000. Understanding the value of additional clinical benefits can inform population health decisions made by both clinicians and policymakers about cancer care including regionalization of highly specialized surgical procedures to achieve optimal outcomes.



17. SURVIVAL AFTER MARGIN POSITIVE RESECTION IN THE ERA OF MODERN CHEMOTHERAPY FOR PANCREATIC CANCER: DO PATIENTS STILL BENEFIT?

Presenter: Amanda Arrington MD, MHM | University of Arizona
AK Arrington, P Hsu, M Schaefer, C O'Grady, M Khreiss, TS Riall

Background: R0 resection for pancreatic cancer is considered standard of care, but unfortunately not always achieved. In the era of modern chemotherapy for pancreatic cancer, it is unclear if there is a benefit to surgery if R0 resection cannot be achieved. This study looks at R1/R2 resection outcomes compared to chemotherapy alone. Our hypothesis is that patients with microscopic positive (R1) disease have better outcomes than chemotherapy alone.

Methods: Stage II pancreatic cancers that underwent R1/R2 surgery with/without NAC from 2010-2015 were identified in the NCDB database and compared to similar staged patients who received chemotherapy alone. We compared demographics, pathologic data, and outcomes between surgical patients with residual tumor (R1/R2) and chemotherapy alone. The surgical group was then analyzed by subset based on receipt of chemotherapy: surgery alone, neoadjuvant therapy (+/- adjuvant therapy), adjuvant therapy only. Patients who died within 2 months or were lost to follow-up within 2 months of initial treatment and those that underwent no treatment at all were excluded in analysis.

Results: A total of 24,185 Stage II pancreatic cancer patients were included of which 21,642 (89.5%) were treated with chemotherapy alone, 2.2% (n=530) surgery only, 1.8% (n=437) neoadjuvant therapy with surgery (+/- adjuvant), and 6.5% (n=1,576) surgery with adjuvant therapy. Patients undergoing R1 resection after neoadjuvant had the best survival (median survival 20.47 months, adjusted HR 0.48, p<0.001) compared to chemotherapy alone (median survival 10.22 months). For patients undergoing R2 resection, survival was better in surgical patients with neoadjuvant therapy compared to patients who underwent chemotherapy only (15.76mo vs 10.22mo, p=0.06). Patients with R1/R2 resections had improved survival if they received neoadjuvant or adjuvant chemotherapy though the survival rates were significantly lower than standard R0 resections (n=16,129).

Conclusion: Though R0 resection is standard of care, R1 resection still has benefit over chemotherapy alone. Pancreatic cancer patients that are left with microscopic R1 disease have better survival than without surgery, particularly in the setting of neoadjuvant therapy.



18. PATIENT PERSPECTIVES ON DEFINING TEXTBOOK OUTCOMES FOLLOWING MAJOR ABDOMINAL SURGERY

Presenter: Jason Wiseman MD, MSPH | The University of Texas MD Anderson Cancer Center

JT Wiseman, A Sarna, CE Wills, J Beane, V Grignol, A Ejaz, TM Paulik, N Ikoma, JM Cloyd

Background: Textbook outcomes (TO) and other composite measures have been constructed to provide a more accurate picture of quality following complex surgery. However, many lack face validity and the patient perspective on the individual quality metrics that comprise these composite measures is unknown.

Methods: We identified patients who underwent major abdominal surgery at a single tertiary care center between 2019-2020. A novel survey was administered to ascertain patients' perspectives on factors related to a TO. McNemar's test was used to compare the relationship between patient-reported and objective TO rates.

Results: Among 79 patients who underwent gastrointestinal (50.6%), pancreatic (29.1%), hepatic (17.7%) or other major abdominal (2.6%) operations; 57% were female, 86.1% had an ASA class ≥ 3 , and 92.4% were white. Most patients underwent surgery for malignancy (87.3%) with 59.5% undergoing an open operation. Patients most commonly valued no mortality following surgery (96.2%), no reoperation (74.7%), and having a margin negative resection (73.4%) as "extremely important". In contrast, factors least commonly rated as "extremely important" include avoiding a long hospitalization (24.1%), not having a blood transfusion (24.4%), and not having any (including minor) complications (40.5%). Using ranking methodology, the highest ranked factor was not dying following surgery (88.6%). Using previously published criteria of TO, 47 (59.5%) patients were classified as having an objective TO; in contrast, 68 patients (86.1%) self-reported the subjective sense that their outcome was textbook. Patient responses were concordant with objective TO criteria 63.3% of the time (McNemar's test: $S=15.2$, $p < 0.01$, evidence of disagreement). Presence of cancer, stage of cancer, surgical margins, operative approach, classification of surgery, and incidence of postoperative complications were not associated with patient-reported TO (all $p > 0.05$).

Conclusion: Among patients undergoing complex surgery, there was significant discordance between patient-reported versus objective measures of TOs, suggesting patients valued other considerations beyond traditional factors when evaluating the success of their surgery. Future studies should delineate these relationships and incorporate these factors to refine patient-centered definitions of TO

19. A NOVEL METHOD OF EVALUATING LIVER TRANSPLANT SURGERY FELLOWS USING OBJECTIVE MEASURES OF OPERATIVE EFFICIENCY AND SURGICAL OUTCOMES

Presenter: Jennifer Yu MD | Washington University in Saint Louis

J Yu, N Vachharajani, O Ahmed, J Wellen, S Shenoy, W Chapman, M Doyle, A Khan

Background: Most liver transplants (LT) in North America are performed by transplant surgery fellows with attending surgeon supervision. While there is a strict cut off for the minimum number of cases required for graduating fellows, there are no guidelines on providing constructive feedback to the trainees during fellowship.

Methods: A retrospective review of all adult LTs performed by ASTS-certified transplant surgery fellows at a single academic institution from 2005 to 2019 was conducted. Data from the fellows were averaged to generate reference learning curves for eight variables that were used as surrogates for measuring operative efficiency (i.e. total operative time, warm ischemia time, cold ischemia time) and surgical outcomes (i.e. intraoperative blood loss, unplanned return to the operating room, biliary complications, vascular complications, patient/graft loss). Values for each variable was plotted against the number of LTs in sequential clusters of 15 (1-15, 16-30...75-90). Data for newer fellows were plotted against the reference curves for the eight variables at 3-month intervals to provide an objective assessment of their operative skills.

Results: Reference learning curves were generated for the eight primary variables utilizing data from 830 adult LTs performed by 11 fellows during the study period. Mean age for the patient cohort was 56 years, 67% were males and average MELD at transplant was 21. For the eight primary variables, mean values included the following: total operative time 336 mins, warm ischemia time 29.8 mins, cold ischemia time 309 mins, intraoperative blood loss 1.6 L, biliary complications 20.8%, unplanned return to OR 14.8%, vascular complications 2.9%, 1-year patient and graft survival 92% and 90% respectively. Comparative feedback was provided to the newer fellows through a printed report card and at an in-person meeting with senior faculty at 3-month intervals.

Conclusion: Comparative feedback using institution-specific reference curves can provide valuable objective data on progression of individual fellows during the course of fellowship. It can also aid in the timely identification of areas in need of improvement, which can not only enhance the quality of the fellowship but also has the potential to improve the quality of patient care and transplant outcomes.

20. A LEG TO STAND ON: TRAUMA CENTER DESIGNATION IS ASSOCIATED WITH THE RATE OF LIMB SALVAGE IN PATIENTS SUFFERING SEVERE LOWER EXTREMITY INJURY

Presenter: Corinne Bunn MD | Loyola University Medical Center
C Bunn, S Kulshrestha, B DiChario, U Maduekwe, FA Luchette, MS Baker, SP Agnew

Background: One of the most difficult injuries for trauma surgeons to manage is the mangled extremity. The American College of Surgeons (ACS) require that specialty care at Level II Trauma Centers (TCs) are comparable to that at Level I TCs. However, recent studies demonstrate a significant survival advantage for patients with severe injury treated at Level I TCs. The purpose of this study was to compare salvage rates for a limb-threatening lower extremity injury managed at either a Level I or a Level II TC.

Methods: The ACS National Trauma Data Bank (NTDB) was used to identify adults who presented to an ACS verified Level I or II TCs with a limb-threatening injury and underwent either primary amputation or LS (defined as having no amputation during the index admission) between 2007-2017. Limb-threatening injuries were defined as an open tibial fracture with concurrent arterial injury (Gustilo Type III). Patients who had primary attempt at LS but later underwent amputation during the index admission were excluded.

Results: 712 patients met inclusion criteria. 391 (54.9%) underwent LS; 321 (45.1%) underwent amputation. On univariate analysis, patients having penetrating injuries (13% vs 9.5%, $p=0.046$) and those having either a tibial/peroneal artery injury (31% vs 59%, $p<0.001$) as opposed to a popliteal artery injury (69% vs 41%, $p<0.001$) were more likely to have LS. The rate of LS was statistically higher among patients treated at Level I TCs than those treated at Level II TCs (47.4% vs 34.8%, $p=0.01$). There were no statistical differences between patients having LS versus amputation with regards to the presence of a concurrent motor nerve injury, deep vein injury, soft tissue defect as captured by abbreviated injury score (AIS) or highest AIS by body region, including lower extremity. There were similarly no statistical differences in age, gender, race, ethnicity, insurance type, injury severity score (ISS), systolic blood pressure (SBP) and/or Glasgow Coma Scale (GCS) score on arrival, comorbid condition, facility teaching status and bed size.

On multivariable regression adjusted for age, race, ethnicity, insurance, comorbid disease, ISS, presenting SBP < 90 mmHg, presenting GCS score < 8, facility type, transfer status and injury mechanism, type of arterial injury and concurrent deep vein and/or motor nerve injury, the risk adjusted odds of having LS for limb-threatening injuries when patients were treated at Level I TCs was 2.3 times that of having LS when patients were treated at Level II TCs (95% CI [1.24-4.46], $p=0.01$). On 1:1 propensity matching of patients treated at Level I TCs to those treated at Level II TCs

for the variables listed above, those treated at Level I TCs had significantly higher rates of LS (53% vs 35%, $p=0.004$).

Conclusion: In spite of current ACS requirements, the rate of LS is associated with the ACS designation of the TC providing care. Patients receiving care at Level 1 TC are more than twice as likely to receive LS, while patients at Level 2 TC demonstrate higher rates of primary amputation, independent of injury severity.

21. IMPROVING SEPSIS SCREENING IN TRAUMA PATIENTS: DEACTIVATING SIRS ALERTS FOR 48 HOURS POST-INJURY

Presenter: Amanda Phares MD | University of California Davis

A Phares, A Marrufo, CM Theodorou, G McGlynn, L Errecart, GJ Jurkovich

Background: Trauma patients often meet criteria for Systemic Inflammatory Response Syndrome (SIRS) due to response to injury. In many electronic medical records (EMRs), SIRS vitals trigger alerts used to screen for sepsis. However, the utility of SIRS criteria in detecting sepsis in the initial post-injury period is low in trauma patients. In addition, false positive EMR alerts lead to unnecessary testing and alert fatigue in providers. Based on these factors, our automated SIRS alert system was deactivated for all trauma patients for the first 48 hours after admission. We hypothesized that this 48-hour deactivation period would improve the specificity and positive predictive value of the SIRS alert system without changing the sensitivity.

Methods: We included all patients >18 years old admitted to the trauma surgery services in the 90 days before and after the SIRS alert system change. Data were collected on the total number of SIRS alerts, total number of patients admitted to trauma surgery, and the number of patients who were diagnosed with sepsis during admission. The sensitivity, specificity, positive predictive value, and negative predictive value of the SIRS alerts during these periods were compared using chi square tests.

Results: There were 619 patients admitted to trauma surgery in the 90 days before the change and 540 patients admitted in the 90 days after. Eighteen patients in the pre group (3%) and 15 in the post group (3%) developed sepsis. The total number of SIRS alerts decreased by half, from 2510 before to 1277 after. The number of patients with false positive alerts decreased by 31%, from 385 to 267. The specificity increased from 38% to 51% ($p < 0.0001$) while the sensitivity remained unchanged (100% before, 93% after, $p = 0.45$). Both the positive predictive value and the negative predictive value were unchanged at 5% before and after ($p = 0.7$) and 100% before and after ($p = 1.0$).

Conclusion: By deactivating automated SIRS alerts in the initial 48 hours of hospitalization in trauma patients, we were able to reduce the total number of SIRS alerts in trauma surgery patients by 49% and decrease the number of patients with false positive alerts by 31%. This intervention increased the specificity of the SIRS alerts from 38% to 51%. However, the positive predictive value remained low at 5%. Further work is needed to determine how to best detect the early stages of sepsis in trauma patients.

