WESTERN SURGICAL ASSOCIATION

2012 Annual Scientific Session

Saturday through Tuesday, November 3-6, 2012
The Broadmoor Resort
Colorado Springs, Colorado

AND

Transactions of the 2011 Annual Meeting
Loews Ventana Canyon Resort
Tucson, Arizona

www.westernsurg.org

LOCATION

The Broadmoor Resort
Colorado Springs, Colorado

REGISTRATION

Sat, Nov 3	3:00pm - 6:00pm
Sun, Nov 4	7:00am - 12 Noon
Mon, Nov 5	7:00am - 5:00pm
Tue, Nov 6	7:30am - 12 Noon

SCIENTIFIC SESSIONS

Sun, Nov 4	7:30am - 12 Noon
Mon, Nov 5	7:30am - 12 Noon
	1:30pm - 4:00pm
Tues, Nov 6	8:00am - 12 Noon

CME

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. Elucidate the outcome of new surgical procedures.

ACCREDITATION STATEMENT

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the American College of Surgeons and the 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 14 *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 13.25 credits meet the requirements for Self-Assessment.

American College of Surgeons
Division of Education

DISCLOSURE INFORMATION

In compliance with 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 see the insert to this program for the complete disclosure list.

TABLE OF CONTENTS

ELECTED TO MEMBERSHIP AT THE ANNUAL MEETING NOVEMBER 2011

The Western Surgical Association Welcomes its New Members and their Spouses

Thomas Aloia
Houston, TX

Farin Amersi
Los Angeles, CA

Paul Benn
Edina, MN

Todd Beyer
Albany, NY

Miguel Burch
Los Angeles, CA

Robert Cuff
Grand Rapids, MI

Patrick Dean
Rochester, MN

Mary Edwards
Kailua, Hawaii

P. Marco Fisichella
Maywood, IL

Richard Frazee
Temple, TX

Sean Glasgow
Ft. Sam Houston, TX

Elizabeth Grubbs
Houston, TX

Thomas Howdieshell
Albuquerque, NM

Kenji Inaba
Los Angeles, CA

James Jakub
Rochester, MN

Matthew Katz
Houston, TX

Christopher Lentz
Albuquerque, NM

Michael Marvin
Louisville, KY

Darren Malinoski
Los Angeles, CA

Jonathan Myers
Chicago, IL

M. Timothy Nelson
Albuquerque, NM

Shawn Obi
Jackson, MI

Daniel Paley
Owatonna, MN

Herb Phelan
Dallas, TX

Ashwani Rajput
Albuquerque, NM

Howard Saylor III
Edina, MN

Robert Shen
Rochester, MN

Randolph Szlabick
Grand Forks, ND

Swee H. Teh
San Francisco, CA

Krista Turner
Houston, TX

Amy Waer
Tucson, AZ

MISSION STATEMENT

The Western Surgical Association is dedicated to the cultivation, promotion, and diffusion of the art and science of surgery, to the sponsorship and maintenance of the highest standards of practice and to the delivery of the best possible care for the public. The goal of our continuing medical education effort is to provide information to the practicing surgeon that will enhance his/her knowledge regarding new diagnostic modalities and therapeutic maneuvers. The scope of our activities is meant to encompass the breadth of general surgery, including the primary and secondary components and is intended for our members and guests who are surgeons in academic and private practice. Our activities will focus on recent advances in basic science applicable to surgical practice, new developments in technology, issues in pre and post-operative care; assessment of diagnostic accuracy and surgical outcomes; and critical analysis of the information provided.

WESTERN SURGICAL ASSOCIATION
120th Scientific Session

FUTURE MEETINGS

Nov 2-5, 2013	**The Grand America Hotel** **Salt Lake City, Utah**
Nov 8-11, 2014	**Miramonte Resort and Spa** **Indian Wells, California**
Nov 7-10, 2015	**Meritage Resort and Spa** **Napa Valley, California**

OFFICERS – 2012

PRESIDENT
Raymond J. Joehl
Phoenix, Arizona

1ST VICE PRESIDENT
Robert Rege
Dallas, Texas

2ND VICE PRESIDENT
William Dolan
Phoenix, Arizona

SECRETARY
R. James Valentine
Dallas, Texas

TREASURER
William C. Chapman
St. Louis, Missouri

RECORDER
Kelly McMasters
Louisville, Kentucky

EXECUTIVE COMMITTEE

PRESIDENT
Raymond J. Joehl
Phoenix, Arizona

SECRETARY
R. James Valentine
Dallas, Texas

TREASURER
William C. Chapman
St. Louis, Missouri

RECORDER
Kelly McMasters
Louisville, Kentucky

IMMEDIATE PAST PRESIDENT
Gregory J. Jurkovich
Denver, Colorado

PAST PRESIDENT
Michael Farnell
Rochester, Minnesota

PAST PRESIDENT
Wayne H. Schwesinger
San Antonio, Texas

DISTRICT REPRESENTATIVE
Peter Pisters
Houston, Texas

DISTRICT REPRESENTATIVE
Donald Low
Seattle, Washington

DISTRICT REPRESENTATIVE
Randall Smith
Temple, Texas

DISTRICT REPRESENTATIVE
Karen Borman
Abington, Pennsylvania

OTHER REPRESENTATIVES

BOARD OF GOVERNORS, AMERICAN COLLEGE OF SURGEONS
Karen J. Brasel
Milwaukee, Wisconsin

AMERICAN BOARD OF SURGERY
Gregory J. Jurkovich
Denver, Colorado

ADVISORY COUNCIL ON SURGERY, AMERICAN COLLEGE OF SURGEONS
Thomas A. Broughan
Falls Church, Virginia

MEMBERSHIP COMMITTEE - 2012
Robert C. McIntyre, Jr. – Chair
Jason Fleming
Katherine Liu
Mark Talamonti
Peter Pisters
Donald Low
R. James Valentine, Ex-Officio
Raymond J. Joehl, Ex-Officio
William C. Chapman, Ex-Officio

PROGRAM COMMITTEE – 2012
Michael Kendrick – Chair
Mitchell Posner
Amalia Cochran
Mark Talamini
Randall Smith
Karen Borman
Raymond J. Joehl, Ex-Officio
R. James Valentine, Ex-Officio
Kelly McMasters, Ex-Officio

LOCAL ARRANGEMENTS CHAIRMAN – 2012
William Chambers
Colorado Springs, Colorado

SCHEDULE OF EVENTS

FRIDAY, NOVEMBER 2

4:30 pm-5:30 pm
Advisory Nominating Committee
Divide

6:30pm – 9:30pm
Executive Committee Dinner (invitation only)
Cheyenne Mountain Country Club

SATURDAY, NOVEMBER 3

8:00am – 12Noon
Executive Committee Meeting
West Ballroom AB

3:00pm – 6:00pm
WSA Registration Open
Rocky Mountain Foyer

3:00pm – 5:00pm
Exhibitor Setup
Rocky Mountain CD

5:30pm – 6:30pm
New Member Reception
Pompellian

6:30pm – 8:30pm
Welcome Reception
Main Ballroom

SCHEDULE OF EVENTS *CONTINUED*

SUNDAY, NOVEMBER 4

7:00am – 8:00am
Continental Breakfast for Physicians
Rocky Mountain CD

7:00am – 12noon
WSA Registration Open
Rocky Mountain Foyer

7:00am – 12noon
Exhibits Open
Rocky Mountain CD

8:00am – 10:00am
Spouse/Guest Hospitality and Breakfast
West Ballroom CD

7:30am – 9:40am
Scientific Session I
Rocky Mountain AB

9:40am – 10:00am
Beverage Break
Rocky Mountain CD

10:00am – 10:45am
Presidential Address
Rocky Mountain AB

10:50am – 12noon
Scientific Session I *(continued)*
Rocky Mountain AB

Afternoon Open

Optional Pike's Peak COG Railway, Hiking in Red Rock Canyon, Golf Tournament, Tennis Tournament

MONDAY, NOVEMBER 5

7:00am – 8:00am
Continental Breakfast for Physicians
Rocky Mountain CD

7:00am – 5:00pm
WSA Registration Open
Rocky Mountain Foyer

7:30am – 1:30pm
Exhibits Open
Rocky Mountain CD

7:30am – 12noon
Scientific Session II
Rocky Mountain AB

8:00am – 10:00am
Spouse/Guest Hospitality and Breakfast
West Ballroom CD

9:40am – 10:10am
Beverage Break
Rocky Mountain CD

10:00am – 11:30am
Spouse Program: Holiday Entertaining
Penrose Dining Room

12noon – 1:30pm
Lunch Break on own

12:15pm – 1:15pm
Western Surgical Women in Surgery Lunch
Crystal Room

1:30pm – 4:00pm
Scientific Session III
Rocky Mountain AB

SCHEDULE OF EVENTS *CONTINUED*

3:00pm – 3:15pm
Beverage Break
Rocky Mountain Foyer

4:00pm – 5:00pm
Annual Business Meeting
Rocky Mountain AB

7:00pm – 8:00pm
Presidents Reception
Rocky Mountain Foyer

8:00pm – 11:00pm
President's Dinner Dance
Rocky Mountain CD

TUESDAY, NOVEMBER 6

7:30am – 8:00am
Continental Breakfast for Physicians and Spouses
Rocky Mountain Foyer

7:30am – 12noon
WSA Registration Open
Rocky Mountain Foyer

8:00am – 12noon
Scientific Session IV
Rocky Mountain AB

12:00noon
Meeting Concludes

FIRST SCIENTIFIC SESSION

Sunday, November 4, 2012 – 7:30am – 12Noon

Moderator: Dr. Raymond J. Joehl

Risk Factors For Prolonged Hospital Stay In Laparoscopic Ventral Hernia Repair
Juliane Bingene , Malek S. Hussein, William S. Harmsen, *Michael L. Kendrick*
Mayo Clinic Rochester

The Urinalysis Rules Out Urinary Tract Infection In The Critically Ill Trauma Patient
Robert T Stovall, Jim Haenal, Timothy C. Jenkins, Fredric Pieracci, *Gregory J. Jurkovich, Walter Biffl, Jeff L. Johnson, Carlton Barnett,* D. Bensard, *Ernest E. Moore, Clay Cothren Burlew*
Denver Medical Health Center

Novel Theranostic Nanoparticle Causes Increased Cytoplasmic Uptake Of Doxorubicin In Mcf-7 Breast Cancer Cell Lines Leading To Increased Apoptosis
Dinesh Vyas, Mohammad Eldakdouki, Marc Basson, L. S. Chaturvedi, Arpita Vyas, P. V. Mohankumar, Xuefei Huang
Michigan State University

1. **Preoperative Axillary Ultrasound In Breast Cancer: Safely Avoid Frozen Section Of Sentinel Lymph Nodes In Breast Conserving Surgery**
   Irada Ibrahim-Zada, Judy C. Boughey, *Clive S. Grant*
   Mayo Clinic Rochester
   Invited Discussant: Amy Waer, Tucson, Arizona

2. **Osteopontin Up-Regulates Critical EMT Transcription Factors To Induce An Aggressive Breast Cancer Phenotype**
   N. Li, C. Weber, Z. Mi, T. Lynch, M. Kundu, Paul Kuo
   Sponsor: Raymond J. Joehl
   Loyola University
   Invited Discussant: Nora Hansen, Chicago, Illinois

3. **Late Recurrence In Melanoma**
   Mark B. Faries, Shawn Steen, Xing Ye, Myung Sim, Donald L. Morton
   John Wayne Cancer Center
   Invited Discussant: James Jakub, Rochester, Minnesota

4. **Is Sentinel Lymph Node Biopsy Necessary For Desmoplastic Melanoma?**
   Michael E. Egger, Katherine M. Huber, Erik M. Dunki-Jacobs, Amy R. Quillo, *Charles R. Scoggins*, *Robert C.G. Martin, II,* Arnold J. Stromberg, *Kelly M. McMasters*, Glenda G. Callender
   University of Louisville
   Invited Discussant: Ashwani Rajput, Albuquerque, New Mexico

INTRODUCTION OF NEW MEMBERS

PRESENTATION OF "J. BRADLEY AUST AWARD" FOR BEST PAPER BY A NEW MEMBER

RECIPIENT OF "J. BRADLEY AUST AWARD" 2011
M. B. Majella Doyle*, MD

….INTERMISSION…..

Moderator: Dr. Robert V. Rege

Presidential Address – Dr. Raymond J. Joehl
"A Precious Resource"

6. **Improving Clinical Productivity In An Academic Surgical Practice Through Transparency**
   Charles R. Scoggins, Robert M. Cannon, Timothy Crockett, Lex Wafford, *Kelly M. McMasters*
   University of Louisville
   Invited Discussant: Merril Dayton, Buffalo, New York

7. **No Trainee Left Behind: A Preemptive Attack On Behalf Of Duty Hour Regulated Surgery Residents**
   Shahzad M. Ali, Roberto Hernandez-Irizarry, *David R. Farley*
   Mayo Clinic Rochester
   Invited Discussant: Tyler Hughes, McPherson, Kansas

8. **Negative Appendectomy In The U.S. 1998-2009: A Population-Based Analysis**
   James A. Madura, II*, David A. Etzioi
   Indiana University
   Invited Discussant: David Sheldon, Kalispell, Montana

SECOND SCIENTIFIC SESSION

Monday, November 5, 2012 – 7:30am – 12noon

Moderator: Dr. Raymond J. Joehl

Sarcopenia And Frailty In Elderly Trauma Patients
Berry Fairchild, *Travis Webb,* Susan Tsai, Qun Xiang, *Karen Brasel*
Medical College of Wisconsin

Hemoglobin A1c Predicts Post-Operative Morbidity In Elective Colectomy Patients
Claire Peeples, Andrew Shaffer, Elizabeth Gates, Carla Ferrise, Thomas Riggs, James Catto, Ananias Diokno
Beaumont Hospitals

Non-Acid Reflux: A Potential Contributor To Reflux-Related Respiratory Symptoms
Candice L. Wilshire, Stefan Niebisch, Nikita Chapurin, Thomas J. Watson, Virginia R. Litle, Christian G. Peyre, Carolyn E. Jones, *Jeffrey H. Peters*
University of Rochester Medical Center

9. **Increasing Experience With Total Mesorectal Excision Allows For Selective Use Of Neoadjuvant Therapy In Patients With Rectal Cancer**
   Jean H. Ashburn, *David W. Dietz*, Feza H. Remzi
   Sponsor: David Dietz
   Cleveland Clinic
   Invited Discussant: Herb Phelan, Dallas, Texas

10. **Current Utilization And Surgical Efficacy Of Laparoscopic Colectomy (Lc) In Colon Cancer (Cc)**
    Robert P. Sticca, Steven R. Alberts, Michelle R. Mahoney, Daniel J. Sargent, Lisa Finstuen, Garth Nelson, Timothy Husted, Jan Franko, Charles Goldman, Barbara A. Pockaj
    University of North Dakota
    Invited Discussant: John Russell, Albuquerque, New Mexico

11. **Readmission Following Rectal Resection: Indication, Length And Complexity Of Surgery Are Predictive Factors**
    Matthias Turina, Feza H. Remzi, *David W. Dietz*, Ravi P. Kiran, Dilara Khoshknabi, Jon D. Vogel
    Cleveland Clinic
    Invited Discussant: Scott Thomas, Temple, Texas

12. **Creation Of A Non-Operative, True Orthotopic Gastric Cancer Murine Model Using Electrocoagulation**
    Jasneet Singh Bhullar, Gokulakkrishna Subhas, Tafadzwa Makarawo, Boris Silberberg, Jacqueline Tilak, Melissa Decker, *Vijay K. Mittal*
    Providence Hospital and Medical Center
    Invited Discussant: Carlton Barnett, Denver, Colorado

13. **Chronic Groin Discomfort After Laparoscopic Tep Inguinal Hernia Repair**
    Shahzad M. Ali, Benjamin Zendejas, Roberto Hernandez-Irizarry, Christine Lohse, *David R. Farley*
    Mayo Clinic Rochester
    Invited Discussant: Richard Frazee, Temple, Texas

….INTERMISSION…..

Point / Counterpoint: Moderator: Dr. Gregory J. Jurkovich

Surgeon Fatigue – Can We Be Too Tired to Work?
Karen Borman, Abington, Pennsylvania
Steven Stain, Albany, New York

Public Reporting of Surgical Outcomes: What Should It Look Like, What Will It Look Like?
Robert Cima, Rochester, Minnesota
Richard Thirlby, Seattle, Washington

14. **The Biopsy-Proven Benign Thyroid Nodule: Is Long-Term Follow-Up Necessary?**
    Sukhyung Lee, MD, MS, Thomas S. Skelton, MD, Feibi Zheng, MD, Katherine A. Schwartz, MS, *Nancy D. Perrier, MD, Jeffrey E. Lee, MD*, Roland L. Bassett, MS, Salmann Ahmed, MD, Savitri Krishnamurthy, MD, Naifa L. Busaidy, MD, *Elizabeth G. Grubbs, MD**
    MD Anderson Cancer Center
    Invited Discussant: Glenn Winslow, Great Falls, Montana

15. **The Assignment Of TASC Classification And Runoff Score: Are We Speaking The Same Language?**
    Tiffany Y. Wu, *Steven G. Katz*
    University of Southern California
    Invited Discussant: William Pearce, Chicago, Illinois

12noon – 1:30pm
Lunch Break on own

THIRD SCIENTIFIC SESSION

Monday, November 5, 2012 – 1:30pm – 4:00pm
Moderator: Dr. William Dolan

16. **Aspiration, Localized Pulmonary Inflammation, And Predictors Of Early-Onset Bronchiolitis Obliterans Syndrome After Lung Transplantation** ◙
*P. Marco Fisichella**, Christopher S. Davis, Cynthia Weber, Erin Lowery, Luis Ramirez, Elizabeth J. Kovacs, Richard L. Gamelli
Loyola University Medical Center
Invited Discussant: Alden Harken, Oakland, California

17. **Excellent Long-Term Patient And Graft Survival Are Possible With Appropriate Use Of Livers From Deceased Septa- And Octogenarian Donors**
Marcio F. Chedid, *Charles B. Rosen**, Scott L. Nyberg, Julie K. Heimbach
Mayo Clinic Rochester
Invited Discussant: William Chapman, St. Louis, Missouri

18. **Outcomes With Split Liver Transplantation Are Equivalent To Whole Organ Transplant**
*M.B. Majella Doyle**, Erin Maynard, Ying Lin, Neeta Vachharajani, Surendra Shenoy, Christopher Anderson, Mark Earl, *Jeffrey A. Lowell*, *William C. Chapman*
Washington University School of Medicine
Invited Discussant: Sue Orloff, Portland, Oregon

19. **Resection Of The Inferior Vena Cava And Liver For Malignancy** ◙
*Alan W. Hemming**, Ivan Zendejas, Robin Kim, Alan Reed, Kristin Mekeel
University of California – San Diego
Invited Discussant: Thomas Aloia, Houston, Texas

….INTERMISSION…..

20. The Optimal Surgical Strategy For Extensive Liver Malignancy And Very Low Future Liver Remnant Volume: Alpps Vs. Percutaneous Portal Vein Embolization ◙
*Thomas Aloia**, Junichi Shindoh, *Eddie Abdalla*, Steven Huang, Michael Wallace, Steven Curley, *Jean-Nicolas Vauthey*
MD Anderson Cancer Center
Invited Discussant: Alan Hemming, San Diego, California

21. Laparoscopic Ivor Lewis Esophagectomy With Prior Gastric Ischemic Conditioning: A New Standard Of Care For Esophageal Cancer ◙
*Swee H Teh**, David McCaslister
Kaiser Permanente
Invited Discussant: Jason Fleming, Houston, Texas

4:00pm – 5:00pm
ANNUAL ASSOCIATION BUSINESS MEETING
(members only)

FOURTH SCIENTIFIC SESSION

Tuesday, November 6, 2012 – 8:00am- 11:00am
Moderator: (President Elect)

22. Duration Of Chronic Critical Limb Ischemia Predicts Amputation-Free Survival Jayer Chung, David A. Timaran, Chul Ahn, Mitchell Plummer, Carlos H. Timaran, Melissa L. Kirkwood, Mirza S. Baig, *R. James Valentine*
UT Southwestern Medical School
Invited Discussant: Ashraf Mansour, Grand Rapids, Michigan

23. Barriers To Efficient Trauma Care Associated With CT Scanning
Daniel Shouhed, Renaldo Blocker, Eric Ley, Ken Catchpole, Doug Wiegmann, Steven Rudd, Jennifer Blaha, Jean-Phillipe Okhovat, Mark Paulsen, *Bruce L. Gewertz*
Cedars-Sinai Medical Center
Invited Discussant: Krista Turner, Houston, Texas

24. Post-Injury Hyperfibrinogenemia Compromises Efficacy Of Heparin-Based Vte Prophylaxis
Jeffrey N. Harr*, Ernest E. Moore*, Arsen Ghasabyan, Theresa L. Chin, Eduardo Gonzalez, Max Wohlauer, Anirban Banerjee, Christopher C. Silliman
University of Colorado Denver
Invited Discussant: Leigh Neumayer, Salt Lake City, Utah

25. Postoperative Plasma Aldosterone Level As An Outcome Predictor After Adrenalectomy For Primary Hyperaldosteronism
Michael Tsinberg, Robin M. Cisco, Chienying Liu, Anouk Scholten, Wen T. Shen, Jessica Gosnell, *Orlo H. Clark*, *Quan-Yang Duh*
University of California San Francisco
Invited Discussant: Melanie Richards, Rochester, Minnesota

26. Living Donor Kidney Transplantation Using Laparoscopically Procured Multiple Renal Artery Kidneys And Right Kidneys
Marcio F. Chedid, Carl Muthu, Justin M. Burns, Tim G. Lesnick, Walter Kremers, *Mikel Prieto,* Julie K. Heimbach, George Chow, Mark D. Stegall*,*
*Patrick G. Dean**
Mayo Clinic Rochester
Invited Discussant: Michael Marvin, Louisville, Kentucky

27. Machine Perfusion: Not Just For Marginal Kidney Donors
Robert M Cannon, Guy N Brock, R Neal Garrison, *Michael R Marvin**, Glen A Franklin
University of Louisville
Invited Discussant: Patrick Dean, Rochester, Minnesota

28. Development And Validation Of A Necrotizing Soft-Tissue Infection Mortality Risk Calculator Using NSQIP
Iris Faraklas, Greg Stoddard, *Leigh Neumayer*, Jeffrey Saffle, *Amalia Cochran*
The University of Utah
Invited Discussant: Karen Brasel, Milwaukee, Wisconsin

Meeting Concludes

Italics indicates a member of the Western Surgical Association
*Indicates a new member ◙ Indicates Aust Award Candidate

PAST RECIPIENTS OF THE "J. BRADLEY AUST AWARD"

FOR BEST PAPER BY A NEW MEMBER

2011
M.B. Majella Doyle
St. Louis, Missouri

2010
Thomas Robinson
Aurora, Colorado

2009
Karen Borman
Abington, Pennsylvania

2008
Mark B. Faries
Santa Monica, California

2007
Jason B. Fleming
Houston, Texas

2006
Frank R. Arko
Dallas, Texas

2005
Donald E. Low
Seattle, Washington

2004
Samuel K. Snyder
Temple, Texas

2003
Nora Hansen
Santa Monica, California

2002
Mark S. Talamonti
Chicago, Illinois

2001
Kelly M. McMasters
Louisville, Kentucky

2000
M. Ashraf Mansour
Maywood, Illinois

1999
William C. Chapman
Nashville, Tennessee

1998
R. Stephen Smith
Ranoke, Virginia

Presenting author must be a new WSA member within the past 2 years in order to qualify for the J. Bradley Aust Award.

