



Volume 228

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Southern Surgical Association Presidential Address

317 Simulation in Surgical Education: Influences of and Opportunities for the Southern Surgical Association

John B Hanks, MD, FACS

Southern Surgical Association Articles

329 How Durable Is Total Pancreatectomy and Intraportal Islet Cell Transplantation for Treatment of Chronic Pancreatitis?

Melena D Bellin, MD, Gregory J Beilman, MD, FACS, David ER Sutherland, MD, PhD, FACS, Hawa Ali, BS, Arzu Petersen, BS, Steven Mongin, MS, Varvara Kirchner, MD, FACS, Sarah J Schwarzenberg, MD, Guru Trikudanathan, MD, Martin L Freeman, MD, Timothy L Pruett, MD, FACS, Srinath Chinnakotla, MD, MBA, FACS

A total pancreatectomy and intraportal islet cell autotransplant is increasingly being offered to patients with chronic pancreatitis. This large series examining long-term outcomes (10 years or more) in 215 patients shows this dual procedure produced durable pain relief and sustained islet graft function.

342 Impact of the Affordable Care Act on Colorectal Cancer Screening, Incidence, and Survival in Kentucky

Tong Gan, MD, Heather F Sinner, MD, Samuel C Walling, MD, Quan Chen, DrPH, Bin Huang, DrPH, Tom C Tucker, PhD, Jitesh A Patel, MD, FACS, B Mark Evers, MD, FACS, Avinash S Bhakta, MD

Kentucky was an early adopter of the Affordable Care Act Medicaid Expansion, providing a significant amount of insurance coverage for poor individuals. As a result, Kentucky had increased colorectal cancer screening, earlier diagnosis, and improved survival, especially evident in Medicaid and Appalachian patients.

356 Influence of Gender on Surgical Residency Applicants' Recommendation Letters

Florence E Turrentine, PhD, RN, Caitlin N Dreisbach, MS, RN, Amanda R St Ivany, PhD, RN, John B Hanks, MD, FACS, Anneke T Schroen, MD, MPH, FACS

Important differences in language in residency applicants' letters of recommendation include more references to leadership and achievement for men and work ethic for women. Men's letters are longer than women's. Letters with meaningful content and editing for reflections of gender schema may reduce bias at surgical career inception.

368 “Show Me the Data”: A Recipe for Quality Improvement Success in an Academic Surgical Department

Thomas J Birdas, MD, MBA, FACS, Grace F Rozycki, MD, MBA, FACS,
Gary L Dunnington, MD, FACS, Larry Stevens, MD, FACS, Vanessa Liali, RHIA,
C Max Schmidt, MD, PhD, MBA, FACS

A data-driven, collaborative approach at an academic surgery department, based on transparent sharing of actionable data and defined accountability structure, led to significant improvement in patient outcomes.

377 Evaluating the Impact of Technique and Mesh Type in Complicated Ventral Hernia Repair: A Prospective Randomized Multicenter Controlled Trial

Grant V Bochicchio, MD, MPH, FACS, Alvaro Garcia, MD, FACS, Jarrod Kaufman, MD, FACS,
Qiao Zhang, MS, Christopher Horn, MD, Kelly Bochicchio, BSN, MS, Bryan Sato, BSN,
Stacey Reese, BSN, MS, Obeid Ilahi, MD, MBBS, FACS

This randomized, prospective multicenter trial compares technique and mesh type for outcomes associated with complex ventral hernia repair. There was no significant difference in recurrence rate at 1 year when evaluated by technique and mesh type. There was greater surgical site infection rate in the underlay arm.

393 Surgical Site Infection after Primary Closure of High-Risk Surgical Wounds in Emergency General Surgery Laparotomy and Closed Negative-Pressure Wound Therapy**CME**

Chad Hall, MD, Justin Regner, MD, FACS, Stephen Abernathy, MD, FACS,
Claire Isbell, MD, FACS, Travis Isbell, MD, Stan Kurek, DO, FACS, Randall Smith, MD, FACS,
Richard Frazee, MD, FACS

A standardized protocol implementing the use of closed negative-pressure wound therapy in contaminated emergency general surgery laparotomies resulted in a superficial surgical site infection rate of 7%. Closed negative-pressure wound therapy should be considered as an alternative to open wound management in contaminated wounds.

