Bring this book with you to San Diego!

STS MISSION STATEMENT

The mission of The Society of Thoracic Surgeons is to enhance the ability of cardiothoracic surgeons to provide the highest quality patient care through education, research, and advocacy.

OVERALL MEETING OBJECTIVE

To provide the forum for all cardiothoracic surgeons to learn the most up-to-date information on research, surgical techniques, patient management, social, ethical, and political issues in order to maintain the highest level of care for the cardiothoracic patient.

STS CONTINUING MEDICAL EDUCATION (CME) MISSION STATEMENT

The continuing medical education mission of The Society of Thoracic Surgeons is to provide a forum for reporting results of scientific research and for updating information in the disciplines of cardiovascular, general thoracic, and congenital heart surgery. The principal continuing education programs conducted by the Society include an annual scientific meeting, self-study programs, and other stand-alone meetings. The Annual Meeting is composed of peer-reviewed scientific abstracts, invited overview presentations, small group presentations, presentations on new technologies, and video programs. The broad scope of topics related to cardiothoracic surgery is covered during each annual meeting. In addition to and separate from the national meeting, topical meetings are held that focus on relevant information needs of cardiothoracic surgeons. These educational sessions frequently highlight a multidisciplinary approach and include content relevant to cardiothoracic surgeons, as well as other physicians and health care providers in related disciplines.

FUTURE MEETINGS OF THE SOCIETY OF THORACIC SURGEONS

44th Annual Meeting
January 28-30, 2008
Fort Lauderdale, Florida

45th Annual Meeting
January 26-28, 2009
San Francisco, California

46th Annual Meeting
January 25-27, 2010
Fort Lauderdale, Florida

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SOCIETY INFORMATION

LOCAL ARRANGEMENTS COMMITTEE

Stuart Jamieson and Sheri Jamieson

Walter Dembitsky and Becky Dembitsky

John Lamberti and Carol Lamberti

Michael Madani and Katie Madani

Patricia Thistlethwaite

THE SOCIETY OF THORACIC SURGEONS 43RD ANNUAL MEETING MEMBERS' SOCIAL EVENT

Tuesday Evening Social Event
An Evening Aboard the USS Midway
Tuesday, January 30, 2007
7:00 p.m. – 10:00 p.m.
$85 per person

The Tuesday evening social event will be aboard the USS Midway, the longest serving aircraft carrier in U.S. Naval history. The Midway, located in downtown San Diego at Navy Pier, is now a museum with more than 40 exhibits and 21 restored aircraft, and provides a dynamic and enriching experience while instilling a greater appreciation for courage, freedom, and service to country.

During its 47-year career, the USS Midway set new standards of naval aviation in the latter half of the 20th century. A captured German V-2 rocket was launched off the USS Midway in 1947—the dawn of naval missile warfare. The USS Midway blazed new trails of sub-Arctic air operations off the coast of Greenland. It was the first carrier stationed in a foreign country, calling Yokosuka, Japan home for 18 years. When others came home, the USS Midway remained at the "tip of the sword" on an odyssey shared by 225,000 Americans that spanned the surrender of Japan in WWII, the Cold War, Vietnam, the era of détente and Desert Storm. No other carrier carries such a proud tradition of diligence, vigilance, and mission completion.

The Midway features two enclosed hangar bays and a flight deck which spans more than 50,000 square feet. Using audio guides, guests navigate their way throughout public areas on the second deck, hangar deck, flight deck, and up in the island.

In addition to dancing, food and drinks, this social event will also feature a patriotic USO Show. Come join colleagues in visiting one of San Diego's most interesting attractions. Tickets are available at registration or at the door on January 30.

Welcome to San Diego!

Greetings:

As Mayor, and on behalf of the City of San Diego, I am pleased to welcome everyone gathered in our city for The Society of Thoracic Surgeons 43rd Annual Meeting.

As the nation's eighth largest city, San Diego boasts a vibrant economy and an easy-going lifestyle that is the perfect place to conduct business or relax all in one trip. While you are in town, you will have the opportunity to experience San Diego for yourself and discover why our city has earned a worldwide reputation as a top convention and meetings destination.

Most people think of San Diego for its near-perfect climate and beautiful beaches, but the region is blessed with more than just sunshine. San Diego offers a wealth of riches not bestowed on many places, including a relaxed and friendly spirit that characterizes the best of Southern California. The Gaslamp Quarter, Seaport Village, PETCO Park and world-renowned family attractions are special treasures that both visitors and locals enjoy year round. An international city, many visitors take advantage of our proximity to the Mexican border and turn their stay into a two-nation vacation.

I am proud of our great city, and I invite you to enjoy all that it has to offer. San Diego's many charms are hard to resist, and you'll soon discover why many attendees "come for the convention and stay for the vacation."

Best wishes for an enjoyable and successful event.

Sincerely,

Jerry Sanders
Mayor

Program at-a-Glance

FRIDAY, JANUARY 26, 2007

2:00 p.m. –	6:00 p.m.	Registration: STS/AATS Tech-Con 2007 and STS Annual Meeting

SATURDAY, JANUARY 27, 2007

10:00 a.m. –	6:00 p.m.	Registration: STS/AATS Tech-Con 2007 and STS Annual Meeting
E 12:00 p.m. –	7:00 p.m.	STS/AATS Tech-Con 2007 Exhibits and Simulator Village
1:00 p.m. –	5:00 p.m.	STS/AATS Tech-Con 2007
5:00 p.m. –	7:00 p.m.	STS/AATS Tech-Con 2007 Reception

SUNDAY, JANUARY 28, 2007

7:00 a.m. –	7:00 p.m.	Registration: STS/AATS Tech-Con 2007 and STS Annual Meeting
E 7:30 a.m. –	4:00 p.m.	STS/AATS Tech-Con 2007 Exhibits and Simulator Village
8:00 a.m. –	11:45 a.m.	STS/AATS Tech-Con 2007
9:00 a.m. –	11:30 a.m.	STS Medical Legal Symposium
9:00 a.m. –	3:00 p.m.	Spouse Postgraduate Program
11:50 a.m. –	1:10 p.m.	Rapid Fire Luncheon: Joint STS/AATS Tech-Con and Parallel Surgical Symposia Luncheon
R 1:30 p.m. –	4:30 p.m.	Residents' Symposium: Navigating the Employment Maze
1:15 p.m. –	4:30 p.m.	Parallel Surgical Symposia: Congenital and General Thoracic
1:15 p.m. –	4:30 p.m.	STS/AATS Tech-Con 2007
E 4:00 p.m. –	7:00 p.m.	STS Exhibits and Scientific Poster Session Opens
4:30 p.m. –	6:30 p.m.	Reception with Exhibitors in STS Exhibit Hall

MONDAY, JANUARY 29, 2007

6:30 a.m. –	5:00 p.m.	Registration: STS Annual Meeting
7:30 a.m. –	7:45 a.m.	Opening Remarks
7:45 a.m. –	8:45 a.m.	General Scientific Session I: J. Maxwell Chamberlain Awards Oral Presentations: #1-3
8:45 a.m. –	8:55 a.m.	Introduction of New Members
8:55 a.m. –	9:00 a.m.	STS Historian Report
9:00 a.m. –	4:30 p.m.	STS Exhibits and Scientific Poster Session Open
9:00 a.m. –	9:15 a.m.	Award Presentations: Earl Bakken Award TSDA/TSFRE Award Socrates Award Geriatric Patient Care Award
E 9:15 a.m. –	10:00 a.m.	Break–Please Visit Exhibits
10:00 a.m. –	11:00 a.m.	Thomas B. Ferguson Lecture
11:00 a.m. –	12:00 p.m.	Presidential Address
E 12:00 p.m. –	1:30 p.m.	Please Visit Exhibits
R 12:00 p.m. –	1:15 p.m.	Thoracic Surgery Residents' Association Meeting

E Exhibit Break

1:30 p.m.	– 3:30 p.m.	Parallel Surgical Forum I: Adult Cardiac I Oral Presentations: #4-11 Parallel Surgical Forum II: Adult Cardiac II Oral Presentations: #12-19 Parallel Surgical Forum III: General Thoracic Oral Presentations: #20-27 Parallel Surgical Forum IV: Congenital Oral Presentations: #28-35 Parallel Surgical Forum V: Practice Education Symposium
E 3:30 p.m.	– 4:15 p.m.	Break–Please Visit Exhibits
4:15 p.m.	– 6:00 p.m.	**Business Meeting (STS Members Only)**
7:00 p.m.	– 9:00 p.m.	Surgical Motion Pictures
7:00 p.m.	– 9:00 p.m.	International Symposium

TUESDAY, JANUARY 30, 2007

6:30 a.m.	– 4:30 p.m.	Registration: STS Annual Meeting
7:00 a.m.	– 8:00 a.m.	Ticketed Breakfast Sessions
7:00 a.m.	– 8:00 a.m.	Health Policy Forum: Performance Measurement and Public Reporting – How the "Transparency Trend" will Affect Your Patients and Your Payments
8:15 a.m.	– 9:15 a.m.	General Scientific Session II Oral Presentations: #36-39
9:00 a.m.	– 4:30 p.m.	STS Exhibits and Scientific Poster Session Open
E 9:45 a.m.	– 10:30 a.m.	Break–Please Visit Exhibits
10:30 a.m.	– 12:30 p.m.	General Scientific Session II (continued) Oral Presentations: #40-43
12:30 p.m.	– 1:45 p.m.	Ethics Debate: Professionalism Meets Commerce: Tighter Regulations of Conflicts of Interest in Surgeon-Industry Relations is Needed
E 12:30 p.m.	– 1:45 p.m.	Please Visit Exhibits
R 12:30 p.m.	– 1:45 p.m.	Residents' Luncheon
1:45 p.m.	– 6:05 p.m.	Parallel Surgical Forum I: Adult Cardiac I Parallel Surgical Forum II: Adult Cardiac II
1:45 p.m.	– 5:45 p.m.	Parallel Surgical Forum III: General Thoracic: Esophageal Parallel Surgical Forum IV: General Thoracic: Lungs Parallel Surgical Forum V: Congenital
E 2:30 p.m.	– 4:00 p.m.	Please Visit Exhibits
7:00 p.m.	– 10:00 p.m.	Members' Social Event

WEDNESDAY, JANUARY 31, 2007

6:30 a.m.	– 12:00 p.m.	Registration: STS Annual Meeting
7:00 a.m.	– 10:00 a.m.	STS University Courses
10:00 a.m.	– 10:30 a.m.	Break
10:30 a.m.	– 12:30 p.m.	STS U Live Surgery
1:00 p.m.	– 5:30 p.m.	Patient Safety Symposium (To be held at the San Diego Marriott)

R Resident Information Session

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1968-New Orleans	Donald L. Paulson*	Francis X. Byron*	Robert G. Ellison*
1969-San Diego	Lyman A. Brewer III*	John N. Briggs	Robert G. Ellison*
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1972-San Francisco	Robert G. Ellison*	Ralph D. Alley*	Jay L. Ankeney
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1974-Los Angeles	Earle B. Kay*	Ralph D. Alley*	Jay L. Ankeney
1975-Montreal	Herbert Sloan	Thomas D. Bartley	Jay L. Ankeney
1976-Washington, DC	Ralph D. Alley*	Thomas D. Bartley	Harold C. Urschel, Jr.
1977-San Francisco	Thomas B. Ferguson	Thomas D. Bartley	Harold C. Urschel, Jr.
1978-Orlando	F. Henry Ellis, Jr.	Thomas D. Bartley	Harold C. Urschel, Jr.
1979-Phoenix	Harold V. Liddle	Thomas D. Bartley	Harold C. Urschel, Jr.
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1983-San Francisco	Hassan Najafi	W. Gerald Rainer	Benson R. Wilcox
1984-San Antonio	Harold C. Urschel, Jr.	W. Gerald Rainer	Benson R. Wilcox
1985-Phoenix	George J. Magovern	George C. Kaiser	Benson R. Wilcox
1986-Washington, DC	Albert Starr	George C. Kaiser	Benson R. Wilcox
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1989-Baltimore	George G. Lindesmith*	George C. Kaiser	Robert L. Repogle
1990-Chicago**	W. Gerald Rainer	Richard P. Anderson	Robert L. Repogle
1991-San Francisco	W. Gerald Rainer	Richard P. Anderson	Robert L. Repogle
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In 1969 the Distinguished Service Award was established to recognize outstanding contributions to the Society. Previous recipients of the award have been:

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2001 – Sidney Levitsky
2001 – George E. Miller
2002 – Richard G. Sanderson
2003 – Benson R. Wilcox
2004 – Richard P. Anderson
2005 – Nicholas T. Kouchoukos
2006 – Gordon F. Murray
2006 – Mark B. Orringer

EARL BAKKEN SCIENTIFIC ACHIEVEMENT AWARD

This award was established in 1999 through a grant from Medtronic, Inc., to recognize individuals who have made outstanding scientific contributions that have enhanced the practice of cardiothoracic surgery and the quality of life of our patients. Previous recipients of the award have been:

2000 – Gerald D. Buckberg
2001 – Rene G. Favaloro
2001 – W. Dudley Johnson
2002 – Hermes C. Grillo
2003 – Denton R. Cooley
2004 – Richard D. Weisel
2005 – Randall B. Griepp
2006 – Vincent L. Gott

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1991 – Harry Schwartz
1997 – Yasuharu Imai
1998 – Vincent L. Gott
1999 – Miles F. Shore
2000 – Hans G. Borst
2001 – William R. Brody

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2003 – David A. Kessler
2004 – Donald J. Palmisano
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2006 – David P. Taggart
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HERBERT SLOAN LECTURERS

1988 – Joel D. Cooper
1992 – Mark V. Braimbridge
1995 – Robert H. Anderson
1996 – Philippe G. Dartevelle

REGISTRATION

1. It is suggested that, whenever possible, registration be completed by January 5, 2007.
2. The registration fee for all Society Members is $100.
3. A Cardiothoracic Resident or Fellow may register without fee by presenting a letter from his or her chief of staff. A Non-Cardiothoracic Resident or Fellow may register for $75 by presenting a letter from his or her chief of staff.
4. Nurses, paramedical personnel and physician assistants may register upon payment of a $150 registration fee and presentation of a letter of introduction from a Member of the Society.
5. Medical Students may register without fee by presenting valid student identification.
6. The registration fee for other Guests or Non-Members is $300, except presenting authors.
7. There will be a $100 late registration charge for Members and Non-Members registering after January 5, 2007. A $50 late registration charge applies to Nurses, Paramedical and Physician Assistants registering after January 5, 2007.
8. Badges are required for admission to the exhibit area and all meetings.

EDUCATION

CONTINUING MEDICAL EDUCATION CREDIT: STS/AATS TECH-CON 2007

The Society of Thoracic Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. STS designates this educational activity for a maximum of 10.25 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

STATEMENT OF OBJECTIVES FOR STS/AATS TECH-CON 2007

1. To introduce the newest therapies in both adult cardiac and general thoracic surgery and to evaluate how these therapies will impact current and future practice.
2. To discuss the latest innovations, outcomes data and controversies in the surgical treatment of coronary artery disease.
3. To examine the new paradigm of the multidisciplinary management of thoracic disease.
4. To critically assess the latest percutaneous valve replacement therapies and examine their likely impact on cardiothoracic surgery.
5. To present current treatment options in endovascular aortic surgery.
6. To discuss new strategies and technologies for diagnosing and treating pulmonary and esophageal malignancy as well as benign esophageal pathology.
7. To address the various alternatives for the surgical treatment of atrial fibrillation.
8. To demonstrate the newest imaging technologies which are revolutionizing the diagnosis and treatment of cardiothoracic disease.

CONTINUING MEDICAL EDUCATION CREDIT: STS 43RD ANNUAL MEETING

The Society of Thoracic Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. STS designates this educational activity for a maximum of 33.5 AMA PRA Category 1 Credits™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

ELECTRONIC CME EVALUATION PROCESS

New this year, STS is moving the evaluation and CME process away from the paper-based system used in the past to an entirely electronic process. This year, all session evaluations and the overall evaluation will be completed by attendees online. Computer terminals will be available in the registration area and in the exhibit hall. Attendees will need to enter their membership number (printed on the meeting badge) in order to complete evaluations. As

session evaluations are completed, a CME certificate will be generated. The attendee can print the certificate each time an evaluation is completed OR wait until he/she has completed all of the evaluations associated with the sessions attended and print one certificate for all CME earned at the meeting. Session evaluations will be available on the day the session is scheduled (e.g. Monday sessions will be available beginning Monday, Tuesday sessions will be available beginning Tuesday). **CME credit will only be awarded upon completion of these evaluations**.

In order to make this process more convenient for attendees, the CME/Evaluation site will be available online during Tech-Con, the Annual Meeting, and through March 2, 2007. **Attendees will be able to complete the evaluations and generate their CME certificates from their home or office computers, as well during the meeting, and up to a month after the meeting.** CME information will be maintained by STS based upon completed evaluations.

STATEMENT OF OBJECTIVES: STS 43RD ANNUAL MEETING

1. To review the results of clinical and laboratory investigations designed to reveal new knowledge of cardiothoracic disease or to develop new technology applicable to the management of cardiothoracic disease.
2. To evaluate the impact of new knowledge and the application of new technology on the treatment of cardiothoracic disease.
3. To discuss the importance of patient safety issues and how current strategies can be introduced into one's practice or institution.
4. To discuss surgical techniques in order to improve the standard of care within the specialty.
5. To examine how public policy can impact the treatment of one's patients.
6. To provide mentored small group discussions where meeting participants can confer with leaders in the field of cardiothoracic surgery.

DISCLOSURE POLICY FOR EDUCATIONAL ACTIVITY PLANNING, PRESENTATION, AND MANAGEMENT

As a sponsor of continuing medical education accredited by the Accreditation Council for Continuing Medical Education (ACCME), The Society of Thoracic Surgeons 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 health care-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 STS educational programming.

Required disclosures include (1) a 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, honoraria, royalties, travel, or gifts) or (3) a nonremunerative position of influence (e.g., as officer, director, trustee or public spokesperson). EXCLUDED 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 STS educational activities.

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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.

Unless otherwise 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.

SCIENTIFIC SESSIONS AND SURGICAL FORUMS

These sessions and forums present the results of clinical and laboratory investigations designed to reveal new knowledge of thoracic disease or to develop new technology applicable to the management of thoracic disease. Participants will be able to evaluate the impact of new knowledge and the application of new technology in the treatment and cure of cardiothoracic disease.

SURGICAL MOTION PICTURES

The Surgical Motion Pictures provides the cardiothoracic surgeon attendee with an audiovisual format to present, review, and discuss surgical techniques in order to improve the standard of care within the cardiothoracic specialty.

TICKETED BREAKFAST SESSIONS

These sessions provide mentored discussion on specific problems that arise during thoracic surgical therapy. Participants will have the opportunity to discuss the establishment of disciplined management programs for specific diseases and the complications of therapy.

STS UNIVERSITY

This program focuses on hands-on education and the presentation of the best surgical practices through the telecast of live surgical procedures. New to STS U this year is the Patient Safety Symposium. Separate registration is required.

RULES REGARDING PAPER PRESENTATIONS

1. Each paper read before the Society must be submitted to *The Annals of Thoracic Surgery* before or at the time of the meeting. Manuscripts must be submitted online via *The Annals* online editorial office (http://www.atseditorialoffice.org). Manuscripts will not be considered for publication if submitted after January 31, 2007, the last day of The Society of Thoracic Surgeons 43rd Annual Meeting. All papers shall become the property of the Society. Publication of all papers in *The Annals of Thoracic Surgery* is not assured. If manuscripts are not submitted to *The Annals* prior to or at the time of the STS Annual Meeting, a two-year period of ineligibility for participation in the Annual Meeting will be imposed upon all authors of the paper. The same two-year sanction applies to all papers and scientific posters returned to authors for revisions that are not resubmitted within one calendar year of the request for the revision.

2. Presenters for scientific sessions are provided with time limits for their presentation and must comply with this limit.

3. All scientific oral presentations must be produced in PowerPoint®. Presenters must report to the Speaker Ready Room (Room 22) at least 24 hours prior to their scheduled presentation time to download their PowerPoint® presentation. Changes can be made to a presentation up to two hours prior to the scheduled presentation time.

4. **Invited discussants** will speak from the podium in the General Session only and are limited to three PowerPoint® slides. Those who wish to discuss an oral presentation during the General Sessions may write the Secretary prior to the meeting.

Discussants from the floor should submit their names to the Secretary prior to the opening of the session during which the paper will be presented. Discussant cards will be available in the Speaker Ready Room (Room 22) and at the entrance to the General Sessions. Secondary discussants will speak from the floor (if time allows).

All discussants must submit their PowerPoint® slides to the Speaker Ready Room (Room 22) at least 60 minutes in advance of the session in order to be uploaded to the General Session main frame computer. Discussants should include the oral presentation number and title as well as their full name.

5. There is reserved seating in front of the General Session for presenters and discussants. In the interest of time, presenters and discussants are requested to sit in this reserved section.

6. Presenters will remain on the dais during the oral presentations with discussants to respond directly to the discussants' queries.

7. Financial and regulatory disclosure, as defined in the Disclosure Policy (see page 25), must be disclosed to the audience at the beginning of presentations. This requirement is for presenters and invited discussants. A slide may be used to reveal the nature of the disclosure. This disclosure information will also be provided in the text of the Final Program.

