STSA
SOUTHERN THORACIC SURGICAL ASSOCIATION
56TH ANNUAL MEETING
NOVEMBER 4 - 7, 2009
Marco Island Marriott Beach Resort
Marco Island, Florida
PROVEN DURABILITY FOR LONG-TERM FREEDOM FROM REOPERATION.

Backed by 25 years of clinical experience and reinforced by two recently published studies, the Biocor™ Tissue Valve from St. Jude Medical provides demonstrated long-term durability, which contributes to lower reoperation rates. The Epic™ Tissue Valve is identical in design to the Biocor Tissue Valve and also features Linx™ AC Technology, a patented, proprietary anticalcification treatment designed to improve long-term performance and valve durability. In addition, both valves use the FlexFit™ System to facilitate the entire implant procedure.

Experience Control. STSA Booth 301, 303.


* There is no clinical data currently available which evaluates the long-term impact of anticalcification tissue treatment in humans.

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BRIEF SUMMARY: St. Jude Medical Stented Tissue Valves are indicated for use as a replacement for malfunctioning native or prosthetic aortic and/or mitral valves. Adverse events potentially associated with the use of bioprosthetic heart valves include: angina, cardiac arrhythmia, endocarditis, heart failure, hemolysis, hemolytic anemia, hemorrhage (anticoagulant/antiplatelet-related), leak (transvalvular or paravalvular), myocardial infarction, nonstructural dysfunction (e.g. annulus, sutures, inappropriate sizing, or other), prosthesis regurgitation, stroke, structural deterioration (e.g. calcification, leaflet tear, or other), thrombembolism and valve thrombosis. It is possible that these complications could lead to: reoperation, explantation, permanent disability, or death. Long-term anticoagulation and/or anti-platelet therapy should be considered in patients with dilated left atrium, a history of thrombotic events, or a cardiac rhythm of atrial fibrillation or flutter. Please see the Instructions for Use (IFU) for a full description of indications, contraindications, side effects, precautions, warnings and instructions for use.

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SPECIAL THANKS

SPECIAL THANKS TO STSA 56TH ANNUAL MEETING
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FUTURE MEETING LOCATIONS

NOVEMBER 3-6, 2010
Disney Yacht & Beach Club
Orlando, FL

NOVEMBER 9-12, 2011
JW Marriott San Antonio Hill
San Antonio, TX

NOVEMBER 7-10, 2012
Naples Grande Beach Resort
Naples, FL

NOVEMBER 6-9, 2013
Hyatt Regency Bonaventure
Weston, FL

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THE ANNALS OF THORACIC SURGERY
L. Henry Edmunds, MD, Philadelphia, PA

PAST MEETINGS

1954—Hollywood Beach, FL
1955—White Sulphur Springs, WV
1956—Miami Beach, FL
1957—New Orleans, LA
1958—Miami Beach, FL
1959—Edgewater Park, MS
1960—Nassau Bahamas, B.W.I.
1961—Memphis, TN
1962—Ocho Rios, Jamaica
1963—San Antonio, TX
1964—Atlanta, GA
1965—Freeport, Grand Bahama
1966—Asheville, NC
1967—Dallas, TX
1968—San Juan, Puerto Rico
1969—Washington, DC
1970—Bermuda
1971—Tampa, FL
1972—Port of Spain
1973—Louisville, KY
1974—Williamsburg, VA
1975—New Orleans, LA
1976—Acapulco, Mexico
1977—Marco Island, FL
1978—Marco Island, FL
1979—San Antonio, TX
1980—White Sulphur Springs, WV
1981—Palm Beach, FL
1982—Hilton Head Island, SC
1983—Marco Island, FL
1984—Hilton Head, SC
1985—Boca Raton, FL
1986—White Sulphur Springs, WV
1987—Boca Raton, FL
1988—Marco Island, FL
1989—Scottsdale, AZ
1990—Orlando, FL
1991—Orlando, FL
1992—Wesley Chapel, FL
1993—Panama City Beach, FL
1994—Marco Island, FL
1995—San Antonio, TX
1996—Cancun, Mexico
1997—Naples, FL
1998—Orlando, FL
1999—San Juan, PR
2000—Marco Island, FL
2001—San Antonio, TX
2002—Miami, FL
2003—Bonita Springs, FL
2004—Cancun, Mexico
2005—Orlando, FL
2006—Tucson, AZ
2007—Bonita Springs, FL
2008—Austin, TX
2009—Marco Island, FL

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John H. Calhoun
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Robert J. Cerfolio
Robert J. Cerfolio
Robert J. Cerfolio

* Deceased
AWARDS

THE 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 the Council members.

CLIFFORD VAN METER PRESIDENT’S AWARD WINNERS

1964—Bertram A. Glass
1965—Harold C. Urschel, Jr.
1966—Thomas J. Yeh
1967—Yale H. Zimberg
1968—J. Alex Haller, Jr.
1969—William H. Sewell
1970—George R. Daicoff
1971—Charles E. Eastridge
1972—J. Kent Trinkle
1973—Donald L. Bricker
1974—Harvey W. Bender, Jr.
1975—Charles E. Martin
1976—Gordon F. Murray
1977—Denis H. Tyras
1978—Joseph I. Miller, Jr.
1979—M. Wayne Flye
1980—Francis Robicsek
1981—Ellis L. Jones
1982—William G. Malette
1983—Robert H. Breyer
1984—Blair A. Keagy
1985—John W. Hammon, Jr.
1986—William H. Frist
1987—Jean-Nicolas Vauthier
1988—Robert A. Gustafson
1989—Harvey I. Pass
1990—Vincent L. Gott
1991—Ross M. Ungerleider
1992—William H. Frist
1993—Kirk R. Kanter
1994—Thomas L. Spray
1995—Constantine Mavroudis
1996—David A. Fullerton
1997—Christopher J. Knott-Craig
1998—James L. Zellner
1999—Thomas D’Amico
2000—Joseph C. Cleveland, Jr.
2001—Neal D. Kon
2002—Joseph S. Coselli
2003—Robert J. Cerfolio
2004—Malcolm DeCamp
2005—Seenu V. Reddy
2006—Andrew W. ElBardissi
2007—John Stulak
2008—G. Chad Hughes

New Orleans, Louisiana
Dallas, Texas
Savannah, Georgia
Richmond, Virginia
Baltimore, Maryland
Sayre, Pennsylvania
St. Petersburg, Florida
Memphis, Tennessee
San Antonio, Texas
Lubbock, Texas
Nashville, Tennessee
Nashville, Tennessee
Chapel Hill, North Carolina
St. Louis, Missouri
Atlanta, Georgia
Galveston, Texas
Charlotte, North Carolina
Atlanta, Georgia
Omaha, Nebraska
Springfield, Massachusetts
Chapel Hill, North Carolina
Nashville, Tennessee
Nashville, Tennessee
New Orleans, Louisiana
Morgantown, West Virginia
Bethesda, Maryland
Baltimore, Maryland
Durham, North Carolina
Nashville Tennessee
Atlanta, Georgia
St. Louis, Missouri
Chicago, Illinois
Denver, Colorado
Oklahoma City, Oklahoma
Charleston, South Carolina
Durham, North Carolina
Denver, Colorado
Winston-Salem, South Carolina
Houston, Texas
Birmingham, Alabama
Boston, Massachusetts
San Antonio, Texas
Rochester, Minnesota
Rochester, Minnesota
Durham, North Carolina

THE 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

1964—Watts R. Webb
1965—J. Alex Haller, Jr.
1966—Richard M. Peters
1967—Myron W. Wheat
1968—Carl H. Almond
1969—Francis Robicsek
1970—William A. Neely
1971—Paul C. Adkins
1972—Panagiotis Symbas
1973—James L. Alexander
1974—Lloyd H. Hudson
1975—Richard E. Clark
1976—William S. Lyons
1977—Maruf A. Razzuk
1978—Harold C. Urschel, Jr.
1979—Maruf A. Razzuk
1980—Francis Robicsek
1981—Robert Sade
1982—Kit V. Aron
1983—Herbert E. Warden
1984—Noel L. Mills
1985—George C. Kaiser
1986—J. G. Selle
1987—Steven Gundry
1988—Harvey I. Pass
1989—Duke E. Cameron
1990—Richard E. Clark
1991—William H. Childers
1992—Joseph S. Coselli
1993—Benson R. Wilcox
1994—P. Michael McFadden
1995—Carolyn E. Reed
1996—John L. Ochsner
1997—Clifford H. Van Meter, Jr.
1998—John D. Oswalt
1999—W. Randolph Chitwood
2000—Ross M. Ungerleider
2001—Neal D. Kon
2002—W. Staves Ring
2003—Betsey Urschel
2004—John Puskas
2005—Meredith Scott
2006—Constantine Mavroudis
2007—Robert J. Cerfolio
2008—Curt Tribble

New Orleans, Louisiana
Baltimore, Maryland
San Diego, California
St. Petersburg, Florida
Columbia, South Carolina
Charlotte, North Carolina
Jackson, Mississippi
Washington, DC
Atlanta, Georgia
Savannah, Georgia
Flint, Michigan
St. Louis, Missouri
Alexandria, Virginia
Dallas, Texas
Dallas, Texas
Dallas, Texas
Charlotte, North Carolina
Charlotte, South Carolina
Minneapolis, Minnesota
Morgantown, West Virginia
New Orleans, Louisiana
St. Louis, Missouri
Charlotte, North Carolina
Baltimore, Maryland
Bethesda, Maryland
Baltimore, Maryland
Pittsburgh, Pennsylvania
Nashville, Tennessee
Houston, Texas
Chapel Hill, North Carolina
New Orleans, Louisiana
New Orleans, Louisiana
New Orleans, Louisiana
Austin, Texas
Greenville, North Carolina
Portland, Oregon
Winston-Salem, South Carolina
Dallas, Texas
Dallas, Texas
Atlanta, Georgia
Shell, Wyoming
Chicago, Illinois
Birmingham, Alabama
Gainesville, Florida
THE 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 discussionsmanship. It was named for Osler Abbott, M.D. 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 subtility 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

1961—Milton V. Davis  
1963—Lewis H. Bosher Jr.  
1964—Sam E. Stephenson Jr.  
1965—Bertram A. Glass  
1966—Robert E. Carr  
1967—Osler A. Abbott  
1968—Watts R. Webb  
1969—William A. Cook  
1970—Edward F. Parker  
1971—Minas Ionides Jr.  
1972—J. Alex Haller Jr.  
1974—Bertram A. Glass  
1975—Gilbert S. Campbell  
1976—James W. Brooks  
1977—J. Kent Trinkle  
1978—Raymond C. Read  
1979—Richard E. Clark  
1980—Joseph Peabody Jr  
1981—Robert M. Sade  
1982—James S. Donahoo  
1983—Francis Robicsek  
1984—Milton V. Davis  
1985—George C. Kaiser  
1986—Milton V. Davis  
1987—J. Alex Haller Jr.  
1988—Ronald C. Elkins  
1989—Bradley M. Rodgers  
1990—Harvey W. Bender Jr.  
1991—Kamal A. Mansour  
1993—Kit V. Arom  
1994—Frederick L. Grover  
1995—Constantine Mavroudis  
1996—George Daicoff  
1997—Ross M. Ungerleider  
1998—Lynn Harrison  
1999—William A. Baumgartner  
2000—Robert J. Cerfolio  
2001—Carolyn E. Reed  
2002—John H. Calhoon  
2003—Constantine Mavroudis  
2004—Keith Nauheim  
2005—Irving Kron  
2006—Thoralf Sundt  
2007—W. Steve’s Ring  
2008—John W. Hammon  

THE KENT TRINKLE EDUCATION LECTURESHP

The Kent Trinkle Educational Lectureship is dedicated to J. Kent Trinkle, MD, (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.
AWARDS

HAWLEY H. SEILER RESIDENTS COMPETITION AWARD
The Hawley H. Seiler Residents Competition Award is presented to an outstanding cardiothoracic resident. This honor is bestowed upon the resident excelling in the following categories regarding their abstract submission: manuscript and oral presentation. This honor is named after Past President and STSA founding member, Hawley H. Seiler, MD.

Dr. Seiler’s many contributions to STSA included serving as Secretary for 15 years and presenting on numerous topics at Annual Meetings.

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

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 in 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.

2007—Kit Arom	Bangkok, Thailand

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 will be given at the discretion of the President in consultation with the Council.

2007—Robert J. Cerfolio	Birmingham, Alabama
Hooshang Bologo	Miami, Florida
CME OVERVIEW

DISCUSSION OF PAPERS
Discussions of papers at the Annual Meeting are published in The Annals of Thoracic Surgery. Please review the program outline carefully to determine if you have a particular interest in some of the topics, then be prepared to discuss them at the meeting. If you wish, you may request a copy of the manuscript in advance of the meeting by contacting the author directly. Each session has a limited amount of time reserved for discussion. Assigned discussants are limited to two minutes and two questions.

PRESENTATION AND PUBLICATION
Please also note that 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 7, 2009. Manuscripts must be submitted via The Annals on-line manuscript submission system at www.atsseritorialoffice.org. A paper copy of the manuscript will not be accepted for consideration. Primary authors and co-authors that 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. STSA designates this activity for a maximum of 19.50 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 time of registration. 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 submit 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 during registration.

Each evaluation will include a series of questions regarding the program content. In addition, physicians will need to complete the cover page of the evaluation packet, 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.

This process will allow the STSA to maintain an electronic record of CME earned by physicians. Files will be maintained for a minimum of six (6) years. Any questions regarding this procedure should be directed to Katie Bochenek, at 312/202-5835, or via e-mail at kbochenek@stsa.org.

Please note, the STSA Advance Program book lists 19.75 as the maximum credit available. Due to a scheduling change the maximum credit available is now 19.50.
P O L I C Y  R E G A R D I N G  D I S C O U R S E

The Southern Thoracic Surgical Association (STSA) will seek appropriate disclosure information from all presenters and communicate such information to the learner. Appropriate disclosure information must be on file before the educational program is delivered.

STSA leadership and staff will also provide disclosure information to be kept on file and communicated to the membership as appropriate.

The STSA Disclosure Policy (as outlined below) 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 (ACCME), 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. 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 orally or 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 342 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 health care 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 health care professionals may also benefit from various sessions and interactions with cardiothoracic colleagues.

OTHER MEETING INFORMATION

Speaker Ready Room

The Speaker Ready Room is located in Sanibel Room. Speakers are requested to go to this room upon arrival, or at least 4 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

56TH ANNUAL MEETING OF THE
SOUTHERN THORACIC SURGICAL ASSOCIATION

WEDNESDAY, NOVEMBER 4, 2009
3:00 P.M. - 8:00 P.M.  Registration - Islands E Desk
8:00 P.M. - 9:45 P.M.  Surgical Motion Pictures - Capri Salon 1 & 6

THURSDAY, NOVEMBER 5, 2009
6:30 A.M. - 5:00 P.M.  Registration - Islands E Desk
6:30 A.M.  Continental Breakfast - Islands Foyer
7:00 A.M. - 8:15 A.M.  Postgraduate Breakouts
Adult Cardiac Breakout - Islands A-D
Congenital Breakout - Capri Salon 6
General Thoracic Breakout - Capri Salon 1
8:15 A.M. - 8:30 A.M.  Break
8:30 A.M. - 10:15 A.M.  Postgraduate Pro/Con Debates - Islands A-D
10:15 A.M. - 10:45 A.M.  Break
10:45 A.M. - 11:30 A.M.  Postgraduate Special Session - Islands A-D
11:30 A.M. - 1:00 P.M.  Break
12:00 P.M. - 5:00 P.M.  Exhibits Open - Islands E-F
1:00 P.M. - 3:00 P.M.  First Scientific Session A - Islands A-D
3:00 P.M. - 3:30 P.M.  Break & Visit Exhibits - Islands E-F
3:30 P.M. - 5:00 P.M.  First Scientific Session B - Islands A-D

FRIDAY, NOVEMBER 6, 2009
6:30 A.M. - 5:30 P.M.  Registration - Islands E Desk
6:30 A.M.  Continental Breakfast - Foyer of Islands A-D
7:00 A.M. - 7:50 A.M.  Basic Science Forum - Islands A-D
8:00 A.M. - 10:00 A.M.  Second Scientific Session - Islands A-D
9:45 A.M. - 11:30 A.M.  Exhibits Open - Islands E-F
10:00 A.M. - 10:30 A.M.  Break & Visit Exhibits - Islands E-F
10:30 A.M. - 11:00 A.M.  President’s Invited Lecturer:
Friedrich Mohr
Leipzig, Germany
Islands A-D
11:00 A.M. - 11:20 A.M.  Kent Trinkle Education Lectureship:
Irving L. Kron
University of Virginia
Islands A-D
11:20 A.M. - 12:00 P.M.  Presidential Address:
Michael J. Mack
Excellence and Innovation: Surgical Imperatives
Islands A-D
12:00 P.M.  All Attendee Luncheon - Sunset Terrace
1:00 P.M. - 2:00 P.M.  Dessert Served in the Exhibit Hall - Islands E-F
## SCHEDULE OF EVENTS

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>1:00 P.M. - 4:15 P.M.</td>
<td>Exhibits Open - Islands E-F</td>
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<tr>
<td>2:00 P.M. - 3:30 P.M.</td>
<td>Third Scientific Session A</td>
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<tr>
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<td>Cardiac Breakout - Islands A-D</td>
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<td>General Thoracic Breakout - Capri Salon 1</td>
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<td>Congenital Breakout - Capri Salon 6</td>
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<tr>
<td>3:30 P.M. - 4:00 P.M.</td>
<td>Break &amp; Visit Exhibits - Islands E-F</td>
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<tr>
<td>4:00 P.M. - 5:00 P.M.</td>
<td>Third Scientific Session B</td>
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<td>Cardiac Breakout - Islands A-D</td>
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<td>General Thoracic Breakout - Capri Salon 1</td>
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<td>Congenital Breakout - Capri Salon 6</td>
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<tr>
<td>5:00 P.M. - 6:00 P.M.</td>
<td>STSA Business Meeting</td>
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<td>STSA Members Only - Islands A-D</td>
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<tr>
<td>7:00 P.M. - 9:00 P.M.</td>
<td>President’s Mixer - Sunset Terrace</td>
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### SATURDAY, NOVEMBER 7, 2009

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>6:30 A.M. - 11:30 A.M.</td>
<td>Registration - Islands E Desk</td>
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<tr>
<td>6:45 A.M.</td>
<td>Continental Breakfast in the Exhibit Hall</td>
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<td>- Islands E-F</td>
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<tr>
<td>6:45 A.M. - 10:30 A.M.</td>
<td>Exhibits Open - Islands E-F</td>
</tr>
<tr>
<td>7:00 A.M. - 7:45 A.M.</td>
<td>Coding Update: Update on CPT and Physician Payment Issues for 2010</td>
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<td>- Islands A-D</td>
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<tr>
<td>7:50 A.M. - 8:50 A.M.</td>
<td>Ethics Forum: Impending Loss of Insurance Coverage is an Indication to Proceed with Complex, Expensive Surgery</td>
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<td>- Islands A-D</td>
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<tr>
<td>9:00 A.M. - 10:00 A.M.</td>
<td>Fourth Scientific Session A</td>
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<tr>
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<td>Cardiac Breakout - Islands A-D</td>
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<td>General Thoracic Breakout - Capri Salon 1</td>
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<td>Transplant Breakout - Capri Salon 6</td>
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<tr>
<td>10:00 A.M. - 10:30 A.M.</td>
<td>Break &amp; Visit Exhibits - Islands E-F</td>
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<tr>
<td>10:30 A.M. - 10:50 A.M.</td>
<td>History Presentation - Islands A-D</td>
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<tr>
<td>10:50 A.M. - 11:50 A.M.</td>
<td>Fourth Scientific Session B</td>
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<td>- Islands A-D</td>
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<tr>
<td>11:50 A.M.</td>
<td>Program Adjourns</td>
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<tr>
<td>1:00 P.M. - 6:00 P.M.</td>
<td>Various Social &amp; Sporting Events</td>
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<td>- See page 21-22 for details</td>
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<tr>
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<td>Awards Dinner and Dance</td>
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<tr>
<td>7:00 P.M. - 8:00 P.M.</td>
<td>Reception - Islands E-F</td>
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<tr>
<td>8:00 P.M. - 11:00 P.M.</td>
<td>Dinner and Awards - Islands A-D</td>
</tr>
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</table>

### SCHEDULE OF ACTIVITIES

#### THURSDAY, NOVEMBER 5

**Spouses’ Hospitality Suite** – Lanai 193
**Time:** 8:00 A.M. – Noon

STSA is providing a hospitality room for your spouse to mingle with other spouses and to make plans for exploring Marco Island and the surrounding areas.

#### FRIDAY, NOVEMBER 6

**Spouses’ Hospitality Suite** – Lanai 193
**Time:** 8:00 A.M. – Noon

STSA is providing a hospitality room for your spouse to mingle with other spouses and to make plans for exploring Marco Island and the surrounding areas.

**All Attendee Lunch** – Sunset Terrace
**Time:** 12:00 P.M.

- **President’s Mixer** – Sunset Terrace
**Time:** 7:00 P.M. – 9:00 P.M.
**Cost:** Complimentary
Gather with fellow meeting attendees for an evening of networking and fun. Attendees receive 2 tickets with registration. Additional tickets may be purchased for $15.

#### SATURDAY, NOVEMBER 7

**Spouses’ Hospitality Suite** – Lanai 193
**Time:** 8:00 A.M. – Noon

STSA is providing a hospitality room for your spouse to mingle with other spouses and to make plans for exploring Marco Island and the surrounding areas.

**Fishing Tournament** – County Park Boat Ramp, Marco Island Bridge
**Time:** 1:00 P.M.
**Cost:** $165 per person *Includes lunch, beverages, fishing license, bait, and tackle*
This year promises to be a great fishing experience. You will enjoy the backcountry waters of the coastal wilderness area known as the 10,000 Islands. Anglers, don’t miss the opportunity to catch many of the following: sea trout, redfish, snook, tarpon, catfish and many more at the STSA Fishing Tournament. The trip will be smooth and the lines tight. Sell out is expected – be sure to register in advance!

**Golf Tournament** – The Rookery at Marco
**Time:** 1:00 P.M. – Shotgun Start
**Cost:** $195 per person *Includes greens fees and box lunch*
The Rookery at Marco was recently redesigned by acclaimed golf course designer Robert Cupp, Jr. At more than 7,100 yards in length, the playing experience includes generous fairways, oversized and receptive greens, the option to play from one of five teeing locations, and immaculate turf condition. Please note the following dress code: collared shirts, slacks or mid-length shorts *(no denim)*, shoes with soft spikes, tennis or athletic shoes *(no sandals or open toed shoes)*.

*Limited number of tee times available – Be sure to register in advance!*

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STSA 56th Annual Meeting
SCHEDULE OF ACTIVITIES

Tennis Tournament – Marriott Tennis Court
Time: 1:00 P.M.
Cost: $35 per person (Includes court fees, tennis balls, and refreshments)
Join fellow attendees for a day of tennis. The Marco Island Marriott Beach Resort offers guests top-notch courts and amenities.
Subject to cancellation if there is a lack of interest. Registrants will be notified in advance and refunds will be issued if this event is cancelled.

Annual Awards Dinner and Dance
Reception: 7:00 P.M. – 8:00 P.M.
Dinner: 8:00 P.M. – 11:00 P.M.
Cost: $115 per person (Black Tie optional)
This evening of dining, dancing, and networking with colleagues is sure to be an unforgettable evening and the perfect finale to a great meeting. You will not want to miss this opportunity to end your STSA 56th Annual Meeting experience in style.
Advance registration recommended. A limited number of tickets will be sold on site. Table selection can be done in advance. Please visit the registration desk to select your table.

SURGICAL MOTION PICTURES

WEDNESDAY, NOVEMBER 4, 2009
8:00 P.M. – 9:45 P.M.
Capri Salon 1 & 6
(Presentations are limited to ten minutes, followed by five minutes of discussion)

CME Credits Available: 1.75
Moderators: *Michael Hines and D**Vinod Thourani

8:00 P.M. - 8:15 P.M. (page 46)
1-V Valve Sparing Aortic Root Replacement in a Patient with Bicuspid Aortic Valve
*Howard K. Song; Sterling L. Humphrey; *Matthew Slater; *Stephen W. Guyton Oregon Health & Science University, Portland, OR

8:15 P.M. - 8:30 P.M. (page 48)
2-V Combined Video Assisted Lobectomy and En Bloc Vertebral Resection for a T4 Non-Small Cell Lung Cancer
Felix G. Fernandez; *Bryan F. Meyers Washington University School of Medicine, St. Louis, MO

8:30 P.M. - 8:45 P.M. (page 55)
3-V Mitral Valve Repair for Rheumatic Disease
D**J. Scott Rankin Vanderbilt University, Nashville, TN

8:45 P.M. - 9:00 P.M. (page 52)
4-V Laparoscopic Repair of Giant Type IV Paraesophageal Hernia
Gan Dunnington; Leo Gazoni; Bruce Schirmer; *Benjamin Kozower University of Virginia, Charlottesville, VA

9:00 P.M. - 9:15 P.M. (page 54)
5-V Biventricular Repair of Complete Atroventricular Septal Defect with Double Outlet Right Ventricle Following Neonatal Repair of Total Anomalous Pulmonary Venous Return
*Joseph M. Forbess Children’s Medical Center Dallas and University of Texas Southwestern Medical Center, Dallas, TX

9:15 P.M. - 9:30 P.M. (page 56)
6-V Extracardiac Off-Pump Fontan Completion for Single Ventricle with Dextrocardia
Onur Selcuk Goksel; Emin Tireli; Enver Dayioglu Istanbul University, Istanbul, Turkey

9:30 P.M. - 9:45 P.M. (page 58)
7-V Minimally Invasive Ivor Lewis Esophagectomy with Linear Non Eea Anastomosis
D**Joshua Robert Sonett; Lyall Gorenstein; Marc Besseler Columbia University, New York, NY

* STSA Member   D Relationship Disclosure
POSTGRADUATE PROGRAM

THURSDAY, NOVEMBER 6, 2008
7:00 A.M. - 11:30 A.M.

The first portion of the Postgraduate Program will feature three simultaneous sessions in adult cardiac, general thoracic and congenital heart surgery. The Program will continue with Pro/Con Debates at 8:30 A.M. and a Special Session at 10:45 A.M. Summaries of postgraduate papers being presented will be posted on the STSA web site.

CME Credits Available: 3.75

ADULT CARDIAC BREAKOUT Islands A-D
(Presentations are limited to 15 minutes followed by a 30 minute panel discussion)

Educational Objectives: Upon Completion of this program, participants will be able to:
• Describe the options and indications of the left ventricular apical to descending aorta valve conduit.
• Analyze surgical approaches to atrial fibrillation.
• Explain the results of the SYNTAX clinical trial and assess the indications for CABG vs percutaneous intervention.

Moderators: *Jennifer Lawton and D*Vinod Thourani

7:00 A.M. - 7:15 A.M.
Off Pump Apical Aortic Valve Replacement
*John Brown
Indiana University School of Medicine, Indianapolis, IN

7:15 A.M. - 7:30 A.M.
Atrial Fibrillation; Surgical Approaches and Results
D*Vigneshwar Kasirajan
VCU Health System, Richmond, VA

7:30 A.M. - 7:45 A.M.
Syntax Trial; What Does It Mean?
Friedrich Mohr
Herzzentrum Universitaet Leipzig, Leipzig, Germany

7:45 A.M. - 8:15 A.M.
Panel Discussion

GENERAL THORACIC BREAKOUT Capri Salon 1
(Presentations are limited to 15 minutes, followed by 10 minutes of open discussion)

Educational Objectives: Upon Completion of this program, participants will be able to:
• List which stage of lung cancer will benefit from what types of adjuvant therapy.
• Compare lung volume reduction surgical options.
• Identify requirements for CMS coverage of lung volume reduction surgery.
• Define treatment options for Stage II esophageal cancer.

Moderators: *Mark Krasna and *Ara A. Vaporciyan

7:00 A.M. - 7:25 A.M.
Early Stage Lung Cancer—Adjuvant Therapy
D*Thomas D'Amico
Duke University Medical Center, Durham, NC

7:25 A.M. - 7:50 A.M.
Lung Volume Reduction
*Keith Naunheim
St. Louis University, St. Louis, MO

7:50 A.M. - 8:15 A.M.
Esophageal Cancer Treatment for Stage II
*Mark Krasna
St. Joseph’s Medical Center, Towson, MD

CONGENITAL BREAKOUT Capri Salon 6
(Presentations are limited to 10-12 minutes, followed by a 19 minute panel discussion)

Educational Objectives: Upon Completion of this program, participants will be able to:
• Describe requirements for certification as a congenital heart surgeon.
• Summarize indications for the Ross procedure for adults at risk for autograft dilation.
• Compare the single ventricle vs the double ventricle surgical options for Epstein’s Anomaly.

Moderator: *Eric Mendeloff

7:00 A.M. - 7:10 A.M.
Certification for Congenital Heart Surgeons
*John Calhoon
University of Texas Health Science Center, San Antonio, TX

7:10 A.M. - 7:22 A.M.
Ross Operation for Adults at Risk for Autograft Dilation
*Ross Ungerleider
Rainbow Babies and Children’s Hospital, Cleveland, OH

7:22 A.M. - 7:34 A.M.
Single Ventricle Approach to Repair for Ebstein’s
Vaughn Starnes
University of Southern California, Los Angeles, CA

7:34 A.M. - 7:46 A.M.
Double Ventricle Approach to Repair for Ebstein’s
*Steven Goldberg
University of Tennessee Health Sciences Center, Memphis, TN

7:46 A.M. - 7:56 A.M.
Surgical Management of Fetal Cardiac Terratoma
Umar Sekou-toure Boston
University of Tennessee Health Sciences Center, Memphis, TN

7:48 A.M. - 8:15 A.M.
Panel Discussion

8:15 A.M. - 8:30 A.M.
Break

* STSA Member   D Relationship Disclosure

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PRO/CON DEBATES Islands A-D
(Pro presentations are limited to 10 minutes, followed by a 10 minute Con presentation. The debate will conclude with 15 minutes of open discussion)

Educational Objectives: Upon Completion of this program, participants will be able to:
• Decide whether and in what situations endoscopic vein harvest is superior to saphenous vein harvest.
• List the current evidence for and against lung cancer screening.
• Describe the clinical findings supporting repair of moderate mitral regurgitation at the time of CAB.