22. ARE URINARY TRACT INFECTIONS RESPONSIBLE FOR ELDERLY GROUND LEVEL FALLS OR FOUND DOWN DIAGNOSES?

Presenter: Navpreet Dhillon MD | Cedars-Sinai Medical Center
N Dhillon, S Toscano, G Conde, S Perepa, L Lill, G Barmparas, E Ley

Background: Elderly trauma patients are known to be at high risk for urinary tract infection (UTI) due in part to comorbidities and immobilization. Among the subset of elderly trauma patients who present after a ground level fall or a found down diagnosis, a urinary tract infection may be a frequent reason for the admission. We hypothesize that a high percentage of elderly trauma patients who present after falling or found down will have a UTI on admission.

Methods: We reviewed elderly trauma patients who presented after a ground level fall or found down diagnosis at a Level I trauma center over a four-year period to determine the rate of a UTI. Data were collected on patient characteristics, outcomes, and antibiotic use as well as on urinary analysis (UA) and urine cultures (UC) that were obtain in the first 48 hours after admission. Testing was sent at the discretion of the admitting team. A UTI was either defined as the presence of leukocyte esterase, nitrites, or at least 5 leukocytes per high power field on UA or greater than 100,000 colony-forming units of an organism on urinary culture. A sub analysis was conduct among patients 80 years or older.

Results: Of the 1,036 elderly patients reviewed after a ground level fall or found down diagnosis, 496 had a UA in during the first two days after admission with 47.6% male, mean hospital length of stay of 7.1 days, and a mortality rate of 7.7%. Of the 496 patients, 149 (30.0%) patients had positive UA with the majority (80.0%) given antibiotics subsequently. Among the 191 patients who had urine sent for culture during the first 48 hours 62 (32.5%) were positive. Patients with a positive UC were 29.0% male, had a hospital length of stay of 6.4 days, and a mortality rate of 6.5%. Fifty-two (83.9%) of these patients were treated with antibiotics. Among patients older than 80 years, the rate of positive UA and UC increased to 69.6% and 52.8%, respectively. These rates were significantly higher in patients 80 years and older compared to their younger counterparts (positive UA OR 5.34 [95% CI 3.53–8.08], $p < 0.01$ and positive UC OR 2.32 [95% CI 1.39–3.90], $p < 0.01$).

Conclusion: A high rate of elderly trauma patients who present after a fall or found down have a UTI. Often these patients do not have urine sent for UA or UC and if the results are suspicious for a UTI 1 in 5 do not receive antibiotics. Patients 80 years or older had higher rates of a positive UA or UC compared to those aged 65 to 79 years. Should an elderly trauma patient present after a fall or found down diagnosis a UA or UC and initiating early antibiotics may be indicated.

23. OPEN VS. ENDOVASCULAR TREATMENT OF TRAUMATIC PERIPHERAL ARTERIAL INJURIES: A PROPENSITY MATCHED ANALYSIS

Presenter: Samer Asmar MD | University of Arizona

S Asmar, L Bible, M Chehab, L Castanon, M Khurrun, M Ditillo, A Tang, M Douglas, B Joseph

Background: Arterial injuries are a common sequel of blunt and penetrating trauma. There remains a paucity of data comparing the endovascular vs. open repair of these injuries. The aim of our study is to compare the outcomes of these two interventions.

Methods: The National Readmission Database (2011-2014) was queried for all adult (age ≥ 18 y) patients presenting with peripheral arterial (axillary, brachial, femoral, popliteal) injuries. Patients were stratified into open vs. endovascular repair. Propensity score matching (1:2) was performed controlling for demographics, comorbidities, and injury severity. Outcomes were complications, length of stay, 30-day-readmission, and cost of readmission.

Results: A total of 8,024 patients were identified. A matched cohort of 786 patients was obtained (endovascular: 262, open: 524). Mean age was 48 ± 20 y. Length of stay was shorter for the endovascular group (4[2-8] vs. 5[3-10]d; $p=0.004$). The endovascular group had higher rates of AKI (11% vs. 4%; $p<0.001$), DVT (4% vs 1%, $p=0.009$), sepsis (5% vs 1% $p<0.001$), seroma (6% vs 3%, $p=0.029$), arterial-thrombosis (14% vs 8% $p=0.004$), and extremity-amputation (5% vs 3% $p=0.03$). Endovascular repair had higher rates of 30-day readmission (13% vs 8% $p=0.03$), 30-day-open-reoperation (10% vs 5%, $p<0.001$), and 30-day mortality (3% vs 1%, $p<0.001$). On sub analysis of readmitted patients, cost of each readmission was higher in the endovascular group \$47,000[\$27,202-\$56,763] vs \$21,000[\$11,889-\$43,503].

Conclusion: Endovascular repair for peripheral arterial injuries was associated with higher rates of in-hospital complications, readmissions, and 30-day-mortality. A thorough re-evaluation of endovascular repair indications, risks, and benefits are warranted.

Q 1. THE EFFECT OF POSTOPERATIVE OPIOID USE ON DISCHARGE OPIOID PRESCRIBING IN THE SETTING OF ERAS

Presenter: Daniel deLahunta MD | Loyola University Medical Center
DP deLahunta, JM Eberhardt, LM Knab, MA Singer

Background: Enhanced Recovery After Surgery (ERAS) has become widely accepted within the colorectal surgery community as an effective way of improving outcomes after surgery. A major component of ERAS is minimizing opioid utilization during the inpatient hospitalization. Motivation for this study was to assess current opioid discharge prescribing patterns from which a standardized approach could be created for both opioid and non-opioid discharge prescriptions. The current inpatient pain medication protocol on the colorectal surgery service at our institution includes pre-, intra-, and post-operative phases with each phase utilizing a multi-modal approach to minimize opioid usage.

Methods: A retrospective chart review was conducted with IRB approval for patients who had undergone surgery via abdominal or perineal approach by two colorectal surgeons at a large academic center between January 2018 and December 2019. Data collected from each chart included age, race, BMI, type of surgery performed, postoperative opioids prescribed and used, and discharge opioids prescribed. Particular attention was paid to the opioids used the day before discharge (DBD) because this is a reasonable assessment of the patients discharge opioid needs at the time of discharge decision. Statistical analysis using Chi square and T test were then used to assess for correlation between postoperative opioid usage and discharge opioid prescriptions.

Results: A total of 193 patients who underwent a variety of elective perineal and intra-abdominal surgery by two colorectal surgeons were reviewed. 84 of these patients received no opioid medications on the DBD. These patients received on average 101 morphine milligram equivalents (MME) on discharge whereas those with non-zero DBD opioid usage received on average 208 MME on discharge ($p < 0.05$). Of the 84 patients who received no opioids DBD, 70 were prescribed an opioid on discharge. These 70 were considered to have been possibly overprescribed discharge opioids. Comparing those who were possibly overprescribed versus those not overprescribed, 91% vs 67% received a tramadol prescription ($p < 0.05$) and 11% vs 36% received a norco or oxycodone prescription ($p < 0.05$). When looking at who was prescribing discharge medications, residents prescribed 153 MME on average and the colorectal surgery physician assistant prescribed 204 MME on average but this difference did not reach statistical significance. An additional finding noted in this chart review was that 57.9 percent of patients were prescribed an IV narcotic postoperatively but did not receive a dose of IV narcotics.

Conclusion: Using our current ERAS protocol, a large number of patients are achieving adequate pain management on the day before discharge without opioids. However, a large number of these patients are still being prescribed opioids on discharge. The majority of those who are possibly overprescribed are being given tramadol, with only 11% receiving norco or oxycodone. There was variability noted when looking at prescribing patterns of residents and PAs, with variability even noted amongst residents. Our ERAS protocol has reduced opioid usage in the inpatient setting, but further standardization along with assessment of post-discharge opioid consumption could be implemented to ensure that overprescribing of discharge opioids does not occur.

Q 2. CAREER ADVANCEMENT FOR SURGEON-EDUCATORS: FINDINGS FROM A MODIFIED DELPHI PROCESS

*A Cochran, L Neumayer, D Scott, M Klingensmith, J Mellinger, G Dunnington,
K Brasel*

Presenter: Amalia Cochran MD

Background: The American Surgical Association Blue Ribbon Panel report, more than 15 years old, addressed surgical education but did not inform career advancement as a surgical educator. Pathways to promotion on educator tracks can be variable between institutions. The goal of this study is to provide expert consensus definition of an academic surgical educator, with focus on criteria for promotion.

Methods: Following IRB approval and with permission from organizational leadership, members of the Society for University Surgeons and Society of Surgical Chairs were invited to electronically submit academic promotion criteria for a surgical educator. Proposed criteria were reviewed, categorized, and edited for clarity and quality. These criteria were then used in two additional rounds of a modified Delphi process using a five-point Likert-scale to generate prioritized academic promotion criteria. Data are reported as mean + standard deviation.

Results: The Round 1 query resulted in 80 criteria for Associate Professor (AP) and 82 criteria for Professor (P) from 89 respondents. These submitted criteria were combined as appropriate and reviewed for clarity, resulting in 52 criteria for both AP and P; these criteria were categorized into ten domains of activity. In subsequent rounds, 51 invitations were issued to individuals who volunteered contact information at the conclusion of Round 1 for participation in subsequent rounds; 30 (Round 2, 28 AP/ 28 P criteria) and 25 (Round 3, 9 AP/ 12 P criteria) responses were received. Within the initial round of responses, scholarship (11 AP/ 10 P), administration (10 AP/ 12 P), and research (6 AP/ 7P) were the most frequently encountered domains of activity for promotion. In Round 2, the most highly ranked activity domains for promotion of surgeon educators were scholarship (6 AP/ 8 P), administration (6 AP/ 6 P), research (4 AP), and mentorship (4 P). In the final round of ranking, teaching (3) and scholarship (3) were the most highly rated domains for promotion to Associate Professor and administration (4), teaching (2), and scholarship (2) were the most highly rated activity domains for promotion to Professor. The top three activities described for promotion to Associate Professor were active participation in conferences/ departmental educational activities for medical students and residents (3.92 + 0.28); educational portfolio demonstrating commitment to activities as an educator (3.79 + 0.41); and clinical teaching excellence at their home institution (3.75 + 0.43). The three activities most highly scored items for promotion to Professor were mentorship of junior

surgical educators (4.83 + 0.37); active participation in conferences/ departmental educational activities for medical students and residents (4.75 + 0.43); and a record of teaching excellence at the medical student and resident levels (4.74 + 0.61). The mean number of peer-reviewed education publications deemed acceptable for academic promotion was 15 for Associate Professor and 31 for Professor.

Conclusion: These findings indicate that teaching, scholarship, and administration are the activity domains most relevant for promotion in surgical education. Identification of categories and criteria may meaningfully inform best practices promotion and career development processes for surgeons on an educator academic pathway.

Q 3. MARGIN POSITIVITY AFFECTS SURVIVAL FOR PAPILLARY THYROID MICROCARCINOMA: AN ANALYSIS OF 13,648 PATIENTS

Presenter: Christina Lee BS | University of Miami Miller School of Medicine
CI Lee, O Kutlu, ZF Khan, O Picado, RS Handelsman, BW Whitfield, JC Farra, JI Lew

Background: The incidence of thyroid cancer has increased over the last three decades, particularly driven by the increased detection of papillary thyroid microcarcinoma (PTMC). Although the majority have excellent prognosis, a subset of PTMC have been shown to harbor aggressive pathologic features that include lymph node [LN] metastasis, extrathyroidal extension [ETE], lymphovascular invasion [LVI], and distant metastasis, which negatively affect survival. Current guidelines for PTMC either recommend thyroid lobectomy or active surveillance for low risk patients without clinically evident metastases or local ETE, and convincing cytologic evidence of aggressive disease that can be only reliably identified on final histopathology following surgical resection. The optimal treatment for PTMC with aggressive pathologic features, however, remains unclear. The aggressive features of PTMC that may affect survival have not been comprehensively delineated in the current literature. This study examines demographics and clinical factors that may affect patient outcome and survival associated with PTMC.

Methods: Adult patients with histologically proven papillary thyroid carcinoma < 1.0 cm who underwent thyroidectomy between 2004-2016 were identified in the National Cancer Database (NCDB). Cox proportional hazards analyses were performed to identify the factors affecting survival while adjusting for variables including patient demographics, comorbidities, stage, grade, LN involvement, ETE, LVI, multifocality, distant metastasis, margin status, extent of operation, and type of treatment institution. Survival was estimated by the Kaplan Meier method and compared using log rank tests. Finally, binary logistic regression analyses were performed to identify advanced features associated with margin status.