NOTE: The Society of Thoracic Surgeons does not necessarily endorse the opinions expressed by any presenter or discussant.

RULES REGARDING SCIENTIFIC POSTERS

1. Authors of Scientific Posters displayed before the Society have the opportunity to submit a corresponding manuscript to *The Annals of Thoracic Surgery* before or at the time of the meeting. If deciding to submit a manuscript, it must be submitted online via *The Annals* online editorial office (http://www.atseditorialoffice.org). Manuscripts will not be considered for publication if submitted after January 31, 2007, the last day of The Society of Thoracic Surgeons 43rd Annual Meeting. All papers shall become the property of the Society. Publication of all papers in *The Annals of Thoracic Surgery* is not assured. If a manuscript is submitted and is returned for revisions, a two-year period of ineligibility for participation in the Annual Meeting will be imposed upon all authors of the paper if it is not resubmitted within one calendar year of the request for revision.

2. Scientific Posters have been assigned designated poster boards. Each Scientific Poster must correspond with the assigned poster board number. Scientific Poster numbers begin with "P" then follow with the corresponding poster board, e.g. P12.

3. Scientific Posters must be designed to fit the poster board which is 4' high by 8' wide. The poster title and author block must be displayed across the top of the poster.

4. Financial and regulatory disclosure as defined in the Disclosure Policy (see pages x & Y), must be included in the poster material in the lower right hand corner. Posters not containing financial and regulatory disclosure may be removed from the scientific poster area.

5. Poster material should be readable from a distance of at least six feet.

6. Scientific Posters set-up will be Saturday, January 27, 2007 from 3:00 p.m. – 5:00 p.m. and Sunday, January 28, 2007 from 8:00 a.m. – 10:00 a.m.

7. Authors are required to be present at their Scientific Poster on Monday, January 29, 2007 from 12:00 p.m. – 1:30 p.m. and Tuesday, January 30, 2007 from 12:00 p.m. – 1:45 p.m.

8. Scientific Poster tear-down will be Tuesday, January 30, 2007 from 3:00 p.m. – 4:15 p.m. Scientific Posters must remain on display all day Tuesday and CANNOT be removed before 3:00 p.m.

9. Scientific posters selected for presentation/display at the STS Annual Meeting must be displayed at the meeting for the entire time assigned and in the assigned location. Authors who do not display their selected posters or are not available to discuss their findings at the assigned time will be subject to a two-year period of ineligibility for participation in the Annual Meeting. This sanction applies to all authors of posters.

FRIDAY, JANUARY 26, 2007

2:00 p.m. – 6:00 p.m.
Registration: STS/AATS Tech-Con 2007 and STS 43rd Annual Meeting

SATURDAY, JANUARY 27, 2007

10:00 a.m. – 6:00 p.m.
Registration: STS/AATS Tech-Con 2007 and STS 43rd Annual Meeting

12:00 p.m. – 7:00 p.m.
STS/AATS Tech-Con 2007
Exhibits and Simulator Village

1:00 p.m. – 5:00 p.m.
STS/AATS Tech-Con 2007

1:00 p.m. – 2:45 p.m.
Joint Session: Cardiac & General Thoracic: *Gee Whiz Technologies*
Moderator: *John D. Puskas

1:00 p.m.
Welcome & Introductions
*John D. Puskas

1:05 p.m.
Keynote: *New Imaging Technologies Revolutionizing Cardiovascular Care and Thoracic Oncology*
TBD

1:40 p.m.
Overview of Percutaneous Valve Technologies
*Bruce W. Lytle

1:55 p.m.
Ex Vivo Beating Heart Organ Preservation for Transplantation
*Bruce R. Rosengard

2:05 p.m.
The Artificial Lung
*Joseph B. Zwischenberger

2:25 p.m.
Update on Aortic Endovascular Stent Therapies
*Joseph E. Bavaria

2:45 p.m. – 3:15 p.m.
Break – Please Visit Exhibits

3:15 p.m. – 5:00 p.m.
Cardiac Track: What's New in Surgical Treatment of Coronary Artery Disease?
Moderator: *Robert C. Robbins

3:15 p.m.
Trial of Percutaneous vs. Surgical Therapy for Left Main Coronary Artery Stenosis (Syntax Trial)
*Friedrich W. Mohr, Principal Investigator

3:25 p.m.
Percutaneous vs. Surgical Treatment for Multivessel Coronary Artery Disease in Diabetic Patients (FREEDOM Trial)
*David H. Adams, Principal Investigator

3:35 p.m.
Results with the CardicaC-Port Distal Anastomotic Device
Jan F. Gummert

3:45 p.m.
Cardiac Stem Cell Therapy: The State of the Art
*Richard Weisel

3:55 p.m.
Bilateral Internal Thoracic Artery (BITA) Grafting: The Future of Coronary Surgery
Antonio M. Calafiore

4:05 p.m.
The Imperative of Arterial Grafting
*James Tatoulis

4:15 p.m.
Keynote: *What Every Surgeon Should Be Able to Tell His Cardiologists About Coronary Artery Bypass Grafting vs. Stents for CAD*
*David Paul Taggert

3:15 p.m. – 5:00 p.m.
General Thoracic Track: Redesigning the Cardiothoracic Practice
Moderator: *Richard H. Feins

3:15 p.m.
Welcome & Introductions
*Richard H. Feins

3:20 p.m.
The Thoracic Surgery Landscape
*Alex G. Little

3:35 p.m.
Staging and Staging Techniques for Lung Cancer
Frank C. Detterbeck

3:50 p.m.
Lymph Node Dissection
*Gail E. Darling

4:05 p.m.
Pulmonary Resection: Modern Technology and Results
*David J. Sugarbaker

4:20 p.m.
Embracing the Multidisciplinary Concept
*Richard H. Feins

4:35 p.m.
Panel Discussion

5:00 p.m.
Adjourn

5:00 p.m. – 7:00 p.m.
STS/AATS Tech-Con 2007 Reception

SUNDAY, JANUARY 28, 2007

7:00 a.m. – 7:00 p.m.
Registration: STS/AATS Tech-Con 2007 and STS 43rd Annual Meeting

E **7:30 a.m. – 4:00 p.m.**
STS/AATS Tech-Con 2007
Exhibits and Simulator Village

8:00 a.m. – 9:35 a.m.
Cardiac Track: Percutaneous Technology for Aortic and Pulmonic Valves
Moderators: *John D. Puskas and *Friedrich W. Mohr

8:00 a.m.
Welcome & Introductions
*John D. Puskas

8:05 a.m.
Transapical Valve Techniques & Technologies
*Friedrich W. Mohr

8:20 a.m.
Clinical Update with the Cor-Valve: Transfemoral Aortic Valve Technology
TBD

8:35 a.m.
Percutaneous Valve Technologies on the Horizon
*Michael J. Mack

8:50 a.m.
Percutaneous Pulmonic Valve Technology: Clinical Results and Innovations
Phillipp Bonhoeffer

9:05 a.m.
Simulator Training for Percutaneous Valve Skills
Thomas J. Walther

9:25 a.m.
Discussion, Questions & Answers

8:00 a.m. – 9:35 a.m.
General Thoracic Track: Thoracic Surgery 2010 & Beyond I
Moderator: *Joe B. Putnam

E Exhibit Break *STS Member

8:05 a.m.
Screening for Lung Cancer: Where Will We Be in 2010?
*Nasser K. Altorki

8:17 a.m.
Once You Have Found the Spot, What Do You Do With It?
*Malcolm M. DeCamp, Jr.

8:29 a.m.
Cyberknife: The End of the Surgical Resection I
James D. Luketich

8:41 a.m.
RF Ablation: The End of the Surgical Resection II
Hiran C. Fernando

8:53 a.m.
Treatment of GERD and Barrett's in 2010
*Steven R. DeMeester

9:05 a.m.
Target Therapies: Molecular Surgery
*David H. Harpole, Jr.

9:17 a.m.
Panel Discussion

9:35 a.m. – 10:20 a.m.
Break – Please Visit Exhibits

10:20 a.m. – 11:35 a.m.
Cardiac Track: Percutaneous Technology for Mitral Valves
Moderator: *Friedrich W. Mohr

10:20 a.m.
Percutaneous Mitral Valve Technologies: Update on E-Valve
Ted E. Feldman, Principal Investigator

10:35 a.m.
The Edge to Edge Percutaneous Mitral Valve Repair: Good Idea, Wrong Indications
Ottavio R. Alfieri

10:50 a.m.
Coronary Sinus Technologies: An Overview
Peter Fitzgerald

11:05 a.m.
A Surgeon's View of Percutaneous Mitral Repair
Alain Carpentier

11:20 a.m.
Discussion, Question & Answers

10:20 a.m. – 11:35 a.m.
General Thoracic Track: Thoracic Surgery: 2010 & Beyond II
Moderator: *Joe B. Putnam

10:20 a.m.
VATS Lobectomy 2010
Robert J. McKenna, Jr.

10:35 a.m.
VATS Esophagectomy 2010
*Scott Swanson

10:50 a.m.
Critical Care of the Cardiothoracic Patient in 2010
*Joseph B. Zwischenberger

11:05 a.m.
Adjuvant Therapy Results & Ramifications
*David W. Johnstone

11:25 a.m.
Panel Discussion

11:45 a.m. – 1:10 p.m.
Joint STS/AATS
Tech-Con and Surgical Symposia
Rapid-Fire Luncheon:
Imaging in Cardiothoracic Surgery
Moderator: *Ralph J. Damiano

11:50 a.m.
Welcome & Introductions
*Ralph J. Damiano

11:55 a.m.
Cardiac MRI in the Diagnosis and Treatment of Congestive Heart Failure
Gerald Pohost

SUNDAY, JANUARY 28, 2007

12:10 p.m.
When Will CT Angio Replace Diagnostic Catheterization?
Matthew Budoff

12:25 p.m.
3-D Echo Cardiography in Cardiothoracic Surgery
*Pedro J. Del Nido

12:40 p.m.
The New Role for PET Scanning in Thoracic Oncology
*Bryan F. Meyers

12:55 p.m.
Ultrafast CAT Scan with 3-D Reconstruction for Virtual Endoscopy
Phillip Boiselle

1:15 p.m. – 2:30 p.m.
(At this time General Thoracic attendees may remain at Tech-Con to participate in the afternoon Joint Session or join the STS General Thoracic Symposium.)

Joint Session: Cardiac & General Thoracic: Surgical Treatment of Atrial Fibrillation
Moderator: *A. Marc Gillinov

1:15 p.m.
Keynote: *The Cardiologist's Perspective on Atrial/Fibrillation Ablation: Outcomes from Different Patient Groups with Catheter Based Therapy*
Hugh Calkins

1:40 p.m.
Surgical Treatment of Lone Atrial Fibrillation: The "Box" Lesion
*J. Crayton Pruitt

1:50 p.m.
Bilateral Pulmonary Vein Isolation
*James R. Edgerton

2:00 p.m.
Amputation of the Left Atrial Appendage: To Be or Not To Be
*John D. Puskas

2:10 p.m.
The Right Minimally Invasive Operation for Lone Atrial Fibrillation
*Ralph J. Damiano

2:20 p.m.
The Integrated Surgical and Electrophysiology Center for the Management of Atrial Fibrillation
*Niv Ad

E **2:30 p.m. – 3:00 p.m.**
Break – Please Visit Exhibits

3:00 p.m. – 4:30 p.m.
Cardiac Track:
Advanced Cardiac Techniques We Should All Be Doing Now
Moderators: Michael J. Mack and John D. Puskas

3:00 p.m.
Bilateral Internal Thoracic Artery Grafting
Rephael Mohr

3:15 p.m.
Mitral Valve Repair
*A. Marc Gillinov

3:30 p.m.
Minimally Invasive Mitral Valve Surgery: The Next Step
*W. Randolph Chitwood, Jr.

3:45 p.m.
Cannulation and Cerebral Protection for Aortic Surgery
Joseph R. Cosselli

4:00 p.m.
Surgical Treatment of Atrial Fibrillation During Concominent Cardiac Surgery
*Patrick M. McCarthy

4:15 p.m.
Panel Discussion

4:30 p.m.
Adjourn

E Exhibit Break *STS Member

Program Outline

FRIDAY, JANUARY, 26, 2007

2:00 p.m. – 6:00 p.m. **Registration: STS/AATS Tech-Con 2007 and STS Annual Meeting**
Location: San Diego Convention Center, Hall D Lobby

SATURDAY, JANUARY 27, 2007

10:00 a.m. – 6:00 p.m. **Registration: STS/AATS Tech-Con 2007 and STS Annual Meeting**
Location: Hall D Lobby

12:00 p.m. – 7:00 p.m. **STS/AATS Tech-Con 2007 Exhibits**
Location: Room 20 A

12:00 p.m. – 7:00 p.m. **STS/AATS Tech-Con 2007 Simulator Village**
Location: Exhibit Hall F

1:00 p.m. – 5:00 p.m. **STS/AATS Tech-Con 2007**
Location: Room 20 D
See page 29 for more details.

5:00 p.m. – 7:00 p.m. **STS/AATS Tech-Con 2007 Reception**
Location: Room 20 A

SUNDAY, JANUARY 28, 2007

7:00 a.m. – 7:00 p.m. **Registration: STS/AATS Tech-Con 2007 and STS Annual Meeting**
Location: San Diego Convention Center, Hall D Lobby

7:30 a.m. – 4:00 p.m. **STS/AATS Tech-Con 2007 Exhibits**
Location: Room 20 A

7:30 a.m. – 4:00 p.m. **STS/AATS Tech-Con 2007 Simulator Village**
Location: Exhibit Hall F

8:00 a.m. – 11:45 a.m. **STS/AATS Tech-Con 2007**
Location: Room 20 D

9:00 a.m. – 11:30 a.m. **STS Medical Legal Symposium**
Moments of Decision in Judgment: Proceed with Trial or Mediate
Moderators: **Joseph J. Amato and *Carl L. Backer*
Location: Room 29 C, D
See page 57 for more details.

9:00 a.m. – 3:00 p.m. **Spouse Postgraduate Program: The Lively Mind: Creative and Critical Thinking Using Both Sides of the Brain**
See page 58 for more details.

11:50 a.m. – 1:10 p.m. **Rapid Fire Luncheon: Imaging in Cardiothoracic Surgery**
Joint STS/AATS Tech-Con and STS Parallel Surgical Symposia
Moderator: **Ralph J. Damiano*
Location: Room 6 A
See page 59 for more details.

E Exhibit Break *STS Member

1:15 p.m. – 4:30 p.m. **Parallel Surgical Symposia (Congenital and General Thoracic)**
Congenital Moderator: **Jeffrey P. Jacobs, St. Petersburg, Florida*
General Thoracic Moderator: **Robert J. McKenna, Jr., Los Angeles, California*
Location: Rooms 32 A, B and 31 A, B, C
See page 61 for more details.

1:15 p.m. – 4:30 p.m. **STS/AATS Tech-Con 2007**
Location: Ballroom 20 D
See page 28 for more details.

R 1:00 p.m. – 4:30 p.m. **Residents' Symposium: Navigating the Employment Maze**
Moderators: **Walter H. Merrrill, Cincinnati, OH*
Location: Room 29 C, D
See page 60 for more details.

E 4:00 p.m. – 7:00 p.m. **STS Exhibits and Scientific Poster Session Opens**
Location: San Diego Convention Center, Hall D

4:30 p.m. – 6:30 p.m. **Reception with Exhibitors in STS Exhibit Hall**
Location: San Diego Convention Center, Hall D

MONDAY, JANUARY 29, 2007

6:30 a.m. – 5:00 p.m. **Registration: Annual Meeting**
Location: San Diego Convention Center, Hall D Lobby

7:30 a.m. – 7:45 a.m. **Opening Remarks**
Location: Room 20
STS President: **Frederick L. Grover*
STS Secretary: **Douglas E. Wood*
2007 Local Host Committee Chair: **Stuart W. Jamieson*
Financial Disclosure: D.E. Wood, Spiration, (Research Support Consultant) Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received), Boston Scientific, Genentech, Speakers Bureau/Honoraria (e.g. speakers bureau, symposia, and expert witness), Alveolus, Consultant/Advisory Board (including volunteer roles).

7:45 a.m. – 8:45 a.m. **General Session I: J. Maxwell Chamberlain Awards (Oral Presentations 1-3)**
Moderators: **Frederick L. Grover, Denver, Colorado; *Douglas E. Wood, Seattle, Washington*

▶ **1. J. Maxwell Chamberlain Memorial Paper for Congenital Heart Surgery: Surgical Lessons from the First 100 Fontan Conversions with Arrhythmia Surgery**
**C. Mavroudis; B. J. Deal; *C. L. Backer; *R. D. Stewart; W. H. Franklin; K. Ward; S. Tsao*
Children's Memorial Hospital, Chicago, Illinois
Discussant: *Joseph A. Dearani, Rochester, Minnesota

R Resident Information Session

▶ New or of special interest

▶ **2. J. Maxwell Chamberlain Memorial Paper for General Thoracic Surgery: Are Surgical Outcomes for Lung Cancer Resections Improved at Academic Institutions?**
*R. A. Meguid; B. S. Brooke; D. C. Chang; *S. C. Yang*
Johns Hopkins University School of Medicine, Baltimore, Maryland
Discussant: *Carolyn E. Reed, Charleston, South Carolina

▶ **3. J. Maxwell Chamberlain Memorial Paper for Adult Cardiac Surgery: Off-Pump Techniques Benefit Both Men and Women and Narrow the Gender Disparity in Mortality After Coronary Artery Bypass Surgery: An Intention-to-Treat Analysis of The Society of Thoracic Surgeons National Cardiac Database**
**J. D. Puskas[1]; *F. H. Edwards[2]; P. Pappas[3]; S. O'Brien[3]; E. M. Peterson[4]; P. Kilgo[1]; *T. B. Ferguson[5]*
[1]Emory University, Atlanta, Georgia; [2]University of Florida, Jacksonville, Florida; [3]Duke Clinical Research Institute, Durham, North Carolina; [4]Duke University School of Medicine, Durham, North Carolina; [5]Eastern Carolina University, Greenville, North Carolina
Discussant: *Bruce W. Lytle, Cleveland, Ohio

8:45 a.m. – 8:55 a.m. **Introduction of New Members**
STS Membership Committee
Chair: **Richard I. Whyte, Stanford, California*

8:55 a.m. – 9:00 a.m. **Historian's Report**
**W. Gerald Rainer, Denver, Colorado*

9:00 a.m. – 9:15 a.m. **Award Presentations: Earl Bakken Award, TSDA/TSFRE Award, Socrates Award, and Geriatric Patient Care Award**

E 9:00 a.m. – 4:30 p.m. **Exhibits and Scientific Posters Open**
Location: San Diego Convention Center, Exhibit Hall D

E 9:15 a.m. – 10:00 a.m. **Break – Please Visit Exhibit Hall**

10:00 a.m. – 11:00 a.m. **Thomas B. Ferguson Lecture**
An Oath to Heal and an Oath to Govern: A Biased View of the Paradox No One is Addressing
**William H. Frist, Retired U.S. Senate Majority Leader*

Presidential Address: *Frederick L. Grover*
The Bright Future of Cardiothoracic Surgery in the Era of Changing Health Care Delivery: An Update

Financial Disclosure: F.L. Grover, Bayer, (Bayer supports a basic scientific research grant for a PhD in our cardiothoracic surgery faculty), Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received), Ethicon, Speakers Bureau/Honoraria (e.g. speakers bureau, symposia, and expert witness).

E 12:00 p.m. – 1:30 p.m. **Please Visit Exhibits – Scientific Posters Q & A**

R 12:00 p.m. – 1:15 p.m. **Thoracic Surgery Residents' Association Meeting**
Location: Room 29 C, D

1:30 p.m. – 3:30 p.m. **Parallel Surgical Forums I-V and Practice Education Symposium**

Parallel Surgical Forum I: Adult Cardiac I
Location: Room 20
Moderators: **John D. Puskas, Atlanta, Georgia; *John R. Doty, Salt Lake City, Utah*

Financial Disclosure: J. D. Puskas, Medtronic, Research Grant and Consultant/ Advisory Board, Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received; Guidant, Consultant/Advisory Board, Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received); J. R. Doty, Medtronic, Research Funding, Educational Grant Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received) and Speaker's Honorarium, Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received); CryoLife, Research Funding, Speaker's Honorarium, Speakers Bureau/Honoraria (e.g. speaker bureau, symposia, and expert witness).