Moderators: *Mark Krasna and *Ara A. Vaporciyan

8:30 A.M. - 9:05 A.M.
Endoscopic Vein Harvest is Superior to Saphenous Vein Harvest
Pro: D*Vinod Thourani
Emory University School of Medicine, Atlanta, GA
Con: *Robert Poston
Boston University, Boston, MA

9:05 A.M. - 9:40 A.M.
Lung Cancer Screening Benefits Outweigh Harms
Pro: D*Robert Cerfolio
University of Alabama at Birmingham, Birmingham, AL
Con: D Reginald Munden
University of Alabama at Birmingham, Birmingham, AL

9:40 A.M. - 10:15 A.M.
Moderate Mitral Regurgitation Should Always be Addressed at the Time of CAB
Pro: D*Irving Kron
University of Virginia, Charlottesville, VA
Con: D*Kevin Accola
Cardiovascular Surgical PA, Orlando, FL

10:15 A.M. - 10:45 A.M.
Break

SPECIAL SESSION
Islands A-D

Moderators: *Mark Krasna and *Ara A. Vaporciyan

10:45 A.M. - 11:30 A.M.
How Does the Practicing CT Surgeon Get Retrained in New Technology?
Edward Verrier
Director of the Joint Council on Thoracic Surgery Education
University of Washington, Seattle, WA

11:30 A.M. - 1:00 P.M.
Break

12:00 P.M. - 5:00 P.M.
Exhibits Open
Islands E-F

* STSA Member  D Relationship Disclosure

STSA 56th Annual Meeting
FIRST SCIENTIFIC SESSION A

2:15 P.M. - 2:30 P.M. (page 70)
6. Outcomes of Video-Assisted Thorascopic Surgery Versus Open Thoracotomy Pulmonary Lobectomy in a Cohort of 13,619 Patients
   Raja R. Gopaldas; *Faisal G. Bakaeen; Tam K. Dao; *Garrett L. Walsh;
   *Stephen G. Swisher Stephen; *Danny Chu
   Baylor College of Medicine, Houston, TX; University of Texas M.D. Anderson Cancer Center, Houston, TX

2:30 P.M. - 2:45 P.M. (page 72)
7. Early and Mid-Term Hemodynamics After Aortic Valve Bypass Surgery
   Crystal J. Vliek; *Bartley P. Griffith; Shuying Li; Jolinta Y. Lin;
   D*James S. Gammie
   University of Maryland Medical Center, Baltimore, MD

2:45 P.M. - 3:00 P.M. (page 74)
8. Looking to the Future: Does a Mentored Program During Early Training Translate Into Retention of Residents Applying to Cardiothoracic Surgery Training?
   *Stephen C. Yang, *Walter H. Merrill
   Johns Hopkins Medical Institutions, Baltimore, MD

3:00 P.M. - 3:30 P.M.
   Break – Visit Exhibits
   Islands E-F

FIRST SCIENTIFIC SESSION B

THURSDAY, NOVEMBER 5, 2009
3:30 P.M. - 5:00 P.M.
Islands A-D
(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: 1.5

Moderators: D*Michael Mack and D*Robert Cerfolio

3:30 P.M. - 3:45 P.M. (page 76)
9. Fifty Years of Surgery for Tetralogy of Fallot
   *Harald L. Lindberg; Egil Seem; Kjell Saatvedt; Tom N. Hoel; Sigurd L. Birkeland
   Rikshospitalet, Oslo University Hospital, Oslo, Norway

3:45 P.M. - 4:00 P.M. (page 78)
10. Use of a Statewide Cardiac Surgery Quality Collaborative for Process Improvement: Internal Mammary Artery Utilization During Coronary Artery Bypass Grafting
    *Scott H. Johnson; Patricia F. Theurer; Gail F. Bell; Luigi Maresca; Tom Leyden; *Richard L. Prager
    Sparrow Hospital, Lansing, MI; University of Michigan Health System, Ann Arbor, MI

4:00 P.M. - 4:15 P.M. (page 80)
11. Pulmonary Function Tests Do Not Predict Pulmonary Complications After Thoracoscopic Lobectomy
    Mark F. Berry; Nestor R. Villamizar-Ortiz; Betty C. Tong; *William R. Burfeind; *David H. Harpole; D*Thomas A. D’Amico; Mark W. Onaitis
    Duke University Medical Center, Durham, NC; St. Luke’s Health Network, Bethlehem, PA

4:15 P.M. - 4:30 P.M. (page 82)
12. Management of Moderate Functional Tricuspid Valve Regurgitation at the Time of Pulmonary Valve Replacement: Is Concomitant Tricuspid Valve Repair Necessary?
    *Brian Kogon; Courtney Plattner; Maan Jokhadar; Manisha Patel; Traci Leong; Michael McConnell; Wendy Book
    Emory University, Atlanta, GA

4:30 P.M. - 4:45 P.M. (page 84)
13. Results of Intra-Operative Open-Chest Completion Angiography in a Hybrid or After Minimally Invasive Off-Pump Coronary Artery Bypass (Midcab) Through a Left Thoracotomy
    *Steven J. Hoff; Stephen K. Ball; D*Michael R. Petracek; *Rashid Ahmad;
    D*James P. Greelish; Jorge M. Balaguer; Marzia Leach; D John G. Byrne
    Vanderbilt University Medical Center, Nashville, TN

4:45 P.M. - 5:00 P.M. (page 86)
14. Accuracy of Surgeon and Trainee Estimates of Lung Resection Risk
    *Mark K. Ferguson; Jennifer D. Stromberg; Amy D. Celauro
    University of Chicago, Chicago, IL

* STSA Member   D Relationship Disclosure

STSA 56th Annual Meeting
FRIDAY, NOVEMBER 6, 2009
7:00 A.M. - 7:50 A.M.
Islands A-D
(Presentations are limited to five minutes, followed by five minutes of discussion)

CME Credits Available: .75

Moderators: *John Hammon and *John Ikonomidis

7:10 A.M. - 7:20 A.M. (page 90)

2B. Col-3 Delays ARDS Development and Improves Survival in an Ovine ARDS Model
Xiaojin Zhou; Dongfang Wang; Cherry Croft; Philip Freidenreich; Sanford R. Simon; His-ming Lee; Lorne M. Golub; *Joseph B. Zwischenberger
University of Kentucky, Lexington, KY

7:20 A.M. - 7:30 A.M. (page 92)

3B. Computational Flow Dynamics Do Not Predict Increased Risk of Thrombosis in an Adjustable Systemic-Pulmonary Artery Shunt
*DWilliam I. Douglas; Mohammad W. Mohiuddin; Glen A. Laine
University of Texas Medical School at Houston, Houston, TX

7:30 A.M. - 7:40 A.M. (page 94)

4B. Brain Natriuretic Peptide is Not Reno-Protective During Renal Ischemia-Reperfusion Injury in the Rat
Tad Kim; P. Kent Harman; Robert Lyons; Roger B. Gaskins; Charles E. Hobson; Stephen Evans; *Curtis G. Tribble; *Thomas M. Beaver
University of Florida College of Medicine, Gainesville, FL

7:40 A.M. - 7:50 A.M. (page 96)

5B. Differential Gene Expression in Brain Injury Induced by Hypothermic Circulatory Arrest Versus Cardiopulmonary Bypass Alone
*Jeremiah G. Allen; *Eric S. Weiss; Mary A. Wilson; Mary E. Blue; Mary Lange; C. Conover Talbot; Chunfa C. Jie; Juan C. Troncoso; Michael Johnston; *William A. Baumgartner
Johns Hopkins Medical Institutions, Baltimore, MD; Kennedy-Krieger Institute, Baltimore, MD

FRIDAY, NOVEMBER 6, 2009
8:00 A.M. - 10:00 A.M.
Islands A-D
(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

Moderators: *Walter Merril and *Vinod Thourani

8:00 A.M. - 8:15 A.M. (page 98)
15. Twenty-Five Year Experience with the St. Jude Medical Mechanical Valve Prosthesis
*John M. Toole; Martha R. Stroud; *John M. Kratz; *Arthur J. Crumbley; *Scott M. Bradley; *Fred A. Crawford, Jr; *John S. Ikonomidis
Medical University of South Carolina, Charleston, SC

8:15 A.M. - 8:30 A.M. (page 100)
16. Intraoperative Blood Transfusion is Associated with Increased Mortality and Morbidity in Patients Having Non-Cardiac Thoracic Operations
*DVictor A. Ferraris; Daniel L. Davenport; *Sibu P. Saha; Alethea Bernard; *Joseph B. Zwischenberger
University of Kentucky, Lexington, KY; Lexington Veterans Affairs Medical Center, Lexington, KY

8:30 A.M. - 8:45 A.M. (page 102)
17. Long-Term Follow-Up after Primary Complete Repair of Truncus Arteriosus with Homograft: A 40 Year Experience
Hunaid A. Vohra; Alicia XF Chia; Vilius Janusauskas; Apostolos Roubelakis; Nicholas Nikolaidis; Gruschen Veldman; Kevin Roman; Joseph J. Vettukattil; James GNanapragasam; Anthony P. Salmon; Jamle L. Monro; Marcus P. Haw
Wessex Cardiothoracic Centre, Southampton, United Kingdom

8:45 A.M. - 9:00 A.M. (page 104)
18. Postoperative Bleeding Complications and Transfusion Requirements Following Pulsatile-Flow Versus Axial-Flow Left Ventricular Assist Device Implantation
Justin M. Schaffer; DJeremiah G. Allen; DEric S. Weiss; Nishant D. Patel; DStuart D. Russell; DAshish S. Shah; D*John V. Conte
Johns Hopkins School of Medicine, Baltimore, MD

9:00 A.M. - 9:15 A.M. (page 106)
19. Wartime Thoracic Injury: Perspectives in Modern Warfare
Brandon W. Propper; Shaun M. Gifford; *John H. Calhoon; *Jeffrey D. McNeil
Wilford Hall Medical Center, Lackland Air Force Base, TX; University of Texas Health Science Center at San Antonio, San Antonio, TX
SECOND SCIENTIFIC SESSION

9:15 A.M. - 9:30 A.M. (page 108)
20. Gathering Evidence About when to Operate on the Bicuspid Valve Patient with a Modestly Dilated Ascending Aorta
   Christian D. Etz; Stefano Zoli; Daniel Silovitz; Robert M. Brenner; Fabian Roder; Gloria Lam; Carol A. Bodian; Gabriele Di Luozzo; Randall B. Griep
   Mount Sinai School of Medicine, New York, NY

9:30 A.M. - 9:45 A.M. (page 110)
21. A Thoracic Surgeon Directed Tobacco Cessation Intervention
   *Benjamin D. Kozower; *Christine L. Lau; Jennifer V. Phillips; Sandra G. Burks; *David R. Jones; George J. Stuckenborg
   University of Virginia, Charlottesville, VA

9:45 A.M. - 10:00 A.M. (page 112)
22. Long-Term Outcomes from Surgical Ventricular Restoration for Severe Heart Failure
   Nathan W. Skelley; D Jeremiah G. Allen; D Eric S. Weiss; Nishant D. Patel; D Stuart D. Russell; D*Ashish S. Shah; D*John V. Conte
   Johns Hopkins Medical Institutions, Baltimore, MD

10:00 A.M. – 10:30 A.M.
Break – Visit Exhibits
Islands E-F

GENERAL SESSION

FRIDAY, NOVEMBER 6, 2009
10:30 A.M. - 12:00 P.M.
Islands A-D

CME Credits Available: 1.5

10:30 A.M. - 11:00 A.M.
President’s Invited Lecturer
Friedrich Mohr
Chairman of the Hearth Center Leipzig, University of Leipzig
Leipzig, Germany

11:00 A.M. - 11:20 A.M.
Kent Trinkle Education Lectureship
*Irving L. Kron
University of Virginia, Charlottesville, VA

11:20 A.M. - 12:00 P.M.
Presidential Address
*Michael J. Mack
Excellence and Innovation: Surgical Imperatives
Cardiothoracic Surgery Associates of North Texas, Dallas, TX

12:00 P.M.
All Attendee Lunch
Sunset Terrace

1:00 P.M. - 2:00 P.M.
Dessert Served in the Exhibit Hall
Islands E-F

1:00 P.M. - 4:15 P.M.
Exhibits Open
THIRD SCIENTIFIC SESSION A

FRIDAY, NOVEMBER 6, 2009
2:00 P.M. - 3:30 P.M.

Simultaneous Cardiac, General Thoracic and Congenital Breakout Sessions
(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)

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

CARDIAC BREAKOUT Islands A-D

CME Credits Available: 1.5

Moderators: *John Ikonomidis and *Marc Moon

2:00 P.M. - 2:15 P.M. (page 114)
23. Outcomes of Acute Type A Aortic Dissection After Previous Cardiac
Surgery
*Anthony L. Estrera; Charles C. Miller; *Jon-Cecil Walkes; Larry Kaiser;
*Hazim J. Safi
University of Texas Houston Medical School, Houston, TX; Texas Tech
University, El Paso, TX

2:15 P.M. - 2:30 P.M. (page 116)
24. Hybrid Debranching with Endovascular Repair of Crawford Extent 1,
2 and 3 Thoracoabdominal Aneurysms: A Therapy with Expanding
Potential in High Risk Patient Cohorts
D Himanshu J. Patel; Gilbert R. Upchurch; Jonathan Eliason; Enrique
Criado-Pallares; John Rectenwald; Ramon Berguer; D David M. Williams;
*Richard L. Prager; James C. Stanley; Michael G. Deeb
University of Michigan Cardiovascular Center, Ann Arbor, MI

2:30 P.M. - 2:45 P.M. (page 118)
25. Long-Term Survival after Open Repair of Chronic Type B Aortic
Dissection
Stefano Zoli; Christian D. Etz; Fabian Roder; Christoph S. Mueller; Robert
M. Brenner; Carol A. Bodian; Gabriele Di Luzzo; Randall B. Griep
Mount Sinai School of Medicine, New York, NY

2:45 P.M. - 3:00 P.M. (page 120)
26. Endovascular Management of Complicated Type B Aortic Dissection:
Methods and Midterm Outcomes
Ali Khoynezhad; D Carlos E. Donayre; D Rod A. White
Creighton University Medical Center, Omaha, NE; Harbor-UCLA Medical
Center, Torrance, CA

3:00 P.M. - 3:15 P.M. (page 122)
27. Endovascular Repair of Descending Thoracic Aneurysms: Results with
On-Label Application in the Post Approval Era
D*G. Chad Hughes; Sean M. Lee; Mani A. Daneshmand; Sonny Tucker;
Richard L. McCann
Duke University Medical Center, Durham, NC

3:15 P.M. - 3:30 P.M.
Panel Discussion
*Anthony L. Estrera; Himanshu J. Patel; Stefano Zoli; Ali Khoynezhad;
*G. Chad Hughes;
* STSA Member  D Relationship Disclosure

GENERAL THORACIC BREAKOUT Capri Salon I

Educational Objective: To provide new or important information from
recognized authorities about the current practice of general thoracic surgery.

CME Credits Available: 1.5

Moderators: *Ara Vaporciyan and *Rodney Landreneau

2:00 P.M. - 2:15 P.M. (page 124)
28. Cervical Tracheal Resection: Lessons Learned
Christopher J. Mutrie; Shady M. Eldaif; Caleb W. Rutledge; *Seth D.
Force; William J. Grist; *Kamal A. Mansour; D*Daniel L. Miller
Emory University School of Medicine, Atlanta, GA

2:15 P.M. - 2:30 P.M. (page 126)
29. Photodynamic Laser Therapy for Lesions in the Airway
Douglas Minnich; Adam C. Dooley; *Robert J. Cerfolio; Ayesha S.
Bryant; Jeana R. Alexander; Hilary B. Moran; Steven E. Parsons
University of Alabama at Birmingham, Birmingham, AL

2:30 P.M. - 2:45 P.M. (page 128)
30. Variation in Esophagectomy Outcomes Among Hospitals Meeting
Leapfrog Volume Standards
Thomas K. Varghese Jr; Douglas E. Wood; Farhood Farjah; Brant K.
Oelschlager; Rebecca G. Symons; Kara E. MacLeod; David R. Flum
University of Washington, Seattle, WA

2:45 P.M. - 3:00 P.M. (page 130)
31. Lymph Node Status Predicts Recurrence after Esophagectomy
Following Neoadjuvant Therapy
*Arjun Pennathur; *Rodney J. Landreneau; Julie Ward; Stephanie Land;
The-Minh Luong; Michael Gibson; Matthew Schuchert; James D. Luketich
University of Pittsburgh Medical Center, Pittsburgh, PA

3:00 P.M. - 3:15 P.M. (page 132)
32. Effectiveness and Risk of Complications Associated with Intrapleural
Alteplase Via Tube Thoracostomy
Sharon Ben-Or; *Richard Feins; Nirmal Veeramachaneni; Benjamin
Haithcock
University of North Carolina, Chapel Hill, NC

3:15 P.M. - 3:30 P.M. (page 134)
33. Prognostic Indicators Following Surgery for Thymoma
Ikenna C. Okereke; Mohammed Morad; Karen M. Rieger; Thomas J.
Birdas; Deming Mi; Mark W. Turrentine; Sunil Bдаве; Patrick J. Loehrer;
*Kenneth A. Kesler
Indiana University School of Medicine, Indianapolis, IN

* STSA Member  D Relationship Disclosure

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CONGENITAL BREAKOUT Capri Salon 6

CME Credits Available: 1.5

Moderators: *Michael Hines and *Brian Kogon

2:00 P.M. - 2:15 P.M. (page 136)
34. Heart Transplantation in Children with a Fontan Procedure
   *Kirk R. Kanter; William T. Mahle; Robert N. Vincent; Alexandria M. Berg; *Brian E. Kogon; *Paul M. Kirshbom
   Emory University School of Medicine, Atlanta, GA; Children’s Healthcare of Atlanta, Atlanta, GA

2:15 P.M. - 2:30 P.M. (page 138)
35. The Rastelli Operation Remains a Good Option for Transposition of the Great Arteries with Ventricular Septal Defect and Pulmonary Stenosis
   John W. Brown; Mark Ruzmetov; Huynh Daniel; *Mark D. Rodefeld; *Mark W. Turrentine; *Andrew C. Fiore
   Indiana University School of Medicine, Indianapolis, IN; St. Louis University School of Medicine, St. Louis, MO

2:30 P.M. - 2:45 P.M. (page 140)
36. Long-Term Outcomes in Supravalvular Aortic Stenosis Demonstrate Superiority of Multi-Sinus Aortoplasty
   Sunjay Kaushal; S. Patel; *Carl L. Backer; Jeffrey G. Gossett
   Children’s Memorial Hospital, Chicago, IL

2:45 P.M. - 3:00 P.M. (page 142)
37. Norwood Operation: Comparison of the Modified Blalock-Taussig Shunt with the RV to PA Conduit
   *Andrew Fiore; Courtney Tobin; Saadeh Jureidini; Mohammad Rahimi; Grace Freire; Kalyani Trivedi; Kenneth Schowengerdt
   St. Louis University/Cardinal Glennon Children’s Hospital, St. Louis, MO

3:00 P.M. - 3:15 P.M. (page 144)
38. Right Ventricular Outflow Tract Reconstruction Utilizing a Bicuspid-Valved-PTFE-Conduit: Early Results
   Masahiro Yoshida; *Victor O. Morell; Peter D. Wearden
   Children’s Hospital of Pittsburgh, Pittsburgh, PA

3:15 P.M. - 3:30 P.M. (page 146)
39. Hypoplastic Left Heart Syndrome: Feasibility Study for Patients Undergoing Completion Fontan at or Prior to 2 Years of Age
   Shyam Sathanandan, Anastasios C. Polimenakos; Chawki el Zein; *Robert S. D. Higgins; Michel N. Ilbawi
   Advocate Hope Children’s Hospital / The Center of Structural and Congenital Heart Disease at Rush University Medical Center, Chicago, IL

3:30 P.M. - 4:00 P.M.
Break – Visit Exhibits
38 STSA 56th Annual Meeting

**THIRD SCIENTIFIC SESSION B**

**GENERAL THORACIC BREAKOUT Capri Salon 1**

**CME Credits Available: 1**

**Moderators: D *Robert Cerfolio and D *Bryan Meyers**

4:00 P.M. - 4:15 P.M. (page 156)
45.  **Variability in Defining T1N0 Non-Small Cell Lung Cancer has Consequences for Locoregional Failure**
Nirmal Veeramachaneni; Mert Saynak; Jessica Hubbs; Jiho Nam; Lawrence Marks; *Richard Feins; Benjamin Haithcock
*University of North Carolina at Chapel Hill, Chapel Hill, NC

4:15 P.M. - 4:30 P.M. (page 158)
45.  **Patterns of Lymph Node Sampling in Video Assisted Thoracoscopic Lobectomy Versus Lobectomy by Standard Thoracotomy**
Chadrick Evan Denlinger; *Bryan F. Meyers; Felix G. Fernandez; Wande Pratt; Jenniver Bell Zoole; *Alexander G. Patterson; *Sasha A. Krupnick; *Daniel Kreisel; D*Traves D. Crabtree
*University of North Carolina at Chapel Hill, Chapel Hill, NC

4:30 P.M. - 4:45 P.M. (page 160)
45.  **Impact of Angioinvasion, Visceral Pleural Invasion and Tumor Inflammation on Outcomes Following Resection of Stage I Non-Small Cell Lung Cancer**
Matthew J. Schuchert; Brian L. Pettiford; Arman Kilic; Alicia Oostdyk; *Arjun Pennathur; Omar Awais; Sebastien Gilbert; James R. Landreneau; David O. Wilson; James D. Luketich; *Rodney J. Landreneau; Lana Y. Schumacher
*University of Pittsburgh Medical Center, Pittsburgh, PA

4:45 P.M. - 5:00 P.M. (page 162)
47.  **Role of a Serum Proteomic Signature in the Management of Pulmonary Nodules**
Eric L. Grogan; Stephen A. Deppen; Chad V. Pecot; Rama Rajanbabu; Yu Shyr; *Joe B. Putnam, Jr.; *Eric S. Lambricht; *Jonathan C. Nesbitt; *Pierre P. Masson
*Vanderbilt University, Nashville, TN

**CONGENITAL BREAKOUT Capri Salon 6**

**CME Credits Available: 1**

**Moderators: *Michael Hines and *Brian Kogon**

4:00 P.M. - 4:15 P.M. (page 164)
48.  **The Fontan Operation: The Pursuit of Associated Lesions and Cumulative Trauma**
*Robert Hannan; Jennifer Zabinsky; Jane Salvaggio; Anthony Rossi; Danyal Khan; Francisco Alonso; Jorge Ojito; David Nykanen; Evan Zahn; *Redmond Burke
*Congenital Heart Institute at Miami Children's Hospital, Miami, FL

4:15 P.M. - 4:30 P.M. (page 166)
49.  **A 45-Year Experience with Multiple Reoperations after Initial Repair of Partial Atrioventricular Septal Defect**
John M. Stulak; Harold M. Burkhart; Joseph A. Dearani; Heidi M. Connolly; Frank Cetta; Roxann D. Barnes; *Hartzell V. Schaff
*Mayo Clinic College of Medicine, Rochester, MN

4:30 P.M. - 4:45 P.M. (page 168)
50.  **Performance of Synergraft Decellularized Pulmonary Heart Valve in Patients Undergoing a Ross Procedure: A Single Institution Experience**
Mark Ruzmetov; John W. Brown; *Mark D. Rodefsl; *Mark W. Turrentine
*Indiana University School of Medicine, Indianapolis, IN

4:45 P.M. - 5:00 P.M. (page 170)
51.  **Surgery for Anomalous Aortic Origin of the Coronary Arteries**
Muhammad Ali Muntaz; Richard E. Lorber; Janine Arruda; Gosta B. Pettersson; *Constantine Mavroudis
*Cleveland Clinic Children's Hospital, Cleveland, OH

5:00 P.M. - 6:00 P.M.
**STSA Annual Business Meeting**
(Members Only) Islands A-D

7:00 P.M. - 9:00 P.M.
**President’s Mixer**
**Sunset Terrace**

* STSA Member  D Relationship Disclosure
CODING UPDATE & ETHICS FORUM

SATURDAY, NOVEMBER 7, 2009
6:45 A.M. – 10:30 A.M.
Exhibits Open
Islands E-F

CODING UPDATE Islands A-D
7:00 A.M. – 7:45 A.M.

Educational Objective: To help attendees understand typical and challenging issues in coding and reimbursement of cardiothoracic surgery procedures.

CME Credits Available: .75

Moderator: #Peter K. Smith

Update on CPT and Physician Payment Issues for 2010

ETHICS FORUM Islands A-D
7:50 A.M. – 8:50 A.M.

Educational Objective: To enable surgeons to deal ethically with insurance coverage as an indication for surgery.

CME Credits Available: 1

Impending Loss of Insurance Coverage is an Indication to Proceed with Complex, Expensive Surgery

Moderator: #Robert Sade

Pro: #Anthony Estrera
University of Texas Houston Medical School, Houston, TX;

Con: #John Ikonomidis
Medical University of South Carolina, Charleston, SC

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40 STSA 56th Annual Meeting

FOURTH SCIENTIFIC SESSION A

SATURDAY, NOVEMBER 7, 2009
9:00 A.M. - 10:00 A.M.

Simultaneous Cardiac, General Thoracic and Transplant Breakout Sessions
(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)

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

CARDIAC BREAKOUT Islands A-D

Moderators: #Walter Merrill and #William Ryan

9:00 A.M. – 9:15 A.M. (page 172)
52. The Ross Procedure Performed for Aortic Insufficiency is Associated with Increased Autograft Reoperation

*DWilliam H. Ryan; Dan Culica; Morley A. Herbert; Syma L. Prince;
*Michael J. Mack
Heart Hospital Baylor Plano, Plano, TX; Cardiopulmonary Research Science and Technology Institute, Dallas, TX; Medical City Dallas Hospital, Dallas, TX

9:15 A.M. – 9:30 A.M. (page 174)
53. Outcomes of Aortic Valve Replacement in High-Risk Patients: Is it Time to Set New Benchmarks?

*DVinod H. Thourani; *Gorav Ailawadi; Wilson Y. Szeto;
Todd M. Dewey; *Michael J. Mack; Joseph E. Bavaria; *Irving L. Kron;
Patrick Kilgo; *Robert A. Guyton
Emory University, Atlanta, GA; University of Virginia, Charlottesville, VA;
University of Pennsylvania, PA; Medical City Dallas Hospital, Dallas, TX

9:30 A.M. – 9:45 A.M. (page 176)
54. Preoperative Functional Tricuspid Valve Regurgitation Predicts Late Atrial Fibrillation Following Mitral Valve Surgery: Should Prophylactic Maze Procedure be Considered?

Pro: #Anthony Estrera
University of Texas Houston Medical School, Houston, TX;

Con: #John Ikonomidis
Medical University of South Carolina, Charleston, SC

55. Repair of Acute Type A Aortic Dissection with Open Distal Anastomosis has Similar Outcome As The Closed Technique: Results of 100 Patients

Hunaid A. Vohra; Amit Modi; Theodore Velissaris; Alicia XF Chia;
Marcus P. Haw; Clifford Barlow; Sunil K. Ohri; Steve A. Livesey;
Geoffrey MK Tsang
Wessex Cardiothoracic Centre, Southampton, United Kingdom

*SSTSA Member    D Relationship Disclosure
41 STSA 56th Annual Meeting
GENERAL THORACIC BREAKOUT Capri Salon 1

CME Credits Available: 1

Moderators: *Mark Krasna and DJoe B. Putnam

9:00 A.M. - 9:15 A.M. (page 180)

56. **Thoracoscopy versus Thoracotomy for Pulmonary Metastasectomy**
Allan Pickens; Nicholas Dewyer; Lili Zhao; Andrew Chang;
Mark Orringer
University of Michigan, Ann Arbor, MI

9:15 A.M. - 9:30 A.M. (page 182)

57. **Vats Segmentectomy: A Safe and Effective Procedure**
Bradley G. Leshnower; *Daniel L. Miller; Allan Pickens; *Seth D. Force
Emory University School of Medicine, Atlanta, GA

9:30 A.M. - 9:45 A.M. (page 184)

58. **The 30 versus 90 Day Operative Mortality after Pulmonary Resection**
Ayesha S. Bryant; Kyle J. Rudemiller; *Robert J. Cerfolo;
University of Alabama at Birmingham, Birmingham, AL

9:45 A.M. - 10:00 A.M. (page 186)

59. **Surgical Management of Superior Sulcus Non-Small Cell Lung Carcinoma: A Retrospective Review of a Single Institution Experience with Long-Term Follow-Up**
Domenico Galetta; Piergiorgio Solli; Francesco Petrella; Alessandro Borri; Roberto Gasparri; Lorenzo Spaggiari
European Institute of Oncology, Milan, Italy

TRANSPLANT BREAKOUT Capri Salon 6

Educational Objective: To provide new or important information from recognized authorities about the current practice of thoracic surgery.

CME Credits Available: 1

Moderators: *John Conte and D*David Jones

9:00 A.M. - 9:15 A.M. (page 188)

60. **Donor Hypoxia is Associated with Development of Bronchiolitis Obliterans Following Lung Transplantation**
Sara A. Hennessy; Brian R. Swenson; Benjamin D. Kozower;
*David R. Jones; *Gorav Ailawadi; *Christine L. Lau; *Irving L. Kron
Department of Surgery, University of Virginia, Charlottesville, VA

9:15 A.M. - 9:30 A.M. (page 190)

61. **Lessons Learned from 100 Consecutive Pediatric Cardiac Transplants**
*Jeffrey Phillip Jacobs; Alfred Asante-Korang; Sean M. O’Brien; Jennifer Carapullucci; *Paul J. Chai; Dien Vu; Jorge McCormack; Robert Joseph Boucek Jr; David S. Cooper; Albert Saltiel; *James Anthony Quintessenza
Congenital Heart Institute of Florida (CHIF) - All Children’s Hospital, Saint Petersburg, FL

9:30 A.M. - 9:45 A.M. (page 192)

62. **Post-Lung Transplantation for High-Risk Recipients is Superior at High-Volume Centers**
Mark J. Russo; Kimberly N. Hong; Ryan Davies; Alexander Iribarne;
Matthew Bacchetta; Annette Geljins; Frank D’Ovidio; Arcasoy Selim Selim; Joshua Sonett
Columbia University Medical Center – Division of Cardiothoracic Surgery, New York, NY; Mount Sinai School of Medicine, New York, NY

9:45 A.M. - 10:00 A.M. (page 1198)

63. **Donor Age is Associated with Late Coronary Artery Disease Following Heart Transplantation: Implications for Donor Allocation**
Alykhan S. Nagji; Brian R. Swenson; *John A. Kern; James D. Bergin;
*Christine L. Lau; *Benjamin B. Peeler; *Irving L. Kron; *Gorav Ailawadi
Department of Surgery, University of Virginia, Charlottesville, VA

10:00 A.M. - 10:30 A.M.
Break – Visit Exhibits
Islands E-F

HISTORY PRESENTATION Islands A-D
10:30 A.M. – 10:50 A.M.

Horace Smithy - Pioneer Heart Surgeon
*Fred A. Crawford
Medical University of South Carolina
FOURTH SCIENTIFIC SESSION B

SATURDAY, NOVEMBER 7, 2009
10:50 A.M. - 11:50 A.M.
Islands A-D

(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: 1

Moderators: D*Michael Mack and #Keith Naunheim

10:50 A.M. - 11:05 A.M. (page 196)
64. Replacement of the Aortic Valve: Comparison of Matched Port Access and Sternotomy Cohorts
William T. Brinkman; D*William H. Ryan; Todd M. Dewey; *Michael J. Mack; Dan Culica; Syma L. Prince; Morley A. Herbert
Texas Health Presbyterian Hospital Dallas, Dallas, TX; Medical City Dallas Hospital, Dallas, TX

11:05 A.M. - 11:20 A.M. (page 198)
65. Improved Long-Term Outcome with Chemoradiotherapy Strategies in Locoregionally Advanced Esophageal Cancer
D*Stephen G. Swisher; *Wayne L. Hofstetter; Ritsuko Komaki; Arlene M. Correa; Jeremy Erasmus; Zhonxing Liao; Jeffrey H. Lee; Dipen M. Maru; *Reza J. Mehran; Shital Patel; Alexandria Phan; *David C. Rice; *Jack A. Roth; *Ara A. Vapoorciyan; *Garrett L. Walsh; Jaffer Ajani
University of Texas MD Anderson Cancer Center, Houston, TX

11:20 A.M. - 11:35 A.M. (page 200)
66. Outcome of Surgical and Catheter Ablation to Treat Atrial Fibrillation
Linda Henry; Henry Tran; Ted Freighling; Sarfaz A. Durrani; Marc Wish; Margaret Bell; Albert Del Negro; D Niv Ad
Inova Heart and Vascular Institute, Falls Church, VA

11:35 A.M. - 11:50 A.M. (page 202)
David Tom Cooke; Faraz Kerendi; Brett A. Mettler; Daniel J. Boffa; John R. Mehall; *Walter H. Merrill; *Robert S.D. Higgins
University of California, Davis Medical Center, Sacramento, CA; Emory University, Atlanta, GA; University of Virginia, Charlottesville, VA; Yale School of Medicine, New Haven, CT; Penrose Hospital, Colorado Springs, CO

PROGRAM ADJOURNS
IV. VALVE SPARING AORTIC ROOT REPLACEMENT IN A PATIENT WITH BICUSPID AORTIC VALVE

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 names have indicated that they have a financial or other relationship with a healthcare-related business or other entity to disclose.

Authors: Sterling L Humphrey¹, *Howard K Song¹, *Matthew Slater¹, Stephen W Guyton¹

Author Institution(s): ¹Oregon Health & Science University, Portland, OR, United States

Objectives: This video is designed to show a safe reimplantation technique of a valve sparing aortic root replacement developed by the work of Dr. Tyrone David.

Methods: A video demonstration of the surgical technique performed on a 36 year old male found to have a bicuspid aortic valve with large ascending and aortic root aneurysm.

Results: This technique has emerged as an alternative to conventional aortic root replacement and more recently extended to patients with genetically triggered thoracic aneurysms, such as patients with Marfan’s syndrome and bicuspid aortic valve.

Conclusions: Bicuspid aortic valves are one of the most common congenital heart lesions, affecting up to 2% of the general population. Studies have shown bicuspid aortic valves to be the most common cause of both isolated aortic stenosis and regurgitation in adults. There is increasing evidence that it is a genetically transmitted disorder and is commonly found in association with aneurysms of the aortic root and ascending aorta. The reimplantation technique demonstrated in this video shares both a safe and reliable alternative to the conventional valve sparing aortic root replacement.
2V. COMBINED VIDEO ASSISTED LOBECTOMY AND EN BLOC VERTEBRAL RESECTION FOR A T4 NON-SMALL CELL LUNG CANCER

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 names have indicated that they have a financial or other relationship with a healthcare-related business or other entity to disclose.

Authors:

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

Objectives: The traditional approach to lung cancers with chest wall and/or limited vertebral involvement has been through a thoracotomy with en bloc resection. We present a combined VATS and posterior approach to a T4 NSCLC with vertebral involvement.

Methods: A right upper lobe lung cancer with limited vertebral involvement of T3 was detected by CT. Needle biopsy revealed a squamous cell cancer. Staging investigations revealed no evidence of metastatic disease. Neoadjuvant chemotherapy was administered. The operative video demonstrates a right VATS approach through which an anatomic right upper lobectomy is performed, leaving the tumor and lobe attached to the apicoposterior chest wall. Additionally, the parietal pleura and endothoracic fascia surrounding the adherent tumor is incised and the supreme intercostal vein was ligated. The patient was subsequently positioned prone and a posterior stabilization was established with bilateral pedicle screws. Subsequently, an en bloc resection of the T3 vertebral body, posterior ribs 2-4 and the right upper lobe was performed.

Results: An R0 resection of the tumor was accomplished through the described approach. The patient tolerated the procedure well and was discharged home on post-operative day seven. Final pathology revealed a T3N0 squamous cell cancer (pleural involvement).

Conclusions: En bloc resection of a lung cancer with chest wall and/or vertebral invasion is feasible through a combined VATS and posterior approach.
3V. MITRAL VALVE REPAIR FOR RHEUMATIC DISEASE

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Authors: D® J. Scott Rankin

Author Institution(s): 1Vanderbilt University, Nashville, TN, United States

Objectives: Initial application of repair to rheumatic mitral disease was fraught with high recurrence rates. For this reason, rheumatic valves primarily have been replaced in recent years. Early and late outcomes with replacement, however, continued to be suboptimal, prompting reexamination of repair.

Methods: All 11 patients encountered with rheumatic mitral valves over the past 4 years have undergone successful repair. One had pure stenosis, 5 had pure regurgitation, and 5 had advanced forms of mixed stenosis and regurgitation. Because posterior leaflet retraction is a prominent feature of rheumatic disease, a gluteraldehyde-fixed autologous pericardial patch was placed into the posterior leaflet in all. In 6 patients with stenosis, thickened chords to the anterior leaflet were resected, extended commissurotomies were performed, an anterior leaflet “hinge” mechanism was restored, and the anterior leaflet was reattached to the papillary muscles using Gore-Tex artificial chords. All 11 patients had full rigid ring annuloplasties.

Results: Every patient recovered uneventfully and without major complications. Postoperatively, all had low gradients and no residual leak. The first patient (with mixed stenosis and regurgitation) was restudied with transesophageal echo after 4 years, and continued to have good valve function. One patient has been re-repaired for endocarditis. Videos and echos from 4 of these patients will be shown.

Conclusions: A combination of posterior leaflet patching, anterior leaflet chordal resection/Gore Tex replacement, extended commissurotomy, and full ring annuloplasty allows excellent repair of rheumatic valves over the full range of pathologies. Early and intermediate-term results are excellent. Continued application of repair to rheumatic mitral disease seems indicated.
4V. LAPAROSCOPIC REPAIR OF GIANT TYPE IV PARAESOPHAGEAL HERNIA

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Authors: Gan Dunnington¹, Leo Gazoni¹, Bruce Schirmer¹, *Benjamin Kozower¹

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

Objectives: An eighty-seven year old female presented with a giant type IV paraesophageal hernia manifested by dysphagia, unintentional weight loss, and impaired functional status.

Methods: Laparoscopic paraesophageal hernia repair was performed with a wedge gastroplasty to lengthen a foreshortened esophagus and an anterior fundoplication. The hiatus was repaired with a biologic mesh.

Results: The patient tolerated the procedure well and had a smooth post-operative course highlighted by a good post-operative esophagram, discharge, and high degree of satisfaction on her post-operative visit.