THE WESTERN SURGICAL ASSOCIATION GRATEFULLY ACKNOWLEDGES THE SUPPORT OF THE FOLLOWING EXHIBITING COMPANIES:

Cook Medical

Cubist Pharmaceuticals

Ethicon Endo-Surgery, Inc.

Kimberly Clark Healthcare

LifeCell

Sanofi

Abstracts

Individual abstracts of the papers to be presented at this year's annual meeting appear on the following pages:

FIRST SCIENTIFIC SESSION

Sunday, November 4, 2012

7:30am to 12:00 Noon

QUICK SHOTS

Risk Factors For Prolonged Hospital Stay In Laparoscopic Ventral Hernia Repair

Juliane Bingener, Malek S. Hussein, William S. Harmsen, Michael L. Kendrick
Mayo Clinic

The Urinalysis Rules Out Urinary Tract Infection In The Critially Ill Trauma Patient

Robert T Stovall, Jim Haenal, Timothy C Jenkins, Fredric Pieracci, Gregory J Jurkovich, Walt Biffl, J Johnson, Carlton Barnett, D Bensard, EE Moore, Clay Cothren Burlew
Denver Health and Hospital

Novel Theranostic Nanoparticle Causes Increased Cytoplasmic Uptake Of Doxorubicin In Mcf-7 Breast Cancer Cell Lines Leading To Increased Apoptosis

Dinesh Vyas , Mohammad Eldakdouki, Marc Basson, L. S. Chaturvedi, Arpita Vyas, P. V. Mohankumar, Xuefei Huang
Michigan State University

ABSTRACTS *CONTINUED*

NOTES

FIRST SCIENTIFIC SESSION | Sunday, November 4, 2012 | 7:30am to 12:00 Noon

PREOPERATIVE AXILLARY ULTRASOUND IN BREAST CANCER: SAFELY AVOID FROZEN SECTION OF SENTINEL LYMPH NODES IN BREAST CONSERVING SURGERY

Irada Ibrahim-Zada, Judy C. Boughey, *Clive S. Grant*

Background: The ACOSOG Z0011 results provided convincing evidence that completion axillary lymph node dissection (CALND) was not necessary in selected patients with 1-2 positive sentinel lymph nodes (SLNs). Because only 27% of the patients who underwent CALND had positive nodes, compared to ³50% in other series, caution has been raised regarding applicability of the study. Preoperative axillary ultrasound (AUS) might identify patients whose disease would be best managed with lymphadenectomy.

Hypothesis: AUS is sufficiently sensitive to detect macrometastasis and multiple positive SLNs in early stage breast cancer to preclude frozen section pathology of SLNs.

Design: Retrospective single institution study; IRB approved

Setting: Tertiary academic referral center

Patients and Methods: 1,139 T1-2 breast cancer patients who underwent SLN biopsy ± CALND, from 1/1/07-12/31/10 were reviewed. All patients were clinically node negative, and had preoperative AUS ± FNA.

Results: 912 (80%) had a negative AUS, whereas the remaining 227 were deemed negative after US-FNA of suspicious LNs. SLN histology was negative in 954 (84%) patients with or without ALND. Of the 185 (16%) node positive patients, only 12 (1.1%) had ³3 positive SLNs (Z0011 exclusion criteria), of whom 1 was ER-, and 7 were premenopausal. Macrometastases were detected in 116 (10.2%) patients: 35 (3%) were >7mm, and 81 (7%) were £7mm in size. 15 women with >7mm metastases were younger than 50 years of age, and 3 had ER- tumor.

Conclusion: Of all 1139 patients, in only 1.1% did AUS fail to detect 3 or more positive SLNs. Overall, only 3% had macrometastases >7 mm. We conclude that AUS can be used effectively to identify breast cancer patients, whose disease can be safely managed with breast conserving surgery without lymphadenectomy, precluding the need for pathologic frozen section.

ABSTRACTS *CONTINUED*

NOTES

FIRST SCIENTIFIC SESSION | Sunday, November 4, 2012 | 7:30am to 12:00 Noon

OSTEOPONTIN UP-REGULATES CRITICAL EMT TRANSCRIPTION FACTORS TO INDUCE AN AGGRESSIVE BREAST CANCER PHENOTYPE

N. Li, C. Weber, Z. Mi, T. Lynch, M. Kundu, Paul Kuo

Background: Tumor cells undergoing epithelial-mesenchymal transition (EMT) develop cellular properties that allow for extracellular matrix invasion and intravasation. We have previously shown in a xenograft breast cancer model that blocking osteopontin (OPN), a secreted phosphoprotein, decreases EMT. This study examines OPN's role in EMT initiation through its regulation of EMT transcription factors (EMT-TFs) Snail, Slug, and Twist. OPN's role in Twist activation is further examined through immunoprecipitation (IP) and western blot (WB).

Methods: MDA-MB-231 breast cancer cells that secrete high levels of OPN were treated with OPN aptamer (APT) or mutant aptamer (MuAPT). OPN APT binds to and inhibits extracellular OPN. Low OPN secreting breast cancer cells, MCF-7, were treated with OPN, OPN+APT, or OPN+MuAPT. Twist was isolated in MB231 with IP. Phospho-serine Ab detected activated Twist in WB.

Results: Analysis through qPCR demonstrated that APT inhibition of OPN in MB231 cells caused a decrease in EMT-TF expression (MB231 vs. MB231+APT: *Twist ΔΔCT: 1.0 vs. 0.07; *Snail ΔΔCT: 1.0 vs. 0.11; *Slug ΔΔCT: 1.0 vs. 0.11, *P<0.001). MuAPT did not change EMT-TF expression (NS). Treatment of MCF7 cells with OPN caused an increase in EMT-TF expression (MCF7 vs. MCF7+OPN: Twist ΔΔCT: 1.0 vs. 9.1; *Snail ΔΔCT: 1.0 vs. 11.2; *Slug ΔΔCT: 1.0 vs. 10.9, *P<0.001). EMT-TF expression in MCF7 treated with OPN+APT did not differ significantly from MCF7 alone. MCF7 treated with OPN+MuAPT only increased Slug expression (MCF7 vs. MCF7+ OPN+APT: Slug ΔΔCT: 1.0 vs. 8.7, P<0.005). Phosphorylated Twist protein was reduced 2-fold with APT in MB231 compared to MB231 and MB231+MuAPT.

Conclusion: This study shows that OPN is critical in EMT initiation by up-regulating expression of EMT transcription factors Snail, Slug, and Twist, and activates Twist via serine phosphorylation. These unique observations indicate that OPN APT may serve a clinical role as a novel therapeutic agent by diminishing breast cancer oncogenesis.

ABSTRACTS *CONTINUED*

NOTES

FIRST SCIENTIFIC SESSION | Sunday, November 4, 2012 | 7:30am to 12:00 Noon

LATE RECURRENCE IN MELANOMA

Mark B. Faries, Shawn Steen, Xing Ye, Myung Sim, Donald L. Morton

Background: Although late recurrence (LR) (occurring after 10 years) has been reported in melanoma, it is generally felt to be a rare event. However, accurate assessment of this phenomenon is difficult due to the need for extensive follow up on a large cohort of patients. We conducted a study of LR in a large and mature institutional database to examine its frequency, associated factors and prognostic significance.

Methods: The LR cohort was defined as having a DFI of ≥10 years after potentially curative treatment and was compared to an early recurrence (ER) cohort who suffered recurrence within 3 years. Actuarial LR frequency, and factors associated with LR were examined. Post-recurrence overall and melanoma-specific survival were analyzed and prognostic variables determined by multivariate analysis.

Results: Among 8671 eligible patients, 408 (4.7%) exhibited LR (mean DFI 15.7 years) This represents 11.5% of patients with ≥10 years of follow up (n=3538). On an actuarial basis, LR rates were 7.4% and 10.6% at 15 and 20 years respectively for those with no recurrence at 10 years. LR was associated with both tumor (thin, non-ulcerated, non-head/neck, node negative) and patient (younger age, less male predominant) characteristics relative to ER. Multivariate analysis confirmed younger age, thinner and node negative tumors in the LR group. The majority of LR were distant and the majority of ER were regional. Despite this difference, LR were associated with *better* post-recurrence survival. When grouped by stage of recurrence, LR demonstrated improved outcomes for stage III, stage IV (M1a), Stage IV(M1b), and Stage IV (M1c). The statistical survival advantage of LR remained significant (HR 0.65, p=0.042) on multivariate analysis.

Conclusion: LR is not rare in melanoma. It occurs more frequently in certain clinical groups and is associated with improved post-recurrence survival.

ABSTRACTS *CONTINUED*

NOTES

FIRST SCIENTIFIC SESSION | Sunday, November 4, 2012 | 7:30am to 12:00 Noon

IS SENTINEL LYMPH NODE BIOPSY NECESSARY FOR DESMOPLASTIC MELANOMA?

Michael E Egger, Katherine M Huber, Erik M Dunki-Jacobs, Amy R Quillo, Charles R Scoggins, Robert CG Martin II, Arnold J Stromberg, Kelly M McMasters, Glenda G Callender

Background: Recent studies have suggested that sentinel lymph node (SLN) biopsy is of limited value in desmoplastic melanoma.

Hypothesis: SLN status is an important prognostic factor in desmoplastic melanoma.
Design: Retrospective review of a prospectively maintained multi-institutional database and a nationwide cancer statistics database.

Setting: Academic institution

Patients and Methods: Patients with desmoplastic melanoma ≥1.0 mm Breslow thickness who underwent SLN biopsy in a multi-institutional prospective clinical trial were combined with a single institution melanoma database (combined database) and were compared to similar patients from the Surveillance, Epidemiology, and End Results (SEER) database (1998-2009). Kaplan-Meier (KM) analyses and multivariate Cox proportional hazard models for disease-free survival (DFS) and overall survival (OS) were performed.

Results: The SLN positivity rate in the combined database was 17.0% (8/47). By comparison, the SLN positive rate in SEER was lower: 2.5% (15/594). Factors that might explain the difference in SLN positivity rate, such as Breslow thickness, ulceration, age, and anatomic location of the primary melanoma, were similar between the two datasets. On KM analysis, greater Breslow thickness and ulceration were associated with worse OS for both datasets. On multivariate analysis, greater Breslow thickness, ulceration, and SLN positivity were significant independent predictors of OS for both datasets. There was a significant interaction between SLN status and ulceration as predictors of OS in both datasets; patients with ulceration and a positive SLN had significantly worse OS. In the combined dataset, KM showed significantly increased recurrence for SLN positivity and ulceration, and on multivariate analysis, SLN positivity and ulceration were independent predictors of DFS. Again, there was a significant interaction between SLN status and ulceration.

Conclusion: The rate of positive SLN in desmoplastic melanoma may be higher than reported in the SEER database. Based on our data, SLN biopsy should be performed in all patients with a desmoplastic melanoma ≥1.0 mm Breslow thickness.

NOTES

FIRST SCIENTIFIC SESSION | Sunday, November 4, 2012 | 7:30am to 12:00 Noon

IMPROVING CLINICAL PRODUCTIVITY IN AN ACADEMIC SURGICAL PRACTICE THROUGH TRANSPARENCY

Charles R. Scoggins, Robert M. Cannon, Timothy Crockett, Lex Wafford, Kelly M. McMasters

Background: Clinical revenue through patient care is becoming and increasingly important source of revenues for academic surgical practices.

Hypothesis: Transparency with regard productivity metrics will improve clinical productivity among members of an academic surgical practice.

Design: Retrospective review

Setting: Academic surgical practice

Patients and Methods: Clinical productivity-related data were collected and compared between two time periods. Data were stratified by pre-transparency and post-transparency time periods. Comparisons were made using the Wilcoxon-Mann-Whitney Test, and p-values <0.05 were considered significant.

Results: Prior to 2006, clinical productivity data were not made public among faculty members. In 2006, the departmental leadership developed a physician scorecard that led to transparency with regard to productivity. Following publication of the scorecard, clinical productivity increased, as did the number of partners producing a threshold number of RVU (11,000 RVU = 1.0 FTE). This occurred during a time of reduced collections per RVU. Faculty work assignments and total VA percent effort were the same between the two periods.

	2000-2005	**2006-2011**	**P-value**
FTE Partners	24.15	36.86	**0.02**
Number of Doctors	41.5	45.5	0.075
Total RVUs/year	305,058	415,237	**0.031**
RVUs Per Doctor/year	7388	8953.13	**0.031**
Collections per RVU	$38.82	$34.21	**0.013**

Conclusion: Clinical productivity can be improved by making productivity metrics transparent among faculty members. Creation of a physician's scorecard makes publication of productivity metrics uniform and actionable among faculty.

ABSTRACTS *CONTINUED*

NOTES

FIRST SCIENTIFIC SESSION | Sunday, November 4, 2012 | 7:30am to 12:00 Noon

NO TRAINEE LEFT BEHIND: A PREEMPTIVE ATTACK ON BEHALF OF DUTY HOUR REGULATED SURGERY RESIDENTS

Shahzad M. Ali, Roberto Hernandez-Irizarry, David R. Farley

Background: Given recent ACGME duty hour regulations, general surgery residents are set up to graduate with less operative and patient care experience.

Hypothesis: An online multimedia curriculum combined with predefined expectations can provide priming and impetus for enhanced learning.

Design: Retrospective evaluation of an active online curriculum, 2011-12.

Setting: A single academic institution.

Methods: An online curriculum using ~1000 short clips containing whiteboard and actual OR videos was developed to sequentially take learners through 16 operative procedures. Completion of online tests (based on curriculum) with a PERFECT score was MANDATED prior to allowing trainees to scrub in the OR with the senior author. Pre- and post-rotation exams on surgical knowledge and an online survey were used for curriculum assessment.

Results: 18 trainees (14 interns, 4 medical students) completed the curriculum.

	Hernia*	**Breast***	**Endocrine***	**Cholecystectomy***	**Anatomy***
Pre-test	41.9 ± 5.0	42.3 ± 4.4	41.7 ± 4.6	62.2 ± 6.3	35.2 ± 5.5
Post-test	64.4 ± 3.5	66.4 ± 4.6	70.6 ± 4.3	75.0 ± 3.1	49.2 ± 5.5

% Correct (Mean ± Standard Error)

*Pre- vs. Post-Test p value <0.05

Trainees accessed modules with a mean number of 634 "hits" (range: 5-1628); mean time per user was 17 hours (range: 0.2-87.1). A trimodal distribution in time of access identified peaks at 0600, 1400 and 2200 hours; 93% of hits occurred during weekdays. A positive correlation in test scores and hits was found for endocrine modules (p=0.01). In survey responses, 100% agreed that videos helped them prepare for operations, and 93% will continue to review a select video module the night before that procedure.

Conclusion: All trainees achieved 100% on their pre-procedure tests allowing them to operate with the senior author. Medical knowledge improved by 22% after watching online videos, and feedback from trainees confirms 24/7 availability to learn surgery is beneficial and desirable. Preemptive learning may facilitate surgical acumen to overcome the lack of clinical and OR repetitions.

NOTES

FIRST SCIENTIFIC SESSION | Sunday, November 4, 2012 | 7:30am to 12:00 Noon

NEGATIVE APPENDECTOMY IN THE U.S. 1998-2009: A POPULATION-BASED ANALYSIS

James A. Madura, II, David A. Etzioni

Background: Negative appendectomy (NA) has long been accepted as a necessary consequence of the prompt triage and treatment of patients with acute appendicitis. NA, however, is not without potential clinical and economic consequence. Diagnostic imaging is increasingly utilized in the evaluation of suspected appendicitis, but the impact of this trend on the incidence rate of NA has not been well-described.

Hypothesis: The population-based rate of NA has declined during the last decade.

Design: Retrospective analysis of discharge data from the Nationwide Inpatient Sample (NIS) from 1998 to 2009.

Setting: A representative sample of the universe of domestic hospital discharges.

Patients and Methods: 776,016 patients discharged after undergoing a non-incidental appendectomy as the primary surgical procedure performed. Changes in incidence rates were analyzed using a linear regression to the log transformation of incidence rate. Multivariate logistic regression was used to examine the effect of time on the likelihood of NA in patients undergoing appendectomy.

Results: The population-based incidence rate of NA decreased by 44% during the period of our study ($p < 0.0001$). These improvements were seen in both genders, but to a greater extent in males (49%, $p < 0.0001$) than in females (41%, $p < 0.0001$). The proportion of appendectomies which were NA decreased from 13.4% to 6.8% ($p < 0.0001$). Rates and likelihood of NA improved in both younger and older patients.

Conclusion: Population-based rates of NA have declined in all age groups since 1998. The reasons underlying these trends are likely attributable to increased use of diagnostic imaging.

ABSTRACTS *CONTINUED*

NOTES

SECOND SCIENTIFIC SESSION

Monday, November 5, 2012
7:30am to 12:00 Noon

QUICK SHOTS

Sarcopenia And Frailty In Elderly Trauma Patients
Berry Fairchild, Travis Webb, Susan Tsai, Qun Xiang, Karen Brasel
Medical College of Wisconsin

Hemoglobin A1c Predicts Post-Operative Morbidity In Elective Colectomy Patients
Claire Peeples, Andrew Shaffer, Elizabeth Gates, Carla Ferrise, Thomas Riggs, James Catto, Ananias Diokno
Beaumont Hospitals

Non-Acid Reflux: A Potential Contributor To Reflux-Related Respiratory Symptoms
Candice L. Wilshire, Stefan Niebisch, Nikita Chapurin, Thomas J. Watson, Virginia R. Litle, Christian G. Peyre, Carolyn E. Jones, Jeffrey H Peters
University of Rochester Medical Center

NOTES

SECOND SCIENTIFIC SESSION | Monday, November 5, 2012 | 7:30am to 12:00 Noon

INCREASING EXPERIENCE WITH TOTAL MESORECTAL EXCISION ALLOWS FOR SELECTIVE USE OF NEOADJUVANT THERAPY IN PATIENTS WITH RECTAL CANCER

Jean H Ashburn, David W Dietz, Feza H Remzi

Background: In European centers, rectal cancer outcomes have improved dramatically over the past 30 years. This phenomenon has been attributed to both improvement and standardization of surgical technique and more widespread use of neoadjuvant therapy (NAT).

Hypothesis: We hypothesized that oncologic outcomes after rectal cancer resection have remained unchanged over time despite changes in the use of NAT, supporting surgical technique as the primary determinant of outcome.

Design: A retrospective review of a prospective cancer database.

Setting: Colorectal surgery unit in a tertiary care academic institution.

Patients and Methods: Patients undergoing proctectomy for rectal cancer from 1980 to 2009 were grouped by decade (Group A= 1980-1989, Group B=1990-1999, Group C=2000-2009) and compared for disease-free survival (DFS), overall survival (OS), and local recurrence (LR) at 10 years after surgery.

Results: 3278 patients were identified: 26% were in Group A, 32% in Group B, and 42% in Group C. Radial margins (RM), a surrogate marker for surgical quality, were 0.63cm in Group B and 0.93cm in Group C (p=0.19). Cancer stage distribution did not vary over time. After 10 years of follow-up, both OS and DFS were greater in Group C (50% and 45%) compared to Group B (45% and 40%, both p=0.001) and Group A (45% and 37%, both p=0.001). LR rate in Group C (5.4%) was lower than Groups A and B (9%, 15%, p=0.001). Use of NAT was less in Group C (73%) than Groups A and B (88%, 94%, p=0.001).

Conclusion: Oncologic outcomes for rectal cancer patients in our institution have improved over the past 30 years. However, this has occurred in a setting of consistent, standardized, high-quality surgery (TME) and despite a decrease in the use of NAT. These results suggest that increasing experience with proper surgical technique alone will result in improved outcomes, further limiting the magnitude of benefit for neoadjuvant and adjuvant treatment.

NOTES

SECOND SCIENTIFIC SESSION | Monday, November 5, 2012 | 7:30am to 12:00 Noon

CURRENT UTILIZATION AND SURGICAL EFFICACY OF LAPAROSCOPIC COLECTOMY (LC) IN COLON CANCER (CC)

Robert P. Sticca, Steven R. Alberts, Michelle R. Mahoney, Daniel J. Sargent, Lisa Finstuen, Garth Nelson, Timothy Husted, Jan Franko, Charles Goldman, Barbara A. Pockaj

Background: Laparoscopic techniques for colon resection were first reported in 1991 and have shown the advantages commonly attributed to laparoscopic surgery including less pain, shorter recovery and quicker return to baseline function. The Clinical Outcomes in Surgical Therapy trial (COST, NEJM 2004) demonstrated that LC was equivalent to open colectomy (OC) for 30 day mortality, time to recurrence, and overall survival in CC patients (pts). The current utilization of LC for CC is not well known.

Hypothesis: Utilization of laparoscopic surgery for colon cancer has changed since the COST trial.
Design: Surgical data was reviewed for all pts randomized onto a national phase III treatment clinical trial for adjuvant therapy in stage III CC [North Central Cancer Treatment Group (NCCTG) trial N0147] to assess utilization patterns and surgical efficacy of LC for CC.

Setting: Multi-institutional, including community, university affiliated and university hospitals.

Patients and Methods: Surgical data were reviewed by NCCTG Surgery Committee surgeons experienced in LC. Colon resections were grouped as open (traditional laparotomy, OC) or laparoscopic (LC), including: laparoscopic, laparoscopic assisted, hand assisted, and laparoscopic converted to OC. Converted cases were included in the LC group on an intention to treat basis. Pt characteristics and oncologic data were obtained prior to randomization. Statistical methods included non-parametric methods, categorical analysis, and logistic regression modeling.

Results: 3,393 pts were randomized between 2004-2009, including 53% males, median age 58, 86% white, and 70% with a BMI >25. 2113 (62%) underwent OC. 1280 (38%) had a laparoscopic procedure, of which 25% (322) were laparoscopic, 32%(410) laparoscopic assisted, 26% (339) hand assisted, and 16% (209) LC converted to OC. Significant predictors of LC (vs OC) surgery in multivariate models were T-stage (T1 or T2 vs T3 or T4, $p=0.0096$), and absence of perforation, bowel obstruction, or adherence to surrounding organs ($p<0.02$ each). Increasing rates of LC were observed over time, with LC rates eclipsing OC in 2009 ($p<0.0001$). Surgical efficacy as measured by lymph node retrieval

was not compromised by LC with the mean number of lymph nodes retrieved significantly higher for the LC group (20.6 vs 19.4 nodes, p=0.0006).