400 Development of Diabetes after Pancreaticoduodenectomy: Results of a 10-Year Series Using Prospective Endocrine Evaluation

Daniel W Maxwell, DO, Mohammad Raheel Jajja, MD, Marvi Tariq, MD,
Zayan Mahmooth, MSPH, Rodolfo J Galindo, MD, John F Sweeney, MD, FACS,
Juan M Sarmiento, MD, FACS

Prospective endocrine laboratories for patients undergoing pancreaticoduodenectomy are analyzed. Postoperative incidence of diabetes was 16.6% (overall) developing primarily before 2 years. Glycated hemoglobin >5.4% was identified as a risk factor for diabetes. Early surgical intervention can attenuate diabetes or prevent development.

415 Enhancing Patient Outcomes while Containing Costs after Complex Abdominal Operation: A Randomized Controlled Trial of the Whipple Accelerated Recovery Pathway

Harish Lavu, MD, FACS, Neal S McCall, MD, Jordan M Winter, MD, FACS, Richard A Burkhart, MD, Michael Pucci, MD, FACS, Benjamin E Leiby, PhD, Theresa P Yeo, PhD, Shawwna Cannaday, CRNP, Charles J Yeo, MD, FACS

The Whipple accelerated recovery pathway emphasized early discharge planning, shortened ICU stay, modified dietary and drain management, and rigorous physical therapy. It reduced hospital length of stay, time to adjuvant therapy, and cost in selected pancreaticoduodenectomy patients without increasing readmission risk.

427 Evolution of Firearm Violence over 20 Years: Integrating Law Enforcement and Clinical Data

Nathan R Manley, MD, MPH, Martin A Croce, MD, Peter E Fischer, MD, MS, Donald E Crowe, BS, James H Goines, BA, John P Sharpe, MD, MS, Timothy C Fabian, MD, Louis J Magnotti, MD

There is a dearth of data on firearm violence and resulting clinical injury. In this study, police and trauma registry data were linked. Larger caliber and higher velocity firearms have increased in our city over the past 20 years in conjunction with injury severity, hospital days, and mean number of gun-related homicides per year.

437 Liver Transplant Survival Index for Patients with Model for End-Stage Liver Disease Score \geq 35: Modeling Risk and Adjusting Expectations in the Share 35 Era

Justin A Steggerda, MD, Irene K Kim, MD, FACS, Tsuyoshi Todo, MD, Darren Malinoski, MD, FACS, Andrew S Klein, MD, FACS, Matthew B Bloom, MD, FACS

The Liver Transplant Survival Index-MELD 35 is a model for post-transplant graft survival in high-risk recipients. It allows risk stratification of potential donor–recipient pairs to influence graft and recipient selection. Furthermore, it provides a model to adjust center-level outcomes and remove disincentives against transplantation in very ill patients.

453 Post-Pancreaticoduodenectomy Outcomes and Epidural Analgesia: A 5-year Single-Institution Experience

Rachel E Simpson, MD, Mitchell L Fennerty, MD, Cameron L Colgate, BS, E Molly Kilbane, RN, Eugene P Ceppa, MD, FACS, Michael G House, MD, FACS, Nicholas J Zyromski, MD, FACS, Attila Nakeeb, MD, FACS, C Max Schmidt, MD, PhD, MBA, FACS

The use of epidural analgesia after pancreaticoduodenectomy not only improved postoperative pain control but also reduced the rate of certain infectious and pulmonary complications in this series. The recommendation for epidural analgesia use in hepatopancreaticobiliary-specific enhanced recovery protocols can be justified.