Conclusions: Laparoscopic repair is possible and maybe even preferable for giant type IV paraesophageal hernias in the elderly population.
SV. BIVENTRICULAR REPAIR OF COMPLETE
ATRIOVENTRICULAR SEPTAL DEFECT WITH DOUBLE
OUTLET RIGHT VENTRICLE FOLLOWING NEONATAL
REPAIR OF TOTAL ANOMALOUS PULMONARY
VENOUS RETURN

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Authors: *Joseph M. Forbess

Author Institution(s): *Children's Medical Center Dallas and University of Texas Southwestern Medical Center, Dallas, TX, United States

Objectives: A case is presented of an infant with complete atrioventricular septal defect (CAVSD), double outlet right ventricle (DORV), and obstructed infradiaphragmatic total anomalous venous return (TAPVR). The biventricular repair of CAVSD and DORV is shown.

Methods: The operation was performed on cardiopulmonary bypass at 24°C. A dacron patch was implanted via the right atrium to close the inlet portion of the ventricular septal defect (VSD). Via a right ventriculotomy, a second dacron patch was used to close the outlet portion of the VSD. This outlet patch was sutured to the anterior aspect of the inlet VSD patch. The cleft in the left atrioventricular valve was closed. The common atrium was partitioned with bovine pericardium. A main pulmonary arterioplasty was performed with bovine pericardium and the right ventriculotomy was closed with bovine pericardium.

Results: Postoperative echocardiogram revealed no significant right or left atrioventricular valve regurgitation. There was no atrial or ventricular septal defect. The right and left ventricular outflow tracts were unobstructed. The patient recovered well and was discharged on post-operative day fourteen.

Conclusions: This staged approach to biventricular repair offers several advantages. In contrast to neonatal repair, CAVSD repair at several months of age allows for a technically superior atrioventricular valve repair, and durable cleft closure. The intraventricular tunnel, or DORV repair portion of the procedure, is likely more durable at this age, with a lower incidence of residual or recurrent left ventricular outflow tract obstruction. These potential benefits outweigh the risks of palliation with a pulmonary artery band at TAPVR repair.
6V. EXTRACARDIAC OFF-PUMP FONTAN COMPLETION FOR SINGLE VENTRICLE WITH DEXTROCARDIA

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**Authors:** Emin Tireli1, Onur Selcuk Goksel1, Enver Dayioglu1

**Author Institution(s):** 1Istanbul University, Istanbul Medical Faculty, Department of Cardiovascular Surgery, Istanbul, Turkey

**Objectives:** Extracardiac off-pump is reported to result in better early hemodynamics and shorter mechanical ventilation periods. However; this may be cumbersome in reoperative patients with dextrocardia.

**Methods:** We present the technical video of extracardiac off-pump Fontan in a 5 year-old-girl with single ventricle and dextrocardia. We exclusively employ extracardiac off-pump technique for Fontan and bidirectional Glenn procedures.

**Results:** Following resternotomy, all mediastinal structures including prior bidirectional Glenn anastomosis, bilateral pulmonary arteries and inferior vena cava (IVC) as inferior as hepatic veins are extensively freed of adhesions from prior operation. Left pulmonary artery is used for ePTFE conduit anastomosis superiorly due to dextrocardia. Technically, midline position of the IVC allowed for a satisfactory configuration of the conduit as the rightsided Glenn anastomosis perfused the right lung allowing oxygenation during superior anastomosis. Another technical cornerstone is to elevate the heart without disturbing the atrioventricular loading. A Y-shaped passive venous drainage system is used between distal IVC and the atrium in Trendelenburg position. Only two-thirds of the cavoatrial junction is separated leaving the posterior wall intact for anastomotic orientation as the caval tissue tends to shrink and rotate. Atrial cuff is oversewn with care not to injure atrioventricular groove/coronary sinus; end-to-end anastomosis of the conduit to IVC is then performed.

**Conclusions:** Correct orientation of the conduit is a major determinant of the outcome; an intact posterior caval wall during inferior anastomosis is the cornerstone. Strong cooperation with the anesthesiology team is important for optimal loading and inotropic requirements during the procedure.

* STSA Member  D Relationship Disclosure

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7V. MINIMALLY INVASIVE IVOR LEWIS ESOPHAGECTOMY WITH LINEAR NON EEA ANASTOMOSIS

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Authors: DJoshua Robert Sonett, Lyall Gorenstein, Marc Besseler

Author Institution(s): Columbia University, New-York Presbyterian Hospital, New York, NY, United States

Objectives: Minimally Invasive Esophagectomy (MIE) is evolving into a more widely utilized procedure. However, evolving techniques continue to offer alternatives to previousley described methods. The majority of techniques have described the use of the circular EEA stapled anastamosis. However, EEA anastamosis may have several disadvantages, especially in regards to strictures. We describe our Video Assisted Thoracoscopy technique of an Ivor Lewis anastamosis utilizing linear staples.

Methods: Over the past 3 years all patients with esophageal cancer referred for surgical resection at our institution, have undergone a MIE. Patients undergo either MIE Ivor Lewis or MIE Trans Hiatal Esophagectomy depending on tumor location and or stage. In order to avoid technical issues with an EEA stapled anastamosis, we adapted an esophago gastric side to side linear anastamosis.

Results: The patient is positioned in a laterl position tilted 45 degrees toward prone. The gastric conduit is placed posterior to the divided esophagus. Adequate esophageal mobilization is essential to allow the esophagus to overlap 4 to 5 cm onto the stomach. Interrupted silk stay sutures are placed at the corners of the anastamosis. The linear stapler is placed through the inferior port. Typically this port is aligned with the anastamosis. We create a 4 cm staple line between the stomach and esophagus. A third stay suture is placed in the anterior defect midway between the two corner sutures. The anterior defect is easily closed with a single firing of the linear stapler placed through the anterior utility incison.

The anastamosis is visualized endoscopically and tested for leak intraoperatively with air.

Conclusions: Totally thoracoscopic MIE Ivor Lewis esophagectomy is now well described. We document an adaptation of open techniques to perform the chest anastamosis thoracoscopically with linear staples. This allows surgeons continuing options when utilizing this technique. The Video accurately describes the technique.
I. THE IMPACT OF DONOR-RECIPIENT RACE MATCHING ON SURVIVAL FOLLOWING ORTHOTOPIC HEART TRANSPLANTATION - AN ANALYSIS OF OVER 20,000 PATIENTS

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Authors: D Jeremiah G. Allen1, D Eric S. Weiss1, D Stuart D. Russell1, * William A. Baumgartner1, D* John V. Conte1, D* Ashish S. Shah1

Author Institution(s): 1 Johns Hopkins Medical Institutions, Baltimore, MD, United States

Discussant: * Robert Higgins, Chicago, IL

Objectives: There is evidence that donor and recipient race interact to affect mortality in adult and pediatric orthotopic heart transplantation (OHT). The United Network for Organ Sharing (UNOS) database provides an opportunity to examine the effect of race on outcomes for a large cohort of OHT patients.

Methods: We retrospectively reviewed the UNOS dataset for 20,185 adult patients receiving primary OHT (1997-2007). Patients were stratified by donor/recipient race matching and divided into groups of specific race. All cause mortality was examined with Cox proportional hazard regression incorporating 22 variables. Short term mortality (30d, 90d, 1yr, and 2yr) and rejection in the 1st year, were examined. Cumulative post-OHT survival was modeled via the Kaplan-Meier (KM) method.

Results: Of 20,185 patients, 12,381 (61%) were race matched (75% of Caucasians, n=7,104; 17% of African Americans, n=514; 30% of Hispanics, n=391; 5% of Asians, n=19). 5,614 (28%) patients died during the study. Race matching did not impact 30d or 90d survival; however, it increased 1 yr (87.6% vs. 86.1%, p=0.008) and 2 yr survival (84.0% vs. 81.4%, p<0.001). On multivariable analysis, race matching resulted in increased cumulative survival (HR ratio 0.85 [0.76-0.95], p=0.003), but did not decrease rejection in the 1st year. KM modeling showed a significant effect of race matching on survival (p<0.001) (Figure). Notably, with censoring for deaths in the 1st year, the difference in KM survival persisted (p<0.001).

Conclusions: Our study represents the largest modern cohort evaluating the effect of race matching in adult OHT. Race matching resulted in increased long term survival. This effect does not appear to be attributable to differences in rejection rate.
2. STAGING OF GASTROESOPHAGEAL ADENOCARCINOMAS: A COMPARISON BETWEEN ESOPHAGEAL STAGING, GASTRIC STAGING, AND A NOVEL WORLDWIDE ESOPHAGEAL CANCER COLLABORATION STAGING SYSTEM

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Authors: Puja Gaur1, *Wayne L Hofstetter1, Nebiyou B Bekele1, Arlene M Correa1, *Reza John Mehran1, David C Rice1, Jack A Roth1, *Ara A Vaporiyan1, Thomas W Rice2, *Stephen G Swisher1

Author Institution(s): 1University of Texas MD Anderson Cancer Center, Houston, TX, United States; 2Cleveland Clinic Foundation, Cleveland, OH, United States

Discussant: *Keith Naunheim, St. Louis, MO

Objectives: Controversy exists regarding the optimal staging system for patients with gastro-esophageal junction adenocarcinoma (GEJA). The Worldwide Esophageal Cancer Collaboration (WECC) has organized a multi-institutional database from which a novel esophageal staging system has been proposed. We used a single institution experience to validate the hypothesis that the WECC system more accurately predicts survival in GEJA patients than both American Joint Commission on Cancer (AJCC) esophageal and gastric systems.

Methods: 452 patients with GEJA (Siewert I-II) underwent resection from 1990 to 2007. A blinded statistician performed a head-to-head comparison regarding each staging system’s ability to accurately predict survival. Subgroup analysis of patients who received neoadjuvant therapy (n=275) versus surgery only (n=177) was similarly performed.

Results: Log-rank trend test determined that all 3 systems predicted survival (Figure 1). However, a Bayesian predictor-selection model found that the WECC system was better than both AJCC esophageal and gastric systems (posterior probability of improved prediction 0.98 and 0.82 respectively). Subset analysis suggested that the WECC staging was also optimum for predicting survival in neoadjuvant patients, whereas the gastric system best predicted survival for surgery alone patients.

Conclusions: While the gastric system is better at predicting survival than the esophageal staging system, the WECC system may be the most favorable single-system predictor of survival for patients with GEJA. Incorporating the number of positive lymph nodes within the staging system may present an advantage in predicting survival.
3. DIFFERENTIAL TEMPORAL CYTOKINE AND PROTEOLYTIC PROFILES IN CHILDREN FOLLOWING CARDIOPULMONARY BYPASS USING SERINE PROTEASE INHIBITION OR LYSINE ANALOGUES

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Authors: D*Tain-Yen Hsia1, Tim McQuinn1, Rachel Deardorff1, Rupak Mukherjee1, Anna Greta B Taylor1, Stacia M DeSantis1, Jennifer B Young1, Robert E Stroud1, *Fred A Crawford1, *Scott T Reeves1, Scott M Bradley1, *Francis G. Spinale1

Author Institution(s): 1Medical University of South Carolina, Charleston, SC, United States

Discussant: *Michael Hines, Winston-Salem, NC

Objectives: In children following cardiopulmonary bypass (CPB), cytokine elaboration, and subsequent interstitial protease induction, i.e. matrix metalloproteinases (MMPs), can result in complex post-CPB course. Serine protease inhibitor, aprotinin(APRO), which has been used in congenital heart surgery putatively for modulating fibrinolysis, is now unavailable, necessitating the use of lysine analogues, i.e. tranexamic acid(TXA). Whether APRO and TXA exhibit differential effects upon cytokine and proteolytic cascades in children has not been examined.

Methods: Patients (n=37, age 4.8±0.3 mos) undergoing corrective surgery for ventricular septal defect (VSD) or Tetralogy of Fallot (TOF) received either APRO (n=22, 240mg/m² BSA IV load, 56mg/m² BSA/hr), or TXA (n=15, 100mg/kg IV load, 10mg/kg/hr). Using a low volume (10 μL), high sensitivity, multiplex immunoassay, plasma levels were serially quantified for 9 cytokines (IL-2, -4, -6, -8, -10, -18, TNF, IFN, GM-CSF), and 7 MMPs (MMP-2, -3, -7, -8, -9, -12, -13) before APRO/TXA (baseline), after aortic cross clamp release (CCR), and 4, 12, 24, and 48 hours post-CPB.

Results: APRO differentially affected a specific portfolio of cytokines and MMPs. For example, baseline IL-6, IL-10, MMP-3, and MMP-9 values (2.1±0.4, 1.7±0.5, 1.5±0.2, 54.1±5.3, pg or ng/mL, respectively) were differentially affected by APRO, when compared to TXA in the post-CPB period (TABLE).

Conclusions: Following VSD or TOF repair, cytokine induction occurs, which is temporally related to a specific MMP profile emergence. In a subset of these patients receiving APRO, this cytokine/protease cascade was attenuated, suggesting that serine protease inhibitor, independent of fibrinolysis, modifies biological events, which is not realized with the lysine analogues such as TXA.

Table: Plasma cytokines and MMP levels

<table>
<thead>
<tr>
<th>Cytokine</th>
<th>Baseline</th>
<th>Post CCR</th>
<th>4 hr</th>
<th>12 hr</th>
<th>24 hr</th>
<th>48 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL-6 (pg/ml)</td>
<td>APRO</td>
<td>2.1±0.4</td>
<td>36.2±12.9</td>
<td>152.2±24.2*</td>
<td>85.4±18.7*</td>
<td>61.7±12.8*</td>
</tr>
<tr>
<td>TXA</td>
<td>43.6±16.4</td>
<td>184.4±64.2*</td>
<td>102.3±18.2*</td>
<td>66.2±9.6*</td>
<td>44.0±20.9</td>
<td></td>
</tr>
<tr>
<td>IL-10 (pg/ml)</td>
<td>APRO</td>
<td>1.7±0.5</td>
<td>51.4±10.9*</td>
<td>10.1±3.4</td>
<td>4.6±0.7</td>
<td>3.6±1.0</td>
</tr>
<tr>
<td>TXA</td>
<td>166.1±38.3*</td>
<td>18.2±6.6</td>
<td>9.8±2.6</td>
<td>3.7±1.0</td>
<td>2.3±0.4</td>
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</tr>
<tr>
<td>MMP-3 (ng/ml)</td>
<td>APRO</td>
<td>1.5±0.2</td>
<td>2.3±0.3</td>
<td>1.3±0.2</td>
<td>1.5±0.3</td>
<td>3.0±0.8*</td>
</tr>
<tr>
<td>TXA</td>
<td>4.0±0.8*</td>
<td>2.3±0.3</td>
<td>1.9±0.2</td>
<td>5.8±0.5*</td>
<td>8.9±1.2*</td>
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</tr>
<tr>
<td>MMP-9 (ng/ml)</td>
<td>APRO</td>
<td>54.1±5.3</td>
<td>189.2±26.9*</td>
<td>114.0±17.2*</td>
<td>105.6±26.5*</td>
<td>89.0±9.5</td>
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<tr>
<td>TXA</td>
<td>376.9±49.4*</td>
<td>100.0±31.1*</td>
<td>184.9±27.6*</td>
<td>128.5±19.3*</td>
<td>140.3±40.6*</td>
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</tr>
</tbody>
</table>

* p<0.05 compared to composite baseline (before APRO or TXA); # p<0.05 compared to TXA.

NOTES
4. THREE YEAR OUTCOMES OF CORONARY ARTERY BYPASS GRAFTING AND PERCUTANEOUS INTERVENTION WITH STENTS IN 14,580 VERY ELDERLY ACUTE CORONARY SYNDROME PATIENTS

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Author Institution(s): ‘University of North Carolina, Chapel Hill, NC, United States

Discussant: *Peter Smith, Durham, NC

Objectives: Optimal revascularization strategies for the very elderly (greater than 84 years) with acute coronary syndrome (ACS) remain poorly defined due to exclusion from randomized controlled trials. In practice, the elderly are frequently directed to a “less invasive” percutaneous coronary intervention with stents (PCIS) because of provider perceptions that coronary artery bypass grafting (CABG) incurs an increased mortality risk. We hypothesize that CABG (versus PCIS) leads to superior freedom from reintervention and death in individuals greater than 84 years old presenting with ACS undergoing revascularization.

Methods: Using Medicare claims data, we analyzed the risk-adjusted rates of subsequent reintervention and/or death following PCIS or CABG treatment in a contemporary cohort of very elderly (> 84 years) beneficiaries diagnosed with ACS in 2003-04. Outcomes were assessed with a parametric survival model assuming a Weibull distribution of failure (Stata v10.1) with Elixhauser risk adjustment methods.

Results: In very elderly ACS patients (14,580), PCIS (11,676) was performed 4 times as often as CABG (2,904). Over 3 years, CABG (vs PCIS) provided improved freedom from death (Table 1, p<0.001). CABG 3 year freedom from death or reintervention (78%) proved superior to drug-eluting stents (64%) and bare metal stents (58%). These results control for demographics and baseline comorbidities (p<0.001).

Conclusions: CABG appears to provide superior outcomes (versus PCIS) in very elderly Medicare patients presenting with ACS. Subject to further controls for treatment selection, increased utilization of CABG (over PCIS) may be warranted in very elderly patients who are candidates for myocardial revascularization.

<table>
<thead>
<tr>
<th></th>
<th>30 days</th>
<th>1 Year</th>
<th>2 years</th>
<th>3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>CABG (2,904)</td>
<td>99.4%</td>
<td>92.8%*</td>
<td>86.5%*</td>
<td>81.0%*</td>
</tr>
<tr>
<td>PCIS (11,676)</td>
<td>99.1%</td>
<td>89.3%</td>
<td>80.4%</td>
<td>72.8%</td>
</tr>
</tbody>
</table>

% Alive (Risk Adjusted)

NOTES

* STSA Member   D Relationship Disclosure
5. EARLY OUTCOMES AFTER TOTAL AORTIC ARCH REPLACEMENT BY USING THE TRIFURCATED GRAFT TECHNIQUE

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Authors: D*Joseph S. Coselli1, Ourania Preventza1, Matt D. Price1, Jennifer L. Parenti1, Alicia D. Lay1, Gerald J. Adams1, Joseph Huh1, D*Scott A. LeMaire1

Author Institution(s): 1The Texas Heart Institute at St. Luke’s Episcopal Hospital and Baylor College of Medicine, Houston, TX, United States

Discussant: Michael Deeb, Ann Arbor, MI

Objectives: Total aortic arch replacement remains one of the most technically challenging operations in cardiovascular surgery. Contemporary reports indicate a 5 to 17% incidence of death and a 2 to 10% incidence of stroke. The trifurcated graft technique, in which a double-y-graft is used to connect the brachiocephalic branches to the main aortic graft (see Figure), was recently developed to simplify arch reconstruction and minimize related cerebral ischemia. We examined early outcomes of total aortic arch replacement with this technique.

Methods: Since December 2006, 47 patients have undergone total arch replacement with the trifurcated graft technique. Twenty-nine patients (62%) had prior median sternotomy, and 30 (64%) had aortic dissection. Axillary cannulation, hypothermic circulatory arrest (HCA), and antegrade selective cerebral perfusion (SCP) were used in all patients. Mean systemic HCA time was 65.3±27.0 min, SCP time was 64.1±26.6 min, and unprotected cerebral ischemic time was 12.5±13.1 min. Thirty-eight patients (81%) underwent an elephant trunk repair. Current follow-up (mean, 306±193 days) was obtained for all patients.

Results: There were no in-hospital or 30-day deaths. One patient (2%) had a stroke. Median length of hospital stay was 13 days (range, 6-89 days). Twenty of the 38 elephant-trunk patients (53%) subsequently underwent a second-stage completion procedure. Actuarial 1-year survival was 89%±5%.

Conclusions: The early results of total aortic arch replacement with the trifurcated graft technique compare favorably to those of traditional approaches. The technique enables effective delivery of SCP, minimizes unprotected cerebral ischemic time, and is associated with a low risk of neurologic sequelae.
6. OUTCOMES OF VIDEO-ASSISTED THORACOSCOPIC SURGERY VERSUS OPEN THORACOTOMY PULMONARY LOBECTOMY IN A COHORT OF 13,619 PATIENTS

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Authors: Raja R. Gopaldas1, #Faisal G. Bakaeen1, Tam K. Dao1, *Garrett L. Walsh2, *Stephen G. Swisher2, #Danny Chu1

Author Institution(s): 1Baylor College of Medicine, Houston, TX, United States; 2The University of Texas M.D. Anderson Cancer Center, Houston, TX, United States

Discussant: #Joseph Miller, Atlanta, GA

Objectives: Video-assisted thoracoscopic surgery (VATS) is gaining popularity as the preferred approach for lung resection. However, the issue of which approach is better remains controversial. We aimed to compare outcomes of open thoracotomy (THOR) and VATS lobectomy in a national database.

Methods: Using the 2004 and 2006 Nationwide Inpatient Sample database, we identified 13,619 discharge records of patients who underwent pulmonary lobectomy via THOR (n=12,860) or VATS approach (n=759). Student’s t and \( \chi^2 \) tests were used to compare the patients. Multivariable analysis was used to identify independent predictors of outcome measures.

Results: The 2 groups of patients had similar demographics and preoperative comorbidities. They also had similar in-hospital mortality rates (3.1% vs 3.4%; \( P=0.67 \)), lengths of stay (9.3±9.8 vs 9.2±11.0 days; \( P=0.84 \)), hospitalization costs ($23,862±$23,413 vs $25,125±$30,125; \( P=0.16 \)), rates of wound infections (0.8% vs 1.3%; \( P=0.15 \)), pulmonary complications (32.2% vs 31.2%; \( P=0.55 \)), and cardiovascular complications (3.4% vs 3.9%; \( P=0.43 \)). However, the VATS group had a significantly higher incidence of intraoperative complications compared to THOR group (4.1% vs 2.8%; OR 1.5, 95%CI 1.0-2.2; \( P=0.03 \)). Furthermore, there was a higher percentage of patients with annual income above $59,000 who underwent VATS lobectomy compared to THOR (35.7% vs 25.4%; \( P<0.0001 \)).

Conclusions: Patients who underwent VATS lobectomy were 1.5 times more likely to experience intraoperative complications than patients who underwent open thoracotomy. However, short-term mortality, lengths of stay, and hospitalization costs were similar between the 2 groups of patients. Moreover, there seems to be a socioeconomic disparity between VATS and open thoracotomy patients.
7. EARLY AND MID-TERM HEMODYNAMICS AFTER AORTIC VALVE BYPASS SURGERY

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Authors: D Crystal J. Vliek1, *Bartley P. Griffith1, Shuying Li1, Jolinta Y. Lin1, *James S. Gammie1

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

Discussant: *John Kern, Charlottesville, VA

Objectives: Aortic Valve Bypass (AVB, apicoaortic conduit) surgery relieves aortic stenosis (AS) by connecting the apex of the left ventricle to the descending thoracic aorta with a valved conduit. AVB is routinely accomplished through a small left thoracotomy without cardiopulmonary bypass, aortic cross-clamping, cardiac arrest, or debridement of the native valve. Little is known about hemodynamics, including ventricular performance, relative conduit blood flow, and progression of native AS after AVB surgery.

Methods: Thirty-two very high-risk patients underwent AVB surgery for aortic stenosis from 2003 to 2008. The mean age was 82 years. Predissmissal and interval transthoracic quantitative 2D and Doppler echocardiography was performed in a core laboratory.

Results: No patient developed obstruction of the native aortic valve during follow-up. Total stroke volume increased to supraphysiologic levels (normal = 71 +/- 17 ml) after AVB surgery (Table).

Conclusions: This investigation is the first to comprehensively characterize hemodynamics and circulatory physiology in humans after AVB surgery. Key findings include: 1. Left ventricular outflow is distributed in a predictable fashion between the native valve and the conduit and the relative distribution of flow is maintained over time 2. Stroke volumes are increased to supraphysiologic levels after AVB surgery and 3. Progression of native AS appears to be halted following placement of an AVB conduit.

<table>
<thead>
<tr>
<th></th>
<th>Preoperative</th>
<th>Predissmissal</th>
<th>Mid-term (&gt;6 months)</th>
<th>p value*</th>
</tr>
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<tbody>
<tr>
<td>Total Stroke Volume (ml)</td>
<td>63 +/- 19</td>
<td>100 +/- 24</td>
<td>110 +/- 25</td>
<td>ns</td>
</tr>
<tr>
<td>Ejection Fraction (%)</td>
<td>52 +/- 17</td>
<td>53 +/- 15</td>
<td>48 +/- 15</td>
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<tr>
<td>Native AOV area (cm2)</td>
<td>0.56 +/- 0.18</td>
<td>0.70 +/- 0.33</td>
<td>0.61 +/- 0.22</td>
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</tr>
<tr>
<td>Native AOV flow (ml)</td>
<td>63 +/- 19</td>
<td>38 +/- 14</td>
<td>33 +/- 10</td>
<td>ns</td>
</tr>
<tr>
<td>Flow Conduit/Total Flow (%)</td>
<td>0</td>
<td>66 +/- 9</td>
<td>65 +/- 16</td>
<td>ns</td>
</tr>
</tbody>
</table>

*predissmissal v mid-term

NOTES
8. LOOKING TO THE FUTURE: DOES A MENTORED PROGRAM DURING EARLY TRAINING TRANSLATE INTO RETENTION OF RESIDENTS APPLYING TO CARDIO THORACIC SURGERY TRAINING?

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Authors: #Stephen C. Yang1, #Walter H. Merrill2

Author Institution(s): 1The Johns Hopkins Medical Institutions, Baltimore, MD, United States; 2The University of Mississippi Medical Center, Jackson, MS, United States

Discussant: #Fred Crawford, Charleston, SC

Objectives: One possible reason for the recent decline in cardiothoracic surgery (CTS) interest is inadequate exposure or mentorship during early surgical training. The STS “Looking to the Future” Scholarship was established to select and mentor residents considering but not yet committed to CTS and inviting them to attend the annual meeting. This report is to convey early outcome program results.

Methods: Awardees were selected to represent a diversity of gender, experience, geography, and subspecialty interest, favoring those with limited CTS experience or mentorship. Annual follow-up was attempted on all recipients via electronic surveys.

Results: From 2006-09, 74 scholarships were awarded, which included: 26 (35%) women; 37 (49%) from a minority group; and 26 (35%) with limited CTS experience/mentorship. Subspecialty interest was unknown in 21 (28%). Mean and median program rating (5-point Likert scale) was 4.5 and 5, respectively. Excluding this year’s recipients, 31 (66%) remain in general surgery training; 13 (28%) entered CTS training (but 1 quit); and 3(6%) whereabouts are unknown. Of the 31 currently in general surgery, 16 (53%) will apply and 9 (30%) have matched to CTS fellowships; 4 (10%) remain undecided; and 2 (7%) decided not to enter CTS.

Conclusions: With overwhelmingly positive comments and dedicated mentorship efforts, this program has a memorable impact on these residents. With 81% of residents being at the PGY2/3 level when awarded, 86% have already made a commitment to CT surgery. This program not only helps solidify CTS interest, but exposes residents to unique mentorship opportunities while demystifying CTS to other fellow residents nationally.
9. FIFTY YEARS OF SURGERY FOR TETRALOGY OF FALLOT

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**Authors:** *Harald L Lindberg†, Egil Seem†, Kjell Saatvedt†, Tom N Hoel†, Sigurd L Birkeland†*

Author Institution(s): †Rikshospitalet, Oslo University Hospital, Oslo, Norway

**Objectives:** To evaluate patients with a diagnosis of Tetralogy of Fallot (TOF) and related congenital malformations undergoing surgery in our Department during the period 1979 through 2007.

**Methods:** Patient records and the database of the department were evaluated, also including earlier procedures performed as long as fifty years ago. The official death registry of Norway was used for follow up. The follow up is 99.6%.

**Results:** A total of 420 patients were included in the study by having a surgical procedure during the inclusion time period. There were a total of 15 early and 14 late deaths. 208 patients underwent some form of palliative procedure as their first treatment. 399 patients had a reparative procedure performed, with an EM of 11 (2.75%).

The median interval between palliation and first repair was 20.5 months in 186 cases. EM was 3(1.6%) in the primary palliated group, and for the 213 that underwent repair as the primary procedure, EM was 8(3.8%).

**Conclusions:** Surgical treatment of the Tetralogy of Fallot and related congenital cardiac malformations has good long term prognosis. In this cohort of patients almost 40% required additional procedures later on, in some cases as many as four additional surgeries. Reoperations carries a relatively low risk during the second or third procedure, but may be more hazardous doing sternotomy for the fourth or fifth time.

- Palliative procedures followed by repair increases risk of re-repair
- There are no differences between transatrial vs. transventricular repair on survival or re-repair
- Any transannular incision increases the risk of re-repair, but does not influence long time survival
- The need for conduit placement increases both risk of death and re-repair
- The hazard of death or re-repair is almost linear up to fifty years
10. USE OF A STATEWIDE CARDIAC SURGERY QUALITY COLLABORATIVE FOR PROCESS IMPROVEMENT: INTERNAL MAMMARY ARTERY UTILIZATION DURING CORONARY ARTERY BYPASS GRAFTING

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Authors: *Scott H. Johnson, Patricia F. Theurer, Gail F. Bell, Luigi Maresca, Tom Leyden, *Richard L. Prager

Author Institution(s): 1University of Michigan Health System, Ann Arbor, MI, United States; 2Sparrow Hospital, Lansing, MI, United States; 3St. Mary's of Michigan, Saginaw, MI, United States; 4Blue Cross Blue Shield of Michigan, Southfield, MI, United States

Objectives: The MSTCVS Quality Collaborative is a voluntary surgeon directed quality initiative involving all 33 cardiac surgery sites in Michigan. The STS Quality Measurement Task Force identified IMA utilization during coronary artery bypass (CAB) as the only operative quality measure. This analysis reviews our methodology to increase appropriate IMA use statewide.

Methods: Michigan data are collected and submitted quarterly to STS/DCRI. Sites with IMA use < 90% were identified as low IMA users. An improvement plan was adopted and included monitoring program IMA utilization, tracking the reasons for IMA non-use, evidence based educational lectures and site visits.

Results: The Michigan improvement plan started in 2005 at which time site IMA utilization ranged from 66.2% (45/68) to 98.4% (184/187). From 2005 through 3rd quarter 2008, 27441 patients underwent CAB. Michigan IMA utilization increased from 91.9% (7188/7822) to 95.8% (4698/4904) (p<0.0001). Seven Michigan programs were identified as low IMA users. The leading reasons for IMA non-use at these sites were: LAD not suitable for IMA grafting, competitive flow concerns and emergent/unstable case.

Collectively the seven low IMA users increased IMA grafting significantly from 82.0% (1380/1682) to 92.7% (983/1060) (p<0.0001). Michigan increased and is now higher than STS. IMA utilization rates for STS, Michigan and the low IMA users are shown below.

Conclusions: The MSTCVS Quality Collaborative identified programs with low IMA utilization and created a mechanism to improve a critical operative process. This improvement plan provides the framework for enhanced outcomes in cardiac surgery and illustrates the value of an inclusive surgeon directed quality initiative.
II. PULMONARY FUNCTION TESTS DO NOT PREDICT PULMONARY COMPLICATIONS AFTER THORACOSCOPIC LOBECTOMY

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Authors: Mark F Berry¹, Nestor R Villamizar-Ortiz², Betty C Tong¹, *William R Burfeind², *David H Harpole¹, D*Thomas A D’Amico¹, Mark W Onaitis¹

Author Institution(s): ¹Duke University Medical Center, Durham, NC, United States; ²St Luke’s Health Network, Bethlehem, PA, United States

Discussant: *Mark Krasna, Towson, MD

Objectives: Pulmonary function tests (PFTs) predict respiratory complications and mortality after lung resection via thoracotomy. We sought to determine the impact of PFTs upon complications after thoracoscopic lobectomy.

Methods: All patients who underwent lobectomy for primary lung cancer between 12/1999 and 10/2007 at a single institution with preoperative forced expiratory volume in 1 second (FEVI) or diffusion capacity to carbon monoxide (DLCO) ≤ 60% predicted were reviewed. Preoperative, histopathologic, perioperative, and outcome variables were assessed using standard descriptive statistics. A model for morbidity including published preoperative risk factors and surgical approach was developed by multivariable logistic regression.

Results: During the study period, 342 patients (median age 67) with DLCO or FEVI ≤ 60% (mean % predicted FEVI 55.2±0.9, mean % predicted DLCO 60.9±0.9) underwent lobectomy (173 thoracoscopy, 169 thoracotomy). Operative mortality was 5.0% (17 patients) and overall morbidity was 48.5% (166 patients). Pulmonary complications occurred in 57 patients (16.7%), including atelectasis requiring bronchoscopy (42 patients, 12.2%), pneumonia (40 patients, 11.7%), reintubation (18 patients, 5.3%), and tracheostomy (6 patients, 1.7%). Significant predictors of respiratory complications by multivariable analysis for all patients included DLCO (odds ratio 1.03,p=0.003), FEVI (odds ratio 1.04,p=0.003) and thoracotomy as surgical approach (odds ratio 3.46,p=0.0007). When patients were analyzed separately according to operative approach, DLCO and FEVI remained significant predictors of respiratory morbidity for patients undergoing thoracotomy but not thoracoscopy.

Conclusions: Preoperative pulmonary function testing parameters are predictors of pulmonary complications for patients undergoing lobectomy via thoracotomy but not via thoracoscopy.

<table>
<thead>
<tr>
<th>Table 1. Incidence of respiratory complications (RC) as a function of preoperative pulmonary function</th>
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<tbody>
<tr>
<td>% Pred &lt; 30</td>
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<tr>
<td>----------------</td>
</tr>
<tr>
<td><strong>FEVI</strong></td>
</tr>
<tr>
<td>All</td>
</tr>
<tr>
<td>17</td>
</tr>
<tr>
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</tr>
<tr>
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<tr>
<td><strong>DLCO</strong></td>
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</tr>
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<td>4</td>
</tr>
<tr>
<td>Thoracotomy</td>
</tr>
<tr>
<td>Thoracotomy</td>
</tr>
</tbody>
</table>

Notes:

* STSA Member  D Relationship Disclosure

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I2. MANAGEMENT OF MODERATE FUNCTIONAL TRICUSPID VALVE REGURGITATION AT THE TIME OF PULMONARY VALVE REPLACEMENT: IS CONCOMITANT TRICUSPID VALVE REPAIR NECESSARY?

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Authors: *Brian Kogon1, Courtney Plattner1, Maan Jokhadar1, Manisha Patel2, Traci Leong3, Michael McConnell2, Wendy Book1

Author Institution(s): 1 Emory University, Atlanta, GA, United States; 2 Childrens Healthcare of Atlanta, Atlanta, GA, United States; 3 Rollins School of Public Health, Atlanta, GA, United States

Discussant: *Joseph Forbess, Dallas, TX

Objectives: Congenital heart defects with a component of pulmonary stenosis are often palliated in childhood by disrupting the pulmonary valve. Patients often undergo subsequent pulmonary valve replacement. We analyzed the results of concomitant tricuspid annuloplasty.