4. **Current Eighteen Month Clinical Outcomes of Percutaneous Coronary Intervention and Coronary Artery Bypass Grafting: The CARE (Coronary Artery Revascularization) Study**
**M. J. Mack[1]; *P. Brown[2]; *M. Katz[2]; *G. Palmer[2]; *J. R. Edgerton[1]; S. L. Prince[1]; E. Eichhorn[2]; M.A. Herbert[3]*
[1]Cardiopulmonary Research Science and Technology Institute, Dallas, Texas; [2]CARE Task Force, Dallas, Texas; [3]Medical City Dallas Hospital, Dallas, Texas

5. **Does Choice of Arterial Graft Influence Long-Term Clinical Outcomes After Coronary Revascularization? Results of a Radial Artery Versus Right Internal Thoracic Artery Trial**
*P.A.Hayward[1]; S.Moten[1]; I.Gordon[2]; G. Matalanis[1]; D.Hare[1]; *B. F. Buxton[1]*
[1]Austin Hospital, Melbourne, Australia; [2]Statistical Consulting Centre of University of Melbourne, Melbourne, Australia

6. **Comparison Between Surgical Arterial Revascularization and Drug Eluting Stents In Patients with Diabetes Mellitus**
*Y. Ben-Gal[1]; B. Medalion[2]; Y. Moshkovitz[3]; I. Herz[1]; N. Hansson[1]; *G. Uretzky[1]; R. Mohr[1]*
[1]Tel Aviv Sourasky Medical Center, Tel-Aviv, Israel; [2]Rabin Medical Center - Beilinson Campus, Petah Tikva, Israel; [3]Assuta Medical Center, Petah Tikva, Israel

7. **Preoperative Statin Use Decreases Operative Mortality in High Risk Coronary Artery Bypass Patients**
**J. Magovern; K. Simpson; *D. Benckart; *G. Marrone; *T. Maher; *D. Dean; *G. Magovern, Jr.*
Allegheny General Hospital, Pittsburgh, Pennsylvania

8. **The Impact of Heparin-induced Thrombocytopenia on Postoperative Outcomes Following Cardiac Surgery**
*F. Kerendi; *O. M. Lattouf; *J. D. Puskas; *V. H.Thourani; *R. A. Guyton*
Emory University, Atlanta, Georgia

9. **Delays Worsen In-Hospital Mortality After Coronary-Artery Bypass Grafting**
*B. Sobolev[1]; *G. Fradet[1]; R. Hayden[2]; A. Levy[1]*
[1]University of British Columbia, Vancouver, British Columbia, Canada; [2]Royal Columbian Hospital, New Westminster, British Columbia, Canada

R Resident Information Session

▶ New or of special interest

10. Sequential Hybrid Carotid and Coronary Artery Revascularization. Sharp Trial: Immediate and Midterm Results
*F.Versaci[1]; C. Del Giudice[2]; P. Nardi[2]; R. Gandini[3]; E. Pampana[3]; A. Pellegrino[2]; A. Salvati[2]; J. Zeitani[2]; G. Simonetti[3]; *L. Chiariello[2]*
[1]Cardiology Tor Vergata University, Rome, Italy; [2]Cardiac Surgery Tor Vergata University, Rome, Italy; [3]Radiology Tor Vergata University, Rome, Italy

11. A Simple Index to Predict Likelihood of Skilled Nursing Facility Admission After CABG Among Older Patients
*D. C. Chang; D. L. Joyce; A. Shoher; *D. D. Yuh*
Johns Hopkins Hospital, Baltimore, Maryland

Parallel Surgical Forum II: Adult Cardiac II
Location: Room 33 A, B, C
Moderators: **Joseph C. Cleveland, Jr., Denver, Colorado; *Francis D. Pagani, Ann Arbor, Michigan*

Financial Disclosure: J. C. Cleveland, Jr., Thoratec Corporation, Heartmate II Trial, Principal Investigator, Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received) F. D. Pagani, Thoratec, Inc., Participation in a multicenter trial sponsored by Thoratec, Inc., Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received).

12. Hemodynamic and Echocardiographic Effects of Temporary Biventricular Pacing Immediately Post Cardiopulmonary Bypass for Patients With Chronic Heart Failure
*J. D. Muehlschlegel[1]; E. B. Lobato[2]; *P. J. Hess, Jr.[2]; *T. D. Martin[2]; *Y. G. Peng[2]; *C. T. Klodell, Jr.[2]*
[1]Brigham and Women's Hospital, Boston, Massachusetts; [2]University of Florida, Gainesville, Florida

13. The Impact of the Extent of Septal Myocardial Infarction on Outcomes Following Surgical Ventricular Restoration
*N. D. Patel; J. A. Williams; *J. V. Conte*
Johns Hopkins Medical Institutions, Baltimore, Maryland

14. Not the Absolute Value But the Change of LVEF and Pulmonary Wedge Pressure During Pump Off Test Can Predict the Successful Explant Of LVAS
G. Matsumiya; M. Nishimura; H. Matsue; N. Sekiya; Y. Sawa
Osaka University Graduate School of Medicine, Osaka, Japan

15. Minimalized Cardiopulmonary Bypass Combined to an Optoelectrical Suction Device: The Future of Cardiopulmonary Bypass Technology
*F. F. Immer; E. Gygax; H. Tevaearai; H. Jenni; *T. P. Carrel*
Department of Cardiovascular Surgery, Bern, Switzerland

16. Partial Loading of the Left Ventricle During Mechanical Assist Device Support Is Associated With Improved Metabolism of Neuroendocrine Hormones and Increased Exercise Capacity
*H. Welp; C. Etz; S. Klotz; A. Hoffmeier; A. Rukosujew; *H. H. Scheld; *C. Schmid*
Department of Thoracic and Cardiovascular Surgery, University Hospital Munster, Münster, Germany

*STS Member

17. Preoperative Screening Scale Predicts Successful Bridge To Transplantation Among Chronic Congestive Heart Failure Patients
*M. J. Russo; *J. M. Chen; H. Hussey; *M. Argenziano; D. C. Ascheim; D. M. Mancini; *A. S. Stewart; *M. C. Oz; *Y. Naka*
Columbia-Presbyterian Medical Center, New York, New York

18. Effect of a Polymorphonuclear Elastase Inhibitor on Acute Lung Injury After Cardiopulmonary Bypass: Evaluation with Bronchoscopic Microsampling
*M. Fujii[1]; Y. Miyagi[1]; K. Hinokiyama[1]; *Y. Ishii[1]; R. Bessho[1]; *T. Nitta[1]; M. Ochi[1]; K. Shimizu[2]*
[1]Cardiovascular Surgery, Nippon Medical School, Tokyo, Japan; [2]Surgery, Nippon Medical School, Tokyo, Japan

19. Prolonged Intraoperative Forebrain Desaturation Predicts Cognitive Decline After Cardiac Surgery
*J. P. Slater; J. Stack; K. Vinod; T. Guarino; R. T. Bustami; *J. M. Brown, III; A. L. Rodriguez; *C. J. Magovern; T. S. Zaubler; G. V. S. Parr; K. Freundlich*
Atlantic Health System, Morristown, New Jersey

Parallel Surgical Forum III: General Thoracic
Location: Room 31 A, B, C
Moderators: *David M. Harpole, Durham, North Carolina; Scott J. Swanson, New York, New York*
Financial Disclosure: S. Swanson, Ethicon, Consultant/Advisory Board (including volunteer roles).

20. Extrapulmonary Ventilation For Refractory Acute Respiratory Distress Syndrome After Pulmonary Resection
P. Macchiarini; P. Jungebluth; M. Iglesias; J. Badia; A. Torres; J. M. Gimferrer; C. Petit
Department of General Thoracic Surgery, Hospital Clinic Barcelona, University of Barcelona, Barcelona, Spain

21. Survival Following Lung Transplant is Equivalent Regardless of CMV-Matching Status: An Analysis of the UNOS Database
*M. J. Russo; D. I. Sternberg; K. N. Hong; T. P. Martens; R. A. Sorabella; F. D'Ovidio; J. S. Wilt; S. M. Kawut; S. Arcasoy; *J. R. Sonett*
Columbia-Presbyterian Medical Center, New York, New York

22. Anatomic Lung Resection for Environmental Mycobacterial Disease
*J. D. Mitchell; A. Bishop; A. Cafaro; M. J. Weyant; *M. Pomerantz*
University of Colorado, Denver, Colorado

23. Outcomes in Survivors from Readmission to the Intensive Care Unit Following Initial Recovery from Major Thoracic Oncologic Surgery
*S. Song[1]; *J. Zo[2]; M. Kim[2]; J. Lee[2]; H. Lee[2]*
[1]Division of Cardiovascular Surgery, Cardiovascular Center, Yonsei; University College of Medicine, Seoul, Republic of Korea; [2]Center for Lung Cancer, Research Institute and Hospital, National Cancer Center, Gyeonggi, Republic of Korea

24. Role of CT-PET in the Evaluation of Screening Detected Lung Nodules
*G.Veronesi[1]; G. Paganelli[1]; M. Bellomi[2]; G. Pelosi[2]; P. Solli[1]; *F. Leo[1]; G.Trifirò[1]; L. Preda[1]; *L. Spaggiari[2]*
[1]European Institute of Oncology, Milan, Italy; [2]European Institute of Oncology, University of Medicine, Milan, Milan, Italy

25. Comparison of Open and Thoracoscopic Pulmonary Segmentectomy: Reduced Length of Stay After Minimally-Invasive Technique
*B. Atkins; G. D. Lappas; *D. H. Harpole, Jr.; E. M.Toloza;T. A. D'Amico; *W. R. Burfeind, Jr.*
Duke University School of Medicine, Durham, North Carolina

26. PET Scanning Predicts Response and Survival Following Induction Chemotherapy for Esophageal Carcinoma
*J. L. Port; *R. K. Korst; *P.C. Lee; A. L. Kansler; Y. Kerem; P. Christos; *N. K.Altorki*
Weill Cornell Medical College, New York, New York

27. Roux-en-Y Gastric Bypass for Intractable Gastroesophageal Reflux Following Anti-reflux Surgery
*O.Awais; J.Tam; K. Irshad; *J. Luketich*
University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania

Parallel Surgical Forum IV: Congenital
Location: Room 30 A, B
Moderators: *Carl L. Backer, Chicago, Illinois;*
Frank A. Pigula, Boston, Massachusetts

28. Prevalence and Associated Risk Factors for Intervention in 313 Children with Subaortic Stenosis
*T. Karamlou; R. Gurofsky;A. Bojcevski; J. L. Russell; *G. S.Van Arsdell; *W. G.Williams; B.W. McCrindle*
Hospital for Sick Children,Toronto, Ontario, Canada

29. Repair of Neonates and Young Infants with Ebstein's Anomaly and Related Pathology
**C. J. Knott-Craig[1]; K. E.Ward[1]; E. O. Overholt[1]; *J. K. Kirklin[2]*
[1]Oklahoma University Medical Center, Oklahoma City, Oklahoma; [2]University of Alabama, Birmingham, Alabama

30. Retrovirally Labeled Endothelial Progenitor and Mesenchymal Stem Cells Persist in Tissue Engineered Pulmonary Artery Augmentation Patches in Vivo
*B. A. Mettler[1];V. L. Sales[1]; C. L. Stucken[1];V. Anttila[1]; K. Mendelson[2]; J. Bischoff[1]; *J. E. Mayer, Jr.[1]*
[1]Children's Hospital Boston, Boston, Massachusetts; [2]Brigham and Women's Hospital, Boston, Massachusetts

31. Right Ventricular Outflow Tract Reconstruction, What Conduit to Use? Homograft or Contegra®?
*J.T. Christenson[1]; J. Sierra[1]; N. H. Lahlaidi[1]; M. Beghetti[2]; *A. Kalangos[1]*
[1]Department of Cardiovascular Surgery, University Hospital of Geneva, Geneva, Switzerland; [2]Department of Pediatric Cardiology, University Hospital of Geneva, Geneva, Switzerland

32. Long-Term Outcomes Following Surgical Treatment of 236 Children With Partial Anomalous Pulmonary Venous Connection
*B. Alsoufi; *W. G.Williams; *C. A. Caldarone; S. Cai; *G. S.Van Arsdell; *J. G. Coles*
Hospital for Sick Children and University of Toronto,Toronto, Ontario, Canada

*STS Member

33. Melbourne Shunt Promotes Growth of Diminutive Central Pulmonary Arteries in Patients With Pulmonary Atresia, VSD and Major Aortopulmonary Collateral Arteries

*M. A. Mumtaz; G. L. Rosenthal; A. Qureshi; L. R. Prieto; T. J. Preminger; R. Lorber; L.A. Latson; *B. W. Duncan
Cleveland Clinic, Cleveland, Ohio

34. Right Ventricle to Pulmonary Artery Conduit Longevity: Is It Related to Valve Size?

B. Askovich[1]; C.A. Albaro[2]; T. Sower[1]; L. L. Minich[1]; *J. Hawkins[1]; L. Tani[1]; M. Puchalski[1]
[1]University of Utah, Salt Lake City, Utah; [2]Vermont Children's Hospital, Burlington, Vermont

35. Accuracy of the Aristotle Basic Complexity Score for Classifying the Mortality and Morbidity Potential of Congenital Heart Surgery Procedures

S. M. O'Brien[1]; *D. R. Clarke[2]; *J. P. Jacobs[3]; B. Maruszewski[4]; *M. L. Jacobs[5]; *H. L. Walters, III[6]; *C. I. Tchervenkov[7]; *K. F. Welke[8]; Z. Tobota[9]; G. Stellin[10]; *C. Mavroudis[11]; J. R. L. Hamilton[12]; *J. W. Gaynor[13]; M. Pozzi[14]; *F. G. Lacour-Gayet[15]
[1]Duke University Medical Center, Durham, North Carolina; [2]Children's Hospital, Denver, Colorado; [3]The Congenital Heart Institute of Florida (CHIF) and Cardiac Surgical Associates (CSA), Saint Petersburg and Tampa, Florida; [4]Memorial Hospital Child's Health Centre, Warsaw, Poland; [5]St. Christopher's Hospital for Children, Philadelphia, Pennsylvania; [6]Wayne State University School of Medicine, Detroit, Michigan; [7]Montreal Children's Hospital, Montreal, Quebec, Canada; [8]Division of Cardiothoracic Surgery, Oregon Health and Science University, Portland, Oregon; [9]Children's Memorial Health Institute, Warsaw, Poland; [10]Policlinico Universita, Padova, Italy; [11]Children's Memorial Hospital, Chicago, Illinois; [12]Freeman Hospital, Newcastle Upon Tyne, United Kingdom; [13]The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; [14]Royal Liverpool Children's Hospital Alder Hey, Liverpool, United Kingdom; [15]Children's Hospital Heart Institute, Denver, Colorado

1:30 p.m. – 3:30 p.m.	**STS Practice Education Symposium** **Cardiothoracic Surgery Practice: State of the Art** Location: Room 32 A, B See page 138 for more details.
3:30 p.m. – 4:15 p.m.	**Break – Please Visit Exhibit Hall**
4:15 p.m. – 6:00 p.m.	**Business Meeting (STS Members Only)** Location: Room 20
7:00 p.m. – 9:00 p.m.	**STS Workforce on International Relationships Symposium** Moderator: *Jack M. Matloff, Los Angeles, California Location: Room 32 A, B See page 149 for more details.
7:00 p.m. – 9:00 p.m.	**Surgical Motion Pictures** Moderators: *Malcolm M. DeCamp, Boston, Massachusetts; *Frank A. Pigula, Boston, Massachusetts Location: Room 20

Surgical Motion Pictures
Location: Room 20

7:00 p.m. **1. Distal Tracheal Resection of a Primary Tracheal Neoplasm**
**M. Lanuti; D. J. Mathisen*
Massachusetts General Hospital, Boston, Massachusetts

7:12 p.m. **2. Training the Cardiac Surgeon of the Next Millenium: Simulator Training for Coronary Angiography and Intervention**
**J. Walkes[1]; *M. J. Reardon[1]; P. Kougias[2]; A. B. Lumsden[2]*
[1]Methodist DeBakey Heart Center, Houston, Texas; [2]Baylor College of Medicine, Houston, Texas

7:24 p.m. **3. Aortic Translocation in the Treatment of Complex Forms of Transposition of the Great Arteries an Expanded Indication**
**B. Alsoufi; *W. G. Williams; *C. A. Caldarone; *G. S. Van Arsdell*
Hospital for Sick Children and University of Toronto, Toronto, Ontario, Canada

7:36 p.m. **4. Transcervical Thymectomy for Non-Thymomatous Myasthenia Gravis**
**J. C. Kucharczuk; *J. Shrager; *L. R. Kaiser; *J. D. Cooper*
University of Pennsylvania, Philadelphia, Pennsylvania

7:48 p.m. **5. Transapical Aortic Valve Implantation in Man**
**S. V. Lichtenstein; A. Cheung; J. Ye; R. G. Carere; C. R. Thompson; J. G. Webb*
University of British Columbia, Vancouver, British Columbia, Canada

8:00 p.m. **6. Cervico-Thoracic Approach for Vascular Resection in Anterior Pancoast Tumor**
**L. Spaggiari; D. Galetta; M. D'Aiuto; G. Veronesi; F. Leo; P. Solli; F. Petrella; *R. Gasparri; A. Borri; P. Scanagatta*
Division of Thoracic Surgery, European Institute of Oncology, Milan, Italy

8:12 p.m. **7. Monobloc Aorto Mitral Homograft Implantation Technique as a Treatment of Complex Cases of Endocarditis**
**S. Chocron, Sr.; D. Kaili; D. Buklas; C. Taberlet; J. Etievent*
Hopital Jean Minjoz, Besancon, France

8:24 p.m. **8. One-Stage Norwood-Rastelli Procedure with Regional Perfusion**
W. Kim
Seoul National University Children's Hospital, Seoul, Republic of Korea

8:36 p.m. **9. The Cox-Maze IV Procedure For Atrial Fibrillation**
**R. J. Damiano, Jr.; M. S. Bailey*
Washington University School of Medicine, St. Louis, Missouri

8:48 p.m. **10. Repair of Anomalous Origin of the Right Coronary Artery from the Left Sinus of Valsalva: The Unroofing Technique**
*S. Emani; B. Z. Atkins; *J. Jaggers*
Duke University Medical Center, Durham, North Carolina

*STS Member

TUESDAY, JANUARY 30, 2007

6:30 a.m. – 4:30 p.m. **Registration: Annual Meeting**
Location: San Diego Convention Center, Hall D Lobby

7:00 a.m. – 8:00 a.m. **Ticketed Breakfast Sessions**
See ticket for location.
See page 153 for more details.

7:00 a.m. – 8:00 a.m. **Health Policy Forum: Performance Measurement and Public Reporting: How the 'Transparency Trend' Will Affect Your Patients and Your Payments**
Location: Room 31 A, B, C
See page 152 for more details.

8:15 a.m. – 12:30 p.m. **General Session II: Cardiothoracic Surgery – Moving Forward**
Location: Room 20
Moderators: **Frederick L. Grover, Denver, Colorado and *Douglas E. Wood, Seattle, Washington*

Financial Disclosure: F. Edwards, United Health Care, (Scientific Advisory Board), Consultant/Advisory Board (including volunteer roles); J.S. Coselli, (grant funding PI clinical trials), St. Jude Medical, (grant funding PI clinical trials) Cook Inc., Research Grant (e.g. principal investigator, collaborator, or consultant and pending grants as well as grants already received), (honoraria symposia) Vascutek Terumo, Speakers Bureau/Honoraria (e.g. speakers bureau, symposia, and expert witness), Vascutek Terumo, Consultant/Advisory Board (including volunteer roles); D.E. Wood, Spiration, (Research Support Consultant) Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received), Boston Scientific, Genentech, Speakers Bureau/Honoraria (e.g. speakers bureau, symposia, and expert witness), Alveolus, Consultant/Advisory Board (including volunteer roles); J.F. Sabik, III, Medtronic, Speakers Bureau/Honoraria (e.g. speakers bureau, symposia, and expert witness), Nova Nordisk, Novadag, Consultant/Advisory Board (including volunteer roles); J.P. Jacobs, (Medical Advisor), CardioAccess, Consultant/Advisory Board (including volunteer roles); J.B. Zwischenberger, (grants and subcontracts), MC 3(insert registered trademark symbol), (grants and subcontracts), MedArray®, (grants and subcontracts), Compact Membrane System, Research Grant (e.g. principal investigator, collaborator, or consultant and pending grants as well as grants already received).

Regulatory Disclosure: This presentation describes the use of AVOR and artificial lung whose FDA status is investigational.