Conclusion: This study demonstrated a steadily increasing utilization of LC for the surgical treatment of colon cancer between 2004-2009, with a preference for LC by the end of the study. Surgical efficacy as measured by lymph node retrieval was not compromised in high risk stage III CC pts.

NOTES

SECOND SCIENTIFIC SESSION | Monday, November 5, 2012 | 7:30am to 12:00 Noon

READMISSION FOLLOWING RECTAL RESECTION: INDICATION, LENGTH AND COMPLEXITY OF SURGERY ARE PREDICTIVE FACTORS

Matthias Turina, Feza H. Remzi, David W. Dietz, Ravi P. Kiran, Dilara Khoshknabi, Jon D. Vogel

Background: Several factors predictive of readmission following colorectal surgery have been identified. These include comorbid conditions, steroid use, and transfusions. While often grouped together in readmission studies, colon and rectal resections differ in many ways. The aim of our present study is to identify specific factors associated with increased readmission rates following rectal resection.

Hypothesis: The likelihood of readmission following rectal resection may be predicted using distinct pre-, intra-, or postoperative variables.

Design: Retrospective single-center cohort; prospective clinical database

Setting: Tertiary referral center for colorectal surgery

Patients and Methods: 565 patients who underwent rectal resection at the Cleveland Clinic in 2010 and 2011 were analyzed. Main outcome measure was readmission within 30 days. Univariate comparison between readmitted and non-readmitted patients was followed by a stepwise logistic regression to determine independent risk factors for readmission.

Results: 105 patients (18.6%) were readmitted. Indication (inflammatory bowel disease [IBD], p=0.008), type of operation (pelvic pouch surgery, p=0.02), use of laparoscopy (readmission 27.8% vs. 14%, p<0.001), and length of surgery (p<0.001) were associated with a higher readmission rate. Neither preoperative chemoradiation (p=0.89), ASA class (p=0.09), nor resident/fellow involvement (p=0.94) was associated with higher readmission risk. Surgical site infections (p<0.001), small bowel obstruction (p<0.001), urinary tract infection / urinary retention (p<0.001) and deep venous thrombosis (p=0.04) were the main reasons for readmission. Logistic regression showed use of laparoscopy (OR 2.4, CI 1.5-3.8), initial diagnosis of IBD (OR 1.9, CI 1.2-3.1), and length of surgery (OR 1.1 per 30 minutes) to be independent risk factors. Risk of readmission rises from 7% with zero to 33% with 3 positive risk factors.

Conclusion: Readmission following rectal resection is dependent on the underlying pathology, but complexity, length of surgery and the use of laparoscopy as surgeon-related factors also play a role. Patient-related factors such as comorbidities and medication use appear less important in the presence of these risk factors.

NOTES

SECOND SCIENTIFIC SESSION | Monday, November 5, 2012 | 7:30am to 12:00 Noon

CREATION OF A NON-OPERATIVE, TRUE ORTHOTOPIC GASTRIC CANCER MURINE MODEL USING ELECTROCOAGULATION

Jasneet Singh Bhullar, Gokulakkrishna Subhas, Tafadzwa Makarawo, Boris Silberberg, Jacqueline Tilak, Milessa Decker, Vijay K. Mittal

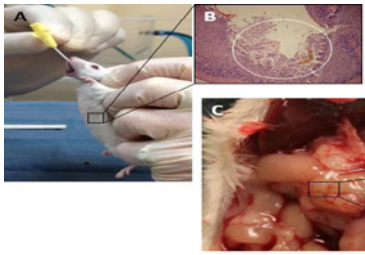
Background: Orthotopic mouse models of human gastric cancer represent an important in vivo tool for testing chemotherapeutic agents and for studying intraluminal factors that might alter the growth of cancers. Currently, the only orthotopic mouse models of gastric cancer require an operative procedure involving either injection of tumor cells or implanting tumor tissue in stomach layers. The resultant tumor does not grow from the stomach's mucosal surface; thus, it does not mimic the human disease process. Studies to evaluate the effects of intraluminal factors on gastric cancer have not been accurate in the reported murine models of gastric cancer.

Hypothesis: By doing a transoral low-dose mucosal electro-coagulation using a specially designed electrode a gastric mucosal injury could be created in which the instilled human tumor cells would proliferate.

Design: The SNU-16 human gastric cancer cell line was used. A low- dose gastric mucosal coagulation was done transorally at 2 predetermined points, 3 mm apart at the body of stomach using a specially designed polyethylene catheter in 16 female SCID mice. This was followed by the instillation of tumor cells ($1x10^6$ cells). Three control mice underwent electrocoagulation alone and three mice underwent cell line instillation alone. Five mice were euthanized at 1 and 2 months, and 6 mice were euthanized at 3 months.

Results: Tumors were detected in 11/16 mice. Tumors were detected in mice sacrificed at 1 month. Over time, there was an increase in tumor growth, tumor volume, and metastasis to lymph nodes and other organs. Control mice only instilled with cells did not have any local or metastatic tumors.

Conclusion: Our model is minimally invasive, easy to create, and overcomes the limitations of the existing models by arising from the stomach's mucosal layer, while mimicking the human disease in terms of morphology and biological behavior. This is the first report of a true orthotopic gastric cancer murine model. This model opens new doors for further studies in tumor transformation, role of intraluminal factors, and targeted therapies which were not possible earlier.



A: Technique of trans oral electrocoagulation.
B: H&E Stomach, showing the mucosal injury.
C: Stomach with the tumor.
D: H& E Gastro-esophageal jn with tumor invading between stomach layers.
E: H&E stomach adenocarcinoma

NOTES

SECOND SCIENTIFIC SESSION | Monday, November 5, 2012 | 7:30am to 12:00 Noon

CHRONIC GROIN DISCOMFORT AFTER LAPAROSCOPIC TEP INGUINAL HERNIA REPAIR

Shahzad M. Ali, Benjamin Zendejas, Roberto Hernandez-Irizarry, Christine Lohse, David R. Farley

Background: Chronic groin discomfort is an undesired complication of laparoscopic TEP inguinal hernia (Lap TEP IH) repairs.

Hypothesis: Perioperative factors may be associated with an increased risk of developing this problem and their recognition could lead to preventive strategies.

Design: Retrospective study.

Setting: Single surgeon experience at an academic institution.

Patients and Methods: Analysis of one surgeon's experience with 1,479 Lap TEP IH repairs on 976 patients from 1995-2009. A mailed survey, which included a groin discomfort questionnaire (Carolinas Comfort Scale), was distributed to all patients. Symptom severity grading (range, 0=none to 5=severe) was used to sort individual responses. Perioperative factors were compared between asymptomatic and symptomatic patients with varying levels of discomfort.

Results: 691 patients (71%) provided complete responses to the questionnaire. Median follow-up was 5.7 years (range 0-14.4). The majority (543, 79 %), denied any symptom of mesh sensation, pain or movement limitation. Of the remaining 148 (21%) affected patients, symptoms were most often mild (n=108), followed by mild but bothersome (n=25), and 15 patients had moderate or severe symptoms. Symptomatic patients were younger (median age 52 vs. 57; p=0.002) and more likely to have had the procedure for a recurrent hernia (24% vs. 17%; p=0.035). Operative diagnosis, bilateral exploration, mesh fixation techniques, perioperative complications, ASA grade and length of hospital stay were not associated with chronic groin discomfort (p≥0.12).

Conclusion: The majority of patients are asymptomatic after a laparoscopic TEP inguinal hernia repair. Most symptomatic patients do not have bothersome symptoms. Preoperative factors of younger age and a recurrent hernia predicted a greater risk for chronic groin discomfort with a laparoscopic TEP IH repair.

NOTES

SECOND SCIENTIFIC SESSION | Monday, November 5, 2012 | 7:30am to 12:00 Noon

THE BIOPSY-PROVEN BENIGN THYROID NODULE: IS LONG-TERM FOLLOW-UP NECESSARY?

Sukhyung Lee, Thomas S. Skelton, Feibi Zheng, Katherine A. Schwartz, Nancy D. Perrier, Jeffrey E. Lee, Roland L. Bassett, Salmann Ahmed, Savitri Krishnamurthy, Naifa L. Busaidy, Elizabeth G. Grubbs

Background: Thyroid nodules are common and of those biopsied by fine needle aspiration (FNA), the majority will be benign colloid nodules (BCN). Current guidelines suggest these BCN should be followed by ultrasonographic exam (US) every 3 years with no endpoint specified. The present study evaluated the results of such long-term follow-up (fu) of BCN and treatment changes based upon prolonged observation.

Design & Setting: Retrospective study at a tertiary care center

Patients and Methods: All patients (pts) with an FNA-based diagnosis (dx) of BCN at our institution from 1998-2007 were identified and US characteristics, initial treatment and long-term changes in US, repeat FNAs, and interval surgery were reviewed. Pts observed after dx were divided into short-term (ST) fu (<3 years) and long-term (LT) fu (≥3yrs).

Results: Over the 10 year period of the study, US-guided thyroid nodule FNA diagnosed BCN in 618 pts. Reasons for initial evaluation of these pts included 397 for palpable nodules or thyroid-related issues, 71 for cancer staging (CS) workup, 93 incidentally found on non-CS imaging and 57 other. Excluding CS pts, 94 (17%) pts underwent thyroid resection within 1 year of dx, of which final pathology was benign in all but 1 patient. 453 pts were observed after initial dx, of which 251 returned for ≥1 fu US: 131 in the ST group (median fu 13 mo, range 1-35) and 120 in the LT group (mfu 61 mo, range 36-153). There were more median fu US in LT vs. ST (4 vs 2, p<.01), more repeat FNAs in LT (11/131 vs. 26/120, p<.01) and no difference in interval thyroidectomies (10/131 vs. 11/120, p=.66), or malignant final pathology (1/10 vs. 1/11, p=.74). The most common reason for interval surgery was growth of BCN on US in ST (50%) and worsening pt symptoms in LT (82%). For all pts undergoing surgery, pathology was malignant in 2/142 (1.4%) (1 had incidental PTC).

Conclusion: Following patients long-term for BCN resulted in more repeat FNAs than shorter fu but no more surgeries or malignancies. Worsening symptoms represented the main reason for long-term interval surgery, suggesting pts may be educated to return in such instances.

NOTES

SECOND SCIENTIFIC SESSION | Monday, November 5, 2012 | 7:30am to 12:00 Noon

THE ASSIGNMENT OF TASC CLASSIFICATION AND RUNOFF SCORE: ARE WE SPEAKING THE SAME LANGUAGE?

Tiffany Y. Wu, Steven G. Katz

Background: Productive communication among different clinical practitioners is essential if recommendations regarding practice are to exist. The durability of vascular surgical operations and endovascular procedures is often influenced by factors such as lesion classification and runoff quality. It is the purpose of this manuscript to determine how reproducible these measures are in the hands of various specialists who deal extensively with peripheral arterial disease (PAD).

Methods: The peripheral arteriograms of 100 patients undergoing percutaneous intervention were distributed to six specialists with extensive experience in treating patients with PAD (3 vascular surgeons, 2 interventional radiologists, 1 interventional cardiologist). Each was provided with the reference document describing TASC II classification, SVS runoff score, simplified runoff score. With no additional instruction or collaboration, each individual was asked to assign each of the 100 angiograms a TASC II class, SVS runoff score, and simplified runoff score. Comparisons between the scores assigned by each reader were made using kappa statistic.

Results: When using the simplified runoff score for grading PAD, there was excellent correlation among readers ($k= 0.81$, $p<0.05$), even across different specialties. When using TASCII class to grade lesions, although there was a good degree of correlation between most readers ($k= 0.44$, $p<0.05$), there was also a greater degree of variation when compared to the simplified runoff score. Finally, there was poor correlation between readers when using the SVS runoff score ($k=0.10$, $p<0.05$).

Conclusion: Descriptors of clinical disease severity are not universally reproducible. The simplified runoff score is reproducible when interpreted by multiple readers across different specialties and can be used without further modification. The TASC II classification may need minor alterations in description to obtain good correlation among readers. Before the SVS runoff score can be universally adapted, it will need to be described in much better detail or significantly modified.

NOTES

THIRD SCIENTIFIC SESSION

Monday, November 5, 2012 | 1:30pm to 4:00pm

ASPIRATION, LOCALIZED PULMONARY INFLAMMATION, AND PREDICTORS OF EARLY-ONSET BRONCHIOLITIS OBLITERANS SYNDROME AFTER LUNG TRANSPLANTATION

P. Marco Fisichella, Christopher S. Davis, Cynthia Weber, Erin Lowery, Luis Ramirez, Elizabeth J. Kovacs, Richard L. Gamelli

Background: The effects of aspiration after lung transplantation remain ill-defined, and survival after lung transplantation remains the worst of all solid organs primarily as the result of bronchiolitis obliterans syndrome (BOS).

Hypothesis: Immune mediator concentrations in the bronchoalveolar fluid (BALF) are predictive of BOS and demonstrate specific patterns of dysregulation depending on the presence of acute cellular rejection (ACR), BOS, aspiration, and timing post-transplant.

Design: This is a longitudinal, prospective study.

Setting: University hospital and lung transplant center.

Patients and Methods: From September 2009 to January 2012, 257 BALF samples were prospectively collected from 105 lung transplant recipients. In addition to absolute and differential white blood cell counts, the BALF samples were assessed for 34 proteins implicated in pulmonary immunity, inflammation, fibrosis, and aspiration. Patients were diagnosed with BOS according to International Society of Heart and Lung Transplantation criteria.

Results: A) Logistic regression analysis of the BALF collected 6-12 months post-transplantation revealed that elevated concentrations of IL-17 and reduced levels of IL-10, IL-12, TGF-β, and A1AT were predictive of BOS by 30 months; B) Patients with BOS had an increased percentage of BALF lymphocytes and neutrophils with a concurrently reduced percentage of macrophages ($p<0.05$); C) BALF concentrations of IL-1β, IL-1RA, IL-5, IL-8, FGFb, IP-10, MIP-1β, RANTES, neutrophil elastase (NE), and pepsin were higher in patients diagnosed with BOS, whereas IL-2 and α_1-antitrypsin (A1AT)/NE were lower ($p<0.05$); D) Among those diagnosed with BOS, BALF concentrations of IL-1RA, IL-8, eotaxin, IP-10, RANTES, MPO, and NE were positively correlated with time since transplantation, while A1AT/NE was negatively correlated with it ($p<0.01$); E) Those with ACR had an increased percentage of lymphocytes in their BALF ($p<0.0001$), which was concurrent to reduced BALF concentrations of IL-1β, IL-12, IL-17, GM-CSF, and VEGF

and elevated IL-5, eotaxin, and IP-10 ($p<0.05$); F) Finally, patients with aspiration based on detectable pepsin had evidence of a pro-inflammatory and fibrogenic milieu in their BALF, as the percentage of neutrophils and levels of IL-1β, IL-8, eotaxin, FGFb, IP-10, MIP-1β, MIP-1α, PDGF, RANTES, FGF-β, TNF-α, and NE were significantly elevated compared with those having undetectable pepsin levels ($p<0.05$).

Conclusions: BALF levels of IL-10, IL-12, IL-17, TGF-β, and A1AT at 6-12 months after lung transplantation are predictive of early-onset BOS, and those with BOS have an augmented chemotactic and inflammatory balance of pulmonary leukocytes and immune mediators We have also identified that aspiration induces a profound pro-inflammatory and fibrogenic environment in the pulmonary allograft. These data justify the prevention of aspiration with laparoscopic antireflux surgery and argue for the refinement of antirejection regimens.

NOTES

THIRD SCIENTIFIC SESSION | Monday, November 5, 2012 | 1:30pm to 4:00pm

EXCELLENT LONG-TERM PATIENT AND GRAFT SURVIVAL ARE POSSIBLE WITH APPROPRIATE USE OF LIVERS FROM DECEASED SEPTA- AND OCTAGENARIAN DONORS

Marcio F. Chedid, Charles B. Rosen, Scott L. Nyberg, Julie K. Heimbach

Background: Although increasing donor age adversely affects patient and graft survival after orthotopic liver transplantation (OLT), we have used livers from deceased donors (DD) older than 70 years for selected patients – older patients, patients with malignancies, patients perceived to be at a higher risk of death than predicted by their MELD scores and critically ill patients that might not survive until a younger donor liver becomes available for them. In general, we avoid using older donor livers for patients with hepatitis C (HCV). Although we and others have reported excellent short-term survival, long-term results are not known. Thus, we compared results achieved with older versus younger donor livers with the specific **aim** of determining whether older donor livers adversely affect long-term patient and graft survival for selected recipients.

Design: We reviewed all adult patients that underwent primary OLT at our institution between July 1998 and December 2010. We excluded recipients of living donor, donation after circulatory arrest, domino amyloid, split and reduced livers and multiple organs. Patient and graft survival were calculated with the Kaplan-Meier method, and comparisons were done with the log-rank test.

Results: 780 patients underwent OLT – 209 with DD $\geq$ 70 years (range 70 – 86, mean 77 $\pm$ 4) and 671 with DD <70 years (range 6 – 69, mean 41 $\pm$ 16).

DD age	HCV	N	Patient / Graft Survival (%)			
			1-Year	3-Year	5-Year	7-Year
$\geq$ 70	No	99	95 / 88	90 / 80	82 / 73	77 / 65
< 70	No	518	93 / 89	87 / 84	83 / 80	78 / 75
$\geq$ 70	Yes	10	80 / 70	70 / 50	50 / 40	38 / 30
< 70	Yes	153	86 / 84	82 / 78	79 / 75	75 / 72

There were no differences in patient or graft survival between recipients of older versus younger DD livers in non-HCV patients. Patient and graft survival in HCV patients receiving older DD livers were significantly less than results achieved with younger DD livers ($p<0.03$ and $p<0.006$). The differences were attributable to recurrent HCV.

Conclusion: Excellent long-term patient and graft survival can be achieved with appropriate use of livers from septa- and octogenarian deceased donors. Results in selected patients are comparable to results with younger donors. Older donor livers should not be used for patients with HCV due to a prohibitively high rate of recurrent HCV leading to graft loss and patient death.

NOTES

THIRD SCIENTIFIC SESSION | Monday, November 5, 2012 | 1:30pm to 4:00pm

OUTCOMES WITH SPLIT LIVER TRANSPLANTATION ARE EQUIVALENT TO WHOLE ORGAN TRANSPLANT

M.B. Majella Doyle, Erin Maynard, Ying Lin, Neeta Vachharajani, Surendra Shenoy, Christopher Anderson, Mark Earl, Jeffrey A. Lowell, and William C. Chapman

Background: Split liver transplant is an excellent option for expansion of the deceased donor organ pool. However reports of increased morbidity in recipients of split liver transplants have been reported which results in caution with this technique at many centers.

Hypothesis: To determine the outcomes and impact of the splitting livers in split liver transplant recipients.

Design and setting: Single center retrospective analysis of a prospectively collected database.

Patients and Methods: From August 1995 to March 2012 1,297 liver transplants were performed at our center. Fifty (3.9%) recipients received grafts from split livers. Twenty-two were performed as in-situ splits and generated 39 grafts and 6 ex-vivo splits generated 8 grafts. The remaining grafts were either exported to other centers or were too small to be used.

Results: The 1-, 5-, and 10 year patient and graft survival in adult recipients was 95.5%, 89.5%, and 89.5% (patient) and 95%, 89.5%, and 89.5% respectively (graft). There was no difference in survival when compared to whole organ recipients (p=0.09). Twenty-three adults received split grafts, right trisegment grafts in 18 (78%), right lobes in 4 (17.4%) and left lobe in 1 (4.3%). The mean cold ischemic time was 5.7 hours (+/- 2.4) and warm ischemic time was 36 minutes (+/- 5.5). Seven (30.4%) recipients required reconstruction of the hepatic artery/s, and 5 (21.7%) required a caval venous patch and 5(21.7%) had roux en Y reconstruction of the bile duct and no venous conduits were required. Complication rates (including bile leak, HAT, and reoperation) comparing adult whole organ and recipients of split grafts were also similar (table 1). Twenty-seven children received split grafts with a median age of 1 year (0.5 to 16) and weight of 8.7Kg (3.6 to 45Kg). The median PELD/MELD at transplant was 25 (-10 to 53) with 5 patients having status 1 or 1a. 24 were for primary transplant (88.9%) and the remainder was for redo-liver transplant. Pediatric split 1-, 5-, and 10 year survival 96.3%, 82.9%, 82.9% and graft survival 92.4%, 79.35, and 79.3% respectively. There was no difference between the pediatric ex-vivo and in-situ splits. Choledochojejunostomy was performed in all patients. Complications included retransplantation in 3 (11%) recipients, bile leak in 3 (11%), hepatic arterial thrombosis (HAT) in 1 (3.7%), bowel perforation in 2 (7.4%) patients and reoperation for bleeding in 2 (7.4%). The mean donor age was 23.6(+/- 10.3) and the mean BMI was 23.0 (+/- 4.4).

Conclusions: We demonstrate excellent outcomes in adults and pediatrics using split grafts, with similar outcomes in adults compared to those receiving a whole organ. We recommend escalation of the use of split liver transplant to continue to expand the donor pool for cadaveric liver transplantation.

NOTES

THIRD SCIENTIFIC SESSION | Monday, November 5, 2012 | 1:30pm to 4:00pm

RESECTION OF THE INFERIOR VENA CAVA AND LIVER FOR MALIGNANCY

Alan W. Hemming, Ivan Zendejas, Robin Kim, Alan Reed, Kristin Mekeel

Background: Involvement of the inferior vena cava (IVC) has traditionally been considered a relative contraindication to resection for advanced tumors of the liver.

Hypothesis: Combined resection of the liver and inferior vena cava for malignancy can be performed safely and results in long term survival.

Design: Retrospective study

Setting: University Hospital

Patients and Methods: Sixty patients undergoing hepatic and IVC resection by the senior author from 1996-2012, were reviewed. Median age was 52 years. Resections were carried out for: cholangiocarcinoma (26), hepatocellular carcinoma (16), colorectal metastases (14), GIST (2) and hepatoblastoma, and squamous cell carcinoma in 1 patient each. Resections performed included 27 right and 5 left trisegmentectomies, 25 right and 3 left lobectomies including the caudate lobe. Ex-vivo procedures were performed in 6 cases using veno-venous bypass while the other 50 cases were performed using varying degrees of vascular isolation. *In-situ* cold perfusion of the liver was used in 8 cases. The IVC was reconstructed tube graft (38), primarily (8), or with patches (14).