Methods: 35 patients were analyzed. Patients underwent subsequent pulmonary valve replacement between 2002 and 2008, and had at least moderate functional tricuspid valve regurgitation at the time of valve replacement. 19 patients underwent pulmonary valve replacement alone, and 16 patients underwent concomitant tricuspid annuloplasty. Echocardiograms were analyzed. Pulmonary and tricuspid regurgitation, along with right ventricular dilation and dysfunction were scored (0—none, 1—mild, 2—moderate, 3—severe). Right ventricular volume and area were calculated.

Results: There was a significant reduction 1 month postoperatively in pulmonary regurgitation (mean, 3 vs. 0.39, p<0.0001) and tricuspid valve regurgitation (mean, 2.33 vs. 1.3, p<0.0001). There were also significant reductions in right ventricular dilation, volume, and area at 1 month. There was no significant further improvement in any of these parameters at 1 or 3 years. There was no difference in the degree of tricuspid regurgitation 1 month postoperatively between those patients who underwent pulmonary valve replacement alone and those who underwent concomitant tricuspid annuloplasty (mean, 1.29 vs 1.31, p=0.81).

Conclusions: Following pulmonary valve replacement, the majority of improvement in tricuspid valve regurgitation and right ventricular size occurs in the first postoperative month. In those patients with at least moderate tricuspid valve regurgitation, valve function improves to a similar degree with or without tricuspid valve annuloplasty.
13. RESULTS OF INTRA-OPERATIVE OPEN-CHEST COMPLETION ANGIOGRAPHY IN A HYBRID OR AFTER MINIMALLY INVASIVE OFF-PUMP CORONARY ARTERY BYPASS (MIDCAB) THROUGH A LEFT THORACOTOMY

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Authors: *Steven J Hoff, Stephen K Ball, D*MICHAEL R PETRACEK, *RASHID AHMAD, JAMES P GREELISH, Jorge M BALAGUER, MARZIA LEACCHI, D John G Byrne

Author Institution(s): Vanderbilt University Medical Center, Nashville, TN, United States

Discussant: *Thomas Vassiliades, Atlanta, GA

Objectives: The benefits of minimally invasive off-pump coronary artery bypass (MIDCAB) remain controversial, partly because of concerns regarding graft patency. We report our experience with intra-operative open-chest completion angiography in MIDCAB patients in our hybrid cath lab/OR.

Methods: Forty two patients underwent MIDCAB via a left thoracotomy without cardiopulmonary bypass. Twenty eight (66%) underwent completion angiography and are the subject of this report. Reasons for not performing angiography included preoperative renal dysfunction, technical issues with catheterization equipment, or lack of qualified catheterization personnel at the completion of the procedure.

Results: Among the 28 patients, 20M/8F, median age 61 years (range 41-82 years) there were 33 grafts (1.2 grafts/patient, range 1-3). There were 4/33 (12%) angiographic findings leading to further intervention, including 2 LIMA dissections treated with placement of a vein graft (n=1) and intra-operative stent to the LIMA conduit (n=1), respectively and 2 grafts with anastomotic lesions each requiring intra-operative stenting. There were no deaths and no major complications. Ten patients also underwent planned hybrid procedures with stents to non-LAD vessels in one setting. Median hospital length of stay was 3.9 (range 2-6) days. There were no renal or catheter related complications.

Conclusions: MIDCAB with or without concomitant stents (hybrid) is safe and reproducible. The availability of intra-operative completion angiography and coronary stenting in the hybrid OR enables not only real time graft assessment but also the opportunity for graft revision with either percutaneous or open surgical methods. This provides confirmation of graft patency prior to leaving the operating room.

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14. ACCURACY OF SURGEON AND TRAINEE ESTIMATES OF LUNG RESECTION RISK

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Authors: *Mark K Ferguson¹, Jennifer D Stromberg¹ Amy D Celauro¹

Author Institution(s): 'The University of Chicago, Chicago, IL, United States

Discussant: *Joe B. Putnam, Nashville, TN

Objectives: Objective models for predicting lung resection risks are rarely used because surgeons believe their experience-based risk estimates are more reliable. We sought to determine the accuracy of such physician risk estimates.

Methods: Clinical vignettes were created for patients who underwent lung resection; 48 patients who suffered complications (cardiopulmonary 28, other 20; 11 deaths) were matched (sex, age, lung function, stage) to 48 patients without complications. Ten senior surgical trainees and 9 thoracic surgeons blinded to outcomes estimated the risk of complications using a 7-point Likert scale, yielding 1920 estimates. Cutoff values differentiating high and low risk were determined using ROC analysis.

Results: Thoracic surgeon risk estimates were lower than trainee estimates (4.4±1.1 vs 4.9±0.9; p=0.002). Agreement among respondents was only fair (kappa = 0.24 for trainees, 0.32 for thoracic surgeons). Risk estimates correlated moderately well with baseline pulmonary function (FEV1 r=-0.35; DLCO% r=-0.34) and objective risk scores (r=0.45) but not with age, stage, performance status, or extent of resection. Risk estimates did not differentiate between patient groups with and without complications (4.8 vs 4.9, p=0.94 for trainees; 4.5 vs 4.2, p=0.21 for thoracic surgeons). Although the sensitivity of risk estimates was good for thoracic surgeons (74%) and trainees (73%), this came at the expense of accuracy (52% and 50%, respectively).

Conclusions: Surgeons base risk estimates on limited objective clinical data. Their estimates were not accurate in predicting complications using vignette-based methodology. Prospective studies are necessary to further explore the etiology, accuracy, and utility of surgeon risk estimates.
IB. IN VIVO ENDOTHELIALISATION OF ALLOGENIC DETERGENT DECELLULARIZED HEART VALVES CAN BE ENHANCED BY SURFACE COATING USING AUTOLOGOUS FIBRIN

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Authors: Payam Akhyari¹, Hiroyuki Kamiya¹, Patricia Mambou³, Heiko Ziegler², Mareike Barth³, Ramon Tschierschke³, Soeren Schilp⁴, Irina Berger⁵, Werner W. Franke³, Matthias Karck³, Artur Lichtenberg¹

Author Institution(s): ¹Dept. Cardiothoracic Surgery, University Hospital Jena, Jena, Germany; ²Dept. Cardiac Surgery, University Hospital Heidelberg, Heidelberg, Germany; ³Dept. Cell Biology, German Cancer Research Center, Heidelberg, Germany; ⁴Institute of Physiological Chemistry, University of Heidelberg, Heidelberg, Germany; ⁵Institute of Pathology, Klinikum Kassel, Kassel, Germany

Objectives: Tissue engineered and decellularized heart valves represent promising alternatives to currently available prosthesis. In this context, integrative capacity, growth potential and anti-thrombogenic characteristics have been attributed to an endothelial surface lining. We propose rapid in vivo re-endothelialisation of decellularized heart valves by coating with bioactive substances to decrease thrombogenicity and provide for improved graft integration in vivo.

Methods: Using a clinically approved system (Vivostat®) 0.5ml of freshly isolated autologous fibrin solution was used for coating of detergent-decellularized ovine pulmonary valves (cPV) prior to implantation in juvenile sheep (n=5), controls were non-coated (nPV,n=5). Efficiency of decellularization and fibrin coating was confirmed by histology (H&E/Pearse staining), and electron microscopy (EM). Explanted PV after 4 months were analyzed by echocardiography, histology, immunohistology (IH), western blot (WB), and EM.

Results: Functional differences or thrombosis were absent, effective orifice area was 1.4±0.3 in dPV and 1.5±0.1 in nPV (p=0.41). An endothelial monolayer covered almost completely the cPV, confirmed by IH for vWF+/CD31+-cells, WB of endothelial markers (eNOS/vWF), and EM. In contrast, re-endothelialization of nPV cusps was only present in the proximal part, lacking at free margins, accompanied by neointimal hyperplasia. Interstitial repopulation was similar in both groups (H&E, vimentin+-cells, total DNA (p=0.58)). ECM proteins (WB of laminin and GAGs; p=0.28) and inflammatory reaction (CD3+/common leucocyte antigen+-cells) were similar, but collagen-IV and elastin content was higher in cPV (p<0.001 and 0.031, respectively).

Conclusions: Fibrin coated decellularized heart valves show enhanced endothelialisation with low neointimal hyperplasia accompanied with excellent functional valve characteristics after 4 months in vivo. Considering the pivotal role of an intact endothelial lining for functional capacity and structural integrity of heart valves, coating strategies, e.g. with autologous fibrin, may represent an alternative to demanding in vitro re-endothelialization techniques with clinical perspectives.

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2B. COL-3 DELAYS ARDS DEVELOPMENT AND IMPROVES SURVIVAL IN AN OVINE ARDS MODEL

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Authors: Xiaqin Zhou1, Dongfang Wang1, Cherry Croft1, Philip Freidenreich3, Sanford R Simon2, Hsi-ming Lee2, Lorne M Golub2, *Joseph B Zwischenberger1

Author Institution(s): 1University of Kentucky, Lexington, KY, United States; 2State University of New York at Stony Brook, Stony Brook, NY, United States; 3Galderma Research & Development, Cranbury, NJ, United States

Objectives: Pulmonary neutrophils play a central role in acute respiratory distress syndrome (ARDS) pathophysiology. Activated neutrophils release a variety of factors including metalloproteinases (MMPs), leading to lung injury. COL-3 is our new tetracycline derivative that inhibits MMPs. Our goal, therefore, was to evaluate the therapeutic potential of COL-3 in our ovine ARDS model.

Methods: Female sheep underwent smoke inhalation (48 breaths) and a 40% body area third degree burn under general anesthesia. Barotrauma ventilation (pressure control, 40 cm H2O) was applied immediately after smoke/burn. When ARDS criteria (PaO2/FiO2 < 200) were met or at 24 hours post injury (if criteria were not met), low tidal volume ventilation strategy was used. The sheep were intravenously administered COL-3 (n=5, 200mg/m2 body surface) or Vehicle (n=5, 10% Solutol HS 15) one hour post smoke/burn injury. At 96 hr or time of animal death, the experiment was terminated followed by necropsy. Plasma MMP-2 levels were also determined.

Results: The COL-3 group developed ARDS significantly later than Vehicle group (20.4 ± 3.8 vs 12.9 ± 3.3 hr). Survival analysis showed a higher survival from ARDS at 96 hr with COL-3 administration (80%, 4/5 COL-3 vs 20%, 1/5 Vehicle, P <0.05). Lung edema was also significantly reduced in COL-3 animals (5.840 ± 1.082 vs 7.428 ± 0.563). MMP-2 levels increased in Vehicle but not in COL-3-treated sheep.

Conclusions: Administration of COL-3 one hour following severe smoke-burn exposure, delays ARDS development and improves 96 hr survival in our ovine ARDS model.
3B. COMPUTATIONAL FLOW DYNAMICS DO NOT PREDICT INCREASED RISK OF THROMBOSIS IN AN ADJUSTABLE SYSTEMIC-PULMONARY ARTERY SHUNT

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Authors: D*William I Douglas1, Mohammad W Mohiuddin2, Glen A Laine3,

Author Institution(s): 1University of Texas Medical School at Houston, Houston, TX, United States; 2Texas A&M University, College Station, TX, United States

Objectives: Our laboratory has created an adjustable systemic-pulmonary artery shunt (AS) to improve results for neonatal single ventricle palliation. The AS consists of an elliptical housing with a screw plunger mechanism which constricts a standard 3.5 mm polytetrafluoroethylene shunt. A computational flow dynamic (CFD) model was developed to investigate the risk of shunt thrombosis of an AS versus a conventional (non-adjustable) shunt (CS).

Methods: COMSOL Multiphysics 3.5 was utilized to evaluate flow dynamics in the shunt. Baseline physiological parameters included: aortic pressure 75/35, systemic flow (Qs) 600 cc/min, pulmonary flow (Qp) 900 cc/min, and a 25 mmHg mean pressure gradient across the shunt prior to constriction. Peak flow velocity, vorticity, and Reynolds numbers were determined for a CS, an AS at 100% flow, and AS's constricted to 100%, 95%, 75%, and 50% of baseline flow.

Results: Compared to the CS, the AS demonstrated lower peak velocities and similar Reynolds numbers. Vorticity was less in the AS vs. the CS except at 50% flow, when the AS and CS vorticities were similar.

Conclusions: The thrombosis risk of an AS would be difficult to quantify in an in vivo model due to inherent coagulation differences between humans and animals. The CFD model demonstrates lower peak velocities, less vorticity at most flow rates, and similar Reynolds numbers in the AS vs. the CS. Thus, from the standpoint of flow dynamics, the risk of thrombosis would not be increased in an AS vs. a CS.

<table>
<thead>
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<th>Parameter</th>
<th>CS</th>
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<th>AS 95% Flow</th>
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Computation Flow Dynamics AS vs. CS

NOTES

* STSA Member  D Relationship Disclosure
4B. BRAIN NATRIURETIC PEPTIDE IS NOT RENO-PROTECTIVE DURING RENAL ISCHEMIA-REPERFUSION INJURY IN THE RAT

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Author Institution(s): *University of Florida College of Medicine, Division of Thoracic & Cardiovascular Surgery, Gainesville, FL, United States

Objectives: Acute kidney injury (AKI) occurs in 30% of patients undergoing complex cardiovascular surgery, and renal ischemia-reperfusion (I/R) injury is often a contributing factor. A recent meta-analysis observed that perioperative natriuretic peptide administration was associated with a reduction in AKI requiring dialysis in cardiovascular surgery patients. This study was designed to further clarify the potential reno-protective effect of brain natriuretic peptide (BNP) using an established rat model of renal I/R injury.

Methods: The study comprised 3 groups (n=6 kidneys each): 1) control (no injury); 2) I/R injury (45 minutes of bilateral renal ischemia followed by 3 hours of reperfusion); and 3) BNP (I/R injury plus rat-BNP pre-treatment at 0.01μg/kg/min). Glomerular filtration rate (GFR) and a biomarker of AKI, urinary neutrophil gelatinase-associated lipocalin (uNGAL), were measured at baseline and at 30 minute intervals post-ischemia. Groups were compared using analysis of variance (mean±SD, significance p<0.05).

Results: Baseline GFR measurements for control, I/R, and BNP groups were 0.72±0.21, 0.58±0.35, and 0.91±0.34mL/min (p=0.21), respectively. Post-ischemia, GFR was significantly lower in I/R and BNP compared to controls at 30 minutes, 0.60±0.24, 0.08±0.06, and 0.08±0.10mL/min (p<0.01), and remained lower through 3 hours, 1.54±0.37, 0.38±0.34, and 0.27±0.25mL/min (p<0.01). Comparing I/R to BNP groups, GFR did not differ significantly at any time point (Figure 1). There was no significant difference in uNGAL levels at 1 hour (552±358 vs 516±259ng/mL, p=0.87) or 2 hours (1073±589 vs 989±218ng/mL, p=0.79) between I/R and BNP (Table 1).

<table>
<thead>
<tr>
<th>Time(hr)</th>
<th>I/R(ng/mL)</th>
<th>BNP(ng/mL)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>741 ±276</td>
<td>805 ±86</td>
<td>0.67</td>
</tr>
<tr>
<td>60</td>
<td>552 ±358</td>
<td>516 ±259</td>
<td>0.87</td>
</tr>
<tr>
<td>120</td>
<td>1073 ±589</td>
<td>989 ±218</td>
<td>0.79</td>
</tr>
</tbody>
</table>

Table 1: Urinary NGAL for I/R and BNP Groups

Figure 1: GFR for Control, I/R, and BNP

NOTES
5B. DIFFERENTIAL GENE EXPRESSION IN BRAIN INJURY INDUCED BY HYPOTHERMIC CIRCULATORY ARREST VERSUS CARDIOPULMONARY BYPASS ALONE

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Authors: D Jeremiah G. Allen1, D Eric S. Weiss1, Mary A. Wilson2, Mary E. Blue3, Mary Lange2, C. Conover Talbot1, Chunfa C. Jie1, Juan C. Troncoso1, Michael Johnston2, * William A. Baumgartner1

Author Institution(s): 1Johns Hopkins Medical Institutions, Baltimore, MD, United States; 2Kennedy-Krieger Institute, Baltimore, MD, United States

Objectives: Little is known about the molecular mechanisms of neurologic complications following hypothermic circulatory arrest (HCA) with cardiopulmonary bypass (CPB). Canine genome sequencing allows profiling of genomic changes following HCA and CPB alone.

Methods: Dogs underwent 2 hours (hr) HCA at 18°C(n=10), 1hr HCA at 18°C(n=8), and 1hr CPB at 32°C alone(n=8). In each group, half were sacrificed at 8hrs and half at 24hrs after treatment. After neurologic scoring, brains were harvested for histopathology. RNA was isolated from the hippocampus and reverse transcribed using an oligo-dT primer. Microarray analysis was performed with canine oligonucleotide expression arrays for 42,028 genes (Agilent technologies). Quantitative real time PCR was used to validate significant genes.

Results: Consistent with prior work, 2hr HCA dogs suffered severe neurologic injury. 1hr HCA led to intermediate histopathological and clinical damage. CPB produced normal clinical and histological scores. Exploratory analysis revealed differences in significantly regulated genes (FDR≤10%, fold change≥1.5), with incremental increases in gene expression with injury severity. At 8hrs and 24hrs post-insult: 2hr HCA dogs had 166 and 496 genes regulated, respectively; 1hr HCA dogs had 68 and 29 genes regulated, respectively; and CPB alone dogs had 0 and 1 genes regulated, respectively (Table).

Conclusions: An initial genomic profile of the canine brain following HCA and CPB revealed that 1hr and 2hr HCA led to marked increases in gene regulation, in contrast to the minimal effect of CPB alone. This adds to the body of literature supporting the safety of CPB alone and the minimal effect of CPB on a normal brain.

Table: Significantly regulated genes for experimental groups (false discovery rate <10% and absolute fold change ≥ 1.5) are tabulated.
15. TWENTY-FIVE YEAR EXPERIENCE WITH THE ST. JUDE MEDICAL MECHANICAL VALVE PROSTHESIS

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Authors: *John M Toole1, Martha R Stroud1, *John M Kratz1, *Arthur J Crumbley1, *Scott M Bradley1, *Fred A Crawford, Jr1, *John S Ikonomidis1

Author Institution(s): 1Medical University of South Carolina, Charleston, SC, United States

Discussant: D*Vinay Badhwar, Orlando, FL

Objectives: We have prospectively followed all adult St. Jude mechanical valve recipients at the Medical University of South Carolina since the initial implant in 1979 and present our 25-year experience.

Methods: 945 valve recipients (aortic, AVR; n=537; mitral, MVR; n=408) from January 1979 to December 2007 were followed prospectively at 12-month intervals.

Results: Ages ranged from 18 to 85 years old. Male patients represented 70% of the aortic valve recipients and 41% of the mitral valve recipients. Seventy-seven percent of the aortic valve recipients and 88% of the mitral valve recipients were in New York Heart Association class III or IV. Nineteen and 21mm valves accounted for 41% of aortic implants. Concomitant coronary artery bypass was carried out in 32% of aortic valve recipients and 20% of mitral valve recipients. Operative mortality was 3% in the aortic valve recipients and 5% in the mitral valve recipients. Follow up was 95% complete. Amongst aortic valve recipients, actuarial survival was 17 ± 4% at 25 years. Twenty-five year freedom from reoperation, thromboembolism, bleeding and endocarditis was 90 ± 2%, 69 ± 5%, 67 ± 3%, 93 ± 2% respectively. Amongst mitral valve recipients, actuarial survival was 23 ± 4% at 25 years. Twenty-five year freedom from reoperation, thromboembolism, bleeding and endocarditis was 81 ± 10%, 52 ± 8%, 64 ± 6%, and 97 ± 1%. Freedom from valve related mortality/morbidity at 25 years was 26 ± 7% and 29 ± 6% for aortic and mitral valve replacements respectively. Freedom from valve related mortality was 66 ± 8% and 87 ± 3% for aortic and mitral valve replacement respectively.

Conclusions: These results compare favorably with other mechanical prostheses. After two and a half decades of observation with close follow-up, the St. Jude mechanical valve continues to be a reliable prosthesis.
16. INTRAOPERATIVE BLOOD TRANSFUSION IS ASSOCIATED WITH INCREASED MORTALITY AND MORBIDITY IN PATIENTS HAVING NON-CARDIAC THORACIC OPERATIONS

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Authors: D*Victor A. Ferraris1, Daniel L. Davenport1, #Sibu P. Saha1, Alethea Bernard1, #Joseph B. Zwischenberger1

Author Institution(s): 1University of Kentucky, Lexington, KY, United States; 2Lexington Veterans Affairs Medical Center, Lexington, KY, United States

Discussant: D*Stephen Swisher, Houston, TX

Objectives: Massive perioperative transfusion is associated with increased morbidity and mortality. We examined whether this association carries over to patients who receive only 1-2 units of packed red blood cells (PRBCs).

Methods: We queried the American College of Surgeon's NSQIP database for patients undergoing non-cardiac thoracic operations from 2005 to 2007. The NSQIP protocol excludes trauma and pediatric patients. Patient 30-day morbidity (one or more of 20 complications) and mortality, along with over fifty demographic, preoperative and intraoperative clinical risk variables were evaluated. Propensity adjusted multivariable analysis identified outcome risks by level of transfusion.

Results: A total of 3970 non-cardiac thoracic operations were analyzed from 173 hospitals, including 1348 esophagus, 1303 lung, 685 diaphragm, 483 thoracic vascular and 151 other procedures. Most patients (3230, 81.4%) did not receive transfusions; 319 (8.0%) received 1-2 u and 417 (10.5%) received 3 or more u to a maximum of 40 u. Sixty-six patients (1.7%) received > 4 u postoperatively within 72 h of operation; 46 of these 66 also received intraoperative transfusion. Patients receiving 1-2 u perioperative PRBCs had higher unadjusted rates of wound infections, pulmonary complications, sepsis/shock, DVT/pulmonary embolism, composite morbidity, mortality and length of stay compared to non-transfused patients (Bonferroni P < .05). These rates further increased with postoperative transfusion. After propensity adjustment, transfusion of 1 or 2 u PRBCs increased the multivariate risk of mortality, composite morbidity, pulmonary complications, sepsis/shock, and the length of stay (Table).

Conclusions: Intraoperative transfusion of seemingly small amounts of blood (1 or 2 u of PRBCs) is associated with increased mortality, morbidity and resource utilization in patients having non-cardiac thoracic operations, even after adjustment for transfusion propensity and numerous clinical and operative risk factors. Although causality cannot be established by a cross-sectional review, surgeons and anesthesiologists should reconsider 1 or 2 u transfusion for mildly hypovolemic or anemic patients.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Percent mortality in patients not transfused</th>
<th>Percent mortality in patients transfused 1-2 u</th>
<th>p-value for rate difference (95% CI)</th>
<th>Propensity adjusted odds ratio (95% CI)</th>
<th>p-value for odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality</td>
<td>2.4 ± 0.3</td>
<td>7.2 ± 1.5</td>
<td>&lt; 0.001</td>
<td>2.0 (1.1 - 3.7)</td>
<td>0.028</td>
</tr>
<tr>
<td>Composity morbidity</td>
<td>20.0 ± 0.7</td>
<td>49.5 ± 2.8</td>
<td>&lt; 0.001</td>
<td>1.7 (1.3 - 2.2)</td>
<td>0.001</td>
</tr>
<tr>
<td>Pulmonary complications</td>
<td>11.3 ± 0.6</td>
<td>34.2 ± 2.7</td>
<td>&lt; 0.001</td>
<td>1.8 (1.3 - 2.4)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Sepsis or septic shock</td>
<td>7.8 ± 0.5</td>
<td>22.9 ± 2.3</td>
<td>&lt; 0.001</td>
<td>1.6 (1.1 - 2.3)</td>
<td>0.009</td>
</tr>
</tbody>
</table>

Outcomes associated with transfusion

NOTES

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I7. LONG-TERM FOLLOW-UP AFTER PRIMARY COMPLETE REPAIR OF TRUNCUS ARTERIOSUS WITH HOMOGRAFT: A 40 YEAR EXPERIENCE

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Authors: Hunaid A Vohra, Alicia XF Chia, Vilius Januusauskas, Apostolos Roubelakis, Nicholas Nikolaidis, Gruschen Veldtman, Kevin Roman, Joseph J Vettukattil, James Gnanapragasam, Anthony P Salmon, James L Monro, Marcus P Haw

Author Institution(s): Wessex Cardiothoracic Centre, Southampton, United Kingdom

Discussant: *Paul Chai, Tampa, FL

Objectives: To determine the long-term performance of homograft and truncal valve after complete repair of truncus arteriosus communis (TAC).

Methods: From January 1964 to June 2008, 32 patients (median age 14 days; range 5 days-2.5 years) underwent primary homograft repair of TAC. Twenty four (75%) were neonates. The homograft used in RVOT was aortic in 24 patients and pulmonary in 8 patients (median diameter 16mm; range 8-24mm). The median follow-up was 24.5 years (range 5.6-43.5 years).

Results: There were 3 hospital deaths and 1 late death. The actuarial survival at 30 years was 83.1±6.6%. Of the 28 survivors, 25 re-operations were performed in 19 patients (76%). The median time to homograft re-operation was 12.1 years (range 1.0-26.1 years). Overall freedom from homograft re-operation after 10, 20 and 30 years was 68.4±8.7%, 37.4±9.5% and 26.7±9.3%, respectively. Twelve patients retained the original homografts at a median follow-up of 16.4 years (range 0-30.2 years). Six underwent a truncal valve replacement (TVR) with mechanical prosthesis at a median of 10.5 years (range 3.4-22 years). Freedom from TVR at 10 and 30 years was 93.1±4.7% and 81.8±8.9%, respectively. In the 22 alive patients who did not undergo TVR, the peak truncal valve gradient was 8.9±8.3 mmHg at a median follow-up of 24.5 years (range 5.6-32.9 years). At last follow-up, 27 patients (96.4%) had good LV function and 24 patients (85.7%) were NYHA I.

Conclusions: After complete primary repair of TAC, homografts can be expected to last >12 years before requiring re-replacement. Long-term TV haemodynamics are good.
18. POSTOPERATIVE BLEEDING COMPLICATIONS AND TRANSFUSION REQUIREMENTS FOLLOWING PULSATILE-FLOW VERSUS AXIAL-FLOW LEFT VENTRICULAR ASSIST DEVICE IMPLANTATION

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**Authors:** Justin M Schaffer¹, D Jeremiah G Allen¹, D Eric S Weiss¹, Nishant D Patel¹, D Stuart D Russell², Ashish S Shah¹, D John V Conte¹

**Author Institution(s):** ¹The Johns Hopkins School of Medicine, Division of Cardiac Surgery, Baltimore, MD, United States; ²The Johns Hopkins School of Medicine, Division of Cardiology, Baltimore, MD, United States

**Discussant:** Curt Tribble, Jackson, MS

**Objectives:** Bleeding is a substantial cause of morbidity and mortality after left ventricular assist device (LVAD) implantation. We compared bleeding complications, transfusion requirements, and mortality between patients receiving axial-flow (AF) versus pulsatile-flow (PF) LVADs.

**Methods:** We retrospectively reviewed our prospective database of LVAD patients to identify those who received AF or PF LVADs at our institution from June 2000–July 2008 with follow up to August 2008. Patients were stratified by LVAD type. Preoperative and intraoperative variables, blood product requirements, reoperation for bleeding, and Kaplan-Meier (KM) mortality (30-day and 1-year) were examined. Multivariable Cox proportional hazard analysis was performed including 4 covariates (APACHEII score, age at operation, total blood products transfused, and device type).

**Results:** Of 107 LVADs implanted, 60(56%) received an AF device. Baseline characteristics were similar between groups, but AF patients had lower preoperative APACHE II scores. AF patients required shorter cardiopulmonary bypass times, as well as fewer units of transfused red blood cells, fresh frozen plasma, and platelets. KM 30-day and 1-year mortality were significantly higher in PF patients. On multivariable analysis, total blood products transfused increased the risk of 30-day mortality (Hz ratio 1.07, 99%CI [1.03–1.11], p=0.001) and 1-year mortality (Hz ratio 1.03, 99%CI [1.00–1.06], p=0.050). Age at operation also increased the risk of 1-year mortality (Hz ratio 1.05, 99%CI [1.02–1.08], p=0.003).

**Conclusions:** We have reviewed our institutional experience with bleeding complications following LVAD implantation. Use of smaller AF LVADs is associated with decreased blood product administration. Furthermore, total blood products transfused was associated with increased short and long term mortality.

<table>
<thead>
<tr>
<th></th>
<th>Axial Flow (HMI)</th>
<th>Pulsatile Flow (HMI)</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-op APACHE II</td>
<td>12.5 ± 4.0</td>
<td>14.4 ± 4.5</td>
<td>0.022</td>
</tr>
<tr>
<td>Reoperations for bleeding</td>
<td>(4) 7%</td>
<td>(11) 23%</td>
<td>0.11</td>
</tr>
<tr>
<td>CPB Time</td>
<td>79 ± 39</td>
<td>101 ± 37</td>
<td>0.005</td>
</tr>
<tr>
<td>Transfused RBCs</td>
<td>5.5 ± 4.4</td>
<td>8.0 ± 4.0</td>
<td>0.004</td>
</tr>
<tr>
<td>Transfused FFP</td>
<td>5.7 ± 4.3</td>
<td>8.5 ± 5.0</td>
<td>0.003</td>
</tr>
<tr>
<td>Transfused Platelets</td>
<td>1.5 ± 1.3</td>
<td>4.5 ± 4.9</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total Transfused</td>
<td>12.8 ± 8.9</td>
<td>20 ± 11.5</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>30-day KM survival</td>
<td>91.70%</td>
<td>74.50%</td>
<td>0.014</td>
</tr>
<tr>
<td>1-year KM survival</td>
<td>71.70%</td>
<td>49.30%</td>
<td>0.048</td>
</tr>
</tbody>
</table>

**Pre-Op Risk Factors and Outcomes by Device Type**

**NOTES**

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19. WARTIME THORACIC INJURY: PERSPECTIVES IN MODERN WARFARE

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Authors: Brandon W Propper², Shaun M Gifford³, *John H Calhoon¹, *Jeffrey D McNeil¹

Author Institution(s): ¹University of Texas Health Science Center at San Antonio, San Antonio, TX, United States; ²Wilford Hall Medical Center, Lackland Air Force Base, TX, United States

Discussant: Geoffrey Graeber, Worcester, MA

Objectives: Thoracic injury represents a major source of combat morbidity and mortality in the Global War on Terror. In theater documentation has demonstrated that overall killed in action rates have decreased, while died of wounds rates have increased. To date, no descriptions have evaluated the impact of thoracic injury on these changes. This report will provide a contemporary look at thoracic injury sustained by military and civilian casualties during the current war.

Methods: The Joint Theatre Trauma Registry was queried between 2002 and 2008. Patients receiving treatment for thoracic injuries were identified using ICD-9 diagnosis and procedure codes. Descriptive statistics were employed to document overall and intergroup comparisons.

Results: There were 33,755 casualties identified during the study period, 1,660 (4.9%) having sustained thoracic injury. Blast mechanism accounted for 45.8% (n=758) of the injuries and the overall mean Injury Severity Score was 14.9. A total of 4232 procedures were performed for an average of 2.5 thoracic procedures per patients. Fifty percent (n=819) of casualties were civilian, 34% (n=565) US troops, and the remainder in coalition forces. Overall mortality of those with thoracic injury was 12% (n=200).

Conclusions: This report provides the first account of thoracic injury during the current conflict. In contrast to previous wars where penetrating trauma was common, the majority of thoracic injury is secondary to blast mechanism and has resulted in higher mortality rates. This report provides a description of thoracic injuries in both armed soldiers and civilian personal, and provides realistic expectation for thoracic injury during future combat.
20. GATHERING EVIDENCE ABOUT WHEN TO OPERATE ON THE BICUSPID VALVE PATIENT WITH A MODESTLY DILATED ASCENDING AORTA

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Authors: Christian D Ettz¹, Stefano Zoli¹, Daniel Silovitz¹, Robert M Brenner¹, Fabian Roder¹, Gloria Lam¹, Carol A Bodian¹, Gabriele Di Luozzo¹, Randall B Griepp¹

Author Institution(s): ¹Mount Sinai School of Medicine, New York, NY, United States

Discussant: *William Ryan, Dallas, TX

Objectives: Bicuspid aortic valves (BAV) are frequently associated with root/ascending aorta (AA) dilation, but there is controversy regarding when to operate to prevent dissection of a dilated aorta associated with a well-functioning BAV.

Methods: 158 patients (mean age: 56±13.5yrs) with a dilated AA and well-functioning BAV were studied from 1988 through 2008. All patients underwent CT scanning and digitization to calculate cross-sectional area of AA and mean diameter. 42 patients underwent operation after initial CT scan (mean AA diameter 5.6±0.5cm). 116 patients (mean diameter 4.6±0.5cm) were enrolled in annual or semi-annual surveillance.

Results: Average follow up was 6.5±4.1 years. Overall survival after the first encounter was 93% at 5 years and 85% at 10 years. 87/158 patients had a Bentall / Yacoub procedure, with one hospital death (1.1%). Mean duration of surveillance in the 116 pts without immediate operation was 4.2±2.9 yrs (481 patient-years). Average growth rate of the AA in pts ≥ 2 scans was 0.77 mm/year (p<.0001 vs normal population; figure) with no significant impact of hypertension, sex, smoking or age. 45 of the 116 surveillance pts underwent operation after a mean of 3.4±2.9 years (mean age 55±14.7yrs; mean AA diameter 4.9±0.6cm). 6 pts died without surgery—mean age 81±8.1 yrs— but none within one year of the last CT scan.

Conclusions: Significant albeit moderate progressive dilatation occurs in most patients with AA < 5cm and well-functioning BAV. Surveillance with appropriately timed surgery does not result in mortality if CT scans are performed at least annually.
21. A THORACIC SURGEON DIRECTED TOBACCO
CESSATION INTERVENTION

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with a D next to their names have indicated that they have a financial or other relationship with
a healthcare-related business or other entity to disclose.

Authors: *Benjamin D Kozower1, *Christine L Lau1, Jennifer V Phillips1,
Sandra G Burks1, *David R Jones1, George J Stukenborg1

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

Discussant: *John Howington, Evanston, IL

Objectives: Thoracic surgeons receive little training in promoting tobacco
cessation despite the impact of tobacco abuse on their patients. In fact,
prospective reports of tobacco cessation efforts involving thoracic surgeons
are extremely scarce. The purpose of this study was to prospectively evaluate
a brief tobacco cessation intervention offered by surgeons in an outpatient
thoracic surgery clinic.

