STSA
SOUTHERN THORACIC SURGICAL ASSOCIATION

59TH ANNUAL MEETING

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59TH ANNUAL MEETING

NOVEMBER 7-10, 2012
WALDORF ASTORIA NAPLES
NAPLES, FLORIDA
SPECIAL THANKS

SPECIAL THANKS TO STSA
59TH ANNUAL MEETING CORPORATE SUPPORTERS

PLATINUM
St. Jude

GOLD
Medtronic, Inc.
FUTURE MEETING LOCATIONS

October 30-November 2, 2013
Hyatt Regency Scottsdale Resort & Spa at Gainey Ranch
Scottsdale, AZ

November 5-8, 2014
JW Marriott Starr Pass Resort
Tucson, AZ

November 3-8, 2015
Disney’s Yacht & Beach Club Resort
Orlando, FL

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THE ANNALS OF THORACIC SURGERY
L. Henry Edmunds, Philadelphia, PA
WEDNESDAY, NOVEMBER 7, 2012
3:00 p.m. – 8:00 p.m.  Registration – Orchid Registration
7:45 p.m. – 10:00 p.m.  Surgical Motion Pictures – Royal Palm 4-8

THURSDAY, NOVEMBER 8, 2012
6:30 a.m. – 5:00 p.m.  Registration – Orchid Registration
6:45 a.m.  Continental Breakfast – Royal Palm Foyer
7:00 a.m. – 8:30 a.m.  Post-Graduate General Session – Royal Palm 4-8
8:30 a.m. – 8:50 a.m.  Break
8:50 a.m. – 10:00 a.m.  Post-Graduate Breakouts
Adult Cardiac Breakout – Royal Palm 4-8
Congenital Breakout – Acacia 1-3
General Thoracic Breakout – Acacia 4-6
10:00 a.m. – 10:20 a.m.  Break
10:20 a.m. – 10:50 a.m.  Post-Graduate Pro/Con Debate
Subspecialization Certification Should Be Required for Individual Procedures
Royal Palm 4-8
10:50 a.m. – 11:20 a.m.  Post-Graduate Pro/Con Debate
Destination VADS Should Only Be Done In A Transplant Center
Royal Palm 4-8
11:20 a.m. – 12:00 p.m.  Post-Graduate Special Session
Paul Uhlig
The Anatomy and Physiology of Exceptional Teamwork
Royal Palm 4-8
12:00 p.m. – 1:00 p.m.  Break
12:30 p.m. – 4:00 p.m.  Exhibits Open – Orchid Ballroom & Foyer
1:00 p.m. – 2:00 p.m.  Ethics Debate
Thoracic Surgery Societies Should Evaluate and Rate the Quality of International Cardiopulmonary Surgery Centers to Help Patients who Wish to Benefit From Low-Cost High-Quality Surgery
Royal Palm 4-8
2:00 p.m. – 2:30 p.m.  Break & Visit Exhibits – Orchid Ballroom & Foyer
2:30 p.m. – 5:00 p.m.  First Scientific Session – Royal Palm 4-8

FRIDAY, NOVEMBER 9, 2012
6:30 a.m. – 5:30 p.m.  Registration – Orchid Registration
6:45 a.m.  Continental Breakfast – Royal Palm Foyer
7:00 a.m. – 7:50 a.m.  Basic Science Forum – Royal Palm 4-8
8:00 a.m. – 10:00 a.m.  Second Scientific Session – Royal Palm 4-8
9:45 a.m. – 11:30 a.m.  Exhibits Open – Orchid Ballroom & Foyer
10:00 a.m. – 10:30 a.m.  Break & Visit Exhibits – Orchid Ballroom & Foyer
10:30 a.m. – 10:50 a.m.  Kent Trinkle Education Lectureship
Bartley P. Griffith
Lessons Learned in More Than 20 Years as a Program Director
Royal Palm 4-8
THURSDAY, NOVEMBER 8
Spouse/Guest Hospitality Suite – The Bar
Time: 8:30 a.m. – 11:30 a.m.
STSA is providing a complimentary hospitality room for spouses and guests to mingle and make plans for exploring Naples.

FRIDAY, NOVEMBER 9
Spouse/Guest Hospitality Suite – The Bar
Time: 8:30 a.m. – 11:30 a.m.
STSA is providing a complimentary hospitality room for spouses and guests to mingle and make plans for exploring Naples.

All Attendee Lunch – Vista Ballroom & Terrace
Time: 12:00 p.m. (Followed by dessert in the Exhibit Hall.)
Cost: Complimentary

Naples Museum of Art
Time: 1:15 p.m. – approximately 4:30 p.m.
Limit: 10 persons
Cost: $98.00 (Includes transportation, admission, guided tour, and gratuities.)

Advanced registration is required. Subject to cancellation if registration is insufficient. Registrants will be notified in advance and refunds will be issued if this event is cancelled.

Enjoy an afternoon at the Naples Museum of Art as you experience a tour with the museum docent. The museum’s visual arts center includes a three-story, 30,000-square-foot museum with 15 galleries, a glass-dome conservatory, entrance gates by renowned metal artist Albert Paley, spectacular chandeliers and a Persian Ceiling by acclaimed glass artist Dale Chihuly, a resource room, and the museum store. The museum is dedicated to displaying world-class paintings, sculpture, drawings, and other art forms.

President’s Mixer – Vista Ballroom & Terrace
Time: 7:00 p.m. – 9:00 p.m.
Cost: Complimentary

Attendees receive two tickets with registration. Additional tickets may be purchased for $25.00. Visit the registration desk for details.

Gather with fellow meeting attendees for an evening of networking and fun.

SATURDAY, NOVEMBER 10
Spouse/Guest Hospitality Suite – The Bar
Time: 8:30 a.m. – 11:30 a.m.
STSA is providing a complimentary hospitality room for spouses and guests to mingle and make plans for exploring Naples.

Fishing Tournament – Lovers Key State Park
Time: 12:15 p.m. – approximately 5:30 p.m.
Limit: 20 persons
Cost: $195.00 (Includes transportation, lunch, beverages, fishing license, bait, and tackle. Gratuity is not included.)

Advanced registration is required. Subject to cancellation if registration is insufficient. Registrants will be notified in advance and refunds will be issued if this event is cancelled.

This year promises to be a great fishing experience with a short trip to Lovers Key State Park where you will enjoy the Estero Bay backwater fishing. Anglers, don’t miss the opportunity to catch many of the following: ladyfish, sea trout, redfish, snook, tarpon, mangrove snapper, catfish, and many more at the

Annual STSA Fishing Tournament. The trip will be smooth and the lines tight. Please dress in casual attire, walking shoes, hat, sunglasses, and sun block.

Everglades Eco Tour
Time: 12:30 p.m. – approximately 4:45 p.m.
Cost: $144.00 (Includes lunch, transportation, tour, airboat ride, gratuities, and guide.)

Advanced registration is required. Subject to cancellation if registration is insufficient. Registrants will be notified in advance and refunds will be issued if this event is cancelled.

Tour Florida’s most famous resource, the Florida Everglades. Discover the four major geographical areas of this unique ecosystem – the pinewoods, the cypress swamp, the fresh and saltwater marshes, and the mangrove islands. The first stop will be the Fakahatchee Strand State Preserve where you will enjoy a guided walk through one of the most valuable biological assets remaining in Florida. You will take the boardwalk through the largest of the Everglades’ strands. The boardwalk penetrates deep into a complex mosaic of trees and plants, which provide habitat for the endangered Florida black bear, panthers, otters, alligators, and many species of birds including Egrets, Osprey, and the Roseate Spoonbill.

After the boardwalk, you will enjoy a thirty minute airboat ride. The specially designed platform airboats give you a unique view as you travel through the varied ecosystem that makes up the Florida Everglades. You will travel along the Barron River, a seasonal home to migrating manatees and a wide variety of birds, through narrow curving mangrove tunnels and finally to the swampy grasslands where alligators are usually found sunning themselves in the Florida sunshine.

Please dress in casual attire, walking shoes, hat, sunglasses, sun block, and insect repellent.

Golf Tournament – Naples Grande Golf Course
Time: 12:30 p.m. shotgun start
Cost: $180.00 (Includes transportation, greens fees, and box lunch.)
A limited number of tee times are available – be sure to register in advance!

Voted one of the ten best new golf courses in Florida, come enjoy the private Naples Grande Golf Course designed for players of all skill levels. Acclaimed golf architect Rees Jones designed a par 72 championship course that proves both interesting and challenging. Each hole at this demanding golf course promises an exhilaratingly new experience. With extraordinary elevations and unique water features expertly incorporating the indigenous Florida foliage, this course offers stunning fairways for year-round play.

Please note the following dress code: collared shirt and long pants or Bermuda length shorts. Mock turtlenecks are acceptable. Ladies must have a collar or sleeves on their top. Shorts or skirts of appropriate length are allowed. Only soft-spiked shoes are allowed on the course.

Annual Awards Dinner & Dance
Reception: 7:00 p.m. – 8:00 p.m. – Royal Palm Foyer
Dinner: 8:00 p.m. – 11:00 p.m. – Royal Palm 4-5
Cost: $100.00 per person
Conclude your STSA 59th Annual Meeting experience with the always memorable Annual Awards Dinner & Dance. Join fellow meeting attendees for an evening of dining, dancing, and networking with colleagues. Advanced registration recommended. A limited number of tickets will be sold on site.

To reflect the relaxation and fun of our Naples beach location, dress will be resort casual. Gentlemen are invited to wear khakis or slacks with a shirt and jacket. Ladies may choose a summer dress or a blouse with a skirt or slacks. No jeans or shorts please.
DISCUSSION OF PAPERS
Discussions of papers at the Annual Meeting are considered for publication in The Annals of Thoracic Surgery. Please review the program outline carefully to determine if you have a particular interest in discussing some of the topics, then be prepared to discuss them at the meeting. Each session has a limited amount of time reserved for discussion. Assigned discussants are limited to two minutes and two questions.

PRESENTATION AND PUBLICATION
Authors of oral presentations are required to submit a manuscript for consideration for publication in The Annals of Thoracic Surgery before noon on Saturday, November 10, 2012. Manuscripts must be submitted via The Annals online manuscript submission system at www.atseditorialoffice.org. A paper copy of the manuscript will not be accepted for consideration. Primary authors and co-authors who are delinquent in submitting their manuscript to The Annals on time will not have their presentations considered for publication in The Annals. In addition, these authors will not have abstracts considered by the Program Committee of the STSA for two (2) subsequent meetings.

ACCREDITATION
The Southern Thoracic Surgical Association is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The STSA designates this educational activity for a maximum of 20.75 AMA PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

STSA CME MISSION
The continuing medical education mission of the Southern Thoracic Surgical Association is to design and deliver high-quality, practical, and scientifically rigorous educational programming at its Annual Meeting in the areas of cardiovascular, general thoracic, and congenital heart surgery, as well as ethics and professionalism, leadership, and practice management.
Such educational programming is meant to advance the overall competence of cardiovascular, general thoracic, and congenital heart surgeons, and ultimately to help them improve their patient outcomes and promote patient safety.
Continuing medical education activities are presented in a variety of formats at an STSA Annual Meeting; these include (but are not limited to) presentations of peer-reviewed scientific abstracts, updates on relevant scientific research, didactic presentations, debates, video presentations, and sub-specialty-specific break-out sessions. All educational sessions include the opportunity for questions, answers and discussion to further support the educational needs of the meeting attendees and the program learning objectives.
STSA educational activities are developed and provided with the intent of confirming an existing knowledge base, imparting new knowledge, enhancing competence in the content areas covered, and addressing identified professional practice gaps. The expected results include participants’ reporting greater confidence in their clinical care skills and a willingness to change their behavior or adapt new strategies as appropriate.

EVALUATIONS
Registrants will receive all CME and session evaluation forms in one packet at the registration desk. Attendees should return the entire packet at the end of the meeting after completing the evaluation forms for all sessions attended.
Physicians wishing to receive CME for sessions they attend will be required to complete the evaluation form for the session. This will be the only way physicians will be able to earn CME for their attendance.
The evaluation form will provide physicians the opportunity to offer feedback to the STSA Council and Program Committee regarding content offered, including information about applicability of the content to current practice, quality of the material presented, and recommendations for future programming. This information is invaluable in the planning of future STSA educational programs.
In addition to being useful for program planning, program evaluation and future needs assessment are important components of the requirements that the STSA must meet to maintain accreditation through the Accreditation Council for Continuing Medical Education (ACCME). It is by meeting the requirements set forth by the ACCME that the STSA is able to award CME credit for educational programming.

CME PROCESS
To ensure that this process will work effectively, session evaluation forms to claim CME will be provided in a packet at the registration desk.
Each evaluation will include a series of questions regarding the program content. In addition, physicians will need to sign each form upon completion and indicate the actual amount of time spent in individual sessions. Without this information CME credit cannot be awarded. Bins for depositing these packets will be located outside the meeting rooms and near the registration desk.
Evaluation forms will be processed soon after the Annual Meeting and entered into an electronic file that STSA staff will use to generate a CME certificate. These certificates will be mailed to physicians early in 2013. This process will allow STSA to maintain an electronic record of CME earned by physicians. Files will be maintained for a minimum of six years. Any questions regarding this procedure should be directed to STSA Headquarters at (800) 685-7872, or via e-mail at stsa@stsa.org.

POLICY REGARDING DISCLOSURE
The Southern Thoracic Surgical Association will seek thorough financial and commercial disclosure information, according to ACCME requirements and recommendations, from all presenters and moderators participating in an STSA Annual Meeting. Failure or refusal to provide disclosure information automatically disqualifies participation. All disclosure information will be communicated to the learners through appropriate means, including but not limited to the Annual Meeting Program Book.
STSA leadership, planning committee members, and staff will also provide disclosure information to be kept on file and communicated to meeting attendees through the STSA Annual Meeting Program Book.
All abstracts and disclosure statements will be reviewed approximately three (3) months prior to the Annual Meeting by staff for unidentified conflicts of interest. Any such potential conflicts will be brought to the attention of the STSA President, Chair, and CME Committee Chair for review and resolution. Any potential conflicts of interest must be resolved before presentation. If a conflict is deemed unresolved, the paper cannot be presented at the Annual Meeting.
The STSA Disclosure Policy (as outlined on page 12) will be communicated to the learner via the Annual Meeting Program Book.
EDUCATION DISCLOSURE POLICY
As a sponsor of continuing medical education accredited by the Accreditation Council for Continuing Medical Education (ACCMCE), the Southern Thoracic Surgical Association requires that any individual who is in a position to control the content of an educational activity must disclose all relevant financial relationships (including known relationships of his or her immediate family, department, and partners) with any healthcare-related business or other entity whose products or services may be discussed in, or directly affected in the marketplace by, the educational content. The ACCME defines a “relevant financial relationship” as a relationship of any amount occurring within the previous twelve (12) months. The question of whether a disclosed conflict situation could represent undue influence on the educational activity by a commercial interest, or whether the disclosed information is sufficient to consider an abstract, presentation, or other educational enduring material to represent potentially biased information must be resolved prior to an individual’s involvement in STSA educational programming.

Required disclosures include (1) financial interest of any amount (e.g., through ownership of stock, stock options, or bonds) (2) the receipt of any amount of cash, goods or services within the current 12-month period (e.g., through research grants, employment, consulting fees, royalties, travel, or gifts) or (3) a non-remunerative position of influence (e.g., as officer, director, trustee or public spokesperson). **NOTE: To avoid confusion with regard to the question of “relevance,” STSA requires that anyone in a position to control content (planners, speakers, authors, volunteer leaders, staff) must review the content they are addressing and disclose relationships with companies that have a material interest in the content being covered regardless of the division of the company for which that relationship exists. For instance, if a speaker will be referencing a product made by the X division of ABC company, but his relationship is with the Y division, he must still disclose the relationship.** EXCLUDED from this disclosure requirement are blind trusts or other passive investments such as mutual funds. In the case of a financial or other relationship disclosure, the company, product/service, and specific nature of the relationship must be noted. Disclosure is mandatory for any person involved in the planning, management, presentation, and/or evaluation of STSA educational activities.

Failure to disclose relevant financial relationships disqualifies the individual from being a planning committee member, a teacher, or an author of CME materials, and this individual cannot have any responsibility for the development, management, presentation, or evaluation of STSA CME activities. This requirement is intended neither to imply any impropriety of such relationships nor to prejudice any individual presenter or author. It is merely to identify such relationships through full disclosure, and to allow the STSA to assess and resolve potential influences on the educational activity prior to the planning and implementation of an educational activity. All abstracts and presentations are reviewed for potential conflicts of interest. All conflicts of interest must be resolved prior to presentation. Any abstract / paper with a conflict that is deemed unresolvable will not be presented at the Annual Meeting. If no relevant financial relationships exist, the individual must indicate this on the disclosure form.

Additionally, the fact that the presentation, paper, or other educational product describes (a) the use of a device, product, or drug that is not FDA approved or (b) an off-label use of an approved device, product, or drug must also be disclosed. This requirement has been adopted in response to FDA policy and recent case law involving medical societies, and is not intended to prohibit or inhibit independent presentation or discussion regarding the uses of devices, products, and drugs as described in (a) or (b) above.

For live presentations, all disclosures must be stated on a slide at the beginning of the presentation and will be noted in published material related to the activity. Slides, handouts, and other materials utilized as part of an educational activity cannot contain any advertising, trade names or a product group message. Speakers are required to disclose that they have nothing to disclose if this is the case.

Authors listed with a D next to their names have indicated, in accordance with the ACCME Standards and the STSA Disclosure Policy, that they have a financial or other relationship with a healthcare-related business or other entity to disclose; or their paper’s content describes the use of a device, product or drug, that is not FDA approved, or the off-label use of an approved device, product or drug. Please refer to the Relationship Disclosure Index on page 344 for a listing of all disclosure information.

OVERALL MEETING OBJECTIVES
To present recent advances in research, surgical techniques, patient management, and the diagnosis and treatment of cardiothoracic disease to cardiothoracic specialists and related healthcare professionals; and to provide a forum for cardiothoracic surgeons and related healthcare professionals to exchange ideas through open discussion periods and question-and-answer sessions related to the practice of cardiothoracic surgery.

After attending the STSA Annual Meeting, participants should have a broader understanding of new and standard techniques and current research specifically related to adult cardiac surgery, general thoracic surgery, congenital heart surgery, and related transplant procedures. Attendees can utilize knowledge gained from the STSA Annual Meeting to help select appropriate surgical procedures and interventions and integrate state of the art knowledge into their own practices.

TARGET AUDIENCE
The STSA Annual Meeting is intended for all professionals involved in delivery of cardiothoracic care with particular emphasis on cardiothoracic surgeons. Cardiothoracic residents, fellows, nurse practitioners, research scientists, and other healthcare professionals may also benefit from various sessions and interactions with cardiothoracic colleagues.

SPEAKER READY ROOM
The Speaker Ready Room is located in Banyan 1-2. Speakers are requested to go to this room upon arrival, or at least four hours prior to the opening of their session to upload slides. Speakers will not be allowed to bring their laptop to the podium.
SCHEDULE OF EVENTS

WEDNESDAY, NOVEMBER 7, 2012

7:45 p.m. – 10:00 p.m.
Royal Palm 4-8
(Presentations are limited to ten minutes, followed by five minutes of discussion.)

CME Credits Available: 2.25
Moderators: *Jeffrey Heinle and D*Scott A. LeMaire

7:45 p.m. - 8:00 p.m. (page 38)
1V. Transsternal Transpericardial Resection-Reconstruction of Distal Trachea and Carina
Marc de Perrot¹, Kazuhiro Yasufuku¹
¹Toronto General Hospital, Toronto, ON, Canada

8:00 p.m. - 8:15 p.m. (page 40)
2V. Alternative Access (Transaortic and Transcarotid) Techniques for Transcatheter Aortic Valve Replacement
Soumya R. Neravetla¹, DVasilis C. Babaliaros¹, *Robert A. Guyton¹, James P. Stewart¹, DPeter C. Block¹, Chandan M. Devireddy¹, Kret On O. Mavromatis¹, D*Vinod H. Thourani¹
¹Emory University, Atlanta, GA

8:15 p.m. - 8:30 p.m. (page 42)
3V. Left Video Assisted Thorascopic Thymectomy With Complete Dissection of the Superior Horns
D*M. B. Marshall¹
¹Georgetown University Medical Center, Washington, DC

8:30 p.m. - 8:45 p.m. (page 44)
4V. Complex Repair for Tricuspid Valve Endocarditis
Murtaza Dawood¹, *James Gammie¹
¹University of Maryland Medical Center, Baltimore, MD

8:45 p.m. - 9:00 p.m. (page 46)
5V. Pectus Excavatum: A Complete Autologous Anatomic Repair
*Brian E. Kogon¹, *Daniel Miller¹
¹Emory University, Atlanta, GA

9:00 p.m. - 9:15 p.m. (page 48)
6V. Robotic Ivor Lewis Esophagectomy With a Two Layered Hand Sewn Anastomosis
*D*Robert Cerfolio¹
¹University of Alabama at Birmingham, Birmingham, AL

9:15 p.m. - 9:30 p.m. (page 50)
7V. Subcostal Exchange of Left Ventricular Assist Devices – A Novel Approach
Claude A. Beaty¹, George J. Arnaoutakis¹, Timothy J. George¹, Arman Kilic¹, Clinton D. Kemp¹, *Ashish A. Shah¹, D*John V. Conte¹
¹Johns Hopkins Medical Institutions, Baltimore, MD

9:30 p.m. - 9:45 p.m. (page 52)
8V. Thoracoscopic Resection of a Thoracic Inlet Periesophageal Mass
Africa F. Wallace¹, *Rodney J. Landreneau¹, Matthew J. Schuchert¹, James D. Luketich¹, Ghulam Abbas¹
¹University of Pittsburgh Medical Center, Pittsburgh, PA

9:45 p.m. - 10:00 p.m. (page 54)
9V. Sliding Tracheoplasty on Infants
*D*Robert Cerfolio¹
¹University of Alabama at Birmingham, Birmingham, AL
THURSDAY, NOVEMBER 8, 2012

7:00 a.m. – 11:30 a.m.
The first portion of the Post-Graduate Program is the General Session which will feature case presentations with audience response participation. Concurrent breakout sessions in adult cardiac, general thoracic, and congenital heart surgery will take place between 8:50 a.m. and 10:00 a.m. The General Session will continue at 10:20 a.m. with two Pro/Con Debates. Summaries of Post-Graduate papers being presented will be posted to www.stsa.org following the meeting.

CME Credits Available: 4.0

GENERAL SESSION Royal Palm 4-8
Case Presentations With Audience-Response System
Moderators: *David R. Jones and D*Vinod H. Thourani
Educational Objectives: Upon completion of this program participants should be able to:
- Formulate a treatment plan for the high risk pulmonary patient with a T1a lung malignancy.
- Identify adult congenital patients best treated by congenital heart surgeons.
- Formulate a treatment for the patient with concomitant aortic stenosis and atrial fibrillation.

7:00 a.m. - 7:30 a.m.
General Thoracic Case & Debate – Management of T1a Lung Malignancy in Patients at High Risk for Pulmonary Resection
Case Presenter: D*Robert J. Cerfolio
University of Alabama at Birmingham, Birmingham, AL
Recommend Lobectomy – D*Joshua R. Sonett
Columbia University, New York, NY
Recommend Minimally Invasive Minimal Resection – D*Mitchell J. Magee
Medical City Dallas Hospital, Dallas, TX

7:30 a.m. - 8:00 a.m.
Congenital Case & Debate – Surgery in Adults With Congenital Heart Disease is (Always) Better Performed by Congenital Heart Surgeons
Case Presenter: *John Calhoon
University of Texas Health Science Center, San Antonio, TX
Pro – *Kristine J. Guleserian
Children’s Medical Center Dallas, Dallas, TX
Con – *Charles B. Huddleston
St. Louis University School of Medicine, St. Louis, MO

8:00 a.m. - 8:30 a.m.
Adult Cardiac Case & Debate – Best Approach to Treat a 50 Year-Old With Aortic Stenosis and Atrial Fibrillation
Case Presenter: D*Niv Ad
Fairfax Hospital, Falls Church, VA
Recommend Bioprosthetic and Mini-Maze – D*Richard Lee
Northwestern University, Chicago, IL
Recommend Mechanical Valve and No AF Treatment – Brian Bethea
University of Texas Southwestern, Dallas, TX

8:30 a.m. - 8:50 a.m.
Break

ADULT CARDIAC BREAKOUT Royal Palm 4-8
Moderators: D*Neal D. Kon and *Marcus G. Williams
Educational Objectives: Upon completion of this program participants should be able to:
- Evaluate and apply techniques for the repair of mitral regurgitation involving the prolapse of both leaflets.
- Apply the latest strategies in myocardial protection.
- Determine who is a candidate for total arterial revascularization, and how best to use the available conduits.

8:50 a.m. - 9:12 a.m.
Mitral Valve Repair of Bileaflet Prolapse
D*Kevin D. Accola
Cardiovascular Surgical PA, Orlando, FL

9:12 a.m. - 9:34 a.m.
Myocardial Protection in 2012: When and How Should you Stop the Heart?
D*John W. Hammon
Wake Forest School of Medicine, Winston-Salem, NC

9:34 a.m. - 10:00 a.m.
Atrial Revascularization: The Role of Rotal Arterial Revascularization in 2012
DJoseph F. Sabik
The Cleveland Clinic, Cleveland, OH

GENERAL THORACIC BREAKOUT Acacia 4-6
Moderators: *Robert Lee and D*Allan Pickens
Educational Objectives: Upon completion of this program participants should be able to:
- Identify the best methods of measuring and reporting quality care in thoracic surgery.
- Incorporate less invasive treatment alternatives of benign esophageal disease appropriately into practice.
- Formulate a more effective treatment plan in managing post-operative pain in patients undergoing common thoracic surgical procedures.

8:50 a.m. - 9:12 a.m.
Quality Metrics in General Thoracic Surgery: A Prelude to Star Rating Programs and Public Reporting
*Alec Patterson
Washington University School of Medicine, St. Louis, MO

9:12 a.m. - 9:34 a.m.
Minimally Invasive Treatment Alternatives in Benign Esophageal Disease
D*Daniel L. Miller
Emory University, Atlanta, GA

9:34 a.m. - 10:00 a.m.
Managing Post-operative Pain in the Thoracic Patient in 2012
D*Ara Vaporciyan
University of Texas, MD Anderson Cancer Center, Houston, TX
POST-GRADUATE PROGRAM

SCHEDULE OF EVENTS

CONGENITAL BREAKOUT Acacia 1-3

Moderators: *Kristine Guleserian and *Jorge Salazar

Educational Objectives: Upon completion of this program participants should be able to:
• Understand contemporary outcomes with congenital heart surgery in low birth-weight infants.
• Identify indications for surgical repair of the incidentally diagnosed anomalous coronary artery in an asymptomatic patient.
• Review systemic venous anomalies, including Scimitar syndrome, and their associated surgical management.

8:50 a.m. - 9:12a.m.
Update on Repair of Congenital Heart Defects in Low Birth-Weight Infants
*Joseph M. Forbess
Children’s Medical Center of Dallas, Dallas, TX

9:12 a.m. - 9:34 a.m.
Management of Incidental Coronary Artery Anomalies in Asymptomatic Patients
*D*James S. Tweddell
Children’s Hospital of Wisconsin, Milwaukee, WI

9:34 a.m. - 10:00 a.m.
Scimitar Syndrome and Other Systemic Venous Anomalies
*James J. Gangemi
University of Virginia, Charlottesville, VA

10:00 a.m.–10:20 a.m.
Break

GENERAL SESSION Royal Palm 4-8

Pro/Con Debate With Audience Response System

Moderators: *D*Richard Lee and *D*Mitchell J. Magee

Educational Objectives: Upon completion of this program participants should be able to:
• List objective criteria for competency of individual procedures and comment on adequacy of the current state of verification of proficiency.
• Understand the current requirements of a Destination Ventricular Assist Device program and comment on the extent of integration with a Heart Transplant program.

10:20 a.m. - 10:50 a.m.
Subspecialization Certification Should Be Required for Individual Procedures

Pro – *Keith S. Naunheim
St. Louis University Health Sciences Center, St. Louis, MO

Con – *Reid W. Tribble
Palmetto Health Richland, Columbia, SC

10:50 a.m. - 11:20 a.m.
Destination VADs Should Be Done In a Transplant Center

Pro – D Edwin C. McGee, Jr.
Northwestern Memorial Hospital, Chicago, IL

Con – *Mark S. Slaughter
University of Louisville, Louisville, KY

SPECIAL SESSION Royal Palm 4-8

Introduction: *Walter H. Merrill

Educational Objective: Upon completion of this program participants should be able to:
• Describe the essential elements of a high reliability team.

11:20 a.m. - 12:00 p.m.
The Anatomy and Physiology of Exceptional Teamwork
Paul Uhlig
Central Plains Cardiothoracic Surgery, Wichita, KS

12:00 p.m. -1:00 p.m.
Break

12:30 p.m. – 4:00 p.m.
Exhibits Open

Orchid Ballroom & Foyer

ETHICS DEBATE

Royal Palm 4-8

Educational Objectives: Upon completion of this program participants should be able to discuss the advantages and disadvantages of thoracic surgery international tourism, describe the reasons for and against quality ratings by thoracic surgery societies, and make ethically and legally appropriate decisions when asked by patients for referral to qualified international thoracic surgery programs.

CME Credits Available: 1.0

Thoracic Surgery Societies Should Evaluate and Rate the Quality of International Cardiothoracic Surgery Centers to Help Patients who Wish to Benefit From Low-Cost High-Quality Surgery

Facilitator: *Robert M. Sade, Medical University of South Carolina, Charleston, SC

Pro: *Jeffrey P. Jacobs, University of South Florida, St. Petersburg, FL

Con: *Constantine Mavroudis, Florida Hospital for Children, Orlando, FL

2:00 p.m. - 2:30 p.m.
Break
FIRST SCIENTIFIC SESSION

THURSDAY, NOVEMBER 8, 2012
2:30 p.m. - 5:00 p.m.
Royal Palm 4-8

(Presentations are limited to seven minutes, followed by two minutes of discussion from a selected discussant and an additional six minutes of discussion open to the audience.)

CME Credits Available: 2.5

Moderators: *Walter H. Merrill and *David R. Jones

2:30 p.m. - 2:45 p.m. (page 56)
   - Discussant:

2:45 p.m. - 3:00 p.m. (page 58)
2. Parachute Mitral Valve in Atroventricular Septal Defects: Should the Zone of Apposition Be Closed?
   - Discussant:

3:00 p.m. - 3:15 p.m. (page 60)
3. Analyzing “Failure to Rescue”: Is This an Opportunity for Outcome Improvement in Cardiac Surgery?
   - Discussant:

3:15 p.m. - 3:30 p.m. (page 62)
4. Segmentectomy is Superior to Wedge Resection for Non-Small Cell Lung Cancer in High-Risk Operable Patients
   - Discussant:

3:30 p.m. - 3:45 p.m. (page 64)
5. Septuagenarians Bridged to Heart Transplantation With a Ventricular Assist Device Have Similar Outcomes as Younger Patients
   - Discussant:

3:45 p.m. - 4:00 p.m. (page 66)
6. The Efficacy of Operating Veno-Venous ECMO at Lower Flow Rates
   - Discussant:

4:00 p.m. - 4:15 p.m. (page 68)
7. Cardiac Risk of Pulmonary Resection Following Percutaneous Coronary Stenting
   - Discussant:

4:15 p.m. - 4:30 p.m. (page 70)
8. Open, VATS, and Robotic Lobectomy: Review of a National Database
   - Discussant:

4:30 p.m. - 4:45 p.m. (page 72)
9. Transcatheter Aortic Valve Replacement Since U.S. Food and Drug Administration Approval: Trends in Patient Characteristics, Techniques, and Results
   - Discussant:

4:45 p.m. - 5:00 p.m. (page 74)
10. Outcomes of the Cox CryoMaze Procedure: Prospective Assessment With Continuous Outpatient Telemetry in 139 Consecutive Patients
    - Discussant:

*STSA Member  D Relationship Disclosure

20 STSA 59th Annual Meeting

*STSA Member  D Relationship Disclosure

STSA 59th Annual Meeting 21
**SCHEDULE OF EVENTS**

**FRIDAY, NOVEMBER 9, 2012**

7:00 a.m. - 7:50 a.m.
Royal Palm 4-8
(Presentations are limited to five minutes, followed by five minutes of discussion.)

CME Credits Available: 0.75
Moderator: D*Scott A. LeMaire and D*Shahab A. Akhter

7:00 a.m. - 7:10 a.m. (page 76)
1B. mTOR Inhibition Blocks Fibrocyte Migration and Attenuates Bronchiolitis Obliterans in a Murine Heterotopic Tracheal Transplant Model
Yunge Zhao1, Jacob R. Gillen1, David A. Harris1, *Irving L. Cron1, *Christine L. Lau1
1University of Virginia, Charlottesville, VA

7:10 a.m. - 7:20 a.m. (page 78)
2B. Alternative Approach for Right Ventricular Failure After Left Ventricular Assist Device Implantation
Koichi Toda1, Tomohiro Saito1, Yoshiaki Takewa1, Eisuke Tatsumi1
1National Cerebral and Cardiovascular Center, Suita, Japan

7:20 a.m. - 7:30 a.m. (page 80)
3B. Interleukin-1 Beta Induces an Inflammatory Phenotype in Human Aortic Valve Interstitial Cells Via NF-kappa B
Nicole Nadlonek1, Joon H. Lee1, *T. B. Reece1, Michael J. Weyant1, Joseph C. Cleveland1, Xianzhong Meng1, David A. Fullerton1
1University of Colorado, Aurora, CO

7:30 a.m. - 7:40 a.m. (page 82)
4B. Mast Cell Membrane Stabilizer Ameliorates Gastric Fluid Aspiration-Associated Pulmonary Allograft Pathology in Rat Orthotopic Lung Transplant Model
1Buddhist Tzu Chi General Hospital, Hualien, Taiwan; 2Duke University Medical Center, Durham, NC

7:40 a.m. - 7:50 a.m. (page 84)
5B. The Cardioprotective Mechanism of Diazoxide Involves the Inhibition of Succinate Dehydrogenase
Melissa M. Anastacio1, Evelyn M. Kanter1, Carol Makepeace1, Angela S. Keith1, Haixa Zhang1, Richard D. Schuessler1, Colin G. Nichols3; *Jennifer S. Lawton1
1Washington University, St. Louis, MO

8:00 a.m. - 10:00 a.m.
Royal Palm 4-8
(Presentations are limited to seven minutes, followed by two minutes of discussion from a selected discussant and an additional six minutes of discussion open to the audience.)

CME Credits Available: 2.0
Moderators: D*Joseph S. Coselli and *Richard K. Freeman

8:00 a.m. - 8:15 a.m. (page 86)
11. Coumadin Thromboprophylaxis Following Mitral Valve Repair in North America: Practice Patterns, Predictors, and Consequences
Rakesh M. Suri1, *Vinod H. Thourani2, *Hartzell V. Schaff1, *Scott Rankin3, Xia He4, James Gammie5
1Mayo Clinic, Rochester, MN; 2Emory University, Atlanta, GA; 3Centennial Medical Center, Nashville, TN; 4Duke Clinical Research Institute, Durham, NC; 5University of Maryland, Baltimore, MD
Discussant: D*Vinay Badhwar, University of Pittsburgh Medical Center, Pittsburgh, PA

8:15 a.m. - 8:30 a.m. (page 88)
12. Use of Lean Thinking and Kaizen to Analyze Thoracic Surgery Operating Room Efficiency at a Tertiary Care Academic Medical Center
*Kenan W. Yount1, Nishant A. Patel1, Christopher M. Harnain1, Shweta Srikanth1, William Irwin1, Eugene T. Millsap2, Eric Teuscher3, *Benjamin D. Kozower1, *David R. Jones1, *Irving L. Cron1, Elliott N. Weiss1, *Christine L. Lau1
1University of Virginia, Charlottesville, VA
Discussant: *Carolyn Reed, Medical University of South Carolina, Charleston, SC

8:30 a.m. - 8:45 a.m. (page 90)
13. Open Versus Hybrid Single Ventricle Palliation: Evolving Algorithm and 24-Month Results From a New Children’s Heart Center
Daniel J. DiBardino1, Makram Ebeid1, Avichal Aggarwal1, Michelle Sheth1, Emilee Taylor1, Mary Taylor1, *Jorge D. Salazar1
1University of Mississippi, Jackson, MS
Discussant: *Andrew Lodge, Duke Children’s Hospital, Durham, NC

8:45 a.m. - 9:00 a.m. (page 92)
14. A Propensity Matched Comparison of Pleurodesis or Tunneled Pleural Catheter in Patients Undergoing Diagnostic Thoracoscopy for Malignancy
*Richard K. Freeman1, *Anthony J. Ascioti1, Theresa Giannini1, Raja Mahidhara1
1St. Vincent Hospital and Health System, Indianapolis, IN
Discussant: *Joe B. Putnam Jr., Vanderbilt University, Nashville, TN

9:00 a.m. - 9:15 a.m. (page 94)
15. Ventricular Assist Devices or Inotropes in Status IA Patients Awaiting Heart Transplantation: Post-Transplant Survival Analysis of the UNOS Database
Curtis J. Wozniak1, *Howard Song2, Bradley Baird1, Josef Stehlik1, Craig Selzman1
1University of Utah, Salt Lake City, UT; 2Oregon Health Sciences University, Portland, OR
Discussant: Simon Maltais, Vanderbilt University, Nashville, TN

*STSA Member  D Relationship Disclosure
SECOND SCIENTIFIC SESSION

9:15 a.m. – 9:30 a.m. (page 96)

16. Routine Intraoperative Frozen Section Analysis of Bronchial Margins is of Limited Utility in Lung Cancer Resection
Rachel M. Owen1, *Seth D. Force1, Paul L. Feingold1, *Allan Pickens1, *Daniel L. Miller1, *Felix Fernandez1
Emory University, Atlanta, GA
Discussant: *Chadrick E. Denlinger, Medical University of South Carolina, Charleston, SC

9:30 a.m. – 9:45 a.m. (page 98)

17. Re-Operation Following Arterial Switch: A 27-Year Experience
Harold M. Burkhart1, Vijayakumar Raju1, Lucian A. Durham1, Benjamin W. Eidem1, Sabrina D. Philips2, Zhuo Li3, Chenhui Hu1, Hartzell V. Schaff1, Joseph Dearani1
Mayo School of Graduate Medical Education, Rochester, MN
Discussant: *Joseph Forbess, University of Texas Southwestern Medical Center, Dallas, TX

9:45 a.m. – 10:00 a.m. (page 100)

18. A Comparison of Integrated Six-Year Curricula to Traditional Programs: More Thoracic, Similar Cardiac
1Northwestern University, Chicago, IL; 2University of Rochester, Rochester, NY; 3University of California, Los Angeles, Los Angeles, CA; 4University of Texas Health Science Center, San Antonio, TX; 5Medical University of South Carolina, Charleston, SC; 6University of Washington, Seattle, WA; 7University of Colorado, Aurora, CO
Discussant: *Stephen Yang, Johns Hopkins Medical Institutions, Baltimore, MD

10:00 a.m. – 10:30 a.m.