Results: There were 5 perioperative deaths (8%). Three patients died of liver failure, 1 patient with cholangiocarcinoma died of pulmonary hemorrhage and 1 patient died of massive pulmonary embolism. Nine patients had evidence of postoperative liver failure that resolved with supportive management and 3 patients required temporary dialysis. With median follow-up of 31 months, 13 patients have died of recurrent malignancy between 22-44 months, while an additional 4 patients are alive with disease at between 16-33 months. Actuarial 1 and 5 year survivals were 89%, and 35% respectively.

Conclusion: IVC involvement by malignancy does not obviate resection. The procedure's increased risk is balanced by the possible benefits, given the lack of alternative curative approaches.

NOTES

THIRD SCIENTIFIC SESSION | Monday, November 5, 2012 | 1:30pm to 4:00pm

THE OPTIMAL SURGICAL STRATEGY FOR PATIENTS WITH EXTENSIVE LIVER MALIGNANCY AND VERY LOW FUTURE LIVER REMNANT VOLUME: ALPPS VS. PERCUTANEOUS PORTAL VEIN EMBOLIZATION AND SINGLE-STAGE SURGERY

Thomas Aloia, Junichi Shindoh, Eddie Abdalla, Steven Huang, Michael Wallace, Steven Curley, and Jean-Nicolas Vauthey

Background: The primary reported indication for the two-stage, extended right hepatectomy with the Associating Liver Partition with Portal vein Ligation for Staged hepatectomy (ALPPS) technique is in patients with very low future liver remnant volumes. Given the elevated incidence of major morbidity (40.0%), liver insufficiency (16.0%), and in-hospital mortality (12.0%) of the ALPPS approach, we sought to determine the efficacy of percutaneous portal vein embolization followed by single-stage hepatectomy in these patients.

Patients and Methods: Tumor resectability and morbidity/mortality rates were reviewed for 144 consecutive liver tumor patients with future liver remnant to body weight ratios (LR/BW) less than 0.5% (median LR/BW: 0.33% [0.11 – 0.49]). All patients were referred for preoperative right plus segment IV portal vein embolization (rPVE+IV) using embolic microspheres, with restaging and recalculation of the LR/BW obtained 30 days after PVE.

Results: rPVE+IV was successfully performed in 141 of the 144 study patients (97.9%). Adequate regeneration was observed in 139 patients with median post-PVE LR/BW rising to 0.52% (0.18 – 1.03, $p<0.0001$), representing a per-patient median regeneration of 62.1% (0.3 - 379%). In total, 104 patients (72.2%) underwent extended right hepatectomy (n=102) or right hepatectomy (n=2). The remaining 40 patients (27.8%) were not resectable due to short-interval disease progression (27 patients, 18.5%), insufficient liver regeneration (5 patients, 3.5%), and/or medical comorbidities (8 patients, 5.6%). After resection, the following outcomes were observed: major morbidity: 33.0% (34/104), liver insufficiency: 12.5% (13/104), and 90-day mortality: 5.8% (6/104).

Conclusion: For patients with locally advanced liver malignancy, post-PVE disease progression is the main reason for surgical drop out. Based on its ability to select oncologically resectable patients and its superior safety and efficacy profiles, rPVE+IV followed by extended right hepatectomy remains the standard of care for patients with very low future liver remnant volumes.

NOTES

THIRD SCIENTIFIC SESSION | Monday, November 5, 2012 | 1:30pm to 4:00pm

LAPAROSCOPIC IVOR LEWIS ESOPHAGECTOMY WITH PRIOR GASTRIC ISCHEMIC CONDITIONING: A NEW STANDARD OF CARE FOR ESOPHAGEAL CANCER

Swee H Teh, David McCaslister

Background: Despite a decrease in operative mortality, esophageal resection still carries significant perioperative morbidity. We hypothesized that the perioperative morbidities can be minimized by ischemic condition of the gastric conduit prior to laparoscopic esophagectomy.

Methods: From Jan 2005 to Jan 2012, 101 patients had esophagectomy (52 Laparoscopic Ivor Lewis and 49 open transhiatus esophagectomy). All patients in the laparoscopic group participated in the prospective preoperative nutritional and physical stamina improvement program. They also underwent laparoscopic proximal gastric devascularization 1 to 2 weeks before laparoscopic Ivor Lewis esophagectomy. A 3 cm gastric conduit was constructed without pyloroplasty. An end-to-side esophago-gastric anastomosis was constructed via a linear staple and a totally laparoscopic intracoporeal suturing technique. All 49 open esophagectomy was done as a single stage transhiatus approach with a 5 cm gastric conduit with pyloroplasty.

Results: The 30 days hospital mortality was zero in both groups.

In the laparoscopic group, the perioperative morbidity was 6% (3 patients) (1 superficial wound infection, 1 pneumonia and 1 gastric staple line leaks). The mean hospital stays was 6 days (4 to 14 days). No patient develops symptoms of delay gastric emptying.

In the open group, the perioperative morbidity was 18% (9 patients, p=0.05.) (4 wound infections, 3 pneumonia, 3 anastomosis leaks and one pulmonary embolism). The mean hospital stays was 11 days (7 to 33 days) with 3 patients described symptoms of delay gastric emptying (8%).
After a mean follow up of 3.2 years, 6 patients (12%) in the open group and 1 patient (1.9%) in the laparoscopic group develop symptomatic anastomosis stricture and required endoscopic dilatation (p=0.04).

Conclusion: Laparoscopic Ivor Lewis esophagectomy in combination of a preoperative improvement program including ischemic conditioning and narrower gastric conduit can significantly decrease the short and long terms morbidity of esophagectomy.

NOTES

FOURTH SCIENTIFIC SESSION

Tuesday, November 6, 2012 | 8:00am to 12:00 Noon

DURATION OF CHRONIC CRITICAL LIMB ISCHEMIA PREDICTS AMPUTATION-FREE SURVIVAL

Jayer Chung, David A. Timaran, Chul Ahn, Mitchell Plummer, Carlos H. Timaran, Melissa L. Kirkwood, Mirza S. Baig, R. James Valentine

Background: Untreated**, c**hronic critical limb ischemia (CLI) results in major amputation rates greater than 40%. Delays in treatment occur frequently, which intuitively results in higher amputation rates. However, the effect of treatment delays upon amputation-free survival (AFS) has not been quantified.

Hypothesis: Patients with prolonged ischemia times will have shorter AFS relative to patients with shorter ischemia times.

Design: Single-center prospective cohort.

Setting: Urban chronic critical limb ischemia population.

Patients and Methods: All patients presenting to with CLI to the Vascular Surgery service comprise the basis for this report. The primary outcome variable was AFS, which was examined with respect to the duration of ischemia, baseline variables of age, gender, medical co-morbidities, laboratory values, ambulatory status, and Rutherford classification. Significant univariate predictors ($p < 0.10$) of AFS were entered into a multivariate Cox proportional hazards model.

Results: From August 1, 2010 through October 31, 2011, 87 patients (52 men, mean age 59.7 +/- 9.7 years) received Vascular Surgery consultation for CLI (38 for rest pain, 49 for tissue loss). Actuarial estimated AFS for the entire cohort was 194.1 days +/- 11.7. Significant univariate predictors of major amputation or death were initial non-ambulatory status (p=0.05), un-revascularized patients (p=0.04), and duration of ischemia prior to vascular surgical intervention (p<0.01). Independent predictors of major amputation or death include: initial non-ambulatory status (p=0.03, hazard ratio [HR], 1.46; 95% confidence interval [CI], 1.03-2.05); duration of ischemia (p<0.01, HR, 1.006; 95% CI, 1.002-1.010); a history of coronary artery disease (p=0.01, HR, 4.16; HR 1.40-12.38) and un-revascularized patients (p=0.02, HR, 3.82; 95% CI 1.41-10.37).

Conclusion: Coronary artery disease, absence of revascularization, initial non-ambulatory status, and duration of ischemia independently predict AFS, with delays longer than thirty days increasing the risk of amputation and/or death by 19%. Population-based efforts to decrease delays in presentation to vascular surgeons may improve major amputation rates.

NOTES

FOURTH SCIENTIFIC SESSION | Tuesday, November 6, 2012 | 8:00am to 12:00 Noon

BARRIERS TO EFFICIENT TRAUMA CARE ASSOCIATED WITH CT SCANNING

Daniel Shouhed, Renaldo Blocker, Eric Ley, Ken Catchpole, Doug Wiegmann, Steven Rudd, Jennifer Blaha, Jean-Phillipe Okhovat, Mark Paulsen, Bruce L. Gewertz

Background: Although utilization of CT scanners is often problematic in trauma patients, the specific problems encountered in CT, such as frequent delays and the lack of resources for airway control, have not been systematically studied. We utilized human factors analysis to evaluate the type and impact of flow disruptions (FD, defined as "deviations that compromise safety or efficiency") in trauma care with a focus on CT scanning.

Hypothesis: Identifying the type and impact of FD within the imaging phase of trauma care will offer a better understanding of the delays and risks associated with the CT scanner and provide opportunities to improve patient safety and system efficiency.

Design: A prospective observational study was conducted to identify and quantify the type and impact of FD that occurred during different phases of trauma care (trauma bay, imaging and OR). This report focuses specifically on the imaging aspect of trauma care.

Setting: The study was conducted at an 878-bed tertiary level-I metropolitan hospital.

Patients and Methods: Seven trained graduate students observed 87 consecutive trauma cases over two months. Observers recorded details on FD using a validated Tablet-PC data collection tool and recorded work-system variables related to breakdowns in communication, coordination, environmental distractions, equipment issues and patient factors. The clinical impact of each FD was scored post hoc. FD impact was classified as 1 (none to minimal delay), 2 (moderate delay), and 3 (major delay).

Results: 1759 overall FD were recorded, 582 (33%) of which occurred in CT or on the way to CT. Patients spent an average of 30 minutes (SD 15 min) in the CT scanner and spent an average of 25 minutes (SD 13 min) in the trauma bay prior to arriving in CT. 77 (89%) of the 87 trauma patients were taken to CT. Among the patients that went to CT, 54% experienced a CT-related FD at level 3 (major delay). In fact, among all the FD with an impact score of 3, 60% were associated with CT. The most common types of FD in the CT scanner were poor coordination (34%), poor communication (19%) and patient factors (12%). Common descriptions of FD associated with the CT scanner included scanner unavailability and untimely movement or improper positioning of the patient.

Conclusion: This prospective study is one of the first and largest to objectively document the frequency, type and impact of FD occurring during the imaging phase of trauma care. This systematic human factor analysis indicates that interventions focused on CT scanning (reducing communication/coordination failures and better controlling patient factors) should provide safer and more efficient trauma care.

NOTES

FOURTH SCIENTIFIC SESSION | Tuesday, November 6, 2012 | 8:00am to 12:00 Noon

POST INJURY HYPERFIBRINOGENEMIA COMPROMISES EFFICACY OF HEPARIN-BASED VTE PROPHYLAXIS

Jeffrey N. Harr, Ernest E. Moore, Arsen Ghasabyan, Theresa L. Chin, Eduardo Gonzalez, Max Wohlauer, Anirban Banerjee, Christopher C. Silliman

Background: The efficacy of venous thromboembolism (VTE) prophylaxis following trauma remains debated. Although hyperfibrinogenemia (HF) is a marker of pro-inflammatory states, it is also known to contribute to thrombus formation. HF is common following severe injury, but the effect of HF on VTE prophylaxis has not been elucidated.
Hypothesis: Heparin is less effective for VTE prophylaxis following severe injury due to hyperfibrinogenemia.

Design: Randomized controlled trial

Setting: Academic level-1 trauma center surgical intensive care unit

Patients and Methods: Critically injured patients were randomized to standard VTE prophylaxis (5,000 Units LMWH daily) or TEG-guided prophylaxis (up to 10,000 Units LMWH daily), and were followed for 5 days in the surgical intensive care unit. Outcomes measured were TEG parameters, anti-Xa levels, and the incidence of VTE. In vitro studies evaluated TEG parameters in 10 healthy volunteers after the addition of fibrinogen concentrate and heparin.

Results: 50 patients were enrolled with 25 in both the control and study arms. Patients were similar regarding age, BMI, ISS, APACHE, base deficit, and baseline hemoglobin, platelet, and fibrinogen levels. TEG parameters, fibrinogen, platelet count, and anti-Xa levels did not differ between groups. Among all patients, fibrinogen levels (597±24.0 to 689.3±25.0) increased over the 5-day study period, as well as clot strength (9.8±0.4 to 14.5±0.6) (Figure). In vitro studies revealed that increasing functional fibrinogen levels by almost 200 mg/dL reversed the effects of heparin as measured by TEG including R-time and clot strength.

Conclusion: Standard doses of LMWH are sub-therapeutic in post-injury patients. This appears to be due to the acute phase increase in fibrinogen, and suggests a need for further evaluation of post-injury VTE prophylaxis.

ABSTRACTS *CONTINUED*

NOTES

FOURTH SCIENTIFIC SESSION | Tuesday, November 6, 2012 | 8:00am to 12:00 Noon

POSTOPERATIVE PLASMA ALDOSTERONE LEVEL AS AN OUTCOME PREDICTOR AFTER ADRENALECTOMY FOR PRIMARY HYPERALDOSTERONISM

Michael Tsinberg, Robin M. Cisco, Chienying Liu, Anouk Scholten, Wen T. Shen, Jessica Gosnell, Orlo H. Clark, Quan-Yang Duh

Background: Successful adrenalectomy results in better blood pressure control in patients with aldosteronoma. Plasma aldosterone level on the first postoperative day is frequently suppressed or undetectable. We hypothesized that first postoperative day plasma aldosterone level predicts postoperative blood pressure normalization and number of postoperative antihypertensive medications.

Patients and Methods: We retrospectively reviewed 146 patients who underwent laparoscopic adrenalectomy in one institution between 1994 and 2011. 87 patients had postoperative day one plasma aldosterone level measured. Arterial blood pressure before and after surgery, and number of preoperative and postoperative antihypertensive medications were analyzed. Data are expressed as mean±SEM

Results: Thirty five patients (24 men, 11 women, age 51.1±1.8) had undetectable (<1 ng/dl) plasma aldosterone on postoperative day one, 52 patients (29 men, 23 women, age 51.3±1.4) had measurable aldosterone level (1 – 13 ng/dl). In the group with undetectable aldosterone level preoperative blood pressure was 148±3.5/92±2 versus 152±2/90±1.4 in the group with measurable postoperative aldosterone level (p=0.6). Postoperative day one blood pressure was 130±2.2/73.9±1.2 versus 141±1.8/79±1.4 (p=0.0004), on the follow up visit blood pressure was 130.3±2.2/80±1.6 vs. 140.3±1.5/84.4±1.4 (p=0.04). The number of antihypertensive medications before adrenalectomy was 1.8±0.2 in undetectable group vs. 1.9±0.1 in measurable group (p=0.5). After adrenalectomy it was 0.62±0.1 vs. 0.94±0 (p=0.02).

Conclusion: Postoperative outcome measures (blood pressure and number of antihypertensive medications) are different in patients with undetectable versus suppressed aldosterone level one day after adrenalectomy. Postoperative day one plasma aldosterone level may help to select patients with higher risk for persistent hypertension and more need for antihypertensive medications regimen.

NOTES

FOURTH SCIENTIFIC SESSION | Tuesday, November 6, 2012 | 8:00am to 12:00 Noon

LIVING DONOR KIDNEY TRANSPLANTATION USING LAPAROSCOPICALLY PROCURED MULTIPLE RENAL ARTERY KIDNEYS AND RIGHT KIDNEYS

Marcio F. Chedid, Carl Muthu, Justin M. Burns, Tim G. Lesnick, Walter Kremers, Mikel Prieto, Julie K. Heimbach, George Chow, Mark D. Stegall, Patrick G. Dean

Background: The use of kidneys with multiple renal arteries (MRA) and right kidneys procured laparoscopically for living donor kidney transplantation (LDKTx) remains controversial.

Hypothesis: Long-term recipient outcomes of LDKTx using MRA kidneys and right kidneys are comparable to those using single renal artery (SRA) and left donor kidneys.

Design: Retrospective cohort study.

Setting: Single-center tertiary referral teaching hospital.

Patients and Methods: We reviewed the medical records of 1,134 consecutive recipients of LDKTx using laparoscopically procured kidneys from 2000 to 2009. Pediatric recipients and recipients of positive cross match and/or ABO incompatible transplants were excluded. We compared the outcomes of recipients of MRA kidneys to those receiving SRA kidneys and the outcomes of the recipients of right kidneys to those of left kidneys. Renal function was estimated using the MDRD equation.

Results: MRA kidneys (192 two-artery and 18 three-artery kidneys) were used in 210 (19%) of the 1,134 LDKTx. The most common reconstructive technique used for MRA kidneys was side-to-side anastomosis of the multiple arteries (64%). There were no significant differences in vascular complications (1% vs. 2%, P=0.17), urologic complications (3% vs. 2.5%, P=0.47), graft survival at 1 year (95% vs. 96%, P=0.75) and 1-year eGFR (P=0.48) between recipients of SRA and MRA kidneys. Patient and graft survival was similar for recipients for SRA and MRA kidneys (5 years=85 vs. 84%, P= 0.84). Graft survival was similar for recipients of right vs. left kidneys (5 years=82% vs. 85%, p= 0.44). There was a 4% difference (P=0.07) in patient survival by 5 years favoring recipients of left-sided donor kidneys. Recipients of right kidneys had a lower 5-year mean eGFR (46 vs. 53 mL/min/1.73 m^2, P=0.0009).

Conclusion: Satisfactory long-term outcomes can be obtained in LDKTx using MRA kidneys and right kidneys recovered laparoscopically. Unavailability of a single renal artery left kidney should not preclude LDKTx.

NOTES

FOURTH SCIENTIFIC SESSION | Tuesday, November 6, 2012 | 8:00am to 12:00 Noon

MACHINE PERFUSION: NOT JUST FOR MARGINAL KIDNEY DONORS

Robert M Cannon, Guy N Brock, R Neal Garrison, Michael R Marvin, Glen A Franklin

Background: Interest in machine perfusion (MP) for donated kidneys has markedly increased in the past decade as a means to improve graft function, although the benefits of use in non-marginal donors have yet to be defined.

Hypothesis: Machine perfusion reduces delayed graft function (DGF) in standard criteria (SCD) kidney donors.

Design: Retrospective review of national database.

Setting: United States transplant centers.

Patients and Methods: All patients over 18 undergoing de novo isolated kidney transplantation from SCD donors contained in the UNOS database form 1/1/2005 through 3/31/2011 were reviewed, with the primary endpoint of DGF, defined as dialysis within 7 days of transplantation, in those who received kidneys that underwent MP versus cold storage (CS) alone. Three methods were used to control for differences between the MP and CS kidneys. Traditional multivariable logistic regression was performed, adjusting for multiple donor and recipient characteristics significantly associated with DGF. Rates of DGF were also compared in a cohort of MP vs. CS recipients matched by propensity scores. Finally, a paired kidney study, where one kidney underwent MP and the other kidney from the same donor underwent CS, was performed.

Results: There were 36,323 patients in the study, with unadjusted DGF rates of 18.6% (n=1,830/9,882) and 22.4% (n=5,931/26,441; p<0.001) in the MP vs. CS groups, respectively. After multivariable analysis, the odds ratio (OR) for DGF in the MP group was 0.59 (p<0.001) vs. the CS group. In the propensity matched cohort, there were 8,929 patients each in the MP and CS groups. DGF occurred in 16.8% of the MP group vs. 25.3% of the CS group (p<0.001), corresponding to an OR of 0.59. In the paired kidney study, rates of DGF were 16.7% vs. 24.3% (p<0.001) in the 1,665 recipients each in the MP versus CS groups, giving an OR of 0.60.

Conclusion: Machine perfusion is beneficial in reducing delayed graft function even when standard donors are utilized, and thus should be considered for expanded use in this population.

NOTES

FOURTH SCIENTIFIC SESSION | Tuesday, November 6, 2012 | 8:00am to 12:00 Noon

DEVELOPMENT AND VALIDATION OF A NECROTIZING SOFT-TISSUE INFECTION MORTALITY RISK CALCULATOR USING NSQIP

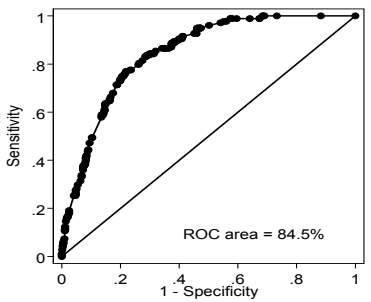
Iris Faraklas, Greg Stoddard, Leigh Neumayer, Jeffrey Saffle, Amalia Cochran

Background: Necrotizing soft-tissue infections (NSTI) are a group of uncommon, rapidly progressive infections requiring prompt surgical debridement, intensive care services, and complex wound care. A risk score estimating postoperative mortality for these patients does not exist.

Objective: The objective of this study was to develop and validate a 30-day postoperative mortality risk calculator for patients with NSTIs.

Methods: The National Surgical Quality Improvement Program (NSQIP) dataset (2005-2010) was used. Patients diagnosed with NSTI were identified by ICD-9 codes. Multiple logistic regression analysis identified key preoperative variables. Bootstrap analysis was used to validate model.

Results: In 1,392 identified cases demographics were as follows: 42% female, 68% Caucasian, median age 55 (IQR 46-63), median BMI 32 (IQR 26-40). Thirty-day mortality was 13%. Seven independent variables were identified: patients older than 60 (OR=2.5, CI: 1.7-3.6), functional status (partially dependent OD=1.6, CI: 0.9-2.7; totally dependent OR=2.3, CI: 1.4-3.8), requiring dialysis (OR=1.9, CI: 1.2-3.1), ASA class 4 or greater (OR=3.6, CI: 2.3-5.6), emergent surgery (OR=1.6, CI: 1.0-2.3), septic shock (OR=2.4, CI: 1.6-3.6), and low platelet count (<50 (OR=3.5, CI:1.6-7.4); <150 but >50 (OR=1.9, CI:1.2-2.9). The ROC area was 0.85 (CI: 0.82-0.87) which indicated a strong predictive model as shown in graph. Using bootstrap validation to represent the model in future patients, the optimism-corrected ROC area was 0.83 (CI: 0.81-0.86). The model was used to develop an interactive risk calculator.



Conclusion: This risk calculator has excellent predictive ability for mortality in patients with NSTIs. This simple interactive tool can aid physicians and patients in the process of pre-operative counseling.