36. Can We Perform CABG on the Basis of CT Angio Alone? A Comparison of CT Angio With Conventional Coronary Angiography
**H. S. Bedi[1]; J. S. Gill[2]; T. P. Singh[2]; S. S. Bakshi[2]*
[1]Ludhiana Mediciti, Ludhiana, Punjab, India; [2]Delta Heart Centre, Ludhiana, Punjab, India
Discussant: Joseph F. Sabik, III, Cleveland, Ohio

37. Endovascular Stenting for Traumatic Aortic Injury: An Emerging New Standard of Care
S. L. Moainie[1]; D. G. Neschis[2]; L. S. Magder[3]; T.M. Scalea[4]; B. P. Griffith[1]
[1]University of Maryland Division of Cardiac Surgery, Baltimore, Maryland;
[2]University of Maryland Division of Vascular Surgery, Baltimore, Maryland;
[3]University of Maryland Department of Epidemiology, Baltimore, Maryland;
[4]University of Maryland R. Adams Cowley Shock Trauma Center, Baltimore, Maryland
Discussant: Joseph S. Coselli, Houston, Texas

38. Survival Outcomes for Rescue Extracorporeal Cardiopulmonary Resuscitation in Pediatric Patients With Refractory Cardiac Arrest
**B. Alsoufi; O. O. Al-Radi; R. I. Nazer; C. Gruenwald; C. Foreman; *W. G. Williams; *J. G. Coles; D. G. Bohn; *C. A. Caldarone; *G. S. Van Arsdell*
Hospital for Sick Children and University of Toronto, Toronto, Ontario, Canada
Discussant: Jeffrey P. Jacobs, St. Petersburg, Florida

39. 30-Day Preclinical Thoracic Artificial Lung Testing in Sheep
H. Sato; C. M. Hall; G.W. Griffith; J. M. Toomasian; R. B. Hirschl; R. H. Bartlett; K. E. Cook
University of Michigan, Ann Arbor, Michigan
Discussant: Joseph B. Zwischenberger, Galveston, Texas

E 9:00 a.m. – 4:30 p.m.	**Exhibits and Scientific Poster Session Opens** Location: San Diego Convention Center, Hall D Lobby
9:15 a.m. – 9:35 a.m.	**STS National Database Updates** **Fred H. Edwards, Jacksonville, Florida* Financial Disclosure: F. Edwards, United Health Care, (Scientific Advisory Board), Consultant/Advisory Board (including volunteer roles).
9:35 a.m. – 9:45 a.m.	**Cardiothoracic Surgeons Divided by a Common Language** *John R. Benfield, Los Angeles, California*
E 9:45 a.m. – 10:30 a.m.	**Break – Please Visit Exhibit Hall**
10:30 a.m. – 11:00 a.m.	**Collaboration Between the ACC and STS** *Steven E. Nissen, MD, FACC, Cleveland, Ohio* *James T. Dove, MD, FACC, Springfield, Illinois*
11:00 a.m. – 11:20 a.m.	**Thoracic Surgery Workforce: Findings From the AAMC/STS/AATS Study** *Atul Grover, Baltimore, Maryland*
11:20 a.m. – 11:30 a.m.	**Maintenance of Certification** **Richard H. Feins, Chapel Hill, North Carolina*
11:30 a.m. – 12:30 p.m.	**General Session II (continued)**

40. Evidence-Based Approach to the Use of Anti-Platelet Drugs in Cardiac Operations: An Example of Practice Guideline Development from the STS Evidence Based Workforce
**V. A. Ferraris[1]; S. P. Ferraris[1]; *S. P. Saha[1]; *C. K. Haan[2]; B. D. Royston[3]; *C. R. Bridges[4]; *R. S. D. Higgins[5]; G. J. Despotis[6]*
[1]University of Kentucky, Lexington, Kentucky; [2]University of Florida, Jacksonville, Jacksonville, Florida; [3]Harefield Hospital, Harefield, United Kingdom; [4]University of Pennsylvania, Philadelphia, Pennsylvania; [5]Rush Presbyterian St. Luke's Medical Center, Chicago, Illinois; [6]Washington University, St. Louis, Missouri
Discussant: Robert A. Guyton, Atlanta, Georgia

41. Does the Number of Grafts Influence Surgeon Choice and Patient Benefit of OPCAB Over Conventional CABG for Multivessel Disease?
**O. M. Lattouf; J. Noora; *J. D. Puskas; P. Kilgo; *V. H. Thourani; *R. A. Guyton*
Emory University, Atlanta, Georgia
Discussant: Fred H. Edwards, Jacksonville, Florida

42. Surgical Outcome of Patients with Hypoplastic Left Heart Syndrome and Intact or Highly Restrictive Atrial Septum
*V. L. Vida; L. A. Larrazabal; K. Gauvreau; *F. Fynn-Thompson; *F. Pigula; *J. E. Mayer, Jr.; *P. J. Del Nido; W. Tworetzky; A. C. Marshall; J. E. Lock; *E. A. Bacha*
Childrens Hospital Boston, Boston, Massachusetts
Discussant: J. William Gaynor, Philadelphia, Pennsylvania

43. Fast Tracking After Lobectomy
**R. J. McKenna, Jr.*
Cedars Sinai Medical Center, Los Angeles, California
Discussant: Robert J. Cerfolio, Birmingham, Alabama

E 12:30 p.m. – 1:45 p.m. **Please Visit Exhibit Hall – Scientific Poster Q & A**
Poster authors will be available to discuss their work and answer questions.

R 12:30 p.m. – 1:45 p.m. **Residents' Luncheon**
Moderator: **Walter H. Merrill, Cincinnati, Ohio*
Location: Room 28 A, B, C

▶ 12:30 p.m. – 1:45 p.m. **Ethics Debate: Professionalism Meets Commerce: Tighter Regulation of Conflicts of Interest in Surgeons – Industry Relations is Needed**
Moderator: **Robert M. Sade, Charleston, South Carolina*
Pro: *Jerome Kassirer, Boston, Massachusetts*
Con: *Thomas Stossel, Boston, Massachusetts*
Location: Room 29

1:45 p.m. – 6:05 p.m. **Parallel Surgical Forum I: Adult Cardiac I**
Moderators: *Michael J. Mack, Dallas, Texas; Edward Y. Sako, San Antonio, Texas*
Location: Room 20
Financial Disclosure: M. J. Mack, Edward Lifesciences, Boston Scientific, Consultant/Advisory Board (including volunteer roles).

44. INR Self-Management Lowers the Risk of Thromboembolic Events after Prosthetic Aortic Valve Replacements
T. Eitz; S. Schenk; O. Wagner; D. Seifert; M. Morshuis; R. Koerfer; H. Koertke
Heart Center NRW, Bad Oeynhausen, Germany

45. A Change in Perspective: Results for Ischemic Mitral Valve Repair are Similar to Mitral Valve Repair for Degenerative Disease
*L. M. Gazoni; *J. A. Kern; *P. W. Smith; T. B. Reece; L. M. Fedoruk; *C. G. Tribble; *I. L. Kron*
University of Virginia, Charlottesville, Virginia

46. Permanent Chronic Atrial Fibrillation: Pulmonary Vein Isolation Alone Is Not Enough
*W. Wisser[1]; C. Aigner[1]; G. Stix[2]; R. Seitelberger[1]; D. Hutschala[3]; *E. Wolner[1]*
[1]Medical University Vienna, Dept. of Cardiothoracic Surgery, Vienna, Austria; [2]Medical University Vienna, Dept. of Cardiology, Vienna, Austria; [3]Medical University Vienna, Dept. of Cardiothoracic and Vascular Anaesthesia & Intensive Care, Vienna, Austria

▶ New or of special interest

E Exhibit Break

47. Reoperation After Mitral Valve Repair for Degenerative Disease
*E. Dumont; *A. Gillinov; E. H. Blackstone; P. L. Houghtaling; *J. F. Sabik; *L. G. Svensson; *T. Mihaljevic; *B. Pettersson; *B.W. Lytle*
Cleveland Clinic, Cleveland, Ohio

48. Vascular Graft Replacement of the Ascending and Descending Aorta: Do Dacron Grafts Grow?
C. D. Etz;T. M. Homann; D. Silovitz; C. A. Bodian; M. Luehr; G. Di Luozzo; K. A. Plestis; R. B. Griepp
Mount Sinai School of Medicine, New York City, New York

49. Long-Term Follow Up Confirms Left Ventricular Reverse Remodeling Following Restrictive Mitral Annuloplasty and CABG in Ischemic Mitral Regurgitation
*J. Braun; N.Van de Veire; R. J. M. Klautz; J.Westenberg; M. I. M.Versteegh; J. J. Bax; *R. A. E. Dion*
Leids Universitair Medisch Centrum, Leiden,The Netherlands

E 3:15 p.m. – 4:00 p.m. **Break – Please Visit Exhibit Hall**

4:00 p.m. – 6:05 p.m. **Parallel Surgical Forum I: Adult Cardiac I (continued)**
Moderators: **John H. Calhoon, San Antonio,Texas; *Grayson H.Wheatley, III, Phoenix, Arizona*
Location: Room 20
Financial Disclosure: G.H. Wheatley, III, Medtronic, Research Grant, W.L. Gore & Associates, Consultant/Advisory Board (including volunteer roles).

50. Aortic Enlargement and Late Reoperation Following Repair of Acute Type A Aortic Dissection
*A. Zierer; R. K.Voeller; K. E. Hill; *N.T. Kouchoukos; *R. J. Damiano, Jr.; *M. R. Moon*
Washington University, School of Medicine, St. Louis, Missouri

51. Straight Deep Hypothermic Arrest: Experience in 394 Patients Supports its Effectiveness as a Sole Means of Brain Preservation
*A. Gega[1]; M.Tranquilli[1]; J.A. Rizzo[2]; M. H. Johnson[1]; Z. Golek[1]; *J. A. Elefteriades[1]*
[1]Yale University School of Medicine, New Haven, Connecticut; [2]State University of New York, Stony Brook, Stony Brook, New York

▶ **Featured Lecturer: Evolution of Aortic Therapy**
**Hazim J. Safi, Houston,Texas*

52. Fate of the Residual Distal and Proximal Aorta After Acute Type A Dissection Repair Using Contemporary Surgical Reconstruction Algorithm
*A. Pochettino; A. Geirsson; M. G. Keane; D. Swarr; *Y. J.Woo; *W.Y. Szeto; *J. E. Bavaria*
University of Pennsylvania, Philadelphia, Pennsylvania

53. Subclavian Revascularization is Required More Frequently Than Predicted In Endovascular Thoracic Aortic Aneurysm Repair
*T. Reece; L. M. Gazoni; K. J. Cherry; B. B. Peeler; *C. G.Tribble; *J. A. Kern*
University of Virginia, Charlottesville, Virginia

54. Risk Factors for Perioperative Stroke After Thoracic Endovascular Aorta Repair (TEVAR)
*J.T. Gutsche; A.T. Cheung; M. L. McGarvey; W. G. Moser; *W.Y. Szeto; *A. Pochettino; *J. E. Bavaria*
University of Pennsylvania, Philadelphia, Pennsylvania

55. Cardiac Risk Associated With Endoluminal Graft Repair of the Descending Thoracic Aorta
**G. H. Wheatley, III; J. Williams; J. Rodriguez-Lopez; V. Ramaiah; D. Olsen; E. B. Diethrich*
Arizona Heart Institute, Phoenix, Arizona

56. Safety of Aortic Surgery in the Present Era
*H. E. Achneck[1]; J.A. Rizzo[2]; M. D. Tranquilli[1]; *J.A. Elefteriades[1]*
[1]Yale University, New Haven, Connecticut; [2]State University of New York, Stony Brook, Stony Brook, New York

1:45 p.m. – 6:05 p.m.

Parallel Surgical Forum II: Adult Cardiac II
Moderators: **Marc Ruel, Ottawa, Canada; *Frank W. Sellke, Boston, Massachusetts*
Location: Room 33 A, B, C

Financial Disclosure: F.W. Sellke, Ikaria Pharmaceuticals, Grant, Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received); Bayer, Speaker's Bureau, Speakers Bureau/Honoraria (e.g. speaker bureau, symposia, and expert witness); Inotek Pharmaceutical, Advisory Board, Consultant/Advisory (including volunteer roles).

57. Genomic and Proteonomic Responses After Cardiopulmonary Bypass Indicate Innate Immune System Dysfunction
*M. J. Delano; P. O. Scumpia; *R. Ungaro; C. L. Tannahill; K. O' Malley; G. M. Janelle; A. Abouhamze; *T. D. Martin; *E. D. Staples; *W.W. Scott; L. L. Moldawer; *P. J. Hess, Jr.*
University of Florida, Gainesville, Florida

58. External Application of Rapamycin-Eluting Film at Anastomotic Site Inhibit Neointimal Hyperplasia in a Canine Model
*S. Kawatsu[1]; K. Oda[1]; Y. Saiki[1]; Y. Tabata[2]; *K. Tabayashi[1]*
[1]Department of Cardiovascular Sugery, Tohoku University Graduate School of Medicine, Sendai, Japan; [2]Department of Bioterials, Field of Tissue Engineering, Institute for Frintier Medical Science, Kyoto University, Kyoto, Japan

59. Oxidative Stress Levels Associated to New Onset Atrial Fibrillation After Cardiac Surgery: A Case-Control Study
*B. Ramlawi; S. Mieno; N. R. Sodha; C. Bianchi; R. T. Clements; J. Feng; *F.W. Sellke*
Harvard Medical School, Boston, Massachusetts

▶ **Featured Lecturer: History of Surgical Treatment of the Aortic Valve Failure**
Albert Starr; Portland, Oregon

Financial Disclosure: Albert Starr, Edwards Lifesciences, Royalties from Valves sold outside of the U.S. M. E. Jessen, Organ Transplant Systems, Research Grant, Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received; PDL Bropharma, Speaker's Bureau, Speakers Bureau/Honoraria (e.g. speaker bureau, symposia, and expert witness); Quest Medical, Advisory Board Member, Consultant/Advisory Board (including volunteer roles).

60. Cardioprotective Effects of Methylprednisolone Treatment in Cardiac Surgery
O. J. Liakopoulos[1]; H. Dörge[1]; A. Bräuer[2]; J. Grabedünkel[1]; U. Nagorsnik[1]; F.A. Schöndube[1]
[1]Department of Thoracic and Cardiovascular Surgery, University of Göttingen, Göttingen, Germany; [2]Department of Anesthesiology, Emergency and Intensive Care Medicine, University of Göttingen, Göttingen, Germany

61. The Role of Somatosensory Evoked Potentials in Predicting Outcome During Repairs of the Descending Thoracic and Thoracoabdominal Aorta
**P. E. Achouh; *A. L. Estrera; C. C. Miller, III; M. Villa; A. Azizzadeh; *E. E. Porat; *H. J. Safi*
University of Texas Medical School Houston; Memorial Hermann Heart and Vascular Institute, Houston, Texas

62. Myocardial Protection During Elective Coronary Artery Bypass Grafting Using High Dose Insulin Therapy
T. B. Albacker; G. Carvalho; T. Schricker; K. Lachapelle
Division of Cardiothoracic Surgery, Department of Surgery, Department of Anaesthesia, McGill University Health Center, McGill University, Montreal, Quebec, Canada

E 3:35 p.m. – 4:20 p.m. **Break – Please Visit Exhibit Hall**

4:20 p.m. – 6:05 p.m. **Parallel Surgical Forum II: Adult Cardiac II (continued)**
Moderators: **Michael E. Jessen, Dallas, Texas; *Octavio E. Pajaro, Jacksonvillle, Florida*
Location: Room 33 A, B, C

63. Aortic Valve Replacement Using Real-Time MRI Guidance
**K. A. Horvath; M. Guttman; M. Li; R. Lederman; D. Mazilu; O. Kocaturk; P. Karmarkar; T. Hunt; S. Kozlov; E. McVeigh*
National Institute of Health, Bethesda, Maryland

64. Reoperative Aortic Root Replacement After Previous Aortic Surgery
**W.Y. Szeto; *J. E. Bavaria; *F.W. Bowen; A. Geirsson; W. C. Hargrove; *A. Pochettino*
University of Pennsylvania Medical Center, Philadelphia, Pennsylvania

65. 10-Year Experience With Stentless Aortic Valves: Full Root Versus Subcoronary Implantation
**J. Ennker; *U. Rosendahl; *A. Albert; *I. C. Ennker; I. Florath*
Heart Institute Lahr/Baden, Lahr, Germany

66. Durability of Stentless Aortic Bioprostheses in the Subcoronary Position: A Comparison with Stented Porcine and Pericardial Bioprostheses
*N. D. Desai; *G.T. Christakis; G. N. Cohen; J.Y. Sever; *S. E. Fremes; *B. S. Goldman*
Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada

67. High-Risk Aortic Valve Replacement: Are the Outcomes as Bad as Predicted?
**E. A. Grossi; C. F. Schwartz; U. P. Jorde; P. Yu; *G.A. Crooke; *J. B. Grau; G. H. Ribakove; F. Baumann; P. Ursomanno; *A.T. Culliford; S. B. Colvin; *A. C. Galloway*
New York University School of Medicine, New York, New York

68. Liberal Use of Aortic Root Replacement is Justified: Perioperative Risk is Low and Quality of Life is Excellent
*M. Stalder; S. Staffelbach; F. F. Immer; L. Englberger; P.A. Berdat; F. S. Eckstein; *T. Carrel*
Clinic for Cardiovascular Surgery, University Hospital, Bern, Switzerland

69. Stentless Aortic Valve Reoperation: A Surgical Challenge
**M.A. Borger; K. Prasongsukarn; S. Armstrong; C. M. Feindel; *T. E. David*
Toronto General Hospital, Toronto, Ontario, Canada

1:45 p.m. – 5:45 p.m. **Parallel Surgical Forum III: General Thoracic I: Esophageal**
Moderators: *Francis C. Nichols, Rochester, Minnesota; Thomas J. Watson, Rochester, New York*
Location: Room 31 A, B, C

▶ **Featured Lecturer: Origins of Transhiatal Esophagectomy**
**Mark B. Orringer, Ann Arbor, Michigan*

70. Validation of Soluble Mesothelin Related Peptide (SMRP) Level Elevation in Mesothelioma Serum and Pleural Effusions
**H. I. Pass[1]; F. Steiner[1]; A. Ivanova[1]; S. Ivanov[1]; J. Allard[2]*
[1]New York University School of Medicine, New York, New York; [2]Fujirebio Diagnostics, Malvern, Pennsylvania

71. Expression of Hypoxia-inducible Factor (HIF)-1 Alpha and Vascular Endothelial Growth Factor as Outcome Predictors in Resected Esophageal Squamous Cell Carcinoma
**C. Tzao[1]; G. Sun[2]; J. Jin[3]; H. Tung[4]; C. Hsieh[1]; Y. Wang[5]*
[1]Division of Thoracic Surgery, Tri-Service General Hospital, Taipei, Taiwan; [2]Department of Thoracic Surgery, Tri-Service General Hospital, Taipei, Taiwan; [3]Department of Pathology, Tri-Service General Hospital, Taipei, Taiwan; [4]Department of Social and Humanity Studies, National Defense Medical Center, Taipei, Taiwan; [5]Department of Life Sciences, National Taiwan Normal University, Taipei, Taiwan

72. Aberrant Promoter CpG Island Hypermethylation of the APC Gene Can Serve as a Good Prognostic Factor by Affecting Lymph Node Metastasis in Squamous Cell Carcinoma of the Esophagus
**Y.T. Kim; J. Park; S. J. Park; C. H. Kang; *S.W. Sung; J. H. Kim*
Seoul National University, College of Medicine, Cancer Research Institute, Seoul, Republic of Korea

3:05 p.m. – 3:50 p.m. **Break – Please Visit Exhibit Hall**

3:50 p.m. – 5:45 p.m. **Parallel Surgical Forum III: General Thoracic I: Esophageal (continued)**
Moderators: **Joe B. Putnam, Jr., Nashville, Tennessee; *Richard I. Whyte, Stanford, California*
Location: Room 31 A, B, C

Financial Disclosure: J. B. Putnam, Bayer Genentech, Principal Investigator, International Trial, Scientific Advisory Board, Consultant/Advisory (including volunteer roles).