Results: Of 13,648 patients with PTMC identified from the NCDB who met the study inclusion criteria, 2676 patients (19.6%) presented with advanced features: LN metastasis (14.8%), ETE (7.2%), LVI (2.9%), and distant metastasis (0.3%). Factors affecting survival of PTMC involved non-modifiable determinants, including age, female sex, presence of ≥ 1 comorbidity, LN involvement, and LVI, as well as modifiable determinants, such as margin positivity, increased length of hospital stay, and treatment at an academic institution. Positive margin status, in particular, was found to be the most significant modifiable risk factor affecting survival (HR 1.576, 95% CI 1.035-2.412, $p=0.008$). Compared to negative margin status, positive margin status was associated with statistically significant lower overall survival (155.4 vs. 145.7 months, $p=0.031$). Finally, total thyroidectomy (OR 0.701, 95%

CI 0.503-0.987, $p=0.013$) and treatment at an academic facility (OR 0.747, 95% CI 0.589-0.947, $p=0.016$) were the modifiable factors significantly associated with lower odds of margin positivity.

Conclusion: The high rates of aggressive features, including LN involvement, ETE, LVI, and distant metastasis, found in a subset of PTMC reflect its insidious nature that may negatively affect prognosis. Among the various risk factors identified, positive margin status is the most significant modifiable determinant that affects patient survival for PTMC. Furthermore, total thyroidectomy and treatment at academic centers are associated with lower odds of margin positivity and may improve survival in this subset of PTMC patients with aggressive pathologic features.

Q 4. TECHNIQUES AND OUTCOMES OF COMPLEX ABDOMINAL WALL RECONSTRUCTION IN CIRRHOTIC PATIENTS WITH ASCITES: INITIAL RESULTS OF A PROSPECTIVE STUDY

Presenter: James Choi MD, MA | Westchester Medical Center

R Latifi, J Choi, S Gogna, R Bodin, A Rojas, M Gachabayov, A Smiley, G Veillette, S Nishida

Background: Umbilical and incisional hernia repair in cirrhotic patients with active ascites is associated with high risk of post-operative complications. Neither the best techniques of repair, nor the outcomes of these procedures have been reported widely. Use of mesh remains controversial. We performed complex abdominal wall reconstruction (CAWR) with biologic mesh placed in a sublay technique. The aim of our study was to analyze surgical outcomes of cirrhotic patients with active ascites undergoing this approach.

Methods: This was a prospective study from March 2016 to June 2020 of all CAWRs completed at a tertiary care institution. CAWRs were performed using the posterior component separation, neurovascular bundle-sparing open technique with biological mesh. Patients were divided into two groups: cirrhotic and non-cirrhotic. Patients with liver transplantation were considered non-cirrhotic. Demographics, intraoperative procedures, and wound complications were compared between the two groups. The risk of 90-day mortality was assessed using the Mayo Risk Calculator. Chi-square analysis was used for nominal variables and means were analyzed using Independent t-tests.

Results: Twenty out of 180 patients undergoing CAWR had cirrhosis with active ascites. 45% of cirrhotic patients presented with umbilical hernias while 55% of cirrhotic patients had incisional hernias. The mean MELD score was 14.3 ± 6.8 with 30% of cirrhotic patients requiring transjugular intrahepatic portosystemic shunt prior to surgery. 36.8% of cirrhotic patients had ascites leaking through their abdominal skin. 50% of cirrhotic patients required intraperitoneal drain placement during CAWR, which remained in place for a mean of 16.9 ± 8.6 days. Cirrhotic patients required a smaller mesh size (198.9 cm^2 vs. 470.2 cm^2 , $p = 0.001$) compared to non-cirrhotic patients. Only 40% of cirrhotic patients required lysis of adhesions compared to 69.4% of non-cirrhotics, $p = 0.01$. The estimated risk of 90-day mortality of our cirrhotic patients was 26.8% using the Mayo Risk Calculator. In our cohort, only 10% of our cirrhotic patients expired within 90 days. There was no significant difference in hospital length of stay, reoperations, rates of post-operative wound infection, wound necrosis or seroma between the two groups.

Conclusion: CAWR can be done safely in cirrhotic patients with complex abdominal wall hernias using biological mesh.

Q 5. ASSOCIATION OF A NON-INVASIVE FIBROSIS MARKER AND POST-OPERATIVE LIVER FAILURE AFTER RESECTION OF COLORECTAL LIVER METASTASIS

Presenter: Yazan Ashouri MBBS | University of Arizona

Y Ashouri, M Hamidi, M El Ghouayel, R Turk, L Konstantinidis, F Maegawa, V Nfonsam

Background: Chemotherapy-associated liver injury (CALI) increases the risk of postoperative liver failure (POLF) after resection of colorectal liver metastases (CRLM). The role of non-invasive fibrosis markers in this setting is not well established.

Methods: The National Surgical Quality Improvement Program (NSQIP) database was utilized to identify patient who received neoadjuvant chemotherapy and underwent subsequently hepatectomy for colorectal liver metastases between 2014-2017. Patients were stratified into two groups using the Aspartate-to-Platelet Index ratio (APRI) of 1.0 as a cut off value.

Results: A total of 2816 patients were identified, of whom 165 had APRI score > 1.0. Patient with APRI > 1.0 were younger, less frail, and had a lower American Score of Anesthesia (ASA) class compared to patients with APRI score ≤ 1.0. However, they had a longer length of stay (6 vs 5 days, P=0.0002), a higher rate of postoperative bleeding (25.5% vs 16.6%, P = 0.003) and POLF (9.1% vs 4.3%, P = 0.004). The multivariable logistic regression showed that APRI > 1.0 was independently associated with POLF, Odds Ratio (OR): 2.21, 95% Confidence Interval (CI):1.24 - 3.93. Likewise, major hepatectomy was associated with POLF, OR: 4.32, 95% CI: 2.86 - 6.26. APRI score > 1.0 was also independently associated with postoperative bleeding and unplanned readmission, OR: 1.82, 95% CI: 1.02-2.75 and OR: 1.59, 95% CI: 1.02-2.48, respectively. The Receiver Operating Characteristic curve analysis showed that APRI > 1.0 was a better predictor of POLF than MELD score, with an Area Under the Curve (AUC): of 0.608 vs 0.542, P < .0001, respectively.

Conclusion: APRI > 1.0 was independently associated with POLF, postoperative bleeding and unplanned readmission after hepatectomy for colorectal liver metastases. When compared to MELD score, APRI > 1.0 was a better predictor of POLF.

Q 6. PRE-SURGICAL POSITRON EMISSION TOMOGRAPHY IMAGING PREDICTS POST-NEOADJUVANT CHEMOTHERAPY PATHOLOGICAL RESPONSE IN PANCREATIC DUCTAL ADENOCARCINOMA

Presenter: Amro Abdelrahman MBBS | Mayo Clinic Rochester

A Abdelrahman, J Yonkus, M Kendrick, D Nagorney, R Smoot, S Cleary, T Grotz, A Goenka, M Truty

Background: Neoadjuvant chemotherapy (NAC) is increasingly utilized in patients with borderline/locally advanced (BL/LA) pancreatic adenocarcinoma (PDAC) prior to resection. Major pathologic response (complete/near-complete) has been identified as a significant survival factor; however, this is only known post-resection. Anatomical (CT/MRI) and/or biochemical (CA19-9) markers have limited predictive utility. Functional metabolic imaging, fluorodeoxyglucose (FDG)-positron emission tomography (PET/CT or PET/MRI), may provide insight into tumor viability after NAC. This study aimed to evaluate post-NAC PET in predicting pathologic response in patients with BR/LA PDAC.

Methods: This is a single-center retrospective analysis of BR/LA PDAC patients who received NAT then underwent PET scan within 60 days of resection. Major pathologic response was graded according to College of American Pathologists: Score 0 - complete response/no viable cancer, Score 1 - near-complete response, Score 2 - partial/moderate response, and Score 3 - poor/no response. Patients were classified into: major pathologic response (Scores 0/1) or minor pathologic response (scores 2/3). Metabolic (PET) response was defined as FDG uptake of the tumor compared to background tissues and dichotomized to: Major (Complete/near-complete metabolic response) or Minor (persistent FDG activity). Biochemical response (CA19-9) was dichotomized to: Optimal (baseline CA19-9 normal and stayed normal or normalized after NAC) or Suboptimal (baseline CA19-9 elevated and stayed elevated after NAC or non-secretors). Both metabolic (PET) and biochemical (CA19-9) responses were compared to final pathologic response categories considering the following diagnostic testing accuracy measurements: sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), positive likelihood ratio (LR+) and negative likelihood ratio (LR-). P-values ≤ 0.05 was considered statistically significant. Overall survival (OS) was assessed.

Results: One hundred fifty-four patients were included in this study. The median follow-up was 23.5 months. There were 113(73.4%) patients alive at last follow-up with a median OS that was not yet reached with a 5-year OS of 56%. Major pathologic response was associated with OS (37.1 months vs. not yet reached, $p=0.04$). Sixty-three patients (41%) had major pathologic response on final histologic examination. Of those, 59(94%) had major metabolic response on preoperative PET. Of the 91(59%) patients with minor pathological response, only 24(26%) had major

metabolic response. Of those patients with no pathologic treatment response (Score 3), 100% had measurable FDG tumor activity after NAC. Major metabolic response highly correlated with major pathologic response ($p < 0.0001$) with a sensitivity and specificity of 0.94 (95% CI:0.85–0.98) and 0.74 (95%CI:0.64–0.82), respectively (PPV=0.71, NPV=0.94, LR+=3.6, LR-=0.09). Biochemical response weekly correlate with pathologic response ($p=0.04$) with sensitivity and specificity of 0.77 (95% CI:0.65–0.86) and 0.4 (95%CI:0.31–0.51), respectively (PPV=0.47, NPV=0.71, LR+=0.1.28, LR-=0.58).

Conclusion: Among BL/LA PDAC patients who received NAC, preoperative PET appears to have significant utility in predicting pathologic response, a surrogate of effective chemotherapy and survival after resection. Given the poor ability of standard imaging or biomarkers to assess NAC responses, functional FDG-PET imaging may provide significant insight into the adequacy of NAC. Such preoperative metabolic data may either support moving with resection or considering chemotherapeutic switch. Larger prospective studies are warranted and currently ongoing to investigate the role of functional imaging in PDAC treatment response assessment.

Q 7. NON-OPERATIVE MANAGEMENT OF ACUTE CALCULOUS CHOLECYSTITIS IN CIRRHOTIC PATIENTS: IS IT THE RIGHT WAY TO GO?

Presenter: Mohamad Chehab MD | University of Arizona

M Chehab, L Bible, S Asmar, M Douglas, M Ditillo, L Castanon, M Khurram, A Tang, L Gries, B Joseph

Background: Non-surgical interventions in managing cases of acute calculous cholecystitis (ACC) have been proposed, but limited data evaluates such approaches in patients with liver cirrhosis. This study aims to examine long-term outcomes of cirrhotic patients with ACC treated with cholecystectomy compared to initial nonoperative management.

Methods: We conducted a one year (2017) analysis of the Nationwide Readmissions Database and included all cirrhotic patients with a diagnosis of ACC. Patients were stratified into those undergoing operative management at index admission (OP) vs. those receiving antibiotics only or with percutaneous drainage without operative intervention (NOP). Primary outcome measures were procedure-related complications for the OP group and 6-month failure of non-operative management (readmission with cholecystitis) for the NOP group. Secondary outcome measures were mortality, hospital length of stay (LOS), and healthcare costs. Multivariate regression analysis was performed adjusting for demographics and comorbidities.

Results: A total of 3455 cirrhotic patients with ACC were identified: 1538 (44.5%) in the OP group and 1917 (55.5%) in the NOP group. Patients in the OP group were older (63±13 vs. 60±14 years; $p < 0.001$), but comparable in comorbidities CCI (4 [3,5] vs. 4 [3,6]; $p = 0.612$). A total of 18.0% of patients in the OP group had procedure-related complications, while 21.8% of patients in the NOP group failed NOP within 6 months. Mortality was significantly higher in the NOP group compared to the OP group (7.2 vs. 4.3%; $p < 0.001$). Also, patients in the NOP group were hospitalized longer (9 [4,19] vs. 7 [4,13] days; $p < 0.001$) and had higher overall costs (40 [14,47] vs. 31 [10,34] \$1000; $p < 0.001$) over the 6 month period. On multivariate analysis, NOP was independently associated with increased mortality at 6 months (OR 1.8 [1.3-2.4]; $p < 0.001$).