Break – Visit Exhibits
Orchid Ballroom & Foyer
THIRD SCIENTIFIC SESSION A

FRIDAY, NOVEMBER 9, 2012

2:00 p.m. – 3:30 p.m.
Simultaneous Cardiac, General Thoracic, and Congenital Breakout Sessions
(Presentations are limited to seven minutes, followed by eight minutes of discussion.)
CME Credits Available: 1.5
Attendees select to participate in one of the following three breakout sessions:

ADULT CARDIAC BREAKOUT Royal Palm 4-8
Moderators: D*Gorav Ailawadi and D*Edward P. Chen

2:00 p.m. - 2:15 p.m. (page 102)
19. The Impact of Internal Mammary Artery Harvesting on Antibiotic Penetration Into Preternstal Subcutaneous Tissue During Cardiac Surgery
Martin Andreas¹, Markus Zeitlinger¹, Thomas Henrich¹, Daniel Zimpfer¹, Jörg-Michael Hiesmayr¹, *Guenther Laufer¹, Doris Hutschala³
¹Medical University of Vienna, Vienna, Austria

2:15 p.m. - 2:30 p.m. (page 104)
20. Multiple Aortic Cross Clamp Applications in Selected Patients Do Not Affect Neurocognitive or Stroke Outcomes in CABG
*T. B. Reece¹, Robert Hawkins¹, Joseph F. Collins², Annie Shroyer³, Elizabeth Kazora⁴, Janet H. Baltz², Brack Hattler², *Frederick L. Grover¹, Joseph C. Cleveland¹
¹University of Colorado, Denver, CO; ²Department of Veterans Affairs, Denver, CO

2:30 p.m. - 2:45 p.m. (page 106)
21. Does Mitral Valve Repair Offer an Incremental Advantage Over Mitral Replacement in Patients Undergoing Aortic Valve Replacement?
D*Vinod H. Thourani¹, Rakesh M. Suri², *J. Scott Rankin⁴, Xia He⁵, Sean M. O’Brien⁵, Christina Vassileva⁶, *James Gammie⁶
¹Emory University, Atlanta, GA; ²Mayo Clinic, Rochester, MN; ³University of Maryland, Baltimore, MD; ⁴Vanderbilt University, Nashville, TN; ⁵Southern Illinois University, Springfield, IL; ⁶Duke Clinical Research Institute, Durham, NC

2:45 p.m. - 3:00 p.m. (page 108)
22. Irrigated Radiofrequency Cox-MAZE IV is Effective for Persistent Atrial Fibrillation During Concomitant Mitral Surgery: A Prospective Multicenter Experience From the CURE-AF Trial
D*Vinay Badhwar¹, D*Ralph J. Damiano², D*Michael A. Acker³, D*Ramesh S. Veeragandham⁴, D*Thoralf M. Sundt⁵
¹University of Pittsburgh Medical Center, Pittsburgh, PA; ²Washington University School of Medicine, St. Louis, MO; ³University of Pennsylvania, Philadelphia, PA; ⁴John Muir Medical Center, Walnut Creek, CA; ⁵Massachusetts General Hospital, Boston, MA

3:00 p.m. - 3:15 p.m. (page 110)
23. CAPE: A Simple Model for Predicting Operative Mortality in Endocarditis
William A. Teeter¹, Brock Hansen¹, Clinton Smithson¹, Colby Ayers¹, *Michael Jessen¹, Nick Dobrilovic¹, Brad Hirsch¹, *Dan Meyer¹, *Matthias Peltz¹, *Michael Wait¹, *J. Michael DiMaio¹
¹University of Texas Southwestern Medical Center, Dallas, TX

3:15 p.m. - 3:30 p.m. (page 112)
24. Effects of Gender, Race, Socioeconomic Status, and Primary Payer Type on Treatment Allocation for Mitral Repair Versus Replacement: A Propensity Analysis
Damien J. LaPar¹, *Christine L. Lau¹, *John A. Kern¹, *Irving L. Kron¹, *Gorav Ailawadi¹
¹University of Virginia, Charlottesville, VA

GENERAL THORACIC BREAKOUT Acacia 4-6
Moderators: *Melanie Edwards and D*Mitchell J. Magee

2:00 p.m. - 2:15 p.m. (page 114)
25. Pyloric Botulinum Injection Increases Postoperative Esophagectomy Complications
Shady Eldaif¹, Richard Lee¹, Kumari Adams¹, Theresa Luu¹, *Felix Fernandez¹, D*Allan Pickens¹, *Seth D. Force¹, D*Daniel L. Miller¹
¹Emory University, Atlanta, GA

2:15 p.m. - 2:30 p.m. (page 116)
26. The Efficacy of EBUS-guided Transbronchial Aspirate for Molecular Testing in Lung Adenocarcinoma
Julissa E. Jurado¹, William A. Bulman¹, Roger Maxfield², Anjali Saqi¹, Matthew Lavelle¹, Alexsis Newmark¹, Matthew Bacchetta¹, Mark E. Ginsburg¹, Lyall Gorenstein¹, Frank D’Ovidio¹, D*Joshua R. Sonett¹
¹Columbia University Medical Center - New York Presbyterian Hospital, New York, NY

2:30 p.m. - 2:45 p.m. (page 118)
27. Characteristics and Outcomes of Patients With Esophageal High-Grade Dysplasia or Intramucosal Carcinoma Who Have Failed Endoscopic Therapy
Ben M. Hunt¹, Brian E. Louie¹, Ralph W. Aye¹, Alexander S. Farivar¹, Drew B. Schembre¹, Anthony G. Bohorfoush¹
¹Swedish Medical Center/Swedish Cancer Institute, Seattle, WA

2:45 p.m. - 3:00 p.m. (page 120)
28. Induction Chemoradiotherapy Versus Surgery Alone for Esophageal Cancer: Comparison of Perioperative and Postoperative Outcomes
Matthew D. Taylor¹, Damien J. LaPar¹, John P. Davis¹, *Benjamin D. Kozower¹, *Christine L. Lau¹, *David R. Jones¹
¹University of Virginia, Charlottesville, VA

3:00 p.m. - 3:15 p.m. (page 122)
29. Clinical Features, Prognostic Factors, and Outcomes of Primary Pulmonary Lymphoma
Domenico Galetta¹, Alessandro Borri¹, Alessandro Pardolesi¹, Monica Casiraghi¹, Adele Tessitore¹, Francesco Petrella¹, Roberto Gasparri¹, Lorenzo Spaggiari¹
¹European Institute of Oncology, Milan, Italy

3:15 p.m. - 3:30 p.m. (page 124)
30. Pneumonectomy for Non-malignant Disease
D*Victor Ferraras¹, D*Sibu P. Saha¹, Jeremiah Martin¹
¹University of Kentucky, Lexington, KY
THIRD SCIENTIFIC SESSION A

CONGENITAL BREAKOUT Acacia 1-3
Moderators: *James Quintessenza and *Charles D. Fraser
2:00 p.m. - 2:15 p.m. (page 126)
31. Tricuspid Valve Re-Repair in Ebstein Malformation Using the Cone Technique: Is it Possible?
   Sameh M. Said1, Joseph Dearani1, Harold M. Burkhart1, Roxann D. Barnes1, Patrick W. O’Leary1, Frank Cetta1
   1Mayo Clinic, Rochester, MN
   Discussant: *Charles D. Fraser, Texas Children’s Hospital, Houston, TX
   2:15 p.m. - 2:30 p.m. (page 128)
32. Biventricular Conversion After Single Ventricle Palliation in Unbalanced Atrioventricular Canal Defects
   Meena Nathani1, Hua Liu1, Frank A. Pigula1, Francis Fynn-Thompson1, Sitaram Emani1, *Christopher Baird1, Gerald Marx1, *John E. Mayer1, Pedro del Nido1
   1Children’s Hospital Boston, Boston, MA
   Discussant: *Pirouz Eghtesady, St. Louis Children’s Hospital, St. Louis, MO
   Discussion read by *Umar S. Boston, St. Louis Children’s Hospital, St. Louis, MO
   2:30 p.m. - 2:45 p.m. (page 130)
33. Liberal Use of Femoral Cutdown and Femoral Bypass in Adult Congenital Heart Surgery is Beneficial
   *Brian E. Kogon1, William Daniel1, Katherine Fay1, Wendy Book1
   1Emory University, Atlanta, GA
   Discussant: *Jeffrey Heinle, Texas Children’s Hospital, Houston, TX
   2:45 p.m. - 3:00 p.m. (page 132)
34. Surgery in Adults With Congenital Heart Disease: Risk Factors for Morbidity and Mortality
   Joanna Grudziak1, Matthew Oster1, Anurag Sahu2, Maan Jokhadar1, Michael McConnell1, Wendy Book1, *Brian E. Kogon1
   1Emory University, Atlanta, GA; 2Children’s Healthcare of Atlanta, Atlanta, GA
   3:00 p.m. - 3:15 p.m.
   Pro/Con Debate: Surgeons Performing Adult Congenital Heart Surgery Should Be Full-Time Congenital Heart Surgeons
   Pro: *Charles D. Fraser, Texas Children’s Hospital, Houston, TX
   Con: *Duke E. Cameron, Johns Hopkins Medical Institutions, Baltimore, MD
   3:30 p.m. - 4:00 p.m.
   Break – Visit Exhibits
   Orchid Ballroom & Foyer

THIRD SCIENTIFIC SESSION B

FRIDAY, NOVEMBER 9, 2012
4:00 p.m. – 5:00 p.m.
Simultaneous Cardiac, General Thoracic, and Congenital Breakout Sessions
(Presentations are limited to seven minutes, followed by eight minutes of discussion.)
CME Credits Available: 1.0
Attendees select to participate in one of the following three breakout sessions:

ADULT CARDIAC BREAKOUT Royal Palm 4-8
Moderators: *Richard L. Prager and *Faisal G. Bakaen
4:00 p.m. - 4:15 p.m. (page 134)
35. A Protocol Driven Approach to Cardiac Reoperations Reduces Mortality and Cardiac Injury at the Time of Resternotomy
   Damien J. LaPar1, *Christine L. Lau1, *Gorav Ailawadi1, *John A. Kern1, *Irving L. Kron1
   1University of Virginia, Charlottesville, VA
   4:15 p.m. - 4:30 p.m. (page 136)
36. Results With Selective Preoperative Lumbar Drain Placement for Thoracic Endovascular Aortic Repair
   *Jennifer M. Hanna1, *Nicholas D. Andersen1, Hamza Aziz1, Elizabeth Scheer1, *Asad A. Shah1, Richard L. McCann1, *G. Chad Hughes1
   1Duke University Medical Center, Durham, NC
   4:30 p.m. - 4:45 p.m. (page 138)
37. Valve-Sparing Aortic Root Replacement: Early and Mid-Term Outcomes in 80 Patients
   *Joseph S. Coselli1, Susan Y. Green1, Samantha Zarda1, Matt D. Price1, Kim de la Cruz1, *Scott A. LeMaire1
   1The Texas Heart Institute/Baylor College of Medicine, Houston, TX
   4:45 p.m. - 5:00 p.m. (page 140)
38. Optimal Coherence Tomography Imaging of Internal Mammary Arteries and Demonstrating High-Risk Regions of the Conduit
   Sugam Bhatnagar1, Michael Simmons1, *Robert Poston1
   1University of Arizona, Tucson, AZ
   5:00 p.m. - 5:15 p.m.
   *STSA Member D Relationship Disclosure

GENERAL THORACIC BREAKOUT Acacia 4-6
Moderators: *Stephen R. Hazelrigg and *Eric L. Grogan
4:00 p.m. - 4:15 p.m. (page 142)
39. Long-Term Patient Satisfaction and Medication Dependence After Antireflux Surgery
   Yinin Hu1, Brian Ezekian1, *David R. Jones1, Bruce Schirmer1, *Christine L. Lau1, Sandra Burks1, *Benjamin D. Kozower1
   1University of Virginia, Charlottesville, VA
   4:15 p.m. - 4:30 p.m. (page 144)
40. Does Pneumonectomy Have a Role in the Treatment of Stage IIIA Non-Small Cell Lung Cancer?
   Asad A. Shah1, Mathias Worni1, Mark W. Onaitis1, *Thomas A. D’Amico1, Mark F. Berry1
   1Duke University Medical Center, Durham, NC
   4:30 p.m. - 4:45 p.m.

*STSA Member D Relationship Disclosure
THIRD SCIENTIFIC SESSION B

4:30 p.m. - 4:45 p.m. (page 146)
41. "Supercharged" Isoperistaltic Colon Interposition for Long-Segment Esophagogastric Reconstruction
*Kenneth A. Kesler¹, Ahmed M. Halal¹, *Karen M. Rieger¹, *Ikenna C. Okereke¹, *Thomas J. Birdas¹, DuyKhanh Ceppa¹, *Sandra Starnes²
¹Indiana University, Indianapolis, IN; ²University of Cincinnati, Cincinnati, OH

4:45 p.m. - 5:00 p.m. (page 148)
42. Rapid Onsite Pathology Evaluation Does Not Impact the Efficacy of Endobronchial Ultrasound
*Mark Joseph¹, Tyler Jones¹, Yasmin Lutterbie¹, Susan Maygarden¹, *Richard H. Feins¹, *Benjamin Haithcock¹, *Nirmal K. Veeramachaneni¹
¹University of North Carolina, Chapel Hill, NC

CONGENITAL BREAKOUT Acacia 1-3
Moderators: *Brian E. Kogon and *Anastasios Polimenakos

4:00 p.m. - 4:15 p.m. (page 150)
43. Selective Fenestration of the Extracardiac Fontan
*Andrew C. Fiore¹, Corinne Tan¹, Connor McCartney¹, *Mark Turrentine², *Mark Rodefeld², *Charles Huddleston¹, *John Brown²
¹Cardinal Glennon Children’s Hospital, St. Louis, MO; ²Indiana University, Indianapolis, IN

4:15 p.m. - 4:30 p.m. (page 152)
44. Outcomes of Modified Norwood Procedure: Hypoplastic Left Heart Syndrome Versus Other Single-Ventricle Malformations
Mark Ruzmetov¹, Dale M. Geiss¹, Randall S. Fortuna¹
¹Children’s Hospital of Illinois, Peoria, IL

4:30 p.m. - 4:36 p.m. (page 154)
45. Outcomes Following Implementation of a Pediatric Rapid-Response Extracorporeal Membrane Oxygenation Program
Nicholas D. Andersen¹, Joseph W. Turek², D. Scott Lawson³, Desiree Bonadonna³, Ryan S. Turley¹, Michelle A. Peters¹, *James J. Jaggers³, *Andrew J. Lodge³
¹Duke University Medical Center, Durham, NC; ²University of Iowa Children’s Hospital, Iowa City, IA; ³Children’s Hospital Colorado, Aurora, CO

4:36 p.m. – 5:00 p.m.
New Avenues in Extracorporeal Support
Lara Shekerdemian
Texas Children’s Hospital, Houston, TX

5:00 p.m. – 6:00 p.m.
STSA ANNUAL BUSINESS MEETING (Members Only)
Royal Palm Ballroom 4-8

CODING UPDATE Royal Palm 4-8
7:00 a.m. – 8:00 a.m.
Educational Objective: Upon completion of this program participants should be able to understand typical and challenging issues in coding and reimbursement of cardiothoracic surgery procedures.
CME Credits Available: 1.0
Update on CPT and Physician Payment Issues for 2013
Moderator: *Peter K. Smith, Duke University Medical Center, Durham, NC

CODING UPDATE
SATURDAY, NOVEMBER 10, 2012
6:45 a.m. – 10:30 a.m.
Exhibits Open
Orchid Ballroom & Foyer

7:00 a.m. – 8:00 a.m.

30  STSA 59th Annual Meeting
*STSA Member  D Relationship Disclosure

31  STSA 59th Annual Meeting
*STSA Member  D Relationship Disclosure
### SATURDAY, NOVEMBER 10, 2012

8:00 a.m. - 9:00 a.m.  
**Simultaneous Cardiac, General Thoracic, Congenital, and Transplant Breakout Sessions**  
(Presentations are limited to seven minutes, followed by eight minutes of discussion.)

**CME Credits Available: 1.0**

Attendees select to participate in one of the following three breakout sessions:

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 a.m.</td>
<td><strong>GENERAL THORACIC BREAKOUT</strong></td>
</tr>
<tr>
<td>8:15 a.m.</td>
<td><strong>ADULT CARDIAC BREAKOUT</strong></td>
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<td>8:30 a.m.</td>
<td><strong>TRANSPLANT BREAKOUT</strong></td>
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#### ADULT CARDIAC BREAKOUT Royal Palm 4-8

**Moderators:**  
*Michael E. Halkos and DJohn Ofenloch

8:00 a.m. - 8:15 a.m.  
46. **Risk of Pacemaker Implantation After a Cox-Maze IV Procedure**  
Jason O. Robertson¹, DPhillip S. Cuculich¹, Marc R. Moon¹, Jennifer S. Lawton¹, Nabil A. Munfakh¹, Donna M. Marin¹, D Ralph J. Damiano¹, Hersh Maniar¹  
¹Washington University, St. Louis, MO

8:15 a.m. - 8:30 a.m.  
47. **Coarctation-Associated Aneurysms: A Localized Disease or a Diffuse Aortopathy**  
Ourania Preventa¹, *James J. Livesay¹, *Denton Cooley¹, Zvonimir Krajcer¹, Benjamin Cheong¹, *Joseph Coselli¹  
¹The Texas Heart Institute/Baylor College of Medicine, Houston, TX

8:30 a.m. - 8:45 a.m.  
48. **Single Institutional Experience With Repair of Type A Aortic Dissection in the Elderly**  
Ahmet Kilic¹, Michael S. Firstenberg¹, John Sirak¹, Chittoor B. Sai-Sudhakar¹, Juan Crestanello¹, *Robert S. Higgins¹  
¹The Ohio State University, Columbus, OH

8:45 a.m. - 9:00 a.m.  
49. **The Impact of Clinical Presentation and Surgeon Experience on the Decision to Perform Concomitant Surgical Ablation for Atrial Fibrillation**  
*Niv Ad¹, Linda Henry¹, Sharon Hunt¹, Sari D. Holmes¹  
¹Inova Heart and Vascular Institute, Falls Church, VA

#### GENERAL THORACIC BREAKOUT Acacia 4-6

**Moderators:**  
*Mark Onaitis and DDaniel L. Miller

8:00 a.m. - 8:15 a.m.  
50. **Diaphragmatic Hernia After Esophagectomy in 440 Patients with Long-Term Follow-Up**  
Dhakshina M. Ganeshan¹, Arlene M. Correa¹, Priya Bhosale¹, *Ara A. Vapoorciyan¹, *David Rice¹, *Reza J. Mehran¹, *Garrett L. Walsh¹, Revathy Iyer¹, *Jack A. Roth¹, *Steven G. Swisher¹, *Wayne L. Hofstetter¹  
¹University of Texas, MD Anderson Cancer Center, Houston, TX

8:15 a.m. - 8:30 a.m.  
51. **Completion Pneumonectomy: Do Outcomes Justify the Operation?**  
Varun Puri¹, Andrew V. Tran¹, Jennifer Bell¹, *Traves D. Crabtree¹, *A. Sasha Krupnick¹, *Daniel Kreisel¹, *G. Alexander Patterson¹, *Bryan F. Meyers¹  
¹Washington University School of Medicine, St. Louis, MO

#### TRANSPLANT BREAKOUT Hibiscus

**Moderators:**  
*Joshua R. Sonett and *Ashish S. Shah

8:00 a.m. - 8:15 a.m.  
52. **Anterior Thoracic Surgical Approaches in the Treatment of Spinal Infections and Neoplasms**  
Matthew J. Schuchert¹, Kristen McCormick¹, Ghulam Abbas¹, *Arjun Pennathur¹, Joshua P. Landreneau¹, James R. Landreneau¹, Andre Pitanga¹, Jamilly Gomes¹, Felipe Franca¹, Matthew el-Kadi¹, Andrew P. Peitzman¹, Peter F. Ferson¹, James D. Luketic¹, *Rodney J. Landreneau¹  
¹University of Pittsburgh Medical Center, Pittsburgh, PA

8:15 a.m. - 8:30 a.m.  
53. **Treatment-Related Morbidity and Mortality of Multimodality Regimens for Stage IIIA Non-Small Cell Lung Cancer**  
Christopher W. Seder¹, Mark S. Allen¹, Stephen D. Cassivi¹, Claude Deschamps¹, Francis C. Nichols¹, Kenneth R. Olivier¹, *Robert Shen¹, Dennis A. Wigle¹  
¹Mayo Clinic, Rochester, MN

8:30 a.m. - 8:45 a.m.  
54. **Impact of Untreated Mitral Insufficiency During Chronic LVAD Support**  
Akiyo Mano¹, Robert L. Kormos¹, Christian Bermudez¹, Jay K. Bahma¹, Jeffrey J. Teuteberg¹, Lawrence M. Wei¹, *Vinay Badhwar¹  
¹University of Pittsburgh Medical Center, Pittsburgh, PA

8:45 a.m. - 9:00 a.m.  
55. **Addition of Bortezomib Improves Panel-Reactive Antibody (PRA) Depletion in Presensitized Adult and Pediatric Cardiac Transplant Recipients**  
Gonzalo Wallis¹, Melissa E. Elder¹, Juan C. Scornik¹, Frederick J. Fricker¹, *Mark S. Bleiweis¹  
¹University of Florida, Gainesville, FL

8:30 a.m. - 8:45 a.m.  
56. **The Impact of Early Acute Rejection on the Incidence of Bronchial Stricture Following Lung Transplantation: A 17-Year Longitudinal Analysis of The United Network for Organ Sharing Database**  
Anthony W. Castleberry¹, Ricardo Pietrobon¹, Mathias Worni¹, Maragatha Kuchibhatla¹, Scott L. Shofer¹, Laurie D. Snyder¹, Scott M. Palmer¹, *R. Duane Davis¹, *Matthew G. Hartwig¹  
¹Duke University Medical Center, Durham, NC

8:45 a.m. - 9:00 a.m.  
57. **Preoperative Risk Stratification of Right Ventricular Dysfunction in the Modern, Continuous Flow Left Ventricular Assist Device Era**  
Andrew Goldstone¹, Pavan Atluri¹, Alex S. Fairman¹, John W. MacArthur¹, Yasuhiro Shudo¹, William Hiesinger¹, Jessica L. Howard¹, Michael A. Acker¹, J. Eduardo Rame¹, Y. Joseph Woo¹  
¹University of Pennsylvania, Philadelphia, PA

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*STSA Member  D Relationship Disclosure  STSA 59th Annual Meeting*
FOURTH SCIENTIFIC SESSION A

CONGENITAL BREAKOUT Acacia 1-3
Moderators: *Jorge Salazar and *Lauren Kane

8:00 a.m. - 8:15 a.m. (page 180)
58. Inferior Vena Cava Oxygen Saturation Monitoring After the Norwood Procedure
*Robert J. Dabal1, Leslie A. Rhodes1, Santiago Borasino1, Mark A. Law1, Kristal M. Hock1, Jeffrey A. Alten1
1University of Alabama at Birmingham, Birmingham, AL

8:15 a.m. - 8:30 a.m.
State of the Art: Preop Monitoring
DKenneth M. Brady
Texas Children’s Hospital, Houston, TX

8:30 a.m. - 9:00 a.m.
Congenital Fellowship Update: Is it Working?
*Edward L. Bove
University of Michigan, Ann Arbor, MI

9:00 a.m. - 9:30 a.m.
Break - Visit Exhibits
Orchid Ballroom & Foyer

HISTORY PRESENTATION
Royal Palm 4-8
CME Credits Available: 0.25
Moderator: D*Robert J. Cerfolio

9:30 a.m. - 9:50 a.m.
Remembering Dr. John Kirklin
DJames Kirklin
University of Alabama at Birmingham, Birmingham, AL

FOURTH SCIENTIFIC SESSION B

SATURDAY, NOVEMBER 10, 2012

9:50 a.m. - 11:50 a.m.
Royal Palm 4-8
CME Credits Available: 2.0
Moderators: *Erle H. Austin, III and D*Robert J. Cerfolio

9:50 a.m. - 10:05 a.m. (page 182)
59. The Influence of Age and Severity of Comorbid Illness on Outcomes After Isolated Aortic Valve Replacement
Alexander Iribarne1, Emily Chen1, Thomas Bozay1, Valluvan Jeevanandam1, Shahab Akhter1, Mark J. Russo1
1University of Chicago, Chicago, IL; 2Columbia University, New York City, NY
Discussant: D*Vinod H. Thourani, Emory University School of Medicine, Atlanta, GA

10:05 a.m. - 10:20 a.m. (page 184)
60. Outcome of Surgical Therapy for Endocarditis in a Pediatric Population: A 21-Year Review
Soraya Johnson1, Hyde M. Russell1, Katherine C. Wurlitzer1, *Carl L. Backer1
1Children’s Memorial Hospital, Chicago, IL
Discussant: Lauren Kane, University of Texas Health Science Center, San Antonio, TX

10:20 a.m. - 10:35 a.m. (page 186)
61. Prospective Cohort Case-Control Study of Staged Unilateral Thoracoscopic Lung Volume Reduction: Effects on Perioperative Mortality, Improvement in Pulmonary Function, and Long-Term Survival
D*John R. Roberts1
1Sarah Cannon Cancer Center, Centennial Medical Center, Nashville, TN
Discussant: *Stephen Hazelrigg, Southern Illinois University, Springfield, IL

10:35 a.m. - 10:50 a.m. (page 188)
62. Early Open and Endovascular Thoracic Aortic Repair for Complicated Type B Aortic Dissection
D. A. Wilkinson1, D*Himanshu J. Patel1, Daniel J. Boffa4, Narasimham L. Dasika1, G. M. Deeb1
1University of Michigan, Ann Arbor, MI
Discussant: D*Joseph S. Coselli, Texas Heart Institute/Baylor College of Medicine, Houston, TX

10:50 a.m. - 11:05 a.m. (page 190)
63. Surgical Strategy and Long-Term Outcomes in Patients With Tetralogy of Fallot and Atrioventricular Septal Defect: A 50-Year Experience
Vijayakumar Raju1, Harold M. Burkhart1, Natalie Rigelman Hedberg1, Benjamin W. Eident1, Zhuo Li1, Chenhui Hu1, Connolly Heidi1, Hartzell V. Schaff1, Joseph Dearani1
1Mayo School of Graduate Medical Education, Rochester, MN
Discussant: *Bret Mettler, Vanderbilt University, Nashville, TN

11:05 a.m. - 11:20 a.m. (page 192)
64. Fewer Complications With VATS Approach to Anatomical Resection of Clinical Stage I Lung Cancer
Daniel J. Boffa4, Ankit Dhamija4, Andrzej Kosinski1, Anthony W. Kim1, Frank C. Detterbeck4, John Mitchell3, Mark Onaitis1, Subroto Paul1
1Duke University Medical Center, Durham, NC; 2University of Colorado Denver, Aurora, CO; 3New York-Presbyterian/Weill Cornell, New York, NY; 4Yale University School of Medicine, New Haven, CT
Discussant: D*Robert J. Cerfolio, University of Alabama at Birmingham, Birmingham, AL

11:20 a.m. - 11:35 a.m. (page 194)
65. Elephant Trunk Procedure: Comparisons of Outcome Between Classic and Other Anastomotic Sites
*Gregory Rushing1, Lars G. Svensson1, Edgardo Sepulveda Valenzuela1, Lillian H. Batizi1, Eric Roselli1, Eugene H. Blackstone1, Bruce W. Lytle1
1Cleveland Clinic, Cleveland, OH
Discussant: *Anthony Estrera, University of Texas Houston Medical School, Houston, TX

11:35 a.m. - 11:50 a.m. (page 196)
66. Minimally Invasive and Open Esophagectomies for Cancer Result in Similar Lymph Node Yields
Ankit Dhamija1, Xiaojie Guo1, *Anthony W. Kim1, Zuoheng Wang1, *Frank C. Detterbeck1, Daniel J. Boffa1
1Yale University School of Medicine, New Haven, CT
Discussant: *Wayne Hofstetter, University of Texas, MD Anderson Cancer Center, Houston, TX

PROGRAM ADJOURNS
1V. Transsternal Transpericardial Resection-Reconstruction Of Distal Trachea And Carina

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Authors: Marc de Perrot1, Kazuhiro Yasufuku1

Author Institution(s): 1Toronto General Hospital, Toronto, ON, Canada

Objectives: The optimal surgical approach for tumors of the distal trachea remains controversial. The transsternal transpericardial approach provides excellent exposure and more versatility for reconstruction of the carina. A video detailing the critical steps of the transsternal transpericardial approach with resection and reconstruction of the carina is presented.

Methods: The patient is in supine position intubated with a long armoured endotracheal tube positioned in the proximal trachea. After median sternotomy, the anterior pericardium is opened vertically. The superior vena cava and ascending aorta are mobilized circumferentially and retracted laterally. The right main pulmonary artery is dissected and displaced inferiorly. The posterior pericardium is divided vertically to expose the trachea and both main bronchi. The trachea and both bronchi are then sectioned proximally and distally to the tumor and resected en bloc with the tumor. Care is taken not to damage the esophagus and left recurrent nerve. The left lung is then intermittently ventilated through the operative field with sterile tubing. The trachea is anastomosed end-to-end to the left main bronchus. The endotracheal tube is advanced through the anastomosis into the left main bronchus under direct vision before tying all the sutures from the front wall. The right main bronchus is then implanted into the side wall of the trachea after creating an orifice in the cartilaginous part about 8 mm above the initial anastomosis. After drainage and closure, the patient is extubated in the operating room.

Results: This approach was used for two patients with adenoid cystic carcinoma and muco-epidermoid carcinoma over the past seven months. Both patients were discharged home on the sixth postoperative day and are doing well.

Conclusion: The transsternal transpericardial approach is an excellent option for resection-reconstruction of the distal trachea and carina.
2V. Alternative Access (Transaortic and Transcarotid) Techniques for Transcatheter Aortic Valve Replacement

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Authors: Soumya R. Neravetla¹, DVasilis C. Babaliaros¹, *Robert A. Guyton¹, James P. Stewart¹, DPeter C. Block¹, Chandan M. Devireddy¹, Kreton O. Mavromatis¹, D*Vinod H. Thourani¹

Author Institution(s): ¹Emory University, Atlanta, GA

Objectives: Transcatheter aortic valve replacement (TAVR) has proven an effective treatment option in high risk patients with severe aortic stenosis (AS) who are considered unsuitable for aortic valve replacement (AVR) utilizing cardiopulmonary bypass. The majority of these patients have undergone TAVR utilizing the transfemoral (TF) or transapical (TA) approaches. This video depicts our surgical technique and rationale for alternative access routes for TAVR.

Methods: From November 2011 to March 2012, 36 commercial SAPIEN TAVRs were performed in our US academic institution: Transfemoral (n=14), Transapical (n=9), Transaortic (TAo, n=9), Transcarotid (TCa, n=3), and Transinnominate (TInn, n=1). The indications and techniques for the transaortic and transcarotid implantations are illustrated in this video submission.

Results: Patient one is an 88 year-old Caucasian female with class IV heart failure and severe AS. Her severe peripheral vascular disease (PVD) and severe chronic obstructive pulmonary disease (COPD) (FEV1 and DLCO < 50% predicted) precluded transfemoral or transapical access. Therefore, she was implanted successfully via transaortic approach which is illustrated in this video.

Patient two is an 80 year-old Caucasian female with class IV heart failure and severe AS. Due to her severe PVD with bilateral calcified subclavian and iliofemorals, porcelain aorta, calcified costal cartilages, and severe COPD; she was not a candidate for TF, TA, or TAo approaches. Preoperative imaging revealed an adequate right carotid artery for implantation. Therefore, a TAVR was successfully performed and is demonstrated in the second half of this video. Both patients did well postoperatively, with uneventful hospital courses and were discharged home on POD 7.

Conclusion: Transaortic and transcarotid approaches are both viable methods of alternative access when routine access via transfemoral or transapical approaches are limited.
3V. Left Video Assisted Thorascopic Thymectomy with Complete Dissection of the Superior Horns

*STSA Member

**STSA Member**

**D** Relationship Disclosure

**Author:** D*M. B. Marshall

**Author Institution(s): 1Georgetown University Medical Center, Washington, DC

**Objectives:** The purpose of this video is to demonstrate the surgical technique for a left video assisted thymectomy including the complete dissection of the superior horns.

**Methods:** The patient is positioned semi-supine with the left chest elevated. The left arm is brought below the level of the thoracic cavity. Four 5-mm ports, placed along the mammary border are used with a 30 degree 5mm camera. The 5mm laparoscopic instruments are used. A single lumen endotracheal tube and carbon dioxide insufflation provide visualization within the pleural space.

**Results:** The thymus, including both superior horns, is completely dissected. The right pleural space, often inadvertently entered during the dissection, is managed by increasing the airway pressure. Once the gland is completely dissected, it is placed in a sac and extracted through one of the port sites. A chest tube is placed across the mediastinum into the right pleural space and removed the next morning. The patient is discharged on postoperative day one.

**Conclusion:** Complete dissection of the thymus including both superior horns is feasible. Smaller instrumentation, positioning and an angled camera minimize the spatial challenges working into the neck through the left chest.
4V. Complex Repair for Tricuspid Valve Endocarditis

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Authors: Murtaza Dawood¹, *James Gammie¹

Author Institution(s): ¹University of Maryland Medical Center, Baltimore, MD

Objectives: The surgical management of tricuspid valve endocarditis is challenging. Extensive leaflet destruction is often treated with valve replacement. We demonstrate techniques that enable repair of an extensively damaged infected tricuspid valve.

Methods: A 40 year-old female with a history of a recent D and C presented with fever, chills, and left-sided pleuritic chest pain. Blood cultures were positive for Streptococcus agalactiae. Transthoracic echocardiography (TTE) demonstrated a mobile 2.5 x 2.0 cm mobile tricuspid valve vegetation and severe tricuspid regurgitation. She failed to respond to intravenous antibiotic therapy, with persistent fevers, tachycardia, and pleuritic chest pain.

Results: At operation, the tricuspid valve vegetation was found to have destroyed nearly all of the anterior leaflet as well as its chordal support. The vegetation was resected and the leaflet debrided. The leaflet was reconstructed using fresh, autologous pericardium. The leaflet was supported with four ePTFE neochords which were anchored to the right ventricular wall. A rigid 3-dimensional annuloplasty ring was inserted and neochordal length calibrated after filling the ventricle with saline. Optimal chordal length was substantially longer than initially predicted. Predischarge TTE showed excellent leaflet mobility and trace tricuspid regurgitation. She was discharged home on postoperative day five on intravenous antibiotic treatment.

Conclusion: Tricuspid valve repair can be accomplished in the setting of extensive leaflet destruction from infective endocarditis using a combination of leaflet reconstruction with fresh autologous pericardium, rigid 3-dimensional annuloplasty ring implantation and ePTFE neochordal reconstruction. Tricuspid valve repair in this setting avoids the morbidity of prosthetic tricuspid valve replacement.
5V. Pectus Excavatum: A Complete Autologous Anatomic Repair

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Authors: *Brian E. Kogon¹, *Daniel Miller¹

Author Institution(s): ¹Emory University, Atlanta, GA

Objectives: Pectus defects are a congenital deformity of the anterior chest wall caused by abnormal growth of the costal cartilage. In 1949, Ravitch described a technique that, with the exception of a few modifications, continues to be performed today. By his description, the principles are: to remove the distorted cartilages, to fix the sternum solidly in its proper position, and to free it from all structures that might tend to maintain or recreate the deformity.

One of the major areas of controversy and modification centers around the method of sternal stabilization in the early and late recovery period. Currently used methods of support include: metallic struts, absorbable struts, wires, mesh, and native cartilage or perichondrial sheaths.

Our complete autologous anatomic repair utilizes the xiphoid process and abdominal musculature for sternal support. Advantages of this repair are that: it avoids the use of any synthetic materials and its potential complications, it is versatile and can be used for any type of defect, and it provides great results with respect to cosmetic and symptomatic improvement.

Methods: N/A

Results: N/A

Conclusion: N/A
6V. Robotic Ivor Lewis Esophagectomy With a Two-Layered Hand Sewn Anastamosis

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Author: D*Robert Cerfolio

Author Institution(s): 1University of Alabama at Birmingham, Birmingham, AL

Objectives: The objective of this study is to demonstrate our novel technique for minimally invasive esophagectomy that features a laparoscopic abdominal approach with a robotic thoracic approach and a hand sewn chest anastamosis.

Methods: The technical details of the chest part of the operation are shown in the video.

Results: We have performed 16 laparoscopic abdominal and robotic chest minimally invasive esophagectomies that use this hand sewn two-layer chest anastamosis between the esophagus and the gastric conduit. We have had no leaks with this technique (yet). However two patients have required dilation.

Conclusion: Minimally invasive esophagectomy does not mean that the anastamosis has to be in the left neck or a stapler has to be used if the anastamosis has to be performed in the left chest. This video and our experience demonstrate that a completely hand sewn chest anastamosis is possible using the robot. In addition, the robot affords an outstanding lymph node dissection and the ability to resect large and T4 tumors after neo-adjuvant chemoradiotherapy.
7V. Subcostal Exchange Of Left Ventricular Assist Devices - A Novel Approach

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Authors: Claude A. Beaty¹, George J. Arnaoutakis¹, Timothy J. George¹, Arman Kilic¹, Clinton D. Kemp¹, *Ashish A. Shah¹, D*John V. Conte¹

Author Institution(s): ªJohns Hopkins Medical Institutions, Baltimore, MD

Objectives: A limitation of long-term left ventricular assist device (LVAD) support is the risk of redo-sternotomy associated with device exchange. We describe our experience with LVAD exchange through a subcostal approach.

Methods: We conducted a retrospective review of our prospectively maintained LVAD database for Heartmate XVE (HM1) and Heartmate II (HM2) patients undergoing device exchange via subcostal incision from June 2000 through April 2011. The femoral vessels are cannulated for cardiopulmonary bypass (CPB). Exchange is performed through a subcostal incision by connecting the original outflow graft and inflow connector elbow to the new pump. Conversion from HM1 to HM2 requires outflow graft-to-graft anastomosis and exchange of the entire inflow cannula. Demographic data, operative data, indications for exchange, complications, and survival were reviewed.

Results: Sixteen device exchanges occurred in 15 patients via a subcostal approach. CPB was required in 16 (100%) cases. Median support duration prior to exchange was 331 days (Interquartile Range (IQR): 70-461). Five (31.2%) devices were replaced for mechanical failure, two (12.5%) for electrical failure, five (31.2%) for thrombosis and four (25%) for infection. Thirteen (81.2%) devices were replaced with HM2’s and three (18.8%) with HM1’s. Mechanical ventilation duration after exchange was 19 hrs (IQR: 6.5-56.5). Intensive care unit length of stay was six days (IQR: 3-18). Average intraoperative transfusions were: 7.25 (±5.9) units of packed red blood cells, 5.85 (±5.44) units of fresh frozen plasma and 1.1 (±1.07) units of platelets. There were no intra-operative deaths and one (6%) peri-operative death. At the end of follow-up, one (7%) patient received a heart transplant, 12 (80%) died, and three (20%) continued on LVAD support.

Conclusion: Device failure is an increasingly common complication of long term LVAD support. Access via a subcostal incision for device exchange is an alternative to redo median sternotomy, and can be performed with acceptable outcomes.
8V. Thoracoscopic Resection of a Thoracic Inlet Periesophageal Mass

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Authors: Africa F. Wallace¹, *Rodney J. Landreneau¹, Matthew J. Schuchert¹, James D. Luketich¹, Ghulam Abbas¹

Author Institution(s): ¹University of Pittsburgh Medical Center, Pittsburgh, PA

Objectives: Esophageal schwannomas are extremely rare tumors with only 31 cases reported in the English literature. Prior reports, with one exception, describe surgical resection via an open thoracotomy. We present a case of a benign esophageal schwannoma surgically excised using a thoracoscopic approach.

Methods: A 58 year-old asymptomatic female presented with a posterior mediastinal mass found incidentally on chest radiograph. Conventional radiologic studies, including chest computed tomography (CT) scan and positron emission tomography (PET)/CT showed an intensely PET-avid, 4cm lesion in the superior mediastinum causing mass effect of the posterior tracheal wall and leftward displacement of the esophagus. Endoscopic evaluation including flexible bronchoscopy, endobronchial ultrasound (EBUS), flexible esophagoscopy and endoscopic ultrasound (EUS) demonstrated a protrusive, but noninvasive, submucosal lesion of the proximal esophagus. Needle biopsies were unrevealing. The patient underwent a right video-assisted thoracoscopic surgery (VATS) with enucleation. Pathologic and immunohistochemical examinations revealed a benign esophageal schwannoma.

Results: There was no postoperative leak, as demonstrated with barium esophagram, or other complications after surgery. She was discharged on postoperative day four. The patient has been doing well.

Conclusion: A thoracoscopic approach for surgical enucleation of an esophageal schwannoma is a viable operative strategy. Although rare, schwannomas should be included in the differential when evaluating submucosal tumors of the esophagus. Use of a VATS approach for resection of these processes appears to be a reasonable consideration for carefully selected patients.
9V. Sliding Tracheoplasty on Infants

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Author: D*Robert Cerfolio

Author Institution(s): 1University of Alabama at Birmingham, Birmingham, AL

Objectives: The objective is to review our sliding tracheoplasty technique via a neck incision in a five month-old child with a critical 1mm tracheal stenosis in the lower one third of the trachea 2cm above the carina.

Methods: The specific operative technique is shown in this video.

Results: The operation shown in this video took an hour and forty minutes. No guardian chin stitch was used, the child went directly to the floor and was discharged home on postoperative day two. He is now 3.5 years old and is asymptomatic. Most recent follow up bronchoscopy performed at home shows a normal trachea that is growing as he grows.

Conclusion: Sliding tracheoplasty can be used even for very low tracheal lesions in newborns and infants because of the pliability of their tissue. Careful attention to technical details leads to a trachea that is significantly increased in diameter immediately after surgery and appears to grow normally as the child grows. Cardiopulmonary bypass is not needed if there are no congenital cardiac abnormalities.

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Authors: DJohn W. Brown¹, Mark Rodefeld¹, Mark W. Turrentine¹, Parth Patel¹

Author Institution(s): ¹Indiana University, Indianapolis, IN

Discussant: Charles Fraser, Texas Children’s Hospital, Houston, TX

Objectives: The Ross root has been the aortic valve replacement (AVR) of choice for children at our center for the past two decades. Absence or inadequate quality of the pulmonary autograft or less commonly, family or surgeon preference, caused us to select an alternative AVR prosthesis on occasion. This review compares the outcomes of 40 (non-Ross) AVRs with 107 children undergoing Ross root replacement at our institution during the most recent 20 years.

Methods: A retrospective chart review of the 40 non-Ross AVRs was compared to 107 Ross AVR patients. The age at AVR was 10.7±6.3 years (one day to 19 years) for the non-Ross and 11.2±5.6 years (one month to 18 years) for the Ross group respectively. Sixty five percent of patients in each group had had prior aortic valve surgery. The majority of valves in both groups were bicuspid.

Results: The early and late mortality or heart transplant of the non-Ross AVR group was 15.0% compared to 6.5% for the Ross cohort (p = 0.11). The Actuarial Survival rate at ten years for the non-Ross AVR group was 74.6% compared to 95.2% for the Ross group (p = 0.0004). Re-replacement AVR was necessary in 18% of the non-Ross group compared to 7% in the Ross group (p= 0.076). Thromboemboli, Bleeding and endocarditis occurred in 1.3, 2.7, and 9.3% in the non-Ross group compared to 0, and 1% in the Ross AVR group.

Conclusions: Lower mortality, re-operation, and valve related complications were seen with Ross root replacement than with other types of AVR prostheses in our children. The Ross root AVR remains the treatment of choice in children who have an adequate pulmonary valve and are in need of AVR. Re-intervention on the Ross root with dilatation and/or regurgitation can usually be managed with valve sparing techniques.
2. Parachute Mitral Valve in Atrioventricular Septal Defects: Should The Zone of Apposition Be Closed?

*STSA Member

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Authors: Vikas Sharma, Harold M. Burkhart, *Hartzell V. Schaff, Frank Cetta, Allison Cabalka, Joseph Dearani

Author Institution(s): Mayo Clinic, Rochester, MN

Discussant: Jeffrey Heinle, Texas Children’s Hospital, Houston, TX

Objectives: The management of the zone of apposition (ZOA) in patients with atrioventricular septal defect (AVSD) and parachute left atrioventricular valve (PLAVV) is controversial. We reviewed our surgical experience with PLAVV in AVSD.

Methods: Between 1977 and 2010, 28 patients with PLAVV associated with AVSD were reviewed; this constituted 3.8% of cases of AVSD at our institution during that time period. The median age at operation was ten months (36-days-old – 14 years-old). Sixteen (57%) patients had complete AVSD and 12 (43%) had partial AVSD. Thirteen (46%) patients had moderate to severe LAVV regurgitation and no patient had LAVV stenosis pre-operatively.

Results: The ZOA was managed with complete closure in six (22%) patients, partial closure in ten (36%), and no closure in 11 (39%). One patient underwent LAVV replacement for dysplastic leaflets. Dismissal echo demonstrated moderate LAVV regurgitation in ten (36%) patients; seven had no closure of ZOA, and three had partial closure. Mild or moderate LAVV stenosis was present in all (six) patients with complete closure of ZOA and one patient with partial closure (mean gradient 6.3+1.3). Median followup was nine years (max, 22 years). Eight patients had progression of LAVV regurgitation through the unsutured ZOA and marked dysplastic leaflets; six patients subsequently underwent LAVV replacement. Of the seven patients that had LAVV stenosis, one patient required opening of ZOA, one month after surgery. The other six patients had a decrease in mean gradient from mean 6.3+1.3mmHg to 4.6+1.7mmHg; p=0.04). There was one late death 22 years later following fourth time redo LAVV replacement from multisystem organ failure.