466 **Should Sentinel Lymph Node Biopsy Be Performed for All T1b Melanomas in the New 8th Edition American Joint Committee on Cancer Staging System?**

CME

Michael E Egger, MD, MPH, Megan Stevenson, MD, Neal Bhutiani, MD, PhD,
Adrienne C Jordan, MD, Charles R Scoggins, MD, MBA, FACS, Prejesh Philips, MBBS, FACS,
Robert CG Martin II, MD, PhD, FACS, Kelly M McMasters, MD, PhD, FACS

Routine SLNB in non-ulcerated T1b cutaneous melanoma will lead to excessive use of SLNB in patients at low risk for lymph node metastases. Age, mitotic rate, and thickness can stratify patients into high- and low-risk groups and SLNB can be selectively applied.

474 **Is Frozen-Section Analysis During Thyroid Operation Useful in the Era of Molecular Testing?**

Reema Mallick, MD, Todd M Stevens, MD, Thomas S Winokur, MD, Ammar Asban, MD,
Thomas N Wang, MD, FACS, Brenessa M Lindeman, MD, MEHP,
John R Porterfield, MD, FACS, Herbert Chen, MD, FACS

Controversy remains around routine use of frozen section in thyroid operations as an intraoperative adjunct to determine surgical extent. We describe, in the era of molecular testing and with novel recommendations to the necessary extent of resection, that intraoperative frozen section is an unhelpful and potentially deleterious technique in thyroidectomy.

482 **Preoperative Frailty and Surgical Outcomes Across Diverse Surgical Subspecialties in a Large Health Care System**

CME

Mary M Mrdutt, MD, Harry T Papaconstantinou, MD, FACS, Bobby D Robinson, MD,
Erin T Bird, MD, MBA, FACS, Claire L Isbell, MD, MSCI, FACS

Preoperative frailty measurement is feasible to perform in a large-scale health care system within a diverse range of surgical clinics. Increasing frailty is associated with increased postoperative complications in both inpatient and outpatient procedures. Increasing frailty is associated with higher costs for inpatient procedures.

494 **Cholecystectomy During the Third Trimester of Pregnancy: Proceed or Delay?**

CME

Zhi Ven Fong, MD, MPH, Henry A Pitt, MD, FACS, Steven M Strasberg, MD, FACS,
Rose L Molina, MD, MPH, FACOG, Numa P Perez, MD, Cassandra M Kelleher, MD, FACS,
Andrew P Loehrer, MD, MPH, Jason K Sicklick, MD, FACS, Mark A Talamini, MD, MBA, FACS,
Keith D Lillemoe, MD, FACS, David C Chang, PhD, MPH, MBA, for the California
Cholecystectomy Group

Cholecystectomy in the third trimester of pregnancy has worse procedure and maternal delivery outcomes than when the operation is performed post partum.

- 504 Surgeon Re-Excision Rates after Breast-Conserving Surgery: A Measure of Low-Value Care**
Katerina Kaczmariski, MD, Peiqi Wang, MD, MPH, Richard Gilmore, MD,
Heidi N Overton, MD, David M Euhus, MD, FACS, Lisa K Jacobs, MD, FACS,
Mehran Habibi, MD, FACS, Melissa Camp, MD, FACS, Matthew J Weiss, MD, FACS,
Martin A Makary, MD, MPH, FACS

Using Medicare claims data, we proved that marked variation exists in surgeon re-excision rates among patients undergoing breast-conserving therapy, which can represent unnecessary operations on individual patients and a financial burden to the healthcare system.

- 516 Remote-Access Thyroidectomy: A Multi-Institutional North American Experience with Transaxillary, Robotic Facelift, and Transoral Endoscopic Vestibular Approaches**
Jonathon O Russell, MD, Christopher R Razavi, MD, Meghan E Garstka, MD,
Lena W Chen, BA, Elya Vasiliou, MD, Sang-Wook Kang, MD,
Ralph P Tufano, MD, MBA, FACS, Emad Kandil, MD, FACS

This multi-institutional study examines outcomes and complications with 3 remote-access thyroidectomy techniques compared with the standard transcervical thyroidectomy approach.