Conclusion: ACC remains a highly morbid disease in cirrhotic patients. One in five patients failed NOP and had longer hospital stays, higher healthcare costs, and increased mortality. Identifying predictors of failure of NOP will better guide patient stratification.

Q 8. PORTAL VEIN FLOW AND THE DEVELOPMENT OF POST-TRANSPLANT ASCITES

Presenter: Morgan Pfeiffer BS | Washington University in Saint Louis
M Pfeiffer, N Vachharajani, T Subramanian, O Ahmed, A Khan, J Wellen, S Shenoy, W Chapman, M Doyle

Background: The development of ascites following orthotopic liver transplantation (OLT) is common with most cases resolving spontaneously or with a short course of diuretic therapy. However, some patients develop refractory ascites requiring recurrent paracentesis and medical therapy. Refractory ascites is also a component of small for size syndrome (SFSS) after living donor transplant. Portal hyperperfusion injury is a known cause of graft dysfunction in SFSS, but portal hyperperfusion and the subsequent graft dysfunction and ascites have not been studied in deceased donor OLT.

Methods: A single center retrospective review of a prospectively kept database of patients receiving liver-only transplantation between 1/1/2009 and 12/31/2018 was performed. Information on demographics, liver disease, intraoperative portal vein (PV) flow, and the development and management of post-transplant ascites and outcomes was collected. Patients were stratified into three groups based on development of ascites: no ascites (NA), transient ascites (TA), and refractory ascites (RA). Groups were analyzed using univariate analysis and regression analysis.

Results: 900 patients received deceased donor OLT during the study period. Thirty two patients were excluded due to death within the first ninety days following transplantation. Data were collected on the remaining 868. 520/868 patients (59.9%) developed no post-OLT ascites. 177/868 (20.4%) patients developed TA, defined as ascites resolving within four weeks of onset. 171/868 patients (19.7%) developed RA, defined as ascites that persisted >4 weeks. The RA group was younger, had higher MELD scores ($p < 0.0001$), had a pre-OLT history of ascites that required intervention and had large volume ascites at the time of transplant ($p=0.0001$) vs. NA and TA groups. The RA group had higher intraoperative post reperfusion PV flows compared to the NA group ($p=0.0018$). On multivariate analysis, it was determined that PV flows >2 L/minute were associated with the development of RA ($p=0.04$). On Cox regression survival analysis, RA was associated with decreased overall patient ($p=0.013$) and graft-survival ($p=0.031$).

Conclusion: Refractory ascites is associated with reduced patient and graft-survival and may be related to PV flow over 2L/min. Intraoperative portal flow alteration by ligation of the splenic artery has been shown to improve outcomes in SFSS cases. This study suggests that there is potential to consider portal flow alteration in deceased donor OLT to minimize development of refractory ascites and the morbidity and mortality associated with this debilitating condition.

Q 9. THE IMPACT OF CANDIDATE AGE ON ACCESS TO LIVER TRANSPLANTATION FOR HEPATOCELLULAR CARCINOMA

Presenter: Ola Ahmed MD | Washington University in Saint Louis

O Ahmed, N Vachharajani, SH Chang, Y Park, AS Khan, WC Chapman, MB Doyle

Background: Recent estimations suggest a rising incidence of hepatocellular carcinoma (HCC) in the US and cancer related deaths are expected to surpass both breast and colorectal cancers by 2030. Liver transplantation (OLT) has offered an effective alternative treatment for unresectable disease, however the feasibility of OLT in older patients remains conflicting and consensus guidelines are lacking in terms of a cut-off age range. The goal of this study was to evaluate the influence of age on access to liver grafts and compare disease-specific outcomes.

Methods: We conducted a retrospective review of 1629 patients diagnosed with HCC from a prospectively maintained database from January 1st 2002 and December 31st 2019. The study focussed on listing for and progression to OLT among patients older and younger than a 65-year age cut-off, with recipient age being the primary variable. Underlying disease etiology and clinical stage were also considered in the analysis. Disease-specific and long-term oncologic outcomes were further analysed.

Results: Four hundred and thirty-five patients underwent OLT for HCC during the study period ($n = 319 \leq 65$ years, $n = 116 \geq 65$ years). Clinical stage was comparable in both groups ($p = 0.083$). Candidate delisting from the OLT waiting list was similar in both older and younger age groups ($p = 0.527$). Hepatic cirrhosis was a consistent factor influencing the likelihood of undergoing OLT in all age groups. On further candidate age analysis, patients older than 65 years were less likely to be considered for OLT ($p < 0.001$). When the candidate age cut-off was further extended, patients older than 75 years were less likely to receive grafts ($p < 0.001$). One-, 3- and 5-year overall and disease-free survival rates for transplanted patients were comparable in both older and younger age groups ($p = 0.295$, $p = 0.156$).

Conclusion: Although older candidates are less likely to be considered for OLT in the management of HCC, judicious matching can lead to disease free and overall survival outcomes that are comparable to their younger counterparts. Older recipient age does not always denote marginality in liver transplantation and previous misconceptions of worse long-term oncologic outcomes need to be challenged.

Q 10. PRE-HOSPITAL ADMINISTRATION OF OPIOIDS IN TRAUMA PATIENTS: DOES DOSE AFFECTS OUTCOMES?

Presenter: Muhammad Khurram MD | University of Arizona

M Khurram, M Chehab, M Douglas, S Asmar, M Ditillo, L Bible, L Gries, B Joseph

Background: The use of opioids for prehospital analgesia in trauma patients is increasing with time and contributes to the opioid overuse epidemic. Current efforts to prevent and control prescription opioid overuse are focused on the in-hospital and post-discharge phases. The aim of our study was to assess the impact of pre-hospital opioids use on in-hospital outcomes among trauma patients.

Methods: We performed a 2-year (2016-2017) retrospective analysis of our Level-I trauma center database. We included all adult trauma patients (age>18y) who received pre-hospital opioids (Fentanyl (F) or Morphine-Sulfate (MS)). Outcome measures were emergency-department (ED) hypotension (SPB ≤ 90 mmHg), ED intubation, prescription opioid medication upon discharge, and mortality. Multivariate logistic regression was performed.

Results: In total, 723 patients were included in the analysis. Mean age was (42 ± 20y) and 67% were males. A cutoff value of 200 mcg F and 15 mg MS were significant predictors of adverse outcomes. Overall, 24% and 31% of the patients received high-dose F or MS, respectively. Overall, the ED hypotension rate was 14.4%, ED intubation rate was 6%, and ED mortality rate was 3.1%. On regression analysis, a higher dosage of pre-hospital F was independently associated with increased odds of ED hypotension (OR=2.04; 95%CI=1.12-2.34; p=0.01), ED intubation (OR=1.74; 95%CI=1.14-2.54; p=0.01), and discharge on opioid medications (OR=1.57; 95%CI=1.28-2.21; p=0.01), but not with ED mortality (p=0.21). On regression analysis, a higher dosage of pre-hospital MS was independently associated with increased odds of ED hypotension (OR=2.11; 95%CI=1.01-2.70; p=0.01), ED intubation (OR=1.53; 95%CI=1.09-2.32; p=0.01), and discharge on opioid medications (OR=1.67; 95%CI=1.18-2.94; p=0.01), but not with ED mortality (p=0.63).

Conclusion: Pre-hospital administration of high dose opioids is associated with increased odds of adverse outcomes. Collaborative efforts to standardize and control the overuse of opioids should target the pre-hospital setting to limit opioid associated adverse effects.

Q 11. CHOOSING WHAT VARIABLES MATTER IN RISK STRATIFICATION FOR HEPATECTOMIES USING A MACHINE LEARNING TECHNIQUE

Presenter: Maria Urdaneta Perez MD | Oklahoma University College of Medicine
MG Urdaneta, T Garwe, K Stewart, Z Sarwar, KT Morris

Background: Classification and regression trees (CART) are a group of machine learning techniques used to identify variables with the best discrimination for a specific outcome, optimizing accuracy in risk modeling. Here we used the CART method recursive partitioning in screening numerous potential predictors of mortality or failure to discharge home after hepatectomy. The goal was to identify a group of key predictors through risk stratification and to determine an optimal threshold for the dichotomization of these variables to maximize accuracy and simplicity in subsequent predictive modeling.

Methods: Data were obtained from the NSQIP PUF 2005-2017 covering hepatectomies. Two classification tree models were developed, one estimating probability of 30-day mortality, the other failure to discharge home. Twenty-eight covariates were considered including: demographics, comorbidities, pre-operative labs, procedure type and functional status. Although indication for resection was also a considered variable, due to a very broad range of diagnoses obtained from the NSQIP dataset, all indications for hepatectomies were included. Continuous predictor variables were converted to dichotomous variables after determining inflection points with the best discriminating ability for the two models. These were then set as our cut-offs. Multiple imputation was used to complete missing lab values. Model discrimination was assessed using the area under the receiver operating characteristic curve (AUC).

Results: Crude 30-day mortality was 1.8% (654/37,141). Among survivors, 1,808 (6.2%) of 29,106 patients were not discharged home (discharge location available 2011-2017). CART results estimated probabilities of death ranging from 0.4% to 27%. The estimated probability of not being discharged home ranged from 2-49%. Starting from 28, CART identified 6 variables for predicting mortality (AUC=0.76) and 7 variables for predicting failure to discharge home (AUC=0.74) with minimal improvement in discrimination with the addition of more variables. For the mortality model the following variables and cut-off points were identified: procedure type dichotomized as right/trisegmentectomy vs partial/left, age < or > 70, albumin < or > 2.5g/dL, bilirubin < or > 3g/dL, platelets < or > 100K and presence or absence of diabetes. For the discharge not home model, the identified variables and cut-off points were: Age < or > 70, functional status dichotomized as partial/total dependence vs independent, albumin < or > 2.5g/dL, procedure type dichotomized as right/trisegmentectomy vs partial/left, presence or absence of hypertension, hematocrit

< or > 30% and presence of COPD. Future efforts may be conducted to consider diagnosis-specific models by using NSQIP hepatectomy targeted data.

Conclusion: Recursive partitioning identified a minimally sufficient number of covariates most strongly associated with two important hepatic resection outcomes which would have been difficult to accomplish with traditional logistic regression models. This screening technique can guide subsequent predictive modeling and potentially result in a simpler hepatic resection outcome risk score development.

Q 12. IT ALL COMES OUT IN THE WASH: AUTOTRANSFUSION IS SAFE DESPITE ENTERIC CONTAMINATION

Presenter: Jordan Lilienstein MD | University of California San Francisco, Fresno
J Lilienstein, M Kochubey, L Garcia, R Dirks, J Davis

Background: Autotransfusion (AT) is a frequently utilized method in which shed blood is collected by a specialized device and returned to the patient during an operation. This has the benefit of reducing the number of allogeneic blood transfusions a patient may require during the procedure. Despite little evidence, utilization of AT in trauma surgery is limited due to concerns that enteric contamination (EC) from hollow viscus injuries or an otherwise non-sterile field may increase the risk of infection. However, allogeneic transfusions carry risks as well, including transmission of blood borne disease, immune reactions, immune suppression and transfusion related acute lung injury (TRALI). The purpose of this study is to determine if AT increases infection rates in patients requiring trauma laparotomy with EC.

Methods: A retrospective review of all trauma patients requiring laparotomy from October 2011 to January 2020 was performed. Patients without EC, who did not receive blood or died within the first 24 hours of arrival were excluded. Demographics, labs, blood use, use of AT, and infectious complications were collected. AT vs non-AT patients were also case matched by estimated blood loss (EBL) and injury severity score (ISS). Infection rates for the two groups were compared. Regression analysis was used to identify independent risk factors for infection.

Results: 235 patients met inclusion criteria; 60 (26%) received blood from AT. Abbreviated injury score (AIS) abdomen, lactic acid (6.2 vs 4.0 mmol/L, $p < 0.001$), and EBL (5.9L vs 1.3L, $p < 0.001$) were significantly higher in the AT group and initial systolic blood pressure was significantly lower (86 vs 103mmHg, $p < 0.001$). The AT group received a mean 1.6L of returned blood. Mortality rate was higher in the AT group (15% vs 6%, $p = 0.03$), but bloodstream infections (BSI) (12% vs 5%, $p = 0.08$) and overall complications (60% vs 46%, $p = 0.067$) were not significantly increased. Case matching by EBL and ISS resulted in 49 AT with 49 non-AT matches. The AT group received significantly more blood (7.0 vs 4.7L, $p = 0.002$), but there was no difference in positive blood cultures (8% vs 4%, $p = 0.40$), overall complications (59% vs 61%, $p = 0.84$), or mortality (17% vs 10%, $p = 0.35$). On regression analysis, EBL was strongly associated with infectious complications while AT was not.