Conclusions: Progression of LAVV regurgitation from the unsutured ZOA was the main indication for reoperation in PLAVV with AVSD. The ZOA in PLAVV should be partially or completely closed at the time of AVSD repair. Although mild LAVV stenosis appeared to improve with time, life-long surveillance is essential.
3. Analyzing “Failure to Rescue”: Is This an Opportunity for Outcome Improvement in Cardiac Surgery?

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Authors: Haritha Reddy, Michael J. Englesbe, Francis L. Shannon, Patricia F. Theurer, Morley A. Herbert, Gaetano Paone, Gail F. Bell, Richard L. Prager

Author Institution(s): 1University of Michigan, Ann Arbor, MI; 2William Beaumont Hospital, Royal Oak, MI; 3Henry Ford Hospital, Detroit, MI; 4Ann Arbor, MI; 5Southwest Data Consultants, Dallas, TX

Discussant: *Giorgio Aru, University of Mississippi, Jackson, MS

Objectives: In the setting of a statewide quality collaborative approach to the review of cardiac surgical mortalities in intensive care units, variations in complication related outcomes became apparent. Utilizing “failure to rescue” methodology, (FTR defined as the probability of death in a patient after a complication), we compared FTR rates after adult cardiac surgery in low, medium, and high mortality centers from a voluntary, 33-center quality collaborative.

Methods: We identified 45,764 patients with a STS Predicted Risk of Mortality operated on between 2006 and 2010. The 33 centers were ranked according to O/E ratio for mortality, and were categorized into three equal groups. The low mortality group included those sites with O/E mortality < 0.77, medium 0.77 - 0.96, and high > 0.96. We then compared rates of complications and FTR.

Results: Overall unadjusted mortality was 2.5% (1139/45764) ranging from 1.4% (227/15766) in the low group to 3.5% (547/15816) in the high group. Complications (17) ranged from 19.1% (3010/15766) in the low group to 22.8% (3603/15816) in the high group while FTR rates were 6.6% (199/3010) in the low mortality group, 10.4% (314/3016) in the medium group and 13.5% (485/3602) in the high mortality group (p<0.001). The FTR rate was significantly better in the lower mortality group for the majority of complications (11 of 17) with the most significant findings for cardiac arrest, dialysis, prolonged ventilation, and pneumonia (table).

Conclusions: This analysis of mortalities from a statewide quality collaborative demonstrates that low mortality hospitals have superior ability to rescue patients from complications that arise after cardiac surgical procedures. Outcome review incorporating a collaborative multi-hospital approach can provide an ideal opportunity to review care processes that anticipate, understand and manage complications in the ICU and help to recognize and share ‘differentiators’ in care.

<table>
<thead>
<tr>
<th>Complication</th>
<th>Low Mortality Group O/E &lt; 0.77</th>
<th>Medium Mortality Group O/E 0.77 - 0.96</th>
<th>High Mortality Group O/E &gt; 0.96</th>
<th>Low mortality compared to High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complication Rate</td>
<td>19.1%</td>
<td>21.3%</td>
<td>22.8%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mortality</td>
<td>1.4%</td>
<td>2.6%</td>
<td>3.5%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>FTR</td>
<td>6.6%</td>
<td>10.4%</td>
<td>13.9%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Complications:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe Sepsis</td>
<td>19.7%</td>
<td>26.9%</td>
<td>33.6%</td>
<td>0.001</td>
</tr>
<tr>
<td>Sepsis</td>
<td>19.7%</td>
<td>26.9%</td>
<td>33.6%</td>
<td>0.004</td>
</tr>
<tr>
<td>Anticoagulation Event</td>
<td>15.0%</td>
<td>22.5%</td>
<td>31.3%</td>
<td>0.001</td>
</tr>
<tr>
<td>GI Event</td>
<td>11.0%</td>
<td>14.7%</td>
<td>19.3%</td>
<td>0.001</td>
</tr>
<tr>
<td>ICU Readmit</td>
<td>8.3%</td>
<td>15.4%</td>
<td>15.6%</td>
<td>0.001</td>
</tr>
<tr>
<td>Prolonged Vent</td>
<td>8.6%</td>
<td>13.3%</td>
<td>15.5%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Renal Failure</td>
<td>7.7%</td>
<td>11.7%</td>
<td>14.9%</td>
<td>0.001</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>7.7%</td>
<td>10.9%</td>
<td>19.8%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stroke</td>
<td>10.0%</td>
<td>21.0%</td>
<td>24.3%</td>
<td>0.102</td>
</tr>
<tr>
<td>Transplant</td>
<td>21.2%</td>
<td>32.0%</td>
<td>45.5%</td>
<td>0.057</td>
</tr>
<tr>
<td>Perioperative</td>
<td>6.7%</td>
<td>10.5%</td>
<td>15.8%</td>
<td>0.246</td>
</tr>
<tr>
<td>Deep Sternal Wound Infection</td>
<td>10.2%</td>
<td>8.0%</td>
<td>10.7%</td>
<td>0.993</td>
</tr>
<tr>
<td>Heart Block</td>
<td>3.5%</td>
<td>4.9%</td>
<td>5.8%</td>
<td>0.278</td>
</tr>
<tr>
<td>Acute Dissection</td>
<td>25.0%</td>
<td>40%</td>
<td>42.9%</td>
<td>0.554</td>
</tr>
</tbody>
</table>

NOTES:
4. Segmentectomy is Superior to Wedge Resection for Non-Small Cell Lung Cancer in High-Risk Operable Patients

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Authors: Michael S. Kent¹, Rodney Landreneau², Sumithra Mandekar³, Shauna Hillman³, Francis Nichols³, *David R. Jones⁶, Sandra Starnes⁴, Angelina Tan⁷, Joe Putnam⁸, Brian Meyers⁹, Benedict Daly¹, Hiran C. Fernando¹

Author Institution(s): ¹Boston University Medical Center, Boston, MA; ²University of Pittsburgh Medical Center, Pittsburgh, PA; ³Mayo Clinic, Rochester, MN; ⁴University of Cincinnati, Cincinnati, OH; ⁵University of Virginia, Charlottesville, VA; ⁶Vanderbilt University, Nashville, TN; ⁷Washington University, St. Louis, MO; ⁸Beth Israel Deaconess Medical Center, Boston, MA

Discussant: *Stephen Hazelrigg, Southern Illinois University, Springfield, IL

Objectives: There is increasing interest in sublobar resection (SR) but variation in how SR is performed continues. We report variations in surgical technique and pathological findings from a multi center, randomized trial (ACOSOG Z4032) of SR versus SR with brachytherapy for high-risk stage I lung cancer.

Methods: Operative and pathological reports were reviewed for 214 patients enrolled in the ACOSOG Z4032 trial. Markers of pathological effectiveness (margin size, margin:tumor ratio, lymph node yield, and rates of nodal upstaging) were compared when stratified by surgical approach (VATS versus thoracotomy), and resection type (segmentectomy versus wedge) using Wilcoxon rank-sum, chi-square, and Fisher’s exact tests.

Results: VATS was undertaken in 137 (64%) and thoracotomy in 77 (36%) patients. There were no differences in the use of segmentectomy in the open versus VATS group. No differences were observed in the rate of nodal upstaging, node stations sampled, and parenchymal margins between VATS and thoracotomy. However, significant differences were observed in pathological effectiveness between segmentectomy and wedge resection as demonstrated in the Table. Notably, 44/126 (28%) wedge patients had zero lymph nodes sampled at operation/mediastinoscopy compared to 1/57(1.8%) segmentectomy patients.

Conclusions: Regardless of approach, segmentectomy was associated with superior markers of pathological effectiveness, potentially impacting oncological outcomes. The results suggest that segmentectomy may be preferential to wedge resection when sublobar resection is undertaken.

<table>
<thead>
<tr>
<th>Resection</th>
<th>Nodal Stages sampled (median)</th>
<th>Number of Nodes removed (median)</th>
<th>Nodal Upstaging (%)</th>
<th>Margin/Tumor ratio (median)</th>
<th>Margin &gt; 1cm (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wedge (n=158)</td>
<td>2</td>
<td>2</td>
<td>1 (0.6%)</td>
<td>0.47</td>
<td>68 (49%)</td>
</tr>
<tr>
<td>Segmentectomy (n=57)</td>
<td>3</td>
<td>4</td>
<td>5 (8.8%)</td>
<td>0.76</td>
<td>39 (47%)</td>
</tr>
</tbody>
</table>

p-value  <.0001  <.0001  <.003  <.009  <.002
5. Septuagenarians Bridged to Heart Transplantation With a Ventricular Assist Device Have Similar Outcomes as Younger Patients

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Authors: Timothy J. George, Arman Kilic, Claude A. Beatty, Alan A. Simeone, John V. Conte, Kaushik Mandal, Ashish S. Shah

Author Institution(s): Johns Hopkins Medical Institutions, Baltimore, MD

Discussant: Hari Mallidi, Texas Heart Institute at St. Luke’s Episcopal, Houston, TX

Objectives: Although orthotopic heart transplantation (OHT) is increasingly being offered to older patients, few studies have evaluated outcomes in patients over the age of 70 years. We undertook this study to characterize the outcomes of septuagenarians bridged to heart transplantation (BTT) in the modern era.

Methods: We conducted a retrospective cohort study of all adult OHT in the United Network for Organ Sharing database from 2005 through 2011. Primary stratification was by age ≥ 70 years. Subgroup analysis evaluated BTT patients. The primary outcome was survival as determined by the Kaplan-Meier method. Mortality was further analyzed using multivariable Cox proportional hazards regression models.

Results: From January 2005 through December 2011, 12,274 adults underwent OHT, including 3,243 (26.4%) who were BTT. In the entire cohort, 11,996 (97.7%) recipients were ages 18-70, and 277 (2.3%) were ≥70 years of age. Overall, patients ≥70 had decreased 90-day (93.6 vs 88.8%, p<0.01), one-year (89.0 vs. 81.6%, p<0.01), and two-year (85.4 vs. 79.9%, p<0.01) survival compared to recipients of other ages. However, in the BTT subgroup, recipients ≥70 (n=43) had similar 90-day (91.2 vs. 84.7%, p=0.2), one-year (86.1 vs. 81.7%, p=0.4), and two-year (82.8 vs. 81.7%, p=0.6; Figure) survival compared to recipients of other ages (n=3,200). After adjusting for multiple recipient and donor factors, age ≥70 was still not associated with an increased hazard of mortality at 90-days (HR:1.6, p=0.3), one-year (HR:1.3, p=0.5; Table), or two-years (HR:1.1, p=0.8). At all three time points, high annual center volume was protective.

Conclusions: In patients bridged to heart transplantation, septuagenarians have similar outcomes as younger recipients. In carefully selected, LVAD-dependent patients, recipient age ≥70 should not be viewed as a contraindication to OHT.

1-Year Cox Proportional Hazards Regression Model for BTT Patients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Hazard Ratio</th>
<th>95% Confidence Interval</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age ≥ 70</td>
<td>1.30</td>
<td>0.98-1.85</td>
<td>0.1</td>
</tr>
<tr>
<td>White ethnicity</td>
<td>1 (Reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black ethnicity</td>
<td>1.56</td>
<td>1.22-2.00</td>
<td>0.001</td>
</tr>
<tr>
<td>Hispanic ethnicity</td>
<td>1.26</td>
<td>1.06-1.50</td>
<td>0.02</td>
</tr>
<tr>
<td>Creatinine, mg/dL</td>
<td>1.23</td>
<td>1.14-1.33</td>
<td>0.002</td>
</tr>
<tr>
<td>Bilirubin, mg/dL</td>
<td>1.09</td>
<td>1.03-1.08</td>
<td>0.001</td>
</tr>
<tr>
<td>BMI, kg/m²</td>
<td>1.02</td>
<td>1.01-1.04</td>
<td>0.01</td>
</tr>
<tr>
<td>Dilated cardiomyopathy</td>
<td>1 (Reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ischemic etiology</td>
<td>1.44</td>
<td>1.13-1.80</td>
<td>0.002</td>
</tr>
<tr>
<td>Conventional etiology</td>
<td>1.26</td>
<td>0.95-1.65</td>
<td>0.1</td>
</tr>
<tr>
<td>ICU</td>
<td>1.32</td>
<td>0.70-2.40</td>
<td>0.08</td>
</tr>
<tr>
<td>Isotropic support</td>
<td>1.13</td>
<td>0.87-1.43</td>
<td>0.2</td>
</tr>
<tr>
<td>Ventilator support</td>
<td>1.54</td>
<td>1.17-2.33</td>
<td>0.002</td>
</tr>
<tr>
<td>Donor age (per 10 years)</td>
<td>1.21</td>
<td>1.11-1.31</td>
<td>0.001</td>
</tr>
<tr>
<td>Same gender matching</td>
<td>0.94</td>
<td>0.73-1.22</td>
<td>0.002</td>
</tr>
<tr>
<td>Ischemic time, min</td>
<td>0.72</td>
<td>0.59-0.92</td>
<td>0.007</td>
</tr>
<tr>
<td>Age &lt; 70</td>
<td>1 (Reference)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual volume &lt; 35 OHT/yr</td>
<td>0.92</td>
<td>0.78-1.12</td>
<td>0.6</td>
</tr>
<tr>
<td>Annual volume 35-70 OHT/yr</td>
<td>0.76</td>
<td>0.58-1.01</td>
<td>0.06</td>
</tr>
<tr>
<td>Annual volume &gt; 70 OHT/yr</td>
<td>0.63</td>
<td>0.43-0.91</td>
<td>0.003</td>
</tr>
</tbody>
</table>

NOTES:
6. The Efficacy of Operating Veno-Venous ECMO at Lower Flow Rates

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Authors: Julissa E. Jurado¹, Matthew Lavelle¹, Alexis Newmark¹, *Joshua Sonett¹, *Joseph Costa¹, Daniel Brodie¹, Matthew Bacchetta¹

Author Institution(s): ¹Columbia University Medical Center - New York Presbyterian Hospital, New York, NY

Discussant: *Joseph Zwischenberger, University of Kentucky, Louisville, KY

Objectives: This study reviews the survival of patients with respiratory failure on ECMO with flow rates below the calculated target rate. Primary endpoint for analysis was survival time; secondary endpoints included thrombus formation and hypoxia.

Methods: This is a retrospective study of a single institution’s experience with patients on veno-venous ECMO (VV ECMO) for respiratory failure from February 2007 to November 2011. Flow rates were compared at two different time intervals: 24 hours and 72 hours. The percentage of time spent below the calculated flow rate was determined at 10%, 15%, and 20% of the calculated target flow rate.

Results: Data was reviewed for 67 patients (males: 38) with a median age of 45 (interquartile Range 33-56), who had been placed on VV ECMO for either hypercarbic or hypoxemic respiratory failure. The groups were matched for gender, age, BMI, indication and pre- and concurrent ECMO mechanical ventilatory support. The survival was significantly better for patients with lower flow rates of 10%, 15%, or 20% at 24 hours, versus those who were at the targeted flow rates (P <0.02, <0.02, <0.03). We observed no difference in thrombus formation between the 10%, 15%, or 20% underflow groups and the targeted flow rate group at 24 hours: P 0.83, 0.91, 0.56; or 72 hours: 0.52, 0.20, 1. Despite lower flow rates, there was no statistically significant difference between pre- and on-ECMO oxygenation among the groups, 10%, 15%, and 20% below versus the calculated target (P 0.61, 0.68, 0.93), respectively.

Conclusions: VV ECMO for respiratory indications operating at flow rates below calculated target flow rate is not associated with worse survival. Although gas exchange is flow rate dependent, it was adequate for these patients. It is feasible to meet physiologic requirements and perhaps safer to operate VV ECMO at flow rates moderately lower than the calculated value in patients with respiratory failure.
7. Cardiac Risk Of Pulmonary Resection Following Percutaneous Coronary Stenting

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Authors: *Felix Fernandez¹, *Traves Crabtree², Jingxia Liu², *Bryan Meyers²

Author Institution(s): ¹Emory University, Atlanta, GA; ²Washington University, St. Louis, MO

Discussant: *Keith S. Naunheim, St. Louis University, St. Louis, MO

Objectives: Many patients requiring lung cancer resection have concomitant coronary artery disease. Preoperative coronary artery stenting has been associated with increased risk of cardiac events in non-cardiac surgery. Our aim was to determine the incidence of major adverse cardiac events (MACE) in patients undergoing pulmonary resection for lung cancer after percutaneous coronary intervention with a stent.

Methods: This study utilizes Surveillance, Epidemiology, and End Results-Medicare data (1998-2005). Patients undergoing lung cancer resection within one year after coronary stenting were compared to patients without preoperative coronary intervention. Medicare claims were queried to determine rates of MACE (acute myocardial infarction, stent thrombosis, repeat coronary intervention, and death) within 30 days following surgery.

Results: 519 patients underwent lung cancer resection following coronary stenting (stent) and 21,892 patients underwent lung cancer resection without preceding coronary intervention (no stent). The stent group had higher comorbidity scores (p<0.0001) and more males (66% vs. 50%, p<0.0001). There were no differences in age (74 vs. 74 years), tumor size (33.7 vs. 33.6 mm), stage (53% vs. 54% stage I) and resections of lobectomy or greater (83% vs. 80%) between stent and no stent groups (all p>0.05). Thirty-day MACE and mortality rates were 9.3% and 7.7% in the stent group and 4.9% and 4.6% in the no stent group (both p<0.0001). Timing of surgery following stent placement (0-90, 91-180, 181-365 days) did not affect MACE free survival (p=0.26). Multivariable predictors of MACE were: coronary stent, age, male gender, comorbidity score, tumor size, and tumor stage (Table).

Conclusions: Patients undergoing lung cancer surgery within one year of percutaneous coronary stenting are at high risk for perioperative MACE and mortality. The presence of a coronary stent should be an important component of the risk assessment prior to resection for lung cancer.

<table>
<thead>
<tr>
<th>Hazard Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment group</td>
<td>0.0119</td>
</tr>
<tr>
<td>Stent</td>
<td>1.90 (1.09, 2.99)</td>
</tr>
<tr>
<td>Control</td>
<td>1.0</td>
</tr>
<tr>
<td>Age, years</td>
<td>1.04 (1.05, 1.08)</td>
</tr>
<tr>
<td>Male gender</td>
<td>1.54 (1.34, 1.76)</td>
</tr>
<tr>
<td>Charlson Comorbidity Index</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1.0</td>
</tr>
<tr>
<td>1</td>
<td>1.20 (1.11, 1.31)</td>
</tr>
<tr>
<td>2</td>
<td>1.09 (1.00, 2.05)</td>
</tr>
<tr>
<td>3+</td>
<td>2.01 (1.83, 2.27)</td>
</tr>
<tr>
<td>Tumor Stage</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>1.0</td>
</tr>
<tr>
<td>II</td>
<td>1.09 (1.07, 1.35)</td>
</tr>
<tr>
<td>III</td>
<td>1.53 (1.30, 1.79)</td>
</tr>
<tr>
<td>IV</td>
<td>2.07 (1.81, 2.36)</td>
</tr>
<tr>
<td>Tumor size (mm)</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1.0</td>
</tr>
<tr>
<td>1</td>
<td>1.004 (1.000, 1.005)</td>
</tr>
</tbody>
</table>

Abbreviations: CI, confidence interval

*STSA Member D Relationship Disclosure
8. Open, VATS, and Robotic Lobectomy: Review of a National Database

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Authors: Michael S. Kent¹, Thomas Wang², Richard Whyte¹, Raja Flores³, Sidhu Gangadharan¹

Author Institution(s): ¹Beth Israel Deaconess Medical Center, Boston, MA; ²Harvard University, Cambridge, MA; ³Mount Sinai School of Medicine, New York, NY

Discussant: *Joe B. Putnam, Vanderbilt University, Nashville, TN

Objectives: Several large series have compared outcomes between open and VATS lobectomy. However, none of these reports have included robotic lobectomies. Reports on outcomes following robotic-assisted pulmonary lobectomy have been confined to small, single-institution case series. We sought to compare the outcomes between open, VATS, and robotic lobectomies using the National Inpatient Sample (NIS) database and State Inpatient Databases (SID).

Methods: Using the 2008 and 2009 NIS database, supplemented by the SID data for eight additional states for those same years, we identified patients who underwent an open, VATS, or robotic lobectomy. Data including mortality, length of stay, and complication rates were recorded.

Results: We identified a total of 41,077 patients (Open: 27,224, VATS: 13,581, robot: 272). Case volumes for both VATS, and robotic procedures increased between 2008 and 2009 (2008: VATS: 6,314, robot: 38; 2009: VATS: 7,267, robot: 234). Robotic resections were performed in 17 states over this time period. Both VATS and robotic lobectomies were associated with significant reductions in mortality, length of stay, and pneumonia compared to open lobectomy (see Table). In addition, smaller differences in length of stay and mortality were observed when comparing VATS to robotic lobectomy.

Conclusions: Over this two-year time period 33% of lobectomies were performed using a minimally invasive approach. Both VATS and robotic lobectomies were associated with a lower mortality and length of stay compared to an open approach. While the case volume for robotic lobectomy was low compared to VATS and open techniques, robotic lobectomy was not associated with a higher rate of mortality or intraoperative complications.

<table>
<thead>
<tr>
<th>Surgical Approach</th>
<th>Morbidity</th>
<th>Median LOS (days)</th>
<th>Hemorrhage</th>
<th>Pneumonia</th>
<th>AEF</th>
<th>Tracheostomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open (n=27,224)</td>
<td>2.76%</td>
<td>7</td>
<td>3.2%</td>
<td>11.1%</td>
<td>18.2%</td>
<td>8.7%</td>
</tr>
<tr>
<td>VATS (n=13,581)</td>
<td>1.38%</td>
<td>5</td>
<td>2.9%</td>
<td>7.2%</td>
<td>14.9%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Robotic (n=272)</td>
<td>0.37%</td>
<td>4</td>
<td>2.2%</td>
<td>4.4%</td>
<td>16.2%</td>
<td>4.0%</td>
</tr>
<tr>
<td>p-value (VATS vs Robotic)</td>
<td>.001</td>
<td>.057</td>
<td>.847</td>
<td>.001</td>
<td>.327</td>
<td>.585</td>
</tr>
<tr>
<td>p-value (Open vs Robotic)</td>
<td>.001</td>
<td>.0001</td>
<td>.251</td>
<td>.0001</td>
<td>.363</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>p-value (Open vs VATS)</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

NOTES:
9. Transcatheter Aortic Valve Replacement Since U.S. Food and Drug Administration Approval: Trends in Patient Characteristics, Techniques, and Results

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Authors: Soumya R. Neravetla1, DVasilis Babaliaros1, *Robert Guyton1, James Stewart1, Peter Block1, Chandon Devireddy1, Kreton O. Mavromatis1, D*Vinod H. Thourani1

Author Institution(s): 1Emory University, Atlanta, GA

Discussant: D*Todd Dewey, Medical City Dallas Hospital, Dallas, TX

Objectives: Transcatheter Aortic Valve Replacement (TAVR) has proven an effective treatment option in high risk patients with severe aortic stenosis (AS) who are considered unsuitable for traditional on-pump AVR. The objective of this study was to evaluate early commercial application of the TAVR.

Methods: All patients who underwent commercial implantation of TAVR at our U.S. academic institution from November 15, 2011 to March 28, 2012 were reviewed. Demographics, hospital characteristics, approach, and outcomes were analyzed. All patients were considered non-operative for CPB AVR by two surgeons. During this time, 38 SAPIEN TAVRs were performed: Transfemoral (TF, n=14), Transapical (TA, n=10), Transaortic (TAo, n=10), Transcarotid (TCa, n=3), and Transinnominate (TInn, n=1). Two patients had a TAVR valve in a prior bioprosthetic AV.

Results: Only 36.8% of all patients were candidate for TF valve implantation. The mean age was 78±11.7 yrs (median 80 yrs) and 14 (36.8%) were female. Mean EF was 45% (range 10-70) and all patients were in the NYHA class III-IV. Eighteen patients (47.4%) were diabetic, 13 (34.2%) had moderate to severe COPD, and nine (23.7%) had a prior CVA. The mean creatinine was 1.75±1.84 and four patients (10.5%) were on preoperative dialysis. Fourteen (36.8%) patients had a prior CABG and two (5.2%) had a prior MV procedure. Mean postoperative ventilator hours was 18.8±41.7 hours (median=6.5 hours) and ICU LOS was 54.4±54.2 hours (median=33 hours). Average postoperative LOS was 6.2±3.6 days (median=5). There was no postoperative MI, stroke, or new dialysis requirements. In-hospital mortality was 0% despite mean STS PROM of 12.4%.

Conclusions: Less than 40% of patients deemed appropriate for commercial TAVR at our site were candidates for TF implantation. A tailored approach to those patients deemed inoperable for standard AVR utilizing not only TF, but also non-femoral access leads to excellent outcomes.
10. Outcomes of the Cox CryoMaze Procedure: Prospective Assessment With Continuous Outpatient Telemetry in 139 Consecutive Patients

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Authors: A. Claire Watkins¹, Mehrdad Ghoreishi¹, Cindi A. Young¹, Stephen Shorofsky¹, Joel Gabre³, *Bartley P. Griffith¹, *James S. Gammie¹

Author Institution(s): ¹University of Maryland, Baltimore, MD

Discussant: *Jennifer S. Lawton, Washington University School of Medicine, St. Louis, MO

Objectives: Fewer than half of patients with atrial fibrillation (AF) undergoing cardiac surgery in North America are treated with surgical AF correction. We performed a prospective study of the Cox-Maze III lesion set performed with endocardial cryoablation that included prespecified rhythm assessment with outpatient telemetry and report our results.

Methods: Between 2007 and 2011, 139 patients underwent surgical AF correction (CM) performed using an argon-powered cryoablation device and the precise Cox-Maze III lesion set. Patients wore continuous ECG monitoring prior to and at six, 12, and 24 months following surgery. The average length of monitoring was 3.7 days prior to surgery and ten days at each time point after surgery. Patients were assessed for cardiac rhythm, interval cardioversion or ablation procedures, pacemaker placement, and the use of warfarin or anti-arrhythmic medications. Other outcomes were as defined in The Society of Thoracic Surgeons Database. The primary endpoint of this study was freedom from AF, as defined by the HRS/EHRA/ECAS consensus statement.

Results: Mean patient age was 66 years-old, 50% were male and 39% had persistent AF. Average duration of AF prior to operation was 3.86 years. History of CVA was present in 12% and 60% were treated with warfarin. CM was done in conjunction with mitral valve in 95% (132/139) or other procedures in 5% (7/139). Perioperative mortality was 1.4% (2/139) and one patient (0.7%) suffered a stroke. Peri-operative pacemaker implantation was required in 13% (18/139). Outcomes at six, 12, and 24 months are shown in Table 1. In univariate analysis, lower serum Cr before surgery (r² = 0.08 P = 0.009), and female gender (r² = 0.03 P = 0.046) were associated with freedom from AF at one year. Actuarial four year (Kaplan-Meier) survival was 90 ± 3%.

Conclusions: The CM procedure is safe and is associated with 75% freedom from AF at one year. It is also associated with low late risk of stroke.

<table>
<thead>
<tr>
<th>Freedom from AF</th>
<th>6 Months</th>
<th>12 Months</th>
<th>24 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warfarin</td>
<td>86% (116/135)</td>
<td>79% (66/80)</td>
<td>85% (59/69)</td>
</tr>
<tr>
<td>Anti-arrhythmics</td>
<td>20% (26/125)</td>
<td>8% (6/100)</td>
<td>11% (54/47)</td>
</tr>
<tr>
<td>Pacemaker placement</td>
<td>14% (18/125)</td>
<td>3% (3/100)</td>
<td>2% (14/71)</td>
</tr>
<tr>
<td>Stroke</td>
<td>7% (3/39)</td>
<td>0% (0/100)</td>
<td>0% (0/100)</td>
</tr>
<tr>
<td>Follow-up among eligible:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhythm</td>
<td>86% (116/135)</td>
<td>79% (66/80)</td>
<td>85% (59/69)</td>
</tr>
<tr>
<td>Clinical</td>
<td>90% (125/135)</td>
<td>83% (100/121)</td>
<td>86% (41/47)</td>
</tr>
</tbody>
</table>

*excludes paced patients

NOTES:

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1B. mTOR Inhibition Blocks Fibrocyte Migration and Attenuates Bronchiolitis Obliterans in a Murine Heterotopic Tracheal Transplant Model

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Authors: Jacob R. Gillen1, Yunge Zhao1, David A. Harris1, *Irving L. Kron1, *Christine L. Lau1

Author Institution(s): 1University of Virginia, Charlottesville, VA

Objectives: Fibrocytes are integral in the development of fibroproliferative disease. Our lab has previously shown that fibrocytes, via the CXCL12/CXCR4 chemokine axis, play a central role in the development of bronchiolitis obliterans (BO). Inhibition of the mTOR pathway via rapamycin has been shown to decrease expression of both CXCR4 and CXCL12. Thus, we hypothesize that the use of the mTOR inhibitor, rapamycin, would decrease fibrocyte trafficking into allografts and prevent BO.

Methods: A total alloantigenic mismatch, murine heterotopic tracheal transplant model of BO was used. Experimental animals were treated with rapamycin (10mg/kg/day); and control animals received DMSO for 14 days post tracheal transplantation. Flow cytometry was used to assess buffy coat, bone marrow, and tracheal allograft fibrocyte levels. Inflammatory cells were also analyzed in these groups. Tracheal luminal obliteration was assessed in a blinded fashion via HE and collagen staining.

Results: Compared to controls, rapamycin treated mice showed a significant decrease in fibrocytes in the allografts (CD45+COLI+, 485629±103629 vs. 231711.5±7011.5, P=0.01; CD45+COLI+CXCR4+, 7995.5±1785.5 vs. 2035.5±274.5, P=0.005; and CD45+COLI+CXCR4+SMA+, 1795.5±305.5 vs. 718.5±28.5, P<0.001; Figure 1). Fibrocytes in recipient’s bone marrow and buffy coat showed a similar pattern. Furthermore, animals treated with rapamycin showed significantly decreased tracheal allograft luminal obliteration and collagen deposition as well as highly preserved luminal epithelium as compared to controls. Alpha-SMA positive cells, macrophages, neutrophils, and T cells were markedly reduced in rapamycin treated allograft versus controls.

Conclusions: mTOR inhibition effectively reduces recruitment of fibrocytes into allografts and mitigates development of tracheal luminal fibrosis. This study provides proof of concept for BO treatment with minimal dose mTOR therapy tailored to individual patient fibrocyte levels.
2B. Alternative Approach for Right Ventricular Failure After Left Ventricular Assist Device Implantation

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Authors: Koichi Toda¹, Tomohiro Saito¹, Yoshiaki Takewa¹, Eisuke Tatsumi¹

Author Institution(s): ¹National Cerebral and Cardiovascular Center, Suita, Japan

Objectives: Right ventricular failure after left ventricular assist device (LVAD) implantation is associated with a high mortality. This study was designed to evaluate the effectiveness of atrial septostomy with the membrane oxygenator incorporated in LVAD as a novel approach for right ventricular failure after LVAD implantation.

Methods: The outflow and inflow cannula were placed to the carotid artery and the left ventricular apex, respectively, then a centrifugal pump and oxygenator were sequentially placed between the inflow and the outflow cannulae in seven anesthetized goats. While right ventricular failure was induced by pulmonary artery banding, a balloon atrial septostomy was performed using a 19-mm balloon catheter under echocardiographic guidance and we investigate the effects of an interatrial shunt on LVAD flow and hemodynamics.

Results: Development of a right ventricular failure decreased the LVAD flow (0.9 L/minute), causing a state of shock [mean arterial pressure, 36 mmHg]. With a balloon atrial septostomy, LVAD flow and mean arterial pressure were significantly improved to 2.7 L/minute (p<0.0001) and 53 mmHg (p=0.006), respectively, while right atrial pressure decreased from 16.8 to 14.5 mmHg (p=0.01). Furthermore, arterial blood oxygenation was maintained by the membrane oxygenator incorporated in LVAD.

Conclusions: In the present model of a right ventricular failure after LVAD implantation, LVAD flow was significantly increased and hemodynamics improved by an interatrial shunt. Our results indicate that this approach may be a novel less-invasive approach for a right ventricular failure after LVAD implantation.
3B. Interleukin-1 Beta Induces an Inflammatory Phenotype in Human Aortic Valve Interstitial Cells Via NF-kappa B

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Authors: Nicole Nadlonek1, Joon H. Lee1, *T. B. Reece1, Michael J. Weyant1, Joseph C. Cleveland1, Xianzhong Meng1, David A. Fullerton1

Author Institution(s): 1University of Colorado, Aurora, CO

Objectives: Calcific aortic stenosis is an inflammatory disease. In response to pro-inflammatory stimulation, the human aortic valve interstitial cell (AVIC) has been shown to change from the phenotype of a myofibroblast to that of an inflammatory cell, manifest by the production of pro-inflammatory cytokines. The powerful pro-inflammatory cytokine, interleukin-1 Beta (IL-1), has been found in calcified aortic valve leaflets. But whether IL-1 is important in the development of aortic stenosis is unknown. Therefore, we hypothesized that stimulation of human AVICs with IL-1 would induce an inflammatory phenotype. In isolated human AVICs, our purposes were to determine (1) the effect of IL-1 on the production of the inflammatory cytokines interleukin-6 and -8 (IL-6, IL-8); (2) the chemokine monocyte chemotactic protein-1 (MCP-1); (3) the adhesion molecule ICAM-1; and (4) whether the actions of IL-1 are mediated by NF-B.

Methods: Human AVICs were isolated from normal aortic valves obtained from explanted hearts of patients undergoing cardiac transplantation (n=4) and grown in culture. After cells were grown to confluence, they were treated with IL-1 (10ng/ml). Cell lysis was performed 24 hours following treatment. Cell lysates were analyzed via immunoblot and densitometry for ICAM-1. Cell culture media was analyzed with ELISA for MCP-1, IL-6 and IL-8. NF-B inhibition was by BAY 5 uM. Statistics were by ANOVA. P < 0.05 was significant.

Results: Stimulation with IL-1 induced an inflammatory phenotype in human AVICs mediated predominantly by NF-B. IL-1 stimulation significantly increased production of the adhesion molecule ICAM-1 and the pro-inflammatory mediators IL-6, IL-8 and MCP-1. Inhibition of NF-B blocked production of all these mediators.

Conclusions: IL-1 stimulation induces an inflammatory phenotype in human AVICs that is mediated by NF-B. These data offer mechanistic insight into the pathogenesis of aortic stenosis.
BASIC SCIENCE FORUM

4B. Mast Cell Membrane Stabilizer Ameliorates Gastric Fluid Aspiration-Associated Pulmonary Allograft Pathology in Rat Orthotopic Lung Transplant Model

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Authors: Jui-Chih Chang¹, Jason Leung², Zoie Holzknecht², Matthew G. Hartwig², *Robert D. Davis², William Parker², Soman N. Abraham², *Shu S. Lin²

Author Institution(s): ¹Buddhist Tzu Chi General Hospital, Hualien, Taiwan; ²Duke University Medical Center, Durham, NC

Objectives: Obliterative bronchiolitis (OB) is the primary factor limiting long-term pulmonary allograft survival. Cromolyn sodium, a mast cell membrane stabilizer, was utilized to investigate the role of mast cells in the development of OB in a well-established model of rat lung transplantation, which entails OB and parenchymal fibrosis as a result of chronic aspiration of gastric fluid.

Methods: Nineteen orthotopic left lung transplants from donor WKY rats to recipient F344 rats were performed. The rats were treated with weekly gastric fluid aspirations into the transplanted lung and immunosuppressed with cyclosporine. In the experimental group (n=10), cromolyn sodium (150 mg/Kg) was injected subcutaneously into the recipient preoperatively and daily post-operatively until the end of the experiment; in addition, aerosolized cromolyn sodium (50 mg/mL) was administered for 20 minutes before the weekly aspirations. The rats in the control group (n=9) were still subjected to gastric fluid aspiration and immunosuppression but did not receive any treatment of cromolyn. Histopathology of the lung allografts was evaluated after eight weeks of gastric fluid aspirations.

Results: The rats receiving cromolyn developed significantly fewer OB lesions than the control group. The number of airways affected (ratio of OB lesions/airways) in the experimental group was 0.09±0.02 (mean ± SEM), compared to 0.56±0.08 in the control group (p<0.0001) [figure]. The histological fibrosis grade was 3.6±0.47 for the grafts in the experimental group, compared to 6.23±0.82 for the control rats (p=0.0107).

Conclusions: Systemic and regional inhibition of mast cell degranulation leads to significantly less OB development as well as parenchyma fibrosis in this rat lung transplant model.
5B. The Cardioprotective Mechanism of Diazoxide Involves The Inhibition of Succinate Dehydrogenase

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Authors: Melissa M. Anastacio1, Evelyn M. Kanter1, Carol Makepeace1, Angela S. Keith1, Haixa Zhang1, Richard D. Schuessler1, Colin G. Nichols1, *Jennifer S. Lawton

Author Institution(s): 1Washington University School of Medicine, St. Louis, MO

Objectives: Adenosine triphosphate-sensitive potassium (KATP) channel opener, Diazoxide (DZX), preserves myocyte volume homeostasis and contractility in response to stress via an unknown mechanism. It has been proposed that Diazoxide may be cardioprotective due to its ability to inhibit mitochondrial succinate dehydrogenase (SDH) or that SDH may form a portion of a purported mitochondrial KATP channel. We hypothesized that the prevention of inhibition of SDH by Glutathione would result in loss of cardioprotection by DZX.

Methods: To evaluate the inhibition of SDH, intact mitochondria isolated from wild type mice myocardium were exposed to 20mM Succinate (positive control), 8mM Malonate (negative control), 100uM DZX, 100uM Glutathione, or 100uM DZX + 100uM Glutathione. SDH activity was measured by spectrophotometric analysis of 2,6-Dichloroindophenol reduction (20 min) and expressed as slope of change in absorbance over time.

To evaluate cardioprotection, wild type mice myocytes were perfused with Tyrode’s physiologic solution (20 min), followed by test solution (20 min) including: Tyrode’s, hyperkalemic cardioplegia (CPG), CPG + 100uM DZX, CPG + 100uM DZX + 100uM Glutathione, or Glutathione alone followed by Tyrode’s (20 min). Myocyte volume and contractility were recorded using image grabbing software.

Results: Both malonate and DZX inhibited SDH (Table). The addition of glutathione prevented the inhibition of SDH by DZX. The addition of DZX prevented myocyte volume swelling due to CPG alone (Figure 1A). This benefit was lost with the addition of Glutathione. Myocyte contractility was similar to previous findings. However, Glutathione elicited an independent cardioprotective effect (Figure 1B).

Conclusions: The ability of diazoxide to provide beneficial myocyte homeostasis during myocyte stress requires the inhibition of SDH, which may be upstream of a purported mitochondrial KATP channel.
11. Coumadin Thromboprophylaxis Following Mitral Valve Repair in North America: Practice Patterns, Predictors, and Consequences

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Authors: Rakesh M. Suri¹, *Vinod H. Thourani², *Hartzell V. Schaff³, *Scott Rankin⁴, Xia He⁴, James Gammie⁵

Author Institution(s): ¹Mayo Clinic, Rochester, MN; ²Emory University Hospital, Atlanta, GA; ³Centennial Medical Center, Nashville, TN; ⁴Duke Clinical Research Institute, Durham, NC; ⁵University of Maryland Medical Center, Baltimore, MD

Discussant: *Vinay Badhwar, University of Pittsburgh Medical Center, Pittsburgh, PA

Objectives: International heart valve guidelines defer the decision to institute Coumadin thromboprophylaxis to individual practitioners following mitral valve repair; however, current practice patterns, predictors of use, and clinical consequences are unknown.

Methods: We studied 13,082 patients from the STS Adult Cardiac Surgery Database who underwent isolated primary mitral valve repair for mitral regurgitation between January 01, 2008 and June 30, 2010. Those having concomitant cardiac operations other than tricuspid repair or PFO closure, patients taking Coumadin preoperatively, and those with a history of preoperative atrial fibrillation (AF) were excluded.

Results: The median age was 58 years-old (IQR: 50-67yr) and 59% (7726) were men. Early stroke/TIA occurred in 1.44% (189), renal failure requiring new dialysis in 0.43% (56), reoperation for bleeding in 2.36% (309), and deep wound infection in 0.48% (63). The median hospital stay was five days (IQR 4-7 d). There were large variations in Coumadin use (Figure). Forty-six percent (5963) of patients were dismissed on Coumadin after mitral repair; which did not appear to influence the risk of reoperation for postoperative bleeding (P=0.5). Amongst the remaining 54%, 88% (6294/7119) were given aspirin. Fifty-nine percent (2082/3535) of those with postoperative AF, were dismissed on Coumadin. Independent predictors of Coumadin thromboprophylaxis included older age, beta blocker use, postop AF / neurologic event, HMO payer, surgery in Northeast and freedom from dialysis. After adjusting for patient risk factors, Coumadin was associated with a 16% increase in length of hospital stay (p<0.0001).

Conclusions: In contemporary practice, roughly half of patients undergoing isolated mitral valve repair are treated with Coumadin, which may potentially prolong duration of hospitalization. These data suggest that there is a pressing need for a prospective randomized trial to ascertain the value of Coumadin thromboprophylaxis following mitral valve repair.
12. Use Of Lean Thinking and Kaizen To Analyze Thoracic Surgery Operating Room Efficiency at a Tertiary Care Academic Medical Center

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Author Institution(s): 1University of Virginia, Charlottesville, VA

Discussant: *Carolyn Reed, Medical University of South Carolina, Charleston, SC

Objectives: Current economic trends necessitate efforts to prevent avoidable expenditure at academic hospitals. Operating rooms (ORs) represent one of their most resource-intensive cost centers. Lean Thinking focuses on reducing steps that occupy personnel, resources, and time but fails to add value to the overall process. Although most Fortune 500 companies rely heavily on this technique for improving operational efficiency, few hospitals have utilized it.

Methods: A team of surgeons and business consultants participated in a Kaizen event examining thoracic surgery ORs at an academic tertiary care center. Interviews were conducted with OR staff, nurses, and surgeons. Key performance metrics were produced by tracking patient flow and analyzing process steps by personnel required, time occupied, and information generated.