NOTES

NOTES

119th Transactions

The Annual Meeting of the
Western Surgical Association
2011, Volume 119

Edited by Clive S. Grant, M.D.
Recorder of the Association

November 13-16, 2011
Loews Ventana Canyon Resort
Tucson, Arizona

NOTES

Gregory J. Jurkovich, MD, FACS
President 2011

Presidential Address
"Regionalized Health Care and the Trauma System Model"

Permission granted
Rights granted herewith are nonexclusive
Journal of American College of Surgeons
Vol. 213 No. 1, July 2012, Pages 1-11

WESTERN SURGICAL ASSOCIATION PRESIDENTIAL ADDRESS

Regionalized Health Care and the Trauma System Model

Gregory J Jurkovich, MD, FACS

This is the 119th presidential address to one of the oldest surgical societies in North America. The "Western" was founded in 1891 in Topeka, KS, which at the time was indeed a western outpost in the United States. Originally intended to have a geographic distribution of states bordering on and west of the Ohio and Mississippi Rivers and their major tributaries, the association now has no geographic constraints. We have held continuous annual meetings since 1891, with the exception of 1943.My first meeting was in 1984, as the guest ofDrDale Liechty (president, 1986), at the Broadmoor Resort in Colorado Springs, wherewe have held 13 annual meetings, making it the most common meeting site for our organization. In the past 3 decades the members and leadership of this organization have influenced my professional career, research, and clinical care activities. The famous camaraderie in this association has nourished my enjoyment and love of academic surgery and maintained my knowledge and education in the broad area of general surgery. The "Western" has also afforded me tremendous opportunities and you have greatly honored me with your trust and recognition, and I thank you.

I also want to publically thank the chairmen of surgery who have directly or unknowingly perhaps allowed me this honor. John Najarian atMinnesota and Tom Starzl at Colorado so strongly influenced my medical school and surgical residency training that I seriously considered a career in transplant surgery. But the influence of the trauma surgeons Bill Curreri, C James Carrico, and EGeneMoore led me to a career in trauma and acute care surgery. My chairman for the last 15 years, Carlos Pellegrini, has been an influential role mode and mentor in the finest tradition, combining a remarkably insightful and dedicated leadership with sincere personal attention to his entire faculty. My academic career also owes much to Ron Maier, Fred Rivara, and EllenMacKenzie and the entire acute care surgery faculty at Harborview Medical Center in Seattle. I believe our collaboration and friendship sets a benchmark for how to make an academic career enjoyable, productive, and meaningful. I have indeed been fortunate.

The purpose of this talk today is to examine why regionalization of health care has become so ubiquitous in medical system discussions, to explore in some detail the trauma model of regionalization, and to propose a national acute care surgery regionalized care model. Regionalization of health care is part of the larger dynamics of change in medicine that includes demographics, financing, and generational identity issues of physicians in training and future providers of care. Trauma systems, I believe, provide a model for effective regionalized care, and I will propose a national acute care surgery network of hospitals built

on this model. But there are lessons that can be learned from 35 years of trauma system development and implementation, and regionalization is not appropriate for all of medical care.

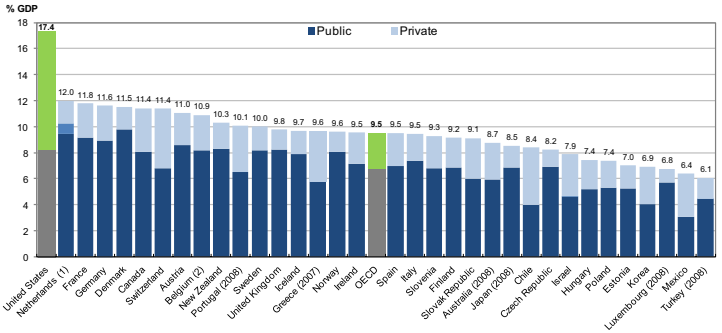


Figure 1. Total health expenditure as a percent of gross domestic product, 2009. United States is highest at 17.4%. Organization for Economic Co-operation and Development (2010), doi: 10.1787/data-00350-en (Accessed February 14, 2012). (Reprinted from: OECD Health Data, OECD Health Statistics [database], with permission.)

MONEY: FINANCING HEALTH CARE

The financing of health care in the United States is poised to undergo another major change, with ramifications affecting how care is delivered that are likely to rival the changes brought about by the Johnson-era establishment ofMedicare andMedicaid. At a time when our national debt ($14 trillion) is about equal to our gross domestic product (GDP), the pressure to reduce spending (and increase revenue) are likely severe enough to bring about change. The total federal dollars spent on health care represent about 17% of GDP, and our percapita spending of more than $7,500 makes theUnited States one of the most costly health care countries in the world (Figs. 1 and 2). The rate of growth of health care expenditure shows no promise of abating, as our population ages and the majority of health care dollars are spent on the elderly. In January 2011, a federal bipartisan commission on debt reduction recommended a $200-billion reduction in health care expenditures by cutting federal spending on graduate medical education, expanding accountable care organizations to include bundled payments, making cuts toMedicare Advantage, home health care, and disproportionate share payment, and placing more Medicaid patients in managed care organization (Table 1). The Heath Care Reform and Affordable Care Act passed in 2011 was insightfully and objectively reviewed by Mike Farnell in his 2010Western Surgical presidential address, and is a major interest of the American College of Surgeons Health Policy Research Institute.[1] A very basic assessment of these issues indicates there will be fewer federal dollars for health care, and those dollars will be tied to performance, outcomes, and patient safety issues.

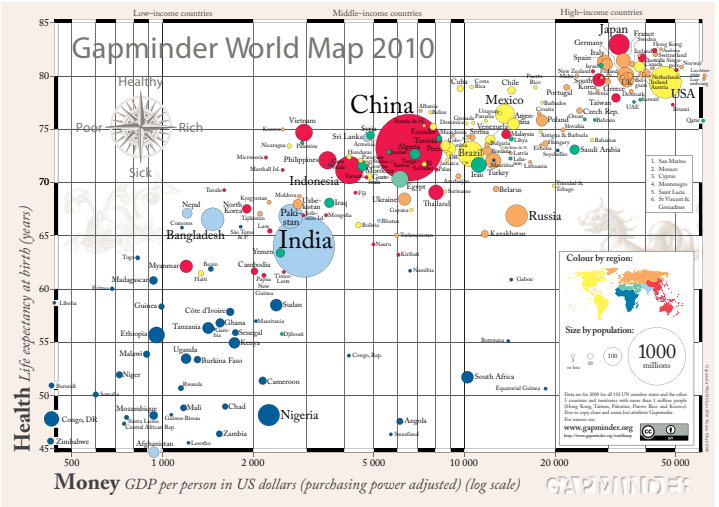


Figure 2. Wealth and health of nations: life expectancy vs. gross domestic product. Available at: http://www.gapminder.org/data/documentation/gd004/. Accessed February 14, 2012. (Source: free material from www.gapminder.org, reprinted, with permission.)

DEMOGRAPHICS: CHANGING WORK-FORCE PICTURE

The second major force that is influencing the delivery of surgical care in this country is the changing demographics of the new physicians. The loss of the general surgeon in the workforce has received much attention, with data demonstrating a 2.3% actual loss in general surgeons between 1996 and 2006, or a fall from approximately 27,000 to 25,000 general surgeons, despite a rising numbers of other primary care providers and of all specialists (Fig. 3). Future projections are no better, with a predicted 10.8% drop in overall surgical workforce by 2025, with the steepest loss in the coming 5 years. A widely accepted benchmark for general surgeons is 6.5 per 100,000 population. In 1981 there were 7.68 general surgeons per 100,000 population, falling to 5.69 per 100,000 in 2005.[2] The relative number of general surgeons in theUnited States has fallen by 25.91% since 1981. Wide variability in distribution of the general surgeon workforce is evident in all studies, but the rural areas are seeing the steepest decline to what has been characterized as critical shortages of surgeons.[3] In part, this is attributed to the aging of baby boomers and with them, the aging of a generation of general surgeons (Fig. 4). But it is also attributed to a static number of medical schools and falling MD enrollment per 100,000 population (Fig. 5). The Association of American Medical Colleges (AAMC) Center for Workforce studies document a decline in medical school enrollment from 7.3 per 100,000 population in 1980 to 5.6 per 100,000 in 2005, with prediction of further decline to 5.0 per 100,000 in 2020. Clearly, a career in medicine is not as attractive as it once was. The specialization of the surgical workforce is also pivotal. The proportion of general surgical residents who go on to pursue

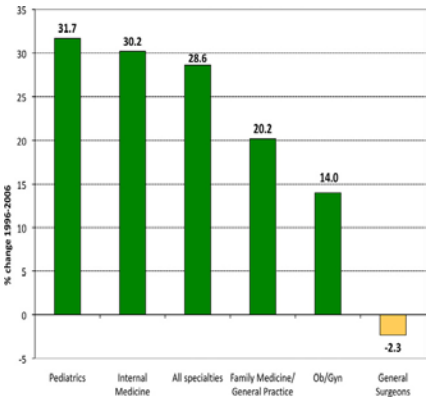


Figure 3. Decreasing general surgeon work force. (Reprinted from: Association of American Medical Colleges, Center for Health Workforce Studies, 2008 Physician Specialty Data, November 2008, with permission.)

Figure 5. First-year MD enrollment per 100,000 population has declined since 1980. (Reprinted from: Association of American Medical Colleges; U.S. Census Bureau, prepared by the Center for Workforce Studies, AAMC, February 2006, with permission.)

REGIONALIZATION: EPOCHAL TRANSFORMATION OF MEDICINE

These demographic and social forces, mixed with a changing surgical training environment and fostered by the expectations of patients, combine to encourage specialization of practice for the majority of surgical training graduates.

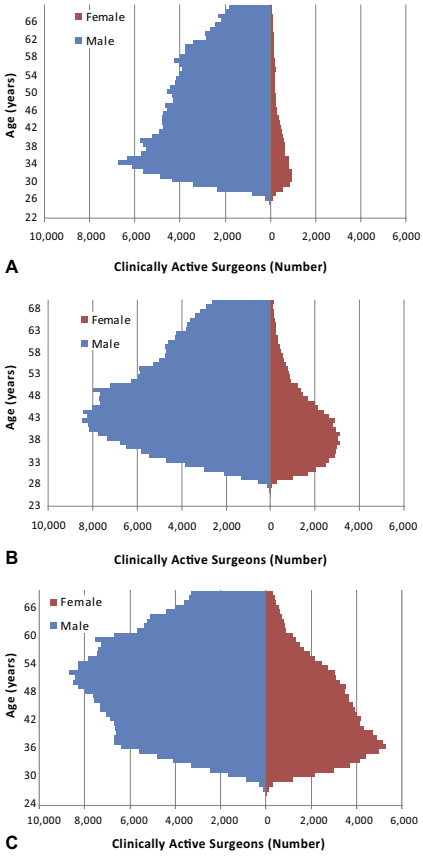


Figure 4. Age and gender trends in American surgeons. AMA Master file, all surgeons: (A) 1981; (B) 1996; and (C) 2006. (Reprinted from: George Sheldon, MD. The millennium generation & health reform: GME and beyond. 2011 Clinical Congress, American College of Surgeons Health Policy Research Institute, with permission.)

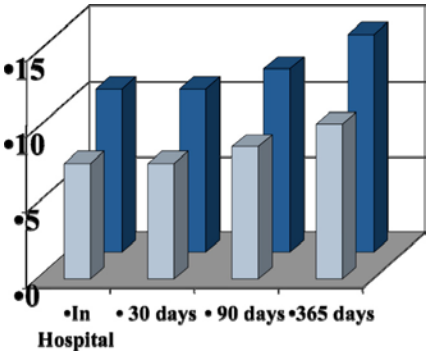


Figure 6. Survival advantage of trauma center care vs nontrauma center care. Mortality (%) vs time from injury. Data from MacKenzie EJ, Rivara FP, Jurkovich GJ, et al.[38] Light blue bar, trauma center; dark blue bar, nontrauma center.

fellowship training has increased. In 1992, 55% of surgical residents went on to specialty training compared with 70% to 80% at the current time. Because there are slightly less than 1,100 new general surgeons trained each year in the United States, only about 300 remain as general surgeons.[4,5]

There is also a growing influence of women in the surgical workforce. In 2010, 26.5% of the surgical residency graduates taking the American Board of Surgery certifying examination were women, but between 39% and 42% of residents taking the in-service examination are women. Since 1970 the total number of women entering and matriculating from US medical schools has also increased every year.Women went from less than one-third (31.4%) of all matriculates in 19821983 to a high of 49.6% in 2003–2004. In 2010–2011, women represented 46.9% of all matriculates.[6] This gender influence is not confined to medicine, of course. Since 1950 in the United States the proportion of women in the general workforce has grown from 27% to just under 50%.

GENERATIONS: CHANGING EXPECTATIONS AND MOTIVATIONS

What are the major concerns, desires, and hopes of this newest generation of surgeons? In 2001 Grabram and colleagues[7] surveyed 111 recent surgery residency graduates, 77% male, and found that financial issues and family plans and work hours represented 6 of the top 10 concerns. A joint Association of American Medical Colleges/American Medical Association 2006 survey of physicians under the age of 60 demonstrated that worklife balance is more important than income for women physicians.[8] Time for personal and family life, flexible scheduling, no call, and minimal practice responsibility have the highest appeal to women; men are more motivated by current and long-term income potential.

In perhaps the best assessment of attitudes of general surgery residents, Yeo and colleagues[9]

surveyed more than 4,400 categorical residents of all levels in 2008, representing 82% of all the residents and virtually every training program in the country. The good news from that survey is that 95% of residents like their jobs, their programs, and their fellow residents; and about 90% of residents are satisfied with their operative experience and technical skills, and feel the work is worth the reward. But a substantial majority (net 29% over neutral) believe that they must become specialty trained to be successful, to be competitive in the market place (net 43% over neutral), and in doing so, will have a better lifestyle (net 51% over neutral). This should not be surprising given that there has been an explosion of medical knowledge and information, there is less training time to learn and master this body of information, and most residents are trained in university-affiliated institutions where nearly all surgeons have developed niche practices that are highly specialized with remarkably challenging clinical scenarios and generally superb outcomes.

Much has been said and written about the generational differences that are altering the American work force in this early part of the 21st century.[10-12] The workplace still has a substantial number of baby boomers, many in leadership positions, but more and more the Generations X and Y are influencing the dynamics of work. Although there is considerable overlap, social scientists have some disagreement on the exact descriptions, baby boomers are those born between the years 1946 and 1964; Generation X born between 1964 and 1984, and Generation Y between 1985 and 2005. Generation Y is also referred to as "Millennials" (turned 21 after 2001), Net or Next Generation, or "Echo-Boomers. The importance of these generation perspectives on life, living, and work place should not be underestimated as forces that influence career selection, job satisfaction, and priorities in life.Unquestionably, the younger workforce is not nearly as loyal to their employer and certainly less willing to sacrifice personal and family life for career demands. They also tend to value friends over all other relationships, and have an expectation of being told exactly what is needed of them, and rewarded for accomplishing just that. Other influential characteristics of Generation Y is that they are generally optimistic, team-oriented, innovative, and environmentally conscious.[7,9,13-15] General surgery has become a vanishing practice, being replaced with surgeons who focus their efforts on an expanding variety of niche practices: hernia, breast, endocrine, surgical oncology, colorectal, vascular, and laparoscopic or minimally invasive gastrointestinal surgery.To be sure, the broad-based and broadly trained general surgeon remains the linchpin of every rural hospital and certainly has not disappeared from practice. Yet with specialization and with the falling number of general surgeons has come a dramatic decline in surgeons willing to take call — that most basic of responsibilities to provide surgical care for any number of unattached, often under- or uninsured, surgical urgencies and emergencies.

This problem has been noticed since the beginning of the 21st century and has received considerable attention from a wide variety of public and private organizations and governmental agencies. The cover story of US News and World Report in 2011 was entitled, "Crisis in the ER." The RobertWood Johnson Foundation report authored by Rao and colleagues3 in 2011 highlights the shortage of surgeons who take emergency call and suggests that "three-quarters of the nations' emergency departments do not have enough on-call coverage by surgical specialists to meet the demand for round-the-clock specialty care." The influential Institute ofMedicine (IOM) 3-volume report in 2009 entitled, "Future of Emergency Care," noted that hospital-based emergency care was at the breaking point, with overcrowding of emergency departments, boarding of patients in the emergency department, ambulance diversion, and uncompensated care being the most pressing problems.

One of the key suggested solutions in the Institute of Medicine report was to regionalized on-call specialty care services. The concept here is that if many hospitals cannot find willing (or able) surgical coverage for certain surgical urgencies or emergencies, then the patients should be sent to regionalized centers of care that can provide these services. The burden on the patient is significant: moving great distances to receive health care. The burden on the receiving hospital is also significant: the patients often are the most challenging and underfunded in medicine. The burden on the profession of surgery is also significant, if often overlooked: a further erosion of the perception of our profession as one concerned primarily about the sick and suffering to one more concerned about themselves, lifestyle, and income. Nonetheless, this does appear to be the best model for the future of surgical care. The purpose of regionalization of care is to consolidate complex and high technology medicine into regional centers with adequate surgeons in all specialties, in the hope that this will ensure quality and cost-effective care. It is an opportunity for surgical leadership to become involved in this dramatic change in medicine.

REGIONALIZATION: CONCENTRATION OF CARE IMPROVES OUTCOME

Regionalized care is certainly not a new idea. The concept that the more you do of something complex the better you get at it is intuitive, and that is the underpinning of regionalization and volume performance.Harold Luft is generally credited for bringing the concept of volume performance in medicine to modern discussions. In an article in 1979 he and his colleagues demonstrated that hospital volume with complex surgical cases was directly related to outcomes, and in a subsequent article in 1987 demonstrated that the volume of cases an individual surgeon performed was also a measure of quality.[16,17] John Birkmeyer is probably most well known to surgeons for a number of articles that looked closely at this concept of volume performance for surgical care. An important one published in 2002 examined hospital volume and surgical outcomes for a large number of cardiovascular, thoracic, and abdominal operations.[18] In this nationwide review of outcomes, mortality improves with increasing volume performed at medical centers. The question of whether it's the medical center or the individual surgeon volume that most affects outcomes remains unresolved.

One article by Birkmeyer and colleagues[18] makes the point that it's the surgeon that's more influential than the center, but others have made just the opposite point, that it's the volume of the overall center and not so much the volume of the surgeon.

Massarweh and colleagues[19] from the University of Washington have challenged the concept of regionalization improving the overall health ofWashington State residents by examining the Leapfrog volume criteria for pancreatic resection, abdominal aortic aneurysm surgery, and esophageal resection. Their data demonstrate a concentration of esophageal and pancreatic operations at a few centers (but not abdominal aortic aneurysm), but disappointingly, there are no improved outcomes for all patients with these diseases in the state over this time period. An explanation for this finding might be found in the report by Stitzenberg, [20] which talks about the selective triage of patients to regional centers based on demographics and economics, not disease states. In this article, patients of black race, with poverty level income and lower insurance status were less likely to receive care in a high volume center. It is possible that for elective procedures (such as oncologic operations), the only people who get access to high volume centers are the ones with health insurance, less overall risk, and those who can afford to travel and have good support structure. This would imply that those most vulnerable to worse outcomes are kept at lower volume centers. That's not regionalization, and that is certainly not good for the population as a whole. That's just concentrating the richest and the wealthiest in a few specialized hospitals, and not improving quality or making more cost-effective overall health care.

The pros and cons of regionalization are also global in nature. Dr Ingemar Ihse's presidential address to the European Surgical Association talks about the issues that are driving regionalization in Europe.[21] He makes the point that hospital team volume and individual surgeon volume are probably both important, and I would agree with that.

He also makes the uncomfortable point that intrusive regulation is likely required to bring about real regionalization. I also agree with that, and the trauma system is an example of state and national governmental regulation being required to have a well-functioning system. Two of the unresolved issues in these discussions are how far a patient is willing to travel to be treated at a center or by a surgeon who has marginally better outcomes statistics, and how cost effective is regionalized care if transportation costs, and family disruption costs are considered?[20,22]

REGIONALIZATION: THE TRAUMA SYSTEM MODEL

I want to try to make the point, and I hope I can convince you, that regionalization of trauma care does work, that it is true regionalization, and that it does save lives. Successful trauma care is largely time sensitive. If you can shorten the time window from injury to definitive care, you can expect a better outcome. This has been referred to as the "golden hour" of trauma care. This tenet has been touted and taught to us by military surgeons. During the American Civil War, the time from injury to definitive hospital care was

measured in days, with a concomitant 25% mortality. The 2 great world wars saw many improvements in care (motorized vehicles, forward medics, plasma, antibiotics, hemostatic dressings) and mortality of the injured continued to fall to 8.6% and 4.5 % as transportation times fell from 8 hours to 4 hours, respectively. Civilian trauma care was not up to military standards until after the Korean War and Vietnam conflict. Those battlegrounds set the stage for forward skilled medics, helicopter transport, and surgeons dedicated to caring for the injured who returned to civilian practice. Vietnam War mortality was under 2%, enviable by today's urban trauma center statistics, with time from injury to definitive care at 30 minutes, consistent with the urban 10:10:10-minute respond, field care, and transport goals. Further advances in field trauma care during the Iraq and Afghanistan conflicts have placed a new definition on prompt scene care, triage, and regionalization, with injury mortality from wounds reported at an incredible 1.7%.[23]

Civilian care of the injured at the scene was spurred by demonstration of the efficacy of mouth-to-mouth resuscitation and cardiopulmonary resuscitation by Peter Safar in 1958, and the subsequent development of paramedics and urban emergency medical services (EMS).[24-26] Although initially developed for cardiac arrest patients, emergency medical services quickly developed into field trauma care providers. In 1966 a sentinel "white paper" entitled, "Accidental Death and Disability: The Neglected Disease," by the National Academy of Sciences called attention to trauma as a major medical disease in this country that was largely being ignored.[27] In 1972, the Emergency Medical Services System (EMSS) Act (PL93-154) established federal guidelines and funding for regional emergency medical service. The organization structure (and some federal funding) for these agencies exists today.

In 1976 the American College of Surgeons Committee on Trauma published the first version of "The Optimal Resources for a Hospital." The 8th version is to be released shortly. This is the bible of how to function as a trauma center. Initially developed to serve as a guideline for what resources a hospital is supposed to have to be a trauma center, a name change in 1990 to "Resources for Optimal Care of the Injured Patients" expanded the implications and reach of these guidelines.[28]

What is the evidence that trauma centers save lives? The evidence that trauma centers save lives comes from 4 distinctly different sources of data: preventable death studies, registry comparison studies, population-based studies, and the National Study on Costs and Outcomes of Trauma (NSCOT).[28]

Preventable death studies dominated the literature in the 1960s and 1970s, with approximately 50 studies published that consistently demonstrated remarkable 50% to 70% drops in mortality after a hospital became a designated trauma center.[29-31] Registry studies compared an individual hospital outcome with a national sampling of trauma centers or hospitals. The first national trauma registry was the result of the federally funded Major

Trauma Outcome Study, MTOS, and publications from 1980s primarily were comparisons with this database.[32-34] In the mid 1990s the American College of Surgeons Committee on Trauma developed the National Trauma Data Bank (NTDB), which now contains data on roughly 1 million patients from the past 5 years on a rolling basis. Individual centers (and surgeons) can compare their results with the NTDB, and again, hospitals that develop trauma systems of care show improved mortality.