Conclusion: The use of AT was not associated with an increased rate of infectious complications in trauma laparotomies with EC. While mortality was higher in the non-case matched AT group, this is likely due to higher blood loss and more severe

shock (as evidenced by higher initial lactic acid and lower initial SBP). When ISS and EBL were controlled for by case-matching, BSIs, complications and mortality were not significantly different. Regression analysis showed that EBL was associated with increased risk for BSIs and other complications, while AT was not. In patients requiring laparotomy with EC, AT is not associated with increased infection rates.

Q 13. REBOA PROVIDES A SAFE AND EFFECTIVE ALTERNATIVE TO EMERGENCY DEPARTMENT THORACOTOMY IN THE TIMES OF COVID-19

Presenter: Navin Vigneshwar MD | University of Colorado School of Medicine
N Vigneshwar, E Moore, A Sauaia, J Morrison, T Scalea, L Moore, J Podbielski, J Cannon, M Seamon, K Inaba, A Piccinini, C Fox, D Kauvar, V Baggenstoss, C Spalding, D Turay, J Dubose

Background: Emergency department thoracotomy (EDT) in patients with COVID19 adds substantial risk to the health care team. Previous studies comparing patient outcome following resuscitative endovascular balloon occlusion of the aorta (REBOA) versus EDT have lacked essential physiologic data at the time of intervention or appropriate controls. The AAST Aortic Occlusion for Resuscitation in Trauma and Acute Care Surgery (AORTA) registry is a large prospective multicenter (28 trauma centers) study that includes granular physiology data to compare the survival benefit of two aortic occlusion techniques (EDT and REBOA) in the acute resuscitation of critically injured patients.

Methods: We analyzed AORTA data from October 2013-January 2020 (level I=1036 patients; level II=31, 3%, patients). We excluded patients admitted to facilities where REBOA was not performed in the ED, and those in whom REBOA was converted to EDT (n=25, 68% mortality). Severe injury was defined as Abbreviated Injury Scale>2. We used Poisson regression with robust standard errors (to account for clustered data by hospital) to adjust the effect of AO type (EDT vs REBOA) on hospital mortality for all potential confounders with univariate $p < 0.25$ (age, sex, time to ED, hospital volume, mechanism, ISS, severe chest injury, severe traumatic brain injury[TBI], CPR and SBP upon AO initiation).

Results: Of 1067 patients, 802 (75%) underwent EDT and 265 (25%) REBOA. Crude mortality was 95% for EDT, and 64% for REBOA. There were no differences between the two groups regarding trauma center level and CPR duration. Compared to EDT patients, the REBOA group was older, more likely to be female, suffer blunt trauma, have longer transport times and less likely to have severe chest injuries. Most REBOAs (74%) were done in high-volume hospitals (> 4000/year), while hospital volume was not a factor in EDT frequency. After adjustment for the above confounders, EDT was associated with a 32% higher mortality risk than REBOA (Adjusted Relative Risk[RR]:1.32; 95% CI: 1.12-1.56). In a stratified analysis by mechanism and CPR, EDT was associated with a significantly higher mortality risk compared to REBOA in blunt trauma patients not requiring CPR upon AO (RR:2.26; 95% CI:1.81-2.84). EDT had a similar mortality risk as REBOA in blunt trauma undergoing CPR upon AO (RR:1.02; 95%CI:0.92-1.13), and in penetrating trauma with or without undergoing CPR upon AO (RR:1.18;95%CI:0.89-1.57;

RR:1.44;95%CI:0.33-6.27). The injury pattern significantly modified the mortality effect of EDT vs REBOA (interaction $p < 0.0001$) with EDT being associated with a significantly higher mortality than REBOA in isolated injury to the pelvis (RR: 4.70;95%CI:2.26-9.77), abdomen (RR:1.54;95%CI:1.16-2.03), and chest+abdomen (RR:1.43;95%CI:1.09-1.86). For injuries to abdomen+pelvis (RR: 1.54; 95%CI: 0.66-3.55), chest (RR:1.01;95%CI:0.87-1.18), chest+abdomen+pelvis (RR:1.39; 95%CI:1.00-1.94), chest+pelvis (RR:1.17;95%CI:0.79-1.73), EDT and REBOA had similar mortality risk.

Conclusion: Overall, and in all subgroups of injury and physiologic patterns, REBOA conferred a similar or better survival benefit compared to EDT. These findings suggest that in critically injured patients, without a suspected penetrating cardiac wound, REBOA is an effective alternative to EDT with the additional advantage of decreasing healthcare provider exposure during the COVID-19 pandemic.

P 1. ORGAN SPACE SURGICAL SITE INFECTION AFTER COLORECTAL SURGERY IN VETERANS

Presenter: Maseray Kamara MD | Wayne State University School of Medicine, Detroit Medical Center

M Kamara, A Shabait, K Girtten, K Saleh, D Weaver, S Gruber, G Mostafa

Background: Organ space surgical site infection (OSSSI) is a significant complication in colorectal surgery, with a reported incidence of 8.4% and an 11.5% associated mortality. This study examines the profile and risk of OSSSI following colorectal operations in veterans.

Methods: The Veterans Affairs Surgical Quality Improvement Program was queried for colorectal operations between 2008-2015 and cases of OSSSI were identified. Demographics, clinical/operative details, and postoperative outcome were compared in cases with and without OSSSI using Chi-square test for categorical variables, Student's t-test for continuous variables with parametric distribution, and the Mann-Whitney test for continuous variables with non-parametric distribution. Logistic regression was performed to detect independent predictors of OSSSI. $P < 0.05$ was considered significant.

Results: A total of 28,755 colorectal surgical cases were identified (96.1% male, mean age 65.5, mean BMI 28.1, 14.1% emergent cases, 84% with ASA ≥ 3 , 31.5% current smokers, and 89.2% functionally independent). OSSSI occurred in 1,055 (3.7%). Compared to patients without OSSSI, those with OSSSI were younger (64.3 vs. 65.6, $p < 0.001$) and more likely with ASA class ≥ 3 (86.5% vs. 83.9%, $p = 0.02$); hypoalbuminemic (36.3% vs. 30.1%, $p < 0.001$); active smokers (19.9% vs. 13.7%, $p = 0.001$); functionally dependent (14.6% vs. 10.7%, $p < 0.001$); chronic steroid users (5.1% vs. 3.1%, $p < 0.001$); had recent weight loss $\geq 10\%$ (9.7% vs. 7.6%, $p = 0.011$); and had undergone radiotherapy (5.1% vs. 2.2%, $p < 0.001$). BMI was comparable in both groups (28.1 vs. 27.9, $p = 0.350$). OSSSI patients had significantly more open (79.9% vs. 72.9%, $p < 0.001$) and emergency (19.9% vs. 13.7%, $p < 0.001$) colectomies as well as rectal resections (15.1% vs. 10.8%, $p < 0.001$). In addition, preoperative sepsis (9.1% vs. 5.0%, $p < 0.001$) and intraoperative transfusion (14.8% vs. 9.0%, $p < 0.001$) were more common, with longer operative time (3.6 hr vs. 3.0 hr, $p < 0.001$) and less use of primary anastomosis alone (68.9% vs. 77.9%, $p < 0.001$). OSSSI resulted in significantly more wound dehiscence (10.1% vs. 2.6%, $p < 0.001$), reoperation (48.4% vs. 9.3%, $p < 0.001$), reintubation (11.6% vs. 3.6%, $p < 0.001$), ICU admission (20.5% vs. 5.5%, $p < 0.001$), venous thromboembolism (2.2% vs. 0.7%, $p < 0.001$) and longer length of stay (21.4 days vs. 9.8 days, $p < 0.001$), but with comparable mortality (4.7% vs. 3.9%, $p = 0.214$) when compared with no OSSSI. Primary anastomosis (OR 2.4, $p < 0.001$), preoperative radiotherapy (OR 2.1, $p < 0.001$), dependent functional

status (OR 1.4, $p=0.02$), open approach (OR 1.4, $p<0.001$), rectal resection (OR 1.3, $p<0.001$), emergency surgery (OR 1.3, $p=0.032$), and smoking (OR 1.2, $p=0.028$) were all independent predictors of OSSSI.

Conclusion: The incidence of OSSSI and its associated mortality following colorectal surgery in a high-risk veteran population compares favorably with that reported in the private sector. Although not affecting mortality, OSSSI still has a significant adverse effect on postoperative morbidity. The independent predictors of OSSSI, in particular the choice of open versus laparoscopic approach well as the decision to perform a primary anastomosis alone, can be useful in preoperative planning and risk stratification.

P 2. MINIMALLY INVASIVE ILEAL POUCH ANAL ANATOMOSIS FOR PATIENTS WITH OBESITY. A PROPENSITY SCORE MATCHED ANALYSIS

Presenter: Mohamed Abd El Aziz MBBCh | Mayo Clinic Rochester
D Larson, M Abd El Aziz, F Grass, S Shawki, K Mathis

Background: Obesity surgery is a major risk factor for pelvic infection after Ileal Pouch Anal Anastomosis (IPAA) and even failure of pouch surgery completion. However, a little is known about the impact of minimally invasive surgery (MIS) on the short term outcomes after IPAA for patients with obesity. This study aims to assess the short term post-operative outcomes for patients undergoing MIS IPAA between obese and nonobese patients.

Methods: All adult patients (≥ 18 years old) who underwent MIS IPAA and reported in the American College of Surgeons National Quality Improvement Program (ACS-NSQIP) Participant User Files 2007 to 2018 were included. Patients were divided according to their body mass index (BMI) into two groups (Obese; BMI ≥ 30 kg/m² and nonobese; BMI < 30 kg/m²). Baseline demographics, preoperative risk factors such as comorbidities, American Society of Anesthesiologist Class, smoking, preoperative laboratories, and operation time were compared between the two groups. A propensity score matching analysis (1:1) based on logistic regression with a caliber distance of 0.2 of the standard deviation of the logit of the propensity score has been used to overcome biases due to different distributions of the covariates. Thirty-day postoperative complications including overall surgical, and medical complications, surgical site infection (SSI), organ space infection, systemic sepsis, 30-day mortality, and length of stay were compared between both groups.

Results: Initially, a total of 2,158 patients (402 (18.6%)obese and 1,756 (81.4%)non obese) identified. After 1:1 matching, 402 patients remained in each group. Patients with obesity found to have a higher risk of postoperative organ/space infection (12.9%; vs 6.5%; p-value 0.002) compared to nonobese patients. There was no difference between the groups regarding the risk of postoperative sepsis, septic shock, need for blood transfusion, wound disruption, superficial SSI, deep SSI, respiratory, renal, major adverse cardiovascular events, venous thromboembolism, 30-day mortality, and length of stay.

Conclusion: Patients with obesity undergoing MIS IPAA have a higher risk (-double) of organ space infection compared to nonobese patients. Therefore, loss of weight before MIS IPAA is recommended. Further studies are needed to assess the differences in the risk of organ space infection for patients with obesity undergoing IPAA between robotic and laparoscopic approach.

P 3. FACTORS CONTRIBUTING TO UNPLANNED READMISSION FOLLOWING COLECTOMY FOR MALIGNANT COLON CANCER

Presenter: Erika Krall | University of Arizona

E Krall, E Krall, J Lee, M Hamidi, M Chehab, R Silva, E Pefok, V Nfonsam, T Jerome, H Jecius

Background: Colon resections are often performed with a substantial risk of complications. Unplanned readmissions are one of the major predictive factors of one-year mortality for colon cancer patient's post-colectomy and are often associated with increased treatment costs. The objective of this study was to determine the factors influencing 30-day unplanned readmissions following colectomy for malignant colon cancer patients.

Methods: A three-year review (2016-2018) of the ACS-NSQIP dataset for all adult patients with malignant colon cancer who underwent colectomy was performed. Colectomy cases were selected using the CPT variable in NSQIP with the corresponding CPT codes. Rectal cancer resections were excluded. Also excluded were patients who expired during admission and whose hospital length of stay was >30 days. Patient characteristics of those who had and did not have an unplanned readmission were compared with univariate and multivariate regression analysis. The primary outcome measure was unplanned readmission within 30 days of surgery.