Results: Mean turnover was 44 minutes, resulting in an estimated forfeiture of $2 million compared to the national average (25 minutes). Preparation accounted for the majority of the time and variability compared to exit (e.g., PACU holds). Case cart setup represented the largest bottleneck with defective or missing items resulting in considerable staff transit time between the OR and sterile core. Efficiency was not dependent on the surgeon, operation type, or start time. Patient arrival in the OR was the main driver of nurse and anesthesiologist activities, highlighting the need for earlier in-room arrival and parallel setup.

Conclusions: Refocusing operations on value creation with Lean Thinking enables academic centers to improve along multiple dimensions traditionally perceived as conflicting goals—teaching, patient safety, and productivity. Although thoracic operations at academic centers require intensive preparation, there is ample scope to reduce nonoperative time to approach the national average. These results emphasize the need for process redesign and future studies to assess those efforts’ effect on teaching and patient safety.
13. Open Versus Hybrid Single Ventricle Palliation; Evolving Algorithm and 24-Month Results from a New Children’s Heart Center

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Authors: Daniel J. DiBardino, Makram Ebeid, Avichal Aggarwal, Michelle Sheth, Emilee Taylor, Mary Taylor, *Jorge D. Salazar

Author Institution(s): University of Mississippi Medical Center, Jackson, MS

Discussant: Andrew Lodge, Duke Children’s Hospital, Durham, NC

Objectives: There is continued controversy regarding the indications for open versus hybrid single ventricle palliation. This is particularly relevant for a new program with a relatively inexperienced team and more limited resources. We review our evolving algorithm for this decision making and the resultant outcomes over the first 24-month experience in a new Children’s Heart Center.

Methods: Retrospective review was conducted of all newborns presenting for evaluation for stage I palliation between April 15, 2010 (program inception) and April 15, 2012 with focus on documented indication for treatment pathway, hospital course, and outcome.

Results: There were 19 newborns presenting for evaluation and all were offered intervention; 13 underwent traditional open stage I operation (including the first ever Norwood operation in the state on February 17, 2011) and six chosen for hybrid stage I modifications (table I). Specific indications for hybrid pathway were RV dysfunction and dilation, restrictive atrial septum, cardiac anatomy variants precluding what we thought was “safe” shunt placement (see table 1), and complex extracardiac anomalies such as rectovaginal fistula requiring diversion and severe right diaphragm eventration with right lung hypoplasia. There was one hospital death in the Hybrid group for an 85% discharge survival and no patient required ECMO support. Morbidity was high with two tracheostomy dependent patients (33%) and long hospital convalesce (mean hospital stay 60 days). Patients without these criteria underwent traditional open operation with one death (92.3% hospital discharge survival) and shorter hospital stays (mean 24 days).

Conclusions: Application of strict cardiac and non-cardiac criteria for selection of stage I pathway can result in excellent outcomes for traditional surgical approach while still allowing high risk patients an opportunity for palliation. This is particularly important in the context of the challenges to a new congenital heart program.

Table 1. Details of 13 Procedures for 6 single ventricle variant patients chosen for Hybrid Stage I palliation over 24 months. One death resulted in a hospital discharge mortality of 15% and no patient required ECMO support.

<table>
<thead>
<tr>
<th>Cardiac Anomaly</th>
<th>Indication for HYBRID Approach</th>
<th>Age at index procedure (days)</th>
<th>Index Procedure</th>
<th>Age at second procedure (days)</th>
<th>Second Procedure</th>
<th>Subsequent procedures</th>
<th>ECU LOS (days)</th>
<th>Hospital LOS (days)</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right</td>
<td>Moderate to severe AVB, severe right diaphragm eventration and right lung hypoplasia</td>
<td>8</td>
<td>Sternotomy, LPA band, intracorporeal antegrade PDA stent (no flow through RPA)</td>
<td>16</td>
<td>Transcatheter PDA stent placement (in cath lab)</td>
<td>Diaphragm plication, tracheostomy</td>
<td>8</td>
<td>145</td>
<td>DCE</td>
</tr>
<tr>
<td>Left</td>
<td>Moderate RV dilation, mild RV dysfunction</td>
<td>9</td>
<td>Sternotomy, B/L PA band placement, unroofed intrapericardial PDA stent</td>
<td>11</td>
<td>Percutaneous dilation catheter placement</td>
<td>Transcatheter PDA stent placement (in cath lab)</td>
<td>18</td>
<td>18</td>
<td>Hospital Death</td>
</tr>
<tr>
<td>HLHS w/ extreme atrial septum</td>
<td>Restrictive atrial septum, fetal AVS</td>
<td>1</td>
<td>Sternotomy, B/L PA bands, atrial septectomy</td>
<td>22</td>
<td>Radiofrequency, transcatheter PDA stent placement (in cath lab)</td>
<td>None</td>
<td>79</td>
<td>77</td>
<td>DCE</td>
</tr>
<tr>
<td>Right IA, Hypoplastic LV, and arch, LSVG to CS</td>
<td>Restructural Shunt requiring division of hypoplastic, Hypoplastic</td>
<td>5</td>
<td>Sternotomy, B/L PA bands</td>
<td>34</td>
<td>Radiofrequency, transcatheter PDA stent placement (in cath lab)</td>
<td>None</td>
<td>41</td>
<td>48</td>
<td>DCE</td>
</tr>
<tr>
<td>HLHS w/ absent right subclavian</td>
<td>High Risk surgical shunt: subclavian pulsed BTRs and coronary shunt precuticular Surgery</td>
<td>6</td>
<td>Sternotomy, B/L PA bands, intrapericardial PDA stent, &quot;modified&quot; DKS</td>
<td>7</td>
<td>Delayed sternal closure</td>
<td>None</td>
<td>8</td>
<td>13</td>
<td>DCE</td>
</tr>
<tr>
<td>1-TGA with Hypoplastic RV and extreme right subclavian</td>
<td>High Risk surgical shunt: subclavian pulsed BTRs and subclavian subclavian anastomosis precuticular Surgery</td>
<td>7</td>
<td>Sternotomy, B/L PA bands, transport to cath lab for transcatheter PDA stent</td>
<td>27</td>
<td>NeoAV repair, band removal, atrial septectomy, &quot;modified&quot; DKS</td>
<td>Exploration and reevaluation, RPA band placement with delayed sternal closure, tracheostomy, transcatheter stent balloon dilation</td>
<td>N/A</td>
<td>N/A</td>
<td>DCE</td>
</tr>
</tbody>
</table>

NOTES:
14. A Propensity Matched Comparison of Pleurodesis or Tunneled Pleural Catheter in Patients Undergoing Diagnostic Thoracoscopy for Malignancy

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Authors: *Richard K. Freeman*, *Anthony J. Ascioti*, Theresa Giannini, Raja Mahidhara

Author Institution(s): ¹St. Vincent Hospital and Health System, Indianapolis, IN

Discussant: *Joe B. Putnam, Vanderbilt University, Nashville, TN

Objectives: Patients with a suspected malignant pleural effusion occasionally require thoracoscopy to achieve a diagnosis. It is unclear whether chemical pleurodesis or the placement of a tunneled pleural catheter that can be used for intermittent pleural drainage produces superior palliation, a shorter hospital stay and less morbidity. This investigation compares these two treatment groups.

Methods: Patients with a recurrent, symptomatic, pleural effusion suspected of having a malignant etiology who underwent a thoracoscopic exploration following at least two non-diagnostic thoracenteses were identified. Two patient groups were formed using propensity matching comprised of patients who received either talc pleurodesis or a tunneled pleural catheter at the conclusion of the procedure. Patient demographics, length of stay, interval until the initiation of systemic therapy, need for further intervention for the pleural effusion, and procedural morbidity and mortality were collected and compared.

Results: Over a six year period, 60 patients undergoing treatment were identified and propensity matched. No significant differences in mean age or palliation from their effusion were identified (Table 1). However the group treated with a tunneled pleural catheter realized a significantly shorter hospital stay and interval to systemic therapy for their malignancy as well as a lower rate of operative morbidity than patients undergoing talc pleurodesis.

Conclusions: This investigation found that a tunneled pleural catheter provided palliation of patients with a malignant pleural effusions and freedom from reintervention equal to that of talc pleurodesis following thoracoscopy while resulting in a shorter mean length of hospital stay and interval to the initiation of systemic therapy. This method of palliation of a malignant pleural effusion should be considered when diagnostic thoracoscopy reveals a malignant pleural effusion.

<table>
<thead>
<tr>
<th>N</th>
<th>Pleurodesis</th>
<th>Tunneled Catheter</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (years)</td>
<td>67</td>
<td>69</td>
<td>NS</td>
</tr>
<tr>
<td>Reintervention for Pleural Effusion</td>
<td>3</td>
<td>2</td>
<td>NS</td>
</tr>
<tr>
<td>Length of Hospital Stay (mean days)</td>
<td>6</td>
<td>3</td>
<td>0.001</td>
</tr>
<tr>
<td>Surgery to Systemic Therapy (mean days)</td>
<td>17</td>
<td>9</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mortality</td>
<td>6</td>
<td>0</td>
<td>0.02</td>
</tr>
<tr>
<td>Operative Mortality</td>
<td>1</td>
<td>1</td>
<td>NS</td>
</tr>
</tbody>
</table>
15. Ventricular Assist Devices or Inotropes in Status IA Patients Awaiting Heart Transplantation: Post-Transplant Survival Analysis of the UNOS Database

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Authors: Curtis J. Wozniak¹, *Howard Song², Bradley Baird¹, Josef Stehlik¹, Craig Selzman¹

Author Institution(s): ¹University of Utah, Salt Lake City, UT; ²Oregon Health Sciences University, Portland, OR

Discussant: Simon Maltais, Vanderbilt University, Nashville, TN

Objectives: Because of both improved outcomes as well as lack of donor hearts, ventricular assist devices (VAD) have increasingly been utilized as a bridge to transplant, rather than continuous inotropes. Yet, many question the fairness of giving stable VAD patients 30-days of status IA time in lieu of similar IA patients on medical therapy. As such, we sought to determine the influence of VAD versus inotrope therapy on post-transplant survival among United Network of Organ Sharing (UNOS) Status 1A patients.

Methods: The UNOS database was analyzed for adult patients between 1998-2008 listed as Status 1A who either received VAD (n=1817) or inotrope therapy (n=2136). Adjusted survival was calculated using Cox proportional hazards analysis both before and after 2005 to account for increased use of continuous flow devices.

Results: Status IA VAD patients had a higher frequency of prior cardiac surgery and longer ischemic times. Adjusted one-year post-transplant risk of death was higher among VAD patients (HR 1.43, CI 1.19-1.73, p=0.0002). Ten year risk of death remained higher among VAD patients (HR 1.16, CI 1.09-1.334, p=0.037). Pre-2005 one-year risk of death was higher in VAD patients compared to inotropes (HR 1.6, CI 1.22-2.1, p=0.0007). Although the risk of death diminished post-2005, VAD patients had a persistently higher one-year risk of death compared to the inotrope group (HR 1.35, CI 1.029-1.78, p=0.03).

Conclusions: Status IA VAD patients had decreased post-transplant survival compared to Status IA patients receiving inotropes. This observation is associated with an increased perioperative mortality, likely due to prior cardiac surgery, presence of biventricular support, and longer ischemic times. While VAD survival improved in the contemporary era, this was matched by a corresponding increase in survival in the inotrope group. These data will prove useful in conversations regarding donor heart allocation.
16. Routine Intraoperative Frozen Section Analysis Of Bronchial Margins is of Limited Utility in Lung Cancer Resection

*STSA Member D Relationship Disclosure

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Authors: Rachel M. Owen1, *Seth D. Force1, Paul L. Feingold1, *Allan Pickens1, *Daniel L. Miller1, *Felix Fernandez1

Author Institution(s): 1Emory University, Atlanta, GA

Discussant: *Chadrick E. Denlinger, Medical University of South Carolina, Charleston, SC

Objectives: Residual disease at the bronchial margin following resection of non-small cell lung cancer (NSCLC) adversely impacts survival. To ensure an R0 resection, thoracic surgeons frequently utilize intraoperative frozen section (FS) analysis of the specimen’s bronchial margin. We hypothesize that FS of the bronchial margin is rarely positive, seldom changes intraoperative management, and should be utilized selectively.

Methods: Our institutional STS database was queried for all patients undergoing lobectomy for NSCLC from 2009 to 2011. Clinical variables, intraoperative data, and postoperative outcomes were reviewed. Specifically, intraoperative FS and final pathology results of all bronchial margins were examined. The frequency that FS results impacted intraoperative decision making was further evaluated.

Results: 287 lobectomies for NSCLC were performed. 196 (68.3%) cases were VATS. Patient and tumor characteristics are shown in the Table. FS analysis of the bronchial margin was performed in 271 (94.4%) cases. There were six (2.1%) true positive bronchial margins and one (0.3%) false negative. All patients with positive bronchial margins had nodal metastases. In no cases did a positive FS lead to a change in operative management; reasons included: patient being unable to tolerate further resection (3), stage IV disease (2), and emergent procedure (1). Positive margins were more frequent with an open technique (open 7% vs VATS 0.05%; p<0.01). Tumors with a positive margin were closer to the bronchial margin (1.0 vs 2.5 cm; p=0.04). FS was not utilized in 19 (6.6%) cases and none of these patients had positive margins on final pathology.

Conclusions: FS analysis of the bronchial margin rarely yields a positive result and infrequently changes intraoperative management in cases of NSCLC resection. Furthermore, FS analysis adds additional time and cost to an operation. We advise that intraoperative FS analysis of the bronchial margin should be utilized selectively.

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years), mean (SD)</td>
<td>65.6 (10.29)</td>
</tr>
<tr>
<td>Race</td>
<td>227 (78.82)</td>
</tr>
<tr>
<td>ASA Class</td>
<td>19 (6.62)</td>
</tr>
<tr>
<td>Class 3</td>
<td>238 (82.93)</td>
</tr>
<tr>
<td>Class 4</td>
<td>30 (10.65)</td>
</tr>
<tr>
<td>Smoking Status</td>
<td>43 (14.98)</td>
</tr>
<tr>
<td>Never Smoker</td>
<td>67 (23.34)</td>
</tr>
<tr>
<td>Prior Smoker</td>
<td>177 (61.67)</td>
</tr>
<tr>
<td>Preoperative Chemotherapy</td>
<td>30 (10.65)</td>
</tr>
<tr>
<td>Preoperative Radiation</td>
<td>18 (6.27)</td>
</tr>
</tbody>
</table>

Tumor Characteristics

<table>
<thead>
<tr>
<th>Tumor Characteristics</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (cm), mean (SD)</td>
<td>3.5 (2.27)</td>
</tr>
<tr>
<td>Distance from Bronchial Margin (cm), mean (SD)</td>
<td>2.35 (2.12)</td>
</tr>
</tbody>
</table>

Biology

| Adenocarcinoma         | 166 (57.34) |
| Squamous Cell          | 78 (27.18) |
| Ciliated               | 15 (5.25) |
| Neuroendocrine         | 9 (3.14) |
| Pleomorphic            | 4 (1.39) |
| Other NSCLC            | 15 (5.25) |

TNM Stage

| IA                     | 87 (30.31) |
| IB                     | 80 (27.87) |
| II                    | 45 (15.68) |
| III                    | 18 (6.41) |
| IV                     | 38 (13.24) |
| V                     | 4 (1.39) |
| VI                     | 6 (2.09) |

* stopped smoking &gt;1 month prior to surgery;
** only recorded in 153 cases;
ASA: American Society of Anesthesiologists;
NSCLC: Non-small cell lung cancer

NOTES:
17. Re-Operation Following Arterial Switch: A 27-Year Experience

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Authors: Harold M. Burkhart\textsuperscript{1}, Vijayakumar Raju\textsuperscript{1}, Lucian A. Durham\textsuperscript{1}, Benjamin W. Eidem\textsuperscript{1}, Sabrina D. Philips\textsuperscript{1}, Zhuo Li\textsuperscript{1}, Chenhui Hu\textsuperscript{1}, Hartzell V. Schaff\textsuperscript{1}, Joseph Dearani\textsuperscript{1}

Author Institution(s): \textsuperscript{1}Mayo School of Graduate Medical Education, Rochester, MN

Discussant: *Joseph Forbess, University of Texas Southernwestern Medical Center, Dallas, TX

Objectives: The long-term outcome for arterial switch operation (ASO) has not been fully defined. We reviewed our institutional experience with reoperations following ASO.

Methods: From January 1984 to January 2012, 32 patients (males = 23) underwent re-operation after ASO. Anatomy included D-TGA with intact ventricular septum in 14 patients, with VSD in 14 patients, and Taussig-Bing in 4 patients. During this time, 182 ASO were performed at our institution with 20 requiring reoperation (11%) and 12 were referred for reoperation. The mean age at first re-operation was 6.7 ±1.4 years (range, three days to 24 years). 65.6% (n=21) presented with multiple lesion during first re-operation. Indications for first re-operation were pulmonary artery (PA) pathology in 26 (81%), neoaortic pathology in ten (31%), coronary artery pathology in three (9%), and a combination of procedures were performed in five patients. Fifteen patients (47%) required multiple re-operation.

Results: First re-operations included PA patch in 19 (transannular patch in six), aortic valve surgery in eight (four valve replacements, three root replacements, and one repair), CABG in three, mitral repair in three, and pulmonary valve replacement in one. Patients requiring PA reconstruction presented earlier than those requiring neoaortic intervention (5.4±6.8 years vs. 13.8±7.7 years). There were two early deaths (6.2%). One patient died of sepsis and due to cardiac shock in other. The median follow up was 4.5 years (maximum, 24 years). There were no late deaths. All patients were in NYHA class 1 or 2. Freedom from re-operation at one, five, and 15 years was 88, 78, and 41%, respectively. Among the multiple re-operation, PA and neoaortic reintervention was performed in ten and two patients, respectively.

Conclusions: The most common indication for re-operation following ASO operation is pulmonary artery pathology followed by neoaortic root pathology. Patient needing PA intervention usually present earlier than those needing neoaortic surgery. A small subset require further re-operation, particularly on the pulmonary arteries.
18. A Comparison of Integrated Six-Year Curricula to Traditional Programs: More Thoracic, Similar Cardiac

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Author Institution(s): 1Northwestern University, Chicago, IL; 2University of Rochester, Rochester, NY; 3University of California, Los Angeles, Los Angeles, CA; 4University of Texas Health Science Center, San Antonio, TX; 5Medical University of South Carolina, Charleston, SC; 6University of Washington, Seattle, WA; 7University of Colorado, Aurora, CO

Discussant: *Stephen Yang, Johns Hopkins Medical Institutions, Baltimore, MD*

Objectives: Compare curricula of integrated thoracic surgery training programs (IP) to traditional two-year (T2) and three-year (T3) programs.

Methods: We requested training rotation schedules from all American Board of Thoracic Surgery eligible residency programs. Responses were obtained from 13/15 IP (87%), 24/39 T2 (62%), and 18/25 T3 (72%). The median duration of training in months (mo) were compared in the various core components (adult cardiac, thoracic, combined cardiothoracic (CT), congenital) and in “other” non-surgical rotations (Intensive Care Unit, Cardiac Catheterization, Imaging). Unspecified T2 and T3 without a designated pathway (n=23) were compared to IP programs (n=12) using paired T tests. T2 and T3 with designated adult cardiac (AC) and general thoracic (GT) pathways were analyzed separately (n=11, n=8 respectively).

Results: Figure 1. In IP, more time is spent on thoracic when compared to unspecified T2 and T3 (p = .005). Similar time is spent on adult cardiac between programs with a trend toward more time in IP and T3 (p=.068). IP spent more time on CT than unspecified T2 and T3 (p=.038).

Table 1. IP spent more time on thoracic than T2 and T3 dedicated AC pathways (p <.001), but similar time on adult cardiac (p=.0528). However, when compared to dedicated GT pathways, IP spent less time on thoracic (p = .062) and more time on cardiac (p=.031). IP spend more time on congenital, combined cardiothoracic, and non-surgical rotations than all traditional pathways.

Conclusions: More time is spent on non-surgical rotations in IP than in traditional training programs; this may produce a need for alternative technical skills training and assessment. Although more exposure occurs to thoracic in the IP overall, there is a disparity compared to the T3 GT pathway; this may produce a need for future curriculum reform for advanced thoracic training.
19. The Impact of Internal Mammary Artery Harvesting on Antibiotic Penetration Into Presternal Subcutaneous Tissue During Cardiac Surgery

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Authors: Martin Andreas¹, Markus Zeitlinger¹, Thomas Henrich¹, Daniel Zimpfer¹, Jörg-Michael Hiesmayr¹, *Guenther Laufer¹, Doris Hutschala¹

Author Institution(s): ¹Medical University of Vienna, Vienna, Austria

Objectives: Internal mammary artery (IMA) harvesting for coronary artery bypass grafting (CABG) influences tissue perfusion and represents a risk factor for deep sternal wound infections. Cephalosporins are routinely administered during cardiac surgery to decrease perioperative wound infections. We hypothesized that IMA preparation impairs antibiotic penetration into presternal tissue during surgery.

Methods: Eight patients undergoing skeletonized left IMA harvesting for CABG were included after informed consent. Standard antibiotic prophylaxis was administered: 4g of Cefazolin prior to skin incision and additional 2g during skin closure. Antibiotic concentrations in the presternal subcutaneous tissue right and left of the sternal midline and on the thigh were measured by microdialysis for ten hours and compared to each other and to plasma concentrations.

Results: Peak tissue concentration and area under the curve (AUC) on the left sternal side were significantly reduced compared to the right side and compared to the thigh (peak concentration: 13.1±3.9 vs. 24.1±4.1 and 27.8±6 µg/mL; p=0.018 and p<0.001; AUC: 74.2±35.2 vs. 110.4±27.8 and 140.3±45.3 µg/h/mL; p=0.0034 and p<0.001). Subcutaneous concentrations of Cefazolin in left sternal side exceeded the minimal inhibiting concentration (MIC90) of Staphylococcus aureus only over approximately 5±0.5 hours.

Conclusions: Internal mammary artery harvesting significantly impairs local antibiotic penetration during cardiac surgery. A continuous protection against Staphylococcus aureus could not be granted in all subjects perioperatively. Advanced antibiotic dosing schemas should be re-evaluated in this surgical setting.
20. Multiple Aortic Cross Clamp Applications in Selected Patients Do Not Affect Neurocognitive or Stroke Outcomes in CABG

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Authors: *T. B. Reece¹, Robert Hawkins¹, Joseph F. Collins², Annie Shroyer², Elizabeth Kazora², Janet H. Baltz², Brack Hattler², *Frederick L. Grover¹, Joseph C. Cleveland¹

Author Institution(s): ¹University of Colorado, Denver, CO; ²Department of Veterans Affairs, Denver, CO

Objectives: Multiple applications of an aortic cross clamp are thought by many surgeons to increase the risk of stroke and to adversely affect neurological function following cardiac surgery. However, contemporary evaluation of the ascending aorta may determine which patients will tolerate the additional partial occlusion clamping for proximal anastomosis. We hypothesized that with thoughtful evaluation of the aorta, multiple cross clamp applications can be tolerated in patients without adverse neurological sequelae.

Methods: From the on bypass arm of the ROOBY study, 645 patients underwent a single cross clamp and 375 had the addition of one or more partial occlusion clamps. The groups were similar based on predictive markers of neurological complications including age, diabetes, extent of education, previous history of atrial fibrillation, previous history of stroke, and neurocognitive testing. The ascending aorta was evaluated using a variety of techniques including palpation, TEE, and epiaortic ultrasound. Comparison focused on stroke and neurocognitive results, but also included nonfatal myocardial infarction and mortality.

Results: No differences were found in perioperative or 12-month mortality or myocardial infarction. Single clamp patients had a slightly higher likelihood of being deemed a poor aorta compared to the multiple cross clamp group 3.3% vs. 2.4% (p=NS). There was no significant difference in stroke between the single and multiple clamps (single 1.1% vs. multiple 0.3%, p=0.3). Neurocognitive outcomes were similar on ten separate neurocognitive tests and in the summarized global Z score (p=0.4).

Conclusions: Multiple applications of an aortic cross clamp during CABG did not increase the risk of stroke or impair the neuropsychological outcomes. Careful evaluation of the ascending aorta allows for the safe utilization of multiple cross clamps, which should reduce ischemic time without increased risk of postoperative neurological dysfunction.
21. Does Mitral Valve Repair Offer an Incremental Advantage Over Mitral Replacement in Patients Undergoing Aortic Valve Replacement?

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Authors: D*Vinod H. Thourani, Rakesh M. Suri, *J. Scott Rankin, Xia He, Sean M. O’Brien, Christina Vassileva, *James Gammie

Author Institution(s): 1Emory University, Atlanta, GA; 2Mayo Clinic, Rochester, MN; 3University of Maryland, Baltimore, MD; 4Vanderbilt University, Nashville, TN; 5Southern Illinois University, Springfield, IL; 6Duke Clinical Research Institute, Durham, NC

Objectives: Concomitant aortic (AV) and mitral valve (MV) operations have more than doubled over the past 15 years. Whether the potential benefits of MV repair outweigh the risk of an additional crossclamp remains uncertain. We utilized the STS Adult Cardiac Surgery Database (STS ACSD) to evaluate outcomes for patients undergoing combined AV replacement (AVR) and MV operation.

Methods: From 1993 to 2007, 23,404 patients undergoing concomitant AVR and MV surgery were identified in the STS ACSD. Patients with mitral stenosis, emergent status, and endocarditis were excluded. Unadjusted operative mortality, adjusted odds ratio (OR) for mortality, and a composite of mortality and major complications are reported. Logistic regression analysis adjusted for differences in patient profiles.

Results: MV Repair was performed in 46.0% (10,765/23,404) and Replacement in 54.0% (12,639/23,404) of AVR patients. The rate of MV repair increased from 22.5% (105/467) in 1993 to 59.1% (2883/4872) in 2007 (p<0.0001). Compared to the AVR+MV Replacement group, the AVR+MV Repair group was older (69.7±11.5 yrs vs. 67.2±11.7 years, p<0.0001), had worse EF (44.9±15.3% vs. 49.5±13.9%, p<0.0001), a higher incidence of an EF<35% (23.9% vs. 12.6%, p<0.0001), and concomitant CABG (50.5% vs. 40.9%, p<0.0001). Operative mortality was lower in the AVR+MV Repair group (8.2% vs. 11.6%, p<0.0001) (Table 1). Independent predictors of operative mortality by multivariable analysis included: age (OR 1.21, p<0.0001), concomitant CABG (OR 1.49, p<0.0001), DI (OR 1.56, p<0.0001), cardiogenic shock (OR 1.82, p=0.001), reoperation (OR 1.53, p<0.0001), and renal failure with or without dialysis (OR 3.57 and 1.90, both p<0.0001). Patients undergoing MV Repair had a lower independent risk of operative mortality compared to MV Replacement (OR 0.61, p<0.0001).

Conclusions: MV Repair has improved early outcomes and is the preferred method of correcting MR at the time of concomitant AVR and MV surgery. Continued efforts to improve MV repair rates in this setting seem warranted.

<table>
<thead>
<tr>
<th>Variable</th>
<th>All Pts (n=23,404)</th>
<th>AVR+MV Replacement (n=12,639)</th>
<th>AVR+MV Repair (n=10,765)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operative Mortality</td>
<td>2567 (10.9%)</td>
<td>1470 (11.6%)</td>
<td>877 (9.2%)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Any Non-Cardiac Event</td>
<td>1279 (5.5%)</td>
<td>728 (5.8%)</td>
<td>551 (5.1%)</td>
<td>0.03</td>
</tr>
<tr>
<td>Prolonged ventilation</td>
<td>299 (1.1%)</td>
<td>1456 (11.5%)</td>
<td>1137 (10.8%)</td>
<td>0.02</td>
</tr>
<tr>
<td>Deep Sternal Wound Intra</td>
<td>179 (0.8%)</td>
<td>98 (0.8%)</td>
<td>81 (0.8%)</td>
<td>0.90</td>
</tr>
<tr>
<td>MSOF</td>
<td>787 (3.3%)</td>
<td>460 (3.6%)</td>
<td>327 (3.0%)</td>
<td>0.01</td>
</tr>
<tr>
<td>Composite mortality and major morbidity</td>
<td>1379 (3.2%)</td>
<td>421 (3.3%)</td>
<td>318 (3.0%)</td>
<td>0.0001</td>
</tr>
</tbody>
</table>
22. Irrigated Radiofrequency Cox-MAZE IV is Effective for Persistent Atrial Fibrillation During Concomitant Mitral Surgery: A Prospective Multicenter Experience From The CURE-AF Trial

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Authors: D*Vinay Badhwar1, D*Ralph J. Damiano2, DMichael A. Acker3, DRamesh S. Veeragandham4, D*Thoralf M. Sundt5

Author Institution(s): 1University of Pittsburgh Medical Center, Pittsburgh, PA; 2Washington University School of Medicine, St. Louis, MO; 3University of Pennsylvania, Philadelphia, PA; 4John Muir Medical Center, Walnut Creek, CA; 5Massachusetts General Hospital, Boston, MA

Objectives: Variations of MAZE technique during concomitant mitral surgery leads to variable results. Our goal was to examine the outcomes of a standardized Cox-MAZE IV lesion set utilizing irrigated radiofrequency (RF) for the treatment of persistent atrial fibrillation (AF) during concomitant mitral operations.

Methods: From May 2007 to July 2011, 150 consecutive patients undergoing RF MAZE during concomitant cardiac operations at 15 U.S. centers were prospectively followed. Seventy-three patients with persistent or longstanding persistent AF undergoing isolated mitral surgery, with or without concomitant tricuspid repair, formed this study cohort. Safety was assessed by major adverse cardiac events (MACE) within 30 days. Efficacy was assessed at a nine month endpoint by 24-hour Holter with recurrent AF defined as any episode of atrial tachyarrhythmias > 30 seconds. All patients underwent a standardized biatrial Cox-Maze IV lesion set with pulmonary vein isolation confirmed by exit block.

Results: Cohort demographics are presented in Table 1. Mean follow-up was 2.0 ± 1.0 years (range 0.8-5.0). Operative mortality as well as 30-day MACE was 1.4% (1/73), both in one patient with a pulmonary embolus. Survival during follow-up was 94.5% (69/73). The five-year actuarial survival was 95.1%. Of the 73 subjects, 62 had evaluable Holters at endpoint (six declined, three medically unavailable, one lost to follow-up). The overall freedom from AF was 74.2% (46/62), 66.1% (41/62) off all Class I/III antiarrhythmics. Outcomes for persistent AF were superior to longstanding persistent AF [91.7% (11/12) vs. 70.0% (35/50)]. Outcomes stratified by left atrial (LA) diameter < 5.5 cm were superior to those with LA ≥ 5.5 cm [69.2% vs. 57.1%].

Conclusions: The biatrial Cox-MAZE IV lesion set can be performed with adjunctive irrigated RF at low risk providing effective treatment of persistent and longstanding persistent AF during mitral operations.

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (years)</td>
<td>68.3 ± 10.4 (range 41-87)</td>
</tr>
<tr>
<td>Ejection Fraction (%)</td>
<td>50.4 ± 9.5 (range 30-70)</td>
</tr>
<tr>
<td>Left atrial diameter (cm)</td>
<td>5.3 ± 0.1 (range 3.0-9.4)</td>
</tr>
<tr>
<td>Male</td>
<td>42.9% (31/73)</td>
</tr>
<tr>
<td>NYHA Class &gt; II</td>
<td>65.9% (46/71)</td>
</tr>
<tr>
<td>Mitrval Valve Repair</td>
<td>65.9% (46/71)</td>
</tr>
<tr>
<td>Mitral Valve Replacement</td>
<td>34.2% (25/73)</td>
</tr>
<tr>
<td>Tricuspid Annuloplasty</td>
<td>38.4% (28/73)</td>
</tr>
<tr>
<td>Persistent AF</td>
<td>80.9% (97/12)</td>
</tr>
<tr>
<td>Longstanding Persistent AF</td>
<td>69.2% (23/33)</td>
</tr>
<tr>
<td>AF duration (months)</td>
<td>63.6 ± 63.7 (range 0.0-298.3, median 36.3)</td>
</tr>
<tr>
<td>Persistent</td>
<td>35.8 ± 10.3 (range 0.0-10.3, median 7.2)</td>
</tr>
<tr>
<td>Longstanding Persistent AF</td>
<td>77.8 ± 62.9 (range 0.0-298.3, median 46.2)</td>
</tr>
</tbody>
</table>

*STSA Member  D Relationship Disclosure
23. CAPE: A Simple Model for Predicting Operative Mortality in Endocarditis

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Authors: William A. Teeter¹, Brock Hansen¹, Clinton Smithson¹, Colby Ayers¹, *Michael Jessen¹, Nick Dobrilovic¹, Brad Hirsch¹, *Dan Meyer¹, *Matthias Peltz¹, *Michael Wait¹, *J. Michael DiMaio¹

Author Institution(s): ¹University of Texas Southwestern Medical Center, Dallas, TX

Objectives: Infective endocarditis (IE) is a relatively rare, but high-risk pathology especially when the patient requires surgical intervention. Recently, several models were developed to predict outcomes of these patients with limited success or great complexity. We sought to develop a simple model which reliably predicts operative mortality in our patient population.

Methods: We performed a comprehensive retrospective review of our center’s operative IE experience over a 21-year period from 1990 to 2011 (n = 326). We gathered data on perioperative clinical characteristics, including mortality and morbidity, in order to construct a logistic regression with operative mortality as the outcome.

Results: Operative mortality in our patient population was 14%. Stepwise logistic regression yielded the following significant risk factors for operative mortality: renal creatinine > 2.0 pre-operatively, active endocarditis, prior valve surgery, and emergent/urgent procedure status (Fig 1). This model was well discriminated (c-statistic = 0.764) and well calibrated (Hosmer and Lemeshow Coefficient = 0.673). Our CAPE model yields similar results in our population to more complex model based on a national database (p = 0.786 for difference).

Conclusions: We have identified a very simple, well calibrated, and discriminative model which is predictive of operative mortality in endocarditis.

CAPE Model for Operative Mortality in Endocarditis

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>Standard Error</th>
<th>χ²</th>
<th>p-value</th>
<th>Post Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-3.182</td>
<td>0.515</td>
<td>38.738</td>
<td>&lt;0.001</td>
<td>3.261 (1.591, 6.684)</td>
</tr>
<tr>
<td>Renal C &gt; 2.0</td>
<td>1.182</td>
<td>0.366</td>
<td>10.426</td>
<td>0.001</td>
<td>3.261 (1.591, 6.684)</td>
</tr>
<tr>
<td>Active Endocarditis</td>
<td>1.533</td>
<td>0.512</td>
<td>8.966</td>
<td>0.003</td>
<td>4.633 (1.698, 12.638)</td>
</tr>
<tr>
<td>Prior Valve Surgery</td>
<td>1.084</td>
<td>0.286</td>
<td>7.900</td>
<td>0.005</td>
<td>2.955 (1.389, 6.297)</td>
</tr>
<tr>
<td>Emergent or Urgent Procedure</td>
<td>0.983</td>
<td>0.355</td>
<td>7.668</td>
<td>0.006</td>
<td>0.374 (0.187, 0.75)</td>
</tr>
</tbody>
</table>

C-statistic = 0.764; Hosmer and Lemeshow Coefficient p = 0.6737

NOTES:
24. Effects of Gender, Race, Socioeconomic Status, and Primary Payer Type on Treatment Allocation for Mitral Repair Versus Replacement: A Propensity Analysis

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Authors: Damien J. LaPar1, *Christine L. Lau1, *John A. Kern1, *Irving L. Kron1, *Gorav Ailawadi1

Author Institution(s): 1University of Virginia, Charlottesville, VA

Objectives: Mitral valve repair has become largely favored over replacement for mitral valve disease. Little is known regarding demographic patient factors that increase the likelihood of mitral repair versus replacement. The purpose of this study was to examine the influence of patient gender, race, socioeconomic status (SES), and primary payer type on the likelihood of performance of repair or replacement.

Methods: Weighted patient discharge records for 37,967 patients undergoing either isolated mitral valve repair (MVP: 19,016) or replacement (MVR: 18,951) were evaluated in the 2008 Nationwide Inpatient Sample. Univariate analyses (Table) and hierarchical multiple regression propensity modeling was utilized to assess associations between patient factors and surgical treatment allocation.

Results: Mean patient age was 64±15 years for MVR and 63±16 years for MVP (p=0.002), and females more commonly underwent MVR (59% vs. 41%, p=<0.001). Among race groups, MVP was slightly more common among Whites (51%), while MVR was more common among Black (58%) and Hispanic (57%) populations. Among SES groups, MVP was performed more commonly among the highest mean income quartile (54%), and MVR was more commonly performed among the lowest income quartile (53%). Similarly, patients with private insurance more commonly underwent MVP (58%), while MVR was more common among those with government based insurance (Medicare: 53% and Medicaid: 59%). Importantly, after multiple regression propensity modeling, gender (p<0.001), race (p=0.002) and primary payer type (p=0.01) were all independently associated with surgical treatment allocation.

Conclusions: Female gender, Black and Hispanic race, and government based payer type increase the likelihood for mitral valve replacement. Possible explanations for these differences include delays in access to care, disparate differences in health maintenance, or differing disease pathologies.
25. Pyloric Botulinum Injection Increases Postoperative Esophagectomy Complications

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Authors: Shady Eldaif¹, Richard Lee¹, Kumari Adams¹, Theresa Luu¹, *Felix Fernandez¹, D*Allan Pickens¹, *Seth D. Force¹, D*Daniel L. Miller¹

Author Institution(s): ¹Emory University, Atlanta, GA

Objectives: Pyloric botulinum toxin injection has emerged as a possible alternative to standard pyloric drainage procedures. Sufficient data is lacking showing its effectiveness. The purpose of this review is to compare the postoperative results in patients who received botulinum injection versus a pyloromyotomy or pyloroplasty with an esophageal resection.

Methods: We performed a retrospective review of a prospective database for all patients who underwent an esophageal resection from 2005 through 2010. Three hundred and twenty-two patients were divided into three groups for analysis: Botulinum injection (78), Pyloromyotomy (45) and Pyloroplasty (199). We compared these groups with respect to procedure duration, delayed gastric emptying, requirement of anastomotic or pyloric dilatation, use of postoperative promotility agents, and postoperative symptoms of reflux and dumping at six months of follow up.

Results: Patients receiving botulinum experienced similar delayed gastric emptying when compared to pyloromyotomy and pyloroplasty patients, respectively (16% vs. 5% and 13%, p=0.14). Mean drainage procedure time was significantly shorter for the botulinum group (3 min vs. 12 min and 35 min, p<0.001). However, more botulinum patients required anastomotic dilatation (41% vs. 22% and 14%, p<0.001), pyloric dilatation (22% vs. 4% and 2%, p<0.001), experienced postoperative reflux symptoms (32% vs. 12% and 13%, p=0.001) and used promotility agents (22% vs. 5% and 15%, p=0.04). There was no statistical difference between the groups in regards to postoperative dumping.

Conclusions: Use of pyloric botulinum injection significantly decreased operative time. Unfortunately, botulinum injections lead to an increased use of promotility agents, requirement for postoperative endoscopic interventions and no reduction in postoperative reflux and dumping symptoms. Pyloric botulinum injection should not be used as an alternative to standard drainage procedures with esophagectomy.
26. The Efficacy of EBUS-Guided Transbronchial Aspirate for Molecular Testing in Lung Adenocarcinoma

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Authors: Julissa E. Jurado1, William A. Bulman1, Roger Maxfield1, Anjali Saqi1, Matthew Lavelle1, Alexis Newmark1, Matthew Bacchetta1, Mark E. Ginsburg1, Lyall Gorenstein1, Frank D’Ovidio1, DJoshua R. Sonett1

Author Institution(s): 1Columbia University Medical Center - New York Presbyterian Hospital, New York, NY

Objectives: The purpose of the study was to review the accuracy of obtaining adequate cytological specimen via endobronchial ultrasound (EBUS)-guided transbronchial needle aspiration (TBNA) for molecular testing in lung adenocarcinoma.

Methods: This was an IRB-approved study of prospectively collected data in all patients who had undergone an EBUS-guided TBNA from April 2010 through March 2012. Patients with a diagnosis of adenocarcinoma were reflexively tested for known molecular markers via polymerase chain reaction, sequencing and fluorescence in situ hybridization. All procedures were performed under conscious sedation in the bronchoscopy suite.

Results: Of 199 patients having an EBUS procedure, 53 patients (24 male, 29 female) had a diagnosis of adenocarcinoma warranting molecular analysis. Molecular analysis was completed for Epidermal Growth Factor Receptor (EGFR), Kirsten rat sarcoma (Kras) mutation and anaplastic lymphoma kinase (ALK) gene mutation. The institution’s protocol assesses EGFR as the first marker with a reflex Kras test for all negative EGFR samples. ALK molecular testing is completed if both EGFR and Kras tests are negative. A total of 48 (91%) of the patients had sufficient cytological material for molecular testing.

All patients had sampling of at least one nodal station with the most common being the paratracheal nodes n = 26 (49%). A total of 14 (26%) patients had two nodal stations biopsied with the second most common being the subcarinal nodes n = 22 (42%). The EGFR analysis yielded a positive result in six (14%) patients. Kras was positive in ten (36%) patients and ALK was positive in five (14%) patients. There were no complications associated with EBUS-TBNA.

Conclusions: EBUS fine needle aspiration can be expected to yield sufficient tissue for full molecular analysis using conscious sedation. EBUS can be effectively used in clinical practice for complete diagnosis, staging and treatment planning with biologic agents.
27. Characteristics and Outcomes of Patients With Esophageal High-Grade Dysplasia or Intramucosal Carcinoma Who Have Failed Endoscopic Therapy

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Authors: Ben M. Hunt, Brian E. Louie, Ralph W. Aye, Alexander S. Farivar, Drew B. Schembre, Anthony G. Bohorfoush

Author Institution(s): *Swedish Medical Center/Swedish Cancer Institute, Seattle, WA

Objectives: Endoscopic therapy (ablation +/- resection) for esophageal high-grade dysplasia (HGD) and/or intramucosal carcinoma (IMC) has demonstrated promising initial results. However, little is known about patients who have persistent or progressive disease despite endotherapy. We compared patients who had successful eradication of their disease with those who failed endotherapy to identify factors predictive of failure and the subsequent treatment outcomes.

Methods: Retrospective review from 2006-2012.

Results: Thirty-nine patients were treated. Nine patients failed due to progression/persistence of disease or recurrence of adenocarcinoma, and 30 patients had successful eradication of dysplasia and Barrett’s metaplasia. Both groups had high rates of long-segment Barrett’s with hiatal hernia. Patients who failed endotherapy were more likely to have HGD present on the index biopsy, nodules or ulcers, and multifocal dysplasia (Table 1).