73. Polyflex Expandable Stents in the Treatment of Esophageal Disease
**A. Pennathur[1]; *A. C. Chang[2]; K. M. McGrath[1]; G. Steiner[1]; M. Alvelo Rivera, II[1]; O.Awais[1]; M. J. Schuchert[1]; S. Gilbert[1]; *R. J. Landreneau[1]; *G. Abbas[1]; *J. D. Luketich[1]*
[1]University Of Pittsburgh Medical Center, Pittsburgh, Pennsylvania; [2]University Of Michigan, Ann Arbor, Michigan

74. Innovative Strategies for the Surgical Management of Esophageal Scleroderma
*M. S. Kent[1]; *J. Luketich[1]; K. Irshad[1]; O.Awais[1]; *H. Fernando[2]; *R. Landreneau[1]; M. Alvelo-Rivera[1]*
[1]University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania; [2]Boston Medical Center, Boston, Massachusetts

75. Long-Term Results of a Phase II Trial of Neoadjuvant Chemotherapy Followed by Esophagectomy for Locally Advanced Esophageal Neoplasm
**A. Pennathur; *J. D. Luketich; M. Alvelo Rivera, II; *R. J. Landreneau; J. Ward; K. Cooper; S. R. Land; C. P. Belani*
University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania

76. Diagnosis of Esophageal Adenocarcinoma by Serum Proteomic Pattern
**Z. Hammoud; L. Dobrolecki; *K. Kesler; E. Rahmani; *K. Rieger; L. Malkas; R. Hickey*
Indiana University School of Medicine, Indianapolis, Indiana

77. The Outcomes of Transhiatal Esophagectomy in the Profoundly Obese: Implications and Experience
*C. N. Scipione; *M. B. Orringer; *A. Chang; A. Pickens; C. Lau*
University of Michigan, Ann Arbor, Michigan

78. Implications of a Positive Gastric Margin After Transhiatal Esophagectomy for Carcinoma of the Distal Esophagus and Cardia
*P. D. DiMusto; *M. B. Orringer*
University of Michigan, Ann Arbor, Michigan

1:45 p.m. – 5:45 p.m. **Parallel Surgical Forum IV: General Thoracic II: Lung**
Moderators: **Michael S. Mulligan, Seattle, Washington; *G. Alexander Patterson, St. Louis, Missouri*
Location: Room 32 A, B

▶ **Invited Lecturer: The History of Lung Transplantation**
**G. Alexander Patterson, St. Louis, Missouri*

79. N-Acetyl Cysteine Attenuates Ischemia-Reperfusion Injury After Lung Transplantation
I. Inci; W. Zhai; S. Arni; S. Hillinger; W. Weder
University of Zurich, Zurich, Switzerland

E 2:35 p.m. – 3:20 p.m. **Break – Please Visit Exhibit Hall**

3:20 p.m. – 5:45 p.m. **Parallel Surgical Forum IV: General Thoracic II: Lung (continued)**

80. Early Donor Management but Not Early Steroids Therapy is Associated With Increased Retrieval Rate of Lungs for Transplantation
R.V.Venkateswaran[1];V. B. Patchell[2]; I. C.Wilson[1]; J. G. Mascaro[1]; R. D.Thompson[1]; J. H. Coote[2]; R. S. Bonser[1]
[1]University Hospital Birmingham NHS Foundation Trust, Birmingham, United Kingdom; [2]University of Birmingham, Birmingham, United Kingdom

81. Two-year Improvement in Multidimensional Bode Index After Awake Nonresectional Lung Volume Reduction Surgery
E. Pompeo;T. C. Mineo
Thoracic Surgery Tor Vergata University, Rome, Italy

82. Obesity is Not Associated With Increased Complications Following Anatomic Resection for Non-Small Cell Lung Cancer
**P.W. Smith; H.Wang; L. M. Gazoni; *K. R. Shen; *T. M. Daniel; *D. R. Jones*
University of Virginia, Charlottesville, Virginia

83. Prognostic Factors in Resected Satellite-Nodule T4 Non-Small Cell Lung Cancer
*J. Rao; R. Sayeed; *G. Darling; S.Tomaszek; S. Fischer; *S. Keshavjee*
Toronto General Hospital,Toronto, Ontario, Canada

84. Efficacy of Anatomic Segmentectomy and the Importance of Surgical Margin: Tumor Diameter Ratio in the Treatment of Stage I Non-Small Cell Lung Cancer (NSCLC)
*M. J. Schuchert; B. L. Pettiford; *S. B. Keeley; *T. A. D'Amato; A. Kilic; R. Santos; *A. El-Sherif; *J. D. Luketich; *R. J. Landreneau*
Heart, Lung and Esophageal Surgery Institute, University of Pennsylvania Medical Center Health System, Pittsburgh, Pennsylvania

85. Incidence and Risk Factors for Lung Injury Following Lung Cancer Resection
*N. Alam; *B. J. Park; D.Amar;A.Wilton; *M. S. Bains; *R. M. Flores; *R. J. Downey; N. Rizk; *V.W. Rusch*
Memorial Sloan-Kettering Cancer Center, New York, New York

86. Use of Video-Assisted Thoracic Surgery (VATS) for Lobectomy in the Elderly Results in Fewer Complications – Geriatric Patient Care Award Recipient
**S. M. Cattaneo, II; *B. J. Park; A. S.Wilton; *M. S. Bains; *R. J. Downey; *R. M. Flores; N. Rizk; *V.W. Rusch*
Memorial Sloan-Kettering Cancer Center, New York, New York

87. Predictors of Survival and Disease-Free Survival in Patients With Resected N1 Non-Small Cell Lung Cancer
**R. J. Cerfolio; A. S. Bryant*
Univeristy of Alabama at Birmingham, Birmingham, Alabama

88. Single Fraction Stereotactic Radiosurgery (SFSR) for the Treatment of Stage I Non-Small Cell Lung Cancer (NSCLC)
**J. S. Donington; L. S. Schumacker; B. Loo; H. A.Wakelee; *R. I.Whyte; Q. Le*
Stanford University, Stanford, California

1:45 p.m. – 5:45 p.m. **Parallel Surgical Forum V: Congenital**
Moderators: *Jeffrey P. Jacobs, St. Petersburg, Florida; *Christopher A. Caldarone, Toronto, Canada
Location: Room 30 A, B
Financial Disclosure: J. P. Jacobs, CardioAccess, Medical Advisor, Consultant/Advisory (including volunteer roles).

89. Excellent Midterm Outcome of Extra-Cardiac Conduit Total Cavopulmonary Connection: Results of 126 Cases
T. Nakano; H. Kado; H. Sonoda; T. Tachibana; N. Boku; Y. Andou
Fukuoka Children's Hospital, Fukuoka, Japan

90. Perfusion-Contractility Relationship in the Fontan Circulation
*G. Szabó; *S. Hagl*
Department of Cardiac Surgery, University of Heidelberg, Heidelberg, Germany

91. Extubation in the Operating Room After Fontan's Procedure: Effect on Practice and Outcomes
*D. L. S. Morales[1]; K. E. Carberry[1]; A. Juergens[2]; M. Butler[2]; J. S. Heinle[1]; *E. D. McKenzie[1]; *C. D. Fraser, Jr.[1]; L. K. Diaz[1]*
[1]Texas Children's Hospital, Houston, Texas; [2]Baylor College of Medicine, Houston, Texas

92. Persistent Antegrade Pulmonary Blood Flow Post-Glenn Does Not Alter Early Post-Fontan Outcomes in Single Ventricle Patients
*R. G. Gray[1]; K. Altmann[1]; *J. M. Quaegebeur[1]; *R. S. Mosca[1]; *J. M. Chen[2]*
[1]Columbia University College of Physicians and Surgeons, New York, New York; [2]Weill Medical College of Cornell University, New York, New York

93. Outcomes of Surgical Management Strategies for Neonates With Aortic Coarctation and Associated Ventricular Septal Defects
*B. Alsoufi; *W. G. Williams; *J. G. Coles; S. Cai; *G. S. Van Arsdell; *C. A. Caldarone*
Hospital for Sick Children and University Of Toronto, Toronto, Ontario, Canada

94. Lessons Learned in the Management of Pulmonary Atresia/Intact Ventricular Septum
*Y. Hirata; *J. M. Chen; *R. S. Mosca; *J. M. Quaegebeur*
Columbia University, New York, New York

E 3:20 p.m. – 4:05 p.m. **Break – Please Visit Exhibit Hall**

4:05 p.m. – 5:45 p.m. **Parallel Surgical Forum V: Congenital (continued)**

95. Complete Atrioventricular Canal: A Comparison of the Modified Single-Patch Technique to the Two-Patch Technique
*C. L. Backer; *R. D. Stewart; F. Bailliard; A. M. Kelle; C. L. Webb; *C. Mavroudis*
Children's Memorial Hospital, Chicago, Illinois

96. Role of Edge-to-Edge Technique in Repair of Tricuspid or Common Atrioventricular Valve Associated With Functional Single Ventricle
M. Ando; Y. Takahashi
Sakakibara Heart Institute, Tokyo, Japan

97. Current Risk Factors and Outcomes for the Arterial Switch Operation
*Z. Qamar; *E. J. Devaney; *E. L. Bove; *R. G. Ohye*
University of Michigan, Ann Arbor, Michigan

98. Aortic Annulus Size and Coronary Artery Pattern are Associated With RVOTO Following Arterial Switch Operation (ASO) for Complex D-Transposition of the Great Arteries (D-TGA)
*D. Gottlieb; M. L. Schwartz; K. Bischoff; K. Gauvreau; *J. E. Mayer, Jr.*
Children's Hospital, Boston, Massachusetts

99. A Ten-Year Experience With Continuous SvO2 Monitoring Following Stage 1 Palliation (S1P) for Hypoplastic Left Heart Syndrome (HLHS): The Evolution and Impact of Goal-Directed Therapy
**J. S. Tweddell[1]; N. S. Ghanayem[1]; K.A. Mussatto[2]; M. E. Mitchell[1]; L. J. Lamers[1]; N. Musa[1]; S. Berger[1]; *S. B. Litwin[1]; G. M. Hoffman[1]*
[1]Medical College of Wisconsin, Milwaukee, Wisconsin; [2]Children's Hospital of Wisconsin, Milwaukee, Wisconsin

100. The Hybrid Approach for the Management of HLHS: Intermediate Results After the Learning Curve
**M. Galantowicz; J. Cheatham; T. Feltes; T. Hoffman; *A. Phillips; J. A. Bauer; A. C. Cook; R. Rodeman*
Columbus Children's Hospital, Columbus, Ohio

101. Role of Nitric Oxide and cGMP in Placental Dysfunction Following Fetal Bypass
*C. T. Lam[1]; R. Baker[1]; W. C. Lubbers[1]; L. C. Spezzano[1]; C. Teuschler[1]; J. L. McNamara[1]; R. E. Ferguson[1]; A. Gardner[1]; J. P. Lombardi[1]; K. E. Clark[2]; *P. Eghtesady[1]*
[1]Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio; [2]University of Cincinnati, Cincinnati, Ohio

7:00 p.m. – 10:00 p.m. **Members' Social Event: An Evening Aboard the USS Midway**
See page 4 for more details.

WEDNESDAY, JANUARY 31, 2007

6:30 a.m. – 12:00 p.m. **Registration: STS Annual Meeting**
Location: San Diego Convention Center, Hall D Lobby

7:00 a.m. – 10:00 a.m. **STS University Hands-On Courses**
(See ticket for location)
See page 289 for more details.

STS Course #1: Congenital Heart Surgery: Cardiopulmonary Bypass Updated "Nuts and Bolts of CPB"
Course Directors: **Charles D. Fraser, Jr. and *Jeffrey S. Heinle, Houston, Texas*

STS Course #2: Endoesophageal Therapies
Course Director: **Thomas J. Watson, Rochester, New York*

STS Course #3: Esophageal, Bronchoscopic and Pleural Ultrasound
Course Directors: **Robert J. Cerfolio and Mohamad A. Eloubeidi, Birmingham, Alabama*

STS Course #4: RFA Navigational Bronchoscopy
Course Director: **Malcolm M. DeCamp, Boston, Massacusetts*

STS Course #5: Management of Tracheobronchial Disease: Stenting, Ablation Therapy and Surgery
Course Director: **Daniel L. Miller, Atlanta, Georgia*

STS Course #6: Mitral Valve Repair: Basic and Advances Techniques
Course Director: **A. Marc Gillinov, Cleveland, Ohio*

STS Course #7: Multidisciplinary Valve Surgery: Techniques and Tips
Course Directors: **Joseph E. Bavaria and *W. Clark Hargrove, Philadelphia, Pennsylvania*

STS Course #8: Surgery for Atrial Fibrilation
Course Director: **Ralph J. Damiano, St. Louis, Missouri*

STS Course #9: Surgical Ventricular Remodeling
Course Director: **John V. Conte, Baltimore, Maryland*

STS Course #10: Practical Ventricular Assist Device: Strategies for the Cardiac Surgeon
Course Director: **Robert L. Kormos, Pittsburgh, Pennsylvania*

STS Course #11: Catheter Based Techniques for Surgeons
Course Director: **Todd M. Dewey, Dallas, Texas*

*STS Member

10:00 a.m. – 10:30 a.m. **Break**

10:30 – 12:30 p.m. **STS University Live Surgery**
Moderators: **John H. Calhoon, San Antonio, Texas; *Richard H. Feins, Chapel Hill, North Carolina; *Michael J. Mack, Dallas, Texas; *Charles D. Fraser, Jr., Houston, Texas; *Malcolm M. DeCamp, Jr., Boston, Massachusetts; Armin Earnst, Boston, Massachusetts*
Location: Room 20 D

1. Minimally Invasive Esophagectomy (Live)
**James D. Luketich, Pittsburgh, Pennsylvania*

2. Congenital Tricuspid Valve Replacement and Maze Procedure for Ebstein's Anomaly (Edited Video)
**Jeffrey P. Jacobs, St. Petersburg, Florida*

3. Endobronchial Ultrasound and Navigational Bronchoscopy (Live)
David Feller-Kupman, Boston, Massachusetts

4. Robotic Mitral Valve (Live)
**W. Randolph Chitwood, Jr., Greenville, North Carolina*

5. Aortic Valve Sparing (Unedited Video)
**Duke E. Cameron, Baltimore, Maryland*

6. Simulator Demonstration: Catheter Based Techniques
**Michael J. Mack, Dallas, Texas*

1:00 p.m. – 5:30 p.m. **Patient Safety Symposium**
Moderator: **Richard H. Feins, Chapel Hill, North Carolina*
Location: San Diego Marriott Hotel
See page 294 for more details.

SUNDAY AT-A-GLANCE

7:00 a.m. – 7:00 p.m.		Registration: STS/AATS Tech-Con 2007 and STS Annual Meeting
E	7:30 a.m. – 4:00 p.m.	STS/AATS Tech-Con 2007 Exhibits and Simulator Village
8:00 a.m. – 11:45 a.m.		STS/AATS Tech-Con 2007
9:00 a.m. – 11:30 a.m.		STS Medical Legal Symposium
9:00 a.m. – 3:00 p.m.		Spouse Postgraduate Program
11:50 a.m. – 1:10 p.m.		Rapid Fire Luncheon: Joint STS/AATS Tech-Con and Parallel Surgical Symposia Luncheon
R	1:00 p.m. – 4:30 p.m.	Residents' Symposium: Navigating the Employment Maze
1:15 p.m. – 4:30 p.m.		STS Parallel Surgical Symposia: Congenital and General Thoracic
1:15 p.m. – 4:30 p.m.		STS/AATS Tech-Con 2007
E	4:00 p.m. – 7:00 p.m.	STS Exhibits and Scientific Poster Session Opens
E	4:30 p.m. – 6:30 p.m.	Reception with Exhibitors in STS Exhibit Hall

MEDICAL LEGAL SYMPOSIUM

Moments of Decision in Judgment:
Proceed With Trial or Mediate
Sunday, January 28, 2007; 8:30 a.m. – 11:30 a.m.
Moderators: **Joseph J. Amato and *Carl L. Backer, Chicago, Illinois*
Location: Room 29 C, D

Symposium Description: This course will present a new understanding of the possible mechanisms of resolving medical-legal litigation. Participants will learn of the history and reason for mediation, develop an understanding that the process of litigation is not only time consuming, psychologically damaging and an expensive proposition, and will come to appreciate that there are times that the results obtained may not be favorable for either the hospital or the surgeon—and that mediation may be the most efficient way to resolve issues presented to them.

8:30 a.m. **Continental Breakfast**

9:00 a.m. **Welcome and Announcements**
**Joseph J. Amato, and *Carl Backer, Chicago, Illinois*

9:05 a.m. **What Exactly is Mediation? Its History, Present and Future**
Max Douglas Brown, JD, Chicago, Illinois

9:30 a.m. **Court Ordered Mediation: Cook County Experience**
Judge William D. Maddux, Chicago, Illinois

9:45 a.m. **A Thoracic Case is Presented**
Potential negligence occurred to a 75-year-old female with a thoracic aneurysm. She sustained numerous complications ultimately causing her death and the issue presented is the cardiothoracic surgeon's decision to perform surgery based upon the size of the aneurysm and the symptoms of the patient.

10:00 a.m. The audience evaluates the facts and votes.

10:05 a.m. Additional facts are presented.

10:15 a.m. Examination of the doctor by the defense attorney.
Chad Castro, JD

10:30 a.m. Cross examination of the doctor by the plaintiff's attorney.
Allen Schwartz, JD

10:45 a.m. Brief summations from both plaintiff and defense attorneys.

11:00 a.m. The audience votes again whether to proceed to trial or a mediation process.

11:10 a.m. – 11:30 a.m. **Panel Discussion – Questions & Answers**

SPOUSE POSTGRADUATE PROGRAM

The Lively Mind: Creative and Critical Thinking Using Both Sides of the Brain

Sunday, January 28, 2007; 9:00 a.m. – 3:00 p.m.
Moderator: Betsey Bradley Urschel, Chair, Spouses' Post Graduate Program
Lecturer: Professor Jody Potts, PhD

Symposium Description: Think faster, work smarter with new left- and right-brain techniques to maximize your performance in the four phases of thinking: perception, memory, imagination and judgment. The result is a keen, energetic mind working at full capacity. It is always startling to realize that we use less than one-tenth of our brain's potential throughout our entire lives. Understanding the heart has been the challenge for the last half of the 20th century; today the brain is the new cutting-edge frontier of exploration.

Dr. Jody Potts is a distinguished professor and historian at Southern Methodist University in Dallas, Texas. She is the author of a landmark series of innovative educational textbooks, Adventure Tales of America: An Illustrated History of the United States. Her compelling and dynamic teaching style will make this a day a memorable and life-changing experience.

8:30 a.m.	**Coffee and Registration**
9:00 a.m.	**Perception: How to Communicate With Left- and Right-Brain People**
12:00 p.m.	**Luncheon**
1:00 p.m.	**Memory: How to Remember More and Forget Less**
	Imagination: How to be Creative on Demand
	Judgment: How to Make Better Decisions

*STS Member

RAPID FIRE LUNCHEON

Imaging in Cardiothoracic Surgery
Sunday, January 28, 2007; 11:50 a.m. – 1:10 p.m.
Moderator: **Ralph J. Damiano, St. Louis, Missouri*
Location: Room 6 A

Symposium Description: The Rapid Fire Luncheon will feature a series of video-rich presentations on new imaging technologies in cardiac and thoracic surgery. These will be projected on large screens on all four walls of the dining room, ensuring a "front row seat" for all attendees. From the role of cardiac MRI in heart failure, to the future of CT coronary angiography, this is a session not to be missed. Join your cardiothoracic surgical colleagues for a sit-down lunch and a glimpse at the future of cardiothoracic imaging.

11:50 a.m. **Welcome, Introduction, and Announcements**
**Ralph J. Damiano, St. Louis, Missouri*

11:55 a.m. **Cardiac MRI in the Diagnosis and Treatment of Congestive Heart Failure**
Gerald Pohost, Los Angeles, California
Financial Disclosure: G. Pohost, NIH (NHLBI), Research Grant, Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received); M. Budoff, GE, Speaker's BureauSpeakers Bureau/Honoraria (e.g. speaker bureau, symposia, and expert witness). Regulatory Disclosure: G. Pohost, 3T CMR (certain uses), not FDA-approved, investigational.

12:10 p.m. **When Will CT Angio Replace Diagnostic Catheterization?**
Matthew Budoff, Torrence, California

12:25 p.m. **3D Echo Cardiography in Cardiothoracic Surgery**
**Pedro J. Del Nido, Boston, Massachusetts*

12:40 p.m. **The New Role for PET Scanning in Thoracic Oncology**
**Bryan F. Meyers, St. Louis, Missouri*

12:55 p.m. **State of the Art 3D CT Airway Imaging**
Phillip Boiselle, Boston, Massachusetts

1:15 p.m. **Tech-Con Resumes**

1:15 p.m. **STS Congenital and General Thoracic Parallel Surgical Forums Begin**

*STS Member

R NAVIGATING THE EMPLOYMENT MAZE:

A SYMPOSIUM FOR GRADUATING RESIDENTS

Sunday, January 28, 2007; 1:00 p.m. – 4:30 p.m.
Location: Room 29 C, D

Symposium Description: Resident attendees will gain a more thorough understanding of the job search process in the field of cardiothoracic surgery and will learn the basic elements of physician employment contracts. Attendees will also learn how to maintain and maximize a relationship with an early-career mentor, and will understand the implications of practicing both cardiac and thoracic surgery. And, importantly, those who attend will gain a basic understanding of the issues and pitfalls that often coincide with the first year of cardiothoracic surgery practice.

1:30 p.m. **Introduction**
**Walter H. Merrill, Cincinnati, Ohio*

1:35 p.m. **Resident Reflections: How to Find a Job**
**John R. Mehall, Cincinnati, Ohio*

1:55 p.m. **Keys to Success in the Job Market**
**Grayson H. Wheatley, III, Phoeniz, Arizona*

2:15 p.m. **Contracting for Your Future**
**Robert S. D. Higgins, Chicago, Illinois*
Financial Disclosure: R.S.D. Higgins, Aventis Sanofi, (Educational Symposium on Diabetes in Cardiac Surgery received stipent for talks) Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness).

2:35 p.m. **Question & Answer Session**

2:55 p.m. **Break**

3:25 p.m. **The Business of Practice**
Tom Johnston, JD, Austin Texas

3:45 p.m. **Early Career Mentoring in an Academic World: Tips & Pitfalls**
**Edward D. Verrier, Seattle, Washington*

4:05 p.m. – 4:30 p.m. **Question & Answers**

CONGENITAL PARALLEL SURGICAL SYMPOSIUM

Sunday, January 28, 2007; 1:15 p.m. – 4:30 p.m.
Location: Room 32 A, B

The Congenital Parallel Surgical Symposium will begin at 11:50 a.m. with the featured STS/AATS Tech-Con 2007 Rapid Fire Luncheon titled, "Imaging in Cardiothoracic Surgery."

Symposium Description: The STS Congenital Surgical Symposium is divided into three sessions. The first session focuses on aortic coarctation and is followed by a mini-symposium on neurologic outcomes after congenital heart surgery. The final session focuses on surgical technique and strategy with updates on pediatric tracheal surgery, pediatric thoracic surgery, hybrid procedures, robotics, and arterial switch procedures. The session on aortic coarctation provides the participant with the most up-to-date information on decision-making strategies for neonatal coarctation, teenage coarctation, and recurrent coarctation. This session includes two debates, clamp and sew versus left heart assist for teenage coarctation, and surgery versus transcatheter intervention for recurrent coarctation, and ends with a panel discussion. The session on neurologic outcomes after congenital heart surgery will present basic science and clinical data from experienced world experts to explain the current state of the art for neuroprotective strategies for children undergoing surgery for congenital heart disease. Finally, a series of lectures will provide participants with the most up-to-date information on the pathophysiology and non-operative and operative treatment for pediatric tracheal and thoracic disease and on the role of hybrid procedures and robotics in congenital heart surgery. The final two lectures will then focus on the fine technical points in the surgical management of transposition of the great arteries. At the conclusion, a panel discussion is presented by the faculty along with opportunities for discussion by the participants.