- 525 Impact of New Vascular Fellowship Programs on Vascular Surgery Operative Volume of Residents in Associated General Surgery Programs**
Alexander H Shannon, MD, William P Robinson III, MD, FACS, John B Hanks, MD, FACS,
John R Potts III, MD, FACS

Newly established vascular surgery fellowship programs have diminished peak general surgery resident vascular case volume during the last 15 years; however, general surgery resident vascular case volumes remain robust in these programs.

- 536 Effect of Renal Diagnosis on Survival in Simultaneous Liver-Kidney Transplantation**
Robert M Cannon, MD, Christopher M Jones, MD, FACS, Eric G Davis, MD, FACS,
Devin E Eckhoff, MD, FACS

Despite a lower acuity of illness, patients undergoing simultaneous liver-kidney transplantation have worse patient and graft survival outcomes than their counterparts carrying a renal diagnosis of hepatorenal syndrome or acute tubular necrosis.

- 547 First, Do No Harm: Rethinking Routine Diversion in Sphincter-Preserving Rectal Cancer Resection**
William C Chapman Jr, MD, MPH, Melanie Subramanian, MD, Senthil Jayarajan, MD,
Bilal Makhdoom, BS, Matthew G Mutch, MD, FACS, Steven Hunt, MD, FACS,
Matthew L Silveira, MD, Sean C Glasgow, MD, FACS, Margaret A Olsen, PhD MPH,
Paul E Wise, MD, FACS

Within a statewide population of cancer patients undergoing sphincter-sparing proctectomy, we found no association between temporary diversion and anastomotic leak. Instead, stomas were associated with higher costs and more nonelective reinterventions and readmissions. We therefore challenge the paradigm of routine diversion after rectal cancer procedures.

560 Use of Hepatitis C Virus Antibody-Positive Donor Livers in Hepatitis C Nonviremic Liver Transplant Recipients

Keith Luckett, MD, FACP, Tiffany E Kaiser, PharmD, Khurram Bari, MD, Kamran Safdar, MD, Michael R Schoech, MD, Senu Apewokin, MD, Tayyab S Diwan, MD, FACS, Madison C Cuffy, MD, FACS, Nadeem Anwar, MD, Shimul A Shah, MD, MHCM, FACS

We report the largest experience with liver transplantation from hepatitis C virus antibody-positive/nucleic acid test-negative donors into 55 seronegative recipients with an HCV transmission rate of 9% with no late conversions at 1 year and no difference in laboratory values, graft loss, or mortality compared with Public Health Services increased-risk hepatitis C virus antibody-negative/nucleic acid test-negative recipients.

570 Multidisciplinary Approach to *Clostridium difficile* Infection in Adult Surgical Patients**CME**

Megan C Turner, MD, MHS, Shay L Behrens, BA, Wendy Webster, MA, MBA, Kirk Huslage, MSPH, BSN, Becky A Smith, MD, Rebekah Wrenn, PharmD, BCPS, Regina Woody, RN, Christopher R Mantyh, MD, FACS

Clostridium difficile infection is a prevalent postoperative complication. Implementation of bundled interventions through a multidisciplinary task force can reduce postoperative *C difficile* infection rates.

583 Population-Based Assessment of Selective Drain Placement During Pancreatoduodenectomy Using the Modified Fistula Risk Score

Dimitrios Xourafas, MD, MPH, MBA, Aslam Ejaz, MD, MPH, Allan Tsung, MD, FACS, Mary Dillhoff, MD, MS, FACS, Timothy M Pawlik, MD, MPH, MTS, PhD, FACS, Jordan M Cloyd, MD

In this population-based cohort, the modified Fistula Risk Score was unable to stratify patients relative to the need for selective drain placement during pancreatoduodenectomy. For both high- and low-risk patients, perioperative drain placement was associated with increased rates of postoperative pancreatic fistula (POPF), clinically relevant POPF, and extended length of stay, but decreased incidence of serious morbidity.