The third type of data supporting trauma center care is based on comparison of large populations. These suffer from the lack of individual patient detail, but have the advantage of looking at the outcomes and health of entire populations. As an example, Mullins and associates[35-37] compared the health of Oregon trauma patients with that of Washington State trauma patients during a time when Oregon had an established regionalized trauma system, and Washington did not. Because Oregon regionalized and concentrated trauma care, mortality of the population improved, and Oregon residents enjoyed a lower injuryrelated mortality compared withWashington State patients during a time in which Washington lacked a statemandated trauma system. The final piece of evidence strongly supporting the efficacy of trauma centers is known as the National Study on Cost and Outcomes of Trauma (NSCOT).[38] Fifteen different regions in the country were involved, comparing outcomes from similar patients treated at 18 level I trauma centers and 51 modest to high volume nontrauma centers. Overall, 15,000 patients were examined in a prospective fashion over 18 months, then followed for 1 year after discharge. As demonstrated in Figure 6 andTable 2 mortality was significantly reduced by 20% to 25% for closely matched patients treated at the trauma centers compared with the nontrauma center. Younger and more severely injured patients benefited the most, with a 35% to 47% reduction in mortality in the more seriously injured subsets.[38]

Table 2. Survival Advantage in Trauma Center vs Nontrauma Center

Total NSCOT population (n = 15,009)	In hospital	30 d	90 d	365 d
Dying in nontrauma center, %	9.5	10.0	11.4	13.8
Dying in trauma center, %	7.6	7.6	8.7	10.4
Relative risk of death (95% CI)	0.80 (0.066,0.98)	0.76 (0.58,1.0)	0.77 (0.60,0.98)	0.75 (0.60,0.95)

Data are from MacKenzie EJ, Rivara FP, Jurkovich GJ, et al.[38]
NSCOT, National Study on Costs and Outcomes of Trauma; NTC, nontrauma center; TC, trauma center.

What makes trauma center care better? Is it larger volume of patients, more resources, residents, and nurses? Is it better ancillary support or faster times from injury to the operating room? Increasing volume certainly seems to be one of the advantages of trauma center care. In a study of 31 academic level I trauma centers, the higher volume trauma centers (_650 major trauma admissions per year) had improved outcomes, particularly for the sickest of patients. [39] Improved critical care also seems partially responsible for better outcomes at trauma centers. The ability of trauma centers to salvage patients with complications or severe shock and injury appears to be a defining characteristic, and interestingly, trauma intensive care units that are “closed” and staffed by surgical critical care surgeons achieve the best

results.[40-43] Although trauma centers do have better outcomes for patients requiring urgent surgery, it is not because they are any quicker at getting a patient from the emergency room to the operating room.[44] Complex pelvic injuries, spine injury, and some urologic injuries also appear to do better at trauma centers.[45,46] Suffice it to say the reason trauma centers have improved outcomes appears to be multifactorial, injury pattern dependent, and not entirely defined. It appears it is not just the hospital designation that makes the difference, but the design and effectiveness of system integration that is equally important.

In the year 2000 approximately one-half of the states in this country had statewide trauma systems that met federal guidelines of functional trauma systems.[47,48]We examined motor vehicle crash fatalities in those states with a trauma system, compared with states without a trauma system. The analysis was controlled for population age, speed laws, restraint laws, miles driven, and rural nature of the state. States with an intact trauma system had an overall 9% lower motor vehicle crash mortality, and about a 25% improved mortality for the most severely injured.49 Fascinatingly, this improvement in mortality was not manifest until the trauma system had been in place for 8 to 9 years. It takes time for a regionalized system of care to mature.

Washington State is a good example of this progressive regionalization of trauma care and improved outcomes. Washington State's trauma program was enacted with legislation in 1991, with the first trauma center verifications in 1993. The system is an inclusive one, with about 80 of the 120 acute care hospitals in the state participating as level I through V trauma centers; there is only 1 level I center for the state, allowing for efficient concentration of resources for the most expensive and highest level of care. Although it's a large state, 88% of the population is within 1 hour of a level I or level II trauma center, although only 39% of the land mass is within this 60-minute time window.[50]

Over the past 20 years, the citizens of Washington have seen a progressive lowering of the motor vehicle crash death rate, from 4.91 per 100 million vehicle miles driven to 0.94, significantly better than the national average of 1.27 deaths per 100 million miles driven.Washington has also seen strengthened drunk driving laws, primary and secondary mandatory seat belt laws, mandatory motorcycle helmet use, and of course, a maturation of the trauma system. This maturation is evident in a more consistent response to trauma alerts by surgeons, more patients entered into the trauma registry, and more uniform prehospital documentation. Remarkably, we have also seen a decrease in the percent of air transports from the scene, with a concomitant increase in injury severity of those transported by air. This has translated into a falling mortality that is most evident in the most severely injured. In 1995, 25% of patients with an Injury Severity Score of 16 or greater died; in 2009 that number was less than 13%. Although every level of trauma center has seen this improvement, the ability to risk adjust and compare outcomes at individual centers has allowed the state Department of Health to identify outliers in care and focus attention and

quality improvement efforts at specific hospitals and regions.

Similar data analysis from Australia demonstrated a relative risk reduction of motor vehicle crash mortality of 44% and of closed head injuries of 38% after the establishment of a regional trauma system.[51] Likewise, in Quebec, Canada over the last decade there has been a stepwise progression of falling risk of death as their trauma system has matured in stages.[47]

These examples emphasize the point that it is a series of activities and actions that are required for regionalizing care, not simply forcing a specific population of patients into one hospital. Regionalization of trauma care includes injury prevention, prehospital phase, the hospital phase, rehabilitation, and returning back to work, and importantly, a method for assessing the system performance and identifying and fixing problem areas. An ideal trauma system provides that continuum of care and addresses the classic 3 phases of trauma mortality: acute scene deaths that can only be prevented, early deaths that involve improved prehospital and hospital care, and late deaths that involve critical care and long-term care and complication reductions. The model trauma system plan written by theHealth Resource Services Administration (HRSA) in 1992, with help from the ACS Committee onTrauma and the Centers for Disease Control continues to serve as the benchmark for trauma system regionalization design.[52] This publication was based on work and definitions first described by West and colleagues,[53] and modified by Bazzoli and associates. [48]The essential components of a trauma system are as follows: designating hospitals that have a specific range of resources; proscribing prehospital triage protocols that allow the selective bypass of nontrauma centers or lower levels of care; requiring interfacility transfer agreements; quality assurance programs with teeth and the ability to impact change; regional or state-wide coverage; and, importantly, a limitation to the number of centers based on need for patient care. These steps are rarely accomplished voluntarily, but require governmental regulations that also provide financial incentives to cover the large number of uninsured trauma patients.

The effectiveness of this approach to regionalized care is remarkable. A recent article in JAMA looked at 2.7 million trauma patients from the National Inpatient Sampling (NIS) data between 1995 and 2003.[53] This study defined major trauma patients as those with a mortality risk of 10% or greater based on injury severity, as calculated using ICD- 9-based Injury Severity Score (ICISS). The authors defined high volume trauma centers as those that treat 915 or more major trauma patients per year. In the United States, only 7% of hospitals meet this threshold, yet they provide 60% of the total major trauma volume care in this country (Fig. 7). That's effective regionalization. That's an effective concentration of resources that saves lives.

NATIONAL TRAUMA AND ACUTE CARE SURGERY CENTER NETWORK:

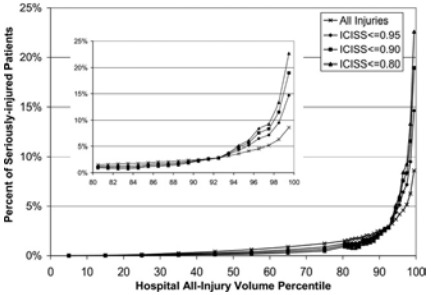


Figure 7. Percent of seriously injured patients seen at hospitals within each hospital all-injury volume percentile for 3 different definitions of seriously injured and for all injuries. Inset shows a detail of the top 20 percentiles of hospitals. ICISS, ICD-9-based Injuruy Severity Score. (Data from Diggs and colleagues.[54])

A PROPOSAL

I am going to conclude with a proposal to create a national network of high volume, high acuity, trauma and acute care surgery medical centers. There are currently about 200 level I trauma centers in the United States; 107 of them are verified by the American College of Surgeons, the rest are verified by state agencies using similar criteria. The ideal population volume per level I trauma center is debated, but probably a minimum of 1 to 3 million people per level I trauma center is most appropriate. Any fewer and the volume of cases is diluted and efficiency of concentration and expertise is lost. Because the population of the United States is about 300 million, the ideal number of trauma centers would be between 100 and 300. I tend to favor fewer level I centers and a greater concentration of the most difficult cases and expertise, so for the purposes of this proposal, let's say 1 level I trauma and acute care surgery center per every 2.5 million people, meaning a network of 120 such centers across the country would be required. This density of trauma centers is readily met (and often exceeded) in urban and suburban environments, but is more difficult to achieve in the rural western states. Staffing and resources for this national trauma and acute care surgical center would be consistent with what the American College of Surgeons requires for verification of level I trauma centers. From the standpoint of surgical coverage, a cadre of general surgeons with specific training and expertise in trauma, surgical critical care, and emergency general surgery—the acute care surgeon model—would be ideal coverage for this type of center.[55,56] Eight to 10 such surgeons, with resident and/or mid-level providers, would provide coverage for surgical critical care, emergency general surgery, trauma surgery, research and education, and administrative duties, implying a need for 960 to 1,200 such surgeons. These surgeons would provide primary surgical care for trauma, critical care, and emergency and elective general surgery, with 1 night per week of in-house call, time for research and administration, and adequate vacation and sick leave coverage.

Focusing the new generations of surgeons in this national network of trauma and acute

care surgical centers could be made attractive to the best and brightest with a number of incentives. Loan forgiveness programs for medical school education could be applied to surgeons working in such centers. Volunteers could be recruited, perhaps establishing an Ameri- Corp for physicians.With adequate manpower, fixed time off, set schedules, and protected time after night coverage and for academic activities would be easier to arrange. Fixed minimum incomes with volume and work performance incentives could be applied. Malpractice limits, similar to the protection state and federal agencies enjoy, could be applied. Such networks could readily become academic centers of excellence. The academic productivity and clinical research material from a well organized network of such facilities would be phenomenal, and would serve as the model for multicenter trials and studies of a wide array of interventions, procedures, and practices. Standardization of care would be much easier to obtain, as would dissemination of new information and practices.

The cost for this national network of trauma and acute are surgery centers can be estimated, if only on the back of a napkin at this point. If each hospital had about 300 to 400 beds and an estimated annual operating budget of $600 million, the total operating costs for 120 such centers would be $72 billion. If one-half of that money came from third-party health care insurance sources, the federal costs would be $36 billion, certainly less than the $50 billion proposed in the 2012 Veteran's Administration budget for direct medical care.[57] This can also be compared with the wide range of public dollars spent by communities to provide safety-net coverage. As an example, the city and county of Denver budgets about $27 million annually to Denver Health, while the city of San Francisco supports San Francisco General with about $38 million annually from their general fund.

How close are we to having the manpower to meet the needs of such a network of hospitals? Over the past 4 years, 10% to 12% of the current 1,100 graduates of general surgery training programs go on to do a surgical critical care residency. That's actually more than or equal to vascular, pediatrics, hand, or thoracic surgery specialty training. In 2009 there were 2,583 surgeons who have their board in surgical critical care, and 1,204 of them have been recertified at least once.[58] In addition, there is the ongoing development of acute care surgery training programs, spearheaded by the American Association for the Surgery of Trauma, with a goal of 20 to 30 such training programs.[55,59-61] So we have the manpower, and we have a great distribution of trauma centers across this country, with authoritative legislation in most of the states. Eightythree percent of the population is within 1 hour of trauma center care by ambulance or helicopter.[50] Western rural states have the unsolved problem of adequate access to trauma center care, primarily because the population density cannot support such highly specialized centers. But with improved organization of regionalized transportation, this could be solved and these patients and resources concentrated. Urban America has a different problem in some locations, and that is the oversubscribing of trauma centers due to ego, greed, lack of cooperation, and presumed prestige. This too could be solved with legislation and changes in funding for trauma and acute care surgical issues.

I want to conclude with the thought that trauma care systems are a model for regionalization of all time-sensitive illnesses, not just trauma, and not just surgical issues; the integrated trauma system model can be the future of regionalization of all health care.

As Vice-President Jim DeBord said, it's a long way from Aurora and the iron mines of northeastern Minnesota for this boy standing at this podium and in front of this audience. Throughout this journey I have been blessed with much support from colleagues and mentors, and much love from family and friends. But the heart and soul and love of my life are sitting here at the front, my wife and 3 daughters, and I certainly wouldn't be in front of you without them. Thank you for the great privilege of serving as your president.

REFERENCES

1. Farnell MB. Surgery 2010: Finding the silver lining on a cloud of regulation. J Am Coll Surg 2011;213:1–9.
2. Lynge DC, Larson EH, Thompson MJ, et al. A longitudinal analysis of the general surgery workforce in the United States, 1981-2005. Arch Surg 2008;143:345–350; discussion 351.
3. Robert Wood Johnson Foundation. Severe shortage of surgical specialists plagues nation's emergency departments. 2011. Available at: http://www.rwjf.org/humancapital/product.jsp? id_71893. Accessed February 14, 2012
4. Stitzenberg KB, Sheldon GF. Progressive specialization within general surgery: adding to the complexity of workforce planning. J Am Coll Surg 2005;201:925–932.
5. Lynge DC, Larson EH. Workforce issues in rural surgery. Surg Clin North Am 2009;89:1285–1291, vii.
6. Association of AmericanMedical Colleges. U.S. medical school applicants and students from 1982–1983 to 2010–2011. AAMC Data Book 2010. Available at: https://www.aamc.org.
7. Gabram SG, Hoenig J, Schroeder JW Jr, et al. What are the primary concerns of recently graduated surgeons and how do they differ from those of the residency training years? Arch Surg 2001;136:1109–1114.
8. American Medical Association/Association of American of Medical Colleges. AMA Policy D-525.995 Investigating the continued gender disparities in physician salaries. 2006. Available at: http://www.ama-assn.org/ama1/pub/upload/mm/377/ a-08botrpt.pdf. Accessed February 14, 2012.
9. Yeo H, Viola K, Berg D, et al. Attitudes, training experiences, and professional expectations of US general surgery residents: a national survey. JAMA 2009;302:1301–1308.
10. Strauss W, Howe N. Generations: The History of America's Future, 1584 to 2069.New York:WilliamMorrow&Co;1991.
11. BennisW, Thomas RJ. Geeks & Geezers: How Era, Values and Defining Moments Shape Leaders. Boston: Harvard Business School Publishing;2002.
12. Chester E, Employing Generation Why? Katy, TX: Tucker
House Books; 2002.
13. Craven J. The generation gap in modern surgery: a new era in general surgery. Arch Surg 2002;137:257–258.
14. Organ CH Jr. The generation gap in modern surgery. Arch Surg 2002;137:250–252.
15. Meyer AA, Weiner TM. The generation gap: perspectives of a program director. Arch Surg 2002;137:268–270.
16. Hughes RG, Hunt SS, Luft HS. Effects of surgeon volume and hospital volume on quality of care in

hospitals.Med Care 1987; 25:489–503.
17. Luft HS, Bunker JP, Enthoven AC. Should operations be regionalized? The empirical relation between surgical volume and mortality. N Engl J Med 1979;301:1364–1369.
18. Birkmeyer JD, Siewers AE, Finlayson EV, et al.Hospital volume and surgical mortality in the United States. N Engl JMed 2002; 346:1128–1137.
19. Massarweh NN, Flum DR, Symons RG, et al. A critical evaluation of the impact of Leapfrog's evidence-based hospital referral. J Am Coll Surg 2011;212:150–159 e1.
20. Stitzenberg KB. Centralization of cancer surgery. J Clin Oncol 2009;27:4671–4678.
21. Ihse I. The volume-outcome relationship in cancer surgery: a hard sell. Ann Surg 2003;238:777–781.
22. Birkmeyer JD, Siewers AE, Marth NJ, Goodman DC. Regionalization of high-risk surgery and implications for patient travel times. JAMA 2003;290:2703–2708.
23. Kotwal RS,Montgomery HR, Kotwal BM, et al. Eliminating preventable death on the battlefield. Arch Surg 2011;146:1350–1358.
24. Jetland RI.Medic 1—the Seattle System for the management of out-of-hospital medical emergencies. World Hosp 1980; 16:10–12.
25. Safar P, Escarraga LA, Elam JO. A comparison of the mouth-tomouth and mouth-to-airway methods of artificial respiration with the chest-pressure arm-lift methods. N Engl J Med 1958; 258:671–677.
26. Safar P, McMahon M. Mouth-to-airway emergency artificial respiration. JAMA 1958;166:1459–1460.
27. Committee on Trauma and Shock/Division of Medical Sciences. Accidental Death and Disability: The Neglected Disease of Modern Society, ed. National Academy of Sciences/National Research Council. Washington, DC: National Academy of Sciences; 1966.
28. Mullins RJ, Mann NC. Introduction to the Academic Sympo-sium to Evaluate Evidence Regarding the Efficacy of Trauma Systems. J Trauma 1999;47 (3 suppl):S3–7.
29. Shackford SR, Mackersie RC, Hoyt DB, et al. Impact of a trauma system on outcome of severely injured patients. Arch Surg 1987;122:523–527.
30. West JG, Cales RH, Gazzaniga AB. Impact of regionalization. TheOrange County experience. Arch Surg 1983;118:740–744.
31. Cales RH, Trunkey DD. Preventable trauma deaths. A review of trauma care systems development. JAMA 1985;254:1059– 1063.
32. Champion HR, Copes WS, Sacco WJ, et al. TheMajorTrauma Outcome Study: establishing national norms for trauma care. J Trauma 1990;30:1356–1365.
33. Wardrope J, Cross SF, Fothergill DJ. One year's experience of major trauma outcome study methodology. BMJ 1990; 301: 156–159.
34. Glance LG, Osler T. Beyond the major trauma outcome study: benchmarking performance using a national contemporary,
population-based trauma registry. J Trauma 2001;51:725–727.
35. Mullins RJ, Mann NC, Hedges JR, et al. Preferential benefit of implementation of a statewide trauma system in one of two adjacent states. J Trauma 1998;44:609–616; discussion 617.
36. Mullins RJ, Veum-Stone J, Hedges JR, et al. Influence of a statewide trauma system on location of hospitalization and outcome of injured patients. J Trauma 1996;40:536–545; discussion 545–546.
37. Mullins RJ, Veum-Stone J, Helfand M, et al. Outcome of hospitalized injured patients after institution of a trauma system in an urban area. JAMA 1994;271:1919–1924.
38. MacKenzie EJ, Rivara FP, Jurkovich GJ, et al. A national evaluation of the effect of trauma-center care on mortality. N Engl J Med 2006;354:366–378.
39. Nathens AB, Jurkovich GJ, Maier RV, et al. Relationship between trauma center volume and outcomes. JAMA 2001;285: 1164–1171.
40. Haas B, Gomez D, Hemmila MR, et al. Prevention of complications and successful rescue of patients with serious complications: characteristics of high-performing trauma centers. J Trauma

2011;70:575–582.
41. Arbabi S, Jurkovich GJ, Rivara FP, et al. Patient outcomes in academic medical centers: influence of fellowship programs and in-house on-call attending surgeon. Arch Surg 2003;138: 47–51; discussion 51.
42. Nathens AB, Maier RV, Jurkovich GJ, et al. The delivery of critical care services in US trauma centers: is the standard being met? J Trauma 2006;60:773–783; discussion 783–784.
43. Nathens AB, Rivara FP, MacKenzie EJ, et al. The impact of an intensivist-model ICU on trauma-related mortality. Ann Surg 2006;244:545–554.
44. Haas B, Jurkovich GJ, Wang J, et al. Survival advantage in trauma centers: expeditious intervention or experience? J Am Coll Surg 2009;208:28–36.
45. Hotaling JM, Wang J, Sorensen MD, et al. A national study of trauma level designation and renal trauma outcomes. J Urol 2012;187:536–541.
46. Morshed S, Jurkovich GJ, Knops S, et al. The importance of trauma-center care on mortality and functional outcome following pelvic ring and acetabular injuries. In: Orthopedic Trauma Association 2012. San Antonio, TX.
47. Mann NC, Mackenzie E, Teitelbaum SD, et al. Trauma system structure and viability in the current healthcare environment: a state-by-state assessment. J Trauma 2005;58:136–147.
48. Bazzoli GJ,Madura KJ, Cooper GF, et al. Progress in the development of trauma systems in the United States. Results of a national survey. JAMA 1995;273: 395–401.
49. Nathens AB, Jurkovich GJ, Rivara FP, et al. Effectiveness of state trauma systems in reducing injury-related mortality: a national evaluation. J Trauma 2000;48:25–30; discussion 30–31.
50. Branas CC,MacKenzie EJ,Williams JC, et al. Access to trauma centers in the United States. JAMA 2005;293:2626–2633.
51. Cameron PA,Gabbe BJ, Cooper DJ, et al., A statewide system of trauma care in Victoria: effect on patient survival. Med J Aust 2008;189:546–550.
52. Health Resources and Services Administration, H., A 2002 national assessment of state trauma system development, emergency medical services resources, and disaster readiness for mass casualty events.Washington DC: USDepartment ofHealth and Human Services; 2003.
53. West JG, Williams MJ, Trunkey DD, et al. Trauma systems. Current status–future challenges. JAMA 1988;259:3597–3600.
54. Diggs BS, Mullins RJ, Hedges JR, et al. Proportion of seriously injured patients admitted to hospitals in the US with a high annual injured patient volume: a metric of regionalized trauma care. J Am Coll Surg 2008;206:212–219.
55. Acute care surgery: trauma, critical care, and emergency surgery. J Trauma 2005;58:614–616. 5
6. Jurkovich GJ. Acute care surgery: the trauma surgeon's perspective. Surgery 2007;141:293–296.
57. Office of Managment and Budget. Fiscal Year 2012 Budget of the U.S. Government. 2012, Washington, DC: US Government Printing Office;2012:137–149.
58. Napolitano LM, Fulda GJ,Davis KA, et al. Challenging issues in surgical critical care, trauma, and acute care surgery: a report from the Critical Care Committee of the American Association for the Surgery of Trauma. J Trauma 2010;69:1619–1633.
59. Committee on Acute Care Surgery, American Association for the Surgery of Trauma. The acute care surgery curriculum. J Trauma 2007;62:553–556. 60. Britt LD. American Association for the Surgery of Trauma and the Clinical Congress of Acute Care Surgery. 2011 presidential address. J Trauma Acute Care Surg 2012;72:4–10. 61. Jurkovich GJ. Identity: 2009 AAST presidential address. J Trauma 2010;68:753–760.