1:15 p.m. **Welcome and Announcements**
**Jeffrey P. Jacobs, St. Petersburg, Florida*
Financial Disclosure: J. P. Jacobs, CardioAccess (Medical Advisor), Consultant/Advisory Board (including volunteer roles).

1:15 – 2:25 p.m. SESSION I: Aortic Coarctation
*Moderators: *Jeffrey P. Jacobs, St. Petersburg, Florida and *J. Mark Morales, Corpus Chrisiti, Texas*

1:15 p.m. **Neonatal Coarctation – Criteria for Thoracotomy Vs. Sternotomy**
Paul J. Chai, Tampa, Florida

1:25 p.m. **Teenage Coarctation – I Use Clamp and Sew**
**Victor O. Morell, Pittsburgh, Pennsylvania*

1:35 p.m. **Teenage Coarctation – I Use Left Heart Assist**
**Christian Pizarro, Wilmington, Delaware*

1:45 p.m. **Recurrent Coarctation – I Like Balloons and Stents**
Neil Wilson, London, United Kingdom

1:55 p.m. **Recurrent Coarctation – I Like Surgery**
**John W. Brown, Indianapolis, Indiana*

2:05 p.m. **Questions and Answers**
**John W. Brown, Paul J. Chai, *Jeffrey P. Jacobs, *J. Mark Morales, *Victor O. Morell, *Christian Pizarro, and Neil Wilson*

2:25 – 3:05 p.m. SESSION II: Neurologic Outcomes After Congenital Heart Surgery
*Moderators: *James Jaggers, Durham, North Carolina and *J. Mark Morales, Corpus Christi, Texas*

2:25 p.m. **Operative and Perfusion Strategies to Minimize CNS Injury During Surgery for CHD**
**James Jaggers, Durham, North Carolina*

2:35 p.m. **The Vulnerable Brain: Mechanisms of CNS Injury in Patients with CHD**
**J. William Gaynor, Philadelphia, Pennsylvania*

2:45 p.m. **The Vulnerable Family: Redefining CNS "Outcomes" in Children with CHD**
Gil Wernovsky, Philadelphia, Pennsylvania

2:55 p.m. **Questions and Answers**
**J. William Gaynor, *James Jaggers, *J. Mark Morales, Gil Wenovsky*

*STS Member

3:05 – 4:30 p.m. SESSION III: Surgical Technique and Strategy
*Moderators: *Jeffrey P. Jacobs, St. Petersburg, Florida and *James Jaggers, Durham, North Carolina*

3:05 p.m. **Pediatric Tracheal Surgery**
**Carl L. Backer, Chicago, Illinois*

3:15 p.m. **Pediatric Thoracic Surgery**
Martin J. Elliott, London, United Kingdom

3:25 p.m. **Hybrid Procedures Including the Hybrid Approach for Muscular VSD**
**Emile M. Bacha, Boston, Massachusetts*
Regulatory Disclosure: The presentation describes the use of Amplatzer Muscular VSD Occluder, which the FDA status is Investigational.

3:35 p.m. **Update on Robotics for Congenital Heart Surgery**
**Richard G. Ohye, Ann Arbor, Michigan*

3:45 p.m. **Arterial Switch for TGA-IVS-Management Strategies and How to Handle Complex Coronary Patterns**
**James A. Quintessenza, St. Petersburg, Florida*

3:55 p.m. **Arterial Switch with VSD, Coarctation, and Aortic Arch Hypoplasia**
**Francois G. Lacour-Gayet, Denver, Colorado*

4:05 p.m. **Panel Discussion**
**Emile M. Bacha, *Carl L. Backer, Martin J. Elliott, *Jeffrey P. Jacobs, *James Jaggers, *Francois G. Lacour-Gayet, *Richard G. Ohye, and *James A. Quintessenza*

4:30 p.m. **Adjourn**

*STS Member

GENERAL THORACIC PARALLEL SURGICAL SYMPOSIUM

Sunday, January 28, 2007; 1:15 p.m. – 4:30 p.m.
Location: Room 31 A, B, C

The General Thoracic Parallel Surgical Forum will begin at 11:50 a.m. with the STS/AATS Tech-Con 2007 Rapid Fire Luncheon titled, "Imaging in Cardiothoracic Surgery."

Symposium Description: This four hour course provides participants with the most up-to-date information in several areas of General Thoracic Surgery. There are several causes for dyspnea which can be treated surgically (emphysema, diaphragmatic paralysis, and tracheomalacia). Experts in these procedures will present the current status of these operations. Lung cancer treatment changes so rapidly that an update is needed for proteomics and adjuvant treatment. A Heller myotomy for achalasia can be performed with abdominal or transthoracic approaches, with or without a fundoplication. Experts will argue the pros and cons of each approach. Finally, sympathectomy and spontaneous pneumothorax are addressed. At the conclusion, there is a panel discussion with the faculty which has extensive experience in these operations.

1:15 p.m. **Welcome and Announcements**
**Robert J. McKenna, Jr., Los Angeles, California*
Financial Disclosure: R. J. McKenna, Jr., Gore (Monies to hospital to cover research project), Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received).

1:20 – 2:20 p.m. SESSION I: Surgical Treatment of Dyspnea

1:20 p.m. **Surgical LVRS – Where Do We Stand?**
TBD

1:30 p.m. **Bronchoscopic LVRS – Does It Work?**
**Sudish C. Murthy, Cleveland, Ohio*
Regulatory Disclosure: The presentation describes the use of Emphasis Endotracheal, Spiration Endotracheal, and Bronchus Stent, which the FDA status is investigational.

1:40 p.m. **Paralyzed Diaphragm – Phrenic Nerve Stimulation**
**Mark E. Ginsburg, New York, New York*

1:50 p.m. **Tracheomalacia – Stent vs. Tracheoplasty**
**Simon K. Ashiku, Boston, Massachusetts*

2:00 p.m. **Panel Discussion**
**Simon K. Ashiku, *Mark E. Ginsburg, *Sudish C. Murthy*

*STS Member

2:20 – 3:20 p.m. SESSION II: Lung Cancer

2:20 p.m. **Proteomics**
**Thomas A. D'Amico, Durham, North Carolina*
Financial Disclosure: T.A. D'Amico, U.S. Surgical, Speakers Bureau/Honoraria (e.g. speaker bureau, symposia, and expert witness).

2:30 p.m. **Resection of Lung Cancer**
**Joe B. Putnam, Nashville, Tennessee*
Financial Disclosure: J. B. Putnam, Bayer (PI), Research Grant (e.g., prinicipar investigator, collaborator or consultant and pending grants as well as grans already received), Genentech (Sci Advisory Board), Consultant/Advisory Board (including volunteer roles).

2:40 p.m. **Pulmonary Carcinoids – Octreoscan/Sleeve Resections**
**David R. Jones, Charlottesville, Virginia*
Financial Disclosure: D. R. Jones, Merck Pharmaceuticals, Millennium Pharmaceutical (support for clinical trials), Other Research Support (e.g. receipt of drugs, supplies, equipment or other in-kind support).

2:50 p.m. **Current Status of Adjuvant Treatment**
**Eric Vallieres, Seattle, Washington*

3:00 p.m. **Panel Discussion**
**Thomas A. D'Amico, *Eric Vallieres, *David R. Jones, *Joe B. Putnam*

3:20 – 4:10 p.m. SESSION III: Heller Myotomy

3:20 p.m. **Transthoracic Approach is the Way to Go**
**Henning A. Gaissert, Boston, Massachusetts*

3:30 p.m. **No, Do Laparoscopy**
**James D. Luketich, Pittsburgh, Pennsylvania*
Financial Disclosure: J. D. Luketich, US Surgical, Stryker, Axcan (PI), Research Grant (e.g., principal investigator, collaborator or consultant and pending grants as well as grants already received), Intuitive Surgical, RITA Medical (Stock Options, Recipient), Ownership Interest (e.g. stock options, patent or other intellectual property)

3:40 p.m. **To Wrap or Not to Wrap**
**Claude Deschamps, Rochester, Minnesota*

3:50 p.m. **Panel Discussion**
**Claude Deschamps, *Henning A. Gaissert, *James D. Luketich*

*STS Member

4:10 – 4:30 p.m. SESSION IV: Miscellaneous

4:10 p.m. **Sympathectomy**
**Mark J. Krasna, Baltimore, Maryland*

4:20 p.m. **Spontaneous Pneumothorax**
Giuseppe Cardillo, Rome, Italy

4:30 p.m. **Adjournment**

4:30 – 6:30 p.m. Reception
Location: Exhibit Hall

Exhibit Break

*STS Member

MONDAY AT-A-GLANCE

6:30 a.m.	– 5:00 p.m.	Registration: STS Annual Meeting
7:30 a.m.	– 7:45 a.m.	Opening Remarks
7:45 a.m.	– 8:45 a.m.	General Scientific Session I: J. Maxwell Chamberlain Memorial Paper Presentations: Abstracts #1-3
8:45 a.m.	– 8:55 a.m.	Introduction of New Members
8:55 a.m.	– 9:00 a.m.	STS Historian Report
9:00 a.m.	– 4:30 p.m.	STS Exhibits and Scientific Poster Session Opens
9:00 a.m.	– 9:15 a.m.	Award Presentations: Earl Bakken Award TSDA/TSFRE Award Socrates Award Geriatric Patient Care Award
E 9:15 a.m.	– 10:00 a.m.	Break – Please Visit Exhibits
10:00 a.m.	– 11:00 a.m.	Thomas B. Ferguson Lecture
11:00 a.m.	– 12:00 p.m.	Presidential Address
E 12:00 p.m.	– 1:30 p.m.	Please Visit Exhibits
R 12:00 p.m.	– 1:15 p.m.	Thoracic Surgery Residents' Association Meeting
1:30 p.m.	– 3:30 p.m.	Parallel Surgical Forum I: Adult Cardiac I Oral Presentations: Abstracts #4-11 Parallel Surgical Forum II: Adult Cardiac II Oral Presentations: Abstracts #12-19 Parallel Surgical Forum III: General Thoracic Oral Presentations: Abstracts #20-27 Parallel Surgical Forum IV: Congenital Oral Presentations: Abstracts #28-35 Parallel Surgical Forum V: Practice Education Symposium
E 3:30 p.m.	– 4:15 p.m.	Break – Please Visit Exhibits
4:15 p.m.	– 6:00 p.m.	**Business Meeting (STS Members Only)**
7:00 p.m.	– 9:00 p.m.	Surgical Motion Pictures
7:00 p.m.	– 9:00 p.m.	STS Workforce on International Relationships Symposium

R Resident Information Session

GENERAL SESSION I: MONDAY, JANUARY 29, 2007

Unless otherwise 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.

7:45 a.m. – 8:05 a.m.

▶ **1. J. Maxwell Chamberlain Memorial Paper for Congenital Heart Surgery: Surgical Lessons from the First 100 Fontan Conversions with Arrhythmia Surgery**

**C. Mavroudis; B. J. Deal; *C. L. Backer; *R. D. Stewart; W. H. Franklin; K. Ward; S. Tsao*
Children's Memorial Hospital, Chicago, Illinois
Discussant: *Joseph A. Dearani, Rochester, Minnesota

Background: The purpose of this report is to examine how our strategy has evolved during 100 consecutive Fontan conversions with arrhythmia surgery (FCAS) and pacemaker therapy.

Methods: Since 1994, 100 consecutive patients, mean age 21.5±8 years, underwent FCAS. The greater majority (n=94) had extracardiac total cavopulmonary connections. Associated procedures included atrioventricular valve repair/replacement (n=18), pulmonary arterioplasty (n=19), coronary sinus unroofing to relieve left pulmonary vein obstruction (n=2), and aortic valve replacement (n=2). Surgical modifications included simplified takedown of atriopulmonary Fontans, aggressive dissection of atrioventricular groove to facilitate arrhythmia surgery and atrial reduction, removal of all intracardiac baffles or atrioventricular valve patches to improve cryoablation, and inclusion of any remnant right ventricle into pulmonary circulation. After early isthmus ablation failure, modified right atrial maze was routinely performed except for atrial fibrillation (biatrial maze). Intraoperative electrophysiologic evaluation led to identification of left-sided atrial reentry tachycardia for which biatrial maze was performed. All patients had pacemaker therapy which has evolved into dual chamber antitachycardia pacemakers with bipolar steroid-eluting epicardial leads.

Results: There was one early death (1%) and 5 late deaths (5%). Renal failure requiring dialysis occurred in 5 patients (5%) and 5 patients required transplantation (5%). Mean hospital stay was 13.7±12.2 days. Recurrent atrial tachyarrhythmias occurred in 11 (11%); 8 of the initial 50 (16%) and 3 of the last 50 patients (6%, p=0.2).

Conclusions: Fontan conversion with arrhythmia surgery and pacemaker therapy is safe and efficacious for patients with failing Fontans. Lessons learned from the first 100 operations have improved outcomes.

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8:05 a.m. – 8:25 a.m.

▶ **2. J. Maxwell Chamberlain Memorial Paper for General Thoracic Surgery: Are Surgical Outcomes for Lung Cancer Resections Improved at Academic Institutions?**

*R. A. Meguid; B. S. Brooke; D. C. Chang; *S. C. Yang*
Johns Hopkins University School of Medicine, Baltimore, Maryland
Discussant: *Carolyn E. Reed, Charleston, South Carolina

Background: Focus on defining centers of excellence for high-risk surgical procedures, including pulmonary resection, reveals improved mortality rates at high-volume centers. We postulate that short-term post-operative outcome is improved in lung cancer resections at academic medical centers (AMCs) vs. non-AMCs, in addition to high-volume centers.

Methods: Patients aged 18-85 undergoing pulmonary resection for lung cancer were identified in the Nationwide Inpatient Sample dataset from 1998-2003 (20% sample of hospitals in 37 states). Patients were stratified by extent of resection (segmentectomy, lobectomy, and pneumonectomy). Independent association of AMC status on in-hospital mortality was assessed via multivariate logistic regression. Covariates included patient demographics, case-volume, and Charlson Index comorbidities.

Results: 50,867 lung resections were identified in this dataset (8,144 segmentectomies, 37,822 lobectomies, 4,901 pneumonectomies; 46.3% female, mean age 64±12years). 55.2% of resections were performed at AMCs. Overall mortality rate for pulmonary resections was 3.82%, with decreased mortality at AMCs vs. non-AMCs (3.63% vs. 4.0%;p=0.016). When stratified by procedure only, the difference in mortality rate for lobectomies at AMCs vs. non-AMCs was significant [2.94%(609/20,740) vs. 3.62%(620/17110);p<0.001]. On multivariate logistic regression analysis, controlling for confounders including case-volume, undergoing lobectomy at AMCs independently reduced the odds of mortality by 17% [OR(95%CI)=0.83(0.71-0.98), p=0.026] vs. undergoing lobectomy at non-AMCs.

Conclusions: Mortality is reduced in lung cancer patients undergoing lobectomy at AMCs, independent of hospital volume. Dissemination of these data to referring physicians would result in improved quality of care for lung cancer patients. Further research is needed to better define centers of excellence for high risk surgical procedures.

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8:25 a.m. – 8:45 a.m.

3. J. Maxwell Chamberlain Memorial Paper for Adult Cardiac Surgery: Off-pump Techniques Benefit Both Men and Women and Narrow the Gender Disparity in Mortality After Coronary Artery Bypass Surgery: An Intention-to-Treat Analysis of The Society of Thoracic Surgeons National Cardiac Database

*J. D. Puskas[1]; *F. H. Edwards[2]; P. Pappas[3]; S. O'Brien[3]; E. M. Peterson[4]; P. Kilgo1; *T. B. Ferguson[5]
[1]Emory University, Atlanta, Georgia; [2]University of Florida, Jacksonville, Florida; [3]Duke Clinical Research Institute, Durham, North Carolina; [4]Duke University School of Medicine, Durham, North Carolina; [5]Eastern Carolina University, Greenville, North Carolina

Financial Disclosure: J.D. Puskas, Medtronic, MCRI, St. Jude, Guidant, Cardiogenesis, NHLBI, Cardica, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Medtronic, Scanlan, Guidant, Consultant/Advisory Board; P. Pappas, STS statistician, Employment (full or part-time) ; STS, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); S. O'Brien, STS, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); E.M. Peterson, STS, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); T.B. Ferguson, AHRQ, Novadaq Technologies, Inc, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Inc; BioVascular, Inc; UHC, Inc, Consultant/Advisory Board.

Discussant: *Bruce W. Lytle, Cleveland, Ohio
Financial Disclosure: B. W. Lytle, Edwards, St. Jude, Medtronic, Viacor, Research Grant Support, Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received).

Background: Women have historically suffered greater morbidity and mortality than men after conventional coronary artery bypass grafting (CABG) on cardiopulmonary bypass (CPB). It is controversial whether off-pump CABG (OPCAB) alters this gender-based disparity.

Methods: The Society of Thoracic Surgeons National Cardiac Database was reviewed for risk factors and clinical outcomes of 42,477 consecutive, non-emergent, isolated, primary CABG/CPB or OPCAB cases performed at 63 North American centers which performed more than 100 OPCAB cases between January 1, 2004 and December 31, 2005. Odds ratios (OR) for adverse events, adjusted for 30 clinical and demographic covariates, were compared by saturated multiple logistic regression models between women and men who had OPCAB versus CABG/CPB. All analyses were by intention-to-treat; patients converted from OPCAB to CABG/CPB or CABG/CPB to OPCAB intraoperatively were included in their originally intended group.

Results: Female patients (n=11,785) and those treated with OPCAB (n=16,245) were older, had more comorbidities and higher predicted risk than male patients (n=30,662) and those treated with conventional CABG/CPB (n=26,202), respectively. In both men and women, adjusted OR for death and most major complications were significantly lower with OPCAB than with CABG/CPB. Among CABG/CPB cases only, women had a significantly greater adjusted risk of death, prolonged ventilation and long LOS than men (TABLE). In contrast, among OPCAB cases, women had outcomes similar to men except higher stroke risks.

Event	Off vs. On (in males)	Off vs. On (in females)	Female vs. Male (on-pump patients)	Female vs. Male (off-pump patients)
Death	0.86	0.75*	1.45#	1.27
Stroke	0.56#	0.72*	1.19	1.54*
MI	0.64#	0.61#	1.19	1.14
Reoperation	0.82#	0.71#	0.98	0.85
Prolonged Ventilation	0.80#	0.64#	1.25#	1.00
LOS > 14 days	0.72#	0.65#	1.16*	1.05

*p<.05 #p<.01

Conclusions: OPCAB is associated with fewer major adverse cardiac events and may benefit women disproportionately, thereby neutralizing some of the gender disparity in clinical outcomes after CABG.

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PARALLEL SURGICAL FORUM I: ADULT CARDIAC I

Monday, January 29, 2007, 1:30 p.m. - 3:30 p.m.

Unless otherwise 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.

1:30 p.m. – 1:45 p.m.

4. Current Eighteen Month Clinical Outcomes of Percutaneous Coronary Intervention and Coronary Artery Bypass Grafting: The CARE (Coronary Artery Revascularization) Study

**M. J. Mack[1]; *P. Brown[2]; *M. Katz[2]; *G. Palmer[2]; *J. R. Edgerton[1]; S. L. Prince[1]; E. Eichhorn[2]; M. A. Herbert[3]*

[1]Cardiopulmonary Research Science and Technology Institute, Dallas, Texas; [2]CARE Task Force, Dallas, Texas; [3]Medical City Dallas Hospital, Dallas, Texas

Financial Disclosure: M.J. Mack, Guidant, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); HCA Corp., Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received).

Introduction: Many randomized trials have compared coronary artery bypass grafting (CABG) and percutaneous coronary intervention (PCI). However, results of these trials in select patients may not accurately reflect current clinical practice using drug-eluting stents and off-pump CABG. We undertook a registry of coronary revascularization to determine clinical outcomes of current techniques.

Methods: All patients undergoing isolated coronary revascularization in 8 community-based hospitals were prospectively enrolled in a centralized database. All pre-, intra-, and post-procedural data were captured, with outcomes obtained at18 months by patient and physician contact and utilizing the National Death Index. Approximately 30% of the patients also filled out SF-12 questionnaires at 12 months.

Results: There were 4352 patients enrolled, 3098 (71.2%) with PCI and 1252 (28.8%) CABG. Drug-eluting stents were used in 2353/3098 (76.0%) of the PCI patients; off-pump CABG performed in 577/1252 (46.1%) patients. The PCI and CABG patient groups were similar with no statistical differences in gender, age, race, renal failure and diabetes. The PCI group had a higher mean ejection fraction (53±16% vs 50±12%; $p<0.001$), and statistically higher rates of previous PCI, valve and CABG procedures. Eighteen month follow-up has been obtained on 79.2% (2453/3098) of the PCI, and 78.5% (983/1252) of the CABG patients.

Conclusions: Eighteen month outcomes show that patients undergoing initial PCI have significantly higher rates of repeat revascularization than those undergoing CABG, resulting in significantly more events overall. Patients score nearly one standard deviation higher on both the SF-12 Physical and Mental sections compared to norms for heart disease patients.