Methods: Adult smokers from a single institution thoracic surgery clinic
were enrolled in a single-arm prospective pilot trial between January and
December, 2008. Patients received a 10-minute intervention which included:
discussing their motivation for quitting, offering tobacco cessation medication
and providing information for a free telephone quitline. The primary outcome
was abstinence at 3 months. Univariate logistic regression identified factors
associated with tobacco cessation.

Results: Forty out of 60 eligible smokers enrolled in the study. The mean age
of participants was 52.1 (± 12.6) years with a 39.9 (± 11.2) pack-year smoking
history. The 3 month quit rate was 35% (14/40). Fifty percent (20/40) of
participants used at least one tobacco cessation medication. Only 7.5% (3/40)
of patients called the quitline but each of these participants quit smoking.
Successful tobacco cessation was associated with a malignant diagnosis and
being the only tobacco user in the home (OR 4.2; 95% CI:1.0-17.2 and OR
6.1; 95% CI:1.4-26.3, respectively).

Conclusions: Thoracic surgeons can successfully implement a tobacco
cessation program with an excellent rate of abstinence compared to reported
cessation rates at 3 months from the literature. Further investigation with a
larger sample size, longer follow-up and improved utilization of the quitline is
warranted.
22. LONG-TERM OUTCOMES FROM SURGICAL VENTRICULAR RESTORATION FOR SEVERE HEART FAILURE

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Authors: Nathan Wm. Skelley1, D Jeremiah G. Allen1, D Eric S. Weiss1, Nishant D. Patel1, D Stuart D. Russell1, D Ashish S. Shah1, D John V. Conte1

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

Discussant: D Irving Kron, Charlottesville, VA

Objectives: Surgical ventricular restoration (SVR) has become a viable surgical option for patients meeting certain cardiac failure criteria, but the long-term utility of SVR in high risk patients has not been well studied.

Methods: We retrospectively reviewed our SVR patients between January 2002 and April 2008 with follow-up to September 2008. Baseline comorbidities, operative data, and postoperative outcomes were assessed by review of the electronic patient record, phone calls, and mailings. Univariate analysis was employed, and survival was modeled using the Kaplan-Meier (KM) method. Magnetic resonance imaging and echocardiography were used to assess cardiac function.

Results: Eighty-seven consecutive SVR patients were identified. Mean age at operation was 61.1 years, with 79% (69/87) males. All patients had congestive heart failure (93% [81/87] NYHA class III/IV preoperatively) and 77% (67/87) had >50% occlusion in at least 3 vessels. Following SVR, mean ejection fraction improved from 24% to 33% (p<.001) and patients experiencing angina decreased from 76% (66/87) to 26% (9/35) (p<.001). Median follow-up was 626 days [interquartile range 162-1071]. At follow-up, 77% (51/66) of patients improved to NYHA class I/II. Ten patients (11.5%) had a left ventricular assist device placed after SVR. Thirteen patients (14.9%) required a pacemaker and fifteen (17.2%) require a defibrillator placed postoperatively. There was one operative mortality and KM survival of our patients was 58.6% at 4 years (figure).

Conclusions: SVR is a viable surgical option for patients suffering from severe congestive heart failure. In these high risk patients, SVR successfully increased EF and decreased symptoms. Four year survival in our study is higher than for published survival from medically managed severe heart failure.
23. OUTCOMES OF ACUTE TYPE A AORTIC DISSECTION AFTER PREVIOUS CARDIAC SURGERY

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Author Institution(s): 1University of Texas Houston Medical School, Memorial Hermann Heart and Vascular Institute, Houston, TX, United States; 2Texas Tech University, El Paso, El Paso, TX, United States.

Discussant: *Edward Po-Chung Chen*, Atlanta, GA.

Objectives: Reports on outcomes of acute type A aortic dissection (ATAAD) repair following previous cardiac surgery (PCS) are few. Some suggest no difference in mortality while others note decreased risk of free rupture due to adhesions. We analyzed our experience of ATAAD following previous cardiac surgery.

Methods: Between 1/1992 and 3/2009 we repaired 330 patients with ATAAD. Of these, 49 (15%) patients had previous cardiac surgery: coronary artery bypass (CABG) in 35 (71%), aortic valve replacement (AVR) in 7 (14%), CABG/AVR in 6, (12%), and congenital repair 1 (2%) patient. ATAAD patients with and without PCS (no-PCS group) were compared.

Results: Patients in the PCS group were older (63 yrs vs. 58 yrs, p<0.02), more frequently men (82% vs. 67%, p<0.04), and less likely to have aortic insufficiency (AI) (30% vs. 47%, p<0.05). Excluding these, the PCS group did not differ in clinical presentation with similar mal-perfusion and tamponade. (See Table 1) Operative procedures did not differ between groups except for repair of pulmonary artery fistula (4% vs. 0%, p<0.03), and more frequent need for mechanical cardiac support in the PCS group, (8% vs. 3.6%, p<0.04). The PCS group suffered more strokes (10% versus 2.5%, p<0.03), and temporary neurological deficits (24% versus 10%, p<0.007), and higher hospital mortality (31% versus 13.8%, p<0.007) than the no-PCS group. Mortality did not differ by type of PCS: prior CABG was 31% (11/35), prior AVR/CABG was 17% (1/6), prior AVR was 43% (3/7), and prior congenital was 0%, p = ns.

Conclusions: Patients with ATAAD following PCS exhibited similar risks for mal-perfusion, hypotension, and cardiac tamponade. This suggests that adhesions formed after PCS do not eliminate the risk of cardiac tamponade from aortic rupture. Although results from surgical repair are acceptable thus justifying timely repair, mortality and still remains higher than without prior history of cardiac surgery.

### Table 1: Comparison of Patients With and Without PCS

<table>
<thead>
<tr>
<th>Variable</th>
<th>PCS (n=49)</th>
<th>No-PCS (n=281)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>63±13</td>
<td>58±14</td>
<td>0.02</td>
</tr>
<tr>
<td>Male</td>
<td>40 (82%)</td>
<td>187 (67%)</td>
<td>0.04</td>
</tr>
<tr>
<td>Leg weakness</td>
<td>10 (20%)</td>
<td>48 (17%)</td>
<td>0.55</td>
</tr>
<tr>
<td>Preop CVA</td>
<td>1 (2%)</td>
<td>29 (10%)</td>
<td>0.07</td>
</tr>
<tr>
<td>Hypotension</td>
<td>10 (20%)</td>
<td>70 (25%)</td>
<td>0.59</td>
</tr>
<tr>
<td>Tamponade</td>
<td>6 (12%)</td>
<td>49 (17%)</td>
<td>0.42</td>
</tr>
<tr>
<td>AI (mod-severe)</td>
<td>15 (30%)</td>
<td>132 (47%)</td>
<td>0.05</td>
</tr>
<tr>
<td>IABP/VAD</td>
<td>4/2 (8%/4%)</td>
<td>10/2 (4%/1%)</td>
<td>0.04</td>
</tr>
<tr>
<td>PA rupture</td>
<td>2 (4%)</td>
<td>0 (0%)</td>
<td>0.03</td>
</tr>
<tr>
<td>Myocardial infarct</td>
<td>4 (8%)</td>
<td>15 (5%)</td>
<td>0.50</td>
</tr>
<tr>
<td>CVA</td>
<td>5 (10%)</td>
<td>7 (2.5%)</td>
<td>0.03</td>
</tr>
<tr>
<td>TND</td>
<td>12 (24%)</td>
<td>28 (10%)</td>
<td>0.007</td>
</tr>
<tr>
<td>Bleeding</td>
<td>2 (4%)</td>
<td>24 (8.5%)</td>
<td>0.39</td>
</tr>
<tr>
<td>Mortality</td>
<td>15 (31%)</td>
<td>39 (13.8%)</td>
<td>0.007</td>
</tr>
</tbody>
</table>

Figure 1: ATAAD after PCS

NOTES

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24. HYBRID DEBRANCHING WITH ENDOVASCULAR REPAIR OF CRAWFORD EXTENT 1, 2 AND 3 THORACOABDOMINAL ANEURYSMS: A THERAPY WITH EXPANDING POTENTIAL IN HIGH RISK PATIENT COHORTS

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Authors: D Himanshu J. Patel1, Gilbert R. Upchurch1, Jonathan Eliason1, Enrique Criado-Pallares1, John Rectenwald1, Ramon Berguer1, D David M. Williams1, Richard L. Prager1, James C. Stanley1, G. Michael Deeb1

Author Institution(s): 1University of Michigan Cardiovascular Center, Ann Arbor, MI, United States

Objectives: Hybrid visceral/renal debranching procedures with endovascular aortic repair have recently been proposed as a less invasive alternative to conventional thoracoabdominal aneurysmectomy(TAAA). This study provides the first contemporary analysis of outcome differences between hybrid and open TAAA repair.

Methods: 94 consecutive patients (mean age 62.4yrs) underwent open(74) or hybrid(20) Crawford type 1,2, or 3 TAAA repair(2000-2008). Hypothermic circulatory arrest was utilized in 18 undergoing open repair. Hybrid procedures were selected when patients were prospectively deemed poor operative risk for open repair. TAAAs were fusiform atherosclerotic(62), chronic dissection(28), or pseudoaneurysm(4). 54 patients(57.4%) had previously undergone aortic repair including 27(28.7%) with prior infrarenal aortic repair. Outcomes were analyzed with 100% followup(mean 28.6 months).

Results: Extent of repair included type 1(19), type 2(47), and type 3(28). The operation was urgent/emergent in 10(10.6%). Median length of stay was 14 days. 30-day mortality occurred in 12 patients(13.5%). A comparative analysis of outcomes by operative strategy is detailed(Table). Multivariate analysis of the entire cohort revealed that a history of CHF(p=0.042) and conventional open repair(p=0.027) were the only independent predictors of a poor composite outcome of death, stroke, permanent spinal cord ischemia, need for dialysis or prolonged ventilatory support requiring tracheostomy. Kaplan-Meier survival(36 months) was similar in open(80.7%) and hybrid groups(88.2%, p=0.37).

Conclusions: Hybrid debranching with endovascular repair for TAAA may reduce early morbidity and mortality and yield similar intermediate rates of survival, even in a group considered high risk for open surgery. These data support the increasing utilization of a hybrid debranching and endovascular approach for patients requiring thoracoabdominal aneurysmectomy.

<table>
<thead>
<tr>
<th></th>
<th>Open TAAA Repair (n=74)</th>
<th>Hybrid TAAA Repair (n=20)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-Day Mortality</td>
<td>12 (16.2%)</td>
<td>0 (0%)</td>
<td>0.06</td>
</tr>
<tr>
<td>Stroke</td>
<td>1 (1.4%)</td>
<td>0 (0%)</td>
<td>1.0</td>
</tr>
<tr>
<td>Permanent Spinal Cord Ischemia</td>
<td>11 (14.8%)</td>
<td>0 (0%)</td>
<td>0.11</td>
</tr>
<tr>
<td>Need for Dialysis</td>
<td>15 (20.3%)</td>
<td>2 (10%)</td>
<td>0.51</td>
</tr>
<tr>
<td>Need for Tracheostomy</td>
<td>7 (9.5%)</td>
<td>0 (0%)</td>
<td>0.34</td>
</tr>
</tbody>
</table>

Open vs. Hybrid TAAA Repair: Univariate Analysis

NOTES

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25. LONG-TERM SURVIVAL AFTER OPEN REPAIR OF CHRONIC TYPE B AORTIC DISSECTION

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Authors: Stefano Zoli', Christian D Etz', Fabian Roder', Christoph S Mueller', Robert M Brenner', Carol A Bodian', Gabriele Di Luozzo', Randall B Griepp'

Author Institution(s): 'Mount Sinai School of Medicine, New York, NY, United States

Discussant: Hazim Safi, Houston, TX

Objectives: The optimal treatment of chronic type B aortic dissection remains controversial, with endovascular stent-graft techniques challenging the traditional surgical approach.

Methods: From 01/1994 to 4/2007, 104 patients (82 male, median age 60.5 years) with type B aortic dissection underwent surgical repair, 60-7300 days after initial diagnosis (median 24.3 months). 23(22%) patients underwent urgent/emergent surgery. Mean aortic diameter was 6.9±1.4cm. Indications for surgery—other than aortic expansion—were pain in 6(6%) pts, malperfusion in 6(6%), and rupture in 11(11%). 49(47%) had previous cardioaortic surgery (23% dissection-related). 21(20%) had CAD, 12(12%) had Marfan syndrome, and 4(4%) were on chronic dialysis. 26(25%) had a thrombosed false lumen. 30(28.9%) pts required reimplantation of visceral arteries. A mean of 8.3±2.7 segmental arteries were sacrificed.

Results: Hospital mortality was 9.6% (10 pts). Paraplegia occurred in 5(4.8%). Adverse outcome—death within one year, paraplegia, stroke or dialysis—occurred in 27 (26%) and was associated only with clot or atheroma (p=0.04, OR=4.3). Survival was 78% at 1, 68% at 5, and 59% at 10 years (average follow-up 7.7±4 years). Freedom from distal aortic reoperation—there were no endovascular procedures—was 99% at 1, 93% at 5, and 83% at 10 years. After one year, patients enjoyed longevity equivalent to a normal age/sex matched population (Standardized Mortality Ratio=1.38, p=0.23, Figure). By multivariate analysis, clot or atheroma (p=0.0005, RR=9.32) and age (p=0.0003, RR=1.15/year) were risk factors for long term survival.

Conclusions: Notwithstanding the severity of operative indications and short term attrition, the efficacy of open repair is highlighted by normal survival after the first year, and a low reoperation/reintervention rate.
26. ENDOVASCULAR MANAGEMENT OF COMPLICATED TYPE B AORTIC DISSECTION: METHODS AND MIDTERM OUTCOMES

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Authors: D Ali Khoyneshad¹, D Carlos E Donayre², D Rod A White³

Author Institution(s): ¹Creighton University Medical Center, Omaha, NE, United States; ²Harbor-UCLA Medical Center, Torrance, CA, United States

Discussant: *Marc Moon, St. Louis, MO

Objectives: The management of patients with complicated acute type B aortic dissection is challenging. Endovascular approach has been recently advocated. The purpose of this study is to review the techniques and outcome of patients undergoing endovascular treatment for complicated acute type B aortic dissection.

Methods: Retrospective analysis of 28 patients undergoing endovascular interventions for acute type B aortic dissection was performed. The Kaplan-Meier survival analysis was used for statistical computation.

Results: Indications for emergency endografting were rupture in four (14%), severe lower body malperfusion in eight (29%), visceral/renal malperfusion in seven (25%), persistent chest pain despite proper anti-impulsive therapy in five (18%), uncontrollable hypertension in one (4%), acute dilatation of false lumen with impending rupture in three (11%). Three patients died early (11%). Three patients died in the follow-up of non-aortic related causes. Overall Survival was 82% and 78% at one- and five-year follow-up, respectively. The aorta-related mortality was 10% for entire follow-up. Complete thrombosis of the false lumen in the thoracic aorta was achieved in 22 of surviving cohort (85%), and partial thrombosis in the remainder. The rate of treatment failure according to Stanford criteria was 18% at five years. Mean follow-up was 36 months, and follow-up was complete in 28 patients (100%).

Conclusions: Thoracic aortic endografting for complicated acute type B aortic dissection can be performed with a relatively low postoperative morbidity and mortality in experienced hands, and should be standard of care in institution offering such expertise. Endovascular approach to life-threatening complications of acute type B aortic dissection appears to have a favorable outcome in mid-term follow-up.

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27. ENDOVASCULAR REPAIR OF DESCENDING THORACIC ANEURYSMS: RESULTS WITH ON-LABEL APPLICATION IN THE POST APPROVAL ERA

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Authors: D*G. Chad Hughes¹, Sean M. Lee¹, Mani A. Daneshmand¹, Sonny Tucker¹, Richard L. McCann¹

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

Discussant: D*Joseph Coselli, Houston, TX

Objectives: Most studies of thoracic endovascular aortic repair (TEVAR) published since FDA-approval in 3/05 have included use in diverse unapproved applications including dissection, trauma, and “hybrid” surgical/endovascular cases. However, little post-approval data exists for the only FDA approved application, namely descending thoracic aneurysms. The purpose of this study was to examine our experience with TEVAR for aneurysms limited to the descending thoracic aorta.

Methods: Between 3/23/05 (date of initial FDA approval) – 4/6/09, 210 TEVAR procedures were performed at our institution. Of these, 79 (38%) were for saccular (N=31) or fusiform (N=48) descending thoracic aneurysm and form the basis of this report. Patients requiring “hybrid” approaches other than carotid-subclavian bypass were excluded. Devices utilized were Gore TAG (N=67; 85%), Zenith TX2 (N=10; 13%), and Medtronic Talent (N=5; 6%). 3 (4%) patients received more than one brand of device.

Results: Mean patient age was 69±14 years; 56% were male. N=32 (41%) had undergone prior aortic surgery. Mean aortic diameter was 5.8±1.8 cm. N=25 (32%) procedures were urgent/emergent. The left subclavian artery was covered in 33 (42%) and bypassed in 4 (12%). Iliac conduit was required in 15 (19%). Thirty day/in-hospital rates of death, stroke, and permanent paraplegia/paresis were 5.1% (n=4; 1.9% elective mortality), 2.5% (n=2), and 1.3% (n=1), respectively. At a mean follow-up of 19±16 months (range 0-48), there were n=2 (2.5%) late aortic deaths from graft infection (n=1) and rupture (n=1). 5 patients (6.3%) required secondary endovascular re-intervention for Type I endoleak (n=4) or device collapse (n=1); re-intervention was successful in all cases.

Conclusions: Despite the advanced age and co-morbid conditions of patients presenting with descending thoracic aneurysms, on-label application of TEVAR yields excellent 30 day and mid-term outcomes, especially in elective cases. These data support TEVAR as the preferred treatment strategy for this pathology.

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28. CERVICAL TRACHEAL RESECTION: LESSONS LEARNED

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**Authors:** Christopher J Mutrie¹, Shady M Eldaif¹, W Caleb Rutledge¹, *Seth D Force¹, William J Grist¹, *Kamal A Mansour², D*Daniel L Miller¹

**Author Institution(s):** ¹Emory University School of Medicine, Atlanta, GA, United States

**Discussant:** D*David Jones, Charlottesville, VA

**Objectives:** Cervical tracheal stenosis can be a difficult condition to manage. Depending on the etiology, location and extent of the stenosis, tracheal or cricotracheal resection may be required. Intraoperative decisions may predict outcome.

**Methods:** We performed a retrospective chart review of all patients undergoing cervical tracheal or cricotracheal resection from April 2000 through March 2008.

**Results:** One hundred and five patients underwent 108 tracheal or cricotracheal resections. Indication for operation included post-intubation tracheal stenosis (38), idiopathic (20), tracheostomy stenosis (19), GERD (11), invasive thyroid cancer (9) and other (8). Median age was 65 years (range, 15 - 78 years); 68% were women. Median length of trachea resected was 2.7 cm (range, 1.5 – 6.0 cm); 48 patients (46%) underwent extended cricotracheal resections. Twenty-six patients (24%) had an intraoperative chin stitch placed. Hospital stay was a median of 4 days (range, 2 – 33 days). Operative mortality was (0.9%); one patient died of MI on POD 3. Four patients (4%) developed hoarseness or vocal cord immobility. Median follow-up was 36 months (range, 1 – 79 months). Eighteen patients (17%) required dilation postoperatively. Seven (6%) patients required tracheostomy; two (2%) are tracheostomy dependent. Three (3%) patients underwent a re-resection for recurrent stenosis. Multivariate analysis of indication for resection, type of resection, length of resection, anastomotic technique and use of chin stitch did not predict the need for postoperative dilatation, tracheostomy or reoperation.

**Conclusions:** Cervical tracheal resection can be performed safely with low morbidity and mortality. Only 5% of patients required a long term tracheostomy or reresection for recurrent tracheal stenosis. Specific intraoperative decisions did not predict long-term success.
29. PHOTODYNAMIC LASER THERAPY FOR LESIONS IN THE AIRWAY

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Authors: Douglas Minnich1, *Robert J Cerfolio1, Adam C Dooley1, Ayesha S Bryant1, Jeana R Alexander1, Hilary B Moran1, Steven E Parsons1

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

Discussant: *Rodney Landreneau, Pittsburgh, PA

Objectives: Photodynamic therapy (PDT) is a non-thermal laser used for obstructive, bloody lesions in the airway.

Methods: A retrospective cohort study of a prospective database. All patients underwent rigid and flexible bronchoscopy under general anesthesia using jet ventilation.

Results: There were 390 operations performed on 130 patients (88 men) between January, 1996 and December, 2008. The mean pre-op dyspnea score was 3 out of 4 and 95 (73%) were DNR prior to surgery. Indications for intervention were: non-small cell lung cancer in 72 and metastatic airway lesions in 37 (renal cell in 11, melanoma in 6). Tumors were most commonly located in the main stem bronchi in 83. A 2.5 cm diffuser was used in 87% of patients and 300 Joules (range 50 – 300) was most frequently selected at first treatment. Most patients received two treatments over a three day hospitalization and returned in two weeks for two more PDT treatments. Dyspnea scored improved in 90%. There were 12 operative mortalities (none treatment related). Morbidity occurred in five patients (re-intubation in 3). Only four patients had a photosensitivity reaction. Median survival was 1.26 years.

Conclusions: Photodynamic therapy is a safe and effective treatment for bloody tumors that block the tracheobronchial tree even in severely debilitative patients with profound shortness of breath who are DNR from stage IV cancer. Photosensitivity reactions are rare with proper education and dyspnea is improved in properly selected patients.
30. VARIATION IN ESOPHAGECTOMY OUTCOMES AMONG HOSPITALS MEETING LEAPFROG VOLUME STANDARDS

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Authors: Thomas K Varghese Jr1, Douglas E. Wood1, Farhood Farjah1, Brant K. Oelschläger1, Rebecca G. Symons1, Kara E. MacLeod1, David R. Flum1

Author Institution(s): 1University of Washington, Seattle, WA, United States

Discussant: D*Thomas D’Amico, Durham, NC

Objectives: The Leapfrog Group established minimum hospital-level standards for esophageal resection including case volume ≥ 13. The aim of this study was to evaluate variation in short-term outcomes among hospitals that meet the Leapfrog volume standard.

Methods: Using the Washington State Comprehensive Hospital Abstract Reporting System, a retrospective cohort design evaluated all patients (≥18 years) undergoing esophageal resection for any diagnosis since the introduction of Leapfrog standards (2000-2007). The main outcome measures were hospital stay, readmissions within 30 days of discharge, discharge to an institutional care facility (ICF), operative reinterventions, and 90-day mortality.

Results: 1505 adult Washington state residents underwent esophageal resection without complex reconstruction (1352 elective [89.8%]). Of 45 hospitals reporting at least one procedure, 5 (11%) met Leapfrog volume standards. Leapfrog standard hospitals accounted for 62% of the total elective volume. Overall, elective patients at Leapfrog standard hospitals had a lower adjusted risk of death compared to those at hospitals that did not meet criteria (OR 0.50, p=0.02). Across the different Leapfrog hospitals there was over 5-fold variation in 90-day mortality (1.7%-10.2%), 2.5-fold variation in reinterventions (8% - 20%), and 4-fold variation in discharges to ICF (5.3%-19.8%). Length of stay and readmission rate varied less.

Conclusions: There was a substantial degree of variability in outcomes among hospitals that met Leapfrog standards for esophagectomies. Quality standards comprised of process, individual surgeon volume and risk-adjusted outcome measures may yield further opportunities for quality improvement that extend beyond hospital volume-based assessments.

<table>
<thead>
<tr>
<th></th>
<th>[95% CI]</th>
<th>OR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-day mortality</td>
<td>[0.32-0.54]</td>
<td>0.41</td>
</tr>
<tr>
<td>30-day readmission</td>
<td>[0.51-1.15]</td>
<td>1.34</td>
</tr>
<tr>
<td>ICF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reintervention</td>
<td>[0.48-0.78]</td>
<td>0.77</td>
</tr>
<tr>
<td>PLOS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leapfrog Hospitals</td>
<td>[0.38-0.66]</td>
<td>0.61</td>
</tr>
<tr>
<td>Non-Leapfrog Hospitals</td>
<td>[0.35-0.59]</td>
<td>0.63</td>
</tr>
</tbody>
</table>

* Adjusted Outcomes

NOTES

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31. LYMPH NODE STATUS PREDICTS RECURRENCE AFTER ESOPHAGECTOMY FOLLOWING NEoadjuvant therapy

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Authors: *Pennathur Arjun*, *Rodney J. Landreneau*, Julie Ward, Stephanie Land*, The-Minh Luong*, Michael Gibson, Matthew Schuchert, James D. Luketich

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

**Discussant**: D*Seth Force, Atlanta, GA*

**Objectives**: Despite complete resection, many patients with esophageal carcinoma (EC) recur. Recent data suggests that the number and percentage of positive nodes are associated with risk of recurrence even after complete resection. However, in most of these studies, patients who had undergone neoadjuvant therapy were excluded from this analysis. The main objective of this study was to analyze the prognostic factors which are predictive of recurrence, in the setting of a Phase II prospective trial of neoadjuvant therapy followed esophagectomy.

**Methods**: A total of 70 patients with pretreatment stages T2N0 (1), T2N1(15), T3N0(13), and T3N1(41) were enrolled. Treatment consisted of neoadjuvant chemotherapy (cisplatinum, paclitaxel, 5-fluoro-uracil) followed by esophagectomy, and adjuvant chemotherapy. Patients were monitored for recurrence and survival. The prognostic factors predictive of recurrence were analyzed.

**Results**: Esophagectomy was performed in 63 patients, and margins were microscopically negative in 56 patients (56/63; 89%). At a median follow-up of 79 months (range 39-138 months), recurrences (primarily distant) occurred in 39 patients. The median time to recurrence was 21.5 months (CI 12.9-27.8). The presence of nodal metastases, the number and percentage of metastatic lymph nodes were significantly associated with the risk of recurrence (Table 1).

**Conclusions**: There is a significant incidence of distant recurrences despite neoadjuvant therapy, and esophagectomy. The presence of nodal metastases (number and percentage of positive nodes) is an important predictor of recurrent disease, even in the setting of neoadjuvant therapy. Further prospective trials with newer chemotherapeutic and targeted agents are needed to investigate their efficacy in control of recurrent disease after surgical resection.

**Table 1: Prognostic Factors for Recurrence**

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Hazard Ratio (95% CI)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (&gt;60 vs &lt;60)</td>
<td>0.73 (0.39-1.34)</td>
<td>0.31</td>
</tr>
<tr>
<td>T Stage (pre-chemotherapy)</td>
<td>1.08 (0.62-1.86)</td>
<td>0.80</td>
</tr>
<tr>
<td>N Stage (pre-chemotherapy)</td>
<td>1.80 (1.06-3.05)</td>
<td>0.028</td>
</tr>
<tr>
<td>T Stage Final</td>
<td>Trend for increasing Hazard Ratio with T Stage</td>
<td>0.181</td>
</tr>
<tr>
<td>N Stage Final</td>
<td>2.88 (1.64-5.04)</td>
<td>0.00022</td>
</tr>
<tr>
<td>No. Positive Nodes</td>
<td>1.11 (1.06-1.18)</td>
<td>0.0001</td>
</tr>
<tr>
<td>% Positive Nodes</td>
<td>1.03 (1.02-1.04)</td>
<td>0.001</td>
</tr>
<tr>
<td>AJCC Stage (pre-chemotherapy)</td>
<td>Trend of increasing Hazard Ratio with Stage</td>
<td>0.0395</td>
</tr>
<tr>
<td>AJCC Final Stage</td>
<td>Trend of increasing Hazard Ratio with Stage</td>
<td>0.000464</td>
</tr>
</tbody>
</table>

**NOTES**
32. EFFECTIVENESS AND RISK OF COMPLICATIONS ASSOCIATED WITH INTRAPLEURAL ALTEPLASE VIA TUBE THORACOSTOMY

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Authors: Sharon Ben-Or, Richard Feins, Nirmal Veeramachaneni, Benjamin Haithcock

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

Discussant: Christine Lau, Charlottesville, VA

Objectives: The use of fibrinolytics has been described for the treatment of complex pleural processes. This has ranged from streptokinase to alteplase or tissue plasminogen activator (tPA). Intrapleural fibrinolysis has added an alternative to surgical intervention in patients with complex pleural processes. This study describes the use alteplase as an alternative to surgical intervention for these processes.

Methods: December 2004 to March 2009, 118 patients required alteplase for complex parapneumonic processes. The type of tube thoracostomy, parapneumonic process, anticoagulation type, INR, doses, and outcomes were reviewed for each patient. Complications and the need for additional interventions were evaluated.

Results: Patients received 1-8 doses of intrapleural alteplase via a tube thoracostomy. Indications for intrapleural alteplase were empyema (32, 27.1%), complex pleural effusion (44, 37.3%), hemothorax (13, 11.0%), parapneumonic effusion (25, 21.2%), and malignant effusion (6, 5.1%). The incidence of bleeding was 10.2% (12). Two of these patients were fully anticoagulated, four received subcutaneous heparin, and two received aspirin. Of the bleeding patients, seven required operative interventions. Thirteen (11.0%) required an operative intervention for incomplete evacuation of the pleural process. Twenty (16.9%) required a second tube thoracostomy for incomplete evacuation of the pleural process.

Conclusions: This is the largest series that has examined the use of intrapleural alteplase. This appears to be effective in treating complex parapneumonic processes. Systemic anticoagulation and prophylactic anticoagulation do not appear to be risk factors for increasing the risk of hemothorax after intrapleural instillation of alteplase.
33. PROGNOSTIC INDICATORS FOLLOWING SURGERY FOR THYMOMA

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Authors: Ikenna C Okereke1, Mohammed Morad1, Karen M Rieger1, Thomas J Birdas1, Deming Mi1, Mark W Turrentine1, Sunil Badve1, Patrick J Loehr1, *Kenneth A Kesler1

Author Institution(s): 1Indiana University School of Medicine, Indianapolis, IN, United States

Discussant: *Mitchell Magee, Dallas, TX

Objectives: Masaoka stage and WHO (World Health Organization) cellular classification have been considered the most important variables which determine survival following surgery for thymoma. We undertook a 20-year retrospective institutional study to investigate prognostic indicators within an institutional treatment strategy.

Methods: Between 1989 and 2009, 72 patients with thymoma were surgically treated at Indiana University Medical Center. Patient demographics, use of neoadjuvant/adjuvant therapy, and pathologic data, including Masaoka stage and WHO classification, were recorded when available and analyzed with respect to survival outcome.

Results: The majority (54%, n=39) of patients were female. Average age was 50.0 years. The distribution of Masaoka stages I, II, III and IV was 33% (n=24), 21% (n=15), 14% (n=10), and 32% (n=23) respectively. Sixty-five percent of patients with Masaoka stages III/IV received preoperative platinum-based chemotherapy. Conversely, only 33% of patients with Masaoka stage II or greater underwent postoperative radiation therapy. WHO cell types included A/AB in 10% and B1-3 in 90%. Complete resection was achieved in all patients. Of all variables, only Masaoka stage groups were significantly predictive of survival. Patients in Masaoka Stages I and II had increased survival compared to patients in Masaoka Stages III and IV (Figure 1, p = 0.02). After mean follow-up of 59 months, 78% (n=56) of patients were alive and 64% (n=46) were alive without disease.

Conclusions: Complete resection of Masaoka stages I and II thymoma may result in not only excellent but also equivalent long-term survival. Patients with Masaoka stages III and IV may also experience long-term survival with multimodality therapy.
34. HEART TRANSPLANTATION IN CHILDREN WITH A FONTAN PROCEDURE

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Author Institution(s): 1Emory University School of Medicine, Atlanta, GA, United States; 2Children’s Healthcare of Atlanta, Atlanta, GA, United States

Discussant: *Robert Jaquiss*, Little Rock, AR

Objectives: Previous studies show that children with a prior Fontan procedure have decreased survival after heart transplantation. We examined our results with 175 primary pediatric heart transplants from our institution.

Methods: Since 1988, of 175 children <18 years old undergoing primary heart transplantation, 26 (15%) had a prior Fontan procedure. The Fontan patients were more likely to have prior surgery (100% vs. 52%; P<0.0001) and need pulmonary artery reconstruction (100% vs. 23.5%; P<0.0001). 11 (42%) had protein-losing enteropathy (PLE).

Results: The Fontan patients were similar in age, presensitization and pre-transplant clinical status (Table 1). Operative complexity and duration as well as hospital variables were all greater in the Fontan group (Table 1). There was only one 30-day mortality in the Fontan group. One and five year actuarial survivals were no different between the two groups nor was the frequency of rejection at one year (Table 2). Five Fontan patients (19%) required retransplantation 4.9±3.6 years post-transplant compared with 18 non-Fontan patients (12%) retransplanted 5.2±3.4 years post-transplant (P=NS).

Conclusions: In contrast to prior reports, we did not demonstrate any early or mid-term disadvantage for children undergoing heart transplantation after a previous Fontan procedure despite more complex transplant operations and longer hospitalizations. We contend that these children with a failing Fontan circulation, if carefully selected, can do as well as other children with pediatric heart transplantation.

<table>
<thead>
<tr>
<th>Fontan (n=26)</th>
<th>Non-Fontan (n=149)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (yrs)</td>
<td>7.9±4.8</td>
</tr>
<tr>
<td>PRA Class I &gt; 10%</td>
<td>19.3%</td>
</tr>
<tr>
<td>UNOS Status I</td>
<td>65.4%</td>
</tr>
<tr>
<td>Donorchemia Time (min)</td>
<td>210±73</td>
</tr>
<tr>
<td>CPB Time (min)</td>
<td>197±93</td>
</tr>
<tr>
<td>Days/Ventilated</td>
<td>4.9±6.7</td>
</tr>
<tr>
<td>Hospital Days</td>
<td>19.6±17.6</td>
</tr>
</tbody>
</table>

Table 1. Characteristics

<table>
<thead>
<tr>
<th>Fontan (n=26)</th>
<th>Non-Fontan (n=149)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survival</td>
<td>Mean Rejection Episodes/Patient</td>
</tr>
<tr>
<td>30 Days</td>
<td>1 Year</td>
</tr>
<tr>
<td>Fontan (n=26)</td>
<td>56.2%</td>
</tr>
<tr>
<td>Non-Fontan (n=149)</td>
<td>53.2%</td>
</tr>
</tbody>
</table>

Table 2. Results

NOTES
35. THE RASTELLI OPERATION REMAINS A GOOD OPTION FOR TRANSPOSITION OF THE GREAT ARTERIES WITH VENTRICULAR SEPTAL DEFECT AND PULMONARY STENOSIS

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Authors: John W. Brown¹, Mark Ruzmetov¹, Daniel Huynh², *Mark D. Rodefelt¹, *Mark W. Turrentine¹, *Andrew C. Fiore²

Author Institution(s): ¹Indiana University School of Medicine, Indianapolis, IN, United States; ²St. Louis University School of Medicine, St. Louis, MO, United States

Discussant: *Victor Morell, Pittsburgh, PA

Objectives: The optimal surgical treatment of patients with transposition of the great arteries (TGA), ventricular septal defect (VSD) and pulmonary stenosis is controversial. Although the Rastelli operation (RO) has been standard surgical management of this lesion, aortic root translocation with right ventricular outflow tract (RVOT) reconstruction is a recent surgical alternative. This report reviews our 20-years experience with the RO.