Results: 37517 patients who had malignant colon cancer underwent colectomy and of these 3828 (9.3%) had an unplanned readmission within 30 days of surgery. The mean age of patients who were readmitted was 69.5 ± 13.4 and 51.1% were male. On Multivariate analysis comorbidities that were independently associated with unplanned readmission include smoking (OR= 1.115 (95% CI, 1.005-1.236)), insulin dependent diabetes mellitus (OR= 1.312 (95% CI, 1.159-2.485)), hypertension requiring medication (OR=1.085 (95% CI, 1.001-1.177)), steroid use for chronic condition (OR=1.238 (95% CI, 1.038-1.476)), and bleeding disorders (OR=1.399 (95% CI, 1.200-1.631)). Operative factors that were independently associated with increased odd of unplanned readmission include ASA of 3 (OR= 1.936 (95% CI, 1.219-3.074)) or 4 (OR= 2.590 (95% CI, 1.612-4.161)) and open procedure (OR= 1.275 (95% CI, 1.181-1.377)).

Conclusion: Unplanned readmissions following colectomy are associated with multiple patient associated factors. Higher ASA score and open procedure were operative factors associated with readmissions. Identification of the modifiable factors associated with increased odds of readmission, provides an opportunity for preoperative intervention and planning that may decrease a patient's risk of unplanned readmission.

P 4. TEACHING ENDOSCOPIC UPPER GASTROINTESTINAL BLEEDING CONTROL TO PRACTICING SURGEONS: AN “INTO THE FIRE” APPROACH TO SIMULATION

Presenter: Harry Wong MD | NorthShore University HealthSystem
H Wong, M Attaar, B Su, K Kuchta, J Linn, S Haggerty, W Denham, M Ujiki

Background: Flexible endoscopy is an increasingly important tool for the gastrointestinal (GI) surgeon. Effective and efficient training curricula are needed more than ever. Here, we present a simulation-based modular curriculum using an “into the fire” approach with hands-on pre- and post-testing to teach endoscopic control of upper GI bleeding to practicing physicians.

Methods: Two advanced flexible endoscopy courses were taught by two expert surgical endoscopists from 2018 to 2019. The upper GI bleeding module focuses on using endoscopic clipping techniques to control simulated bleeding from the stomach using ex-vivo porcine models and is composed of a series of pre-training tests, didactic and mentored hands-on instructions, and post-training tests. Both pre- and post-testing included a confidence survey, knowledge-based written test, and evaluation form specific to the hands-on performance of the bleeding control techniques. Wilcoxon signed-rank tests were used to compare pre- and post-tests scores.

Results: Twenty-eight practicing physicians with varying endoscopic experiences participated in the course. Fifty percent of participants had completed < 200 upper endoscopic procedures. After completion of the course curriculum, participants had improved confidence survey scores from 11.4 ± 4.2 to 20.7 ± 4.0 ($p < 0.001$) as well as improved knowledge-based written test scores from 7.1 ± 1.2 to 8.4 ± 0.9 ($p < 0.001$). More importantly, hands-on performance of the endoscopic clipping technique to control bleeding improved from 15.5 ± 2.5 to 27.3 ± 2.4 ($p < 0.001$) with significant improvement in all individual components of the hands-on skills (all p values < 0.001).

Conclusion: Our simulation module using an “into the fire” approach to teach endoscopic upper GI bleeding control is effective in improving participants’ knowledge, confidence and hands-on performance of the technical skills. This novel approach using a hands-on pre-test prior to any formal instructions addresses unique challenges of teaching practicing providers with varying levels of experience and may lead to more efficient learning.

P 5. DOES PRE-OPERATIVE ESTIMATED GLOMERULAR FILTRATION RATE (EGFR) PREDICT SHORT-TERM SURGICAL OUTCOMES IN PATIENTS UNDERGOING PANCREATIC RESECTIONS?

Presenter: Mohammad Hamidi MD | University of Arizona

M Hamidi, C O'Grady, A Arrington, L Morris-Wiseman, TS Riall, M Khreiss

Background: Preoperative eGFR has been found to be a reliable predictor of post-operative outcomes in patients with normal creatinine levels who undergo surgery. The aim of our study was to evaluate the impact of preoperative eGFR levels on short-term post-operative outcomes in patients undergoing pancreatic resection.

Methods: The American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) pancreatic resection file (2014-2017) was queried for all adult patients (age ≥ 18) who underwent pancreatic resection. Pancreatic procedures analyzed included Pancreaticoduodenectomy (PD), distal pancreatectomy (DP), and other procedures (OTH) using CPT codes. Patients on preoperative renal dialysis were excluded from the study. Patients were stratified into two groups based on their preoperative eGFR; (eGFR < 60 mL/min/1.73m² and eGFR ≥ 60 mL/min/1.73m²). Outcome measures included post-operative pancreatic fistula, discharge disposition, hospital length of stay, 30-day readmission rate, 30-day morbidity, and mortality. Multivariate logistic regression analysis was performed.

Results: A total of 21,148 were included in the study of which 12% (n=2,256) had preoperative eGFR < 60 mL/min/1.73m². In terms of procedures, 62% had PD, 31.2% had DP and 6.8% had other procedures. The mean age was 63.3 \pm 12.6 years, 49.6% were females and 15.6% received neoadjuvant chemotherapy. Patients in the eGFR < 60 group were more likely to be older (70.5 \pm 9.3years vs. 62.4 \pm 12.7 years, $p < 0.01$), white (88.5% vs. 85.3%, $p < 0.01$) and have higher ASA3 class (78% vs. 68.3%, $p < 0.01$). On univariate analysis, patients in the eGFR < 60 group had prolonged length of stay (75th Percentile, 10days; 32.6% vs. 27.1%, $p < 0.01$), were less likely to be discharged home (10.6% vs. 20.2%, $p < 0.01$), had higher minor (37.9% vs. 29.7%, $p < 0.01$) and major (23.1% vs. 19%, $p < 0.01$) complication rates, and higher rates of mortality (2.7% vs. 1.2%, $p < 0.01$). There was no difference between the two groups in terms of readmission rate and postoperative pancreatic fistula formation. On multivariate logistic regression controlling for age, gender, race, BMI, preoperative comorbidities, operative time, preoperative albumin levels, recipient of neoadjuvant therapy, and procedure type, lower preoperative eGFR (< 60 mL/min/1.73m²) was associated with higher odds of prolonged length of stay [aOR: 1.294 (1.166-1.436)], adverse discharge disposition [aOR: 1.860 (1.644-2.103)], minor [aOR: 1.460 (1.321-1.613)] and major complications [aOR: 1.214 (1.086-1.358)], bleeding requiring transfusion [aOR: 1.861 (1.656-2.091)], as well as mortality [aOR: 2.064

(1.523-2.797)]. No association was found between preoperative eGFR and 30-days readmission and post-operative fistula formation.

Conclusion: Preoperative decreased renal function measured by eGFR appears to be associated with adverse outcomes in patients undergoing pancreatic resection. The results of this study may aid in improving preoperative risk-stratification, resource allocation, and discharge planning.

P 6. PREDICTING EARLY RECURRENCE AFTER MAJOR HEPATECTOMY FOR METASTATIC COLORECTAL CANCER

Presenter: Marc Fromer MD | University of Louisville
MW Fromer, CR Scoggins, ME Egger, P Philips, CH O'Neill, KM McMasters, RCG Martin

Background: Early recurrence following liver resection generally portends poor survival. We sought to identify factors associated with early disease recurrence after major hepatectomy for metastatic colorectal cancer (mCRC) in order to improve patient selection.

Methods: Sequential major (≥ 3 segments) liver resections performed for mCRC between 1995-2019 were selected from our prospectively-maintained database. Univariate, multivariable regression, and survival analyses were used to identify predictors of early recurrence, defined as within 6 months of major hepatectomy.

Results: Of the 259 patients included in the analysis, the median age was 61.3 years (IQR 53.2, 68.5). The median number of liver tumors was 3.0 (IQR 2.0, 4.0), and the median size of the largest lesion was 4.5 cm (IQR 3.0, 6.5). A majority (59%) of liver metastases were synchronous (liver diagnosis within 3 months), and the median colorectal-to-hepatic disease-free interval (DFI) was 22.7 months for non-synchronous tumors. 78.0% of patients received pre-hepatectomy chemotherapy. The operative procedures performed were right hepatectomy (56.4%), left hepatectomy (19.3%), and extended hepatectomy (24.3%). Early recurrence (ER) occurred in 26 (10.6%) patients. Resection margin positivity was similar in the ER group compared with the non-ER group (11.5% vs. 11.4%). A comparable number of patients received pre-hepatectomy chemotherapy among the ER and non-ER patients, 73.1% and 79.6%, respectively ($p=0.450$). Extrahepatic disease was present prior to liver resection in 23.1% of patients with an ER and 7.2% of those without ($p=0.019$). While the median Fong Score in the ER cohort (3.0, IQR 2.0, 4.0) was greater than in the non-ER group (2.0, IQR 1.0, 3.0; $p=0.005$), the individual components of the score were not significant predictors of recurrence within the 6-month interval. Among the ER patients, 15.8% (vs. 9.4%) had a preoperative CEA >200 ng/mL, 50% (vs. 31.3%) had a lesion greater than 5 cm in diameter, 72% (vs. 57.3%) had more than 1 liver lesion, 57.7% (vs. 44.8%) had a lymph node-positive colorectal primary tumor, and 76.9% (vs. 63.9%) had a colorectal-to-hepatic DFI less than 12 months ($p>0.05$). After multivariable regression, the factors predictive of an early recurrence were extrahepatic disease (HR 4.5; $p=0.009$), number of liver lesions (HR 1.2; $p=0.010$), and need for extended hepatectomy (HR 3.0; $p=0.016$). Greater than three liver lesions was associated with a hazard ratio for ER of 5.0 (95%CI 2.1, 11.8). Notably, 70.8% of early recurrences occurred within the liver remnant, while 20.8% were pulmonary metastases. The median overall survival was 11.7 months (95%CI 7.1, 16.2) for the

early recurrence cohort vs. 45.6 months (95%CI 39.1, 52.1) for those who did not recur within 6 months of hepatectomy ($p < 0.001$).

Conclusion: Early recurrence after hepatic resection can be predicted based on preoperative factors and carries a poor prognosis. Strategies to treat systemic disease might hold promise for reducing recurrence following hepatectomy for mCRC.

P 7. PREOPERATIVE CHEMOTHERAPY IS ASSOCIATED WITH WORSE OVERALL SURVIVAL IN OPERABLE COLON CANCER

Presenter: Avo Artinyan MD, MS | Adventist Health, Glendale

A Artinyan, Y Nasser, R Zhu, I Stettler, W Shen, F Alemi, J Cohen, N Seiser

Background: The FOxTROT trial suggested that preoperative chemotherapy may provide a survival benefit in patients with operable colon cancer. We examined the benefit of preoperative chemotherapy in patients with resected, non-metastatic colon cancer using a large nationwide cohort. We hypothesized that preoperative chemotherapy would provide a small survival benefit over postoperative chemotherapy.

Methods: The NCDB database (2004-2016) was queried for all patients with non-metastatic colon adenocarcinoma, treated with radical resection and chemotherapy in whom clinical stage was known. Treatment groups were categorized into preoperative vs. post-operative chemotherapy. Demographic, clinical and pathologic factors were compared between treatment groups. Because pretreatment EUS or MRI are not routinely performed for colon cancer, patients were broadly categorized into those with clinical localized disease (stages 1-2) and those with clinical nodal disease (stage 3). Overall survival was compared using the Kaplan Meier method stratified by clinical nodal status, and multivariate Cox-regression analysis controlling for confounding factors including age, comorbidity, clinical stage, and regional nodes examined.

Results: 49,255 patients were identified. The mean age of the population was 62.6+/- 12.5 years. 24,738 patients (50.2%) had clinical nodal disease. 1509 patients (3.1%) received preoperative chemotherapy, while the remainder (96.9%) received postoperative chemotherapy. Patients receiving preoperative chemotherapy were younger (60.4+/- 0.31 vs. 62.7+/- 0.06 yrs, preop vs. postop, respectively), more likely to be male (61% vs. 50%), had less comorbidity (80% vs. 74% Charlson-Deyo 0), lower grade disease (83% vs. 75% Grade 1-2), less clinical stage 3 disease (42% vs. 51%), less pathologic stage 3 disease (37% vs 76%) and lower mean lymph node harvest (17.8+/- 0.11 vs. 20.8+/- 0.04) (all p-values < 0.05). On Kaplan Meier analysis, preoperative chemotherapy was associated with significantly worse overall survival (median OS 100 vs. 136 months, preop vs postop, respectively, p<0.05). On stratified analysis, this difference was most pronounced in patients with clinical node negative disease. On multivariate analysis, preoperative chemotherapy was a significant independent predictor of worse overall survival (HR 1.5, p<0.001).