595 Perioperative Bundle to Reduce Surgical Site Infection after Pancreaticoduodenectomy: A Prospective Cohort Study

Sharon A Lawrence, MD, Caitlin A McIntyre, MD, Alessandra Pulvirenti, MD, Kenneth Seier, MS, Yuting Chou, MS, Mithat Gonen, PhD, Vinod P Balachandran, MD, T Peter Kingham, MD, Michael I D'Angelica, MD, Jeffrey A Drebin, MD, PhD, William R Jarnagin, MD, Peter J Allen, MD

Implementation of a 4-part perioperative bundle was associated with a significant reduction in incisional surgical site infection in patients undergoing pancreaticoduodenectomy. Patients who received the perioperative bundle were 50% less likely to have incisional surgical site infections develop than those who did not.

605 Blunt Thoracic Aortic Injury: Endovascular Repair Is Now the Standard

Thomas M Scalea, MD, FACS, David V Feliciano, MD, FACS, Joseph J DuBose, MD, FACS, Marcus Ottochian, MD, James V O'Connor, MD, FACS, Jonathan J Morrison, PhD, FRCS

The incidence of blunt thoracic aortic injury is increasing. Nonoperative management is commonly used. Of those patients who receive intervention, endovascular repair has almost completely replaced open repair.

613 Robotic Pancreaticoduodenectomy Is the Future: Here and Now

Alexander Rosemurgy, MD, FACS, Sharona Ross, MD, FACS, Timothy Bourdeau, BS, Danielle Craig, MD, Janelle Spence, BA, Joshua Alvior, Iswanto Sucandy, MD, FACS

Our results with robotic pancreaticoduodenectomy are compared with those predicted by the American College of Surgeons NSQIP Surgical Risk Calculator and those reported through the American College of Surgeons NSQIP. Our results document the salutary benefits of minimally invasive robotic pancreaticoduodenectomy.

627 Operative Mortality Prediction for Primary Rectal Cancer: Age Matters

Zhan Li, MD, JoAnn Coleman, DNP, ACNP-BC, Christopher R D'Adamo, PhD, Joshua Wolf, MD, FACS, Mark Katlic, MD, FACS, Nita Ahuja, MD, MBA, FACS, David Blumberg, MD, FACS, Vanita Ahuja, MD, MPH, MBA, FACS

The American College of Surgeons NSQIP Risk Calculator underestimates mortality risk in the older patients with colorectal cancer undergoing proctectomy. There is a lack of current literature about this study population. Our article creates a model for future studies of the NSQIP risk calculator's mortality and morbidity predictive accuracy.

635 A2 to B Kidney Transplantation in the Post-Kidney Allocation System Era: A 3-year Experience with Anti-A Titers, Outcomes, and Cost

David Shaffer, MD, FACS, Irene D Feurer, PhD, Scott A Rega, MS, Rachel C Forbes, MD, MBA, FACS

A 3-year single-center cohort analysis of anti-A titers, outcomes, and cost with A2 to B vs B to B kidney transplants since the institution of the new kidney allocation system. Transplant programs, regulators, and payors will need to weigh improved access for minorities with increased costs.

644 Real-World Outcomes of Talimogene Laherparepvec Therapy: A Multi-Institutional Experience

Raphael J Louie, MD, Matthew C Perez, MD, Mohammad Raheel Jajja, MBBS, James Sun, MD, Frances Collichio, MD, Keith A Delman, MD, FACS, Michael Lowe, MD, FACS, Amod A Sarnaik, MD, FACS, Jonathan S Zager, MD, FACS, David W Ollila, MD, FACS

Talimogene laherparepvec is a well-tolerated, durable treatment option for patients with unresectable locoregional melanoma, particularly in stage IIIB/C disease. Additionally, we found that talimogene laherparepvec can be administered safely across anatomic sites that are otherwise not amenable to other local therapies.

652 **Bilateral Neck Exploration for Sporadic Primary Hyperparathyroidism: Use Patterns in 5,597 Patients Undergoing Parathyroidectomy in the Collaborative Endocrine Surgery Quality Improvement Program**

Colleen M Kiernan, MD, MPH, Tracy Wang, MD, MPH, FACS, Nancy D Perrier, MD, FACS, Elizabeth G Grubbs, MD, FACS, Carmen C Solórzano, MD, FACS

An analysis of parathyroidectomy use trends by endocrine surgeons. Bilateral neck exploration (BE) is a commonly used approach (40%) despite highly localized glands. It remains a complex and frequently used procedure, and surgeons intending to perform parathyroid surgery should be adequately trained and adept at BE.