NOTES

NOTES

Bylaws

BYLAWS

ARTICLE I

Membership

SECTION 1. The ACTIVE MEMBERSHIP shall be limited to three hundred and fifty (350). The HONORARY MEMBERSHIP shall be limited to fifteen (15).

SECTION 2. ACTIVE MEMBERS. To be eligible for consideration for active membership, an individual shall be a graduate of an accredited medical school, shall have completed formal residency training at least three (3) years prior to nomination, and shall have been established in his/her current practice locale for a minimum of two years. To be considered, the individual must have established an excellent reputation as a surgeon. The individual must be recommended by the Membership Committee of the Association and approved by at least three-fourths of the Executive Committee to be presented to the members of the Association. Nominees to be Active Membership shall be elected to membership by the favorable vote of three-fourths of the members voting by secret ballot at the Executive Session of the Annual Meeting. Membership shall not be denied because of race, creed, color, or sex. Desired qualifications include:

a. Practice limited to a surgical specialty, to a career in academic surgery, or to a career in administrative surgical fields.
b. Certification by the American Board of Surgery or by the Board of another surgical specialty, or Fellowship in a recognized College of Surgeons.
c. Fellowship in the American College of Surgeons.
d. Contributions to scientific literature and/or documented leadership activity in local, state, or regional medical and surgical organizations.
e. Evidence of a sincere interest in making a professional contribution to the Association.

Under special circumstances, renowned surgeons not meeting the above requirements may be granted membership.

A nomination shall be initiated by a member sponsor who shall be responsible for obtaining the curriculum vitae of the nominee which is to be submitted on a form provided by the Secretary of the Association. The nomination shall be endorsed by two (2) members. The completed nomination form and letters of recommendation from the sponsor and endorsers must be received in the office of the Secretary by May 1 of the year in which the nominee is to be considered.

SECTION 3. The Secretary will solicit additional letters of comment on the nominees from members of the Association. Each completed nomination received by the Secretary shall be presented to the Chairman of the Membership Committee. The Membership Committee shall consider all nominations and make recommendations to the Executive Committee. A final list of nominees shall be prepared by the Executive Committee for presentation to the members at the Annual Business Meeting for approval and acceptance.

SECTION 4. Upon notification by the Secretary of election to membership in the Association, the nominee must accept the election within three (3) months by payment of the initiation fee and the annual dues to the Treasurer of the Association. To become an Active member, the nominee shall be expected to attend the first Annual Meeting after election to be introduced to the Association and to receive the certification of membership. *Should the nominee fail to attend the first subsequent meeting, the second Annual Meeting must be attended. If the nominee* is unable to attend the second meeting, membership will not be conferred subject to action by the Executive Committee. Fees contingent on *membership will not be refunded.*

SECTION 5. Nominees who have not been recommended for active membership after three (3) consecutive years of consideration by the Membership Committee and the Executive Committee shall be withdrawn from consideration. This action shall not preclude subsequent nominations for membership after an interval of two (2) years.

SECTION 6. A Senior Membership shall be any active member who has reached the age of sixty (60) years or retired from the active practice of surgery. He/she may be recommended for Senior Membership for other acceptable reasons if so ordered by the Executive Committee. A Senior Member shall retain all rights and privileges of membership, but he/she shall be relieved of the rules of attendance. He/she shall pay dues and any assessments until the age of sixty-five (65) or upon retirement, whichever shall occur first.

SECTION 7. HONORARY MEMBERS may be selected from individuals of scientific eminence or from among those who have made unusual contributions to surgery. They shall be proposed to the Association by the Executive Committee and elected in the same manner as active members. They shall not be required to pay dues or fees nor shall they be privileged to vote or hold office.

SECTION 8. The resignation of a member in good standing submitted in writing may be accepted by the Executive Committee.

SECTION 9. Any Active Member who fails to attend three consecutive annual scientific meetings shall be notified of his/her absences by the Secretary. Written requests for excused absence will be considered by the Executive Committee. If the truant member fails to attend the next successive Annual Meeting, membership shall be forfeited unless for good and sufficient cause which the Executive Committee shall determine otherwise.

SECTION 10. Any member may be expelled for unprofessional or unethical conduct by unanimous vote of the Executive Committee. This action requires confirmation by the Association at the next Executive Session. Charges shall be preferred in writing and signed by three (3) members before consideration by the Executive Committee. If the vote of the Executive Committee is not unanimous, the charges may be adopted by mutual consent of the members of the Executive Committee, or they may be presented by the Executive Committee to the Association in Executive Session.

A three-fourths vote of the members voting by secret ballot (Article VI, Section 2) at the Executive Session of the Annual Meeting shall be required for expulsion.

SECTION 11. An active member, temporarily residing outside the continental limits of the United States or Canada, may be placed on temporary inactive status if such request is presented in writing and approved by the Executive Committee. Temporary inactive status relieves the member of attendance requirements and dues payment. Such status shall be granted for a period no longer than three (3) years.

ARTICLE II

Duties of Executive Committee and Officers

SECTION 1. The EXECUTIVE COMMITTEE shall be the executive body of the Association and shall consider all the business and policies pertaining to the affairs of the Association. It shall make nominations for officers and fill vacancies arising among officers. It shall select the sites and dates for Annual Meetings and appoint the Chairman of the Committee on Local Arrangements. It shall recommend the amount of the dues for the consideration of the membership. It shall make recommendations for Active, Senior, Honorary and Temporary Inactive Membership and shall act upon resignations and forfeitures of membership as necessary. It shall consider and act upon charges of unprofessional conduct and charges against members for alleged offenses against the Constitution and Bylaws. It shall also submit, for the vote of the membership in Executive Session, its recommendation concerning expulsion of a member. It shall direct the conservation and investment of funds held by the Association.

A report of the Executive Committee shall be presented to the members during the Executive Session of the Association during each Annual Meeting. No decisions or recommendations of the Executive Committee shall be binding on the Association unless accepted by a three-fourths vote of the members voting in Executive Session at the Annual Meeting.

Meetings of the Executive Committee shall be held at the call of the Chairman of the Executive Committee. Seven members present shall constitute a quorum.

The most immediate Past President of the Association in attendance shall be Chairman of the Executive Committee, and the Secretary of the Association shall be Secretary of the Executive Committee.

SECTION 2. The PRESIDENT shall preside at the meetings of the Association, preserve order, regulate debates, appoint committees not otherwise provided for, announce results of elections, perform all other duties appertaining to his office, ex-officio member of all committees. The President shall hold office for one (1) year. In the absence of the President, the order of succession to the Chair shall be the First Vice President, the Second Vice President and then the Senior Member of the Executive Committee present.

SECTION 3. The SECRETARY shall attend to the correspondence of the Association, shall notify officers and new Members of their election, and shall notify and instruct new members of the Program Committee, the Membership Committee, and of other specially designed committees. The Secretary shall keep minutes of the Executive committee's executive sessions. Such minutes shall be the property of the Association and shall be the Custodian of the Seal of the Association and shall, upon direction by the Executive Committee, affix it to papers and documents. Together with the President, the Secretary shall sign all official papers. The Secretary shall pass upon all bills for expenses to be paid by the Treasurer. The Secretary shall publish a list of all nominees presenting their age, address, surgical board certification status, College of Surgeons fellowship status, and the names of the sponsor and endorsing members. This information on the nominees will be mailed to the members of the Association with a request for comment on individual nominees at an appropriate interval before the meetings of the Membership Committee. The Secretary shall send invitations to guests invited to attend the Annual Meeting at the request of a member. The Secretary shall be custodian of the records of attendance of all meetings of the Association. The Secretary shall make an annual report to the Executive Committee and to the Membership at the Annual Executive Session of the Association. The Secretary shall be an ex-officio member of all committees.

SECTION 4. The TREASURER shall be the custodian of all the moneys of the Association and shall be responsible to the Executive Committee. The Treasurer shall keep full and accurate books of account, containing a record of all moneys received and expended, which books shall be the property of the Association and open to the inspect of the authorized officers at all reasonable times. The Treasurer shall collect initiation fees, dues and assessments, and shall report to the Executive Committee the names of those members in arrears. The Treasurer shall present an annual report of account for audit which shall be made a part of the report of the Executive Committee. The Treasurer shall cooperate with the Chairman of the Local Committee on arrangements regarding finance.

SECTION 5. The RECORDER shall receive all scientific papers presented before the Association and is responsible for the process of paper submission to the affiliated journal. The Recorder shall be responsible for the *Transactions of the Western Surgical Association,* published in the Program Book. The *Transactions* includes a list of past presidents and meeting places; a list of J. Bradley Aust awardees; previous year's scientific program; previous year's Presidential Address; and a list of deaths and memorials. The Recorder will send one copy of the *Transactions* to the National Library of Medicine to be kept in perpetuity. The Recorder shall maintain an up-to-date file of the membership.

SECTION 6. The RECORDER shall act as Historian for the organization and maintain and transfer appropriate archival material from the organization to the Library of Medicine.

SECTION 7. DISTRICT REPRESENTATIVES. These shall be four (4) District Representatives, one of whom shall be elected each year for a term of four (4) years. The tenure of office shall be staggered in order to facilitate continuity in committee activities. These representative shall be elected to represent widely diverse geographical sections of membership. They shall represent the best interests of the entire Association to the membership of their general areas, and in turn shall represent the will and pleasure of the membership of their general geographical areas to the Executive Committee.

SECTION 8. The Association is represented on the American Board of Surgery. When requested by the Board, the Executive Committee shall submit the names of three (3) member nominees for each position to the membership for approval of an Annual Meeting. Upon approval the panel of nominees will be forwarded to the American Board of Surgery who will notify the Association of the nominees selected for this office.

SECTION 9. The Association is regularly represented on the Board of Governors of the American College of Surgeons by one (1) member. When required, the Executive Committee shall submit the names of three (3) nominees approved by the membership for this office.

SECTION 10. The Secretary of the Association shall serve as the Association's representative to the National Society for Biomedical Research.

SECTION 11. The Association is regularly represented on the Advisory Council on Surgery of the American College of Surgeons by one member. When requested, the Executive Committee shall submit the names of three (3) nominees approved by the membership of this office.

ARTICLE III

Initiation Fee and Annual Dues

SECTION 1. Every active member on his/her election shall pay an initiation fee, thereby acknowledging and accepting the Constitution and Bylaws. The amount of the fee may be changed at any Annual Meeting on recommendation of the Executive Committee and approved by a majority of the membership of the Association at the Executive Session of the Annual Meeting.

SECTION 2. Annual dues of every active member shall be paid by May 1 of each calendar year. The amount of the dues may be changed at the Executive Session of the Association on recommendation of the Executive Committee and approval by the majority of the members present.

SECTION 3. Any member who fails to pay dues or assessments for one year shall be notified by the Treasure in writing. If the member fails to pay the required dues within two (2) months thereafter, the membership will be forfeited. The Treasurer shall notify the Executive Committee of this forfeiture. Waiver of membership fees or assessments shall be the prerogative of the Executive Committee.

ARTICLE IV

Programs and Publications

SECTION 1. A balanced program for the Annual Scientific Meeting will be arranged by the Program Committee, a copy of which shall be distributed to the membership. Abstracts submitted for consideration to be included in the program shall represent original material which shall not have been submitted for publication previously.

SECTION 2. All papers read before the Association shall be presented by a member or sponsored guest. The sponsoring member or co-author member shall be responsible for the content and quality of presentation. An excuse not to do this will require permission of the President.

SECTION 3. The time allowed for presentation of papers shall be determined by the Program Committee. The manuscript must be completed for publication in accordance with the guidelines of the affiliated journal, and must be submitted to the Recorder in accordance with published guidelines of the Association.

SECTION 4. The Executive Committee shall have full power to omit from the published records any paper, in part or in whole, which may have been read before the Association.

SECTION 5. The Executive Committee shall cooperate with the editorial board of the affiliated journal to obtain prompt publication of the scientific papers.

SECTION 6. The expense of publication of papers and costs in excess of that allowed by the publisher shall be subject to assessment against the author. All papers published in the affiliated journal shall have been read before the Association.

ARTICLE V

Meetings

SECTION 1. The place and time of the Annual Meeting and the Chairman of the Committee on Local Arrangements shall be selected by the Executive Committee.

a. The date and location of the four (4) succeeding meetings shall be published in the program at the time of the Annual Meeting each year.
b. After such publication, the selected place of the meeting may be changed only by unanimous vote of the Executive Committee.
c. Members shall sign the permanent register of the Association as a record of their attendance.
d. A special register shall be provided for guests.

SECTION 2. A special meeting of the Association may be called at any time by the President, with the concurrence of the Executive Committee, and it shall be his duty to do so upon receipt of a written petition signed by ten (10) percent of the members.

SECTION 3. A member may invite a Doctor of Medicine or other distinguished scientist to participate in the scientific and social functions of the Association. A member inviting a guest to the Annual Scientific Meeting should send the name to the Secretary at least one (1) month before the date of the Annual Meeting. The Secretary shall forward an official invitation to the guest. The invited guests attending the meeting will receive a program of the meeting at the time of their registration. The President may extend to guests the privilege of participating in the discussions. Each guest will be assessed a Registration Fee. A senior medical student or a resident in surgery from an accredited residency program may attend the scientific meetings without charge upon presentation of appropriate identification and certification at the time of registration.

ARTICLE VI

Quorum

SECTION 1. A minimum of twenty-five (25) percent of the membership shall be required at any Executive Session to form a quorum for transaction of the ordinary business of the Association, for elections, for changes in the Constitution and Bylaws, or for ordering assessments.

SECTION 2. A minimum of fifty-one (51) percent of the membership shall be required to form a quorum to consider the expulsion of a member.

ARTICLE VII

Committee

SECTION 1. All standing and ad hoc committees shall act in an advisory capacity to the duly elected Executive Committee of the Association.

SECTION 2. The Membership Committee shall be composed of six (6) members: four (4) presidential appointees, each to serve for a period of four (4) years; the other two (2) members shall be District Representatives assigned by the Executive Committee for the latter two-year (2-year) portion of their term of office. The President, the Secretary, and the Treasurer shall be ex-officio members of the Committee.

a. The Chairman shall be the senior appointed member of the Committee, i.e. that appointed member who is in his/her fourth year on the Committee.
b. The deadline for submission of applications to the Secretary of the Association shall be in accordance with published guidelines of the Association.
c. The Secretary of the Association shall send all applications and related data to this Committee at an appropriate interval preceding the Annual Meeting.
d. The Membership Committee shall convene and present annually to the Executive Committee the complete list of candidates and their recommendation on each of them.

SECTION 3. The Program Committee shall consist of six (6) members: four (4) presidential appointees, each to serve for a period of four (4) years; the other two (2) members shall be District Representatives assigned by the Executive Committee for the first two-year (2-year) portion of their term of office. The President, the Secretary, and the Recorder shall be ex-officio members.

a. The Chairman shall be the senior appointed member, i.e. that appointed member who is in his/her fourth year on the Committee.

b. The deadline for submission of abstracts to the Secretary of the Association shall be in accordance with published guidelines of the Association.

c. After individual preliminary evaluation of all abstracts, this Committee shall convene for purposes of final selection of the program for the Annual Meeting.

SECTION 4. The Executive Committee shall act as a Budget Committee with reference to necessary secretarial expenditures for officers and committee members, subject to the approval of the membership.

SECTION 5. ADVISORY NOMINATING COMMITTEE. The Executive Committee shall act as the Nominating Committee at the Annual Meeting. In turn, the Executive Committee shall appoint an Advisory Committee, consisting of the three (3) immediate Past-Presidents and the senior District Representative. The Chairman of this Advisory Committee shall be the immediate Past-President. This Advisory Committee shall discuss suitable nominees to fill the officer and representative vacancies which shall occur at the time of the Annual Meeting, and shall submit its recommendations to the Executive Committee for consideration. The President and Secretary shall serve as ex-officio members.

SECTION 6. The Executive Committee shall appoint the Chairman of the Committee on Local Arrangements at least three (3) years in advance. *In coordination with the Secretary and Treasurer* he/she shall be responsible for all details pertaining to the Annual Meeting unless otherwise ordered by the Executive Committee.

ARTICLE VIII

Seal and Certificate of Membership

SECTION 1. The Seal shall be circular in form and bear the name of the Association about the border. In the center shall be portrayed the Western Country, similar to the State Seal of Kansas. The Association was founded in Topeka, Kansas, 1891.

SECTION 2. The Association shall issue a Certificate of Membership signed by the President and Secretary.

SECTION 3. The Certificate of Membership shall be as follows:

WESTERN SURGICAL ASSOCIATION
FOR THE CULTIVATION PROMOTION AND DIFFUSION OF
KNOWLEDGE OF THE ART AND SCIENCE OF SURGERY
HAS ELECTED

_____

TO ACTIVE MEMBERSHIP
OR
HONORARY MEMBERSHIP

_____ _____

President Secretary

_____

Date

ARTICLE IX

Nominations and Elections

SECTION 1. Nominations for all Officers shall be made at the Executive Session of the Annual Meeting by the Executive Committee of the Association. Additional nominations may be made from the floor.

SECTION 2. The election of Officers shall take place at the Executive Session of the Annual Meeting. An affirmative vote of a majority of the members voting at the Executive Session shall constitute an election.

SECTION 3. Any vacancy occurring during the year among the Officers of the Association shall be filled by the action of the Executive Committee. Any vacancy occurring among Committee Members shall be filled by action of the President.

ARTICLE X

Order of Business

SECTION 1. Order of Business of the Executive Committee

1. Reading of minutes of last meeting
2. Reports:
   - A. Secretary
   - B. Treasurer
   - C. Recorder
3. Reports of Program and Membership Committees
4. Reports of Representatives of American Board of Surgery and the Board of Governors and Advisory Council on Surgery of the American College of Surgeons
5. Unfinished Business
6. New Business
7. Nominations:
   - A. Locations of Future Meetings
   - B. Chairman of Committee on Local Arrangements
8. The report of the Advisory Committee on Nominations shall be considered, and a slate of nominations for officers shall be prepared.
9. The report of the Executive Committee of the Association shall be discussed in preparation for its presentation by the Secretary to the membership of the Association in Executive Session at the Annual Meeting.

SECTION 2. Executive Session of the Annual Meeting

1. Reading of previous year's minutes of the Executive Session of the Annual Meeting
2. Report of Executive Committee meetings to the Association by the Secretary
3. Report of the Treasurer
4. Report of the Recorder
5. Report of the Representative—Board of Governors, American College of Surgeons
6. Report of the Representative—American Board of Surgery
7. Report of the Representative—Advisory Council on Surgery, American College of Surgeons
8. Report of Program & Membership Committees
9. Unfinished Business
10. New Business
11. Election of New Members
12. Election of New Officers
13. Adjournment

ARTICLE XI

Alterations in the Constitution and Bylaws

No part of the Constitution or Bylaws may be amended, altered or replaced, except at a regular Annual Meeting of the Association in Executive Session. The suggested amendment, alteration or repeal in the Constitution or Bylaws must have been presented in writing at the Executive Session of the previous Annual Meeting, signed by three (3) members. Notice of the proposed amendment, alteration or repeal shall be given in writing with the call to the Annual Meeting. The adoption of the suggested amendment, alteration or repeal shall be by vote of three-fourths of the members voting, a quorum being present at the Executive Session.

ARTICLE XII

Parliamentary Authority

Sturgis' *Standard Code of Parliamentary Procedure,* the current edition, shall be the parliamentary authority in all matters not specified in the Constitution, Bylaws or standing rules of this organization.

PAST PRESIDENTS & MEETING PLACES

PRESIDENT	PLACE	YEAR
S.S. Todd*	Topeka	1891
Milo B. Ward*	Kansas City	1892
Milo B. Ward*	Des Moines	1893
Lewis Schooler*	Omaha	1894
John E. Summers, Jr.*	Kansas City	1895
Thomas J. Beattie*	Topeka	1896
Joseph Eastman*	Denver	1897
David S. Fairchild*	Omaha	1898
Homer C. Crowell*	Des Moines	1899
O. Beverly Campbell*	Minneapolis	1900
August F. Jonas*	Chicago	1901
James E. Moore*	St. Joseph	1902
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
Lewis H. McKinnie*	Omaha	1927
Kellog Speed*	Chicago	1928
E. Starr Judd*	Del Monte	1929

PAST PRESIDENTS & MEETING PLACES

PRESIDENT	PLACE	YEAR
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
Eugene A. Osius*	Colorado Springs	1964
Arthur J. Hunnicutt*	Omaha	1965
Walter W. Carroll*	Phoenix	1966
O. Theron Claggett*	Los Angeles	1967
Merle M. Musselman*	Chicago	1968

PAST PRESIDENTS & MEETING PLACES

PRESIDENT	PLACE	YEAR
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
J. David Richardson	San Antonio	2001
Claude H. Organ*	Vancouver, British Columbia	2002
Richard A. Prinz	Tucson	2003
Fabrizio Michelassi	Las Vegas	2004
Arthur S. McFee	Rancho Mirage	2005
Richard C. Thirlby	Los Cabos, México	2006
Merril T. Dayton	Colorado Springs	2007

PAST PRESIDENTS & MEETING PLACES

PRESIDENT	PLACE	YEAR
Bruce L. Gewertz	Santa Fe	2008
Wayne H. Schwesinger	San Antonio	2009
Michael B. Farnell	Chicago	2010
Gregory J. Jurkovich	Tucson	2011
Raymond J. Joehl	Colorado Springs	2012

**Deceased*

NOTES

A look back at last year's Scientific Program

FIRST SCIENTIFIC SESSION

Monday, November 14, 2011, 7:45 a.m.-12:00 noon

Moderator: Dr. Gregory J. Jurkovich

Special Presentation: Media Involvement After High Profile Injuries: Are Trauma Centers Prepared?
Joseph Bellal, *Peter Rhee*

1. **Pre-Operative Cognitive Impairment Predicts Adverse Post-Operative Outcomes in Older Adults**
   Thomas N. Robinson, Daniel S. Wu, Lauren Pointer, Christina Dunn, Marc Moss
   University of Colorado
   Invited Discussant: Alden Harken, Oakland, California

2. **Liver Transplantation for Hepatocellular Carcinoma: Long Term Results Suggest Excellent Outcomes**
   *M. B. Majella Doyle**, Neeta Vachharajani, T. Mark Earl, Ying Lin, Christopher D. Anderson, Surendra Shenoy, Jason R. Wellen, *Jeffrey A. Lowell*, *William C. Chapman*
   Washington University
   Invited Discussant: Alan Hemming, San Diego, California

3. **Neoadjuvant Therapy and Liver Transplantation for Hilar Cholangiocarcinoma: Is Pathological Confirmation of Diagnosis Necessary?**
   Charles B. Rosen,* Sarwa Darwish Murad, Julie K. Heimbach, Gregory J. Gores
   Mayo Clinic Rochester
   Invited Discussant: Andrew Klein, Los Angeles, California

4. **Re-Operative Pancreatectomy: Curative Resection Through a Multimodality Approach**
   Mark J. Truty, Matthew H. Katz, *Peter W. Pisters, Jean-Nicolas Vauthey, Jeffrey E. Lee, Jason B. Fleming.* MD Anderson Cancer Center
   Invited Discussant: Kelly McMasters, Louisville, Kentucky

INTRODUCTION OF NEW MEMBERS

PRESENTATION OF " 2010 J. BRADLEY AUST AWARD" FOR BEST PAPER BY A NEW MEMBER

RECIPIENT OF "J. BRADLEY AUST AWARD" 2010 – Dr. Thomas Robinson

….INTERMISSION….