*STS Member

Eighteen Month Events

	CABG	PCI	pValue
Cardiac Death (Overall)	5.6%	6.0%	0.62
0 - 30 days	2.1%	1.5%	0.17
>31 days	3.5%	4.6%	0.15
MI	1.4%	1.9%	0.32
Repeat Target Vessel Revascularization			
With CABG	0.5%	2.2%	<0.001
With PCI	5.5%	9.3%	<0.001
MACE (Major Adverse Cardiac Events)	13.0%	19.4%	<0.001
SF-12 Physical Score (Heart Disease Norm = 38.8 + 10.0)	46.0 + 11.7	44.9 + 10.9	0.11
SF-12 Mental Score (Heart Disease Norm = 48.3 + 10.1)	54.8 + 8.2	54.4 + 8.8	0.44

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1:45 p.m. – 2:00 p.m.

5. Does Choice of Arterial Graft Influence Long Term Clinical Outcomes After Coronary Revascularization? Results of a Radial Artery vs. Right Internal Thoracic Artery Trial

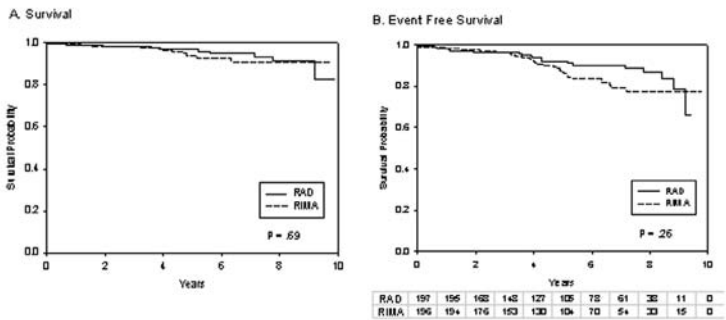
*P.A. Hayward[1]; S. Moten[1]; I. Gordon[2]; G. Matalanis[1]; D. Hare[1]; *B. F. Buxton[1]*
[1]Austin Hospital, Melbourne, Australia; [2]Statistical Consulting Centre of University of Melbourne, Melbourne, Australia

Background: To investigate the optimal revascularisation conduit for coronary territories other than that of the left anterior descending artery, long-term clinical outcomes following use of a radial artery (RA) or right internal thoracic artery (RITA) were evaluated as part of the Radial Artery Patency and Clinical Outcomes (RAPCO) study.

Methods: As part of a 10-year prospective, randomized, single-center trial, patients aged <70 years undergoing primary coronary surgery, were randomly allocated to use of RA (n=198) or free RITA (n=196) for grafting the largest target other than LAD. Annual follow up documented death, myocardial infarction or revascularisation as primary endpoints (1 patient lost). Analysis was on an intention-to-treat basis.

Results: There were no significant differences in the preoperative status of the two groups including age, gender, diabetes mellitus, hypertension, urgency of surgery. 186 of 198 patients in the RA group and 179 of 196 patients in the RITA group received the intended conduit. Mean number of grafts was 3.1+/-0.8 and 3.2+/-0.9 in the RA and RITA groups respectively. During surveillance of up to 9.8 years, mean 5.3 years, absolute survival and event free survival was equivalent between groups, with 10 versus 12 deaths and 20 versus 28 events in the RA and RITA groups respectively (log ranks: p=0.69 for survival, p=0.26 for event free survival).

Conclusions: These 2 arterial conduits may yield equivalent clinical outcomes at 5 years. This will be compared with mean 5 year angiographic patency when available. For now, equivalent clinical results offer surgeons flexibility in planning revascularization.



*STS Member

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2:00 p.m. – 2:15 p.m.

6. Comparison Between Surgical Arterial Revascularization and Drug Eluting Stents in Patients with Diabetes Mellitus

*Y. Ben-Gal[1]; B. Medalion[2]; Y. Moshkovitz[3]; I. Herz[1]; N. Hansson[1]; *G. Uretzky1; R. Mohr[1]*
[1]Tel Aviv Sourasky Medical Center, Tel-Aviv, Israel; [2]Rabin Medical Center - Beilinson Campus, Petah Tikva, Israel; [3]Assuta Medical Center, Petah Tikva, Israel

Background: Reduction of re-stenosis and re-intervention was recently reported with the introduction of drug-eluting stents (DES). This study compares mid-term outcome of surgical arterial revascularization in patients with diabetes mellitus to that of percutaneous interventions (PCI) incorporating DES (Cypher).

Methods: One hundred and forty two diabetic patients who underwent arterial revascularization between May 2002 and December 2005 were compared with 172 diabetics who underwent Cypher stenting. Single-vessel patients in the surgical group were treated with left internal thoracic artery (ITA), and most multi-vessel patients were treated with two ITAs. After performing propensity score with patients' characteristics, COX regression was used in order to evaluate predictors of outcome events.

Results: Follow-up ranged between 6-49 months. Thirty months survival (Kaplan-Meier) of the two groups was similar (97% and 98% for the surgical and Cypher groups, respectively, p=0.65). However, angina-free survival (88% vs 66% respectively, Log Rank p<0.001) and re-intervention-free survival (96% vs 89%, p=0.006) were better in the surgical group. Assignment to the Cypher group (OR 4.3, 95% CI 1.4-14.3) and right coronary revascularization (all bare metal stents in the PCI group) (OR 2.7, CI 1.1-6.7) were independent predictors of re-intervention. Assignment to the Cypher group was the only predictor of angina recurrence (OR 6.7, 95% CI 3.3-12.5). Single vessel disease had a protective effect for re-angina (OR 0.4, 95% CI 6.18-6.77).

Conclusions: Outcome of diabetic patients who underwent surgical arterial revascularization is better than that of PCI patients treated with DES.

*STS Member

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2:15 p.m. – 2:30 p.m.

7. Preoperative Statin Use Decreases Operative Mortality in High Risk Coronary Artery Bypass Patients

*J. Magovern; K. Simpson; *D. H. Benckart; *G. Marrone; *T. Maher; *D. Dean; *G. Magovern, Jr.
Allegheny General Hospital, Pittsburgh, Pennsylvania

Background: Statins are widely prescribed to patients with atherosclerosis. Database analysis was used to examine changes in preoperative statin use, as well as its effect on mortality over a 5-year period of patients undergoing coronary artery bypass grafting (CABG).

Methods: 2,377 patients had isolated CABG at Allegheny General Hospital from 2000-2004. Mean age was 65 ± 11 years, (70%) male, (5%) redo operations, and (4%) emergencies. Both univariate analysis (Chi2, Fisher's Exact and Student's t-tests) and multivariate linear regression were used to determine differences.

Results: Incidence of preoperative statin use gradually increased from 38% in 2000 to 45% in 2004. There was no significant preoperative difference between the groups: predicted operative risk (2%), female gender (30%), redo operations (6%), emergency operation (4%), or diabetes mellitus (30%). Overall operative mortality was 2.4 %, but was 1.7% for statin users and 2.8% for non-statin users ($p < 0.05$). Univariate predictors of mortality were emergency surgery; redo operation, preoperative renal insufficiency, insulin dependent diabetes, and no statins ($p < 0.05$). In multivariate analysis lack of statin use was a significant predictor of mortality in high-risk patients ($n = 245$, 12.9% vs. 5.6%, $p < 0.05$).

Conclusions: Despite widespread use, <50% of CABG patients were receiving statins before surgery at AGH, where many patients present with unstable coronary syndromes. Preoperative statin use is associated with lower operative mortality in high-risk patients. The mechanism is not known but may reflect the pleiotropic properties of statins.

*STS Member

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2:30 p.m. – 2:45 p.m.

8. The Impact of Heparin-Induced Thrombocytopenia on Postoperative Outcomes Following Cardiac Surgery

*F. Kerendi; *O. M. Lattouf; *J. D. Puskas; *V. H. Thourani; *R. A. Guyton*
Emory University, Atlanta, Georgia

Financial Disclosure: O.M. Lattouf, Guidant, MCRI, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); J.D. Puskas, MCRI, St Jude, Guidant, Cardiogenesis, NHLBI, Cardica, Medtronic, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Medtronic, Scanlan, Guidant, Consultant/Advisory Board; V.H. Thourani, Medtronic, Coulter Foundation, Edwards, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); R.A. Guyton, Guidant, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Medtronic, Consultant/Advisory Board.

Background: To determine the effect of heparin-induced thrombocytopenia (HIT) on postoperative morbidity and mortality after cardiac surgery and to identify preoperative risk factors for HIT.

Methods: From 2002-2005, 492 cardiac surgery patients with postoperative thrombocytopenia (50% drop in platelet count) underwent testing for HIT platelet factor 4 antibodies. Risk factors and outcomes of patients with a positive HIT assay (HIT+) were compared to patients with thrombocytopenia but without HIT antibodies.

Results: 19.9% of patients (98/492) were HIT+. Among HIT+ patients there was a higher preoperative incidence of infectious endocarditis (8.2% vs. 2.5%, p=0.014, Fisher's Exact Test) and urgent/emergent cases (44.9% vs. 33%, p=0.033). Other risk factors were similar between the two groups, including previous cardiac/vascular surgery or percutaneous interventions. Postoperative infections occurred more frequently in HIT+ patients, including sepsis (19.4% vs. 9.6%, p=0.012) and pneumonia (53.1% vs. 23.1%, p<0.001). HIT+ patients also had a higher rate of stroke (11.2% vs. 5.6%. P=0.046), renal failure requiring hemodialysis (27.6% vs. 8.6%, p<0.001), and acute limb ischemia (19.4% vs. 4.1%, p<0.001). Thirty-day mortality was significantly higher in the HIT+ group (25.5% vs. 15.2%, p=0.024).

Conclusions: HIT+ patients suffered significantly more complications than patients with similar thrombocytopenia and a negative HIT panel. Greater awareness of this devastating problem may allow earlier detection of HIT and institution of appropriate therapy, which may limit the associated morbidity and mortality.

*STS Member

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2:45 p.m. – 3:00 p.m.

9. Delays Worsen In-Hospital Mortality After Coronary-Artery Bypass Grafting

B. Sobolev[1]; *G. Fradet[1]; R. Hayden[2]; A. Levy[1]
[1]University of British Columbia, Vancouver, British Columbia, Canada; [2]Royal Columbian Hospital, New Westminster, British Columbia, Canada

Background: Currently there are no direct estimates of in-hospital mortality reduction afforded by undergoing coronary-artery bypass grafting (CABG) within the recommended time in health systems that use priority waiting lists to manage access to elective surgery.

Methods: We used a population-based registry to identify patients with established coronary artery disease who were to undergo first-time isolated CABG in British Columbia, Canada. We studied whether survival during hospital admission differed significantly among patients who waited for CABG longer than the recommended time, six weeks for semi-urgent patients and twelve weeks for those in the non-urgent group.

Results: Among 7,316 patients who underwent CABG, 97 patients died postoperatively during the same hospital admission, giving a province-wide death rate at discharge of 1.3%. The observed (unadjusted) proportion of in-hospital deaths was lower in patients treated within a recommended time than in those whose CABG was delayed (1.0% [27 deaths in 2,675 patients] vs. 1.5% [70 in 4,641], P = 0.07). The odds of in-hospital death were 39% lower in those who underwent early (as opposed to late) CABG, the adjusted odds ratio 0.61 (95% confidence interval, 0.39 to 0.96). The adjusted odds of in-hospital death increased by 5% for every additional month of delay in undergoing surgery, OR = 1.05 (95% confidence interval, 1.01 to 1.11).

Conclusions: We found a significant survival benefit of performing early surgical revascularization for patients judged to be at lower risk of death at the time of the decision to treat.

*STS Member

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3:00 p.m. – 3:15 p.m.

10. Sequential Hybrid Carotid and Coronary Artery Revascularization Sharp Trial: Immediate and Midterm Results

*F. Versaci[1]; C. Del Giudice[2]; P. Nardi[2]; R. Gandini[3]; E. Pampana[3]; A. Pellegrino[2]; A. Salvati[2]; J. Zeitani[2]; G. Simonetti[3]; *L. Chiariello[2]*

[1]Cardiology Tor Vergata University, Rome, Italy; [2]Cardiac Surgery Tor Vergata University, Rome, Italy; [3]Radiology Tor Vergata University, Rome, Italy

Background: The aim of the study is to assess the technical feasibility and safety of a sequential hybrid carotid artery stenting (CAS) and coronary artery bypass grafting (CABG).

Methods: Between February 2004 and May 2006, 60 (7.5%) out of 800 patients referred to our Department for CABG had significant concomitant coronary and carotid artery disease. Of these 37 patients (30 males), aged 54-88 (mean age 70,3±8.5) years, with high risk for combined or staged carotid endarterectomy-CABG or CAS -CABG operation were treated. All patients underwent CAS with distal filter protection. Aspirin 100 mg a day had to be started two days before the procedure. At the end of CAS, all patients were transferred to the operating room, where the planned CABG interventions were performed with normothermic cardiopulmonary bypass. Clopidogrel (300 mg as a loading dose, followed by 75 mg a day for a month) was started in the Intensive care unit, 6 hours after the end of CABG, provided that bleeding from the thoracic drainages had stopped. All patients were followed-up every 6 months clinically and by ultrasonography (mean follow-up 10,3±5,3 months, range 1-22).

Results: All patients underwent successful CAS. One patient had stroke and one patient a transient ischemic attack immediately after the CAS (5,4%). There were 2 (5,4%) in hospital deaths by cardiac failure. Event-free survival at the follow-up was 94,6%.

Conclusions: In patients with combined carotid and coronary disease at high surgical risk the proposed hybrid approach seems to be an alternative therapeutic strategy.

*STS Member

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3:15 p.m. – 3:30 p.m.

11. A Simple Index to Predict Likelihood of Skilled Nursing Facility Admission After CABG Among Older Patients

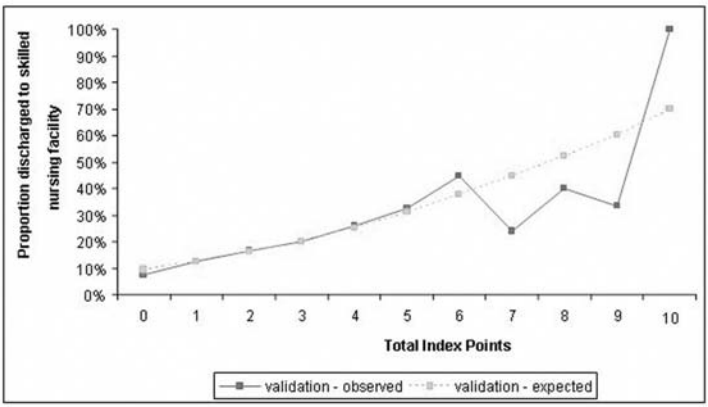
*D. C. Chang; D. L. Joyce; A. Shoher; *D. D. Yuh*
Johns Hopkins Hospital, Baltimore, Maryland

Background: Acceptable short-term mortality rates for elderly patients undergoing coronary artery bypass grafting (CABG) are reported in the literature. Elderly patients considering CABG also fear a post-operative loss of functional independence. We describe an index that predicts a patient's likelihood of admission to a skilled nursing facility (SNF) after CABG to address this concern.

Methods: Logistic regression analysis of the California hospital discharge database over a 5 year period was performed to identify the most prevalent preoperative ICD-9 diagnoses associated with SNF admission after primary CABG in patients 65 years or older. Each diagnosis was weighted according to odds ratios to develop an index that predicts the likelihood of discharge to a SNF. The index was validated using our institutional database.

Results: 26,040 patients fit our criteria with a mean age of 74.2 years (32.8% women), an in-hospital mortality rate of 3.09%, and a 17.3% SNF discharge rate. Our index was a summation of 9 selected preoperative ICD-9 diagnoses, each assigned a 1- (osteoarthritis, congestive heart failure, atrial fibrillation, myocardial infarction, anemia, obesity) or 2-point value (female, COPD, renal failure). Patients with scores of 3 or less were considered "low-risk," being 60% less likely for SNF discharge than "high-risk" patients with scores of 4 and above. Validation analysis produced ROC and pseudo r^2 values of 0.6435 and 0.0408, respectively (Figure).

Conclusions: We describe a simple index to identify older patients at low- and high-risk for SNF admission after CABG. Such tools may be useful in counseling older patients considering CABG.



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PARALLEL SURGICAL FORUM II: ADULT CARDIAC II

Monday, January 29, 2007, 1:30 p.m. - 3:30 p.m.

Unless otherwise 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.

1:30 p.m. – 1:45 p.m.

12. Hemodynamic and Echocardiographic Effects of Temporary Biventricular Pacing Immediately Post Cardiopulmonary Bypass for Patients With Chronic Heart Failure

*J. D. Muehlschlegel[1]; E. B. Lobato[2]; *P. J. Hess, Jr.[2]; *T. D. Martin[2]; Y. G. Peng[2]; *C. T. Klodell, Jr.[2]*

[1]Brigham and Women's Hospital, Boston, Massachusetts; [2]University of Florida, Gainesville, Florida

Background: Chronic biventricular (BV) pacing improves left ventricular (LV) function in patients with low ejection fraction during resynchronization therapy. We aimed to analyze the acute effects of biventricular pacing versus single ventricle lead pacing on hemodynamics and left ventricular function immediately following cardiopulmonary bypass.

Methods: Ten patients with a mean ejection fraction of 35% underwent open heart surgery involving cardiopulmonary bypass (CPB). Temporary pacing electrodes were placed on the right atrium, apex of the right ventricle (RV), and lateral wall of the LV prior to separation from CPB. After separation, the hemodynamic effects of three atrio-ventricular pacing modes were studied for 4 minutes each. The random pacing modes differed in the site of ventricular stimulation and were RV, LV and BV. Hemodynamic and echocardiographic data were collected. Statistical analysis was performed with analysis of variance.

Results: Biventricular pacing increased cardiac output by 4%, 13%, and 44% over RV pacing, LV pacing, and pre-bypass values, respectively ($p<0.05$) (Figure 1, Table 1). The fractional area of change increased significantly with BV pacing compared to pre-CPB and RV and LV pacing (41% to 49%, $P<0.05$)(Figure 1, Table 1) A strong tendency for improved diastolic function during biventricular pacing was suggested by an increased propagation velocity of 49 cm/s compared to 38 cm/s and 40 cm/s for RV and LV pacing, respectively ($p=0.057$).

Conclusions: Biventricular pacing, immediately after cardiopulmonary bypass, improves LV systolic function and cardiac output while showing a strong tendency for improved diastolic function in patients with poor ejection fraction.

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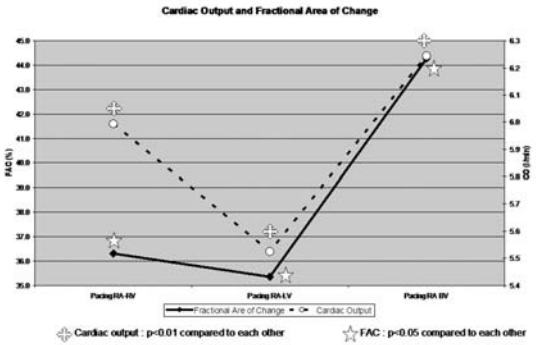
Table 1:

	Pre-CPB	Pacing RA-RV	Pacing RA-LV	Pacing RA BV
Heart Rate (beats/min)	74 ±14	94 ±4	94 ±4	94 ±4
Fractional area of Change (%)	40 ±11	36 ±14	35 ±13	44 ±12
Cardiac Output (l/min)	4.4 ±1.2	6.0 ±2.3	5.5 ±1.7	6.2 ±2.2
Mean Arterial Pressure (mmHg)	76 ±11	64 ±8	63 ±8	61 ±7
Central Venous Pressure (mmHg)	10 ±6	8 ±2	8 ±3	8 ±3



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1:45 p.m. – 2:00 p.m.

13. The Impact of the Extent of Septal Myocardial Infarction on Outcomes Following Surgical Ventricular Restoration

*N. D. Patel; J. A. Williams; *J. V. Conte*
Johns Hopkins Medical Institutions, Baltimore, Maryland

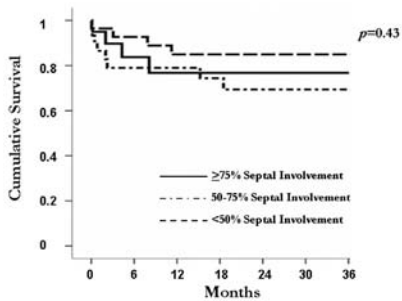
Financial Disclosure: N.D. Patel, 2005 Chase Medical Scholar for Surgical Ventricular Restoration, Other Research Support (receipt of drugs, supplies, equipment or other in-kind support); J.V. Conte, Chase Medical Corporation, Consultant/Advisory Board.

Background: Surgical ventricular restoration (SVR) is classically performed in heart failure patients with anteroseptal infarction. It is unknown how the extent of septal infarction (SMI) affects prognosis. We reviewed our experience to evaluate the impact of the extent of SMI on outcomes following SVR.

Methods: We retrospectively reviewed SVR patients from 1/2002-12/2005. The extent of SMI was assessed by magnetic resonance imaging (MRI) and intraoperative findings; SMI was graded as <50%, 50-75%, and >75% of the length of the septum. Follow-up was 100%.

Results: Seventy-eight patients underwent SVR. Twenty-eight patients had <50%, thirty patients had 50-75%, and twenty patients had >75% involvement of the septum. Patients with >75% involvement had a significantly lower ejection fraction and larger left ventricular volumes preoperatively by MRI (Table 1). All patients with >75% involvement were New York Heart Association (NYHA) class III/IV preoperatively, and 50% (10/20) had significant mitral regurgitation requiring a concomitant mitral valve procedure. Operative mortality was 5% (1/20). Cardiac function improved and was similar between the 3 groups postoperatively (Table 1). Three-year Kaplan-Meier survival was also similar between groups (Figure 1); >75% involvement was not a predictor of mortality on Cox regression analysis (OR=1.4; 95% CI=0.3-7.0; p=0.6). Three-quarters (15/20) of patients with >75% involvement of the septum improved to NYHA class I/II at follow-up.