Of the nine failures, six underwent esophagectomy, one preferred definitive chemoradiotherapy, one was medically unfit for surgery and has stable HGD, and one had endoscopic resection of the recurrent IMC. Seven patients had persistent dysplasia, and two patients had complete eradication of HGD only to recur with intramucosal carcinoma 12 and 24 months after eradication. Patients treated with resection were disease free at a mean of 18 months of follow-up.

Conclusions: Patients who failed endotherapy were more likely to have HGD present on the index biopsy, multifocal HGD, and nodules or ulcers in the Barrett’s segment. Esophagectomy should be considered earlier for patients with these characteristics who have persistent or progressive disease while undergoing endotherapy. Continued surveillance after complete eradication is mandatory. Even after failed endotherapy, early oncologic outcomes were favorable after definitive therapy.

Table 1: Characteristics of patients who had successful endotherapy compared with those who failed endotherapy

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Failed endotherapy n (%)</th>
<th>Successful endotherapy n (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nodular Barrett’s</td>
<td>7 (78%)</td>
<td>8 (27%)</td>
<td>0.03</td>
</tr>
<tr>
<td>Ulcerated Barrett’s</td>
<td>1 (11%)</td>
<td>5 (17%)</td>
<td>0.05</td>
</tr>
<tr>
<td>HGD present on index endoscopy</td>
<td>7 (78%)</td>
<td>0 (0%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Multifocal Dysplasia</td>
<td>8 (89%)</td>
<td>6 (20%)</td>
<td>0.0001</td>
</tr>
<tr>
<td>BMI</td>
<td>26</td>
<td>28</td>
<td>0.24</td>
</tr>
<tr>
<td>Male</td>
<td>3 (33%)</td>
<td>24 (80%)</td>
<td>0.15</td>
</tr>
<tr>
<td>Hiatal hernia</td>
<td>8 (89%)</td>
<td>24 (80%)</td>
<td>0.26</td>
</tr>
<tr>
<td>Long-segment Barrett’s</td>
<td>7 (78%)</td>
<td>13 (43%)</td>
<td>0.35</td>
</tr>
<tr>
<td># ER Sessions mean (range)</td>
<td>1.8 (0-5)</td>
<td>2.0 (0-4)</td>
<td>0.72</td>
</tr>
</tbody>
</table>

HGD: High-grade dysplasia. BMI: Body Mass Index. RFA: Radio-frequency ablation. ER: Endoscopic resection

NOTES:
28. Induction Chemoradiotherapy Versus Surgery Alone for Esophageal Cancer: Comparison of Perioperative and Postoperative Outcomes

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Authors: Matthew D. Taylor¹, Damien J. LaPar¹, John P. Davis¹, *Benjamin D. Kozower¹, *Christine L. Lau¹, *David R. Jones¹

Author Institution(s): ¹University of Virginia, Charlottesville, VA

Objectives: The impact of induction chemoradiation therapy on esophageal cancer remains controversial. The purpose of this study was to evaluate the comparative effectiveness of induction chemoradiation therapy on perioperative and postoperative outcomes in patients with esophageal cancer.

Methods: A retrospective study of a prospectively collected database uncovered 369 consecutive patients undergoing esophagectomies for esophageal cancer between 1999 and 2011 at a high-volume institution. Comparison cohorts were patients treated with induction chemoradiation followed by surgery or surgery only patients. Median follow-up was 592 days and was complete in 97% of patients. Propensity score analysis controlled for potential allocation-to-treatment bias and created matched groups. Multivariable logistic regression and the generalized linear model determined differences in outcomes.

Results: Clinical stage of patients in the study was as follows: Stage 0 and I- 29%, Stage II- 37%, Stage III- 34%. The majority (86%, 319/369) of patients had pretreatment endoscopic ultrasonography. Of the 369 patients, 180 (49%) patients received induction chemoradiation therapy and 53 (29%) achieved pathologic complete response. The propensity score model performed well to create matched groups (c-index=0.88). Number of lymph nodes sampled was not significantly different between groups (neoadjuvant group=12.9±0.67 versus surgery alone=14.8±0.64, p=0.06). Perioperative and postoperative outcomes are displayed in Table 1.

Conclusions: Induction chemoradiation therapy for esophageal cancer is associated with minimal perioperative and postoperative morbidity including increased need for postoperative transfusion, higher wound infection rate, and need for longer chest tube drainage. Despite this associated morbidity, chemoradiation therapy for clinically-defined node-positive esophageal cancer represents a safe regimen in the treatment armamentarium for esophageal cancer.

Table 1: Adjusted Effects of Perioperative Outcomes in Propensity Matched Groups

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Induction therapy vs. Surgery Alone</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intravenous RBC transfusion</td>
<td>OR 1.18</td>
<td>0.87 to 1.60</td>
<td>0.31</td>
</tr>
<tr>
<td>Postoperative RBC transfusion</td>
<td>OR 1.28</td>
<td>1.03 to 1.60</td>
<td>0.03</td>
</tr>
<tr>
<td>Post-operative anastomotic leak rate</td>
<td>OR 1.02</td>
<td>0.65 to 1.61</td>
<td>0.9</td>
</tr>
<tr>
<td>Urine leak</td>
<td>OR 1.03</td>
<td>0.25 to 4.11</td>
<td>0.97</td>
</tr>
<tr>
<td>Wound infection</td>
<td>OR 1.40</td>
<td>0.75 to 2.64</td>
<td>0.03</td>
</tr>
<tr>
<td>Total chest tube drainage (days)</td>
<td>Beta 2.47</td>
<td>1.04 to 5.94</td>
<td>0.001</td>
</tr>
<tr>
<td>Postoperative length of stay</td>
<td>Beta 0.90</td>
<td>-1.99 to 3.73</td>
<td>0.53</td>
</tr>
<tr>
<td>Readmission within 30 days of discharge</td>
<td>OR 1.74</td>
<td>0.80 to 3.78</td>
<td>0.56</td>
</tr>
<tr>
<td>30-day mortality</td>
<td>OR 1.15</td>
<td>0.65 to 2.02</td>
<td>0.64</td>
</tr>
</tbody>
</table>

Note: Effects were measured using multivariable logistic regression (Odds Ratio, OR) or the Generalized Linear Model (Beta). All effects are adjusted for the covariates in the propensity score model, including Zubrod status, clinical stage, age, creatinine, home oxygen use, and history of CHF, CAD, and pulmonary disease. The effects for patients in the primary resection group are referent to the induction therapy group.

NOTES:
29. Clinical Features, Prognostic Factors, and Outcomes of Primary Pulmonary Lymphoma

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Authors: Domenico Galetta1, Alessandro Borri1, Alessandro Pardolesi2, Monica Casiraghi1, Adele Tessitore1, Francesco Petrella1, Roberto Gasparri1, Lorenzo Spaggiari1

Author Institution(s): 1European Institute of Oncology, Milan, Italy

Objectives: Primary pulmonary lymphoma (PPL) is a rare neoplasm with a favorable prognosis. In order to assess clinical features, patient management, prognostic factors and outcomes, we report our single-institution experience.

Methods: A retrospective review of a prospective database of patients operated on for PPL between 1998 and 2011 was performed. Univariate and multivariate analysis was performed to identify prognostic factors. Survival was calculated by Kaplan-Meier method.

Results: There were 35 patients (18 men; median age, 59 years). Twenty-two patients had marginal zone B-cell lymphoma of mucosal-associated lymphoid tissue (MALT), five had large B-cell lymphoma, six had Hodgkin’s disease, and two had follicular lymphoma. Fourteen (40%) were asymptomatic at presentation, and 21 (60%) had pulmonary symptoms, systemic symptoms, or both. Radiological findings at CT scan included nodules, masses infiltrates or consolidation. Bilateral pulmonary lesions were detected in 12 patients. PET scan was performed in 28 patients (80%): in 16 cases it was negative, in 12 it showed a median standardized uptake value of 4.4. CT-guided biopsy was diagnostic in four of 15 attempts. A definitive diagnosis was obtained by thoracotomy in 28 patients (80% - one pneumonectomy, ten lobectomies, and 17 segmentectomies and wedge resections) and thoracoscopy in seven (20% - five pulmonary wedges and two lung biopsies). Treatments included surgery (n=14), surgery plus chemotherapy (n=18), surgery plus radiotherapy (n=2), and surgery plus chemotherapy plus radiotherapy (n=1). Median follow-up was 110 months (range, 2-322 months). Overall five-year and ten-year survival was 69% and 42.3%, respectively. Patients with MALT lymphoma had a best prognosis (p= 0.01). None of the prognostic factors studied significantly influenced survival.

Conclusions: PPL have non-specific clinical features. Surgery should be the treatment of choice in localized forms while a combination of treatment should be used for diffuse diseases.
30. Pneumonectomy for Non-malignant Disease

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Authors: Jeremiah Martin1, D* Victor Ferraris1, D* Sibu P. Saha1

Author Institution(s): 1 University of Kentucky, Lexington, KY

Objectives: Pneumonectomies done for non-malignant conditions are unusual. We wondered about the incidence, predisposing risks, and outcomes of this entity.

Methods: We interrogated the STS General Thoracic Surgery Database between 2006 and 2010 to determine etiologies, preoperative risk factors, and treatment outcomes of patients requiring pneumonectomy for non-malignant conditions.

Results: There were 309 out of 3081 patients (10%) who underwent pneumonectomy for non-malignant conditions. Patients having pneumonectomy for benign disease were younger (56 vs. 62 years), and were more likely to be on steroid therapy (11.3% vs. 2.7%), but were less likely to be current smokers (14.4% vs. 20.1%). Both groups had equal incidence of cardiac co-morbidities, diabetes, and COPD. Preoperative pulmonary function was decreased in patients with non-malignant conditions compared to those with malignancy (FEV1 = 76% of predicted for non-malignant vs. 86% of predicted for malignant; DLCO = 61% of predicted for non-malignant versus 71% for malignant conditions). The most common non-malignant etiologies requiring pneumonectomy included lung and pleural infections (Figure). Complications commonly associated with pneumonectomy were much more common in the non-malignant group (Table).

Conclusions: Approximately 10% of patients who have pneumonectomy do so for non-malignant disease. Patients undergoing pneumonectomy for non-malignant conditions have increased postoperative bleeding, infections, and lung-related complications. For patients undergoing pneumonectomy for non-malignant conditions, careful patient selection with detailed preoperative preparation including improvement in nutrition and functional status are indicated. Technical aspects of pneumonectomy that minimize perioperative bleeding, and infectious complications are particularly important when pneumonectomy is done for non-malignant conditions.
31. Tricuspid Valve Re-Repair in Ebstein Malformation Using the Cone Technique: Is It Possible?

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Authors: Sameh M. Said¹, Joseph Dearani¹, Harold M. Burkhart¹, Roxann D. Barnes¹, Patrick W. O’leary¹, Frank Cetta¹

Author Institution(s): ¹Mayo Clinic, Rochester, MN

Discussant: *Charles D. Fraser, Texas Children’s Hospital, Houston, TX

Objectives: Successful tricuspid repair for Ebstein malformation (EM) continues to be challenging for the surgeon. Cone repair has recently emerged as the most anatomic repair technique. There is no data on tricuspid re-repair in EM. We reviewed our experience with TV re-repair using cone technique for EM.

Methods: Between June 2007 and December 2011, 89 patients underwent cone repair for EM. Prior TV repair was performed in 14 patients (six female, 43%), and one of the 14 patients had two prior TV repairs. Median age was 15 years-old (range: four to 68 years-old). Three patients (21%) had prior bidirectional Glenn. Preoperative heart failure was present in four patients (29%). All patients had severe right ventricular (RV) enlargement and five (36%) had severe RV dysfunction. The mean TV displacement index was 19±11 mm. Mechanism of TR was incomplete leaflet coaptation with tethered (undelaminated) anterior leaflet in all patients; five patients had diminutive septal leaflet, and two patients had absent inferior leaflets. Prior operative notes demonstrated initial TV repair techniques to consist of anuloplasty maneuvers; there had been no or incomplete surgical delamination in all patients.

Results: TV re-repair using cone technique was possible in all patients after all available leaflet tissue was surgically delaminated. Plication of atrialized RV was done in five (36%). Modifications to the cone technique included: anuloplasty band in 11 patients (79%) and TV leaflet augmentation in six patients (43%). A bidirectional Glenn was performed in three patients (21%) and modified Cox-maze procedure in eight patients (57%). There were no early or late deaths and no reoperations. Mean follow-up was 7.5±3.6mos; during follow-up, 13 patients had no or mild TR and one patient had moderate TR.

Conclusions: TV re-repair in EM using the cone technique is feasible, particularly when there has been no surgical delamination at initial operation. Leaflet augmentation and use of an anuloplasty ring optimizes success of TV re-repair. Longer follow-up is required to assess durability.
32. Biventricular Conversion After Single Ventricle Palliation In Unbalanced Atrioventricular Canal Defects

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Authors: Meena Nathan1, Hua Liu1, Frank A. Pigula1, Francis Fynn-Thompson1, Sitaram Emani1, *Christopher Baird1, Gerald Marx1, *John E. Mayer1, Pedro del Nido1

Author Institution(s): 1Children’s Hospital Boston, Boston, MA

Discussant: *Pirooz Eghtesady, St. Louis Children’s Hospital, MO

Discussion Read By: *Umar Boston, St. Louis Children’s Hospital, St. Louis, MO

Objectives: Management of Unbalanced Complete Atrio Ventricular Canal (UCAVC) defect by a single ventricle approach frequently results in poor outcomes, especially in trisomy 21 patients. Outcome information after conversion from single ventricle palliation to a biventricular circulation in patients with failing single ventricle physiology is limited.

Methods: Retrospective review of patients with UCAVC undergoing biventricular conversion from prior single ventricle palliation between 2000 and 2011. Mortality and freedom from reinterventions were analyzed using non-parametric methods.

Results: Sixteen children with UCAVC (nine [56%] left dominant) underwent conversion to a two ventricle circulation between 2000 and 2011. Median follow up was 18 months (1-94). Surgical indications included worsening cyanosis, severe AVV Regurgitation, failing BDG/Fontan or failure to thrive. All patients had either unequal distribution of the common AVV of > 60% and/or one hypoplastic ventricle. By MRI/CT, seven right dominant AVC had median LVEDV of 31ml/m2 (22-35). Seven left dominant AVC, had median RVEDV of 42ml/m2 (26-86). Nine (56%) had Tri 21 and three (19%) had heterotaxy.

Stages of palliation included:
Stage I Norwood 2
Bidirectional Glenn 10
Hemifontan 2
Fontan 2.

There was one (6%) operative and no late deaths. Eight patients required reinterventions, three (19%) surgical (AVV repairsx3, subAS resectionx2, SVC augmentx1, pacemakerx1 ) and six (38%) catheter based (on RVOT, SVC, Atrial septum, collaterals, SVC, Coronary artery). On follow-up, all had improvement in cyanosis and symptoms.

Conclusions: Biventricular conversion from failing single ventricle palliation in UCAVC can be accomplished with a low early and late morbidity and mortality, although reoperation was not uncommon. This approach is a viable alternative to transplantation in this high risk group.
33. Liberal Use of Femoral Cutdown and Femoral Bypass in Adult Congenital Heart Surgery is Beneficial

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Authors: *Brian E. Kogon*, William Daniel, Katherine Fay, Wendy Book

Author Institution(s): 'Emory University, Atlanta, GA

Discussant: *Jeffrey Heinle, Texas Children’s Hospital, Houston, TX

Objectives: Adults with congenital heart disease frequently require repeat surgery. Oftentimes, unique anatomy can make re-operative sternotomy and the conduct of surgery challenging. The liberal use of femoral cutdown and femoral cardiopulmonary bypass is beneficial.

Methods: We studied 205 adult patients, who underwent re-operative cardiac surgery for congenital heart disease between 2006 and 2011. Based on prior operative history and three-dimensional preoperative imaging, an algorithm determined what femoral intervention was performed prior to sternal re-entry. Analyses were performed to determine the benefits of this strategy.

Algorithm:
If the immediate substernal space was clear, then patients underwent nothing or femoral arterial line placement; If occupied by the right atrium or ventricle, then femoral cutdown; If occupied by the aorta or right ventricular outflow tract (or history of prior challenging re-entry), then institution of femoral cardiopulmonary bypass.

Results: Prior to sternal re-entry, femoral cutdown alone was performed in 69 (34%) patients and femoral cardiopulmonary bypass in 43 (21%). Nineteen (9%) patients sustained a cardiac injury. Of these, 17 patients already had femoral cutdown /cardiopulmonary bypass already performed. Only two patients required urgent femoral cutdown/cannulation.

In addition to its use in patients for cardiac injury or facilitation of sternal re-entry, cannulation was used in 30 patients as a preferential site of venous (6), arterial (9), or veno-arterial cannulation (15) due to anatomic constraints within the chest cavity.

Three patients suffered groin complications (abscess, ischemia, fistula) requiring surgery.

Conclusions: Liberal use of femoral cutdown/cardiopulmonary bypass is beneficial to prevent catastrophic sternal re-entry and facilitate re-operative surgery in adult congenital cardiac surgery.

<table>
<thead>
<tr>
<th>Algorithm-Based Intervention and Outcome</th>
<th>Number of patients</th>
<th>Safe sternal re-entry</th>
<th>Cardiac Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>No femoral intervention</td>
<td>58</td>
<td>57</td>
<td>1</td>
</tr>
<tr>
<td>Femoral arterial line only</td>
<td>28</td>
<td>27</td>
<td>1</td>
</tr>
<tr>
<td>Femoral cutdown without CPB</td>
<td>69</td>
<td>61</td>
<td>8</td>
</tr>
<tr>
<td>Femoral cutdown with CPB</td>
<td>43</td>
<td>34</td>
<td>9</td>
</tr>
</tbody>
</table>

(CPB - cardiopulmonary bypass)

NOTES:
34. Surgery in Adults With Congenital Heart Disease: Risk Factors for Morbidity and Mortality

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**Authors:** *Brian E. Kogon*, Joanna Grudziak, Matthew Oster, Anurag Sahu, Maan Jokhadar, Michael McConnell, Wendy Book

**Author Institution(s):** 1Emory University, Atlanta, GA; 2Children’s Healthcare of Atlanta, Atlanta, GA

**Objectives:** Patients with congenital heart disease are frequently surviving into adulthood, and many of them will require surgery. Unfortunately, outcome data in this patient population are limited. We aimed to identify risk factors associated with adverse events in adults with congenital heart disease undergoing cardiac surgery and establish long-term survival data.

**Methods:** We retrospectively studied 458 adult patients, who underwent cardiac surgery for congenital heart disease between 2000 and 2010. We constructed logistic models to assess risk factors for mortality, major adverse event (stroke, renal failure, prolonged ventilation, prolonged coma, deep sternal infection, reoperation, and operative mortality), and prolonged length of stay (>7 days). Long-term, all-cause mortality was also measured.

**Results:** Sixteen patients died (3.49%). Risk factors for mortality included a history of cerebrovascular disease (OR: 4.51), NYHA class 3 or 4 (OR: 8.88), and surgery on the aorta or the aortic valve (OR: 5.74). Ninety-four patients suffered a major adverse event (20.5%). Significant risk factors were male gender (OR: 2.28), NYHA class of 3 or 4 (OR: 2.58), two concomitant major surgeries (OR: 2.15), and cardiopulmonary bypass time of >100 minutes (OR: 3.18). Lastly, 90 patients (19.7%) remained in the hospital longer than seven days. Significant risk factors for a prolonged length of stay included chronic lung disease (OR: 3.05), NYHA class of 3 or 4 (OR: 3.69), surgery by an adult cardiac surgeon (OR: 2.58), two concomitant major surgeries (OR: 3.28), and cardiopulmonary bypass time of >100 minutes (OR: 2.41). Survival at 1-, 5-, and 10 years was 97.6%, 95.2%, and 93.4% respectively.

**Conclusions:** Surgery in adults with congenital heart disease can be performed with low morbidity and mortality. Nonetheless, there remain important risk factors for adverse events. Awareness and modification of risk factors may help improve outcomes.
35. A Protocol Driven Approach to Cardiac Reoperations Reduces Mortality and Cardiac Injury at the Time of Resternotomy

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Authors: Damien J. LaPar¹, *Christine L. Lau¹, *Gorav Ailawadi¹, *John A. Kern¹, *Irving L. Kron¹

Author Institution(s): ¹University of Virginia, Charlottesville, VA

Objectives: Cardiac reoperations are increasingly more common, and injury upon resternotomy may increase operative mortality and morbidity. We hypothesized that a preoperative, protocol driven approach to cardiac reoperations would improve patient outcomes and reduce resternotomy injuries.

Methods: From 1995 to 2010, 946 cardiac reoperations were analyzed at a single institution. Patients were stratified into preoperative protocol (PP, n=344, age= 61±17 years) vs. non-protocol (NP, n=602, age=64±14 years) comparison groups. PP included use of preoperative computed tomography and placement of femoral access wires, no dissection of prior internal mammary artery (IMA) grafts, and initiation of cardiopulmonary bypass (CPB) prior to sternotomy for cases with high potential for aortic injury.

Results: PP patients underwent more complex reoperations (PP: 24% vs. NP: 15%, p<0.001). Initiation of CPB prior to sternotomy was similar between study groups (5% vs. 3%, p=0.07). Operative mortality was lower for PP patients (6% vs. 10%, p=0.04), and the use of PP was associated with a significantly reduced incidence of injury upon resternotomy (3% vs. 10%, p<0.001). Upon resternotomy, ventricular injuries were most common, followed by vein graft and IMA injuries (Table). Importantly, on multivariate analysis, PP was associated with a 70% reduction in risk-adjusted odds of resternotomy injury (AOR: 0.30, p=0.001), and prior valve operation was an independent risk factor for re-entry injury (AOR= 2.24, p=0.02).

Conclusions: A protocol driven approach to cardiac reoperations is associated with reduced cardiac injury upon resternotomy and decreased mortality. In an era of increasingly complex cardiac reoperations, the protocolized use of femoral wires and routine preoperative CT, no dissection of prior IMA grafts, and the early initiation of cardiopulmonary bypass prior to sternotomy for select cases should be considered to improve operative results and efficiency.
36. Results With Selective Preoperative Lumbar Drain Placement for Thoracic Endovascular Aortic Repair

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Authors: *Jennifer M. Hanna*, *Nicholas D. Andersen*, Hamza Aziz*, Elizabeth Scheer*, *Asad A. Shah*, *Richard L. McCann*, *G. Chad Hughes*

Author Institution(s): 'Duke University Medical Center, Durham, NC

Objectives: The utility of preoperative lumbar drain placement for prevention of spinal cord ischemia (SCI) with thoracic endovascular aortic repair (TEVAR) remains unclear. Here, we report our experience with selective preoperative lumbar drain use with TEVAR.

Methods: Between May 2002 and January 2012, 379 TEVAR procedures were performed at a single institution. Routine spinal cord management included neurophysiologic intraoperative monitoring with somatosensory and motor evoked potentials (283 cases monitored; 75%), and preoperative lumbar drain placement for patients at high-risk of SCI based on previously published risk factors (age, comorbidities, prior aortic interventions, planned extensive aortic coverage). Clinical or electrophysiologic evidence of SCI was treated by blood pressure augmentation, cerebrospinal fluid (CSF) drainage, and postoperative lumbar drain placement if not already present.

Results: A preoperative lumbar drain was placed in 79 (21%) patients. Twelve (15.2%) patients who received a preoperative lumbar drain experienced SCI (six [7.6%] transient, six [7.6%] permanent), whereas 12 (4.0%) patients who did not receive a preoperative lumbar drain experienced SCI (11 [3.7%] transient, one [0.3%] permanent). Independent risk factors for SCI included age and the number of endografts implanted. Preoperative lumbar drain placement was not associated with reduced SCI after adjustment for these risk factors (Table). Nine (11.0%) patients experienced a lumbar drain complication: spinal headache in five, puncture site bleeding or CSF drainage in two, and clinically-silent subdural hematoma in two.

Conclusions: Restricted use of preoperative lumbar drains for patients at high-risk of SCI undergoing TEVAR appears safe and leads to low rates of SCI in non-drained patients. However, the utility of preoperative lumbar drains in preventing SCI with TEVAR remains questionable and should be weighed against the risk of drain complications.

<table>
<thead>
<tr>
<th></th>
<th>Adjusted odds ratio</th>
<th>95% confidence interval</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>1.05</td>
<td>1.0, 1.10</td>
<td>0.02</td>
</tr>
<tr>
<td>Number of endografts implanted</td>
<td>1.00</td>
<td>1.29, 2.80</td>
<td>0.001</td>
</tr>
<tr>
<td>Preoperative lumbar drain</td>
<td>2.27</td>
<td>0.90, 5.71</td>
<td>0.08</td>
</tr>
</tbody>
</table>

NOTES:
37. Valve-Sparing Aortic Root Replacement: Early and Mid-Term Outcomes in 80 Patients

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Authors: D*Joseph S. Coselli, Susan Y. Green, Samantha Zarda, Matt D. Price, Kim de la Cruz, *Scott A. LeMaire

Author Institution(s): *The Texas Heart Institute at St. Luke's Episcopal Hospital and Baylor College of Medicine, Houston, TX

Objectives: Valve-sparing aortic root replacement (VSARR) is an alternative to traditional composite valve graft replacement of the root. The purpose of this study was to examine early and mid-term outcomes after VSARR.

Methods: During a nearly 12-year period, 80 patients underwent VSARR consecutively. Thirty-four patients (43%) had a connective tissue disorder, 3 (4%) had aortic dissection, and 39 (49%) had moderate (n=28; 35%) or severe (n=11; 14%) aortic valve regurgitation (AR). Left ventricular dysfunction was found in 28 patients (35%). The reimplantation VSARR technique was used in 79 patients (99%); the Florida sleeve technique was used in one. Twenty-nine patients (36%) underwent concomitant aortic arch replacement. The mean duration of follow-up was 4.4±3.1 years.

Results: One patient had severe AR after VSARR that necessitated intraoperative conversion to a mechanical composite valve graft. There was one operative death (1%); this occurred in a patient with acute dissection. No patient had a stroke. Actuarial survival was 96%±2% at one year and 93%±4% at five years. Six patients (8%) had late valve-related complications: one died of endocarditis, four underwent reoperation for severe AR and received mechanical valves, and one developed severe AR and is currently being monitored. Freedom from repair failure (i.e., reoperation, endocarditis, or severe AR) was 97%±2% at one year and 89%±5% at five years (Figure). Of the 69 surviving patients with intact VSARR repairs, follow-up NYHA class was obtained from 66 (96%); no patient had NYHA class III or IV symptoms. Results from echocardiograms obtained > one year after VSARR were available from 58 of 63 (92%) patients; ten of these patients (17%) had moderate AR.

Conclusions: VSARR can have excellent early and respectable mid-term outcomes, even when combined with arch repair. Further follow-up remains necessary to evaluate the long-term durability of this approach to root replacement.
38. Optimal Coherence Tomography Imaging of Internal Mammary Arteries and Demonstrating High-Risk Regions of the Conduit

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Authors: Sugam Bhatnagar1, Michael Simmons1, *Robert Poston1

Author Institution(s): 1University of Arizona, Tucson, AZ

Objectives: Internal mammary arteries (IMA) are the highest quality conduit for CABG with patency rates that exceed 90% at ten years. Skeletonization and robot-assisted dissection of the IMA are modifications that facilitate less invasive CABG but have an unknown influence on conduit quality. The purpose of this study was to compare the risk of vascular injury for IMA procured using skeletonized technique and robotic assistance (ROBOT) vs. a pedicled technique via full sternotomy (STERN).

Methods: All patients in the STERN (n=8) and ROBOT cohorts (n=6) provided consent before undergoing in situ OCT imaging after IMA harvest using a 1F imaging probe (Model M2/M2x, St. Jude's Medical, Westford, MA). Images were scored for the incidence of retained thrombus and disruption to the endothelium and external elastic lamina. Graft patency was determined using pre-discharge CT angiography.

Results: Harvested IMA from both group had similar length (11.3 vs. 12.5 cm), similar luminal blood flow measured intra-operatively (27 vs. 25 cc/min) and 100% patency on postoperative CTA. However, OCT imaging revealed significant increase in the incidence of conduit injury in the ROBOT cohort as compared to STERN (average 0.13 injuries/cm vs. 0 injuries/cm, p=0.002). We found a strong correlation between the number of branches and existence of retained clot strands in the IMA’s (r = 0.9041), approximately 53% clots and tears existed near a branch.

Conclusions: Preliminary data using high-resolution OCT imaging suggest that IMA injury may be an underappreciated risk of robotic assisted, skeletonized harvest. Establishing the clinical relevance of this injury in these cohorts awaits further follow-up of short and long-term IMA graft patency.
39. Long-Term Patient Satisfaction and Medication Dependence After Antireflux Surgery

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Authors: Yinyin Hu¹, Brian Ezekian¹, *David R. Jones¹, Bruce Schirmer¹, *Christine L. Lau¹, Sandra Burks¹, *Benjamin D. Kozower¹

Author Institution(s): ¹University of Virginia, Charlottesville, VA

Objectives: Antireflux surgery remains an important treatment for gastroesophageal reflux disease (GERD) refractory to phramacotherapy. However, there is a paucity of data on long-term surgical outcomes. The objectives of this study were to determine long-term patient satisfaction and medication dependence following antireflux surgery.

Methods: We identified all patients having antireflux surgery for GERD, with or without type I hiatal hernia, at our institution between 1990 and 2010. Medical records were reviewed and outcomes were assessed using telephone surveys. Cox proportional hazards models were used to determine patient satisfaction and medication use at five years and to identify significant predictors of these outcomes.

Results: We successfully surveyed 204/327 (62.4%) of all patients receiving antireflux surgery with a median follow-up of 6.3 years. 200/204 (99%) of operations were performed laparoscopically. Antireflux surgery successfully achieved long-term symptom improvement for both typical and atypical symptoms (p < 0.02). At five years postoperatively, 85% of patients were satisfied with their operation and 82% of patients were not taking any antireflux medication (Figure 1). Of those patients taking medication that received formal diagnostic evaluation of their symptoms, only 15/43 (34.9%) had evidence of reflux. The only significant predictors of continued medication dependence were age and the operating surgeon. Gender, BMI, and presenting symptom were not associated with long-term outcomes.

Conclusions: Antireflux surgery dramatically improves patients’ symptoms and provides excellent five-year satisfaction and freedom from medication use. Patients continuing to use medications should be formally evaluated as the majority of them do not have evidence of reflux.
40. Does Pneumonectomy Have a Role in the Treatment of Stage IIIA Non-Small Cell Lung Cancer?

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Authors: Asad A. Shah¹, Mathias Worni², Mark W. Onaitis¹, *Thomas A. D’Amico³, Mark F. Berry¹

Author Institution(s): ¹Duke University Medical Center, Durham, NC

Objectives: The role of surgical resection for stage IIIA non-small cell lung cancer (NSCLC) is unclear. We sought to examine outcomes after pneumonectomy for patients with stage IIIA disease.

Methods: All patients with stage IIIA NSCLC who had pneumonectomy at a single institution between May 1999 and July 2010 were retrospectively reviewed. The Kaplan-Meier method was used to estimate long-term survival and multivariable Cox proportional hazards regression was used to identify clinical characteristics associated with decreased survival.

Results: During the study period, 324 patients overall had surgical resection of stage IIIA NSCLC. Pneumonectomy was performed in 55 patients, 21 (38%) of whom had N2 disease (Table). Induction treatment was used in 17 (31%) patients overall, and in nine (43%) of the patients with N2 disease. Perioperative mortality was 9.1% (n=5) overall and 18% (n=3) in patients who had received induction therapy. Complications occurred in 58% (n=32) and most commonly included blood product transfusion (n=16; 29%) and atrial fibrillation (n=11; 20%). Mean follow-up was 30 ± 32 months. Three-year survival was 36% and five-year survival was 29% for all patients (Figure). Three-year survival was 41% for N0-1 patients and 27% for N2 patients. In multivariable analysis, age over 60 (HR 3.4, 95% CI: 1.6-7.4, p=0.002) and induction therapy (HR 2.3, 95% CI: 1.1-4.9, p=0.03) predicted worse survival, while adjuvant therapy (HR 0.4, 95% CI: 0.2-0.8, p=0.02) predicted improved survival.

Conclusions: Long-term survival after pneumonectomy for stage IIIA NSCLC is within an acceptable range, but pneumonectomy may not be appropriate after induction therapy. Patient selection and operative technique that limits perioperative morbidity and allows adjuvant chemotherapy use are critical to optimizing outcomes.
41. “Supercharged” Isoperistaltic Colon Interposition for Long-Segment Esophagogastric Reconstruction

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Authors: *Kenneth A. Kesler¹, Ahmed M. Halal¹, *Karen M. Rieger¹, *Ikenna C. Okereke¹, *Thomas J. Birdas¹, DuyKhanh Ceppa¹, *Sandra Starnes²

Author Institution(s): ¹Indiana University, Indianapolis, IN; ²University of Cincinnati, Cincinnati, OH

Objectives: When the stomach is not available, long-segment esophagogastric reconstruction remains a surgical challenge. Since 2005, we have utilized a “supercharged” isoperistaltic colon interposition conduit for long-segment esophagogastric reconstruction, which reestablishes a dual blood supply.

Methods: An institutional database search of 449 patients who underwent esophagectomy from 2005 to 2012 identified nine patients who underwent long-segment esophagogastric reconstruction using an isoperistaltic “supercharged” right (n=7) or left (n=2) colon conduit. All conduits were routed through the anterior mediastinum, maintaining either the middle colic (right) or ascending left colic vessels (left) in situ with reimplantation of either the ileocolic vessels (right) or middle colic vessels (left) into the internal thoracic artery and brachiocephalic vein to improve distal conduit blood flow.

Results: Mean age was 64 years (range 47 to 76 years). Six patients had a history of malignancy and three with benign processes. The stomach was unavailable to utilize for reconstruction due to prior gastric surgery (n=7) or neoplastic involvement (n=2). All reimplanted vessels demonstrated excellent flow by Doppler evaluation. Anastomotic healing was uneventful in all patients without leak or stricture after an average of 20-month follow-up.

Conclusions: “Supercharged” isoperistaltic colon interposition appears to be an excellent option for the challenging situation where long-segment esophagogastric reconstruction is needed and the stomach is not available. The additional effort required to reestablish a dual blood supply appears justified to minimize ischemic related morbidity. Unlike long-segment small bowel supercharged techniques, adequate blood supply to the distal conduit may still be present in case thrombosis of the reimplanted vessels occurs.
42. Rapid Onsite Pathology Evaluation Does Not Impact the Efficacy of Endobronchial Ultrasound

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Authors: *Mark Joseph¹, Tyler Jones¹, Yasmin Lutterbie¹, Susan Maygarden¹, *Richard H. Feins¹, *Benjamin Haithcock¹, *Nirmal K. Veeramachaneni¹

Author Institution(s): ¹University of North Carolina, Chapel Hill, NC

Objectives: Endobronchial ultrasound with transbronchial needle aspiration (EBUS-TBNA) has been shown to be equivalent to mediastinoscopy in lung cancer staging for mediastinal (N2) involvement. Rapid on-site evaluation (ROSE) to determine the adequacy of nodal sampling has been claimed to be of benefit.

Methods: A retrospective evaluation was performed on 171 patients who underwent EBUS-TBNA by a surgeon from July 2008 to May 2011. The patients were classified as having either high or low-pretest probability for N2 disease, based on history and radiographic imaging. ROSE was compared to the final pathology reports based upon slides and cell blocks.

Results: A total of 131 (77%) patients were classified as being in the high pretest group based on clinical staging. Of these, 101 patients had adequate tissue sampling based on ROSE, out of which 70 (69%) patients had positive N2 disease by ROSE. Analysis of the cell block confirmed N2 disease in 68 patients, with two patients having a false positive ROSE. Of the remaining 31 patients (31%) with adequate tissue, cell block confirmed the finding of no evidence of malignancy by ROSE. Only one patient had a false negative EBUS. In the 30 (23%) patients who had inadequate tissue by ROSE, analysis of the cell block allowed for a diagnosis in all but eight patients. Surgery revealed cancer in only three of the eight patients. However, two patients were identified to have N2 disease despite a negative cell block.

Conclusions: ROSE does not alter diagnostic yield or help in clinical decision making. Even in cases where tissue sampling is considered inadequate for ROSE, our data shows a final diagnosis is able to be made in most patients, thus potentially avoiding an additional surgical procedure to prove N2 disease.
43. Selective Fenestration of the Extracardiac Fontan

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**Authors:** *Andrew C. Fiore*, Corinne Tan, Connor McCartney, *Mark Turrentine*, *Mark Rodefeld*, *Charles Huddleston*, *John Brown*

**Author Institution(s):** 1Cardinal Glennon Children’s Hospital, St. Louis, MO; 2Indiana University, Indianapolis, IN

**Objectives:** Extracardiac Fontan (ECF) fenestration remains controversial. Fenestration (F) is usually associated with less pleural drainage and shorter hospital stay, but prolonged cyanosis and increased risk of paradoxical embolism. The purpose of this study was to evaluate the impact of fenestration on outcomes in similar cohorts of patients undergoing ECF.

**Methods:** We retrospectively compared 115 consecutive ECF patients from July 1995 to December 2010 undergoing fenestration (Group F, 61 patients) with non fenestration (Group NF; 54 patients). Preoperatively, cohorts were similar in age, weight, transpulmonary gradient, end diastolic pressure, oxygen saturation, McGoon ratio, and bypass time. HLHS was greater in F cohort (49% vs. 31% P < 0.05). Non fenestrated patients were followed longer (F, 27 months; NF, 40 months; P<0.03). Group F received Coumadin and aspirin; NF, aspirin. Fenestration usage was surgeon preference with a patency of 85%. Groups were compared using Chi Square, t test, and logistic regression.

**Results:** Fenestration of the ECF did not decrease readmission for chylothorax, protect patients from Fontan takedown or reduce mortality. Despite similar preoperative risk variables, Fenestration of the ECF was associated with greater total pleural drainage. Univariate analysis demonstrated Fenestration and HLHS but not McGoon ratio, age, TPG or O2 saturation as predictive of higher tube drainage (odds ratio, F, 3.2; HLHS, 2.6).

NF patients experienced higher O2 saturation and a similar frequency of neurologic events and hospital stay. Fenestration of HLHS patients may be a surrogate for higher tube drainage.

**Conclusions:** Fenestration of the ECF should be selective, as fenestration does not decrease adverse postoperative outcomes, mortality, or hospital stay and is associated with lower systemic oxygen saturation.

<table>
<thead>
<tr>
<th></th>
<th>F (N=61)</th>
<th>NF (N=54)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre op TP gradient (mmHg)</td>
<td>45 ±2</td>
<td>5 ±2</td>
<td>NS</td>
</tr>
<tr>
<td>Post op O2 sat (%)</td>
<td>89 ±7</td>
<td>94 ±6</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Total tube loss (ml)</td>
<td>4877 ± 5670</td>
<td>2049 ± 2506</td>
<td>&lt;0.02</td>
</tr>
<tr>
<td>ICU Stay (days)</td>
<td>9 ±7</td>
<td>7 ±5</td>
<td>NS</td>
</tr>
<tr>
<td>Readmit for chylothorax (%)</td>
<td>7 (%)</td>
<td>5 (%)</td>
<td>NS</td>
</tr>
<tr>
<td>Neuro event (%)</td>
<td>3 (5)</td>
<td>8 (18)</td>
<td>NS</td>
</tr>
<tr>
<td>Fontan takedown (%)</td>
<td>3 (5)</td>
<td>2 (4)</td>
<td>NS</td>
</tr>
<tr>
<td>Early mortality (%)</td>
<td>0 (0)</td>
<td>1 (2)</td>
<td>NS</td>
</tr>
<tr>
<td>Late mortality (%)</td>
<td>2 (5)</td>
<td>2 (4)</td>
<td>NS</td>
</tr>
</tbody>
</table>

N, number of patients; TP, transpulmonary; ICU, intensive care unit; values expressed as a mean ± standard deviation

**NOTES:**
44. Outcomes of Modified Norwood Procedure: Hypoplastic Left Heart Syndrome Versus Other Single-Ventricle Malformations

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Authors: Mark Ruzmetov¹, Dale M. Geiss¹, Randall S. Fortuna¹

Author Institution(s): ¹Children’s Hospital of Illinois, Peoria, IL

Objectives: Recent studies have suggested that survival following the modified Norwood procedure is influenced by anatomy and is worse for patients with hypoplastic left heart syndrome (HLHS) as compared to other forms of functional single ventricle. The aim of this study is to compare the outcomes of modified Norwood procedure for these two groups at a single Institution.

Methods: A retrospective chart review compared modified Norwood procedure outcomes for children with HLHS (n=35) and other single-ventricle malformations (n=18) from January 2002 to December 2011. The HLHS patients had a lower mean age at the time of operation than non-HLHS patients (9.2±5.8 days vs. 13.9±9.5 days; p=0.03). The number of patients with a Sano modification was significant higher for the HLHS group (HLHS, 83% vs. non-HLHS, 33%; p<0.001). Follow-up was not different between the groups (HLHS, 3.0±2.8 years vs. non-HLHS, 4.0±2.9 years, p=0.27).

Results: Overall operative survival was 91%, 89% for patients with HLHS, and 94% for patients with non-HLHS (p=0.65). The Kaplan-Meier survival estimate at five years was 76% and was not different for patients with HLHS (71%) compared to non-HLHS (83%, p=0.50). The timing of stage II and III palliation (bidirectional Glenn and external conduit Fontan) was not significantly different (HLHS, 7.1±3.1 months and 3.0±0.5 years vs non-HLHS, 6.0±1.6 months and 2.8±0.8 years; p=NS). The two groups were similar with respect to need for post-Norwood to ECMO support, aortic arch reinterventions, tricuspid valve repair, pulmonary artery reconstruction, pacemaker implantation, and progression to bidirectional Glenn and Fontan completion.