Conclusion: Preoperative chemotherapy is associated with worse survival compared to postoperative chemotherapy in patients with operable colon cancer, particularly in clinical node negative disease. This finding may be secondary to delayed surgery in

the preoperative therapy group or may be due to more high-risk disease that cannot be accounted for by traditional risk factors. Prospective trials are necessary to evaluate the true benefit of preoperative chemotherapy in operable colon cancer.

P 8. MICROBIAL DYSBIOSIS IS ASSOCIATED WITH ADENOMATOUS POLYPS

Presenter: Vasiliki Liana Tsikitis MD, MBA, MCR | Oregon Health & Science University
KM Watson, S Anand, IH Gardner, K Siemens, EN Dewey, CA Gaulke, VL Tsikitis

Background: Microbial dysbiosis has been associated with colorectal cancer development. However, data is limited regarding the relationship of the microbiome and adenomatous polyps. Understanding the association between the microbiome and the host at this pre-neoplastic stage may point toward interactions which incite tumorigenesis.

Methods: We conducted a prospective single-center study including patients undergoing screening colonoscopy from October 2018-2019. Fecal samples were collected prior to initiation of the subject's bowel prep and saliva samples were obtained with an oral swab prior to the procedure. Patients were divided into cohorts based on the presence or absence of adenomatous polyps on screening colonoscopy. Microbial DNA was extracted from fecal and salivary samples, and amplicon libraries were generated using primers directed against the V4 region of the 16S rRNA gene and sequenced on an Illumina MiSeq instrument. The resulting 8.7 million reads (mean 38,677/sample) were quality filtered and processed using DADA2. Information regarding demographics, known risk factors for colorectal cancer and diet were obtained using a questionnaire and the electronic medical record. Results were analyzed using R statistical software.

Results: One-hundred ten patients underwent screening colonoscopy with mean age 60 years (range 41-78 years, SD 8). Polyps were identified in 44% of participants and were predominantly tubular adenomas (87%) and right-sided (58%). Patients with and without adenomas were similar in terms of age, sex, body mass index, race/ethnicity and family history of colorectal cancer. Consumption of alcohol, dietary practices, antibiotic use and probiotic use did not differ between those with or without adenomas. Smoking was associated with adenoma formation (26% for those without adenomas, 48% for those with adenomas, $p=0.016$), whereas regular activity was associated with the absence of adenomas (77% for those without adenomas, 58% for those with adenomas, $p=0.032$). We evaluated the microbial richness and diversity of fecal and salivary samples between the adenoma and non-adenoma groups. The Shannon entropy of the fecal microbiome was significantly lower in the adenoma group in comparison to the non-adenoma group ($p=0.03$). Conversely salivary samples did not reveal significant differences in Shannon entropy ($p=0.51$). There were taxonomic differences appreciated between adenoma formers and non-adenoma formers in both the fecal and salivary microbiomes. Fecal samples demonstrated significant ($p<0.05$) increases in *Bifidobacterium*, *Blautia*, *Escherichia/Shigella*,

Coprococcus and a trend in Bacteroides ($p=0.06$) in those with adenomas. The salivary microbiome associated with adenomas demonstrated moderate but significant increases in Mycoplasma and Treponema ($p<0.05$). Additionally, the diversity of the fecal and salivary microbiome diversity associates with polyp and host metadata, including number of polyps, polyp location, demographic characteristics, diet and exercise.

Conclusion: Patients with adenomas display a decrease in the overall richness and diversity of their microbial communities and also unique taxonomic differences in fecal and salivary samples in comparison to those without adenomas. Understanding these changes and the interactions with the host may offer novel prevention, screening and treatment strategies.

P 9. POSTOPERATIVE OUTCOMES IN THE PLAIN COMMUNITY PATIENT POPULATION: A SINGLE INSTITUTION RETROSPECTIVE STUDY IN WISCONSIN

Presenter: Rachel Seiler MD | Gundersen Health System
R Seiler, K Kallies, A Borgert, B Jarman

Background: Residents of Plain Communities (PC) such as Amish, German Baptist, and Old Order Mennonite, constitute an underserved minority population in the U.S. that is not reliably captured in contemporary healthcare outcomes research. In Wisconsin, there are an estimated 22,020 individuals in PC comprising 56 different settlements. This population has unique and variable beliefs about modern healthcare and is growing at a rate of 4% per year. The surgical outcomes of PCs have not been assessed. The objective of this study is to identify differences in postoperative outcomes or care between the PC population and a general surgical population at a single independent academic institution in Wisconsin. We hypothesized that PC patients will have a higher rate of complications compared to a matched majority patient population. We suspect that contributing factors to this may include delay in presentation and less frequent follow-up care.

Methods: A retrospective review of 30-day postoperative follow-up and outcomes for PC patients compared to a majority (non-PC) matched patient population from 9/1/2014 to 3/31/2020 was performed. PC patients were identified based on our medical center's electronic medical record (EMR) payor identification. Non-PC and PC patients were matched up to a 2:1 ratio based on age, gender, date of operation, ASA class, primary service line, and emergency admission status. 30-day postoperative complications were identified based on our EMR system ICD-10 codes. The primary outcome measure was any complication within 30 days of surgery. Statistical analysis included chi-square and Wilcoxon rank sum tests. A p-value < 0.05 was considered significant.

Results: A total of 271 PC patients were identified and matched with 498 non-PC patients. The analysis included general surgery (35.1%), orthopaedics (25.1%), obstetrics (10.4%), gynecology (10.0%), otolaryngology (8.5%), urology (7.2%), cardiothoracic (2.3%), neurosurgery (1.0%), and pediatric (0.4%) service lines. The overall 30-day complication rate was 27/769 (3.5%) and was slightly higher for the PC group (13/271, 4.8%) compared to the matched non-PC population (14/498, 2.8%), however the difference was not statistically significant (p=0.15). There were no 30-day mortalities in the PC group, and 2 (0.4%) in the non-PC group (p=0.54). There was noted to be lower utilization of select preventive care services in the year prior to surgery among the PC vs. non-PC population, e.g., colonoscopy (1.1% vs. 7.8%; p<0.001), female mammography (0.8% vs 22.4%, p < 0.0001), cholesterol screening (5.5% vs. 24.1%; p<0.001). Additionally, the proportion of patients who attended at

least one postoperative follow-up appointment was significantly lower for PC patients (162/271, 59.8%) compared to their non-PC counterparts (414/498, 83.1%, $p < 0.001$).

Conclusion: Our regional PC surgical patient population utilizes preventive healthcare services less than a comparable non-PC population and is less likely to attend follow-up appointments. Despite this, there is not a statistically significant difference in 30-day morbidity or mortality between the groups. This may be due in part to the relatively low number of PC patients captured in this data set. Further iterations of this research will focus on specific postoperative outcome measures and examine financial and additional healthcare utilization data.

P 10. IS NUTRITIONAL STATUS ASSOCIATED WITH PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG) COMPLICATIONS IN TRAUMA PATIENTS?

Presenter: Jamie Tung MD | University of California San Francisco, Fresno
J Tung, KL Kaups, A Saraswat, RC Dirks, LP Sue

Background: PEG tubes are frequently placed to facilitate nutritional support in severely injured trauma patients. PEG-related complications are believed to be increased in malnourished patients, yet optimal nutritional status prior to placement has not been defined. Additionally, complications of PEG tubes have been reported to range from 20 -30% in all patients. We sought to identify whether nutritional status at the time of placement was associated with PEG-related complications in trauma patients and to examine the PEG-related complication rate in this patient group.

Methods: The trauma registry at a Level I trauma center was used to identify all adult trauma patients who had PEG placement by critical care/trauma surgeons, between 1/1/2015-12/31/2019. Data included demographics, Hgb A1C, ISS, ventilator days, ICU and hospital LOS, PEG-related complications, and outcomes. Pre-procedure albumin (ALB) and prealbumin (PALB) levels and post procedure PALB levels were also included. PEG-related complications included leak, infection, or dislodgement. Patients without PEG complications (NO COMP) were compared to those who developed complications (COMP).

Results: During the study period, 16,740 trauma patients were admitted; 218 had PEG placed. PEG patients were severely injured with a mean ISS of 22; 28 (13%) had a complication. The majority (19) were due to PEG dislodgement with the remainder (9) consisting of leak and/or infection. The NO COMP and COMP groups did not differ by gender, Hgb A1C, ISS, ventilator days, hospital or ICU LOS or outcomes, although age (48 ± 21 yrs NO COMP vs 56 ± 18 yrs COMP, $p = 0.04$) and BMI (27 kg/m $^2 \pm 6$ NO COMP vs 29 kg/m $^2 \pm 5$ COMP, $p = 0.04$) were higher in the COMP group. No patients died due to PEG-related complications. Pre-procedure ALB and PALB were similar between groups, however, post-procedure PALB was lower (15 ± 7 mg/dl NO COMP vs 12 ± 7 mg/dl COMP, $p = 0.04$) in the group experiencing complications. Additionally, in the COMP group, PALB decreased post-PEG but did not change in the NO COMP group ($p = 0.02$). Stratification by PALB level prior to placement also did not correlate with the development of complications.

Conclusion: PEG tube complications in trauma patients occur much less frequently than reported in other patient populations. Pre-procedure nutritional markers do not correlate with the development of complications. However, a decrease in PALB after PEG placement is associated with the development of PEG-related complications.

P 11. TOTAL ENDOVASCULAR REPAIR OF A RUPTURED ABERRANT RIGHT SUBCLAVIAN ARTERY ANEURYSM

Presenter: Asim Shabbir DO | Henry Ford Macomb Hospital
A Shabbir, E Kerby, S Hans

Background: Aberrant right subclavian arteries are present in 0.02 to 1.17% of the population. It originates distal to the left subclavian artery and subsequently courses posterior to the esophagus. Most individuals with this anatomic anomaly are asymptomatic. When this artery becomes aneurysmal, symptoms can include dysphagia, dyspnea, chest pain, or right upper extremity ischemia. No standardization exists regarding treatment of these lesions. Literature has typically described open and hybrid treatment of these lesions. Some case reports regarding complete endovascular approaches do exist; however, they usually involve a specialized endograft which has to be specially ordered. We present a case of total endovascular repair of a ruptured aberrant right subclavian artery aneurysm performed in an emergent fashion with the use of a standard TEVAR stent graft.

Methods: Our patient was an 83 year old male presented to the ED with worsening shortness of breath for three days. Medical history was significant for atrial fibrillation on apixaban as well as a stroke with residual right sided weakness. On arrival, patient was hemodynamically stable though he required supplemental oxygen. He had a CT angiogram of the chest which was significant for right aberrant subclavian artery aneurysm with active contrast extravasation as well as a right sided moderate pleural effusion. He was taken to the OR on an urgent basis.

Results: In the OR, bilateral groin access was obtained. A TEVAR stent graft was deployed just distal to the left subclavian artery, providing coverage over the origin of the right subclavian artery. Angiogram after TEVAR stent placement was significant for backfilling of the aneurysmal sac. We, therefore, coil embolized the right subclavian artery distal to the aneurysm but proximal to the internal mammary artery via percutaneous access of the right brachial artery. No filling of the aneurysmal sac was noted. No upper extremity revascularization was performed. The patient did well post operatively with adequate flow to his right upper extremity proven by arterial doppler and CT angiogram of upper extremity prior to discharge.

Conclusion: In a patient with a ruptured aberrant right subclavian artery aneurysm, where time is of the essence, a TEVAR can be performed with a standard stent graft without the need for upper extremity revascularization. We recommend performing upper extremity revascularization, i.e carotid-subclavian bypass, on only selective basis.

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Deaths
AND
Memorials

IN MEMORIAM



F. William Blaisdell

San Francisco, CA

Frank William Blaisdell died of a stroke on April 18, 2020, at his home in San Francisco. The renowned vascular and trauma surgeon, after whom the medical library at U.C. Davis was named, was born on August 30, 1927, in Santa Barbara, California. “Bill” was the eldest of three children. His parents were Stanford graduates; his mother, a political activist, had been a chemistry teacher; his father was an obstetrician and radiologist as well as the author of several magic books. When Bill was five, the family moved to Watsonville in the Pajaro Valley. After graduating from high school, he attended Stanford University, where he graduated with a Bachelor of Science degree. While attending Stanford’s medical school in San Francisco, he married Marilyn Janeck, a recent Stanford graduate who was teaching junior high, in December of 1950. During an internship in Philadelphia, he and Marilyn had the first of their six children.