PRESIDENTIAL ADDRESS
"Regionalized Health Care: Lessons from the Trauma System Model"
Gregory J. ("Jerry") Jurkovich M.D.

Moderator: Dr. James DeBord

5. **Microscopically Positive Margins for Primary Gastrointestinal Stromal Tumors: Analysis of Risk Factors and Risk of Recurrence**
   Martin D. McCarter, Karla V. Ballman, Linda McCall, David M. Ota, Ronald P. DeMatteo
   Sponsor: *Thomas Robinson*
   University of Colorado
   Invited Discussant: Matthew Hansman, Santa Cruz, California

6. **The Role of Sentinel Lymph Node Biopsy in Patients with Thin Melanomas at a Single Institution**
   James Tidwell, Chad Housewright, Cary Chisholm, Daniel Jupiter, Raman Mahabir, *Terry Lairmore,* Charles Verheyden
   Scott and White Memorial Hospital
   Invited Discussant: John Vetto, Portland, Oregon

7. **Time-Dependent Estimates of Recurrence and Survival in Colon Cancer: Decision Support Tool Development for Adjuvant Therapy and Oncological Outcome Assessment** ◙
   Scott R. Steele, Anton Bilchik,* Eric K. Johnson, Aviram Nissan, George E. Peoples, John S. Eberhardt, Philip Kalina, Benjamin Petersen, Alexander Stojadinovic
   Madigan Army Medical Center
   Invited Discussant: Steven Hunt, Saint Louis, Missouri

SECOND SCIENTIFIC SESSION

Tuesday, November 15, 2011, 8:00 a.m. – 12 noon
Moderator: Dr. Gregory J. Jurkovich

8. **Perioperative Risk of Laparoscopic Fundoplication: Safer Than Previously Reported-Result from the ACS-NSQIP 2005-2009**
   Stefan Niebisch, Fergal J. Fleming, Kelly M. Galey, Candice L. Wilshire, Carolyn E. Jones, Virginia R. Litle, Thomas J. Watson, *Jeffrey H. Peters*
   University of Rochester Medical Center
   Invited Discussant: Stephen Jolley, Anchorage, Alaska

9. **Rapid Rate of Decline in Intraoperative Parathyroid Hormone Predicts Single Gland Disease During Parathyroidectomy for Primary Hyperparathyroidism**
   Sara C. Oltmann, Jennifer L. Rabaglia, Fiemu E. Nwariaku, *Shelby Holt,* Stacy L. Woodruff
   UT Southwestern Medical Center
   Invited Discussant: Melanie Richards, Rochester, Minnesota

10. **Medicare Procedures in Rural and Urban Areas: Special Training for Rural Surgery May Not Be Necessary**
    Thomas A. Broughan, Moira E. Crosby, Amber W. Trickey, Allen Ma, Dale W. Bratzler
    University of Oklahoma College of Medicine, Tulsa
    Oklahoma Foundation for Medical Quality
    Inova Fairfax Hospital
    Invited Discussant: Thomas Cogbill, LaCrosse, Wisconsin

11. **Getting Honors in Surgery: Smart Student or Just Great Timing?**
    Shirin Towfigh, Aniebiet Udofia, Nirvi Shah, James Mirocha
    Cedars-Sinai Medical Center
    Invited Discussant: J. Scott Thomas, Temple, Texas

12. **Duty Hours, Quality of Care, and Patient Safety: General Surgery Resident Perceptions**
    Karen R. Borman, Judy A. Shea, Andrew T. Jones
    Abington Memorial Hospital
    Invited Discussant: Ronald Gagliano, Honolulu, Hawaii

….INTERMISSION….

13. **Risk-Adjusted Outcomes: Can Hospitals "Game" the System by Avoiding High-Risk Patients?**
    Jamie E. Anderson, David C. Chang, J. Kellogg Parsons, *Mark A. Talamini*
    University of California, San Diego
    Invited Discussant: J. Craig Collins, Los Angeles, California

14. **Laparoscopic Versus Open Appendectomy in Obese Patients: Outcomes Using the ACS-NSQIP Database**
    Rodney J. Mason, Ashkan Moazezz
    University of Southern California
    Invited Discussant: Dr. Brent Matthews, St. Louis, Missouri

15. **Outpatient Laparoscopic Appendectomy**
    Cassandra Cash, Richard Frazee, *Randall Smith,* Stephen Abernathy, Edward Childs, Matthew Davis, *John Hendricks*
    Scott and White Clinic Foundation
    Invited Discussant: Fred Luchette, Maywood, Illinois
16. **The First National Examination of the Trends and Outcomes of Robotic Surgery in the U.S.**
    Jamie Anderson, David C. Chang, *Mark A. Talamini*
    University of California, San Diego
    Invited Discussant: James Fleshman, Saint Louis, Missouri

17. **Fall and Fall Again: Risk Factors for In-Hospital Falls in Trauma Patients** ◙
    Carlos Brown,* Sadia Ali, Romeo Fairley
    University of Texas Southwestern - Austin
    Invited Discussant: Heidi Frankel, College Park, Maryland

THIRD SCIENTIFIC SESSION

Tuesday, November 15, 2011, 1:30 p.m.-4:00 p.m.
Point/Counterpoint: Moderator: Dr. Richard Thirlby

Management of Symptomatic Pancreatic Pseudocyst: Endoscopic or Surgical Drainage?

Frame the issue
George Kazantsev, Oakland, California

Endoscopic drainage should be tried first
Thomas Howard, Indianapolis, Indiana

Surgical drainage remains the gold standard
Richard Prinz, Evanston, Illinois

Re-defining the Specialty of General Surgery – The Time has Come

Frame the issue
Wayne Schwesinger, San Antonio, Texas

Acute care surgery is the new General Surgery
Gregory J. Jurkovich, Seattle, Washington

Let's redesign rather than further eviscerate General Surgery
Thomas Cogbill, La Crosse, Wisconsin

….INTERMISSION….

Moderator: Dr. Stanley Goldberg

18. **Long-Term Outcomes of Planned Cortex Preservation in Patients Requiring Bilateral Adrenalectomy for Hereditary Pheochromocytoma**
Elizabeth G. Grubbs, Thereasa A. Ric, Mimi Hu, Camilo Jimenez, Chetna Wathoo, *Jeffrey E. Lee, Nancy D. Perrier*
MD Anderson Cancer Center
Invited Discussant: Richard Prinz, Evanston, Illinois

19. **Metastatic Nonfunctioning Pancreatic Neuroendocrine Carcinoma to the Liver: Surgical Treatment and Outcomes**
Daniel Cusati, Janani S. Arun, Lizhi Zhang, *Michael B. Farnell, David M. Nagorney, John H. Donohue,* Florencia G. Que, Kaye M. Reid-Lombardo, *Michael L. Kendrick*
Mayo Clinic Rochester
Invited Discussant: Jean-Nicholas Vauthey, Houston, Texas

20. Surgical Management of Pulmonary Carcinoid Tumors: Sub-Lobar Resection Versus Lobectomy
Matthew Fox, Victor Van Berkl, Michael Bousamra, *Robert Martin II*
University of Louisville
Invited Discussant: Alex Little, Tucson, Arizona

4:00-5:00 p.m.
ANNUAL ASSOCIATION BUSINESS MEETING
(Members only)

FOURTH SCIENTIFIC SESSION

Wednesday, November 16, 2011, 8:00 a.m.-12 noon

Moderator: (President Elect)

21. **Fluorescence-Guided Surgery Allows for More Complete Resection of Pancreatic Cancer in Orthotopic Mouse Models**
Cristina A. Metildi, Sharmeela Kaushal, Chanae Hardamon, Cynthia S. Snyder, *Mark A. Talamini,* Robert M. Hoffman, *Michael Bouvet*
University of California, San Diego, Medical Center
Invited Discussant: Margo Shoup, Maywood, Illinois

22. **Comparison of Outcomes of Breast Conservative Therapy in Multifocal or Multicentric and Unifocal Invasive Breast Cancer**
Alice Chung, Kelly Huynh, Travis Kidner, Parisa Mirzadehgan, Myung-Shin Sim, *Armando Giuliano*
John Wayne Cancer Institute
Invited Discussant: Nora Hansen, Chicago, Illinois

Quick Shots

Thoracic Endografts for Penetrating Aortic Ulcers
Michelle Kosovec, *M. Ashraf Mansour,* Christopher M. Chambers, Jason D. Slaikeu, Robert F. Cuff
Spectrum Health

A Drain Amylase Level of 1000 U/L or Less on the Third Postoperative Day Predicts the Absence of Fistula Following Pancreatic Resection
Michael G. Hurtuk, Eileen Bock, *Gerard V. Aranha*
Loyola University Medical Center

Laparoscopic Total Pancreatectomy: Feasibility and Outcomes in an Early Experience
J. S. Arun, *Michael L. Kendrick*
Mayo Clinic Rochester

Local Ablative Therapy in the Management of Locally Advanced Pancreatic Adenocarcinoma
Robert C. G. Martin, Kellie Mcfarlin, Charles R. St Hill, Susan F. Ellis, Vic Velanovich
University of Louisville

Single Incision Laparoscopic Cholecystectomy-Evaluation of Our Initial Experience and Learning Curve
Nicole Sharp, Matthew Tillman, Rob Watson, John F. Eckford, Daniel Jupiter, F. Paul Buckley
Scott and White Memorial Hospital and Clinic
Sponsor: *J. Scott Thomas*

23. ACS-NSQIP as a Quality Improvement Tool: A Single Institution's Experience with Vascular Surgical Site Infection
John M. Compoginis, *Steven Katz*
University of Southern California, Huntington Hospital, Pasadena
Invited Discussant: Richard Keen, Chicago, Illinois

24. **Compliance With CDC Field Triage Guidelines in an Established Trauma Center**
    Alexis Gage, Saman Arbabi, *Gregory J. Jurkovich*
    Harborview Medical Center
    Invited Discussant: John Weigelt, Milwaukee, Wisconsin

25. **Prevalence and Course of Atrial Fibrillation (AF) in Critically Ill Trauma Patients**
    Shannon VonMuenster, Jeremiah J. Duby, Brett Heintz, *Christine S. Cocanour*
    University of California Davis Medical Center
    Invited Discussant: Randall Smith, Temple, Texas

Italics indicates a member of the Western Surgical Association
*Indicates a new member ◙ Indicates Aust Award Candidate

CME

The Western Surgical Association is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians. The organization has been accredited since 1976.

ACCREDITATION STATEMENT

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

CME CREDIT

The American College of Surgeons designates this educational activity for up to a maximum of 13.50hours in Category 1 credits toward the AMA Physician's Recognition Award. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

American College of Surgeons
Division of Education

DISCLOSURE STATEMENT

The Western Surgical Association has a policy of disclosure of financial interest or possible conflicts of interest on the part of any presenters at the annual meeting. If such interes are present, they will be disclosed to the attendees via a handout distributed with the Program Book at the time of the scientific session.

Deaths and Memorials

DEATHS REPORTED 2011-2012

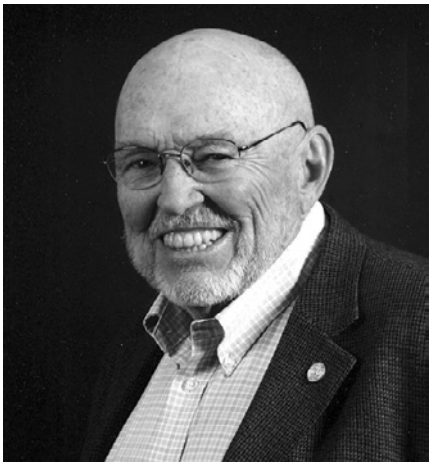
Theodore Dickinson, MD (1932 – 2012)

Michael E. Fenoglio, MD (1955 – 2012)

Lawrence O'Neal, MD (1923 – 2012)

William J. Schulte, MD (1928 – 2012)

Roger S. Wotkyns, MD (1927- 2011)



Theodore Dickinson, MD
(1932 – 2012)

Ted was born in Champaign Illinois. He was an Eagle Scout, and graduated from Cornell College in Iowa. He received his medical degree from Washington University in St. Louis, interned at Vancouver General Hospital and completed his surgery residency at the University of Colorado Medical Center in Denver.

Ted was in private practice in Denver from 1966 – 1971. He them moved his family and practice to a small town on the western slope of Colorado, Montrose. He was looking for a rural lifestyle, and found it as the first trained surgeon in a town with 3 traffic lights. I was a resident when I met Ted in 1977, when he returned home to the university for 6 months on what he called a "reverse sabbatical", updating his skills and learning new techniques to take back to his rural practice. He was my mentor then, and I subsequently had the honor of being his partner in Montrose for 10 years.

Ted was a skilled surgeon, dedicated to his patients, and worked tirelessly to build his hospital into the full service institution that serves his community today. He epitomized the truth that caring for patients, is, at its core, caring about your patients. I also learned from him that the art of medicine is how you apply the science to the individual.

Beyond his practice, Ted raised a wonderful family, was an avid skier, outdoorsman and woodworker. But the real impact he had was on the little community of Montrose he called home. For over 40 years he served on endless committees and facilitated projects to make his town a more healthy, prosperous and happy place for all his neighbors. Whether it was the community foundation, academic booster club, or a school bond issue, he was in the middle of it. The list is endless. He even wrote a medical column in the weekly paper. His style was that of a good listener, and he "focused on the issues that could improve the community rather than the personalities that often seemed to divide it".

Ted will be missed by everyone: patients, family, friends, and above all his community. He touched them all. We can only hope to do as well.

Tribute provided by Hamilton Lokey, MD.

Michael E. Feneglio, MD
(1955 – 2012)

Michael E. Fenoglio, MD, a member of the Western Surgical Association since 1993, died on May 5, 2012, from complications of frontotemporal lobar degeneration. He was 57 years old.

He was born on January 22, 1955 in Nocona, Texas where he was raised. He attended Midwestern State University and graduated in 1980 from The University of Texas Medical Branch at Galveston. His surgical training was at Saint Joseph Hospital, Denver, Colorado, under Robert Spencer, MD, and Leroy Stahlgren, MD, from 1980 to 1985. He entered private practice in 1985 with Tom Early, MD, Jack Gallagher, MD, William Haun, MD, and Erick Ratzer, MD. His entire practice life was in mid-town Denver and he retired in 2006.

In 1988, Mike went to London, England, with Jack Gallagher, MD, to observe Sir John Wickham, a British urologist, perform laparoscopic procedures. From that time, he became an avid laparoscopic surgeon starting with gallbladders and common bile ducts and adding appendectomies, splenectomies, colon resections, hernias, fundoplasties and donor nephrectomies, in addition to miscellaneous other procedures. He was a premier technician.

He was a member of the American Medical Association, Denver Medical Society, Colorado Medical Society, American College of Surgeons, Colorado Chapter of the American College of Surgeons (President, 1994), Denver Academy of Surgery (President, 2000), SAGES, Southwestern Surgical Congress, Rocky Mountain Oncology Society, American Cancer Society Colorado Division (President, 1993), Denver Clinical and Pathological Society (President, 1997), Collegium Internationale Chirurgiae Digestivae, International Surgical Society, Society for Medical Innovation and Technology, International Society for Breast Surgery, American Society of General Surgeons, American Hernia Society, American Society of Breast Surgeons, Society of Laparoendoscopic Surgeons and the United States Laparoscopic Founders Society, as well as the Western Surgical Association. He was an Associate Clinical Professor of Surgery at the University of Colorado School of Medicine.

He authored multiple peer-reviewed articles and book chapters. In 1993 he started the Rocky Mountain Advanced Surgical Symposium which continues annually.

He was dedicated to teaching his skills to other surgeons throughout the Rocky Mountain region, as well as in Mexico, Venezuela and Vietnam. He was a caring man to his family and his patients. He leaves his wife Debbie, four children and two grandchildren.

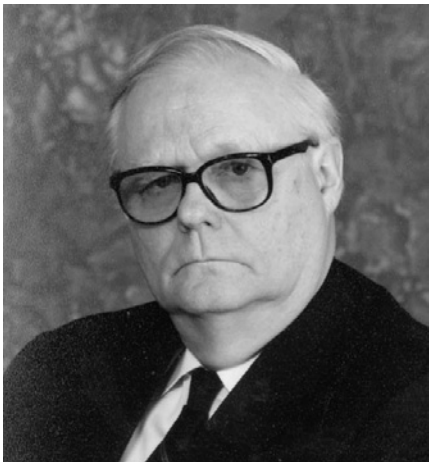
Tribute provided by Erick R. Ratzer, MD.

Lawrence W. O'Neal, MD
(1923 – 2012)

Born in St. Charles, Missouri in 1923, Lawrence received his undergraduate degree from the University of Toledo, and in 1946 graduated from Washington University School of Medicine obtaining his medical degree in the wartime-accelerated program. He stayed on for his surgical training at Barnes Hospital and subsequently was recruited to the staff of Barnes Hospital. Lawrence had a major interest in endocrine surgery, and he, along with Marvin Levin, MD, established and edited a volume on diabetic foot problems in 1973. This work has gone forward into seven subsequent editions and has been published in Italian, Portuguese, and Spanish. He received the prestigious Washington University Alumni Achievement Award in 1991.

In 1980, he was appointed as Chairman of the Department of Surgery at St. John's Medical Center in St. Louis, a position he retained until 1988. During his tenure as Department Chair, he established a level I trauma designation for the medical center, which remains in place to the present time. He also established an integrated training program between St. John's Medical Center and St. Louis University, and served as Director of Surgical Education. Lawrence had many hobbies including photography and literature, publishing profiles of prominent events that occurred in the mid-century 1900's. He served as President of the St. Louis Medical Society in 1971, and also was a delegate to the American Medical Society and was granted a special recognition award from this society in 2001. Dr. O'Neal was a regular contributor to the Western Surgical Association and will be missed by all.

Tribute provided by William C. Chapman, MD



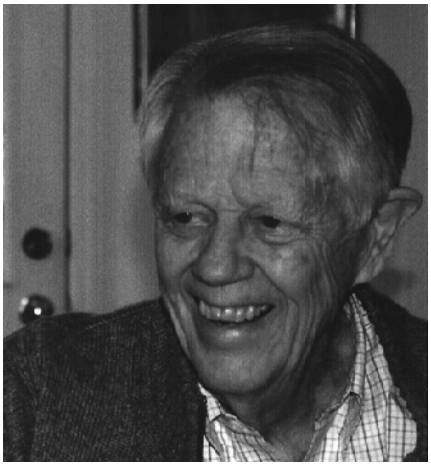
William J. Schulte, MD
(1928 – 2012)

Born in Stryker, Ohio in 1928, Bill received his undergraduate degree from the University of Toledo and his medical degree from The Ohio State University College of Medicine. He served his country as a Captain in the Army from 1957-59. Bill completed his surgical residency at the Milwaukee County General Hospital. He served as the Chief of Surgery at the Zablocki VA Medical Center and was a professor of surgery at the Medical College of Wisconsin. He joined the MCW Department of Surgery and witnessed the transition of the major teaching hospital at MCW from Milwaukee County Hospital to Froedtert Hospital. He also saw the closing of Marquette Medical School in 1970, the birth of the Medical College of Wisconsin and the eventual move of the medical school to the county grounds. He established the MCW Bariatric Surgery Program which is recognized as a "Center of Excellence" by the American Society for Metabolic and Bariatric Surgery. Bill was the president of the Association of VA Surgeons (1990-91) and the Wisconsin Surgical Society (1996).

Bill joined the Western Surgical Association in 1988. I knew him as a student at MCW and as I became active in the Western as a resident I always remember him asking about me and my activities even though I had drifted away from Milwaukee and MCW. On my return to MCW, Bill remained a congenial colleague who helped me get settled once again in Milwaukee. My other memory is his loud and distinct laugh which he shared with all of us many times. He was a staunch supporter of the MCW Department of Surgery and weathered the many changes over a stellar career.

Bill had other interests including gardening, fishing, Civil War history, and participation in his children's activities such as Boy Scouting and soccer. His interest in Civil War history was an interest we shared which produced many a vibrant discussion. We will all miss him.

Tribute provided by John A. Weigelt, MD



Roger S. Wotkyns, MD
(1927 – 2011)

Roger S. Wotkyns, MD, a member of the Western Surgical Association since 1976, died in September, 2011, at age 84.

He was born January 13, 1927, in Oahu, Hawaii. He graduated from the University of New Mexico in 1947 with Bachelor's and Master's degrees. After graduate work at Stanford University in California, he attended the University of Colorado School of Medicine, graduating in 1955. He was a junior member of Alpha Omega Alpha.

He interned at Denver General Hospital – 1955-56 – and took his surgical residency at the Denver Veterans Administration Hospital from 1956-60 under Ben Eiseman, MD. He spent 1958-59 as a senior registrar at St. Bartholomew's Hospital, London, England. William Silen, MD, was assistant chief of surgery during Roger's chief resident year – 1959-60.
In 1960, he started practice in Denver working with Kenneth Sawyer, MD, a past President of the Western Surgical Association. In 1961, he partnered with Frank Traylor, MD, and moved his practice to Lutheran Medical Center in Wheat Ridge, Colorado. He retired from active surgery in 1988.

From 1988 to 1992 he was the surgical residency director at the University of Colorado Medical School. In 1992 he became director of ambulatory surgery at the Denver Veterans Administration Hospital until 1996. He was hired to oversee outpatient surgery clinics but ended up spending most of his time devising programs for computerized medical records. That work was the first of its kind at the hospital and received national VA attention.
He was a member of the American College of Surgeons, the American Medical Association, Denver Medical Society, Colorado Medical Society, Denver Academy of Surgery (President, 1975), Colorado Chapter of the American College of Surgeons (President, 1984), Southwestern Surgical Congress, Society for Clinical Vascular Surgery, as well as the Western Surgical Association.

He was a Professor of Surgery at the University of Colorado Medical School. He published six peer-reviewed articles and four book chapters. He co-authored the first edition of Surgical Decision Making with Ben Eiseman. He was a skilled and accomplished ocean sailor.
He "finished" the manufactured hull of a 28-foot Rhodes Southern Cross sailboat in his backyard, trailered it to the West Coast and sailed the boat on San Francisco Bay. He and wife Jackie raised five children.

In his later years he developed severe back problems and an immune deficiency that markedly limited his mobility, but not his effervescent outlook on life.

Tribute provided by Erick R. Ratzer, MD, and Lawrence W. Norton, MD.