Methods: Between 1988 and 2008, 40 patients (median age, 4 years; range, 9 months to 17 years) underwent RO at our institutions. The RVOT was obstructed in 32 and atretic in 8. Follow-up was available for all patients (mean follow-up, 8.6 ± 5.6 years). The RVOT was reconstructed with homograft (n = 25), bovine jugular vein (n = 8), nonvalved Gore-Tex tube (n = 5), or a porcine valved conduit (n = 2). Three patients required a pacemaker.

Results: There was one early and two late deaths and one heart transplantation 12 years postoperative RO. Kaplan-Meier survival was 93% at 5, 10, and 20 years. Univariate risk factors for death or transplantation included surgery before 1998 (P = 0.03) and concomitant non-cardiac anomalies (P = 0.001). Sixteen patients (40%) had reoperation for right ventricular-pulmonary artery conduit stenosis (mean 7.8 ± 3.8 years) without mortality. Freedom from conduit replacement was 86%, 74%, 63%, and 59% at 5, 10, 15, and 20 years, respectively. Multivariate analysis revealed that the risks factors of conduit replacement were younger age at operation (P = 0.001) and surgery before 1998 (P < 0.001). At follow-up, there were no sudden unexplained deaths, and NYHA functional class was I or II. One patient (2.5%) required reoperation for left ventricular outflow tract obstruction (LVOTO).

Conclusions: The Rastelli procedure is a low-risk operation with regard to early and late mortality and reoperation for LVOTO. Conduit change operations will be required in all patients, but currently can be performed with low morbidity and mortality. These mid-term outcomes after the RO should serve as a basis for comparison with surgical alternatives more recently introduced for TGA, VSD with RVOT.
36. LONG-TERM OUTCOMES IN SUPRAVALVULAR AORTIC STENOSIS DEMONSTRATE SUPERIORITY OF MULTI-SINUS AORTOPLASTY

Authors: Sunjay Kaushal¹, S Patel¹, *Carl L Backer¹, Jeffrey G Gossett¹

Author Institution(s): ¹Children's Memorial Hospital - Northwestern University Feinberg School of Medicine, Chicago, IL, United States

Discussant: *John Calhoon, San Antonio, TX

Objectives: Surgical techniques for repair of supravalvular aortic stenosis (SVAS) include McGoon's one-patch, Doty's two-patch, and Brom's three-patch method. In this review we evaluated long-term clinical outcomes of these techniques at our institution.

Methods: Our cardiac surgery database identified patients with SVAS repair from 1990-2008. Follow-up records, reintervention/reoperation data, and most recent echocardiograms were obtained.

Results: From 1990-2008 20 patients (70% male) underwent surgery for SVAS. Mean age was 3.6±5.6 years. In chronological sequence, 8 patients had single-patch aortoplasty, 4 had the Doty procedure, and 8 received Brom's symmetric three-patch aortoplasty. Of the Brom patients, 5 had Williams syndrome. Aortic cross-clamp times were 40.1±13.6 minutes (one-patch), 60.3±38.8 (Doty), and 104±20.5 (Brom). Perioperative mortality was 4.5% (1 single-patch). Median postoperative length of stay was 8 days. Follow-up data were available for all survivors (mean follow-up, 6.2±5.7 years). There were no late deaths. Follow-up echocardiogram revealed peak Doppler gradient across the aortic outflow tract of 44.2±12.1 mm Hg (one-patch), 9.8±9.9 mm Hg (Doty), and 16.4±13.6 mm Hg (Brom). All patients in the Doty and Brom groups had < moderate aortic insufficiency. Aortic root reoperation was required in 3 of 8 1-patch patients (37.5%) for residual aortic stenoses (n = 2) and aortic insufficiency (n = 1). No Doty or Brom patient has required aortic reoperation, p=.06.

Conclusions: Despite longer cross-clamp time, SVAS repair by Doty or Brom aortoplasty restores normal hemodynamics and reduces the need for reoperation when compared with the classic one-patch technique. Our current preference is the Brom three-patch symmetric aortoplasty.
37. NORWOOD OPERATION: COMPARISON OF THE MODIFIED BLALOCK-TAUSSEIG SHUNT WITH THE RV TO PA CONDUIT

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Authors: *Andrew Fiore1, Courtney Tobin1, Saadeh Jureidini1, Mohammad Rahimi1, Grace Freire1, Kalyani Trivedi1, Kenneth Schowengerdt1

Author Institution(s): 1St. Louis University/Cardinal Glennon Children’s Hospital, St. Louis, MO, United States

Discussant: *James Tweddell, Milwaukee, WI

Objectives: The optimal source of pulmonary blood flow for Norwood palliation remains controversial. Alternatives include the modified Blalock-Taussig shunt (MBT) which may improve pulmonary artery growth secondary to continuous antegrade flow and the RV-PA conduit (RV-PA) which provides pulsatile pulmonary flow, but allows diastolic flow reversal with potential ventricular volume overload.

Methods: From November 2000 to December 2008, 19 patients underwent Norwood operation with MBT, while 15 patients had RV-PA. Cohorts were similar in gestational age, BSA, systolic and diastolic pressure, RV length and thickness, McGoon ratio and age at Glenn. Shunt was larger in the RV-PA (6 mm + .5 vs. 4 mm + .2; p < .05). Follow up to Glenn was similar (MBT, 8 mon; RV-PA 10 mon; NS) with one early MBT death.

Results: RV-PA conduit patients had a higher McGoon ratio indicating improved pulmonary artery growth without RV enlargement. Systolic pressure was greater in the MBT, but diastolic pressure, an indicator of coronary flow was similar in both. Weight gain, re-intervention and systemic saturation were not different. Nineteen patients 10 MBT (53%); 9 RV-PA (60%) have undergone completion Fontan with no early or late deaths. At follow up, no patient has required anti-arrhythmic medication, despite ventriculotomy in the RV-PA cohort.

Conclusions: (1) RV-PA conduit provides superior pulmonary artery growth without change in ventricle size; (2) MBT shunt patients have higher systolic pressures and equivalent diastolic pressures as RV-PA; (3) weight gain, saturation, re-intervention rate and successful Fontan completion are similar. This study suggests Norwood palliation with the RV-PA conduit improves pulmonary artery growth, but other measured variables are not significantly different from palliation using a modified Blalock shunt.

<table>
<thead>
<tr>
<th></th>
<th>MBT</th>
<th>RV-PA</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systolic BP (mmHg)</td>
<td>103 ± 14</td>
<td>89 ± 16</td>
<td>.01</td>
</tr>
<tr>
<td>Diastolic BP (mmHg)</td>
<td>46 ± 14</td>
<td>47 ± 1.0</td>
<td>NS</td>
</tr>
<tr>
<td>RV length (cm/M2)</td>
<td>3.0 ± .4</td>
<td>3.2 ± .5</td>
<td>NS</td>
</tr>
<tr>
<td>RV thickness (cm/M2)</td>
<td>0.5 ± 1</td>
<td>0.5 ± 1.12</td>
<td>NS</td>
</tr>
<tr>
<td>McGoon Ratio (cath)</td>
<td>1.6 ± .3</td>
<td>2 ± .5</td>
<td>.01</td>
</tr>
<tr>
<td>Sa O2 (%)</td>
<td>75</td>
<td>74</td>
<td>NS</td>
</tr>
<tr>
<td>Weight gain (grams/day)</td>
<td>18 ± 6</td>
<td>21 ± 6</td>
<td>NS</td>
</tr>
<tr>
<td>Need for re-intervention (%)</td>
<td>42%</td>
<td>33%</td>
<td>NS</td>
</tr>
</tbody>
</table>
38. RIGHT VENTRICULAR OUTFLOW TRACT RECONSTRUCTION UTILIZING A BICUSPID-VALVED-PTFE-CONDUIT: EARLY RESULTS

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Authors: Masahiro Yoshida¹, *Victor O Morell¹, Peter D Wearden¹

Author Institution(s): ¹Department of Cardiothoracic Surgery, Children’s Hospital of Pittsburgh, Pittsburgh, PA, United States

Discussant: *John Brown, Indianapolis, IN

Objectives: In general, all conduits available for right ventricular outflow tract (RVOT) reconstruction eventually become stenotic and/or insufficient. Due to the lack of an ideal conduit and with the hope of reducing the incidence of reoperations we have developed and utilized a bicuspid valved PTFE conduit for the reconstruction of the RVOT. The purpose of this study was to review our early experience with this conduit.

Methods: Since October 2008, we have implanted a bicuspid valved PTFE conduit in ten patients, with a median age was 1.8 years (9 days-12 years). Their diagnoses include: Tetralogy of Fallot with pulmonary atresia in five, truncus arteriosus in four and interrupted aortic arch with a ventricular septal defect in one. The conduit was used to establish right ventricle to pulmonary artery continuity in all patients, nine of which had a completed biventricular repair. The conduit sizes varied from 12 to 22 mm in diameter. The construction of the valved conduit is depicted in Figure I.

Results: There was no surgical mortality or reinterventions associated with the conduit placement in our series. At the time of discharge none of the patients had any echocardiographic findings consistent with significant conduit stenosis or insufficiency. During the follow-up period of 2.8 +/-1.6 months all patients are alive and only two have more than mild pulmonary insufficiency.

Conclusions: Our bicuspid valved PTFE conduit has an acceptable early performance, with a low incidence of valve insufficiency and no conduit stenosis. Certainly, longer follow-up is necessary to fully assess its long-term viability.
39. HYPOPLASTIC LEFT HEART SYNDROME: FEASIBILITY STUDY FOR PATIENTS UNDERGOING COMPLETION FONTAN AT OR PRIOR TO 2 YEARS OF AGE

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Authors: Anastasios C Polimenakos1, Shyam Sathanandam1, Chawki el Zein1, *Robert S D Higgins2, Michel N Ilbawi1

Author Institution(s): 1Advocate Hope Children’s Hospital / The Center of Structural and Congenital Heart Disease at Rush University Medical Center, Chicago, IL, United States; 2The Center of Structural and Congenital Heart Disease / Rush University Medical Center, Chicago, IL, United States

Discussant: *Ross Ungerleider, Cleveland, OH

Objectives: There are limited data regarding management of children with Hypoplastic left heart syndrome (HLHS) and completion Fontan (CF) at or prior to 2 years of age. A study was undertaken to investigate intermediate outcomes.

Methods: From August 1999 to December 2008, 52 HLHS-survivors underwent extracardiac-conduit CF [29 prior to (group A) vs 23 after 25 months of age (group B)]. Mean weight and median follow-up was 9.9+/−1.3kg and 79 months (2 to 112) for group A vs 12.1+/−2.2kg and 87 months (1 to 97) for group B, respectively. Polytetrafluoroethylene conduits were used. Perioperative outcome variables were studied.

Results: There was 1 hospital death (group B) and no late mortality. In group A, 16 CF had 20mm conduit (vs 18mm in 13). Thirteen group B patients received 18mm conduit (vs 20mm in 10). No CF was taken down. Cardiopulmonary bypass was 78+/−37.3min in group A vs 77+/−33.9min in group B (p ns). More group B patients required fenestration (8 of 23 vs 8 of 29 in group A, p<0.05). Mean pulmonary artery size, McGoon ratio, transpulmonary gradient in groups A vs B were 7.94+/−0.59mm vs 7.87+/−0.58 (p ns), 1.79+/−0.2 vs 1.77+/−0.19 (p ns), 4.1+/−1.1mmHg vs 3.5+/−0.9 (p ns). Aspirin and warfarin were used postoperatively. Mean hospital length of stay (LOS), ICU-LOS, pleural drainage duration between group A and B were 10.9+/−5.8days vs 12.7+/−6.1 (p ns), 5.6+/−2.6days vs 6.7+/−2.9 (p ns), 7.6+/−3.8days vs 8.7+/−4.1 (p ns), respectively. Between groups no difference in ventilatoty support time, arrhythmias, sinus/AV node dysfunction, protein-losing-enteropathy and thromboembolic events was noted.

Conclusions: In HLHS patients earlier unloading of univentricular heart by means of CF can be performed with good intermediate results at or prior to 2 years of age. Fenestration is less often required without effect in pleural drainage duration. Age at CF had no effect in preoperative pulmonary artery growth and conduit size selection.
40. **AGE AND PROSTHESIS TYPE AFFECT LATE SURVIVAL FOLLOWING MITRAL VALVE REPLACEMENT IN PATIENTS WITH PROSTHESIS-PATIENT MISMATCH**

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**Authors:** Abdulhameed Aziz1, Jennifer S Lawton1, Nader Moazami1, Michael K Pasque1, Ralph J Damiano, Jr1, Marc R Moon1

**Author Institution(s):** Division of Cardiothoracic Surgery, Washington University School of Medicine, St. Louis, MO, United States

**Discussant:** Neil Kon, Winston-Salem, NC

**Objectives:** Long-term sequelae of prosthesis-patient mismatch (PPM) after mitral valve replacement (MVR) remains controversial. Most studies exhibit selection bias, combining mechanical and bioprosthetic recipients of all ages. The purpose of this study was to determine long-term outcomes in patients with PPM after MVR stratified by age and prosthesis type.

**Methods:** From 1992-2008, 765 patients underwent bioprosthetic (42%) or mechanical (58%) MVR, including 370 (48%) patients greater than 65 yo. PPM was defined as severe (effective orifice area/body surface area <0.9 cm²/m²), moderate (0.9-1.2), or absent (>1.2). Compiled data were investigated and further evaluated with multivariate and Kaplan-Meier analysis.

**Results:** In patients with mechanical valves, PPM was severe in 2%, moderate in 32%, and absent in 66%. With bioprosthetic valves, PPM was severe in 30%, moderate in 45%, and absent in 25%. Patients less than 65 yo most often underwent mechanical MVR (76%), while those greater than 65 yo most often underwent bioprosthetic MVR (62%). Long-term survival was evaluated by Kaplan-Meier analysis as shown in Figure. For bioprosthetic recipients, multivariate analysis identified four risk factors for late death: advanced age, earlier operative year, diabetes, and renal disease (p=0.004). For mechanical recipients, moderate/severe PPM was also identified as a risk factor for late death (p=0.02).

**Conclusions:** Severe PPM adversely affected long-term survival for patients >65 yo receiving bioprosthetic valves. For mechanical valves, there was a trend toward impaired survival when PPM was moderate or severe in patients under 65 yo. Thus, selection of an appropriate mitral prosthesis warrants careful consideration of age and valve type.
41. INFLUENCE OF PATIENT AGE ON PROCEDURAL SELECTION IN MITRAL VALVE SURGERY

Authors: Mani A. Daneshmand¹, D*Carmelo A. Milano¹, D*J. Scott Rankin², Emily Honeycutt¹, Linda K. Shaw¹, *R. Duane Davis¹, *Walter G. Wolfe¹, D*Donald D. Glower¹, *Peter K. Smith¹

Author Institution(s): ¹Duke University Medical Center, Durham, NC, United States; ²Vanderbilt University, Nashville, TN, United States

Discussant: *Walter Merrill, Jackson, MS

Objectives: Previous studies suggest that mitral valve replacement is comparable to repair in the elderly, and a national trend exists toward using tissue valves; however, few direct comparison data are available, and this study was designed to evaluate the effects of patient age on risk-adjusted survival after mitral procedures.

Methods: From 1986-2006, 2,064 patients underwent isolated primary mitral operations (+/- CABG). Maximal follow-up was 20-years with a median of 5-years. Valve disease etiology was degenerative in 864, ischemic in 450, rheumatic in 416, endocarditis in 98, and “other” in 236. Overall, 58% of valves had repair, and 39% had concomitant CABG. Survival differences were evaluated with a Cox proportional hazards model that included baseline characteristics, valve disease etiology, and choice of repair versus replacement with tissue (TRpI) or mechanical (MRpI) valves.

Results: Baseline risk profiles were better for MRpI (p<0.0020), and age was the most significant multivariable predictor of late mortality [HR = 1.5/10-year increment, Wald Chi-Square = 38.3, p<0.0001]. As compared to repair (Figure), risk-adjusted survival was inferior with either TRpI [1.8, 27.5, <0.0001] or MRpI [1.3, 7.0, 0.008], and no treatment interaction was observed with age (p=0.16). At no patient age did TRpI achieve equivalent survival to either repair or MRpI (Figure).

Conclusions: Mitral repair is associated with better survival than valve replacement across the spectrum of patient age. If replacement is required, MRpI achieves better outcomes, even in the elderly. These data suggest that TRpI should be reserved only for patients with absolute contraindications to anticoagulation who are not amenable to repair.
42. THE EFFECT OF DIABETES MELLITUS ON SHORT AND LONG-TERM OUTCOMES AFTER HEART VALVE SURGERY

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**Authors:** Michael E. Halkos1, *Omar M. Latrouf1, Patrick Kilgo1, *John D. Puskas1, J. David Vega1, *Edward P. Chen1, William A. Cooper1, *Thomas Vassiliades1, *Cullen D. Morris1, *Robert A. Guyton1, *Vinod H. Thourani1

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

**Discussant:** D*John Hammon, Winston-Salem, NC

**Objectives:** Diabetes mellitus (DM) is associated with adverse short- and long-term outcomes in patient undergoing coronary artery bypass surgery. The purpose of this study was to evaluate the short- and long-term mortality in patients with DM undergoing heart valve surgery.

**Methods:** From 1/1/1996-3/31/2008, 3,532 consecutive patients underwent primary, isolated heart valve surgery at a single institution. Patients undergoing concomitant coronary bypass were excluded. Of these patients, 14.0% (493/3532) had a diagnosis of DM of which 28.8% (142/493) received insulin therapy. Long-term survival status was determined by using the Social Security Death Index. Multivariable logistic regression analysis (MLR) was employed to calculate adjusted odds ratios (AOR) to identify risk factors for adverse 30-day outcomes and long-term (10-year) mortality.

**Results:** Among patients with DM, 30-day mortality occurred in 8.7% (43/493) compared to 5.1% (156/3039) without DM (p=0.002). However, after MLR adjustment, DM was no longer a significant predictor of 30-day mortality (AOR 1.12, p=0.54). Variables associated with higher 30-day mortality on MLR analysis included advanced age, renal failure, NYHA Class III-IV heart failure, prior stroke, and longer perfusion time (see table below). Compared to patients without DM, patients with DM had significantly reduced 10-year survival (29.7%, 146/493 vs. 62.9%, 1911/3039, p<0.001). On MLR analysis, DM was also associated with reduced 10-year survival (AOR 1.50, p<0.0001). Additional variables associated with reduced 10-year survival included advanced age, renal failure, NYHA Class III-IV heart failure, prior stroke, and peripheral vascular disease (see table).

**Conclusions:** Although not a significant predictor of 30-day mortality, DM was associated with a significantly reduced long-term survival among patients undergoing valve surgery. The reduced long-term survival observed in these patients may affect the choice of valve procedure (repair vs. replacement) as well as the choice of prosthesis (mechanical vs. bioprosthetic) if replacement is indicated.

<table>
<thead>
<tr>
<th>Risk Factor for 30-day Mortality</th>
<th>Adjusted Odds Ratio</th>
<th>p-value</th>
<th>Risk Factor for Long-Term (10-year) Mortality</th>
<th>Adjusted Odds Ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>1.04 (1.02, 1.05)</td>
<td>&lt;0.0001</td>
<td>Age</td>
<td>1.03 (1.03, 1.04)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Renal failure</td>
<td>3.36 (2.27, 4.98)</td>
<td>&lt;0.0001</td>
<td>Renal failure</td>
<td>3.18 (2.66, 3.82)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>NYHA Class III-IV</td>
<td>1.21 (1.01, 1.45)</td>
<td>0.04</td>
<td>NYHA Class III-IV</td>
<td>1.12 (1.02, 1.22)</td>
<td>0.012</td>
</tr>
<tr>
<td>Prior stroke</td>
<td>2.10 (1.35, 3.25)</td>
<td>0.001</td>
<td>Prior stroke</td>
<td>1.57 (1.27, 1.93)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Perfusion time</td>
<td>1.03 (1.02, 1.03)</td>
<td>&lt;0.0001</td>
<td>Peripheral vascular disease</td>
<td>1.96 (1.49, 2.59)</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

**Risk Factors for 30-day and Long-Term Mortality**

**NOTES**

* STSA Member    D Relationship Disclosure

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43. SIMPLIFIED DAVID REIMPLANTATION WITH REDUCTION OF ANULAR SIZE AND CREATION OF ARTIFICIAL SINUSES

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Authors: Lars G Svensson\textsuperscript{1}, Maxwell Cooper\textsuperscript{1}, Edward R Nowicki\textsuperscript{1}

Author Institution(s): \textsuperscript{1}Cleveland Clinic, Cleveland, OH, United States

Discussant: *John Ikonomidis, Charleston, SC

Objectives: David valve-sparing root reimplantation has evolved to improve ease of operation and reliability of results. We evaluated one modification that incorporates a 30-mm tube graft, anular reduction, and neo-sinus creation.

Methods: Of 201 patients who underwent David operations or some modification thereof, 130 operated upon from 2001 to 6/2008 formed a consecutive single-surgeon series. Anulus and proximal tube graft size were reduced over a Hégar dilator to average normal size based on body surface area (BSA), in the process creating neo-sinuses to accommodate cusp opening. Ninety-six patients (73\%) were male, and 61 (47\%) had Marfan syndrome. Mean BSA was $2.1 \pm 0.2 \text{m}^2$. Degree of preoperative aortic regurgitation (AR) was 0 in 9.5\%, trace in 23\%, 1+ in 16\%, 2+ in 25\%, 3+ in 25\%, and 4+ in 0.8\%.

Results: Fifty-four patients (42\%) had concomitant cusp repair, and sizing with the Hégar dilator was 17 mm in 9\%, 19 mm in 18\%, 21 mm in 57\%, and 23 mm in 16\%. Degree of postoperative AR was 0 in 55\%, trace in 37\%, 1+ in 7.0\%, 2+ in 0.8\%, and 3+ or 4+ in none. Postoperative mean aortic gradient was 9.0 $\pm 3.5 \text{mmHg}$, and peak was 16$\pm 6.8 \text{mmHg}$. There were 2 (1.5\%) transient ischemic attacks, no strokes, and no in-hospital or 30-day deaths in the entire series.

Conclusions: A simple modification of the David operation--reducing anular size and creating neo-sinuses--preserves the aortic valve and successfully eliminates aortic regurgitation, without creating significant aortic stenosis.
44. VARIABILITY IN DEFINING T1N0 NON-SMALL CELL LUNG CANCER HAS CONSEQUENCES FOR LOCOREGIONAL FAILURE

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Authors: Mert Saynak1, Jessica Hubbs1, Jiho Nam1, Lawrence Marks1, *Richard Feins1, Benjamin Haithcock1, Nirmal Veeramachaneni1

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

Discussant: D*Todd Demmy, Buffalo, NY

Objectives: Locoregional recurrence (LR) can occur despite complete anatomic resection of T1N0 lung cancer. This may be the result of incomplete resection or inaccurate staging. We assessed the impact of extent of nodal staging on the rate of locoregional failure.

Methods: The records of 270 patients undergoing lobectomy, bilobectomy or pneumonectomy for NSCLC from 1996-2006 were reviewed. Operative reports and pathology reports were reviewed for the number of lymph nodes and the anatomic nodal stations examined. Kaplan-Meier method was applied to analyze recurrence-free survival.

Results: 92 patients with pathologically staged T1N0 lung cancer were identified (58% adenocarcinoma, 28% squamous cell cancer, 14% other). Median age was 66.5 years. Adjuvant chemotherapy was provided in 6%(n=6), but no patient received post-operative radiotherapy. Mean follow-up duration was 40 months (1-124). LR occurred in 20%(n=18). N2 nodal stations were examined in 97%(n=89).

At least one defined N1 nodal station was examined in 63%(n=58). Station undefined N1 nodes were examined in 31%(n=29) and no N1 nodes were examined in 5%(n=5). Mean number of N1 lymph nodes analyzed was 5.4 (range 0-14). While LR rate for patients with a defined N1 station node was 13.8%(8/58), LR occurred in 29.4%(10/34) of patients in whom N1 nodes were analyzed without specification of nodal station (Figure 1, p=0.04).

Conclusions: Despite anatomic resection of T1N0 lung cancer and uniform analysis of N2 nodal stations, a high rate of locoregional recurrence occurs. Imprecise staging of N1 lymph nodes may contribute to the understaging and undertreatment of patients with early stage lung cancer.
45. PATTERNS OF LYMPH NODE SAMPLING IN VIDEO ASSISTED THORACOSCOPIC LOBECTOMY VERSUS LOBECTOMY BY STANDARD THORACOTOMY

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Authors: Chadrick Evan Denlinger1, *Bryan F Meyers1, Felix G Fernandez1, Wande Pratt1, Jennifer Bell Zoole1, G. *Alexander Patterson1, *A. Sasha Krupnick1, *Daniel Kreisel1, D*Traves D Crabtree1

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

Discussant: D*Daniel Miller, Atlanta, GA

Objectives: With the emergence of VATS lobectomy, concern remains regarding the adequacy of nodal assessment vs. thoracotomy.

Methods: All clinical stage I NSCLC patients treated with VATS (2005-2008) or open lobectomy (2000-2008) were retrospectively evaluated. Total nodes, N2 nodes, and nodes at each station were evaluated for associations with surgery type and location of involved lobe.

Results: There were 78 VATS and 454 open lobectomies for stage I tumors. Overall, fewer nodes were sampled with VATS compared to thoracotomy (7.1±0.6 vs. 8.9±0.2, p=0.006), and fewer N2 nodes were sampled with VATS vs. thoracotomy as well (3.7±0.2 vs. 2.4±0.3, p=0.001). There were no differences in N1 node sampling between the two groups (5.4±0.2 vs. 4.8±0.4, p=0.2). Furthermore, there were more station 7 nodes with thoracotomy vs. VATS (1.2±0.1 vs. 0.6±0.1, p=0.002).

Among right-sided lesions, there was no difference in 4R nodes between groups (1.4±0.4 vs. 1.6±0.2, p=0.7) although there was a trend towards more level 7 nodes with thoracotomy (1.0±0.2 vs. 1.4±0.2, p<0.08). Among left-sided resections there were more station 7 nodes with thoracotomy vs. VATS (1.0±0.1 vs. 0.4±0.1, p<0.001) and more station 5/6 nodes (1.1±0.1 vs. 0.5±0.1, p<0.04).

For upper lobe resections, the total nodes (8.9±0.3 vs. 7.4±0.7, p=0.05) and station 7 nodes (1.0±0.1 vs. 0.6±0.1, p=0.01) were higher with thoracotomy than VATS. There was no difference in 2-year survival between groups (81% vs. 83%, p=0.4).

Conclusions: Our early experience with VATS has been associated with fewer lymph nodes sampled compared to open lobectomy although there was no survival difference. Analysis of these differences has directed us toward a more focused lymph node sampling with VATS lobectomy.
46. IMPACT OF ANGIOINVASION, VISCERAL PLEURAL INVASION AND TUMOR INFLAMMATION ON OUTCOMES FOLLOWING RESECTION OF STAGE I NON-SMALL CELL LUNG CANCER

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Authors: Matthew J. Schuchert¹, Brian L. Pettiford¹, Arman Kilic¹, Alicia Oostdyk¹, *Arjun Pennathur¹, Omar Awais¹, Sebastien Gilbert¹, James R. Landreneau¹, David O. Wilson¹, James D. Luketich¹, *Rodney J. Landreneau¹, Lana Y. Schumacher¹

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

Discussant: *Stephen Yang, Baltimore, MD

Objectives: Sublobar resection has been proposed as an alternative to lobectomy in the management of stage I NSCLC. In the current study, we analyze the impact of pathologic variables (angio lymphatic invasion, visceral pleural invasion and tumor inflammation) upon survival outcomes following segmentectomy or lobectomy for stage I NSCLC.

Methods: Retrospective review of 524 patients undergoing resection of Stage I NSCLC via either lobectomy (n=285) or anatomic segmentectomy (n=239). Primary outcome variables include recurrence-free and overall survival. Statistical comparisons were performed with the t-test and Fisher’s exact test. Recurrence-free and overall survival was estimated utilizing the Kaplan-Meier method, with statistical significance being assessed by the log rank test.

Results: The incidence of angio lymphatic invasion, visceral pleural invasion and degree of tumor inflammation, as well as morbidity, mortality and length of stay were similar between segmentectomy and lobectomy [Table]. The presence of angio lymphatic invasion or visceral pleural invasion was associated with a significant decrease in recurrence-free (p<0.01) and overall (p<0.01) survival. There was a trend for decreased recurrence with increasing tumor inflammation (mild vs. severe; p=0.066). There was no difference in rates of local recurrence (5.6% vs 7.9%, p=0.59) or survival (p=0.455) between segmentectomy and lobectomy, respectively.

Conclusions: Angio lymphatic and visceral pleural invasion appear to be strong adverse prognostic factors following anatomic resection by segmentectomy or lobectomy for stage I NSCLC. Overall survival is not affected by the extent of anatomical surgical resection. These data may have implications regarding to the role of adjuvant systemic therapy following surgical resection for tumors with these pathologic characteristics.

<table>
<thead>
<tr>
<th></th>
<th>Segmentectomy (n=239)</th>
<th>Lobectomy (n=285)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>69.7</td>
<td>67.8</td>
<td>0.03</td>
</tr>
<tr>
<td>Tumor Size (cm)</td>
<td>2.3</td>
<td>3.0</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Angio lymphatic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invasion</td>
<td>34.7</td>
<td>40.3</td>
<td>0.22</td>
</tr>
<tr>
<td>Visceral Pleural</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Invasion</td>
<td>31.1</td>
<td>30.1</td>
<td>0.84</td>
</tr>
<tr>
<td>Length of Stay (median)</td>
<td>6</td>
<td>6</td>
<td>0.10</td>
</tr>
<tr>
<td>Morbidity (%)</td>
<td>38.1</td>
<td>34.0</td>
<td>0.14</td>
</tr>
<tr>
<td>Mortality (%)</td>
<td>0.4</td>
<td>2.5</td>
<td>0.08</td>
</tr>
<tr>
<td>Recurrence (%)</td>
<td>7.9</td>
<td>5.6</td>
<td>0.59</td>
</tr>
<tr>
<td>2 Year Survival (%)</td>
<td>80</td>
<td>78</td>
<td>0.46</td>
</tr>
</tbody>
</table>

Outcomes Following Segmentectomy and Lobectomy

NOTES
47. ROLE OF A SERUM PROTEOMIC SIGNATURE IN THE
MANAGEMENT OF PULMONARY NODULES

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products, or drugs that are FDA approved for the purposes they are discussing. Authors listed
with a D next to their names have indicated that they have a financial or other relationship with
a healthcare-related business or other entity to disclose.

Authors: Eric L. Grogan¹, Stephen A. Deppen¹, Chad V. Pecot¹, Rama
Rajanbabu¹, Yu Shyr¹, *Joe B. Putnam, Jr.¹, *Eric S. Lambright¹, *Jonathan C.
Nesbitt¹, *Pierre P. Massion¹

Author Institution(s): ¹Vanderbilt University, Nashville, TN, United States

Discussant: *Bryan Meyers, St. Louis, MO

Objectives: Surgery for pulmonary nodules results in a benign diagnosis in
15-40% of cases. Computed tomography(CT) has high sensitivity but poor
specificity. Positron emission tomography(PET) is more accurate but only
80% specific. High risk patients (Age>55, smoke>15pk yrs) for lung cancer
with negative PET scans, or low-risk patients with positive PET scans may
have higher rates of benign nodules. We hypothesized that our published 7
features serum proteomic profile improves diagnostic accuracy by providing
greater specificity.

Methods: 58 patients with pulmonary nodules(<3cm) were prospectively
enrolled. We tested the accuracy of our proteomic signature in the serum by
matrix-assisted laser desorption/ionization time-of-flight mass spectrometry
(MALDI-TOF-MS). Contingency table, sensitivity, and specificity analyses
were calculated for the entire group and in a subset of patients at high-risk for
benign disease.

Results: There were 46(79%) lung cancers and 12(21%) benign lesions. 45
of the nodules were PET-positive. In 36 high-risk patients with PET-positive
lesions 32(89%) had cancer. In the remaining 22 patients (low-risk patients
but PET-positive lesions or patients with PET-negative lesions), 14(64%) had
cancer(p=0.02). Overall accuracy of the proteomic signature was 39.7%. The
sensitivity was 26.1% and specificity was 91.7% (95% CI -61.5%-99.8%). In
the 22-patient subset, all 8 benign nodules were accurately predicted by the
serum signature.

Conclusions: Patients with PET-negative lesions or low risk patients with
PET-positive lesions are at higher risk for benign disease. The specificity
of the serum proteomic may improve the non-invasive evaluation of lung
nodules and reduce surgery for benign disease. Validation of the results in a
larger population is warranted.
48. THE FONTAN OPERATION: THE PURSUIT OF ASSOCIATED LESIONS AND CUMULATIVE TRAUMA

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**Authors:** *Robert Hannan*, Jennifer Zabinsky, Jane Salvaggio, Anthony Rossi, Danyal Khan, Francisco Alonso, Jorge Ojito, David Nykanen, Evan Zahn, *Redmond Burke*

**Author Institution(s):** *Congenital Heart Institute at Miami Children's Hospital, Miami, FL, United States; Congenital Heart Institute at Arnold Palmer Hospital for Children, Orlando, FL, United States*

**Discussant:** Tain Yen Hsia, Charleston, SC

**Objectives:** Our programmatic approach to the Fontan operation has evolved to include using an extracardiac conduit with aggressive presumptive treatment of associated lesions either in the catheterization laboratory or the operating room. Fenestration is used selectively based on hemodynamics, anatomy, and presence of associated lesions. We reviewed our experience to determine the effectiveness and outcome of this strategy, to determine the level of effort needed to achieve these results, and to assess the cumulative trauma to the patients.