In the midst of his medical residency, he served two years in the U.S. Navy in the Korean War as a medical officer. With three children in tow, he took a year residency with Dr. Francis Moore in Boston and after his residency a year’s fellowship with Dr. Michael DeBakey in Houston. He was chief of surgery at San Francisco’s Veterans Administration Hospital from 1960 to 1966 before, as a father of six, moving to UCSF and San Francisco General Hospital, where he was also chief of surgery and became San Francisco’s chief of Emergency Services. He coordinated the city’s ambulance service and was always proud of the trauma center he created at SFGH, one of the first in the country. In 1978 he moved to Sacramento to chair the department of surgery at U.C. Davis. In parallel with his work as a surgeon, he had a

IN MEMORIAM

prominent research career. He published more than 186 papers and 135 book chapters; his series of textbooks on trauma, co-edited with Donald Trunkey and others, were standard works for many years. When he retired from his chairship at UCD in 1995, he took on work as chief of surgery for the Northern California Veterans Administration Health Care System. In 2001, he moved full-time back to San Francisco. He continued to teach and consult.

Well known for his energy, wit and activity, he was also fun-loving and enthusiastically partook of his hobbies, which over the decades, included magic, model airplanes, slot-car racing, and tennis with his equally energetic wife. In his complete retirement, he wrote mystery novels based on characters invented by his father. His favorite place was a rustic family cabin at Fallen Leaf Lake, near South Lake Tahoe, where he could swim, hike and conduct various home-improvement projects. Widowed in 2016, he leaves behind his six beloved children (Sally, Sue, Rich, Carol, Bob and Molly), fourteen grandchildren and five great-grandchildren, sons- and daughters-in-law, his admired sister Mary, many fond nieces and nephews and devoted friends and colleagues.

(Sourced from Legacy)

IN MEMORIAM



Donald McIlrath

Rochester, MN

Donald Christner McIlrath died peacefully on Saturday, December 7, 2019 at Charter House in Rochester, Minnesota. He was 90.

Donald McIlrath (Mac) was born in Hutchinson, Kansas to Donald and Lera McIlrath on February 2, 1929. He was raised in Great Bend, Kansas and graduated from Great

Bend High School where he was a four-sport athlete and sang in the choir. Mac graduated from the University of Kansas in 1950 and that same year married his sweetheart, Constance Kendall, and decided to pursue a career in medicine. He received his MD degree from the University of Kansas School of Medicine in 1954. Following internship at the same institution, he enlisted in the U.S. Navy and served as a Lieutenant in the Medical Corps, assigned as a battalion surgeon with the U.S. Marines at Camp Lejeune, North Carolina and Okinawa, Japan.

When he returned from service in 1957, he entered the Mayo School of Graduate Medical Education as a fellow in surgery. Mac was appointed a Mayo Clinic Consultant in Surgery in 1962 and was destined to spend his entire career at the institution. Together he and Connie raised their four children in Rochester. He advanced through the academic ranks and became Professor of Surgery at Mayo Clinic College of Medicine in 1974. A gifted leader and surgeon, he became Chair, Department of Surgery 1979-1987, and was a member of both the Mayo Clinic Board of Governors and the Board of Trustees. He was a member of multiple academic surgical organizations and served as president of six. He was a master technical surgeon and his interests were diseases of the pancreas, biliary tree, gastrointestinal tract and breast. He was a member of the surgical team

IN MEMORIAM

caring for President Lyndon Johnson in 1965 and was surgeon for President Ronald Reagan's wife, Nancy, in 1987. He retired from Mayo Clinic in 1993.

Mac was Chair of the Department of Surgery when I joined the surgical staff of the Mayo Clinic in 1980. Always the tough task master, he was a technically gifted surgeon with superb surgical judgement. Whenever I had a particularly tough case, I would ask myself, "what would Mac do?" I was in the Emergency Room in 1986 when his first wife, Connie, was admitted for a severe and ultimately fatal stroke. It was then that I got to observe his soft side. Two years later he married Alice Hoffman, who had also lost a spouse, and together they enjoyed a vibrant life in retirement that included traveling, gardening, tennis, opera and participating in the Minnesota cultural community. Mac was a passionate student of history and served on the Executive Council of the Minnesota Historical Society from 1993 to 2005. In 2001, he and his wife Alice (Hoffman) McIlrath established the Donald and Alice McIlrath Endowed Fund in support of Minnesota History. Mac and Alice were devoted members of the Surgeon's Travel Club attending meetings annually through 2016 until travel was prevented by declining health. After 29 years of marriage, Alice died in 2017.

Donald McIlrath was a strong and effective leader. He was a master surgeon who demanded the best of himself and his trainees. He made his mark and though he has passed on, his legacy lives on through the scores of surgeons he trained during his long career at Mayo Clinic. He will be missed and not soon forgotten.

Michael B. Farnell

Prepared for the American Surgical Association (used with permission)

IN MEMORIAM



Waid Rogers

San Antonio, TX

Waid Rogers was born in New York City, NY on September 7, 1927 and passed away November 18, 2019. Dr. Rogers attended and graduated from Yale University with a Bachelor of Arts in 1950. That same year the Korean war broke out and he was commissioned as an Ensign in the US Navy, serving in the USN from 1950-1953.

While in the Navy, he married Jean Schier, his high school sweetheart. Jean was a prolific and recognized artist who also had a keen mind for personal finance. Jean Rogers donated many works of art to friends and organizations, including UT Health San Antonio. Jean preceded Dr. Rogers in death in June of 1991.

Following Dr. Roger's service in the US Navy and with the end of the Korean War, he separated as a Lieutenant (junior grade). He then enrolled as a first-year medical student at Cornell University Medical College, graduating four years later with his doctorate in medicine (MD).

Dr. Rogers completed his internship and junior resident years at The New York Hospital, Cornell University Medical Center. He was recruited by Dr. Owen Wangensteen to the University of Minnesota Department of Surgery where he completed his surgical residency while also completing a Master of Science in Microbiology and a PhD in Surgery from the University of Minnesota under the tutelage of Drs. Wangensteen and J. Bradley Aust. Dr. Rogers was recruited by Dr. Aust as one of the founding faculty of the new University of Texas Medical School at San Antonio. Dr. Rogers, with seven of his surgical colleagues from Minnesota, joined the new medical school as an Assistant Professor of Surgery in 1967. Dr. Rogers and this group of

IN MEMORIAM

founding surgical faculty remained in San Antonio for their entire careers. Dr. Roger's served in numerous leadership positions within the UT Health Science Center and the Audie L. Murphy Memorial Veterans Hospital. He was the Chief of Surgery at the Audie Murphy VA Hospital for more than two decades and played a critical role in developing the discipline of Vascular Surgery at UT Health San Antonio.

Dr. Rogers' entire professional life was spent in the education of medical students and surgical residents. At the time of his death, the new residency and medical school that he helped found had graduated its 335th surgical resident this past June.

In addition to his role as an educator and mentor of surgical residents and students, Dr. Rogers was a true academic surgeon. His initial work was in vascular surgery, transplant and microbiology. He and Dr. Aust did some of the early work in the field of immunological tolerance in transplanted tissue. He was a senior member of the Texas Surgical Society, the Western Surgical Association, the American College of Surgeons, the New York Academy of Sciences, the Transplantation Society, the American Trauma Society, the American Association for the Advancement of Science, the Texas Medical Association and the American Medical Association. He was a fellow in the American College of Angiology. In 1990, Dr. Rogers was the senior author on a paper by Dr. Julio Palmaz that changed the management of vascular disease across the globe: *Placement of Balloon-expandable Intraluminal Stents in Iliac Arteries: First 171 Procedures* (Palmaz Stent). Dr. Rogers possessed an amazing intellect, with interests that spanned many different domains in medicine and surgery. He was the author of more than forty publications crossing transplantation, vascular surgery, surgical oncology, surgical infections and trauma.

On October 27, 1991 at Christ Episcopal Church, while attending a concert featuring Mozart's Requiem, Dr. Rogers happened to sit next to a wonderful

IN MEMORIAM

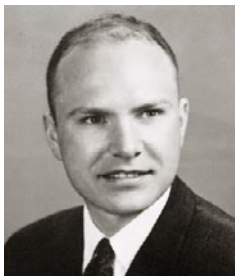
person, Mary Ballou. Dr. Rogers and Mary were married almost a year later on October 3, 1992. Dr. Rogers is survived by Mary and his children: Mark Rogers, Kim Rogers Wilson and her husband Reid, Leslie Rogers Kidd and her husband Greg, and Elly Hamilton Rogers.

Waid Rogers, MD, PhD, was a kind and compassionate surgeon and teacher. He was a true scholar whose work had wide ranging influence on the fields of vascular, transplant and general surgery. Through the work of Dr. Rogers and his fellow transplanted Minnesota team of surgeons, he leaves an enduring legacy in South Texas and across the globe. He will be sadly missed.

Ronald Stewart MD

Prepared for the Western Surgical Association

IN MEMORIAM



Jeremiah Turcotte

Ann Arbor, MI

Jeremiah George Turcotte, M.D., University of Michigan Professor Emeritus of Surgery, died peacefully at age 87 on February 12, 2020, in Ann Arbor, Michigan.

Jerry was born on January 20, 1933, in Detroit to Margaret Campau Meldrum and Vincent Joseph Turcotte, Sr., M.D. He graduated from

De La Salle Collegiate as valedictorian in 1950. At Michigan, he earned his B.S. with high distinction, Phi Beta Kappa, Phi Kappa Phi, receiving the Phi Sigma Award. He earned his M.D. cum laude as president of the class of 1957, receiving the Oreon E. Scott Award. A true Michigan man, Jerry completed his internship and surgical residency at Michigan in 1963, and was honored with the Intern-Resident Outstanding Achievement Award. In 1958, Jerry married Claire Lenz, also a Michigan graduate. They and their four children enjoyed summers at the Racquet Club and Barton Boat Club in Ann Arbor and up north at their cottage at Presque Isle boating and fishing on Lake Huron. An avid sailor, Jerry competed in the Mackinac yacht races, with the Esprit sporting a maize-and-blue spinnaker. For over 50 years, Jerry and Claire cheered the Wolverines at home football games.

Jeremiah G. Turcotte, M.D., enjoyed a distinguished career at the University of Michigan. He was the 12th Chairman of the Department of Surgery, 1974-1987, and the second Frederick A. Collier Professor of Surgery, 1978-1989. He was a pioneering transplant surgeon. Dr. Turcotte was a founder and Director of the Surgical Transplant Program, 1964-1984, and Director of the Organ Transplantation Center, 1984-1996. In 1964, as a 31-year-old first-year faculty member, Dr. Turcotte performed the first organ transplant at Michigan, a kidney, the first in the state of Michigan. In 1985, he performed the first liver transplant at Michigan as well. Throughout his

IN MEMORIAM

career, Dr. Turcotte practiced general and transplant surgery; he was devoted to Michigan, academic medicine and his patients. His major investigative interests focused on transplantation of the kidney, pancreas and liver, prognostic indices for liver disease, portal hypertension, and bioethics. As Chairman, he dramatically modernized and expanded the Department of Surgery so that excellent faculty could be hired and clinical and laboratory research advanced. He also played an important role to replace the original University Hospital.

An internationally recognized general and transplant surgeon, Dr. Turcotte was a Director of the American Board of Surgery, a Governor of the American College of Surgeons, and President of the Central Surgical Association, the Coller Surgical Society, the American Society of Transplant Surgeons, and the United Network for Organ Sharing. Throughout his career, Dr. Turcotte was revered as a visionary leader. In 1970, he received Michigan's Henry Russel Award for Distinguished Achievement in Scholarly Research, and in 2004, the Medical Center Alumni Society Distinguished Service Award. In 2002, the Department of Surgery named its library the Jeremiah G. Turcotte, M.D. Surgical Library. In 2005, the American Society of Transplant Surgeons honored him with the Pioneer Award.

Jeremiah George Turcotte, M.D., was the beloved husband of Claire Mary Lenz Turcotte; father of Elizabeth Margaret (David N. Parsigian), the late John Jeremiah Turcotte (1961-1988), Sarah Lenz (Richard J. Manser) and Claire Meldrum (James E. May); grandfather of Jeremiah James May and Joseph Casper Manser; and brother of Vincent J. Turcotte, Jr., M.D. (the late Nancy H.)

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