Conclusions: The modified Norwood reconstruction provides good palliation for HLHS as well as other forms of functional single ventricle anatomy. Survival, postoperative morbidity, and progression to Glenn and Fontan are not significantly different.
45. Outcomes Following Implementation Of A Pediatric Rapid-Response Extracorporeal Membrane Oxygenation Program

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Authors: Nicholas D. Andersen¹, Joseph W. Turek², D. Scott Lawson³, Desiree Bonadonna¹, Ryan S. Turley¹, Michelle A. Peters¹, *James J. Jaggers³, *Andrew J. Lodge¹

Author Institution(s): ¹Duke University Medical Center, Durham, NC; ²University of Iowa Children’s Hospital, Iowa City, IA; ³Children’s Hospital Colorado, Aurora, CO

Objectives: Rapid-response extracorporeal membrane oxygenation (RR-ECMO) has been implemented at select centers to expedite cannulation for patients placed on ECMO during cardiopulmonary resuscitation (ECPR). In 2008, a formal RR-ECMO program was established at our institution and used for all pediatric venoarterial ECMO initiations, including ECPR and non-ECPR cannulations.

Methods: Between May 2003 and March 2011, 144 pediatric patients were placed on venoarterial ECMO. Records of patients placed on ECMO before (17 ECPR and 62 non-ECPR) or after (14 ECPR and 51 non-ECPR) RR-ECMO program implementation were retrospectively compared. Perception surveys were administered to ECMO team members two years after RR-ECMO program implementation.

Results: The peak speed and coordinated performance of the ECMO team was assessed by measuring ECMO initiation times for ECPR patients. There was a shift towards more ECPR initiations achieved in under 40 minutes (24% pre-RR-ECMO vs. 43% RR-ECMO, P=0.25) and fewer ECPR initiations requiring more than 60 minutes (47% pre-RR-ECMO vs. 21% RR-ECMO, P=0.14) with RR-ECMO (Figure). After multivariable risk-adjustment, RR-ECMO was associated with a 56% reduction in neurologic complications (adjusted odds ratio, 0.44; confidence interval, 0.20-0.95; P=0.04, Table). Perception surveys revealed ECMO team members perceived improved efficiency and comfort with the initiation of ECMO after RR-ECMO program implementation.

Conclusions: Implementation of a pediatric RR-ECMO program was associated with shortened ECPR initiation times, reduced neurologic complications, and a formalization of the ECMO deployment process that was well received by staff. These data suggest that development of a standardized system for rapid ECMO deployment can improve outcomes of both ECPR and non-ECPR patients and is a valuable quality improvement initiative for centers that offer ECMO.

<table>
<thead>
<tr>
<th>RR-ECMO vs. pre-RR-ECMO</th>
<th>Adjusted odds ratio</th>
<th>95% confidence interval</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central nervous-system injury</td>
<td>0.44</td>
<td>0.20-0.95</td>
<td>0.04</td>
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<tr>
<td>Respiratory failure</td>
<td>0.92</td>
<td>0.41-2.05</td>
<td>0.83</td>
</tr>
<tr>
<td>Liver injury</td>
<td>0.89</td>
<td>0.30-2.64</td>
<td>0.83</td>
</tr>
<tr>
<td>In-hospital death</td>
<td>0.84</td>
<td>0.38-1.85</td>
<td>0.66</td>
</tr>
<tr>
<td>Pediatric cerebral performance category score ≥3</td>
<td>0.70</td>
<td>0.15-3.27</td>
<td>0.65</td>
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</tbody>
</table>

NOTES:
46. Risk of Pacemaker Implantation After a Cox-Maze IV Procedure

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Authors: Jason O. Robertson¹, DPhillip S. Cuculich¹, Marc R. Moon¹, Jennifer S. Lawton¹, Nabil A. Munfakh¹, Donna M. Marin¹, D Ralph J. Damiano¹, Hersh Maniar¹

Author Institution(s): ¹Washington University, St. Louis, MO

Objectives: The incidence and etiology for pacemaker (PPM) implantation after a Cox-Maze IV Procedure (CMP IV) remain poorly described. The purpose of this study was to characterize the need for postoperative PPM among patients who underwent a CMP IV for atrial fibrillation (AF).

Methods: A retrospective analysis of 380 consecutive patients undergoing a CMP IV between 2002 and 2011 was conducted. After excluding patients with a preoperative PPM (n=43), the incidence, indication and variables associated with PPM implantation were assessed.

Results: Forty-six patients (13.7%) required a postoperative PPM. The incidence of PPM implantation after a lone CMP IV was 5.6% (6/108). PPM rates were higher for concomitant single valve surgery (16.1% [24/149], p=0.010) and concomitant double valve surgery (27.6% [8/29], p=0.0011). Concomitant aortic valve surgery had the highest rate of PPM implantation with either single or double valve surgery (22.6% [7/31] and 33.3% [2/6], respectively). Indications for PPM were SA node dysfunction (60.9% [28/46]), AV node dysfunction (23.9% [11/46]) and SA/AV node dysfunction (10.9% [5/46]). At a mean followup of 2.2 ± 2.2 years, 95% (38/40) of patients requiring a PPM remained PPM dependent. Multivariate logistic regression revealed age ≥ 75 (OR=3.49, [1.49-8.17], p=0.004), female sex (OR=2.18, [1.02-4.66], p=0.044) and concomitant surgery (OR=3.99, [1.33-11.97], p=0.013) were associated with higher risk of a postoperative PPM. AF type (p=0.94) and duration (p=0.58) were not associated with PPM requirement.

Conclusions: The risk of PPM implantation after a lone CMP IV is low, independent of AF type and duration, but increases with age, female sex, and concomitant valvular heart surgery. The need for PPM is largely due to SA node dysfunction and is unlikely to recover over time. These data should help physicians who counsel patients about risks associated with the CMP IV and aid in development of future AF procedures.
47. Coarctation-Associated Aneurysms: A Localized Disease or a Diffuse Aortopathy

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Authors: Ourania Preventza¹, *James J. Livesay¹, *Denton Cooley¹, Zvonimir Krajcer¹, Benjamin Cheong¹, *Joseph Coselli¹

Author Institution(s): ¹The Texas Heart Institute/Baylor College of Medicine, Houston, TX

Objectives: We evaluated the prevalence and treatment of coarctation-associated aortic aneurysms that arise at previous repair sites or remotely.

Methods: During 1962 to 2011, 942 cases of coarctation were repaired. Aortic aneurysms were identified in 54 patients (5.7%). Forty-four patients had prior coarctation repair (median, 23 y earlier; range, 4-47 y). Forty-two aneurysms were found in the descending thoracic aorta at or near the site of the repair (77.7%), 17 in the ascending aorta (31.5%), five in the left subclavian artery (9.3%), one in the abdominal aorta (1.8%), and one in the iliac artery (1.8%). Multiple aneurysms were seen in nine patients (16.6%). Twenty-five patients (46.3%) had a bicuspid aortic valve.

Results: Fifty-two patients were treated. Thirty-five (64.8%) had descending thoracic aortic repair, of whom 12 had concomitant aorto-left subclavian bypass. Aortic cross-clamping alone was used in 29 patients, left heart bypass in four, and circulatory arrest in eight. Ten patients had endovascular repair of their thoracic aneurysms (18.5%). Proximal aortic aneurysms were repaired in seven patients (13%); one had simultaneous repair of the coarctation site with antegrade endostent delivery. Four patients had ascending to descending aortic bypass (7.4%). Combined valve-sparing root repair was performed in one, bio-root in one, Bentall in three, aortic valve replacement in three, and coronary artery bypass in one. One 30-day death (1.8%) and one diffuse neuromuscular weakness with full recovery (1.8%) were noted; three patients (5.5%) required tracheostomy, and ten (18.5%) had left vocal cord paralysis, all of which were repaired.

Conclusions: Coarctation is a marker for aortic aneurysm formation in adults even decades after diagnosis consequently meriting long-term surveillance. Anatomic complexity and associated conditions pose a challenge for successful surgical repair. A variety of open, extra-anatomic and endovascular techniques may be used.
48. Single Institutional Experience With Repair of Type A Aortic Dissection in the Elderly

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Authors: Ahmet Kilic1, Michael S. Firstenberg1, John Sirak1, Chittoor B. Sai-Sudhakar1, Juan Crestanello1, *Robert S. Higgins1

Author Institution(s): 1The Ohio State University, Columbus, OH

Objectives: To review our single center experience with operative repair of Type A dissections with particular emphasis on the elderly.

Methods: Consecutive adult patients undergoing operative repair of acute type A aortic dissections between February 2004 and December 2011 were identified. Patients were stratified into elderly (≥70 years) and control cohorts (<70 years). A multivariable logistic regression model adjusting for potential confounders was used to evaluate the effect of elderly age on survival to discharge. Kaplan-Meier analysis was also conducted, and survival curves compared using the log-rank test.

Results: A total of 117 patients were identified during the study period, including 31 (26.5%) elderly and 86 (73.5%) control patients. The mean age in the elderly cohort was 78.0 ± 4.7 years. The elderly and control groups were well-matched with regards to preoperative comorbidities (each p>0.05). The most common site of tear involved the proximal ascending aorta (elderly-83.9% vs. controls-84.9%) with similar operative data between cohorts with the exception that fewer elderly patients underwent hypothermic circulatory arrest (67.7% vs. 90.7%, p=0.002). Overall survival to discharge was 87.2% (n=102), with no difference in the elderly (83.9%; n=26) versus controls (88.4%; n=76) (p=0.52). Other postoperative outcomes were also comparable (Table). At a mean follow-up of 2.7 ± 2.5 years, late aortic reoperations were required in two (6.5%) elderly and seven (8.1%) control patients (p=0.99) (Table). Kaplan-Meier 30-day (elderly-82.8% vs. controls-86.2%), 90-day (elderly-79.0% vs. controls-84.8%), and one-year (elderly-75.4% vs. controls-84.8%) survival were also comparable (p=0.25) (Figure).

Conclusions: Excellent operative outcomes can be achieved in elderly patients undergoing emergent repair of type A aortic dissections and therefore advanced patient age should not serve as an absolute contraindication to operative repair.
49. The Impact of Clinical Presentation and Surgeon Experience on the Decision to Perform Concomitant Surgical Ablation for Atrial Fibrillation

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Authors: *Niv Ad*, Linda Henry*, Sharon Hunt*, Sari D. Holmes

Author Institution(s): *Inova Heart and Vascular Institute, Falls Church, VA*

Objectives: Patients with Atrial fibrillation (AF) undergoing cardiac surgery have higher morbidity and decreased survival. Data from the STS revealed that only in 38% of these patients surgical ablation (SA) is performed with variability among surgeons. The study aims were to: determine the association between clinical presentation and SA; determine the roll of the surgeon’s experience in SA and the decision to perform SA for AF.

Methods: Since 2005, we identified 987 non-emergent patients with preoperative AF at our institution with 41% (n=405) had concomitant SA. Logistic regression identified independent predictors for SA (Table). Surgeon experience was captured by the number of SAs performed.

Results: Major growth in the percent of SA for AF performed was noted (31% in 2005 vs 49% in 2010; p<0.001). Independent predictors (Chi-Square=281.2, p<0.001, AUC=0.80) are bolded in Table. Concomitant mitral valve surgery (OR=5.60) and lower creatinine (OR=4.39) were the strongest positive predictors. Perioperative outcomes were similar between groups with no negative impact of SA procedure. Surgeon experience predicted SA, 6% greater odds for every ten SA cases performed (OR=1.06, p<0.001). The group of surgeons with >50 SA cases, ablated 57% of AF patients (304/530) vs. those with <50 cases ablated 22% (101/457) (p<0.001). The most experienced surgeon’s decision to perform SA was less influenced by comorbid factors (Figure).

Conclusions: We demonstrated for the first time that patient acuity and surgeon experience are significantly associated with the decision to perform concomitant SA. Only the most experienced surgeons performed SA in patients with more complex clinical presentation. The addition of SA was not associated with increased perioperative morbidity. These findings together with the negative impact of AF on patient outcomes should prompt a comprehensive approach to educate and train surgeons in the performance of SA for AF when clinically justified.
50. Diaphragmatic Hernia After Esophagectomy in 440 Patients With Long-Term Follow-Up

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Author Institution(s): 1University of Texas, MD Anderson Cancer Center, Houston, TX

Objectives: Postoperative diaphragmatic hernia (PDH) after esophagectomy is a recognized but severely under-reported and potentially hazardous event. Information regarding the natural course of this condition and guidelines regarding indications for re-operative intervention are lacking. In this study we aim to describe the frequency, predictors of incidence, and indications for repair.

Methods: Radiographs from patients who underwent esophagectomy between January 2001 and December 2007 at a single center were reviewed by two radiologists blinded to previous reports and clinical outcomes. Patients with PDH were compared to a similar cohort without hernia. Patient characteristics, outcomes, and hernia descriptors including longitudinal progression were recorded. Multivariable logistic regression analyses identified predictors of PDH and need for repair.

Results: From a total of 440 patients who underwent esophagectomy, 67 (15%) were radiographically diagnosed with PDH. Of these, only 7/67 (10%) cases were prospectively reported by the radiologist. Median time interval from esophagectomy to hernia was two years. Type of esophagectomy was an independent predictor for developing a hernia (p=0.027). Patients with high body mass index were less prone to develop PDH (p=0.043). Thus far, nine patients (2%) have required surgical intervention, all for hernia related symptoms or progression. Despite mesh repair, 4/9 have recurred, two were re-repaired. There was one PDH-associated death, eight years after transhiatal resection.