**Methods:** The records of 137 consecutive patients who underwent Fontan at Miami Children's Hospital from 1995 to 2008 were reviewed.

**Results:** Results are summarized in the table. At mean follow up of 5.1 years, freedom from death or transplantation is 94.2% (129/137). Of the patients who underwent extracardiac Fontan, circulatory arrest was used in 4.9% (6/123) at the time of Glenn or Fontan, and cardioplegic arrest was used in 42.3% (52/123). Median age at operation was 4.6 years. Longer LOS correlated with older operative age (p=0.0056). Pacemakers were implanted in 11.7% (16/137). Additional (not pre-Glenn or pre-Fontan) interventional catheterizations were performed in 46.0% (63/137). Ablation of arrhythmias was required in 2 patients. Additional operations were done in 10.2% (14/137). No patient has required replacement or revision of the extracardiac conduit.

**Conclusions:** Our current approach to the Fontan operation provides acceptable midterm results. The pursuit of residual lesions results in a significant number of additional interventional catheterizations and operative procedures but may have an important influence on long-term survival after the Fontan procedure.

<table>
<thead>
<tr>
<th></th>
<th>Overall</th>
<th>Fenestrated</th>
<th>Non-Fenestrated</th>
<th>P values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>137</td>
<td>50.4% (69/137)</td>
<td>49.6% (68/137)</td>
<td>--</td>
</tr>
<tr>
<td>Extracardiac Fontan</td>
<td>89.8% (123/137)</td>
<td>44.7% (55/123)</td>
<td>55.3% (68/123)</td>
<td>--</td>
</tr>
<tr>
<td>Intracardiac Lateral Tunnel</td>
<td>10.2% (14/137)</td>
<td>100%</td>
<td>0%</td>
<td>--</td>
</tr>
<tr>
<td>Hospital Mortality</td>
<td>1.5% (2/137)</td>
<td>2.9% (2/69)</td>
<td>0%</td>
<td>N.S.</td>
</tr>
<tr>
<td>Overall Mortality</td>
<td>5.1% (7/137)</td>
<td>4.3% (3/69)</td>
<td>5.9% (4/68)</td>
<td>N.S.</td>
</tr>
<tr>
<td>Median Length of Stay (days)</td>
<td>9</td>
<td>13</td>
<td>9</td>
<td>0.005</td>
</tr>
<tr>
<td>Reinsertion of Chest Tubes</td>
<td>17.5% (24/137)</td>
<td>18.8% (13/69)</td>
<td>16.2% (11/68)</td>
<td>N.S.</td>
</tr>
<tr>
<td>Patients with Cath Interventions (Excluding Collateral Occlusions)</td>
<td>56.2% (77/137)</td>
<td>66.7% (46/69)</td>
<td>45.6% (31/68)</td>
<td>0.021</td>
</tr>
<tr>
<td>Patients with Surgical Interventions</td>
<td>61.3% (84/137)</td>
<td>59.4% (41/69)</td>
<td>63.2% (43/68)</td>
<td>N.S.</td>
</tr>
<tr>
<td>Patients with Hybrid Interventions</td>
<td>5.8% (8/137)</td>
<td>7.2% (5/69)</td>
<td>4.4% (3/68)</td>
<td>N.S.</td>
</tr>
</tbody>
</table>

**Summary of Data**

**NOTES**

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49. A 45-YEAR EXPERIENCE WITH MULTIPLE REOPERATIONS AFTER INITIAL REPAIR OF PARTIAL ATRIOVENTRICAL SEPTAL DEFECT

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Authors: John M Stulak1, Harold M Burkhart1, Joseph A Dearani1, Heidi M Connolly1, Frank Cetta1, Roxann D Barnes1, *Hartzell V Schaff1

Author Institution(s): 1Mayo Clinic College of Medicine, Rochester, MN, United States

Discussant: *Fred Crawford, Charleston, SC

Objectives: Pt undergoing complete repair of partial atrioventricular septal defect (PAVSD) may require reoperation for left atrioventricular valve (LAVV) pathology or subaortic obstruction. Since no large series exist, our objective was to examine reoperations after initial repair of PAVSD and determine late outcome.

Methods: Between 1962 and 2006, 96pt (63 female) underwent reoperation after prior repair of PAVSD (median interval;10 yr, range;8 days-48yr). Median age at initial repair was 1yr (range;55d-64yr) and at first reoperation was 26yr (range;10mo-71yr). Indications for first reoperation included LAVV regurgitation in 64pt, subaortic stenosis in 24, tricuspid valve regurgitation in 21, residual ASD in 11, and other in 6.

Results: The first reoperation included LAVV repair in 38pt and replacement in 35, subaortic fibrous resection/myectomy in 22, tricuspid valve surgery in 19, and other in 14. After LAVV repair, 7pt required a 2nd reoperation for LAVV regurgitation(n=5), LAVV stenosis(n=1) and hemolysis(n=1). After the first LAVV replacement, 6pt required a 2nd reoperation for outgrowth(n=3), paravalvular leak(n=2), and malfunction(n=1). Indications for LAVV replacement at 1st reoperation included dysplastic leaflet tissue in 20pt, severe annular dilatation in 8 and extensive calcification in 7. After the first subaortic resection, 4pt had recurrent LVOTO and required modified Konno procedure. Overall, 128 reoperations were required in these 96pt. There were 5 early deaths (5.2 %) after first reoperation; 3/5 were prior to 1983. At last follow-up (median;5.2 yr, max;34 yr), echocardiography demonstrated less than moderate MR in all but 7pt with a durable repair. Eighty-one out of 89 late survivors were in NYHA functional class I or II.

Conclusions: The most common indication for reoperation after initial repair of PAVSD is LAVV pathology. Complex recurrent LVOTO often requiring more than simple subaortic resection represents another common indication for reoperation. Long term survival and functional outcome are good despite multiple reoperations in some.
50. PERFORMANCE OF SYNERGRAFT DECELLULARIZED PULMONARY HEART VALVE IN PATIENTS UNDERGOING A ROSS PROCEDURE: A SINGLE INSTITUTION EXPERIENCE

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Authors: John W. Brown, Mark Ruzmetov, *Mark D. Rodefeld, *Mark W. Turrentine

Author Institution(s): †Indiana University School of Medicine, Indianapolis, IN, United States

Discussant: †Ross Ungerleider, Cleveland, OH

Objectives: In the Ross procedure a valved conduit is used in place of autotransplanted pulmonary valve. Despite Ross procedure advantages, there is a certain risk of structural valve deterioration, especially of the cryopreserved pulmonary allograft as a result of shrinkage and subsequent stenosis predominantly. This study analyzed our results of the CryoValve Synergraft decellularized pulmonary heart valve (SGDPV) implanted in patients undergoing a Ross procedure.

Methods: Between 2000 and 2008, 27 consecutive patients received a SGPV during the Ross procedure. Patient age ranged from 4 mo to 58 years, mean age at implant was 28.2 years. Retrospective data included reported adverse events and recent hemodynamic results.

Results: There was no operative mortality and late mortality or morbidity during the mean follow-up of 4.1±2.1 years (range, 3 mo to 8 years). No patients required reoperation. The median gradient at discharge was 12 mm Hg, which remained uncharged at last follow-up. No deterioration in conduit or conduit valve dysfunction was noted.

Conclusions: The new SGDPV conduit can be a viable alternative to a cryopreserved homograft in the Ross procedure. The early clinical and hemodynamic results are encouraging. SG technology may provide a more durable, low risk option for those patients needing heart valve replacements.
51. SURGERY FOR ANOMALOUS AORTIC ORIGIN OF THE CORONARY ARTERIES

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Authors: Muhammad Ali Mumtaz1, Richard E. Lorber1, Janine Arruda1, Gosta B. Pettersson2, *Constantine Mavroudis1

Author Institution(s): 1Cleveland Clinic Children’s Hospital, Center for Pediatric and Adult Congenital Heart Diseases, Cleveland, OH, United States; 2Cleveland Clinic, Department of Thoracic and Cardiovascular Surgery, Cleveland, OH, United States

Discussant: *James Jaggers, Durham, NC

Objectives: Anomalous aortic origin of the coronary arteries (AAOCA) has been associated with coronary ischemia, myocardial infarction, and sudden death. Advances in echocardiography (ECHO) and computed tomography (CT) have identified at risk patients. Treatment options include unroofing strategies in symptomatic and asymptomatic patients. We review our experience for efficacy and safety.

Methods: Between 1998 and 2009, we performed coronary unroofing in 22 patients with AAOCA without aortic commissural detachment. In 7 patients with “left from right” AAOCA, 4 had chest pain only, 1 had syncope, 1 had myocardial infarction and 1 was asymptomatic. In 15 patients with “right from left” AAOCA, 11 had chest pain only, 4 had syncope, and none were without symptoms. Median age was 15 years (range, 5 to 42). Eight patients had concomitant procedures, most commonly patent foramen ovale closure.

Results: There were no deaths or complications. Mean cross clamp time was 53 minutes. Mean length of stay was 4 days. Postoperative evaluation included ECHO, CT angiogram, stress thallium, stress ECHO, and exercise stress test. In all patients the repaired coronary was patent with demonstrated flow. Mean follow-up was 17 months (range, 1 to 63 months).

Conclusions: AAOCA is emerging as an identifiable disease entity associated with symptoms or sudden death. We conclude that coronary unroofing is a safe and effective therapy for symptomatic patients. Surgery for asymptomatic patients has been segregated between “left from right” and “right from left” origins. Prospective studies will be required to answer these questions.
52. THE ROSS PROCEDURE PERFORMED FOR AORTIC INSUFFICIENCY IS ASSOCIATED WITH INCREASED AUTOGRAFT REOPERATION

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Authors: *William H. Ryan1, Dan Culica2, Morley A. Herbert3, Syma L. Prince2, *Michael J. Mack3

Author Institution(s): 1Heart Hospital Baylor Plano, Plano, TX, United States; 2Cardiopulmonary Research Science and Technology Institute, Dallas, TX, United States; 3Medical City Dallas Hospital, Dallas, TX, United States

Discussant: D John D. Oswalt, Austin, TX

Objectives: The Ross procedure in infants/children is generally accepted while in adults, it remains controversial. We examined our adult experience for clinical and operative factors that predict autograft reoperation.

Methods: Prospectively collected data of 160 consecutive adults undergoing a miniroot Ross procedure by a single surgeon from 7/1994 through 6/2008 were reviewed. Clinical follow-up was obtained in 159/160 (99.4%) and echo in 149/152 (98%) survivors. Multivariate proportional hazards analysis was employed to determine risk factors for autograft reoperation.

Results: Mean age was 42.0 ± 11.1 years and 73.1% were male. Presenting pathology was aortic insufficiency (AI) in 93 (58.1%) and aortic stenosis (AS) in 67 (41.9%). Annuloplasty was required in 49/93 (52.7%) patients with AI and 12/67 (17.9%) patients with AS (p < 0.001). There were 3 operative mortalities (1.87%) with 2 late cardiac related deaths (1.3%). Kaplan-Meier survival was 96.8 ± 1.6% at 7.5 years. Fifteen patients (9.4%) required reoperation on the autograft root; 14/15 (93.3%) had AI. The time to aortic valve reoperation diverged at 7.5 years; patients with AI required more reoperations. See graph.

Factors predicting increased risk of autograft reoperation included female gender (HR = 7.5; 95% CI 1.3–44.5), aortic dilatation (HR = 6.9; 95% CI 1.3–37.5), a 3-cusp valve (HR = 8.1; 95% CI 1.3–52.5) and annuloplasty (HR = 8.1; 95% CI 1.3–49.9).

Conclusions: The Ross procedure in adults provides excellent freedom from autograft failure in patients operated for AS. Other treatment alternatives should be strongly considered in adults presenting primarily with aortic insufficiency.
53. OUTCOMES OF AORTIC VALVE REPLACEMENT IN HIGH-RISK PATIENTS: IS IT TIME TO SET NEW BENCHMARKS?

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Author Institution(s): 1Emory University, Atlanta, GA, United States; 2University of Virginia, Charlottesville, VA, United States; 3University of Pennsylvania, Philadelphia, PA, United States; 4Medical City Dallas, Dallas, TX, United States

Discussant: Friedrich Mohr, Leipzig, Germany

Objectives: The introduction of transcatheter aortic valves has focused attention on outcomes following open aortic valve replacement (AVR) in very high risk patients. This study analyzes the short- and mid-term outcomes of AVR in this patient cohort in the current surgical era.

Methods: A retrospective review was performed on 159 patients from four US academic institutions who underwent isolated, primary AVR with a STS predicted risk of mortality (PROM) of ≥10% from 1/2002-12/2007. Patients with previous valve surgery were excluded. Multivariable model was constructed to determine predictors of in-hospital mortality. Estimates of the cumulative event rate mortality were calculated by Kaplan-Meier (KM) method.

Results: Mean age was 76.1±11.2 years, most were men (92/159, 57.9%), and the mean STS PROM was 16.3±7.3%. Significant preoperative factors included: peripheral vascular disease 33.3% (53/159), stroke 23.3% (37/159), renal failure 50.3% (80/159), NYHA class 3-4 78% (124/159), and previous CABG 39.0% (62/159). Mean EF was 46.1±15.3% and the most common valve size was 23mm. Postoperative complications included stroke 4.4% (7/159), heart block requiring pacemaker 5.0% (8/159), MSOF 6.9% (11/159), pneumonia 7.5% (12/159), and new renal failure requiring dialysis 8.2% (13/159). Postoperative length of stay was 12.6±11.0 days and in-hospital mortality was 16.4% (26/159). One and 3-year survival by KM analysis was 70.9% and 56.8%, respectively. The only independent predictor for in-hospital mortality was CPB time (HR=1.035, p=0.014).

Conclusions: In the current era, high risk surgical patients undergoing open AVR have acceptable short and mid-term survival. These results should serve as a benchmark for evaluating outcomes of transcatheter aortic valve implantation.
54. PREOPERATIVE FUNCTIONAL TRICUSPID VALVE REGURGITATION PREDICTS LATE ATRIAL FIBRILLATION FOLLOWING MITRAL VALVE SURGERY: SHOULD PROPHYLACTIC MAZE PROCEDURE BE CONSIDERED?

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Authors: John M Stulak1, Rakesh M Suri1, Thomas A Orszulak1, Joseph A Dearani1, *Thoralf M Sundt, III1, Hartzell V Schaff1

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Discussant: *Jennifer Lawton, St. Louis, MO

Objectives: Some pt are at high risk for late atrial fibrillation (AF) after mitral valve surgery, even in the absence of past history of arrhythmias. There are few studies analyzing late incidence of AF and predisposing factors. We examined pt with functional tricuspid regurgitation (TR) undergoing mitral valve repair, and further investigated the impact of tricuspid valve surgery (TVS).

Methods: From March 1995 to December 2005, 573 pt (375 men) with severe MR and concomitant functional TR underwent mitral valve repair. Preoperatively, 498 pt (87%) had trivial or mild TR and 75(13%) had moderate or greater TR. In a post hoc analysis, these endpoints were examined in separate cohort (n=26) of pt with moderate or greater TR undergoing tricuspid valve repair.

Results: Cumulative risk of late AF for all pt was 11% at 5 yr and 23% at 10 yr. The risk of late AF was higher in pt with >mild preop TR compared with pt with <mild TR (23% vs. 9%, p=0.0007). In a multivariable model, the risk of late AF was significantly increased in pt with >mild preop TR (HR 2.3), advancing age (HR 1.04 for each decade increase over 50 years) and diabetes (HR 4.8). Compared to a separate cohort of pt with >mild TR undergoing tricuspid valve repair (n=26), the risk of late AF at 5 yr was not significantly different (TVS: 18% vs. no TVS: 23%, p=0.44).

Conclusions: The incidence of new, late-onset AF following mitral valve repair is significantly increased in pt with greater degrees of preoperative TR, and concomitant tricuspid valve repair does not appear to reduce this risk. In order to effectively avoid morbidity of late AF, mitral valve repair for degenerative disease should be performed before significant functional TR develops. Furthermore, in pt with significant functional TR, the addition of surgical AF ablation may be warranted.
55. REPAIR OF ACUTE TYPE A AORTIC DISSECTION WITH OPEN DISTAL ANASTOMOSIS HAS SIMILAR OUTCOME AS THE CLOSED TECHNIQUE: RESULTS OF 100 PATIENTS

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Authors: Hunaid A Vohra1, Amit Modi1, Theodore Velissaris1, Alicia XF Chia1, Marcus P Haw1, Clifford Barlow1, Sunil K Ohri1, Steve A Livesey1, Geoffrey MK Tsang1

Author Institution(s): 1Wessex Cardiothoracic Centre, Southampton, United Kingdom

Discussant: *John Ikonomidis, Charleston, SC

Objectives: To compare short- and long-term outcomes after open versus closed distal anastomosis for acute type A aortic dissection.

Methods: We reviewed 100 consecutive patients who underwent acute type A aortic dissection repair between January 2000 and June 2008 (64 men; mean age 63±12.2 years). Patients were divided into: Group I- open anastomosis (circulatory arrest; n=59); Group II- closed anastomosis (no circulatory arrest; n=41). Groups were well-matched for 20 peri-operative variables. Aortic valve resuspension/replacement was performed in 77 patients, aortic root replacement (AR) in 29 patients and aortic arch procedures in 31 patients. The median follow-up was 2.8 years (0-8.6 years).

Results: The 30-day mortality was 15.2% (n=9) in group I and 9.8% (n=4) in group II (p=0.3). Post-operatively, there was no difference between the two groups with respect to stroke (p=0.4), sepsis (p=0.7), renal failure (p=0.6), multi-organ failure (p=1) and re-operation (p=0.9). Twenty three variables were analysed to determine the predictors of death and stroke with multiple regression analysis. None of the variables significantly affected death on multivariate analysis. Overall actuarial survival at 1, 3, 5 and 8 years for the group I and group II was 77.8±5.4% vs 90.2±4.6% (p=0.15), 75.8±5.7% vs 86.6±5.7% (p=0.2), 75.8±5.7% vs 86.6±5.7% (p=0.2) and 38.5±17.6% vs 55.8±4.8% (p=0.5), respectively.

Conclusions: There is no significant difference in the short- and long-term outcomes between the open and closed distal anastomosis for acute type A aortic dissection.
56. THORACOSCOPY VERSUS THORACOTOMY FOR PULMONARY METASTASECTOMY

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Authors: Allan Pickens¹, Nicholas Dewyer¹, Lili Zhao¹, Andrew Chang¹, Mark Orringer¹

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

Discussant: D* John Howington, Evanston, IL

Objectives: Video assisted thoracoscopic surgery (VATS) for pulmonary metastasectomy remains a controversial approach. For oncologic purposes, VATS must prove to be equally effective in pulmonary metastasectomy when compared to standard open procedures.

Methods: We performed a retrospective review of all patients who underwent pulmonary metastasectomy from 1995 through 2008. Patients with colorectal and sarcoma metastasis were analyzed. VATS pulmonary metastasectomies were compared with matched open thoracotomy pulmonary metastasectomies. Matched variables included age, gender, cancer type, pulmonary function, and neoadjuvant treatment. Hospital course and complications were compared. Computerized tomography (CT) was used to assess number of pulmonary metastases, resection completeness, and disease free interval (DFI).

Results: Twenty-eight patients underwent 55 operations (26 VATS and 29 thoracotomy metastasectomies). Preoperative CT identified an average 1.9 nodules (range 1-6) before VATS and 1.4 nodules (range 1-3) before thoracotomy. VATS resected an average 2.1 nodules (range 1-8) and thoracotomy resected 1.7 nodules (range 1-7). Complete resection was achieved in 21 (91.3%) of VATS operations and 19 (90.5%) of thoracotomy operations. There was no significant difference in number of nodules resected or completeness of resection (p=0.34 and p=1.0 respectively). Chest tube duration (VATS 2.2 days; thoracotomy 4.1 days) and hospital stay (VATS 2.7 days; thoracotomy 5.2 days) were significantly shorter after VATS resection (p=0.004). Complications occurred after 5 (20.8%) VATS procedures and 4 (16.7%) thoracotomy procedures (p=1.0). No mortalities occurred. There was no difference in the median DFI of 4 months for the VATS patients (95% CI 1.6-10.9) compared to 5 months for the thoracotomy patients (95% CI 2.1-7.9) (p=0.14).

Conclusions: There is no statistical difference in operative morbidity or mortality when VATS pulmonary metastasectomy is compared to thoracotomy pulmonary metastasectomy, but there is significant reduction in hospital stay following VATS. The VATS approach for pulmonary metastasectomy provides an equally efficient resection and DFI compared to the open approach.

* STSA Member  D Relationship Disclosure
FOURTH SCIENTIFIC SESSION A

57. VATS SEGMENTECTOMY: A SAFE AND EFFECTIVE PROCEDURE

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Authors: Bradley G Leshnower¹, *Daniel L Miller¹, Allan Pickens¹, *Seth D Force¹

Author Institution(s): ¹Emory University School of Medicine, Atlanta, GA, United States

Discussant: D*Traves Crabtree, St. Louis, MO

Objectives: Anatomic sublobar resection is currently being assessed as an alternative to lobectomy for primary lung cancers <2cm. Open segmentectomy is a proven oncologic procedure for patients with reduced cardiopulmonary reserve and significant co-morbidities. With the increase use of thoracoscopy, VATS segmentectomy may be as safe and effective as open segmentectomy.

Methods: We performed a retrospective review of patients who underwent a segmentectomy between May 1, 2002 and March 31, 2009 within Emory University Healthcare.

Results: Forty-one patients underwent pulmonary segmentectomy, 26 via thoracotomy and 15 by a VATS approach. Both groups were well matched for age, gender and pre-operative risk factors. Segmentectomy was performed for primary lung cancer in 25(60%) patients. There was no difference in tumor size, number of lymph node (LN) stations sampled or number of LN removed based upon approach. The remaining indications for surgery were metastatic disease in 12 patients and benign disease in 4 patients. All patients underwent R0 resections. There was no significant difference in operative time, but patients undergoing a VATS segmentectomy had significantly reduced chest tube (CT) durations and hospital stays (See Table). Major complications occurred in 19% of patients in the open group and none in the VATS group. There were two operative deaths (4.8%), both in the open group.

Conclusions: VATS segmentectomy is a safe procedure which has fewer complications and a reduced hospital stay when compared to an open segmentectomy. This approach may be the ideal oncologic procedure for patients with small lung cancers (<2cm) and/or limited cardiopulmonary reserve and significant co-morbidities.

<table>
<thead>
<tr>
<th></th>
<th>VATS (n=15)</th>
<th>Open (n=26)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (avg + SD)</td>
<td>65 ± 11</td>
<td>64 ± 15</td>
<td>0.83</td>
</tr>
<tr>
<td>Operative time (mins)</td>
<td>130 ± 57</td>
<td>136 ± 36</td>
<td>0.60</td>
</tr>
<tr>
<td>Tumor size (cm)</td>
<td>2.2 ± 1</td>
<td>2.9 ± 2</td>
<td>0.26</td>
</tr>
<tr>
<td>LN stations sampled (mean)</td>
<td>3 ± 1</td>
<td>3.5 ± 1</td>
<td>0.96</td>
</tr>
<tr>
<td>CT duration (days)</td>
<td>2.8 ± 1</td>
<td>5.1 ± 4</td>
<td>0.02*</td>
</tr>
<tr>
<td>Hospital stay (days)</td>
<td>3.5 ± 1</td>
<td>8.2 ± 6</td>
<td>0.01*</td>
</tr>
<tr>
<td>Mortality (%)</td>
<td>0.4</td>
<td>2.5</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Means: Std Dev.*p<0.05

NOTES

* STSA Member   D Relationship Disclosure

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58. THE 30 VERSUS 90 DAY OPERATIVE MORTALITY AFTER PULMONARY RESECTION

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Authors: Ayesha S Bryant¹, *Robert J Cerfolio¹, Kyle J Rudemiller¹,

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

Discussant: *Frederick Grover, Aurora, CO

Objectives: The 30 day mortality rate after thoracotomy is well known but the 90 day is not and is not part of the STS database.

Methods: A retrospective study of patients who underwent elective thoracotomy including: wedge resection, segmentectomy, lobectomy/bi-lobectomy, pneumonectomy, decortication and empyectomy.

Results: There were 2,384 patients between January 2001 and December 2008. Our overall discharge mortality for lobectomy was (2.3%, the STS database was 1.5%). Our 30-day mortality for lobectomy was 3.2% (STS database 1.5%). Our 90-day mortality rate was 6.7%. For the entire cohort, the discharge mortality was 2.3%, the 30 day mortality was 3.8% and the 90 day mortality was 7.2%. The most common cause of death after discharge in the 30 day mortality was respiratory associated complication (pneumonia or respiratory distress). The most common cause of death between 30 and 90 days was sudden death from cardiac or pulmonary emboli.

Conclusions: A significant number of patients die after discharge within 30 and 90 days of thoracotomy. A prospective database with calls to patients and families is required to accurately obtain this information and the incidence of both may be underestimated. The STS database should consider adding 90-day mortality to their data collection.
FOURTH SCIENTIFIC SESSION A

59. SURGICAL MANAGEMENT OF SUPERIOR SULCUS NON-SMALL CELL LUNG CARCINOMA: A RETROSPECTIVE REVIEW OF A SINGLE INSTITUTION EXPERIENCE WITH LONG-TERM FOLLOW-UP

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Authors: Domenico Galetta¹, Piergiorgio Solli¹, Francesco Petrella¹, Alessandro Borri¹, Roberto Gasparri¹, Lorenzo Spaggiari¹

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

Discussant: ²Harold Urschel, Dallas, TX

Objectives: We reviewed our experience with the surgical treatment for superior sulcus non-small cell lung cancer (NSCLC) to identify factors that impact survival.

Methods: We retrospectively analyzed the records of 90 consecutive patients who underwent surgical resection in a single institution between 1995 and 2008.

Results: Median age at presentation was 63 years (range, 39 to 80). Eighty patients (89%) were men. Forty-three patients (48%) received induction therapy. Resection was performed by anterior (48%) or posterior (52%) approach according to tumor localization. A lobectomy was performed in 69 cases (77%) and a wedge resection in 21 (33%). Extended resection (vertebral or vascular) was performed in 27 patients (30%). Resection was complete in 81 patients (90%). Complete pathological response to the treatment was recorded in 11 patients (11%). There were 2 (2.2%) postoperative deaths. Major postoperative complication rate was 24% including respiratory complications in 13 cases, neurological in 3, tracheal fistula, emithorax and chilothorax in 2 cases, respectively. Overall 5-year survival was 32.3%. Independently, T (p=0.02) and N (p=0.0004) status, histology (p=0.03), dimension inferior to 6 cm (p=0.01), posterior tumor localization (p=0.0004), and number of resected ribs (p=0.0002) were predictors of overall survival. Multivariable analysis identified N status, tumor localization and number of resected ribs as factors significantly associated with overall survival. Pre- and postoperative treatment, extended resection and complete pathological response did not correlate with survival.

Conclusions: The optimal treatment for superior sulcus NSCLC is complete surgical resection. Induction treatment may downstage tumor enhancing the ability to obtain a complete surgical resection, and prolong survival.
60. DONOR HYPOXIA IS ASSOCIATED WITH DEVELOPMENT OF BRONCHIOLITIS OBLITERANS FOLLOWING LUNG TRANSPLANTATION

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Authors: Sara A. Hennessy¹, Brian R. Swenson¹, Benjamin D. Kozower¹, #David R. Jones¹, #Gorav Ailawadi¹, #Christine L. Lau¹, #Irving L. Kron¹

Author Institution(s): ¹Department of Surgery, University of Virginia, Charlottesville, VA, United States

Discussant: *G. Alexander Patterson, St. Louis, MO

Objectives: Bronchiolitis obliterans syndrome (BOS) is a major cause for the 50% five-year survival following lung transplantation. While some recipient and peri-operative risk factors are suspected for BOS, reperfusion injury related to the donor has recently been incriminated. We hypothesized that donor factors are important for BOS-free survival.

Methods: We performed a retrospective review of the United Network for Organ Sharing (UNOS) lung transplant database from 1987 to May 2008. Transplant recipients had yearly follow-up. Donor factors were evaluated for their influence on BOS-free survival. Kaplan-Meier plots of BOS-free survival were compared for each donor factor using log-rank test; these differences were then quantified with the Cox proportional hazard test.

Results: A total of 17,222 lung transplant recipients were identified, with 57% (9,816 recipients) incidence of BOS for those patients surviving 5 years. Recipients that receive lungs from female donors and donors who were not current smokers, without a history of myocardial infarction or with more immunologic similarity to their recipients had longer BOS-free survival (Table 1). Recipients who received lungs with higher partial pressures of oxygen in arterial blood (PaO2) developed more BOS (p=0.0017).

Conclusions: Higher PaO2 in the donor correlates to the development of BOS in lung transplant recipients. Further investigation into donor ventilator management is needed. The mechanism may be related to increased release of oxygen free radicals and subclinical lung injury. Studies to define the role of these donor factors in the development of BOS may improve the overall survival following lung transplantation.

<table>
<thead>
<tr>
<th>Donor Factors</th>
<th>Hazard Ratio</th>
<th>Recipients with BOS at 5 years without donor factor</th>
<th>Recipients with BOS at 5 years with donor factor</th>
<th>P value†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Smokers</td>
<td>1.15</td>
<td>903 (46.2%)</td>
<td>751 (53.2%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Living Donor</td>
<td>0.61</td>
<td>3945 (57.3%)</td>
<td>39 (36.5%)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Female Gender</td>
<td>0.94</td>
<td>2544 (57.9%)</td>
<td>1440 (55.4%)</td>
<td>0.038</td>
</tr>
<tr>
<td>HLA Mismatch</td>
<td>1.05*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Locus Mismatch</td>
<td>1.10*</td>
<td></td>
<td></td>
<td>0.0009</td>
</tr>
<tr>
<td>Prior Myocardial Infarction</td>
<td>1.59</td>
<td>3566 (56.8%)</td>
<td>50 (80.7%)</td>
<td>0.0007</td>
</tr>
<tr>
<td>PaO2 &gt; 75th percentile on</td>
<td>1.14</td>
<td>3404 (55.5%)</td>
<td>580 (67.7%)</td>
<td>0.0017</td>
</tr>
<tr>
<td>100% FiO2 (599mmHg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Per mismatch locus
† Significance p<0.05

Table 1: Donor factors associated with BOS free survival after lung transplantation

NOTES
61. LESSONS LEARNED FROM 100 CONSECUTIVE PEDIATRIC CARDIAC TRANSPLANTS

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Authors: D*Jeffrey Phillip Jacobs1, Alfred Asante-Korang2, Sean M. O’Brien3, Jennifer Carapelli4, *Paul J. Chai5, Dien Vu6, Jorge McCormack7, Robert Joseph Boucek Jr1, David S. Cooper1, Albert Saltiel1, *James Anthony Quintessenza1

Author Institution(s): 1The Congenital Heart Institute of Florida (CHIF) - All Children’s Hospital, Saint Petersburg, FL, United States; 2Duke University Medical Center, Durham, NC, United States

Discussant: *Kristine Guleserian, Dallas, TX

Objectives: We reviewed our first 100 heart transplants.

Methods: We performed our first heart transplant on June 19, 1995. One hundred consecutive pediatric heart transplants have been performed (14 neonates, 57 infants; age [days]: median = 148.5, range = 5 - 7125; weight [kilograms]: median = 5.8, range = 2.2 - 113) in the following 5 diagnostic subgroups:

Cardiomyopathy (n=25), Primary transplantation for HLHS or HLHS Related Malformation (n=27), Transplantation status post prior cardiac surgery for HLHS or HLHS Related Malformation (n=9), Complex congenital heart disease (n=34), and Retransplant (n=5).

Several patients were in potentially high risk subgroups:

High Panel Reactive Antibody (PRA) (n=14), Preoperative mechanical circulatory support (n=14), Postoperative mechanical circulatory support (n=6).

Results: Operative mortality was 13/100. Late mortality was 15/100. Seventy-two patients are alive today with a median follow-up of 5.9 years (range = 0.12 to 12.82 years, total follow-up = 590.68 years.)

No difference in survival was seen between the 5 diagnostic subgroups (p=0.34).

Univariate association between patient risk factors and survival was assessed for the following variables:

- Infant (p=0.9719)
- Age (p=0.8923)
- Insurance type (p=0.7960)
- Weight (p=0.7026)
- Gender (p=0.6779)
- Cardiomyopathy (p=0.5979)
- Redo sternotomy (p=0.3177)
- Neonate (p=0.2927)
- Race (p=0.2586)
- Heterotaxy (p=0.1793)
- High PRA (p=0.1202)
- CPB time (p=0.0509)
- Preoperative mechanical circulatory support (p=0.0465)
- Donor heart cross-clamp time (p=0.0266)
- Postoperative mechanical circulatory support (p=0.0012)

Conclusions: Excellent results can be expected for children undergoing cardiac transplantation regardless of their diagnostic classification. Preoperative mechanical circulatory support, postoperative mechanical circulatory support and donor heart crossclamp time are risk factors for decreased survival.

NOTES
POST-LUNG TRANSPLANTATION FOR HIGH-RISK RECIPIENTS IS SUPERIOR AT HIGH VOLUME CENTERS

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**Authors:** Mark J Russo, Kimberly N Hong, Ryan Davies, Alexander Iribarne, Matthew Bacchetta, Annetine Gelijns, Frank D'Ovidio, Selim Selim Arcasoy, Joshua Sonett

**Author Institution(s):** 1Columbia University Medical Center - Division of Cardiothoracic Surgery, New York, NY, United States; 2Department of Health Policy, Mount Sinai School of Medicine, New York, NY, United States

**Discussant:** *Benjamin Kozower, Charlottesville, VA

**Objectives:** (1) To determine the relationship between post-lung transplant outcomes and center experience; (2) to identify center volume strata associated with survival differences; and (3) to describe differences in recipient composition and outcomes by center volume.

**Methods:** UNOS provided de-identified patient-level data. Analysis included lung transplant recipients aged ≥12yo and transplanted 1/1/99 - 12/31/06 (n=8,559). Center volume was defined as the mean number of recipients transplanted annually at a given center. The primary outcome was post-lung transplant graft survival at 1 yr (PTGS1Y). Other outcomes included infection (INFX), stroke (STR), and dialysis (DIAL) during the transplant hospitalization and primary graft failure at 30 days (PGF). Multivariable regression analysis was used to determine the relationship between center volume and outcome measures. Receiver-operating characteristic curves and stratum-specific likelihood ratios (SSLR) were generated to determine 1yr survival at center volume thresholds. Using our previously described risk stratification score, recipients were stratified--into low, moderate, elevated, and high (HR) risk.