662 **Pancreatic Cancer Lymph Node Resection Revisited: A Novel Calculation of Number of Lymph Nodes Required**

Amanda K Arrington, MD, FACS, Elinora T Price, MPH, Kimberly Golisch, BS, Taylor S Riall, MD, PhD, FACS

The extent of lymph node resection is still debated in pancreatic cancer. Our study uses the distribution of the ratio of positive to negative lymph nodes to derive a more adequate number of necessary examined lymph nodes based on the target lymph node threshold.

672 **Near Infrared Fluorescent Lymph Node Mapping with Indocyanine Green in Breast Cancer Patients: A Prospective Trial**

Stephanie A Valente, DO, FACS, Zahraa Al-Hilli, MD, FACS, Diane M Radford, MD, FACS, Courtney Yanda, MS, Chao Tu, MS, Stephen R Grobmyer, MD, FACS

This study compared fluorescence imaging using indocyanine green with technetium-99 for sentinel lymph node mapping in breast cancer patients. Indocyanine green performed similarly to technetium-99 with regard to the number of sentinel lymph nodes identified, rate of failed mapping, and identification of pathologically positive sentinel lymph nodes.

680 **Length of Stay and Opioid Dose Requirement with Transversus Abdominis Plane Block vs Epidural Analgesia for Ventral Hernia Repair**

Jeremy A Warren, MD, FACS, Alfredo M Carbonell, DO, FACOS, FACS, Lauren K Jones, BS, Aaron Mcguire, BS, William R Hand, MD, Vito A Cancellaro, MD, Joseph A Ewing, PhD, William S Cobb, MD, FACS

This study compares transversus abdominis plane block with epidural analgesia as part of an Enhanced Recovery after Surgery protocol. Transversus abdominis plane block reduced length of stay (median 2 vs 4 days) and opioid dose requirements on both postoperative days 1 and 2 compared with epidural analgesia.

690 Dual Kidney Transplantation from Donors at the Extremes of Age

Jeffrey Rogers, MD, FACS, Alan C Farney, MD, PhD, Giuseppe Orlando, MD, PhD,
David Harriman, MD, Amber Reeves-Daniel, DO, Colleen L Jay, MD,
William Doares, PharmD, Scott Kaczowski, PharmD, Michael D Gautreaux, PhD,
Robert J Stratta, MD, FACS

Historically, kidneys from donors at the extremes of age were considered marginal organs for kidney transplantation. With appropriate donor and recipient selection, acceptable mid-term outcomes can be achieved with either dual pediatric en bloc kidneys from small pediatric donors or adult dual kidney transplants from marginal deceased donors.

History

708 W Dean Warren, MD: Iron Hand and Principles of Steel

Hiram C Polk Jr, MD, FACS, David Levi, MD, FACS, Duane G Hutson, MD, FACS

Continuing Medical Education Program

715 Surgical site infection after primary closure of high-risk surgical wounds in emergency general surgery laparotomy and closed negative-pressure wound therapy. Hall C, Regner J, Abernathy S, et al.

Cholecystectomy during the third trimester of pregnancy: proceed or delay? Fong ZV, Pitt HA, Strasberg SM, et al.

Additional Articles for April 2019 Online at <http://jacscme.facs.org>

Preoperative frailty and surgical outcomes across diverse surgical subspecialties in a large health care system. Mrdutt MM, Papaconstantinou HT, Robinson BD, et al.

Should sentinel lymph node biopsy be performed for all T1b melanomas in the new 8th edition American Joint Committee on Cancer staging system? Egger ME, Stevenson M, Bhutiani N, et al.

Multidisciplinary approach to Clostridium difficile infection in adult surgical patients. Turner MC, Behrens SL, Webster W, et al.

Corrections

720 Corrections

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