Conclusions: Variables contributing to PDH are both technical and patient dependent. Whereas the majority of patients with PDH have not required repair, a small portion that became symptomatic or had large, progressive hernia required remedial surgery. Post-esophagectomy patients require long-term surveillance for PDH.

```
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<th>p-Value</th>
<th>OR</th>
<th>95% CI</th>
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<tr>
<td>Gender M/F</td>
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<td>67 (15%)</td>
<td>0.008</td>
<td>0.189</td>
<td>0.06-0.65</td>
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<td>BMI &lt;25</td>
<td>132</td>
<td>27 (20%)</td>
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<td></td>
<td></td>
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<tr>
<td>BMI ≥25</td>
<td>303</td>
<td>40 (13%)</td>
<td>0.043</td>
<td>0.56</td>
<td>0.31-0.98</td>
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<td>Type of Surgery</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Tor Lewin (reference)</td>
<td>267</td>
<td>32 (12%)</td>
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<tr>
<td>Transhiatal</td>
<td>103</td>
<td>25 (24%)</td>
<td>0.005</td>
<td>2.35</td>
<td>1.31-4.30</td>
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<td>McKeown (3-field)</td>
<td>40</td>
<td>7 (17%)</td>
<td>0.18</td>
<td>1.91</td>
<td>0.74-4.89</td>
</tr>
<tr>
<td>Minimally invasive</td>
<td>30</td>
<td>3 (10%)</td>
<td>0.69</td>
<td>0.78</td>
<td>0.22-2.72</td>
</tr>
<tr>
<td>Age</td>
<td>440</td>
<td>67</td>
<td>0.063</td>
<td>0.98</td>
<td>0.95-1.00</td>
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51. Completion Pneumonectomy: Do Outcomes Justify the Operation?

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Authors: Varun Puri1, Andrew V. Tran1, Jennifer Bell1, *Traves D. Crabtree1, *A. Sasha Krupnick1, *Daniel Kreisel1, *G. Alexander Patterson1, *Bryan F. Meyers1

Author Institution(s): 1Washington University School of Medicine, St. Louis, MO

Objectives: Past series have identified completion pneumonectomy (CP) as a high-risk operation. We evaluated factors affecting outcomes of CP with a highly selective approach to offering this operation.

Methods: Evaluation of a prospectively maintained database.

Results: Between January 2000 and February 2011, 212 patients underwent pneumonectomy, of which 36 (17%) were CPs. Of these, 11/36 (31%) were for benign disease and 25/36 (69%) for cancer. All CP patients had bronchial closure reinforced with autologous tissue. The mean FEV1 was 2.42 ± 0.88L. Major perioperative morbidity was seen in 22/36 (61%) and 4/36 (11%) patients died perioperatively. In univariate analysis of risk factors, postoperative bronchopleural fistula (BPF) (p=0.05) and benign indication for surgery (p=0.07) tended to be related to perioperative mortality.

All eleven patients undergoing CP for benign disease developed a major complication compared to 11/25 (44%) with malignancy, p=0.002. A bronchopleural fistula (4/36, 11%) was more likely to occur in patients undergoing CP shortly after the primary operation (0.28 vs. 4.5 years; p=0.018) and a trend was seen toward a benign indication for operation (p=0.07). Median survival for CP for benign indications was 24.3 months and 36.5 months for malignancy (p=NS).

Comparing CP patients to those undergoing primary pneumonectomy (PP, n=176), CP patients were more likely to undergo the operation for benign disease (11/36, 31% vs. 14/176, 8%, p=0.001). The perioperative mortality for PP was 10/176 (5.7%), and was not significantly different from CP (11%).

Conclusions: Despite a selective approach, CP remains a highly morbid operation especially for benign indications. Rigorous preoperative optimization, ruling out contraindications to surgery and attention to technical detail are recommended.
52. Anterior Thoracic Surgical Approaches in the Treatment of Spinal Infections and Neoplasms

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Author Institution(s): University of Pittsburgh Medical Center, Pittsburgh, PA

Objectives: Thoracic surgeons are commonly consulted to provide anterior thoracic exposure for infection and malignant neoplasms involving the thoraco-lumbar spine. These cases can present significant technical and patient care challenges secondary to the underlying pathology, associated anatomic inflammation and impaired functional status. In this study, we review our surgical experience and the perioperative outcomes of patients undergoing anterior spinal exposure for infection and neoplasm.

Methods: 121 consecutive patients (55 Female, 66 Male) undergoing corpectomy, debridement or debulking for osteomyelitis (n=47) or neoplasms (n=74) with decompression/stabilization at a single institution were analyzed. Primary endpoints include morbidity, mortality, and perioperative neurologic outcomes.

Results: Mean age was 61.3. A cervical/sternotomy (n=5) approach was used for levels C7-T2, thoracotomy (n=78) for T3-T11, and thoraco-abdominal (n=38) for T12-L1 involvement. Primary spinal neoplasms were resected in 11 patients (9.1%). Metastases (n=63, 52.1%) were treated with corpectomy and prosthetic stabilization. Surgery for malignancy was associated with increased operative time. Osteomyelitis was associated with significantly longer hospital stays [Table]. There were 13 perioperative deaths (10.7%). Major complication rate was 19.1%. Median length of stay was nine days. Successful palliation of acute neurologic symptoms was achieved in 87.6% of patients.

Conclusions: Anterior spinal exposure represents an important modality in facilitating the management of patients with osteomyelitis, pathologic fractures and spinal cord compression syndromes. These procedures are associated with a significant risk of morbidity and mortality, but are effective in achieving spinal stabilization and alleviating neurologic symptoms.

<table>
<thead>
<tr>
<th></th>
<th>Infection (n=47)</th>
<th>Neoplasm (n=74)</th>
<th>P Value</th>
</tr>
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<tr>
<td>Operative Time (min)</td>
<td>236</td>
<td>292</td>
<td>0.005</td>
</tr>
<tr>
<td>Estimated Blood Loss (ml)</td>
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<td>250</td>
<td>0.006</td>
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<tr>
<td>Length of Stay (days)</td>
<td>13</td>
<td>8</td>
<td>0.001</td>
</tr>
<tr>
<td>Mortality (%)</td>
<td>40.4</td>
<td>32.4</td>
<td>0.44</td>
</tr>
<tr>
<td>Morbidity (%)</td>
<td>8.5</td>
<td>12.3</td>
<td>0.70</td>
</tr>
</tbody>
</table>

NOTES:
53. Treatment-Related Morbidity and Mortality of Multimodality Regimens for Stage IIIA Non-Small Cell Lung Cancer

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Authors: Christopher W Seder1, Mark S. Allen1, Stephen D. Cassivi1, Claude Deschamps1, Francis C. Nichols1, Kenneth R. Olivier1, *Robert Shen1, Dennis A. Wigle1

Author Institution(s): 1Mayo Clinic, Rochester, MN

Objectives: Although concurrent chemoradiation can cure stage IIIA non-small cell lung cancer (NSCLC), studies have demonstrated that anatomic resection following high- or low-dose chemoradiation may benefit selected patients. We examined morbidity and mortality associated with three different treatment strategies for stage IIIA disease.

Methods: Prospectively-maintained institutional databases were used to identify patients with stage IIIA (T1-3, N2) NSCLC who underwent concurrent platinum-based chemoradiation with or without pulmonary resection between 1998 and 2011. Exclusion criteria included sequential chemoradiation, radiation-surgery interval >12 weeks, superior sulcus tumors, radiotherapy other than standard external beam radiation, biopsy-proven M1 disease, and palliative regimens. Data were collected on patient demographics, treatment regimen, and treatment-related morbidity and mortality.

Results: For the strict inclusion criteria described, 144 patients (88 definitive chemoradiation; 27 trimodality (45 Gy); 29 trimodality (≥60 Gy) were identified. Treatment-related morbidity and mortality rates for definitive chemoradiation were 74% [65/88] and 2.3% [2/88], respectively. Patients who received 45 Gy neoadjuvant radiation had fewer chemoradiation-related complications than those who received ≥60 Gy in a neoadjuvant or definitive manner (44% [12/27] vs. 69% [20/29] vs. 74% [65/88]; p=0.02). Postoperative morbidity and mortality rates for patients who proceeded to surgery were 48% [27/56] and 1.8% [1/56], respectively and did not differ based on dose of neoadjuvant radiation. Despite varied anatomic resections and methods of bronchial closure and coverage, no bronchopleural fistulae were observed.

Conclusions: Although chemoradiation-induced toxicities are dose-dependent, high-dose neoadjuvant radiation does not increase postoperative morbidity or mortality in patients selected for anatomic resection.

|                  | Trimodality (45 Gy) | Trimodality (60 Gy) | p-value
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<td></td>
<td>[n=27]/[ch]/s</td>
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</tr>
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<td>Any</td>
<td>13 (48)</td>
<td>14 (48)</td>
<td></td>
</tr>
<tr>
<td>Chest tube replacement</td>
<td>0</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Decortication</td>
<td>0</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Pneumonecrosis</td>
<td>1 (4)</td>
<td>4 (14)</td>
<td></td>
</tr>
<tr>
<td>Pericardial effusion</td>
<td>3 (11)</td>
<td>4 (14)</td>
<td></td>
</tr>
<tr>
<td>Reimplantation</td>
<td>1 (4)</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Therapeutic bronchoscopy</td>
<td>3 (11)</td>
<td>2 (7)</td>
<td></td>
</tr>
<tr>
<td>Infected prosthetic mesh</td>
<td>0</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Chylothorax</td>
<td>1 (4)</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Acute renal failure</td>
<td>2 (7)</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Pneumonia</td>
<td>4 (15)</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Vocal cord paralysis</td>
<td>0</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Wound dehiscence</td>
<td>1 (4)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>1 (4)</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Total complications/[ch]/s</td>
<td>28</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Hospital stay [median (IQR)/ch]/s</td>
<td>6 (5-9)</td>
<td>7 (5-14)</td>
<td>0.76</td>
</tr>
<tr>
<td>Death/[ch]</td>
<td>1 (4)</td>
<td>0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Data presented as n (%) unless otherwise specified. DVT/PE, deep vein thrombosis/pulmonary embolism

NOTES:
54. Impact of Untreated Mitral Insufficiency During Chronic LVAD support

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Authors: Akiko Mano1, Robert L. Kormos1, Christian Bermudez1, Jay K. Bhama1, Jeffrey J. Teuteberg1, Lawrence M. Wei1, *Vinay Badhwar1

Author Institution(s): 1University of Pittsburgh Medical Center, Pittsburgh, PA

Objectives: Current convention ignores Mitral regurgitation (MR) at the time of LVAD implantation since MR is presumed to improve following continuous flow left ventricular assist device (LVAD) implantation. We set out to define the impact of untreated MR following chronic LVAD therapy for heart failure.

Methods: Between January 2007 and July 2011, we prospectively examined 46 consecutive patients undergoing LVAD implantation with serial echocardiography. Regurgitation was graded as 1=mild 2=moderate 3=severe. Group I had severe MR; Group II had mild-moderate MR. Groups were homogenous based on pre-LVAD hemodynamics, demographics and etiology of heart failure. Group I (n=12) and II (n=34) were structurally and clinically compared.

Results: Pre-LVAD MR was greater in Group I (2.5 ± 0.7 vs. 1.9 ± 0.9; p<0.03) as was tricuspid regurgitation, (2.2 ± 0.7 vs. 1.6 ± 0.7; p<0.02). Both groups had equivalent 78% one-year survival. At six months, mitral annulus diameter (MAD) trended larger in Group I (31.9 ± 3.0 mm; p=0.08). Group II had significant reductions of MAD and vena contracta compared to Group I (-3.3 ± 2.5 vs. -0.8 ± 3.9 mm; p<0.05, and -3.7 ± 2.6 vs. -0.4 ± 2.4 mm; p<0.01, respectively). Cardiac related re-admissions were more frequent in Group I (42% vs. 6%; p<0.01) as was the need for diuretics (100% vs. 70%; p<0.04). EQ-5D Quality of Life utility index scores trended worse in Group I (0.699 vs. 0.785; p = 0.271).

Conclusions: Patients with severe MR at the time of chronic LVAD implantation are often left with residual MR and worsening symptoms prompting future consideration for mitral repair at the time of LVAD.
55. Addition of Bortezomib Improves Panel-Reactive Antibody (PRA) Depletion in Presensitized Adult and Pediatric Cardiac Transplant Recipients

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Authors: Gonzalo Wallis¹, Melissa E. Elder¹, Juan C. Scornik¹, Frederick J. Fricker¹, *Mark S. Bleiweis¹

Author Institution(s): ¹University of Florida, Gainesville, FL

Objectives: Efficacy of plasmapheresis, intravenous gammaglobulin (IVIG), and rituximab for reduction of PRA in highly sensitized cardiac transplant recipients remains limited since alloantibody production by long-lived plasma cells is unaffected. We hypothesized that adjunct bortezomib therapy would enhance PRA depletion, allow successful transplantation, and decrease future risk of antibody-mediated rejection (AMR).

Methods: Four presensitized patients between nine months and 30 years of age with PRA 81-99% received bortezomib in addition to rituximab, IVIG and intraoperative plasmapheresis. Lymphocyte subsets, serum immunoglobulins, PRA, donor-specific antibody (DSA), endomyocaridal biopsy, and cardiac function were monitored before and after transplant.

Results: One adult and two pediatric patients receiving induction and maintenance rituximab, monthly IVIG +/- T-cell immunosuppression for 0.5-6 months pre-transplant had no change in their PRA. Bortezomib was administered to two of these patients pre-transplant and at one month post-transplant in the third, leading to sustained undetectable PRA and subsequent negative or weakly positive crossmatches after intraoperative plasmapheresis. The fourth patient, an adult, received intraoperative plasmapheresis for a moderately positive crossmatch and then received rituximab, IVIG, and bortezomib one week after transplant for rising DSA, now declining 2.5 months post-transplant. No recipients have developed AMR, although one child did have an episode of cellular rejection.

Conclusions: Addition of bortezomib to standard B-cell immunosuppression in order to deplete alloantibody production by long-lived plasma cells, either before or shortly after cardiac transplant, significantly reduces PRA and risks of positive crossmatch and AMR in highly sensitized patients. Monthly IVIG as passive immunity decreases infection risk and should be considered for all patients and especially children.

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Authors: Anthony W. Castleberry¹, Ricardo Pietrobon¹, Mathias Worni¹, Maragatha Kuchibhatla¹, Scott L. Shofer¹, Laurie D. Snyder¹, Scott M. Palmer¹, *R. Duane Davis¹, *Matthew G. Hartwig¹

Author Institution(s): ¹Duke University Medical Center, Durham, NC

Objectives: Risk factors and outcomes of bronchial stricture (BSt) following lung transplantation (LTx) are not well defined. An association between acute rejection (AR) and development of BSt has been suggested in the literature; however, these studies are few and comprised of small sample sizes. Our objective was to evaluate the impact of early AR on the incidence of BSt using a cohort of all LTx performed in the United States (US) and recorded by the United Network For Organ Sharing (UNOS).

Methods: We performed a secondary longitudinal analysis of all US LTx performed between October 1987 and June 2011 as recorded in the UNOS database. Patients missing AR or BSt information and those undergoing multi-visceral transplant other than heart-lung were excluded. Generalized linear models were used to determine the association between early AR and development of BSt after adjusting for demographics, diagnosis, comorbidities, and donor characteristics. The population was further stratified by type of transplant (single or bilateral).

Results: A total of 11,295 patients were included, with 4,780 (42%) treated for AR within the first year. The overall incidence of BSt was 11% (=1,245/11,295). Early AR was associated with a significantly greater incidence of BSt for patients undergoing single LTx (OR: 1.5, 95%CI 1.2, 1.9) and bilateral LTx (OR: 1.2, 95% CI 1.01, 1.4). Male gender, underlying diagnosis of restrictive lung disease, and year of transplant prior to 2000 were also predictive of BSt for both single and bilateral LTx. Those who developed BSt had significantly decreased survival (Figure 1) and maximum postop FEV1 (single lung 63% vs 58%, p = 0.0001; bilateral lung 83% vs 71%, p = 0.0001).

Conclusions: Data from UNOS suggests that early AR may significantly increase the incidence of BSt resulting in worse postoperative outcomes. Patients with early AR may benefit from increased surveillance for airway complications and early interventions.
57. Preoperative Risk Stratification of Right Ventricular Dysfunction in the Modern, Continuous Flow Left Ventricular Assist Device Era

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**Authors:** Andrew Goldstone¹, Pavan Atluri¹, Alex S. Fairman¹, John W. MacArthur¹, Yasuhiro Shudo¹, William Hiesinger¹, Jessica L. Howard¹, Michael A. Acker¹, J. Eduardo Rame¹, Y. Joseph Woo¹

**Author Institution(s):** ¹University of Pennsylvania, Philadelphia, PA

**Objectives:** In the era of destination continuous flow left ventricular assist devices (LVAD), the decision as to whether a patient will tolerate isolated LVAD support or will need biventricular support (BIVAD) can be challenging. Incorrect decision making, with delayed right ventricular assist device (RVAD) implant, results in increased morbidity and mortality. Modern, continuous flow LVADs have been shown to decrease pulmonary hypertension and improve right ventricular (RV) function. We undertook this study to determine the variables in the modern, continuous flow LVAD era that identify the patients whom are candidates for isolated LVAD therapy as opposed to requisite, biventricular support.

**Methods:** We reviewed demographic, hemodynamic, and echocardiographic variables on 218 patients who underwent VAD implant from 2003 to 2011 (LVAD = 167, BIVAD = 51), during the era of continuous flow LVADs.

**Results:** We compared 52 different pre-operative risk factors between those patients that were successfully managed with an LVAD with those requiring a BIVAD. Eighteen different variables demonstrated statistical significance by univariate analysis (p<0.05), Table 1. Multivariate logistic regression analysis demonstrated pulmonary hypertension (OR 4.9), severe RV dysfunction (OR 3.9), severe tricuspid regurgitation (OR 3.7), preoperative extracorporeal membrane oxygenation (ECMO) support (OR 5.7), heart rate >100bpm (OR 2.5), and central venous pressure >15mmHg (OR 2.2) as the major criteria predictive of the need for BIVAD support. Utilizing this data, a highly sensitive risk predictive formula was created.

**Conclusions:** We present a preoperative risk calculator to determine suitability of a patient for isolated LVAD support in the current continuous flow ventricular assist device era.
58. Inferior Vena Cava Oxygen Saturation Monitoring After the Norwood Procedure

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Authors: *Robert J. Dabal*, Leslie A. Rhodes, Santiago Borasino, Mark A. Law, Kristal M. Hock, Jeffrey A. Alten

Author Institution(s): *University of Alabama at Birmingham, Birmingham, AL*

Objectives: SVC oximetry is used to estimate systemic oxygen delivery after neonatal cardiac surgery. IVC oximetry may be a superior indicator of early shock, due to redistribution of blood flow from renal, splanchnic, and mesenteric beds while cerebral circulation is maintained. We sought to determine if oxygen saturation measured from IVC (SVO2) can be used in goal directed management or prognosis after Norwood Procedure with RV-PA conduit (NP) in the early postoperative period.

Methods: Retrospective study of 26 consecutive NP patients from March 2010 through November 2011. All patients were managed with a femoral CVL. Arterial and venous blood gasses were drawn on CICU admission and at least every two hours with concomitant recording of hemodynamic variables. Patients had protocolized colloid, inotrope, and ventilator adjustments targeting SVO2≥45, A-VO2<25, arterial saturations 70-80, mean arterial pressure 45-50, CVP 8-12, pH 7.4. We analyzed the first four hours of oximetry data; adverse events (AE) were defined as death, CPR, ECMO and residual surgical defects.

Results: Ten patients had at least one AE. In-hospital mortality was 6/26 (23%). Mean SVO2 was 40 ± 11 in AE vs. 60 ± 10 in non-AE patients, and A-VO2 was 31 ± 14 in AE vs. 16 ± 9 in non-AE patients, both p=.0001. At four hours, 9/10 AE patients had SVO2 < 45 vs. only 1/16 non-AE patient, p=.0001. SVO2 and renal NIRS were highly predictive of AE by ROC analysis (both AUC=.98, p=.02). Mean renal NIRS was 54 ± 10 in AE patients vs. 76 ± 6 in non-AE patients; renal NIRS strongly correlated with SVO2 (r=.87, p<.001), but cerebral NIRS did not (r=.43). Comparison of other variables is shown in Table 1.

Conclusions: Intermittent IVC oximetry can be used to estimate oxygen delivery in early postoperative NP management. Renal NIRS is an accurate continuous non-invasive surrogate for IVC SVO2. SVO2 <45 in first four hours is highly predictive of poor outcomes. It remains to be seen if “low” IVC SVO2 is a modifiable risk factor.

Table 1. Comparison of hemodynamic and oxygen transport variables

<table>
<thead>
<tr>
<th></th>
<th>Adverse Event(s)</th>
<th>No Adverse Event(s)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean arterial pressure (mm Hg)</td>
<td>50 ± 8</td>
<td>50 ± 7</td>
<td>0.01</td>
</tr>
<tr>
<td>Pulse Pressure (mm Hg)</td>
<td>17 ± 5</td>
<td>29 ± 0</td>
<td>0.0001</td>
</tr>
<tr>
<td>Central Venous Pressure (mm Hg)</td>
<td>15 ± 4</td>
<td>13 ± 4</td>
<td>0.01</td>
</tr>
<tr>
<td>Arterial Oxygen Saturation</td>
<td>70 ± 10</td>
<td>76 ± 8</td>
<td>0.01</td>
</tr>
<tr>
<td>Cerebral NIRS</td>
<td>43 ± 7</td>
<td>46 ± 9</td>
<td>0.03</td>
</tr>
<tr>
<td>Arterial pH</td>
<td>7.35 ± 0.07</td>
<td>7.61 ± 0.08</td>
<td>0.00</td>
</tr>
<tr>
<td>Lactate (mmol/l)</td>
<td>15 ± 5</td>
<td>5 ± 3</td>
<td>0.0001</td>
</tr>
<tr>
<td>Inotrope Score</td>
<td>22.4 ± 11.2</td>
<td>15.5 ± 5</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Data presented as mean ± SD of first 4 hours after CICU admit.
59. The Influence of Age and Severity of Comorbid Illness on Outcomes After Isolated Aortic Valve Replacement

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Authors: Mark J. Russo1, Alexander Iribarne2, Emily Chen1, Thomas Bozzay1, Valluvan Jeevanandam3, Shahab Akhter3,

Author Institution(s): 1University of Chicago, Chicago, IL; 2Columbia University, New York City, NY

Discussant: D*Vinod H. Thourani, Emory University School of Medicine, Atlanta, GA

Objectives: With the introduction of transcatheter valve technologies, patient selection for traditional aortic valve replacement (AVR) will evolve. The purpose of this study was to describe outcomes of AVR among patients stratified by both age and severity-of-comorbid-illness (SOCI).

Methods: De-identified patient-level claims data on a random sample of AVRs performed in the U.S. from January 1, 2008 through December 31, 2008 was obtained from the National Inpatient Sample. Patients with major concomitant procedures were excluded for a net sample size of 4,406. Patients were stratified by SOCI according to all-patient-defined diagnosis related groups (APR-DRGs), resulting in four SOCI levels: minor (n=324; 7.4%); moderate (n=1,585; 36%); major (n=1,747; 39.7%); and extreme (n=750; 17%). The primary outcome measures were inpatient mortality, length of stay (LOS), and discharge location.

Results: Patients > 80 years-old represented 19.4% (n=851) of all patients undergoing isolated AVR. Regardless of age, mortality in the minor, moderate, and major SOCI groups was < 1.4%, and the discharge to home rate > 75% (Figure 1). However, the inpatient mortality rate was five to 12-fold higher in the extreme SOCI group, and over half of patients were discharged to a nursing facility. Among patients > 80 years-old, 23.4% (n=199) were in the extreme SOCI group, and this group had a 2.3 - 3.4 day longer LOS compared to the other three age groups (Table 1). Also, among patients > 80 years-old, the mortality rate was 5.2% (n=44), and 48.3% (n=411) were discharge to a nursing facility.

Conclusions: Regardless of age, mortality was acceptably low in the minor, moderate, and major SOCI groups. However, in the extreme group inpatient mortality was significantly higher and the discharge to home rate was lower across all age strata. These results highlight the need for further risk stratification among high-risk and elderly patients undergoing traditional AVR.

Table 1

<table>
<thead>
<tr>
<th>Age</th>
<th>18-39</th>
<th>40-59</th>
<th>60-79</th>
<th>80+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor n</td>
<td>182</td>
<td>972</td>
<td>279</td>
<td>821</td>
<td>434</td>
</tr>
<tr>
<td>%</td>
<td>10.8%</td>
<td>11.3%</td>
<td>16.5%</td>
<td>19.1%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Moderate n</td>
<td>98</td>
<td>293</td>
<td>879</td>
<td>217</td>
<td>1,387</td>
</tr>
<tr>
<td>%</td>
<td>7.6%</td>
<td>21.7%</td>
<td>64.5%</td>
<td>15.7%</td>
<td>35.6%</td>
</tr>
<tr>
<td>Major n</td>
<td>60</td>
<td>331</td>
<td>971</td>
<td>378</td>
<td>1,780</td>
</tr>
<tr>
<td>%</td>
<td>5.2%</td>
<td>22.6%</td>
<td>56.9%</td>
<td>21.3%</td>
<td>39.6%</td>
</tr>
<tr>
<td>Extreme n</td>
<td>20</td>
<td>145</td>
<td>380</td>
<td>199</td>
<td>744</td>
</tr>
<tr>
<td>%</td>
<td>1.2%</td>
<td>7.0%</td>
<td>8.5%</td>
<td>4.6%</td>
<td>16.7%</td>
</tr>
</tbody>
</table>

Location of Discharge by Age

<table>
<thead>
<tr>
<th></th>
<th>Dead</th>
<th>Facility</th>
<th>Home</th>
<th>LOS</th>
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<tbody>
<tr>
<td>18-39</td>
<td>13</td>
<td>63</td>
<td>123</td>
<td>5.8</td>
</tr>
<tr>
<td>40-59</td>
<td>10</td>
<td>43</td>
<td>182</td>
<td>5.9</td>
</tr>
<tr>
<td>60-79</td>
<td>7</td>
<td>28</td>
<td>205</td>
<td>5.9</td>
</tr>
<tr>
<td>80+</td>
<td>4</td>
<td>16</td>
<td>164</td>
<td>6.1</td>
</tr>
</tbody>
</table>

LOS mean 5.74 6.53 8.86 11.04 9.18

NOTES:

*STSA Member  D Relationship Disclosure
60. Outcome of Surgical Therapy for Endocarditis in a Pediatric Population: A 21-Year Review

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Authors: Hyde M. Russell*, Soraya Johnson¹, Katherine C. Wurlitzer¹, *Carl L. Backer¹

Author Institution(s): ¹Children’s Memorial Hospital, Chicago, IL

Discussant: Lauren Kane, University of Texas Health Science Center, San Antonio, TX

Objectives: Infective endocarditis is a rare disease in the pediatric population. We sought to define patient characteristics and outcomes of surgical therapy for endocarditis in children.

Methods: We performed a retrospective review of all patients with infective endocarditis who received surgical therapy between January 1, 1990 and March 1, 2011. We were interested in their congenital heart defect, prior surgical procedures, and outcome of the operation.

Results: We identified 35 cases of endocarditis requiring surgical intervention. Mean age was 10.7 ± 8.8 yrs. There was a bimodal age distribution at presentation: 11/34 (31%) < one year-old and 15/34 (43%) 10-21 years-old. The majority of the patients had no history of prior cardiac surgery (22/35, 63%). The infective organism was identified in 30/35 (86%) with Staphylococcus aureus (n=8) and Streptococcus viridians (n=6) predominating. Valve replacement was performed in 12 patients and valve repair in ten. All patients received six weeks of postoperative intravenous antimicrobial therapy. Operative mortality was 5/34 (15%). All deaths occurred in infants with a mean age of 2.5 months, and 3/5 (60%) of them were premature. Of four patients with fungal infection, three patients died. The Ross operation was performed successfully in cases of severe aortic valve disease (n=5). Reoperations (n=10, 28%) included valve replacement in five and conduit replacement in three, all but one due to somatic growth resulting in functional stenosis.

Conclusions: Outcomes of surgical therapy for endocarditis in children was similar to that reported for adults with an overall mortality rate of 15%. The Ross operation was very effective in cases of aortic valve endocarditis. There is a significant incidence of late re-operation for valve and conduit replacement due to somatic growth. Age < one year, prematurity, and fungal organisms appear to be risk factors for death. Patients surviving to discharge had good outcomes with no episodes of recurrent endocarditis.
61. Prospective Cohort Case-Control Study of Staged Unilateral Thoracoscopic Lung Volume Reduction: Effects on Perioperative Mortality, Improvement in Pulmonary Function, and Long-Term Survival

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Authors: D*John R. Roberts

Author Institution(s): *Sarah Cannon Cancer Center, Centennial Medical Center, Nashville, TN

Discussant: *Stephen Hazelrigg, Southern Illinois University, Springfield, IL

Objectives: LVRS is effective, but dangerous. We evaluated an algorithm to perform unilateral LVRS, measure improvement, and only proceed to contralateral LVRS for those patients who did not improve. In this way, we might attain the benefits of LVRS, but diminish the risks.

Methods: We present a prospective cohort analysis of a therapeutic algorithm to perform unilateral LVRS. We evaluated outcomes at two to six months after surgery, in terms of lung function and the patient’s evaluation of their exercise tolerance. We followed those patients who improved, but perform immediate contralateral LVRS in patients who did not improve.

Patients were matched for FEV1% and age. We measured lung function pre- and postoperatively, and survival. P-values were set at 0.05.

Results: Seventy-two patients with FEV1% between 18 and 35% underwent 84 procedures. Ages ranged from 40 to 77 years of age. Twenty-two were women and 48 were men.

The average length of stay was 12 days, with a median of eight days. Most patients had no ICU stays, nor days intubated (the medians for ICU stay and days intubated were both 0 days), but outliers gave an average days intubated of 1.4 days.

Twenty-nine of 84 patients developed prolonged air leak. Two patients developed pneumonia and required intubation—one of these patients died, accounting for the single perioperative death.

The average improvement in FEV1% was 33%. No difference in long-term survival (65%) was found between those patients who underwent unilateral or bilateral surgery.

Conclusions: Unilateral LVRS was safe (1.35% operative mortality) and effective (33% improvement in FEV1) in our patients. Our data indicate that unilateral or staged LVRS may result in lower perioperative mortality and a similar benefit as simultaneous bilateral LVRS. Further, our patients with unilateral LVRS had the same long term survival as did our bilateral patients, even when matched for severity of disease.
62. Early Open and Endovascular Thoracic Aortic Repair for Complicated Type B Aortic Dissection

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Authors: *Himanshu J. Patel, DA. Wilkinson, David M. Williams, Narasimham L. Dasika, G. M. Deeb

Author Institution(s): 1University of Michigan, Ann Arbor, MI

Discussant: *Joseph S. Coselli, Texas Heart Institute/Baylor College of Medicine, Houston, TX

Objectives: Aortic repair for acute (<two weeks) or subacute (two to eight weeks) type B dissection (TBD) performed for rupture or factors portending rupture is associated with significant morbidity. A paradigm shift favoring endovascular repair (TEVAR) in lieu of open repair (DTAR) for this indication has emerged, suggesting a comparative analysis is warranted.

Methods: Fifty-seven of 383 patients (14.9%) with complicated TBD (1995-2010) underwent early DTAR (22) or TEVAR (35). Mean age was 67.2 years-old (60% male). Thirty-nine underwent intervention in the acute period: 18 in the subacute period. Indications for intervention included rupture (20) or factors portending rupture including rapid expansion (19), uncontrolled pain (15), aortic size >5.0 cm (21) or refractory hypertension (2). Twenty had multiple indications. Isolated intramural hematoma was present in 12. Extent of repair included arch (44) or total descending aorta (24). Differences between treatment groups are listed in the Table.

Results: Thirty-day mortality was 14% (n=8). Morbidity included stroke (6), new onset dialysis (5), permanent paralysis (3) and tracheostomy (6). A composite outcome of mortality and these morbidities independently correlated with frank rupture (p=0.01), but not treatment strategy (p=0.8). 8-yr Kaplan-Meier survival was 55.4%. Independent predictors of late mortality included preexisting renal failure or CHF, presentation with rupture or perioperative stroke (all p<0.02). 5-year survival was similar between groups (TEVAR 55% vs. DTAR 60.4% p=0.71). 5-year freedom from aortic reintervention/rupture was 71.1%, and was lower after TEVAR (67.4% vs. DTAR 81%, p=0.1).

Conclusions: Early aortic repair for complicated type B dissection is associated with high rates of morbidity, late mortality and reintervention. Despite its use in a higher risk group, early morbidity and late survival with TEVAR were similar to those seen with conventional open repair, thus supporting the recent paradigm shift towards an endovascular approach.

Baseline Differences Between Treatment Groups

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>TEVAR</th>
<th>DTAR</th>
<th>P.VALUE</th>
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<tbody>
<tr>
<td>Age (years)</td>
<td>72.9</td>
<td>69.5</td>
<td>0.000</td>
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<tr>
<td>CAD</td>
<td>80%</td>
<td>10.9%</td>
<td>0.003</td>
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<tr>
<td>PVOD</td>
<td>50%</td>
<td>0%</td>
<td>0.032</td>
</tr>
<tr>
<td>Baseline Creatinine Clearance (mL/min)</td>
<td>64.7</td>
<td>108.6</td>
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<tr>
<td>Debulking Extent IRA</td>
<td>30%</td>
<td>40.7%</td>
<td>0.035</td>
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<tr>
<td>Presentation with Rupture</td>
<td>31.3%</td>
<td>37.0%</td>
<td>0.79</td>
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<td>Treatment in Subacute Phase</td>
<td>23.3%</td>
<td>0.7%</td>
<td>0.25</td>
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</table>

CAD=coronary artery disease; PVOD=peripheral vascular occlusive disease

NOTES:
63. Surgical Strategy and Long-Term Outcomes in Patients With Tetralogy of Fallot and Atrioventricular Septal Defect: A 50-Year Experience

Unless otherwise noted in this program book or verbally by the speakers, speakers have no relevant financial relationship to disclose and will only be presenting information on devices, products, or drugs that are FDA approved for the purposes they are discussing. Authors listed with a D next to their name have indicated that they have a financial or other relationship with a healthcare-related business or other entity to disclose.

Authors: Vijayakumar Raju¹, Harold M. Burkhart¹, Natalie Rigelman Hedberg², Benjamin W. Eidem², Zhuo Li³, Chenhui Hu³, Connolly Heidi², Hartzell V. Schaff¹, Joseph Dearani¹

Author Institution(s): ¹Mayo School of Graduate Medical Education, Rochester, MN

Discussant: *Bret Mettler, Vanderbilt University, Nashville, TN

Objectives: Tetralogy of Fallot with atrioventricular septal defect (TOF/AVSD) is rare with limited long-term data available. We report our institutional surgical strategy and outcome over a 50-year period.

Methods: From January 1961 to January 2011, a total of 73 patients (n=50; males, 68%) between the ages of one month-old and 35 years-old (mean 6.8 ± 4.4 years) underwent surgical repair of TOF/AVSD. Symptoms included cyanosis in 50 patients (69%) and heart failure in 12 (17%). Down syndrome was present in 34% (n=25). On AVSD, Rastelli type A, B and C were seen in 12%, 7%, and 81% of patients, respectively. Significant common atrioventricular valve regurgitation (CAVR) was present in 40% of patients. Forty-nine patients (67%) had previous palliation including systemic to pulmonary arterial shunt in 36 patients.

Results: Surgical management included two-ventricle repair in 48% (Group A, n=35) and single ventricle palliation (Fontan) in 52% (Group B, n=38). Early mortality was 22.7% in each group (10 patients in each group) before 1990 (n=44); after 1990 (n=29) mortality decreased to 3.4% (1 patient) in group A and 10.3% (3 patients) in group B (p=0.008). The era of repair (before 1990, p=0.0048) and the presence of significant CAVR (p=0.04) were univariate risk factors for early mortality in both groups. Median follow-up was 9.8 years (max 31 years). Late mortality was 12% in Group A (n=6) and 18% (n=9) in Group B (p=0.95). The presence of significant CAVR (p=0.02) was strongly associated with late death. Overall survival at one, five, and 15 years was 92%, 77%, and 77% in Group A, and 83%, 79%, 70% in group B (p=0.9). Freedom from re-operation at one, five, and 15 years in Group A was 95%, 85%, 67% and in Group B was 96%, 91%, 82% (p=0.1). Presence of CAVR was a strong risk factor for late re-operation in both the groups (p=0.019).

Conclusions: Complete repair and single ventricle palliation have low early mortality in the current era and reasonable long-term outcome. AV valve regurgitation is a significant risk factor for mortality and re-operation.
64. Fewer Complications With VATS Approach to Anatomic Resection of Clinical Stage I Lung Cancer

*STSA Member  D Relationship Disclosure

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Authors: Daniel J. Boffa*, Ankit Dhamija*, Andrzej Kosinski, Anthony W. Kim, Frank C. Detterbeck*, John Mitchell, Mark Onaitis, Subroto Paul

Author Institution(s): 1Duke University Medical Center, Durham, NC; 2University of Colorado Denver School of Medicine, Aurora, CO; 3New York-Presbyterian/Weill Cornell, New York, NY; 4Yale University School of Medicine, New Haven, CT

Discussant: *Robert J. Cerfolio, University of Alabama at Birmingham, Birmingham, AL

Objectives: Anatomic resection is currently the standard of care for clinical stage I lung cancer, yet ablative technologies are increasingly presented to avoid the morbidity of a Thoracotomy. The Video Assisted Thoracic Surgery (VATS) approach to anatomic resection is a minimally invasive alternative to Thoracotomy however the advantages of VATS in the clinical stage I subset are not fully characterized. We evaluated perioperative outcomes to compare complications rates by surgical approach and to establish a safety standard in clinical stage I lung cancer.

Methods: The Society of Thoracic Surgeons General Thoracic Surgery Database was queried for lobectomies and segmentectomies performed between 2001 and 2010 for clinical stage I primary cancer.

Results: A total of 11,531 (7,137 Open and 4,394 VATS) clinical stage I primary lung cancers were resected. Propensity scoring was used to match 2,745 well balanced pairs. Overall complications were significantly more likely in the Thoracotomy group (36% versus 30%, p < .001), as shown in the Table. The Thoracotomy patients experienced significantly more pneumonias (5% versus 3%), total pulmonary complications (21% versus 18%), atrial arrhythmias (13% versus 10%) and were more likely to be transfused (6% versus 4%). Mortality at discharge or at 30 days was similar (Thoracotomy 1.8%, VATS 1.3%, p = .13).

Conclusions: Anatomic resection of clinical stage I primary lung cancer can be performed safely by thoracic surgeons via Thoracotomy or VATS. However complications are significantly less likely with the VATS approach. As this represents the largest propensity-matched evaluation of perioperative outcomes by approach to date, this study should be considered a safety benchmark for competing technologies. Further study is warranted to determine the short and potential long term effects of these differences in perioperative outcomes.

<table>
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<td>7.1 ± 3.0</td>
<td>5.6 ± 4.5</td>
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<td>Any Complication (%)</td>
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<td>30</td>
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<td>Any Pulmonary (%)</td>
<td>20.8</td>
<td>18.3</td>
<td>.014</td>
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<td>Pneumonia (%)</td>
<td>4.6</td>
<td>3.4</td>
<td>.03</td>
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<tr>
<td>Atrial arrhythmias (%)</td>
<td>4.1</td>
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<td>Air Leak &gt;5ml (%)</td>
<td>10.9</td>
<td>10.7</td>
<td>NS</td>
</tr>
<tr>
<td>Discharged with Chest Tube (%)</td>
<td>5.9</td>
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<td>Any Cardiovascular (%)</td>
<td>1.5</td>
<td>1.3</td>
<td>&lt;.001</td>
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<td>Atrial Fibrillation (%)</td>
<td>12.7</td>
<td>9.7</td>
<td>&lt;.001</td>
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<td>Blood Transfusion Intra Op (%)</td>
<td>2.8</td>
<td>1.1</td>
<td>&lt;.001</td>
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<tr>
<td>Blood Transfusion Post Op (%)</td>
<td>6.2</td>
<td>4.8</td>
<td>&lt;.001</td>
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<tr>
<td>Wound Infection (%)</td>
<td>4</td>
<td>4</td>
<td>NS</td>
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<tr>
<td>Mortality % (Hospital or 30 days)</td>
<td>1.8</td>
<td>1.3</td>
<td>.15</td>
</tr>
</tbody>
</table>

SD = Standard Deviation, ARDS = Adult Respiratory Distress Syndrome
* requiring treatment

NOTES:

192 STSA 59th Annual Meeting
65. Elephant Trunk Procedure: Comparisons of Outcome Between Classic And Other Anastomotic Sites

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Authors: *Gregory Rushing¹, Lars G. Svensson¹, Edgardo Sepulveda Valenzuela¹, Lillian H. Batizy¹, Eric Roselli¹, Eugene H. Blackstone¹, Bruce W. Lytle¹

Author Institution(s): ¹Cleveland Clinic, Cleveland, OH

Discussant: *Anthony Estrera, University of Texas Houston Medical School, Houston, TX

Objectives: To compare (1) outcome between classic elephant trunk anastomotic site (anastomosis beyond the left subclavian artery [LSCA]) and alternative sites (anastomosis between the left common carotid artery [LCCA] vs. the LSCA or other aortic sites) and (2) time to second-stage elephant trunk completion.

Methods: From May 1992 to January 2011, 526 patients underwent a first-stage elephant trunk procedure (age 64±13 years, 57% male). Distal aortic anastomosis was sited before brachiocephalic artery (BA) in six patients (1.1%), between BA and LCCA in one (0.19%), between LCCA and LSCA in 154 (29%), and beyond LSCA in 365 (69%), including 34 (6.5%) patients whose descending aorta was stented simultaneously (frozen elephant trunk). Aortic dissection was present in 257 (49%), aneurysm in 492 (94%), and hematoma with leak in 32 (6.2%). Fifty-nine patients (11%) had connective tissue disorders. One hundred ninety-five were reoperations (37%).

Results: Unadjusted 30-day mortality was 7.6% (predictors [P<.05]: older age, greater body surface area, higher bilirubin/creatinine, lower hematocrit, coronary artery bypass grafting, cardiopulmonary bypass) and was similar for LCCA-LSCA (9.7%) and classic (6.3%) groups, P=.7. Stroke (predictors [P<.05]: older age, acute dissection) occurred in 8.0%/overall, 10% (n=16) in the LCCA-LSCA group and 6.9% (n=25) in the classic group (P=.2). Likelihood of surviving without second-stage elephant trunk (ET-II) at 1, 4, and 8 years after operation was 31%, 19%, and 12%, respectively (Figure). Likelihood of death before second-stage elephant trunk one, four, and eight years after operation was 16%, 22%, and 27%, respectively.

Conclusions: The elephant trunk operation is safe, including when anastomosis is at sites other than beyond the LSCA (classic), but without the second stage, mortality increases markedly after four years (Figure).
66. Minimally Invasive and Open Esophagectomies for Cancer Result in Similar Lymph Node Yields

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Authors: Ankit Dhamija¹, Xiaojie Guo¹, *Anthony W. Kim¹, Zuoheng Wang¹, *Frank C. Detterbeck¹, Daniel J. Boffa¹

Author Institution(s): ¹Yale University School of Medicine, New Haven, CT

Discussant: *Wayne Hofstetter, University of Texas, MD Anderson Cancer Center, Houston, TX

Objectives: Regional lymphadenectomy is a critical component of esophagectomy for esophageal cancer, yet there is considerable variability in the extent to which this is performed. Although the minimally invasive approach is a safe alternative to open esophagectomy, the adequacy of the minimally invasive lymphadenectomy is unclear. The objective of the current study is to compare the lymph node yield from minimally invasive and open esophagectomies for esophageal cancer.

Methods: A retrospective review was performed on a prospectively maintained database. Optimal lymphadenectomy has been defined by the institutional esophageal cancer program to be 18 or greater lymph nodes.

Results: A single surgeon performed 54 minimally invasive esophagectomies (MIE) for esophageal cancer from May 2008 to February 2012. These were compared to 34 “Open” esophagectomies via thoracotomy (13 by said surgeon) during a similar time period (2006 to 2012). Patient and tumor characteristics were similar for the two groups (Table). Operative mortality was 3.7% for MIE and 5.9% in Open group. The median lymph node yield was 26 for MIE and 17 for Open groups (p = .008).

The MIE cohort was considered in two chronologic groups; the first 18 patients (33%) and the next 36 (67%). The median number of lymph nodes retrieved was 19 and 27 respectively, and the frequency of optimal lymphadenectomy (18 or greater nodes) increased significantly from the first group (9/18) to the second group (32/36) p = .005.

Conclusions: The surgical lymph node evaluation during minimally invasive esophagectomy may achieve a yield of harvested lymph nodes that compares well to that of the Open approach. The frequency of achieving institutionally-imposed optimal lymph node standards increases with experience, therefore particular attention should be paid to the lymphadenectomy when adopting this approach.

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<td>61 (37-77)</td>
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<tr>
<td>I</td>
<td>15</td>
<td>15</td>
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<td>II</td>
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<td>Anastomosis (%)</td>
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<td>.62</td>
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<td>Cervical</td>
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<tr>
<td>I</td>
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<tr>
<td>III</td>
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<td>Lymph-node yield (mean)</td>
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<td>Hawley H. Seiler*</td>
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<td>Bonita Springs, FL</td>
<td>Carolyn E. Reed</td>
<td>Robert J. Cerfolio</td>
</tr>
<tr>
<td>2008</td>
<td>Austin, TX</td>
<td>John W. Hammon</td>
<td>Robert J. Cerfolio</td>
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<td>2009</td>
<td>Marco Island, FL</td>
<td>Michael J. Mack</td>
<td>Robert J. Cerfolio</td>
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<td>2010</td>
<td>Orlando, FL</td>
<td>Keith S. Naunheim</td>
<td>Robert J. Cerfolio</td>
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<tr>
<td>2011</td>
<td>San Antonio, TX</td>
<td>Joseph S. Coselli</td>
<td>David R. Jones</td>
</tr>
<tr>
<td>2012</td>
<td>Naples, FL</td>
<td>Walter H. Merrill</td>
<td>David R. Jones</td>
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<tr>
<td></td>
<td></td>
<td>* Deceased</td>
<td></td>
</tr>
</tbody>
</table>
**AWARDS**

**CLIFFORD VAN METER PRESIDENT’S AWARD**

Formerly known as the President’s Award, the Clifford Van Meter President’s Award was established in 2008 to recognize the best scientific paper delivered at the previous Annual Meeting of the Association. The award is given on the basis of originality, content, and presentation. Previous winners have uniformly displayed excellence in all areas. The author receives a certificate identifying the award and a suitable monetary reward. The winner is chosen by the President with the assistance of Council members.

**CLIFFORD VAN METER PRESIDENT’S AWARD WINNERS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Winner</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964</td>
<td>Bertram A. Glass</td>
<td>New Orleans, Louisiana</td>
</tr>
<tr>
<td>1965</td>
<td>Harold C. Urschel, Jr.</td>
<td>Dallas, Texas</td>
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<tr>
<td>1966</td>
<td>Thomas J. Yeh</td>
<td>Savannah, Georgia</td>
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<tr>
<td>1967</td>
<td>Yale H. Zimberg</td>
<td>Richmond, Virginia</td>
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<tr>
<td>1968</td>
<td>J. Alex Haller, Jr.</td>
<td>Baltimore, Maryland</td>
</tr>
<tr>
<td>1969</td>
<td>William H. Sewell</td>
<td>Sayre, Pennsylvania</td>
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<tr>
<td>1970</td>
<td>George R. Daicoff</td>
<td>St. Petersburg, Florida</td>
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<tr>
<td>1971</td>
<td>Charles E. Eastridge</td>
<td>Memphis, Tennessee</td>
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<tr>
<td>1972</td>
<td>J. Kent Trinkle</td>
<td>San Antonio, Texas</td>
</tr>
<tr>
<td>1973</td>
<td>Donald L. Bricker</td>
<td>Lubbock, Texas</td>
</tr>
<tr>
<td>1974</td>
<td>Harvey W. Bender, Jr.</td>
<td>Nashville, Tennessee</td>
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<tr>
<td>1975</td>
<td>Charles E. Martin</td>
<td>Nashville, Tennessee</td>
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<tr>
<td>1976</td>
<td>Gordon F. Murray</td>
<td>Chapel Hill, North Carolina</td>
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<tr>
<td>1977</td>
<td>Denis H. Tymas</td>
<td>St. Louis, Missouri</td>
</tr>
<tr>
<td>1978</td>
<td>Joseph I. Miller, Jr.</td>
<td>Atlanta, Georgia</td>
</tr>
<tr>
<td>1979</td>
<td>M. Wayne Flye</td>
<td>Galveston, Texas</td>
</tr>
<tr>
<td>1980</td>
<td>Francis Robicsek</td>
<td>Charlotte, North Carolina</td>
</tr>
<tr>
<td>1981</td>
<td>Ellis L. Jones</td>
<td>Atlanta, Georgia</td>
</tr>
<tr>
<td>1982</td>
<td>William G. Malette</td>
<td>Omaha, Nebraska</td>
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<tr>
<td>1983</td>
<td>Robert H. Breyer</td>
<td>Springfield, Massachusetts</td>
</tr>
<tr>
<td>1984</td>
<td>Blair A. Keagy</td>
<td>Chapel Hill, North Carolina</td>
</tr>
<tr>
<td>1985</td>
<td>John W. Hammon, Jr.</td>
<td>Nashville, Tennessee</td>
</tr>
<tr>
<td>1986</td>
<td>William H. Frist</td>
<td>Nashville, Tennessee</td>
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<tr>
<td>1987</td>
<td>Jean-Nicolas Vauthey</td>
<td>New Orleans, Louisiana</td>
</tr>
<tr>
<td>1988</td>
<td>Robert A. Gustafson</td>
<td>Morgantown, West Virginia</td>
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<tr>
<td>1989</td>
<td>Harvey I. Pass</td>
<td>Bethesda, Maryland</td>
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<tr>
<td>1990</td>
<td>Vincent L. Gott</td>
<td>Baltimore, Maryland</td>
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<tr>
<td>1991</td>
<td>Ross M. Ungerleider</td>
<td>Durham, North Carolina</td>
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<tr>
<td>1992</td>
<td>William H. Frist</td>
<td>Nashville Tennessee</td>
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<tr>
<td>1993</td>
<td>Kirk R. Kanter</td>
<td>Atlanta, Georgia</td>
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<tr>
<td>1994</td>
<td>Thomas L. Spray</td>
<td>St. Louis, Missouri</td>
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<tr>
<td>1995</td>
<td>Constantine Mavroudis</td>
<td>Chicago, Illinois</td>
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<td>1996</td>
<td>David A. Fullerton</td>
<td>Denver, Colorado</td>
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<tr>
<td>1997</td>
<td>Christopher J. Knott-Craig</td>
<td>Oklahoma City, Oklahoma</td>
</tr>
<tr>
<td>1998</td>
<td>James L. Zallner</td>
<td>Charleston, South Carolina</td>
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<tr>
<td>1999</td>
<td>Thomas D’Amico</td>
<td>Durham, North Carolina</td>
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<tr>
<td>2000</td>
<td>Joseph C. Cleveland, Jr.</td>
<td>Denver, Colorado</td>
</tr>
<tr>
<td>2001</td>
<td>Neal D. Kon</td>
<td>Winston-Salem, South Carolina</td>
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<tr>
<td>2002</td>
<td>Joseph S. Coselli</td>
<td>Houston, Texas</td>
</tr>
<tr>
<td>2003</td>
<td>Robert J. Cerflio</td>
<td>Birmingham, Alabama</td>
</tr>
<tr>
<td>2004</td>
<td>Malcolm DeCamp</td>
<td>Boston, Massachusetts</td>
</tr>
<tr>
<td>2005</td>
<td>Seenu V. Reddy</td>
<td>San Antonio, Texas</td>
</tr>
<tr>
<td>2006</td>
<td>Andrew W. ElBardissi</td>
<td>Rochester, Minnesota</td>
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<tr>
<td>2007</td>
<td>John Stulak</td>
<td>Rochester, Minnesota</td>
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<tr>
<td>2008</td>
<td>G. Chad Hughes</td>
<td>Durham, North Carolina</td>
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<td>2009</td>
<td>Scott H. Johnson</td>
<td>Lansing, Michigan</td>
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<td>2010</td>
<td>Kenneth A. Kesler</td>
<td>Indianapolis, Indiana</td>
</tr>
<tr>
<td>2011</td>
<td>Robert Stewart</td>
<td>Cleveland, Ohio</td>
</tr>
</tbody>
</table>

**TIKI AWARD**

The quality of slides can greatly enhance or detract from a scientific presentation. In order to emphasize the importance of well-planned and prepared slides, the Southern Thoracic Surgical Association has created the Tiki Award.

This award is given to the person who presents a slide at the Annual Meeting which is judged by a committee appointed by the President to be the most memorable and noteworthy. This slide can be selected because it is unintelligible, confusing, cluttered, irrelevant, or conversely because it is superbly clear, concise, colorful, pertinent, and/or utilizes state of the art graphics.

**TIKI AWARD WINNERS**

<table>
<thead>
<tr>
<th>Year</th>
<th>Winner</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1964</td>
<td>Watts R. Webb</td>
<td>New Orleans, Louisiana</td>
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<tr>
<td>1965</td>
<td>J. Alex Haller, Jr.</td>
<td>Baltimore, Maryland</td>
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<tr>
<td>1966</td>
<td>Richard M. Peters</td>
<td>San Diego, California</td>
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<tr>
<td>1967</td>
<td>Myron W. Wheat</td>
<td>St. Petersburg, Florida</td>
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<tr>
<td>1968</td>
<td>Carl H. Almond</td>
<td>Columbia, South Carolina</td>
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<tr>
<td>1969</td>
<td>Francis Robicsek</td>
<td>Charlotte, North Carolina</td>
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<tr>
<td>1970</td>
<td>William A. Neely</td>
<td>Jackson, Mississippi</td>
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<tr>
<td>1971</td>
<td>Paul C. Adkins</td>
<td>Washington, DC</td>
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<tr>
<td>1972</td>
<td>Panagiotis Symbas</td>
<td>Atlanta, Georgia</td>
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<td>1973</td>
<td>James L. Alexander</td>
<td>Savannah, Georgia</td>
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<td>1974</td>
<td>Lloyd H. Hudson</td>
<td>Flint, Michigan</td>
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<tr>
<td>1975</td>
<td>Richard E. Clark</td>
<td>St. Louis, Missouri</td>
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<td>1976</td>
<td>William S. Lyons</td>
<td>Alexandria, Virginia</td>
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<tr>
<td>1977</td>
<td>Maruf A. Razzuk</td>
<td>Dallas, Texas</td>
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<td>1978</td>
<td>Harold C. Urschel, Jr.</td>
<td>Dallas, Texas</td>
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<tr>
<td>1979</td>
<td>Maruf A. Razzuk</td>
<td>Dallas, Texas</td>
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<tr>
<td>1980</td>
<td>Francis Robicsek</td>
<td>Charleston, South Carolina</td>
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<td>1981</td>
<td>Robert Sade</td>
<td>Minneapolis, Minnesota</td>
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<tr>
<td>1982</td>
<td>Kit V. Arom</td>
<td>Morgantown, West Virginia</td>
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<td>1983</td>
<td>Herbert E. Warden</td>
<td>New Orleans, Louisiana</td>
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<tr>
<td>1984</td>
<td>Noel L. Mills</td>
<td>St. Louis, Missouri</td>
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<tr>
<td>1985</td>
<td>George C. Kaiser</td>
<td>Charleston, North Carolina</td>
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<td>1986</td>
<td>J. G. Sele</td>
<td>Baltimore, Maryland</td>
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<tr>
<td>1987</td>
<td>Steven Gundy</td>
<td>Bethesda, Maryland</td>
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<td>1988</td>
<td>Harvey I. Pass</td>
<td>Baltimore, Maryland</td>
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<td>1989</td>
<td>Duke E. Cameron</td>
<td>Pittsburgh, Pennsylvania</td>
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<td>1990</td>
<td>Richard E. Clark</td>
<td>Nashville, Tennessee</td>
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<td>1991</td>
<td>William H. Coltharp</td>
<td>Houston, Texas</td>
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<tr>
<td>1992</td>
<td>Joseph S. Coselli</td>
<td>Chapel Hill, North Carolina</td>
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<tr>
<td>1993</td>
<td>Benson R. Wilcox</td>
<td>New Orleans, Louisiana</td>
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<td>1994</td>
<td>P. Michael McFadden</td>
<td>Charleston, South Carolina</td>
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<td>1995</td>
<td>Carolyn E. Reed</td>
<td>New Orleans, Louisiana</td>
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<td>1996</td>
<td>John L. Ochsner</td>
<td>New Orleans, Louisiana</td>
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<td>1997</td>
<td>Clifford H. Van Meter, Jr.</td>
<td>Austin, Texas</td>
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<td>1998</td>
<td>John D. Oswalt</td>
<td>Greenville, North Carolina</td>
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<td>1999</td>
<td>W. Randolph Chitwood</td>
<td>Portland, Oregon</td>
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<td>2000</td>
<td>Ross M. Ungerleider</td>
<td>Winston-Salem, South Carolina</td>
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<td>2001</td>
<td>Neal D. Kon</td>
<td>Dallas, Texas</td>
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<td>2002</td>
<td>W. Steves Ring</td>
<td>Dallas, Texas</td>
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<td>2003</td>
<td>Betsey Urschel</td>
<td>Atlanta, Georgia</td>
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<td>2004</td>
<td>John Puskas</td>
<td>Shell, Wyoming</td>
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<td>2005</td>
<td>Meredith Scott</td>
<td>Chicago, Illinois</td>
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<td>2006</td>
<td>Constantine Mavroudis</td>
<td>Birmingham, Alabama</td>
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<td>2007</td>
<td>Robert J. Cerflio</td>
<td>Gainesville, Florida</td>
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<td>2008</td>
<td>Curt Tribble</td>
<td>St. Petersburg, Florida</td>
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<tr>
<td>2009</td>
<td>Jeffrey P. Jacobs</td>
<td>Durham, North Carolina</td>
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<tr>
<td>2010</td>
<td>Peter K. Smith</td>
<td>Houston, Texas</td>
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<tr>
<td>2011</td>
<td>John Calhoon</td>
<td>STSA 59th Annual Meeting</td>
</tr>
</tbody>
</table>
OSLER ABBOTT AWARD

The Osler Abbott Award was first given in 1960 and has been awarded annually to that member of the Association who excels in the art of discussionmanship. It was named for Osler Abbott, MD of Atlanta, Georgia, who, in 1950, somehow managed to discuss 26 papers, no mean feat since only 25 were presented and one was his own!

In the early years, sheer volume of discussion was sufficient to earn at least an honorable mention, but volume alone never won the award. More important were factors such as pomposity, arrogance, irrelevancy, and the use of outdated slides which had been shown on two or more occasions. In recent years, the tactics have ranged from extreme subtlety to blatant exhibitionism and from apparent indifference to obvious covetousness.