**Results:** In multivariable regression analysis, center volume was associated with PTGS1Y (OR=0.988, 0.983-0.993, p<0.001), INFX (0.987-0.981-0.992; p<0.001), DIAL (0.987, 0.978-0.996; p=0.004), and PGF (0.982, 0.964-0.999; p=0.048). In threshold analysis, 3 risk strata were identified: LOW (< 5.375 recipients/yr), MOD (5.375-18.5), and HIGH (>18.5) with SSLRs of 1.85 (1.50-2.29), 1.24 (1.15-1.34), 0.85 (0.81-0.89). There was a trend towards a higher percentage of HR recipients at LOW volume centers (9.06%) compared with MOD (6.60%, p=0.082) and HIGH (6.02%, p=0.072). Compared with both LOW and MOD, PTGS1Y at HIGH was significantly better in all recipient risk strata; in the HR group, graft failure at 1 yr was 2.36-fold higher at LOW compared with HIGH (p<0.001).

**Conclusions:** Increasing center volume is associated with superior outcomes. Given these findings, we speculate that superior outcomes in lung transplantation could be achieved by concentrating referrals to centers with more experience, especially when transplanting HR recipients.
63. DONOR AGE IS ASSOCIATED WITH LATE CORONARY ARTERY DISEASE FOLLOWING HEART TRANSPLANTATION: IMPLICATIONS FOR DONOR ALLOCATION

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Author Institution(s): 1Department of Surgery, University of Virginia, Charlottesville, VA, United States; 2Department of Medicine, University of Virginia, Charlottesville, VA, United States

Discussant: *John Conte, Baltimore, MD

Objectives: Chronic allograft vasculopathy, or the late development of coronary artery disease (CAD), is a major cause for the long-term complications and mortality following heart transplantation. Some patients never develop chronic rejection and maintain excellent heart function long-term. We hypothesized that donor factors may contribute to CAD following heart transplantation.

Methods: We performed a review of the United Network for Organ Sharing heart transplant database from August 1987 to March 2008. Using Kaplan-Meier analysis and the log-rank test, donor factors were evaluated for their influence on 10-year survival with and without CAD. Significant factors were entered into a logistic regression model for predictors of CAD-free survival. Donor and recipient populations were separated into quartiles to analyze for age-matched factors.

Results: Of 11,444 patients who survived 10 years, a total of 4,266 (37.3%) developed CAD. Multivariate analysis demonstrated five donor factors as independent predictors of late CAD in patients 10-years post-transplant (Table 1). Older donor age (>59 years) highly correlated with late development of CAD when compared to younger donor age (<38 years). In young recipients (<38 years), the risk of CAD at 10 years is markedly higher using older donors compared to younger donors (RR=2.64, 95%CI [2.23–3.12], P<0.05). However, in older recipients (>59 years), the risk of CAD is only marginally higher using older donors compared to younger donors (RR=1.08, 95%CI [1.08–1.47], P<0.05).

Conclusions: These findings suggest that older donor age is associated with chronic rejection and development of CAD. Avoiding the use of older donors especially in stable young recipients should be considered.

<table>
<thead>
<tr>
<th>Donor Age (yrs)</th>
<th>Odds Ratio</th>
<th>95% CI of Odds Ratio</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-9.9</td>
<td>0.61</td>
<td>1.11–2.44</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>10-19.9</td>
<td>0.92</td>
<td>0.90–1.32</td>
<td></td>
</tr>
<tr>
<td>20-29.9</td>
<td>1.0*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-39.9</td>
<td>1.25</td>
<td>0.65–0.99</td>
<td></td>
</tr>
<tr>
<td>40-49.9</td>
<td>1.78</td>
<td>0.47–0.74</td>
<td></td>
</tr>
<tr>
<td>50-59.9</td>
<td>2.27</td>
<td>0.32–6.60</td>
<td></td>
</tr>
<tr>
<td>60-69.9</td>
<td>2.27</td>
<td>0.21–0.90</td>
<td></td>
</tr>
</tbody>
</table>

* Reference group
† Per kilogram

Table 1

NOTES
64. REPLACEMENT OF THE AORTIC VALVE: COMPARISON OF MATCHED PORT ACCESS AND STERNOTOMY COHORTS

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 names have indicated that they have a financial or other relationship with a healthcare-related business or other entity to disclose.

Authors: William T. Brinkman1, DWilliam H Ryan2, Todd M. Dewey3,  
Michael J. Mack1, Dan Culica3, Syma L. Prince3, Morley A. Herbert3

Author Institution(s): 1Heart Hospital Baylor Plano, Plano, TX, United States;  
2Texas Heart Presbyterian Hospital Dallas, Dallas, TX, United States; 3Medical City Dallas Hospital, Dallas, TX, United States; 4Cardiopulmonary Research Science and Technology Institute, Dallas, TX, United States

Discussant: *Thoralf Sundt, Rochester, NY

Objectives: During the past 30 years surgery to replace aortic valves through a sternotomy has improved, leading to declining morbidity and mortality. In the past decade, minimally invasive approaches have been developed that enhance cosmesis, reduce recovery time and improve patient satisfaction. We reviewed our data to determine if the use of port-access techniques has improved hospital morbidity and mortality, compared with conventional surgery.

Methods: Data was extracted from our STS certified, audited database on 84 patients who had no history of previous valve or coronary artery surgery, and had a replacement of the aortic valve using port access procedures -femoral cannulation, percutaneous retrograde cardioplegia and endoballoon aortic occlusion with a 4-5 cm thoracotomy approach. In this group, 78 patients could be matched 1:1, for the same time frame, by age, NYHA class, presence of hypertension and heart failure and degree of chronic lung disease to a control group having aortic valve replacement surgery using a standard sternotomy approach. Categorical variables were analyzed with chi-squared statistics; highly skewed continuous variables were analyzed using a non-parametric test (Kruskal-Wallis).

Operative and 30 day outcomes were measured.

Results: Table 1 compares the matched Port Access and Sternotomy groups. No other morbidity was significantly different between groups.

Conclusions: In this analysis of matched patients, the patients having aortic valve replacement using Port Access procedures, had reduced mortality, spent a shorter time in the ICU and had less need for post-op ventilator usage (both number of patients using a ventilator and the mean time of use).

<table>
<thead>
<tr>
<th></th>
<th>Sternotomy</th>
<th>Port Access</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOS (days)</td>
<td>8.4 ± 9.1</td>
<td>6.9 ± 4.3</td>
<td>0.229</td>
</tr>
<tr>
<td>* (median 6)</td>
<td></td>
<td>(median 5)</td>
<td></td>
</tr>
<tr>
<td>Mortality</td>
<td>5.1% (4/78)</td>
<td>0</td>
<td>0.043</td>
</tr>
<tr>
<td>Re-op Bleeding</td>
<td>6.7% (5/75)</td>
<td>8.1% (6/74)</td>
<td>0.765</td>
</tr>
<tr>
<td>Required Postop Ventilation</td>
<td>80.5% (62/77)</td>
<td>50.7% (38/75)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mean Vent Time (hours)</td>
<td>16.4 ± 35.1 (median 6)</td>
<td>9.3 ± 27.0 (median 1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Readmit within 30 days</td>
<td>11.1% (8/72)</td>
<td>5.2% (3/58)</td>
<td>0.344</td>
</tr>
<tr>
<td>ICU LOS (hours)</td>
<td>64.5 ± 69.6 (median 36)</td>
<td>40.3 ± 34.4 (median 25)</td>
<td>0.034</td>
</tr>
</tbody>
</table>

NOTES

* STSA Member    D Relationship Disclosure
65. IMPROVED LONG-TERM OUTCOME WITH CHEMORADIOThERAPY STRATEGIES IN LOCOREGIONALLY ADVANCED ESOPHAGEAL CANCER

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Authors: D*Stephen G Swisher1, *Wayne L Hofstetter1, Ritsuko Komaki1, Arlene M Correa1, Jeremy Erasmus1, Zhonxing Liao1, Jeffrey H Lee1, Dipen M Marul1, *Reza J Mehran1, Shital Patel1, Alexandria Phan1, *David C Rice1, *Jack A Roth1, *Ara A Vaporiyan1, *Garrett L Walsh1, Jaffer A Ajani1

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

Discussant: Richard Freeman, Indianapolis, IN

Objectives: Controversy currently exists between Europe and North America about the best preoperative treatment platform for locoregionally advanced esophageal cancer (ie preoperative C/RT or preoperative C). We therefore reviewed sequential Phase II/III trials performed at a single institution to assess the impact of preop C (Grp A) vs preop C/RT (Grp B) strategies.

Methods: 157 esophageal cancer patients were sequentially enrolled on Phase II/III trials from March 27, 1990 to March 8, 2005. The treatment approaches included (Grp A, preop C, n=76, INT 113 and ID90-01; Grp B, preop C/RT, n=81, ID96-189 and DM98-349). Analysis was by intention to treat with a primary endpoint of overall and disease free survival.

Results: Adenocarcinoma predominated (85%), with cT3 (73%) and cN1 (43%). No significant difference was noted between groups in demographics or perioperative mortality. Preop C/RT (Grp B) demonstrated increased path CR (28% vs 4%, p<0.001) and overall survival (3yr: 48% vs 29%, p =0.04). Preop CRT was a significant independent predictor of improved overall (HR: 0.52, 95% CI: 0.35-0.78, p=0.002) and disease free survival (HR: 0.38, 95% CI: 0.23-0.60, p=0.06) in multivariable regression.

Conclusions: In sequential Phase II/III trials in locoregionally advanced esophageal cancer, preop C/RT (Grp B) was associated with improved overall and disease free survival rates (p=0.04, p=0.02) and increased path CR (p<0.001) compared to preop C (Grp A).
66. OUTCOME OF SURGICAL AND CATHETER ABLATION TO TREAT ATRIAL FIBRILLATION

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Authors: Linda Henry¹, Henry Tran¹, Ted Freighling¹, Sarfaz A. Durrani¹, Marc Wish¹, Margaret Bell¹, Albert Del Negro¹, D Niv Ad¹

Author Institution(s): 'Inova Heart and Vascular Institute, Falls Church, VA, United States

Discussant: Mark Groh, Asheville, NC

Objectives: Surgical ablation for atrial fibrillation (AF) is associated with early and late atrial arrhythmias. While the early arrhythmias may be controlled with conventional treatment, late arrhythmias are highly symptomatic and hard to control with antiarrhythmic drugs and cardioversion. This study explores a single center experience with catheter ablation to treat late failures (>3 months) following surgery.

Methods: This is a prospective study following all patients who had surgical treatment for AF as a stand alone or concomitant with other procedures by multiple surgeons. All patients were followed according to the HRS guidelines at 3, 6, 9, 12, 18 and 24 months post operatively.

Results: From January 2005 to present, 324 consecutive patients were enrolled. The overall success rate was 83% and 85% at 12 and 24 months respectively. Fifteen patients (5%) were referred for electrophysiology study following the surgical procedure (14 Full Maze, 1 pulmonary vein isolation). The average age was 60.2 (±14.0) years; the mean left atrium size was 5.1 (± .69) cm; the mean time to ablation was 15.2 (± 8.3) months. In 14 patients radiofrequency ablation (RFA) was applied to treat atrial arrhythmia: 11 right atrial flutter, 5 left atrial flutter, 1 bi atrial flutter, and 1 left atrial tachycardia. In one patient non-inducible ventricular tachycardia was assessed and no catheter RFA was applied. Mean follow-up post ablation was 9.6 (± 7.8) months: 14 of the 15 patients were in sinus rhythm with 50% off anti-arrhythmics drugs; 9 patients remained on warfarin. There was 1 late non-cardiac death and no late strokes.

Conclusions: Following the surgical correction for AF, highly symptomatic atrial arrhythmias are not uncommon. If needed catheter ablation is a safe and effective intervention. A very high success rate should be expected when combining the two modalities of treatment, catheter and surgical ablation for atrial fibrillation.
67. UPDATE ON GRADUATING RESIDENT EMPLOYMENT:
A COMPARISON OF THE TSRA 2007-08 RESIDENT JOB
SURVEYS TO THE 2006 STS TASK FORCE ON JOB
OPPORTUNITIES REPORT

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 names have indicated that they have a financial or other relationship with
a healthcare-related business or other entity to disclose.

Authors: David Tom Cooke¹, Faraz Kerendi², Brett A Mettler³, Daniel J
Boffa¹, John R Mehall⁴, *Walter H Merrill⁵, *Robert S.D. Higgins⁶

Author Institution(s): ¹University of California, Davis Medical Center, Sacramento,
CA, United States; ²Emory University, Atlanta, GA, United States; ³University of
Virginia, Charlottesville, VA, United States; ⁴Yale School of Medicine, New Haven,
CT, United States; ⁵Penrose Hospital, Colorado Springs, CO, United States;
⁶University of Mississippi, Jackson, MS, United States; ⁷Rush Presbyterian St. Lukes’
Medical Center, Chicago, IL, United States

Discussant: Edward Verrier, Seattle, WA

Objectives: Concerns regarding ample employment opportunities for
graduating cardiothoracic (CT) surgery residents may affect perceptions of
the field, and recruitment into residency programs. We present the results
of the Thoracic Surgery Residents Association/Thoracic Surgery Directors
Association (TSRA/TSDA) 2008 resident survey, and compare them to
the 2007 TSRA/TSDA survey and the 2006 interim report of the Society of
Thoracic Surgeons (STS) Taskforce on Job Opportunities.

Methods: In April 2008, the TSRA/TSDA conducted an anonymous survey,
linked to the CT surgery resident online in-training exam, with questions
germane to resident job seeking and perceptions of the specialty. Results
were compared to resident surveys from 2007 and 2006.

Results: Response rates for the 2008 and 2007 surveys were 100%, and
54.7% for 2006. Of graduating residents looking for employment, 61.6% had
one or more job offers, compared to 64.7% and 77% from the 2007 and 2006
surveys respectively. Of the respondents completing their job search, 24.5% entered private practice and 26.3% academia, compared to 12.1% and 30.1%
respectively in the 2007 survey. 57.7% of all respondents had >$100,000
education related debt, compared to 54.2% of 2007 respondents. 19.9% of all
2008 respondents would not recommend CT surgery to a potential trainee,
compared to 32.9% and 54.0% from 2007 and 2006 survey respondents
respectively.

Conclusions: The 2008 survey suggests that while the majority of
respondents found employment, the percentage is less than 65%, reinforcing
a need for formal networking programs. Despite continued limited
employment opportunities, resident impressions of CT surgery have
improved from 2006 to 2008.
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- All coffee breaks scheduled during show hours are in the exhibit area
- Complimentary coffee and pastries will be served
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(as amended November 10, 2006)

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 three (3) categories of members: Active, Senior and Honorary Member. Members shall be composed of 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. 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 area that is provided for in SECTION 2, they may retain their 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 Members do not have voting privileges, nor shall they hold office.

SECTION 2. Applicants. An applicant for active membership must at the time of acceptance reside, or have previously practiced cardiothoracic surgery for at least two consecutive years, or have completed a thoracic residency program in one of the following states or regions: Alabama; Arkansas; Florida; Georgia; Kentucky; Louisiana; Maryland; Mississippi; Missouri; North Carolina; Oklahoma; South Carolina; Tennessee; Texas; Virginia; West Virginia; District of Columbia; the U.S. territories and commonwealths in the Caribbean. An applicant for active membership must be certified by the...
Constitution and By-Laws

American Board of Thoracic Surgery (ABTS). Applicants whose training has been in countries other than the United States of America, and who are certified as proficient in thoracic and cardiovascular surgery by appropriate authorities in their home country, may apply. Seventy-five percent of the practice of the applicant must be devoted to the field of thoracic and cardiovascular surgery, which may include research and peripheral vascular surgery. If an applicant is unsuccessful in obtaining membership in two successive years, an interval of two years must elapse before he/she may reapply. The Membership Committee and the Council may recommend acceptance of foreign training and certification by stating that, in their opinion, it represents equivalent status. Applicants so approved by the Membership Committee and the Council may become active members upon election by the membership at an annual meeting.

Active status will not become effective, nor a certificate of membership presented, until such elected applicant registers at one of the next four annual meetings following his/her initial election to membership. Exception for this requirement may be granted by a majority vote of the Council. Failure to comply with this procedure will require reapplication for membership.

SECTION 3. Applications. Application forms for active membership are available from the Secretary-Treasurer and are forwarded to the Chairman of the Membership Committee for verification. Applications will be verified by the Membership Committee in accordance with the policies and procedures established by the Council.

SECTION 4. Certificates. The Council shall issue a Certificate of the Association evidencing the member’s admission to the Association and indicating membership status. These certificates remain the sole property of the Association and shall be surrendered upon written demand and/or for non-payment of dues.

SECTION 5. Resignation. Members may resign from the Association at any time by giving written notice to the Secretary-Treasurer of the Association. Such resignation shall not relieve the member of any obligation for dues, assessments or other charges previously accrued and unpaid. Membership is not transferable or assignable.

SECTION 6. Termination of Membership. The Council, by affirmative vote of two-thirds of all Council members present and voting at any duly constituted meeting of the Council, may suspend or expel a member for cause after an appropriate hearing in accordance with policies and procedures established by the Council. The Council, by affirmative vote of a majority of all Council members present and voting at any duly constituted meeting of the Council may terminate the membership of any member who has become ineligible for membership in accordance with the policies and procedures established by the Council.

SECTION 7. Application for Reinstatement. Any former members of the Association may apply for reinstatement through the regular application procedure.

ARTICLE V: DUES AND ASSESSMENTS

The initiation and annual dues for each category of member of the Association, the time for paying such dues, and other assessments, if any, shall be determined by the Council. Annual dues are not refundable.

ARTICLE VI: MEETING OF MEMBERS

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 by, 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 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 accede 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 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 record 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.

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
CONSTITUTION AND BY-LAWS

the Association, shall not be indemnifiable unless there exists a bonafide 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.
Michael Mack; President, Program Committee, Moderator
Financial Disclosure: Consultant: Edwards Lifesciences, Medtronic, Maquet; Advisory Board: CardiAQ

John Hammon; Council Chair, Program Committee, Moderator
Financial Disclosure: Nothing to Disclose

Keith Naunheim; President Elect, Moderator
Financial Disclosure: Nothing to Disclose

Robert Cerfolio; Secretary/Treasurer, Program Committee, Moderator
Financial Disclosure: Speaker Board: E Plus Healthcare; Speaker and Consultant: Ethicon, Millicore, Medela, Atrium; Consultant: NeoMend, Closure; Speaker: Deknatel, OSI Pharmaceuticals, Oncotech, Covidien

Walter Merrill; Director of CME, Program Committee, PostGraduate Committee, Moderator
Financial Disclosure: Nothing to Disclose

Vinod Thourani; Program Committee, Director Elect of CME, Moderator
Financial Disclosure: Speaker & Research Grants: Maquet, Edwards Lifesciences, Medtronic Cardiovascular; Speaker: St. Jude Medical, Sorin

Daniel Miller; Councilor
Financial Disclosure: Scientific Advisor: Ethicon Endosurgery Inc, Synovis Inc, Neo Medical Inc; Speakers Bureau: Power Medical Inc.

David Jones; Councilor, Moderator
Financial Disclosure: Consultant: Covidien Inc; Research Support, Millennium Inc, Merck Inc.

Jeffrey Jacobs; Councilor
Financial Disclosure: Shareholder and Medical Advisor: CardioAccess; Grant Recipient: Children’s Heart Foundation

Joe Putnam, Jr.; Representative, Board of Governors of ACS, Moderator
Financial Disclosure: Consultant: Cardinal Health; Advisory Board: Genentech

Bryan Meyers; Program Committee, Moderator
Financial Disclosure: Consultant: Ethicon Endosurgery Inc.

John Ikonomidis; Program Committee, Moderator
Financial Disclosure: Nothing to Disclose

Michael Hines; Program Committee, Moderator
Financial Disclosure: Nothing to Disclose

William Ryan; Program Committee, Moderator
Financial Disclosure: Nothing to Disclose

Rodney Landreneau; Program Committee, Moderator
Financial Disclosure: Nothing to Disclose

Mark Krasna; PostGraduate Committee, Moderator
Financial Disclosure: Nothing to Disclose
RELATIONSHIP DISCLOSURE INDEX

Ara Vaportciyan; PostGraduate Committee, Moderator
Financial Disclosure: Nothing to Disclose

Jennifer Lawton; PostGraduate Committee, Moderator
Financial Disclosure: Nothing to Disclose

William Holman; PostGraduate Committee
Financial Disclosure: Nothing to Disclose

Eric Mendeloff; PostGraduate Committee, Moderator
Financial Disclosure: Nothing to Disclose

Richard Feins; PostGraduate Committee
Financial Disclosure: Nothing to Disclose

Mark Moon; Moderator
Financial Disclosure: Nothing to Disclose

Peter K Smith; Moderator
Financial Disclosure: Nothing to Disclose

Robert Sade; Moderator
Financial Disclosure: Nothing to Disclose

John Conte; Moderator
Financial Disclosure: Nothing to Disclose

FINANCIAL DISCLOSURE STATEMENTS OF STAFF

Nancy Puckett; Executive Director
Financial Disclosure: Nothing to Disclose

Katie Bochenek; Affiliate Manager
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 4, 2009

SURGICAL MOTION PICTURES

Moderator

Vinod Thourani – Research Grant: Maquet, Edwards Lifesciences, Medtronic Inc; Speakers Bureau/Honoraria: Maquet, Edwards Lifesciences, Medtronic Inc, St. Jude Medical, Sorin

3V. Mitral Valve Repair for Rheumatic Disease

J. Scott Rankin – Consultant: Biostable Science and Engineering

7V. Minimally Invasive Ivor Lewis Esophagectomy with Linear Non Eea Anastomosis

Joshua Sonnett – Consultant: Covidean

POSTGRADUATE PROGRAM

Moderator

Vinod Thourani – Research Grant: Maquet, Edwards Lifesciences, Medtronic Inc; Speakers Bureau/Honoraria: Maquet, Edwards Lifesciences, Medtronic Inc, St. Jude Medical, Sorin

POSTGRADUATE ADULT CARDIAC BREAKOUT

Atrial Fibrillation; Surgical Approaches and Results

Vigneshwar Kasirajan - Research Grant: Atricure; Speaker Bureau/ Honoraria: Atricure; Consultant/Advisory Board: Atricure

POSTGRADUATE GENERAL THORACIC BREAKOUT

Early Stage Lung Cancer - Adjuvant Therapy

Thomas D’Amico - Speakers Bureau/Honoraria: Covidien; Consultant/ Advisory Board: Scanlan Instruments
RELATIONSHIP DISCLOSURE INDEX

POSTGRADUATE PRO/CON DEBATES

Endoscopic Vein Harvest is Superior to Saphenous Vein Harvest
Vinod Thourani - Research Grant: Maquet; Speakers Bureau/Honoraria: Medtronic, Maquet

Lung Cancer Screening Benefits Outweigh Harms
Robert Cerfolio - Speaker Board: E Plus Healthcare; Speaker and Consultant: Ethicon, Millicore, Medela, Atrium; Consultant: NeoMend, Closure; Speaker: Deknatel, OSI Pharmaceuticals, Oncotech, Covidien
Reginald Munden - Research Grant: ACRIN/NCI

Moderate Mitral Regurgitation Should Always be Addressed at the Time of CAB
Irving Kron - Consultant: St. Jude Medical, Edwards
Kevin Accola - Speakers Bureau/Consultant: Edwards LifeSciences

FIRST SCIENTIFIC SESSION A

Moderators
Michael Mack – Consultant/Advisory Board: Edwards Lifesciences, Medtronic, Maquet
Robert Cerfolio – Speaker Board: E Plus Healthcare; Speaker and Consultant: Ethicon, Millicore, Medela, Atrium; Consultant: NeoMend, Closure; Speaker: Deknatel, OSI Pharmaceuticals, Oncotech, Covidien

1. The Impact of Donor - Recipient Race Matching on Survival Following Orthotopic Heart Transplantation - An Analysis of Over 20,000 Patients
Jeremiah G. Allen - Educational Grant: St. Jude Medical
Eric Weiss – Research Grant: St. Jude Medical
Stuart Russell – Consultant and Research Grant: Thoratec, Corp; Investigator in the HeartMate II Pivotal Clinical Trial
Ashish Shah – Investigator in the HeartMate II Pivotal Clinical Trial
John Conte – Consultant: Thoratec, Corp; Research Grant: Thoratec, Corp., Abiomed, Inc

3. Differential Temporal Cytokine and Proteolytic Profiles in Children Following Cardiopulmonary Bypass Using Serine Protease Inhibition or Lysine Analogues
Content describes the off-label use of Aprotinin and tranexamic acid use in children

5. Early Outcomes after Total Aortic Arch Replacement by Using the Trifurcated Graft Technique
Content describes the off-label use of TEVAR
Joseph S. Coselli - Research Grant: Vascutek Terumo, Cook Inc, Medtronic; Speakers Bureau/Honoraria: WL Gore & Associates, Medtronic Inc; Ownership Interest: Vascutek Terumo; Consultant/Advisory Board: Edwards Life Sciences, Vascutek Terumo, Medtronic Inc
Scott LeMaître – Royalties: Blackwell Publishing

7. Early and Mid-Term Hemodynamics after Aortic Valve Bypass Surgery
Content describes the off-label use of the Medtronic apical connector
James Gammie – Correx, Inc

FIRST SCIENTIFIC SESSION B

Moderators
Michael Mack – Consultant/Advisory Board: Edwards Lifesciences, Medtronic, Maquet
Robert Cerfolio – Consultant/Advisory Board: Neomend; Speakers Bureau/Honoraria: Ethicon, E Plus Health Care, Covidien, Millicore, Deknatel, Thopaz, Atrium

11. Pulmonary Function Tests Do Not Predict Pulmonary Complications afterThoracoscopic Lobectomy
Thomas D'Amico – Speaker: Covidien; Consultant: Scanlan

13. Results of Intra-Operative Open-Chest Completion Angiography in a Hybrid or after Minimally Invasive Off-Pump Coronary Artery Bypass (Midcab) Through a Left Thoracotomy
Michael Petracek – Research Grant: St. Jude Medical
John Byrne – Research Grant: Carpentier-Edwards

BASIC SCIENCE FORUM

3B. Computational Flow Dynamics Do Not Predict Increased Risk of Thrombosis in an Adjustable Systemic-Pulmonary Artery Shunt
US Patent held
William I. Douglas – Consultant: St. Jude Medical

4B. Brain Natriuretic Peptide is Not Reno-Protective during Renal Ischemia-Reperfusion Injury in the Rat
Thomas Beaver – Action Pharma, Inc., Scios Inc.

5B. Differential Gene Expression in Brain Injury Induced by Hypothermic Circulatory Arrest versus Cardiopulmonary Bypass Alone
Jeremiah G. Allen – Educational Grant: St. Jude Medical
Eric Weiss – Educational Grant: St. Jude Medical

SECOND SCIENTIFIC SESSION

Moderator
Vinod Thourani – Research Grant: Maquet, Edwards LifeSciences, Medtronic Inc; Speakers Bureau/Honoraria: Maquet, Edwards LifeSciences, Medtronic Inc, St. Jude Medical, Sorin

15. Twenty-Five Year Experience with the St. Jude Medical Mechanical Valve Prosthesis
Vinay Badhwar (Discussant) – Speakers Bureau/Honoraria: St. Jude Medical

16. Intraoperative Blood Transfusion is Associated with Increased Mortality and Morbidity in Patients Having Non-Cardiac Thoracic Operations
Victor Ferraris – Speakers Bureau and Consulting: Sanofi-Aventis, Bristol-Myers, King Pharmaceuticals, Lilly Pharmaceuticals, Daichi-Sankyo
Stephen Swisher (Discussant) – Consultant/Advisory Board: Glaxo SmithKline

18. Postoperative Bleeding Complications and Transfusion Requirements Following Pulsatile-Flow versus Axial-Flow Left Ventricular Assist Device Implantation
Jeremiah Allen – Research Grant: St. Jude Medical
Eric Weiss – Research Grant: St. Jude Medical
22. Long-Term Outcomes from Surgical Ventricular Restoration for Severe Heart Failure

Jeremiah Allen – Research Grant: St. Jude Medical
Eric Weiss – Research Grant: St. Jude Medical
Stuart Russell – Consultant and Research Grant: Thoratec, Corp;
Investigator in the HeartMate II Pivotal Clinical Trial
Ashish Shah – Investigator in the HeartMate II Pivotal Clinical Trial
John Conte – Consultant: Thoratec, Corp; Research Grant: Thoratec, Corp., Abiomed, Inc
Irving Kron (Discussant) - Consultant/Advisory Board: Edwards Lifesiences, St. Jude Medical

THIRD SCIENTIFIC SESSION A – CARDIAC BREAKOUT

24. Hybrid Debranching with Endovascular Repair of Crawford Extent 1, 2 and 3 Thoracoabdominal Aneurysms: A Therapy with Expanding Potential in High Risk Patient Cohorts
Content describes the off-label use of thoracic endografting/stent graft technology
Himanshu J. Patel – Consultant: WL Gore, Medtronic Inc
David Williams – Consultant: WL Gore

26. Endovascular Management of Complicated Type B Aortic Dissection: Methods and Midterm Outcomes
Content describes the off-label use of the thoracic stent-graft for type B dissection, which is not FDA approved
Carlos Donayre – Speakers Bureau/Honoraria: Medtronic Vascular Inc.
Rod White – Speakers Bureau/Honoraria: Medtronic Vascular Inc.

27. Endovascular Repair of Descending Thoracic Aneurysms: Results with On-Label Application in the Post Approval Era
G. Chad Hughes – Research Grant: WL Gore, Medtronic, CarboMedics
Joseph S. Coselli (Discussant) - Research Grant: Vascutek Terumo, Cook Inc, Medtronic; Speakers Bureau/Honoraria: WL Gore & Associates, Medtronic Inc; Ownership Interest: Vascutek Terumo; Consultant/Advisory Board: Edwards Life Sciences, Vascutek Terumo, Medtronic Inc

THIRD SCIENTIFIC SESSION A – GENERAL THORACIC BREAKOUT

28. Cervical Tracheal Resection: Lessons Learned
Dan Miller – Speakers Bureau: Ethicon Endosurgery Inc, Power Medical Inc; Scientific Advisor: Synovis Inc.
David Jones (Discussant) - Consultant/Advisory Board: Covidien Inc; Research Support: Millennium Inc, Merck Inc

30. Variation in Esophagectomy Outcomes Among Hospitals Meeting Leapfrog Volume Standards
Thomas D’Amico (Discussant) - Speakers Bureau/Honoraria: Covidien; Consultant/Advisory Board: Scanlan Instruments

31. Lymph Node Status Predicts Recurrence after Esophagectomy Following Neoadjuvant Therapy
Seth Force (Discussant) - Consultant/Advisory Board: Karl Storz, Ethicon

THIRD SCIENTIFIC SESSION B – CARDIAC BREAKOUT

40. Age and Prosthesis Type Affect Late Survival Following Mitral Valve Replacement in Patients with Prosthesis-Patient Mismatch
Ralph Damiano, Jr. – AtriCure, Medtronic, Estech, nContact

41. Influence of Patient Age on Procedural Selection in Mitral Valve Surgery
Carmelo Milano – Research Grant: Thoratec, St. Jude Medical
J. Scott Rankin – Consultant: Biostable Science and Engineering
Donald Glower – PI without pay on Research Grant: Edwards, St. Jude Medical, Evalve

42. The Effect of Diabetes Mellitus on Short and Long-Term Outcomes after Heart Valve Surgery
John Hammon (Discussant) – Research Grant: Medtronic; Consultant/Advisory Board: St. Jude Medical

THIRD SCIENTIFIC SESSION B – GENERAL THORACIC BREAKOUT

44. Variability in Defining T1n0 Non-Small Cell Lung Cancer has Consequences for Locoregional Failure
Todd Demmy (Discussant) - Speakers Bureau/Honoraria: Covidien

45. Patterns of Lymph Node Sampling in Video Assisted Thoracoscopic Lobectomy vs. Lobectomy by Standard Thoracotomy
Traves Crabtree – Speakers Bureau/Honoraria: Ethicon Endo-Surgery
Daniel Miller (Discussant) - Speakers Bureau/Honoraria: Power Medical Inc; Consultant/Advisory Board: Ethicon Endo-Surgery, Synovis Inc, NeoMend, Inc.

FOURTH SCIENTIFIC SESSION A – CARDIAC BREAKOUT

52. The Ross Procedure Performed for Aortic Insufficiency is Associated with Increased Autograft Reoperation
John Oswalt (Discussant) - Speakers Bureau/Honoraria: CryoLife Inc

53. Outcomes of Aortic Valve Replacement in High-Risk Patients: Is it Time to Set New Benchmarks?
Vinod Thourani – Research Grant: Edwards, Medtronic; Speakers Bureau/Honoraria: Edwards, Medtronic, St. Jude, Sorin
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**Moderator**

**Joe B. Putnam, Jr.** – Consultant/Advisory Board: Cardinal Health, Genentech

56. **Thoracoscopy Versus Thoracotomy for Pulmonary Metastasectomy**  
   **John Howington (Discussant)** – Speakers Bureau/Honoraria: Covidien; Consultant/Advisory Board: Ethicon Endo-Surgery

57. **Vats Segmentectomy: A Safe and Effective Procedure**  
   **Traves Crabtree (Discussant)** – Speakers Bureau/Honoraria: Ethicon Endo-Surgery

FOURTH SCIENTIFIC SESSION A – TRANSPLANT BREAKOUT

**Moderator**

**David Jones** - Consultant/Advisory Board: Covidien Inc; Research Support: Millennium Inc, Merck Inc

61. **Lessons Learned from 100 Consecutive Pediatric Cardiac Transplants**  
   **Jeffrey P. Jacobs** - Ownership Interest: CardioAccess; Consultant/Advisory Board: CardioAccess; Research Grant: Children's Heart Foundation

FOURTH SCIENTIFIC SESSION B

**Moderator**

**Michael Mack** - Consultant/Advisory Board: Edwards LifeSciences, Medtronic, Maquet

64. **Replacement of the Aortic Valve: Comparison of Matched Port Access and Sternotomy Cohorts**  
   **William H. Ryan** - Consultant: Edwards LifeSciences; Advisory Board: Edward LifeSciences

65. **Improved Long-Term Outcome with Chemoradiotherapy Strategies in Locoregionally Advanced Esophageal Cancer**  
   **Stephen G. Swisher** - Consultant/Advisory Board: Glaxo SmithKline

66. **Outcome of Surgical and Catheter Ablation to Treat Atrial Fibrillation**  
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