To place this traditional award on a somewhat higher plane of competition, the Council, in its wisdom, decided to base the decision on Oslerian principles, and selection would come from evaluation of the more memorable of discussions during the scientific sessions.

Thus, the reincarnated purposes of the Osler Abbott Award of the Southern Thoracic Surgical Association are:

1. To focus on the importance of open, frank, and candid discussion in the spirit and substance of the Southern Thoracic Surgical Association and, in this way, to encourage more objective and active participation by all members attending the Annual Meeting.

2. To stimulate a healthy give-and-take among the members and, thereby, enhance the camaraderie and esprit-de-corps which have traditionally characterized the Southern Thoracic Surgical Association.

OSLER ABBOTT AWARD WINNERS

1960—Joseph W. Peabody, Jr.  Washington, DC
1961—Milton V. Davis  Dallas, Texas
1963—Lewis H. Bosher, Jr.  Richmond, Virginia
1964—Sam E. Stephenson, Jr.  Jacksonville, Florida
1965—Bertram A. Glass  New Orleans, Louisiana
1966—Robert E. Carr  Fort Worth, Texas
1967—Osler A. Abbott  Atlanta, Georgia
1968—Watts R. Webb  New Orleans, Louisiana
1969—William A. Cook  Andover, Massachusetts
1970—Edward F. Parker  Charleston, South Carolina
1971—Minas Joannides, Jr.  St. Petersburg, Florida
1972—J. Alex Haller, Jr.  Baltimore, Maryland
1973—Harold C. Urschel, Jr.  Dallas, Texas
1974—Bertram A. Glass  New Orleans, Louisiana
1975—Gilbert S. Campbell  Little Rock, Arkansas
1976—James W. Brooks  Richmond, Virginia
1977—J. Kent Trinkle  San Antonio, Texas
1978—Raymond C. Read  Little Rock, Arkansas
1979—Richard E. Clark  St. Louis, Missouri
1980—Joseph Peabody, Jr.  Washington, DC
1981—Robert M. Sade  Charleston, South Carolina
1983—Francis Robicsek  Charlotte, North Carolina
1984—Milton V. Davis  Kaufman, Texas
1985—George C. Kaiser  St. Louis, Missouri
1986—Milton V. Davis  Kaufman, Texas
1987—J. Alex Haller, Jr.  Baltimore, Maryland
1988—Ronald C. Elkins  Oklahoma City, Oklahoma
1989—Bradley M. Rodgers  Charlettesville, Virginia

1990—Harvey W. Bender, Jr.  Nashville, Tennessee
1991—Kamal A. Mansour  Atlanta, Georgia
1992—Arthur E. Baue  St. Louis, Missouri
1993—Kit V. Arom  Minneapolis, Minnesota
1994—Frederick L. Grover  Denver, Colorado
1995—Constantine Mavroudis  Chicago, Illinois
1996—George Daicoff  St. Petersburg, Florida
1997—Ross M. Ungerleider  Durham, North Carolina
1998—Lynn Harrison  New Orleans, Louisiana
1999—William A. Baumgartner  Baltimore, Maryland
2000—Robert J. Cerfolio  Birmingham, Alabama
2001—Carolyn E. Reed  Charleston, South Carolina
2002—John H. Calhoon  San Antonio, Texas
2003—Constantine Mavroudis  Chicago, Illinois
2004—Keith S. Naunheim  St. Louis, Missouri
2005—Irving L. Kron  Charlottesville, Virginia
2006—Thoralf M. Sundt  Rochester, Minnesota
2007—W. Steves Ring  Dallas, Texas
2008—John W. Hammon  Winston-Salem, North Carolina
2009—Kevin D. Accola  Orlando, Florida
2010—Vinod Thorani  Atlanta, Georgia
2011—Jeffrey P. Jacobs  St. Petersburg, Florida

KENT TRINKLE EDUCATION LECTURESHIP

The Kent Trinkle Educational Lectureship is dedicated to J. Kent Trinkle, (STSA President, 1981-1982) for his contributions to cardiothoracic surgery and STSA. Each year, in honor of Dr. Trinkle’s remarkable dedication to student education, an STSA member is selected to present on his/her training program. Presenters are selected by the STSA President.

1993—Benson R. Wilcox  Chapel Hill, North Carolina
1994—George C. Kaiser  St. Louis, Missouri
1995—J. Kent Trinkle  San Antonio, Texas
1996—Irving L. Kron  Charlottesville, Virginia
1997—William A. Baumgartner  Baltimore, Maryland
1998—Donald C. Watson, Jr.  Memphis, Tennessee
1999—Fred A. Crawford, Jr.  Charleston, South Carolina
2000—Robert A. Guyton  Atlanta, Georgia
2001—Joel D. Cooper  St. Louis, Missouri
2002—W. Steves Ring  Dallas, Texas
2003—Walter G. Wolfe  Durham, North Carolina
2004—Joseph Coselli  Houston, Texas
2005—Neal Kon  Winston-Salem, North Carolina
2007—Walter H. Merrill  Cincinnati, Ohio
2008—Curt Tribble  Gainesville, Florida
2009—Irving L. Kron  Charlottesville, Virginia
2010—Michael R. Mill  Chapel Hill, North Carolina
2011—John H. Calhoon  Houston, Texas
AWARDS

HAWLEY H. SEILER RESIDENTS COMPETITION AWARD
The Hawley H. Seiler Residents Competition Award is presented for an outstanding paper by a cardiothoracic or general surgery resident. It is bestowed upon the resident excelling in the following categories regarding their abstract submission: quality of abstract as well as manuscript and oral presentation. The award is named after STSA Past President and founding member, Hawley H. Seiler. Dr. Seiler’s many contributions to STSA included serving as Secretary for 15 years and presenting on numerous topics at Annual Meetings.

HAWLEY H. SEILER RESIDENTS COMPETITION AWARD WINNERS
1997—Elaine E. Tseng Baltimore, Maryland
1998—Stephen Langley Durham, North Carolina
1999—Aron Goldberg Charleston, South Carolina
2000—Cullen D. Morris Atlanta, Georgia
2001—Sitaram M. Emani Durham, North Carolina
2002—Thomas H. Maxey Charlottesville, Virginia
2003—Brian T. Bethea Baltimore, Maryland
2004—Tara Karamlou Portland, Oregon
2006—Thomas K. Varghese Seattle, Washington
2007—Tara Karamlou Portland, Oregon
2008—David T. Cooke Sacramento, California
2009—Jeremiah Geoff Allen Baltimore, Maryland
2010—Castigliano M. Bhamidipati Charlottesville, Virginia
2011—Sameh Said Rochester, Minnesota

MAVROUDIS-URSCHEL AWARD
The Mavroudis-Urschel Award was established in 2006 to recognize and honor an STSA member who has not only made important contributions to the STSA scientific program, but who has also uniquely personified the social spirit, camaraderie, and fun for which STSA is famous. The award is named for STSA Past Presidents Constantine Mavroudis and Harold Urschel, who both contributed significantly not only to the scientific value of the STSA Annual Meeting but also, and just as importantly, to the organization’s high spirits (and high-jinx).

There is more to an organization than its bylaws, and there is more to its Annual Meeting than the slides and presentations. To many, STSA meetings are as much about social interactions as they are about new research findings in cardiothoracic surgery. Meeting highlights also happen at social events, such as the president’s mixer, receptions, sports events, and during the exhibit hall breaks. The Award goes to a member who has enhanced both aspects of the organization, scientific and social, and done so with a distinctive, even flamboyant, personal style – in the manner of its namesakes.

The Mavroudis-Urschel Award is made at the discretion of the President with input and recommendation from the double-secret Tiki and Osler-Abbot committee chairs. When given, the award is announced at the annual dinner dance.

MAVROUDIS-URSCHEL AWARD WINNERS
2007 – Kit V. Arom Bangkok, Thailand
2009 – John H. Calhoon San Antonio, Texas
2010 – Keith S. Naunheim St. Louis, Missouri
2011 – Francis Robicsek Charlotte, North Carolina

STSA INSPIRATION AWARD
The STSA Inspiration Award was established in 2007 to recognize the important contribution of mentorship to the specialty and the organization, and to encourage upcoming generations of CT surgeons by helping to cultivate mentors worthy of emulation.

The future of cardiothoracic surgery is in the hands and hearts of its medical students and residents. Inspiring a resident or medical student to become a CT surgeon – to become a great CT surgeon – is among the most far-reaching and important contributions one can make to the specialty and ultimately to the Southern Thoracic Surgical Association. The residency program directors and faculty at teaching programs affiliated with the STSA are developing and inspiring future cardiothoracic surgeons every day — teaching them to become leaders in their future institutions, practices, and communities. And mentorship is not limited to program directors and faculty. Surgeons in private practice hire young graduates and become influential mentors providing career guidance and support often for years to come.

To acknowledge the crucial importance of mentorship in developing CT surgeons and to recognize and positively reinforce STSA members who have excelled in their mentorship roles, STSA established its Inspiration Award in 2007. The Inspiration Award is given to the STSA member who has demonstrated exceptional efforts in motivating, inspiring, and cultivating the clinical and research talents of medical students, residents and/or early career CT surgeons.

Nominations must be submitted in writing by September 1 to the sitting STSA President to be considered for possible presentation at the subsequent STSA Annual Meeting. Recommendation letters should outline the specific merits of the nominee and his or her positive influences for the ‘mentee(s).’ Recipient must be a member of STSA in good standing. The award is given at the discretion of the President in consultation with the Council.

2007 – Robert J. Cerfolio Birmingham, Alabama
2009 – Irving L. Kron Miami, Florida
2010 – Kamal A. Mansour Charlotte, North Carolina
2011 – Carlo Bartoli Louisville, Kentucky

JAMES W. BROOKS, MD MEDICAL STUDENT SCHOLARSHIP
The STSA James W. Brooks Medical Student Scholarship was established in 2010 to pay tribute to Dr. Jim Brooks, past president of STSA and a great mentor to countless residents and students. The Brooks Scholarship seeks to identify 2nd, 3rd, and 4th year medical students in the STSA region who are interested in cardiothoracic surgery. The recipient, selected annually by a committee of STSA leaders, receives funding to attend the STSA Annual Meeting and the unique opportunity to benefit from the guidance of STSA members, thus extending Dr. Brooks’ legacy as a great mentor. It has become increasingly important to begin mentoring future CT surgeons at the medical student level. In establishing the Brooks Scholarship and providing first-rate mentorship, STSA hopes to annually inspire a promising medical student to become a great CT surgeon, thus making a far-reaching and important contribution to the future of the specialty and ultimately to the STSA.

2010 – Elizabeth A. Spradlin Richmond, Virginia
2011 – Carlo Bartoli Louisville, Kentucky
THURSDAY, NOVEMBER 8
Exhibits Open  12:30 p.m. – 4:00 p.m.

FRIDAY, NOVEMBER 9
Exhibits Open  9:45 a.m. – 11:30 a.m.
1:00 p.m. - 4:15 p.m.

SATURDAY, NOVEMBER 10
Exhibits Open  6:45 a.m. – 10:30 a.m.

- Exhibit Hall is located in Orchid Ballroom & Foyer
- All coffee breaks scheduled during show hours are in the exhibit area
- Complimentary coffee and pastries will be served
AtriCure, Inc.  
6217 Centre Park Dr.  
West Chester, OH 45069

AtriCure, a leader in cardiac surgical ablation featuring bipolar RF and cryothermic energy devices. AtriCure’s portfolio includes the AtriClip™ LAA exclusion system, the only device specifically approved for LAA exclusion.

Atrium Medical Corporation  
a MAQUET Getinge Group Company  
5 Wentworth Drive  
Hudson, NH 03051

Get your patients mobile with Express Mini 500 and Pneumostat mobile drains. Ocean, Oasis & Express Chest Drains. Also featuring Hydraglide™ Silicone Catheters and the new and improved PleuraGuide™ Chest Tube Insertion Kit.

Baxter Healthcare  
One Baxter Parkway  
Deerfield, IL 60015

In cardiovascular surgery, the BioSurgery products allow the surgeon to control bleeding and deal tissue quickly. Baxter, a global, diversified healthcare company, provides therapeutic solutions for biosurgery with biological products, preparation/delivery devices, and physician resources.

Biomet Microfixation  
1520 Tradeport Drive  
Jacksonville, FL 32218

Biomet Microfixation is a leading global healthcare provider of orthopedic products. Our thoracic portfolio includes the Pectus Bar for repair of Pectus Excavatum and the SternaLock Blu Primary Closure System for sternal closure.

CardiacAssist, Inc.  
240 Alpha Drive  
Pittsburgh, PA 15238

CardiacAssist’s TandemHeart system enables both Surgeons and Cardiologists to initiate high flow circulatory support, with optimal unloading of the left ventricle. As the most versatile extracorporeal circulatory support system available, TandemHeart offers multiple configurations to customize support for each individual patient’s needs.

CorMatrix Cardiovascular, Inc.  
286 South Main Street  
Suite 200  
Alpharetta, GA 30009

CorMatrix® Cardiovascular markets its ECM® Technology biomaterial devices for pericardial closure, cardiac tissue repair, and carotid repair and is currently conducting preclinical studies to evaluate future applications in heart failure as well as other cardiovascular applications.

CryoLife  
1655 Roberts Blvd.  
Kennesaw, GA 30144

CryoLife is a global provider of life restoring technologies for complex cardiac and vascular reconstructive surgery. With the acquisition of Cardiogenesis, CryoLife now offers Cardiac Surgeons a viable treatment for patients with Refractory Angina.

CSA Medical, Inc.  
91 Hartwell Avenue  
Lexington, MA 02421

CSA Medical’s truFreeze® System provides physicians with a “cold” ablation option by utilizing low pressure liquid nitrogen spray to selectively freeze and destroy unwanted tissue.

Estech  
2603 Camino Ramon, Suite 100  
San Ramon, CA 94583

Estech develops and markets a broad portfolio of innovative medical devices and disposables that enable cardiac surgeons worldwide to perform a variety of traditional and minimally invasive surgical procedures.

Ethicon Endo-Surgery  
4545 Creek Road  
Cincinnati, OH 45242

Ethicon Endo-Surgery, a Johnson & Johnson company, develops and markets advanced medical devices for minimally invasive and open surgical procedures, focusing on procedure-enabling devices for the interventional diagnosis and treatment of conditions in general and bariatric surgery, as well as gastrointestinal health, gynecology and surgical oncology. More information can be found at www.ethiconendosurgery.com.

Fehling Surgical Instruments, Inc.  
509 Broadstone Lane  
Acworth, GA 30101

Fehling Surgical Instruments’ exhibit features the “Fehling CERAMO® Instrument Line” and new Minimal Invasive Retractors.” Black CERAMO® surface means high efficiency through enhanced performance, increased endurance and minimal maintenance. See and feel the difference.

HeartWare, Inc.  
205 Newbury Street  
Framingham, MA 01701

HeartWare is a leading innovator of less invasive, miniaturized circulatory support technologies for advanced heart failure. The HeartWare® Ventricular Assist System is commercially available in Europe and is currently the subject of U.S. clinical trials.

Intuitive Surgical  
1266 Kifer Rd.  
Sunnyvale, CA 94086

Intuitive Surgical, Inc. is the global technology leader in robotic-assisted, minimally invasive surgery. The Company’s da Vinci® Surgical System offers breakthrough capabilities that enable cardiac surgeons to use a minimally invasive approach and avoid median sternotomy.

KLS-Martin  
P.O. Box 16369  
Jacksonville, FL 32245

KLS-Martin, a responsive company, is focused on the development of innovative products for oral, plastic and craniofacial surgery. New product developments in our titanium osteosynthesis plating systems allow these products to be used for rapid sternal fixation and reconstruction.

LifeNet Health  
1864 Concert Drive  
Virginia Beach, VA 23453

LifeNet Health helps to save lives and restore health for thousands of patients each year. We are the world’s most trusted provider of transplant solutions, while always honoring the donors and healthcare professionals that allow the healing process.
Medela, Inc.
1101 Corporate Drive
McHenry, IL 60050

Medela has manufactured innovative medical suction pumps and systems for 25 years. Medela’s vacuum technology knowledge and experience resulted in the first digital cardiothoracic drainage system.

Medistim
14000 25th Ave. N., Suite 108
Plymouth, MN 55447

Medistim offers technologies proven to reduce reduce post-CABG MACCE. The VeriQC combines transit time flow and a new 15 MHz ultrasound probe, specifically designed for epiaortic and epicardial imaging.

Medtronic, Inc.
710 Medtronic Pkwy,
Minneapolis, MN 55432

At Medtronic, we’re committed to Innovating for Life. Consider Medtronic’s intuitive solutions in Structural Heart and Aortic Diseases including tissue, mechanical and transcatheter valves, surgical ablation devices, OPCAB, MICS CABG, cannulae and perfusion products.

Mountain States Health Alliance
203 Gray Commons Circle, Suite 120
Gray, TN 37615

Mountain States Health Alliance nestled in beautiful Northeast TN and Southwest Virginia, a 13 hospital system, providing care to 29 counties and 1.2 million residents, seeking Cardiothoracic Surgeon to join well established reputable practice, a vibrant Healthcare Organization, a 250+ multispecialty group of health system employed providers who serve patients in our 29 county service area. Visit Booth 1609 for further details.

Neomend, Inc.
60 Technology Drive
Irvine, CA 92618

Progel® Pleural Air Leak Sealant is a resorbable hydrogel designed to seal air leaks incurred during pulmonary surgery. Progel is the only commercially available, FDA approved product with compelling clinical results that show a significant reduction in post operative air leaks and a reduction in inpatient length of stay.

On-X Life Technologies, Inc.
1300 E. Anderson Lane
Building B
Austin, TX 78752

On-X® Heart Valves: Patented natural design and On-X® Carbon offer reduced turbulence in a mechanical valve to rival the clinical and hemodynamic performance of bioprostheses. FDA IDE approved PROACT (Prospective Randomized On-X® Anticoagulation Clinical Trial) is in process.

Scanlan International, Inc.
One Scanlan Plaza
Saint Paul, MN 55107

Highest quality surgical products designed and manufactured by the Scanlan family since 1921. Stainless steel and titanium precision instrumentation designs. Introducing new VATS/MICS instruments, single-use and instrument care products.

Pioneer Surgical Technology
375 River Park Circle
Marquette, MI 49855

The Pioneer Sternal Cable System is significantly stronger in static and fatigue strength than monofilament wire. Its flexibility and ease of use make it a better choice for sternal closure.

Sorin Group
14401 W. 65th Way
Arvada, CO 80004

Sorin Group’s innovative designs for tissue and mechanical heart valves and annuloplasty repair devices combine superior performance with proven long-term clinical outcomes to become the choice of cardiac surgeons worldwide.

Spiration, Inc.
6675 185th Ave., N.E.
Redmond, WA 98052

Spiration develops novel therapies for patients with conditions of the lung. The IBV Valve System has FDA humanitarian use approval in the U.S. to control specific prolonged post-operative air leaks.

St. Jude Medical
6300 Bee Cave Road, Bldg 2
Austin, TX 78746

St. Jude Medical’s history of commitment to cardiac surgery continues with our legacy of market-leading heart valves, which continues our passion of putting more control into the hands of physicians to offer patients an improved quality of life.

Synthes CMF
1301 Goshen Parkway
West Chester, PA 19380

Synthes CMF develops, produces and markets instruments, implants and biomaterials for the surgical fixation, correction and regeneration of the human skeleton and its soft tissues.

Terumo Cardiovascular Systems
6200 Jackson Rd
Ann Arbor, MI 48103

Whether surgical or interventional, disposable, or implantable, common-place or custom, Terumo products are used daily in a wide range of cardiac and vascular procedures. Terumo Cardiovascular Systems develops, manufactures and distributes products for surgical teams, including cardiopulmonary bypass and intraoperative monitoring, endoscopic vein harvesting, and vascular grafts.

Thoratec
6035 Stoneridge Dr.
Pleasanton, CA 94588

Thoratec is the world leader in mechanical circulatory support with the broadest product portfolio to treat the full range of clinical needs for patients suffering from advanced heart failure.

Vitalcor, Inc. / Applied Fiberoptics
100 E. Chestnut Avenue
Westmont, IL 60559

Introducing the NEW improved Gemini Plus headlight & Camera headlight with larger spot size and brighter output. Latex Free Coronary Artery Balloon Canulæ with self-inflating Balloon. Reusable Bulldog Clamp. Titanium and stainless steel specialty instruments and retractors.

Vitalitec International, Inc.
10 Cordage Park Circle, #200
Plymouth, MA 02360

Vitalitec Geister will be displaying all our products, highlighting our Enclose® II Anastomosis Assist Device, Cygnet® Flexible Clamps, Intrack® Atraumatic Temporary Clamps and Inserts and Geister® ValveGate® and ValveGate® PROTM line of MIS CV instrumentation. You may view our products at www.vitalitec.com and www.geister.com prior to visiting us at our booth.

Wexler Surgical, Inc.
11333 Chimney Rock Road, Suite110
Houston, TX 77035

SOUTHERN THORACIC SURGICAL ASSOCIATION
CONSTITUTION AND BYLAWS
(as amended November 11, 2011)

ARTICLE I: NAME
The name of the Corporation shall be the SOUTHERN THORACIC SURGICAL ASSOCIATION, INC. (hereinafter designated as “the Association”).

ARTICLE II: OBJECTIVES
The Association is a not-for-profit corporation whose principle objectives are to disseminate knowledge and information and to stimulate progress in the field of thoracic and cardiovascular surgery in the designated geographic area.

The Association will:
1. Disseminate knowledge, encourage research and report at the annual meeting, scientific session and postgraduate course on the advancements within the field of thoracic and cardiovascular surgery.
2. Promote fellowship among thoracic and cardiovascular surgeons throughout the designated geographic area.
3. Assure that the activities of the Association are undertaken without any discrimination with regard to race, color, religious creed, national origin, ancestry, physical handicap, medical condition, marital status or sex.

ARTICLE III: OFFICES
The Association shall have and continuously maintain a registered office and a registered agent in the State of Illinois, and may have such other offices in or outside the State of Illinois at the Council’s discretion.

ARTICLE IV: MEMBERS
SECTION 1. Membership. There shall be four (4) categories of members: Active, Senior, Resident and Honorary Member. Members shall be individuals who support the purpose of the Association and who agree to comply with the Association’s rules and regulations. Active and Senior members shall be entitled to hold office and shall have voting privileges. Active and Senior Members must be board certified by the American Board of Thoracic Surgery or its foreign equivalent. If an Active Member moves from the designated membership geographical area outlined in SECTION 2, he or she may retain membership as long as all other requirements for membership are satisfied. Members whose practices have been limited because of disability, or who have reached the age of 65 years, may apply for Senior Membership. The Association shall not be required to subscribe to The Annals of Thoracic Surgery for Senior members. Honorary membership can be bestowed upon a worthy recipient upon recommendation of the Council and ratification by a two-thirds majority of the votes at the annual meeting. Honorary Members are welcomed at all scientific and business meetings of the Association, but have no obligations or responsibilities in the organization. Honorary and Resident Members do not have voting privileges, nor may they hold office. Resident Members must be matched or enrolled in a thoracic surgery educational program accredited by the Residency Review Committee for Thoracic Surgery under the authority of the Accreditation Council for Graduate Medical Education that is within the STSA region provided for in SECTION 2. Resident Members may retain membership up to three years following the completion of their thoracic surgery training. Resident members who have been certified in thoracic surgery by the American Board of Thoracic Surgery may, upon written request to the Association and with approval of the Membership Committee and the Council, transition
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SECTION 1. Annual Meeting. The annual meeting of the members shall be held at a date, time and place determined by the Council and shall be held in conjunction with the scientific session of the Association.

SECTION 2. Purpose. The purpose of the annual meeting is to: elect officers and councilors; receive reports from the Association on the activities of the Council; provide members an opportunity to express their opinions on matters affecting the Association; and to dispense with such other business, as necessary. The order of business for a meeting shall be determined in advance by the President and subsequently adopted at a called meeting.

SECTION 3. Special Meetings. Special meetings of the membership may be called by the President or the Council. Such special meetings shall be held at a date, time and place as determined by the Council.

SECTION 4. Notice of Meetings. Written notice stating the date, time and place of any annual or special meeting shall be delivered no less than seven (7) days, nor more than 30 days, before the date of the meeting to each member entitled to vote at the meeting. In the case of removal of one or more Council members, a merger, consolidation, dissolution or sale of assets, a written notice of no less than twenty (20) days or more than sixty (60) days before the date of the meeting will be given, or at the direction of, the President, the Secretary, or the Council.

SECTION 5. Quorum. The quorum for the transaction of business at a meeting of members or special meeting shall be a majority of the members attending that meeting.

SECTION 6. Voting. Each member with voting rights shall be entitled to only one (1) vote. A majority of the votes present at a meeting where
CONSTITUTION AND BYLAWS

a quorum is present shall be necessary for the adoption of any matter voted upon by the members, except where otherwise provided by law, the articles of incorporation of the Association or these bylaws.

SECTION 7. Informal Action. Required action may be taken without a meeting if a consent in writing, setting forth the action taken, is signed by not less than the minimum number of members necessary to authorize such action at a meeting, except for dissolution of the Association, which must be voted on at a special meeting of the members entitled to vote.

ARTICLE VII: OFFICERS AND THE COUNCIL

SECTION 1. General Powers. The property, business and affairs of the Association shall be managed by the Council. The Council may adopt such rules and regulations for the conduct of its business as shall be deemed advisable and may, in the execution of the power granted, appoint such agents as necessary. In addition, the Council shall act as a Board of Censors for the trial of all alleged offenses against the bylaws. A report by the Chairman of the Council shall be made to the members at the annual meeting.

SECTION 2. Number, Tenure and Qualifications. The Council shall consist of the Past President, the Chairman of the Council (Immediate Past President), the President, the President-Elect, the Vice President, the Secretary/Treasurer, the Director of Continuing Medical Education, the Historian and three Councilors-At-Large. The Secretary/Treasurer Elect, the representative of the Board of Governors of the American College of Surgeons, representative of the Advisory Council for Cardiothoracic Surgery of the American College of Surgeons, the Editor of the Annals of Thoracic Surgery, the Chairman of the Program Committee, the Chairman of the Membership Committee, and the Chairman of the Postgraduate Program Committee shall attend the Council meetings without vote.

SECTION 3. Election. The eligible members will elect the Council. Officers shall be elected annually to serve a one-year term, except the Secretary/Treasurer whose term shall be for four years and the historian whose term shall be for four years and who can be re-elected. The President, Vice President and Secretary/Treasurer are not eligible for re-election. The term of office of councilors-at-large shall be two years. Two Councilors shall be elected one-year and one Councilor the next year to replace the retiring members, unless a vacancy or vacancies has occurred, in which case an additional Councilor(s) shall be appointed by the President to fill the vacant term(s).

SECTION 4. Resignation. Any Council member may resign at any time by giving written notice to the President. Such resignation shall take effect when the notice is delivered, unless the notice specifies a future date. Another exception would be, unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective.

SECTION 5. Annual Meetings. The annual meeting of the Council shall be held at the time and place designated by the Council in connection with the annual members meeting.

SECTION 6. Regular Meetings. The Council may hold regular meetings at such place and at such times as designated by the Council.

SECTION 7. Special Meetings. Special meetings of the Council may be held at any place and time on the call of the President or at the request in writing of any three Council members.

SECTION 8. Notice of Meetings. Notice of special meetings of the Council shall be delivered by, or at the direction of, the Secretary/Treasurer to each Council member at least seven (7) days before the day on which the meeting is to be held. Notice may be waived in writing by a Council member, either before or after the meeting. Neither the business to be transacted at, nor the purpose of any special meeting of the Council, need be specified in the notice or waiver of notice of such meeting.

SECTION 9. Quorum. A majority of the Council members entitled to vote shall constitute a quorum for the transaction of business at any meeting of the Council.

SECTION 10. Manner of Acting. The act of a majority of the Council members at a meeting at which a quorum is present shall be the act of the Council, unless the act of a greater number is required by law, the articles of incorporation, or by these bylaws.

SECTION 11. Informal Action. Action may be taken by the Council without a meeting if a consent in writing, setting forth the action so taken, is signed by all the Council members.

SECTION 12. Participation at Meetings by Conference Telephone. Members of the Council, or of any committee designated by the Council, may take any action permitted or authorized by these bylaws by means of conference telephone, or similar telecommunications equipment, in which all persons participating in the meeting can communicate with each other. Participation in such a meeting shall constitute presence in person at such meeting.

SECTION 13. Compensation. Council members, as such, shall not receive any stated compensation for their services on the Council, but the Council may, by resolution, authorize reimbursement for reasonable expenses incurred in the performance of their duties. The Council will occasionally review the reimbursement policies.

ARTICLE VIII: OFFICERS AND EXECUTIVE DIRECTOR

SECTION 1. Officers. The officers of the Association shall consist of the President, the President-Elect, the Vice President, the Secretary/Treasurer, the Chairman (Immediate Past President), the Past President, the Historian, and such other officers and assistant officers as may be elected in accordance with the provisions of this Article. The Council may elect or appoint such other officers as it shall deem necessary. These officers shall have the authority to perform such duties as may be prescribed from time-to-time by the Council.

SECTION 2. President. The President shall be the principal elected officer of the Association. The President shall preside at all meetings of the Association. The President shall appoint members to the standing committees and to any other special committee, which may be deemed necessary for the welfare of the association. The President shall perform all other duties appropriate to the conduct of the office. At the conclusion of the annual meeting, the retiring President shall automatically become a Councilor for a two-year term of office in the capacity of Chairman the first year and Past President the second year.

SECTION 3. President-Elect. The President-Elect shall participate in all the meetings and deliberations of the Council during the year elected and shall acceed to the office of President the following year.

SECTION 4. Vice President. In the absence of the President, or in the event of his or her inability or refusal to act, the Vice President shall perform the duties of the President. When so acting, the Vice-President shall have all the powers, and be subject to all the restrictions, of the President. The Vice President shall perform such other duties as may be assigned by the President or by the Council.

SECTION 5. Secretary/Treasurer. As Secretary he/she shall: keep the minutes of the meetings of the members and of the Council in one or
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more books provided for that purpose; see that all notices are duly given in accordance with the provisions of these bylaws, or as required by law; be custodian of the Council’s records; keep a register of the post office address of each member, which shall be furnished to the Secretary by such member; notify candidates of their election to membership; and in general perform all duties incident to the office of Secretary, and such other duties that may be assigned by the President or by the Council. The administrative duties of the Secretary may be assigned, in whole or in part, to the Executive Director by the Council.

As Treasurer, he/she shall keep an account of all monies received and expended by the Association and shall make disbursements authorized by the Council. All sums received shall be deposited or invested in such bank, trust company, or other depositories authorized by the Council. The Treasurer shall perform all the duties incident to the office of Treasurer and such other duties as may be assigned by the President or by the Council. The administrative duties of the Treasurer may be assigned, in whole or in part by the Council, to the Executive Director. He/she shall present an annual report to the membership for audit.

SECTION 6. Secretary/Treasurer-Elect. The Secretary/Treasurer-Elect shall serve as understudy to the Secretary/Treasurer for a term of one year.

SECTION 7. Chairman. The immediate Past President shall be the Chairman of the Council and perform such duties as occasionally may be designated by the President or by the Council. Upon termination of the term of office as President, the President shall become Immediate Past President for a one-year term.

SECTION 8. Past President. The Past President shall serve on the Council and perform such duties as may be designated by the President, Chairman of the Council, or by the Council. Upon termination of the term of office as Immediate Past President, the Immediate Past President shall become Previous Past President for a one year term.

SECTION 9. Director of Continuing Medical Education. The Director of Continuing Medical Education shall be appointed by the President for a term of four years and shall oversee and coordinate the Program and Postgraduate Programs, and the administration aspects of continuing education, and chair the Continuing Education Committee.

SECTION 10. Executive Director. The administrative duties and day-to-day operation of the Association shall be conducted by a salaried staff head or firm employed or appointed by the Council. The Executive Director shall be responsible to the Council. The Executive Director shall have the authority to execute contracts on behalf of the Association and as approved by the Council. The Executive Director may carry out the duties of the Secretary of the Association and may carry out the duties of the Treasurer as directed by the Council. The Executive Director shall employ and may terminate the employment of staff members necessary to carry out the work of the Association and shall perform such other duties as may be specified by the Council.

SECTION 11. Historian. The Historian shall record the history of the Association, keep archives of the programs and minutes of the Business and Council meetings, and report the deaths of members at the annual business meeting. In addition, he/she shall perform all other duties appropriate to this office and other duties assigned by the President for Council.

ARTICLE IX: COMMITTEES

The President shall appoint committees as may be necessary for the proper conduct and management of the Association. The standing Committees of the Association shall be:

SECTION 1. Executive Committee. The Executive Committee shall consist of the officers of the Association and the Executive Director. The Executive Director shall be ex-officio, a member of the Executive Committee without the right to vote. The Executive Committee may exercise the authority of the Council in the management of the affairs of the Association during the intervals between meetings of the Council, subject at all times to the bylaws of the Association, and the prior resolutions, regulations and directives issued, adopted or promulgated by the Council. A majority of the members of the Executive Committee shall constitute a quorum for the transaction of business. Meetings may be called by the President or by any two Executive Committee members.

SECTION 2. Program Committee. The Program Committee shall consist of the President, the Director of Continuing Medical Education, the Secretary/Treasurer, and additional members appointed to the Program Committee. Appointment to the Program Committee shall be for a period of three years. Appointment(s) to this committee shall be made by the President each year. The senior member of the appointed members shall serve as Chairman. It shall be the duty of the committee to review the abstracts of scientific papers submitted by the members and arrange the program for the annual meeting. At least one author of each abstract for the regular scientific program should be a member of the association. No more than 25 percent of the papers presented at the annual meeting may be presented by authors who are not members, provided that such papers are of unusual merit.

SECTION 3. Postgraduate Program Committee. The Postgraduate Program Committee shall consist of the Director of Continuing Medical Education and appointed members. Appointment to the Postgraduate Program Committee shall be for a period of three years. Appointments to this committee shall be made by the President each year. The senior appointed member of the committee shall act as chair. It shall be the duty of this committee to arrange a Postgraduate Continuing Medical Education Program to cover broad and varied aspects of thoracic surgery to be presented at the time of the annual meeting.

SECTION 4. Membership Committee. This committee shall consist of four members. Appointment to the Membership Committee shall be for a period of four years. One new appointee to this committee shall be made by the President each year. The senior member of the committee shall serve as Chairman. This committee shall receive applications for membership in the association and after consideration of the applicants may propose them to the Council for approval and to the membership for election.

SECTION 5. Continuing Medical Education Committee. This committee shall consist of the Chairman of the Postgraduate Committee, the Chairman of the Program Committee, and the Director of Continuing Medical Education who shall serve as Chairman. It shall be the duty of this committee to set up the objectives of the next annual meeting with the said objectives being presented for approval by the Council at their interim meeting and forwarded to members prior to the annual meeting.

SECTION 6. Nominating Committee. This committee shall consist of the four Immediate Past Presidents with the most senior Past President serving as Chairman. This committee shall prepare a slate of nominees for officers and Councilors for the following year. This report is submitted to the organization at its annual meeting. The recommendations of the Nominating Committee are not intended to exclude direct nominations from the floor.
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SECTION 7. Other Committees. Other committees may be designated by a resolution adopted by a majority of the Council present at a meeting at which a quorum is present (Ad Hoc Committees may be designated by the President with approval of the Council). Except as otherwise provided in such resolution, members of each committee shall be members of the Association, and the President of the Association shall appoint the members thereof. Any member may be removed by the person or persons authorized to appoint such member whenever in their judgment the best interests of the Association shall be served by such removal.

SECTION 8. Term of Office. Each member of a committee shall continue as such until the next annual meeting of the Council or until a successor is appointed, unless the committee is terminated, or the member is removed from the committee, ceases to qualify as a member, or the member resigns from the committee.

SECTION 9. Vacancies. Vacancies in the membership of any committee may be filled by appointments made in the same manner as provided in the case of the original appointments.

SECTION 10. Quorum. Unless otherwise provided in the resolution of the Council designating a committee, a majority of any committee shall constitute a quorum for committee action. The act of a majority of committee members present and voting at a meeting, at which a quorum is present, shall be the act of the committee.

SECTION 11. Participation at Meetings by Conference Telephone. Committee members may participate in and act at any committee meeting through the use of a conference telephone or other communications equipment by means of which all persons participating in the meeting can communicate with each other. If the Chairman of a committee so orders, participation in such meetings shall constitute attendance at the meeting.

SECTION 12. Meetings of Committees. Subject to action by the Council, each committee by a majority vote of its members shall determine the time and place of meetings and the notice required.

SECTION 13. Informal Action. Any action required or taken at a meeting of a committee may be taken without a meeting if a consent in writing, setting forth the action so taken, is signed by all of the committee members.

SECTION 14. Rules. Each committee may adopt rules for its own government not inconsistent with these bylaws or with rules adopted by the Council.

ARTICLE X: OFFICIAL ORGAN
The Annals of Thoracic Surgery shall be the official publication of the Southern Thoracic Surgical Association. Papers read before the Association shall be forwarded to the Editor of The Annals of Thoracic Surgery for consideration for publication at the time requested by the Program Committee Chair and Editor of The Annals.

ARTICLE XI: CONTRACTS, CHECKS, DEPOSITS AND FUNDS, BONDING
SECTION 1. Contracts. The Council may authorize any officer or officers, agent or agents of the Association, in addition to the officers so authorized by these bylaws, to enter into any contract or execute and deliver any instrument in the name of, and on behalf of, the Association. Such authority may be general or confined to specific instances.

SECTION 2. Depositories. All funds of the Association not otherwise employed shall be deposited to the credit of the Association in such banks, trust companies or other depositories as the Council may designate.

SECTION 3. Checks, Drafts, Notes, Etc. All checks, drafts or other orders for the payment of money and all notes or other evidences of indebtedness issued in the name of the Association shall be signed by such officer or officers, or agent or agents, of the Association and in such manner as shall be determined by resolution of the Council.

SECTION 4. Bonding. The Council shall provide for the bonding of such officers and employees of the Association, as needed.

SECTION 5. Delivery of Notice. Any notices required to be delivered pursuant to these bylaws shall be deemed to be delivered when transferred or presented in person or deposited in the United States mail addressed to the person at his/her or its address as it appears on the records of the Association, with sufficient first-class postage prepaid thereon.

SECTION 6. Investments. Unless otherwise specified by the terms of a particular gift, bequest or devise, grant or other instrument, the funds of the Association may be invested, in such manner as the Council may deem advantageous, without regard to restrictions applicable to trusts or trust funds.

ARTICLE XII: BOOKS AND RECORDS
The Association shall keep correct and complete books and records of accounts and shall also keep minutes of the proceedings of its members, Council, and committees having any of the authority of the Council, and shall keep at the registered or principal office a record giving the names and addresses of the members entitled to vote. All books and records of the Association may be inspected by any member, or his or her agent or attorney, for any proper purpose at any reasonable time.

ARTICLE XIII: FISCAL YEAR
The fiscal year of the Association shall be established by the Council.

ARTICLE XIV: WAIVER OF NOTICE
Whenever any notice is required to be given under the provisions of the General Not For Profit Corporation Act of the State of Illinois or under the provisions of the articles of incorporation or the bylaws of the Association, a waiver in writing signed by the person or persons entitled to such notice, whether before or after the time stated therein, shall be deemed equivalent to the giving of such notice. Attendance at any meeting shall constitute waiver of notice unless the person at the meeting objects to the holding of the meeting because proper notice was not given.
ARTICLE XV: INDEMNIFICATION OF DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS; INSURANCE

SECTION 1. Right to Indemnification. Each person who was or is a party or is threatened to be made a party to, or is involved in, any action, suit or proceeding—whether civil, criminal, administrative or investigative—by reason of the fact that he/she, or a person of whom he/she is the legal representative, is or was a director, officer, employee or agent of the Association, or is or was serving at the request of the Association, shall be indemnified and held harmless by the Association to the fullest extent authorized by the laws of Illinois against all costs, charges, expenses, liabilities and losses reasonably incurred or suffered by such person in connection with and such indemnification shall continue to a person who has ceased to be associated with the Association. This includes attorneys’ fees, judgments, fines, ERISA excise taxes or penalties and amounts paid, or to be paid, in settlement. The right to indemnification conferred in this Article XV shall be a contract right and shall include the right to be paid by the Association the expenses incurred in defending any such proceeding in advance of its final disposition. For the purpose of determining the reasonableness of indemnifiable expenses, the fees and expenses of separate counsel from counsel for the Association, or other joint defendants being indemnified by the Association, shall not be indemnifiable unless there exists a bona fide conflict of interest.

SECTION 2. Right of Claimant to Bring Suit. If a claim under Section 1 of Article XV is not paid in full by the Association within a reasonable amount of time after a written claim has been received by the Association, the claimant may at any time thereafter bring suit against the Association to recover the unpaid amount of the claim and, if successful in whole or in part, the claimant shall also be entitled to be paid the expenses of prosecuting such a claim. It shall be a defense to any action that the claimant has failed to meet a standard of conduct which makes it permissible under Illinois law for the Association to indemnify the claimant for the amount claimed. But the burden of proving such defense shall be on the Association.

SECTION 3. Non-Exclusive of Rights. The right to indemnification and the payment of expenses incurred in defending a proceeding in advance of its final disposition conferred in Article XV shall not be exclusive of any other right which any person may have or hereafter acquire under any statute, provision of the articles of incorporation, bylaws, agreement, vote of members or disinterested directors or otherwise.

SECTION 4. Insurance. The Association shall maintain insurance to the extent of availability at commercial reasonable rates, at its expense, to protect itself and any director, officer, employee or agent of the Association or another corporation, partnership, joint venture, trust or other enterprise against any expense, liability or loss, whether or not the Association would have the power to indemnify such person against such expense, liability or loss under Illinois law.

SECTION 5. Expenses as a Witness. To the extent that any director, officer, employee or agent of the Association is by reason of such position, or a position with another entity at the request of the Association, a witness in any proceeding, he shall be indemnified against all costs and expenses actually and reasonably incurred by him or on his behalf in connection therewith.

SECTION 6. Notification. If the Association has paid indemnity or has advanced expenses under this Article XV to a director, officer, employee or agent, the Association shall report the indemnification or advance in writing to the members with or before the notice of the next meeting of the members.

SECTION 7. Effect of Amendment. Any amendment, repeal or modification of any provision of this Article XV by the members or the directors of the Association shall not adversely affect any right or protection of a director or officer of the Association existing at the time of such amendment, repeal or modification.

ARTICLE XVI: DISSOLUTION

Upon the dissolution of the Association, and after payment of all indebtedness of the Association, any remaining funds, investments and other assets of the Association shall be distributed to such organization or organizations which are then qualified as exempt from taxation under Section 501(c) 6 of the Internal Revenue Code of 1986, as amended (or the corresponding provision of any future Internal Revenue Law of the United States). This distribution shall only occur if the purposes and objectives of such organization(s) are similar to the purposes and objectives of the Association, as may be determined by vote of the then voting members of the Association.

ARTICLE XVII: AMENDMENTS

These bylaws may be altered, amended, or repealed at the time of the annual meeting by a two-thirds vote of the membership present, provided that the amendment has been presented to the membership in writing at least 30 days prior to the time of the annual meeting.

ARTICLE XVIII: PARLIAMENTARY AUTHORITY

The deliberations of the Association, Council, and committees shall be governed by the parliamentary rules and usages contained in the then current edition of “Roberts Rules of Order, Newly Revised”, when not in conflict with the bylaws of the Association.
FINANCIAL DISCLOSURE STATEMENTS OF COUNCIL MEMBERS AND PROGRAM PLANNERS

Walter H. Merrill: President, Program Committee, Post-Graduate Committee  
Financial Disclosure: Nothing to Disclose

Joseph S. Coselli: Past President, Council Chair, Program Committee, Nominating Committee  

Robert J. Cerfolio: President Elect, Program Committee  
Financial Disclosure: Proctor: Intuitive Surgical, Inc.; Faculty: Intuitive Surgical, Inc.; Research Grant: Pfizer, Inc., Precision Medical; Lecturer: Precision Medical, Intuitive Surgical, Inc.

Earle H. Austin: Vice President  
Financial Disclosure: Nothing to Disclose

David R. Jones: Secretary/Treasurer, Program Committee, Post-Graduate Committee  
Financial Disclosure: Nothing to Disclose

Vinod H. Thourani: Director of CME, Program Committee, Post-Graduate Committee, CME Committee  

Harold C. Urschel, Jr.: Historian  
Financial Disclosure: Nothing to Disclose

Shanda H. Blackmon: Councilor  
Financial Disclosure: Consultant: Covidien, Maquet; Speaker: Covidien, Maquet, Karl Storz, CareFusion

Jennifer S. Lawton: Councilor  
Financial Disclosure: Nothing to Disclose

Neal D. Kon: Councilor, Post-Graduate Committee  
Financial Disclosure: Clinical Trial: Medtronic, Inc.

Richard K. Freeman: Program Committee, CME Committee  
Financial Disclosure: Nothing to Disclose

Stephen R. Hazelrigg: Program Committee, CME Committee  
Financial Disclosure: Nothing to Disclose

Melanie Edwards: Program Committee  
Financial Disclosure: Nothing to Disclose

Scott A. LeMaire: Program Committee  

Charles D. Fraser: Program Committee  
Financial Disclosure: Nothing to Disclose

Kristine J. Guleserian: Post-Graduate Committee  
Financial Disclosure: Nothing to Disclose

Jorge Salazar: Program Committee  
Financial Disclosure: Nothing to Disclose
RELATIONSHIP DISCLOSURES FROM PRESENTERS

The following presenters have indicated, in accordance with the Accreditation Council for Continuing Medical Education Standards and the STSA Disclosure Policy, that they have a financial or other relationship with a healthcare-related business or other entity whose products or services may be discussed in, or directly affected in the marketplace by the educational program/product under consideration. Listed too are abstracts whose content describes the use of a device, product, or drug, that is not FDA approved, or the off-label use of an approved device, product, or drug.

Unless noted in this program book or verbally by the speakers, speakers have no relevant financial relationships to disclose and will only be presenting information on devices, products, or drugs that are FDA approved for the purposes they are discussing.

WEDNESDAY, NOVEMBER 7, 2012

SURGICAL MOTION PICTURES

Moderators
Jeffrey Heinle – Nothing to Disclose

2V. Alternative Access (Transaortic and Transcarotid) Techniques for Transcatheter Aortic Valve Replacement
Vasilis C. Babaliaros: Consultant/Advisory Board: DirectFlow Medical, Symetis
Peter C. Block: Equity/Ownership Interest: DirectFlow Medical; PI/Research Support: Edwards Lifesciences
Vinod H. Thourani: Research Grant: Edwards Lifesciences; Advisory Board: Edwards Lifesciences, St. Jude Medical, Sorin Medical, DirectFlow; IP/Co-Founder: Apica Cardiovascular

3V. Left Video Assisted Thorascopic Thymectomy with Complete Dissection of the Superior Horns
M. B. Marshall: Consultant/Advisory Board: Ethicon

6V. Robotic Ivor Lewis Esophagectomy With a Two Layered Hand Sewn Anastomosis
Robert Cerfolio: Speaker: Intuitive Surgical

7V. Subcostal Exchange Of Left Ventricular Assist Devices - A Novel Approach
John V. Conte: Research Grant: Thoratec, Medtronic, Inc., HeartWare

9V. Sliding Tracheoplasty on Infants
Robert Cerfolio: Speaker: Intuitive Surgical

THURSDAY, NOVEMBER 8, 2012

POST-GRADUATE PROGRAM

General Session

Moderators
David R. Jones – Nothing to Disclose
Vinod H. Thourani – Research Grant: Maquet, Sorin Group; Ownership Interest: Apica Cardiovascular; Consultant/Advisory Board: Sorin Group, Edwards Lifesciences, St. Jude Medical, Inc.

General Thoracic Case & Debate - Management of T1a Lung Malignancy in Patients at High Risk for Pulmonary Resection – Case Presentation
Robert Cerfolio: Speaker: Intuitive Surgical
General Thoracic Case & Debate - Management of T1a Lung Malignancy in Patients at High Risk for Pulmonary Resection – Recommend Lobectomy
Joshua Sonett: Speaker: Covidien

General Thoracic Case & Debate - Management of T1a Lung Malignancy in Patients at High Risk for Pulmonary Resection – Recommend Minimally Invasive Minimal Resection

Destination VADs Should Be Done In a Transplant Center – Pro
Mark Slaughter: PI: Thoratec, HeartWare; Research Grant: Thoratec; Consultant: Sunshine Heart
Edwin McGee: Consultant/Advisory Board: HeartWare, Inc.

ETHICS DEBATE
Moderator
Robert M. Sade – Nothing to Disclose

THURSDAY, NOVEMBER 8, 2012
FIRST SCIENTIFIC SESSION
Moderators
Walter H. Merrill – Nothing to Disclose
David R. Jones – Nothing to Disclose

   John W. Brown – Speaker: Cryolife Inc.

2. Septuagenarians Bridged to Heart Transplantation with a Ventricular Assist Device Have Similar Outcomes as Younger Patients
   John V. Conte – Research Support: Thoratec, HeartWare, Medtronic, Inc.

3. The Efficacy of Operating Veno-Venous ECMO at Lower Flow Rates
   Joshua Sonett – Speaker: Covidien

4. Transcatheter Aortic Valve Replacement Since U.S. Food and Drug Administration Approval: Trends in Patient Characteristics, Techniques, and Results
   Vasillis Babaliaros – PI: Edwards Lifesciences

Discussant: Todd Dewey – Speaker: Edwards Lifesciences; Consultant: Edwards Lifesciences
FRIDAY, NOVEMBER 9, 2012

BASIC SCIENCE FORUM

Moderators
Shahab A. Akhter – Principal Investigator: Thoratec Corporation; Consultant: Thoratec Corporation

SECOND SCIENTIFIC SESSION

Moderators
Richard K. Freeman – Nothing to Disclose

11. Coumadin Thromboprophylaxis Following Mitral Valve Repair in North America: Practice Patterns, Predictors, and Consequences
Discusant: Vinay Badhwar – Speaker: Medtronic, Inc.

THIRD SCIENTIFIC SESSION A

ADULT CARDIAC BREAKOUT

Moderators
Gorav Ailawadi – PI: AstraZeneca; Proctor: AtriCure; Advisor: Sorin, Edwards Lifesciences, Abbott
Edward P. Chen – Valve Consultant: Medtronic, Inc.

21. Does Mitral Valve Repair Offer an Incremental Advantage Over Mitral Replacement in Patients Undergoing Aortic Valve Replacement?
Vinod H. Thourani: Research Grant: Edwards Lifesciences; Advisory Board: Edwards Lifesciences, St. Jude Medical, DirectFlow, Sorin Medical; PI: Edwards Lifesciences; IP/Co-Founder: Apica Cardiovascular

22. Irrigated Radiofrequency Cox-MAZE IV is Effective for Persistent Atrial Fibrillation During Concomitant Mitral Surgery: A Prospective Multicenter Experience From The CURE-AF Trial
Vinay Badhwar: Research Grant: Medtronic, Inc.
Ralph J. Damiano: Research Grant: Medtronic, Inc.
Michael A. Acker: Research Grant: Medtronic, Inc.
Ramesh S. Veeragandham: Research Grant: Medtronic, Inc.
Thoralf M. Sundt: Research Grant: Medtronic, Inc.

GENERAL THORACIC BREAKOUT

Moderators
Melanie Edwards – Nothing to Disclose
Mitchell Magee – Consultant/Speaker: Covidien

25. Pyloric Botulinum Injection Increases Postoperative Esophagectomy Complications
Allan Pickens: Speaker: Ethicon Endosurgery, Inc
Daniel L. Miller: Consultant/Advisory Board: Ethicon Endosurgery, Inc

26. The Efficacy of EBUS-guided Transbronchial Aspirate for Molecular Testing in Lung Adenocarcinoma
Joshua R. Sonett: Speaker: Covidien

30. Pneumonectomy for Non-malignant Disease
Victor Ferraris – Consultant/Advisory Board: AstraZeneca; Speaker: Baxter Health Care
Sibu P. Saha – Research Grant: Baxter Labs, TicoMed

CONGENITAL BREAKOUT

Moderators
James Quintessenza – Nothing to Disclose
Charles Fraser – Nothing to Disclose

THIRD SCIENTIFIC SESSION B

ADULT CARDIAC BREAKOUT

Moderators
Richard Prager – Nothing to Disclose
Faisal Bakaeen – Research Grant: Veterans Affairs Cooperative Studies Program; Speaker: AstraZeneca

37. Valve-Sparing Aortic Root Replacement: Early and Mid-Term Outcomes in 80 Patients
Joseph S. Coselli – Research Support/PI: St. Jude Medical, Inc.; Speaker: St. Jude Medical, Inc.; Consultant/Advisory Board: Vascutek Terumo

GENERAL THORACIC BREAKOUT

Moderators
Mark Onaitis – Nothing to Disclose
Daniel Miller – Advisory Board: Ethicon Endosurgery, Neomend, Inc.
RELATIONSHIP DISCLOSURE INDEX

TRANSPLANT BREAKOUT
Moderators
Joshua Sonett – Nothing to Disclose
Ashish Shah – Nothing to Disclose

CONGENITAL BREAKOUT
Moderators
Jorge Salazar – Nothing to Disclose
Lauren Kane – Nothing to Disclose

State of the Art: Preop Monitoring
Kenneth Brady – Royalties: Covidien

HISTORY PRESENTATION
Moderator
Robert J. Cerfolio – Proctor: Intuitive Surgical, Inc.; Faculty: Intuitive Surgical, Inc.; Research Grant: Pfizer, Inc., Precision Medical; Lecturer: Precision Medical, Intuitive Surgical, Inc.

Remembering Dr. John Kirklin
James Kirklin – Principal Investigator: NHLBI

FOURTH SCIENTIFIC SESSION B
Moderators
Erle H. Austin, III – Nothing to Disclose
Robert J. Cerfolio – Proctor: Intuitive Surgical, Inc.; Faculty: Intuitive Surgical, Inc.; Research Grant: Pfizer, Inc., Precision Medical; Lecturer: Precision Medical, Intuitive Surgical, Inc.

59. The Influence of Age and Severity of Comorbid Illness on Outcomes After Isolated Aortic Valve Replacement

61. Prospective Cohort Case-Control Study of Staged Unilateral Thoracoscopic Lung Volume Reduction: Effects on Perioperative Mortality, Improvement in Pulmonary Function, and Long-Term Survival
John R. Roberts – Consultant/Advisory Board: Medtronic, Inc.; Speaker: Ethicon

62. Early Open and Endovascular Thoracic Aortic Repair for Complicated Type B Aortic Dissection
David M. Williams – Consultant/Advisory Board: W.L. Gore & Associates, Inc.

64. Fewer Complications With VATS Approach to Anatomic Resection of Clinical Stage I Lung Cancer
Discussant: Robert J. Cerfolio – Proctor: Intuitive Surgical, Inc.; Faculty: Intuitive Surgical, Inc.; Research Grant: Pfizer, Inc., Precision Medical; Lecturer: Precision Medical, Intuitive Surgical, Inc.
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