Conclusions: This study is the first to evaluate the impact of the extent of SMI on SVR outcomes. These data demonstrate similar survival and significant functional and clinical improvement following SVR regardless of the extent of SMI.



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	Preoperative	Postoperative	p-value
> 75%			
EF (%)	20.9 + 8.3	39.7 + 6.2	<0.0001
LVESVI (mL/m2)	124.1 + 67.5	56.1 + 11.3	0.007
LVEDVI (mL/m2)	163.7 + 66.5	96.2 + 21.2	0.0077
50-75%			
EF	27.5 + 9.0a	38.3 + 10.5c	0.004
LVESVI (mL/m2)	88.4 + 32.6a	55.6 + 18.4c	0.0041
LVEDVI (mL/m2)	127.4 + 37.1a	88.8 + 23.8c	0.0036
< 50%			
EF	29.7 + 13.5a	36.1 + 10.9c	0.11
LVESVI (mL/m2)	87.4 + 45.7 b	64.4 + 30.9c	0.07
LVEDVI (mL/m2)	119.1 + 47.4a	96.8 + 36.4c	0.11

a p<0.05; versus preoperative, > 75% group
bp=0.06; versus preoperative, > 75% group
cp>0.05; versus postoperative, > 75% group
EF, ejection fraction; LVESVI, left ventricular end-systolic volume index;
LVEDVI, left ventricular end-diastolic volume index

NOTES

2:00 p.m. – 2:15 p.m.

14. Not the Absolute Value But the Change of LVEF and Pulmonary Wedge Pressure During Pump Off Test Can Predict the Successful Explant of LVAS

G. Matsumiya; M. Nishimura; H. Matsue; N. Sekiya; Y. Sawa
Osaka University Graduate School of Medicine, Osaka, Japan

Background: There are remaining questions in clinical application of bridge to recovery using left ventricular assist system (LVAS). Because of severe shortage of organ donors, we have adopted more liberal criteria for LVAS explant and evaluated the factors to predict its success.

Methods: Since 2000 to the end of 2005, 45 patients received LVAS, and 12 of them underwent LVAS explant after the pump off evaluation of left ventricular function. The etiologies of heart failure were idiopathic dilated cardiomyopathy (DCM) in 9, ischemic CM in 2 and peripertum CM in 1. Age ranged between 15 and 38 (27.9 ± 7.6).

Results: Four patients had early recurrence of severe congestive heart failure and required re-LVAS implant (F-group). In these 4 failed patients, increase of pulmonary capillary wedge pressure (PCWP) and decrease of LVEF were observed when the pump was temporally turned off. Eight patients (7 DCM, 1 ICM) have undergone successful LVAS explant and survived for 50-1460 (mean 910) days. In 4 of these successfully recovered patients, LVEF was over 50% during pump off test (S-1). In the other 4 patients, LVEF was less than 40% and not different from that in F-group, but significant increase of PCWP or decrease of LVEF were not observed (S-2).

Conclusions: Not the absolute value of LVEF and PCWP, but those changes from the pump on to off situation may reflect the reserved LV function and could be useful predictors of the successful explant of LVAS and the sustained functional recovery.

Change of LVEF and PCWP during Pump off test

	LVEF			PCWP		
Group	LVAS on	LVAS off	Change	LVAS on	LVAS off	Change
S-1 (n=4)	48±3.8	54.7±2.7	6.7±3.5	4.7±4.9	5.0±6.0	0.2±1.2
S-2 (n=4)	32.6±6.4	35.4±3.1	2.7±5.5	7.0±3.9	7.7±4.3	0.7±2.2
F (n=4)	39.9±9.7	30.5±4.9*	-9.5±5.1**	10.2±11.8	16.7±12.2	6.5 ±2.0**
	*p<0.05 vs. S-1			**p<0.05 vs. S-1, S-2		

*STS Member

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2:15 p.m. – 2:30 p.m.

15. Minimalized Cardiopulmonary Bypass Combined to an Optoelectrical Suction Device: The Future of Cardiopulmonary Bypass Technology

*F. F. Immer; E. Gygax; H. Tevaearai; H. Jenni; *T. P. Carrel*
Department of Cardiovascular Surgery, Bern, Switzerland

Background: Minimalized extracorporeal circulation (MECC) is a promising perfusion technology which allows a constant volume perfusion. We developed a MECC-System with a new opto-electrical suction device (Smart), where the suction is activated only when the top of the sucker is in direct contact with blood. A summary of our clinical experience with 805 MECC-Smart perfusions is reported here.

Methods: All in-hospital data of patients who underwent isolated CABG-surgery with the MECC-Smart system were prospectively analysed. Mortality and morbidity were assessed and compared to those obtained in 812 patients who underwent CABG-surgery with a conventional cardiopulmonary bypass system (CPB).

Results: Patients characteristics were similar in both groups. Average number of distal anastomoses was 3.2±0.9, without difference between the two techniques. Intraoperative vasoactive support (>500 mcg Noradrenalin/h) was more frequently required in patients who underwent surgery with CPB (21%), than in those with MECC-Smart (0%) ($p<0.05$). Perioperative transfusion of red blood cells was significantly lower in the MECC-Smart group (0.058 Units/pt compared to 1.46 Units/pt; $p<0.05$). Postoperative maximal cTnI-values were significantly lower in the MECC-Smart-group (11.8±11.6 versus 24.2±26.0 ug/l; $p<0.05$). Atrial fibrillation before discharge occurred in 11% of the MECC patients and in 39% of the CPB-patients ($p<0.05$).

Conclusions: Results of CABG-surgery using MECC-Smart technique are excellent. Perfusion with constant volume is safe, reduces transfusion requirements and perioperative myocardial damage seems to be lower than after conventional CPB.

*STS Member

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2:30 p.m. – 2:45 p.m.

16. Partial Loading of the Left Ventricle During Mechanical Assist Device Support is Associated With Improved Metabolism of Neuroendocrine Hormones and Increased Exercise Capacity

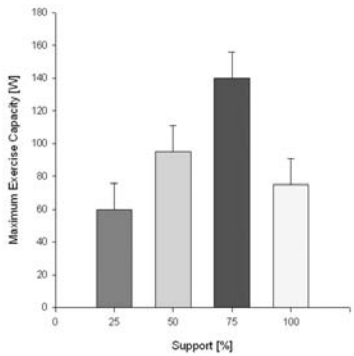
*H. Welp; C. Etz; S. Klotz; A. Hoffmeier; A. Rukosujew; *H. H. Scheld; *C. Schmid*
Department of Thoracic and Cardiovascular Surgery, University Hospital Münster, Münster, Germany

Background: Myocardial recovery has been observed after placement of left-ventricular-assist-devices (LVAD). However, the optimal degree of left ventricular unloading during LVAD support is unknown.

Methods: Sixteen patients with an LVAD underwent cardiopulmonary exercise-testing employing spiroergometry. Every week, level of support (measured as LVAD output) was reduced by 25 % and exercise-testing repeated. Left ventricular unloading was assessed by echocardiographic measurement of LVEDD. Blood samples for epinephrine, norepinephrine, renin and vasopressin were taken before and immediately after the exercise test.

Results: Reduction of ventricular support to 75%, 50% and 25% lead to an significant increase in LVEDD compared to baseline . The increment of support form 50% to 75% lead to an increase in peak-oxygen-consumption and maximum exercise-capacity (Fig. 1.). Exercise lead to a significant increase of norepinephrine and epinephrine levels at each level of support. Norepinephrine and epinephrine levels were not significantly different at the four levels of support before and after exercise. Renin-activity at rest was significantly higher at 25%, 50% and 100% of support than it was at 75%. After exercise, renin-activity was significantly higher as being at rest in all groups. However, the difference was significantly lower when support was at 75% as compared to 25%, 50% and 100%.

Conclusions: These results suggest that partial loading of the left ventricle does not result in a linear neuroendocrine response and exercise-capacity. There is a physiologic optimum during which the left ventricular assist device support is most beneficial, also indicating that partial unlaoding is superior to complete unloading.



*STS Member

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2:45 p.m. – 3:00 p.m.

17. Preoperative Screening Scale Predicts Successful Bridge to Transplantation Among Chronic Congestive Heart Failure Patients

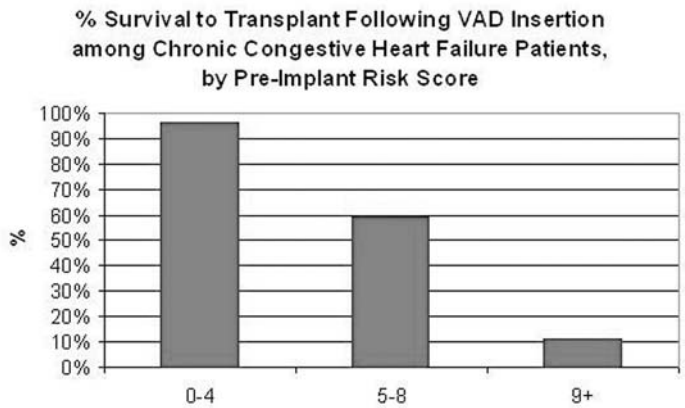
*M. J. Russo; *J. M. Chen; H. Hussey; *M. Argenziano; D. C. Ascheim; D. M. Mancini; *A. S. Stewart; *M. C. Oz; *Y. Naka*
Columbia-Presbyterian Medical Center, New York, New York

Background: Devise a preoperative risk score to predict successful bridge to transplant (BTT) following left ventricular assist device (LVAD) implantation among patients with chronic congestive heart failure (CCHF).

Methods: Analysis included 132 CCHF patients (diagnosis ≥6months) who underwent LVAD implant as a BTT. The outcome measure was survival to transplantation; others included 1-year survival. Univariate and multivariable analyses were performed to determine the predictors of survival to transplant after LVAD insertion. Using the relative risks for each identified variable, a risk factor summation score was devised. To assess the predictive power of the model, ROC curves were constructed to determine the area under the curve (AUC).

Results: Patient risk was determined by assigning points based on the following scoring scheme: albumin<2.9 (1), hematocrit<27 (1), central venous pressure>16 (1), age 56 years old (1), CrCl <55.2 (2), female sex (2), previous cardiac surgery (2), PT>16 (2), and BMI≤20.4 (3) Survival to transplant by risk score is as follows: 0-4 96.2% (n=79); 5-8 59.1% (n=44); ≥9 11.1% (n=9); the AUC was 0.87 (0.81-0.94). This risk score is highly predictive of longer term survival with 1-year survival following LVAD implant by risk score as follows: 0-4 86.0% (n=57); 5-8 46.0% (n=37); ≥9 11.1% (n=9); the AUC was 0.80 (0.71-0.88)

Conclusions: Pre-VAD implant patient characteristics are highly associated with survival to transplant and longer term survival. Because CCHF patients may undergo non-emergent VAD implant, this risk score could assist in patient selection, timing of implant, and pre-implant optimization of patients.



*STS Member

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3:00 p.m. – 3:15 p.m.

18. Effect of a Polymorphonuclear Elastase Inhibitor on Acute Lung Injury After Cardiopulmonary Bypass: Evaluation with Bronchoscopic Microsampling

*M. Fujii[1]; Y. Miyagi1; K. Hinokiyama[1]; *Y. Ishii1; R. Bessho[1]; *T. Nitta[1]; M. Ochi[1]; K. Shimizu[2]*
[1]Cardiovascular Surgery, Nippon Medical School, Tokyo, Japan; [2]Surgery, Nippon Medical School, Tokyo, Japan

Background: Cardiopulmonary bypass (CPB) has been implicated as a cause of acute lung injury (ALI) in cardiac surgical patients. We examined pulmonary biochemical constituents (PBC) in epithelial lining fluid with bronchoscopic microsampling (BMS) probe and evaluated the effect of sivelestat sodium (SI), a novel synthesized polymorphonuclear (PMN) elastase inhibitor, on acute lung injury (ALI) caused by cardiopulmonary bypass.

Methods: Twelve patients who underwent aortic valve surgery using CPB, followed by the development of both systemic inflammatory response syndrome (SIRS) and ALI, were treated with either 0.2 mg/kg per hour SI (SI group, n = 6) or 0.9 % saline (control group, n = 6) from the start of surgery. Samples of PBC were collected after bronchial intubation, during CPB, and 3 hours after CPB termination with BMS probe. Pulmonary data were obtained perioperatively.

Results: There were no differences in the baseline characteristics. Concentrations of PMN elastase in the SI group were significantly suppressed compared with those in the control group (SI group 4-5-9 pg/mg, control group 6-32-54 ng/mg, respectively; p=0.027). Also the SI group had a lower level of interleukin (IL)-6 and IL-8. Alveolar-arterial oxygen difference ($AaDO_2$) sharply increased and PaO_2/FiO_2 ratio showed severe worsening after CPB. The pattern of physiological deterioration of gas exchange, however, was improved 12 hours after CPB in the SI group.

Conclusions: Sivelestat sodium suppressed the production of PMN elastase and attenuated the elevation of IL-6 and IL-8 in the PBC, resulting in improved respiratory function in patients with ALI caused by CPB.

*STS Member

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3:15 p.m. – 3:30 p.m.

19. Prolonged Intraoperative Forebrain Desaturation Predicts Cognitive Decline After Cardiac Surgery

*J. P. Slater; J. Stack; K. Vinod; T. Guarino; R. T. Bustami; *J. M. Brown, III; A. L. Rodriguez; *C. J. Magovern; T. S. Zaubler; G. V. S. Parr; K. Freundlich*
Atlantic Health System, Morristown, New Jersey

Background: Previous studies have reported an 11-75% incidence of postoperative cognitive decline among cardiac surgery patients. INVOS® Cerebral Oximeter is an FDA-approved non-invasive device that measures regional cerebral oxygen (rSO_2) desaturation. The purpose of this study is to examine whether decreased rSO_2 predicts cognitive decline following coronary artery bypass grafting (CABG).

Methods: Prospectively collected data were obtained from a randomized clinical trial comparing outcomes in CABG patients who underwent blinded and unblinded intraoperative cerebral oximetry monitoring. Cognitive function was assessed pre and postoperatively in 240 patients using standardized neurocognitive tests. Cognitive decline was defined as a decrease of one standard deviation or more in performance on at least one neurocognitive measure. The rSO_2 desaturation risk score was calculated by multiplying rSO_2 below 50% by time in seconds. A multivariate logistic regression model (table) was used to examine the independent effect of decreased intraoperative rSO_2 on cognitive decline. The model was adjusted for age, gender, race, hypertension, left ventricular ejection fraction, history of myocardial infarction, renal function, and intraoperative neuromonitoring.

Results: CABG patients with rSO_2 desaturation risk score of greater than 6000 had a significantly higher risk of cognitive decline [Odds Ratio (OR) = 2.69, p = 0.003]. Cognitive decline was also significantly associated with smoking history and increased score on the Delirium Rating Scale.

Conclusions: This study showed that prolonged intraoperative forebrain desaturation is significantly associated with an increased risk of cognitive decline after CABG. Intraoperative management of cerebral rSO_2 may result in decreased cognitive decline after CABG.

Factor (N = 240)	Mean or %	OR for Cognitive Decline	95% CI	p-value
rSO_2 desaturation risk > 6000 (yes vs. no)	37.5%	2.69	(1.40,5.17)	0.003
History of Smoking (yes vs. no)	67.9%	1.96	(1.05,3.66)	0.034
Delirium Rating Scale (per 1 unit increase)	5.0	1.29	(1.10,1.53)	0.002

*STS Member

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PARALLEL SURGICAL FORUM III: GENERAL THORACIC

Monday, January 29, 2007, 1:30 p.m. - 3:30 p.m.

Unless otherwise 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.

1:30 p.m. – 1:45 p.m.

20. Extrapulmonary Ventilation for Refractory Acute Respiratory Distress Syndrome After Pulmonary Resection

**P. Macchiarini; P. Jungebluth; M. Iglesias; J. Badia; A. Torres; J. M. Gimferrer; C. Petit*
Department of General Thoracic Surgery, Hospital Clinic Barcelona, University of Barcelona, Barcelona, Spain

Financial Disclosure: P. Macchiarini, Principal Investigator, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Consultant, Consultant/Advisory Board

Background: Evaluate the feasibility and efficacy of a pumpless, artificial extracorporeal respiratory support (iLA, Novalung®) in patients with post-resectional acute respiratory distress syndrome (ARDS) refractory to conventional medical treatment.

Methods: Patients with post-resectional ARDS (PaO2/FIO2 ratio <200 mm Hg; bilateral or unilateral pulmonary infiltrates on chest x-ray, absence of clinical signs of left atrial hypertension) that failed to respond to conventional treatment including protective mechanical ventilation, prone positioning, steroids, control secretions, and nitric oxide were included. Other forms of ARDS, e.g. sepsis, heart failure, aspiration, or bronchial fistula were excluded. ILA was attached via the femoral vessels by direct transcutaneous cannulation.

Results: Since 2005, 7 patients (5 pneumonectomies and 2 lobectomies) with a refractory and worsening ARDS lasting 4±2 days had an iLA support for 11±6 days (range, 4 to 23 days). This permitted a near static ventilation (tidal volume, 3±0.5 mL/Kg; respiratory rate, 6±2 breaths/min; PEEP of 12±3 cmH_2O, and FiO_2 of 0.5±0.1), an arterio-venous CO_2 removal of 255±31 mL/min, and an early significant clinical, radiological and gas exchange improvement:

Parameters	Prior iLA	12 hrs iLA	48 hrs iLA
$PaCO_2$ (mmHg)	67±7	45±2*	38±3*
PaO_2/FiO_2	94±28	183±31*	223±42*
SaO_2 (%)	95±1	98±1*	98±1*

*p <0.05

All patients could be weaned from mechanical ventilation 8±3 days after disconnecting the iLA support. All but one (14%) patient survived.

Conclusions: The artificial respiratory support used here was highly effective in patients with refractory ARDS following pulmonary resection.

*STS Member

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1:45 p.m. – 2:00 p.m.

21. Survival Following Lung Transplant is Equivalent Regardless of CMV-Matching Status: An Analysis of the UNOS Database

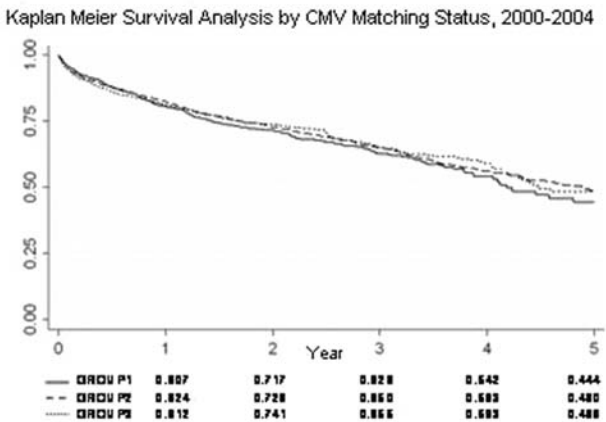
*M. J. Russo; D. I. Sternberg; K. N. Hong; T. P. Martens; R. A. Sorabella; F. D'Ovidio; J. S. Wilt; S. M. Kawut; S. Arcasoy; *J. R. Sonett*
Columbia-Presbyterian Medical Center, New York, New York

Background: To assess (1) the relationship between donor-recipient CMV serologic status and post-transplant survival in the current era and (2) temporal changes in post-transplant survival by CMV matching status over 3 sequential time periods.

Methods: De-identified data was obtained from UNOS. To examine trends, all lung transplants occurring between 1/1/91 and 12/31/04 were considered in recipients 18 years. Based on pre-transplant CMV serologies (+/-) of recipients(R) and donors(D), three groups were compared: GROUP1 (D+|R-), GROUP2 (D-|R+ and D+|R+), and GROUP3 (D-|R-). Primary analysis focused on transplants performed 1/1/00-12/31/04. To assess temporal trends in survival, patients were divided into 3 time periods based on transplant year: 1991-1994, 1995-1999, and 2000-2004

Results: During the current era (2000-2004), GROUP1 (n=951), GROUP2 (n=2,676), and GROUP3 (n=772) exhibited no differences in median survival (p= 0.561): 1,527, 1,793, and 1,636 days, respectively. Over the 3 time periods, median survival improved significantly in GROUP1 ($p < 0.0001$) and GROUP2 ($p < 0.0001$), but there were no differences over time in GROUP3 (p=0.642). GROUP1 had significantly worse median survival compared with GROUP2 and GROUP3 in 1991-1994 (p=0.004) and 1995-1999 ($p < 0.0001$), but there was no difference in 2000-2004 (p=0.561).

Conclusions: In earlier eras, CMV mismatch was associated with worse survival. However, in the current era there is no difference in post-transplant survival between groups. Equality resulted from improvements in survival among CMV mismatched recipients, possibly due to more aggressive CMV prophylaxis. Therefore, a D+|R- CMV-mismatch should not be sufficient to decline a lung allograft offer.



*STS Member

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2:00 p.m. – 2:15 p.m.

22. Anatomic Lung Resection for Environmental Mycobacterial Disease

*J. D. Mitchell; A. Bishop; A. Cafaro; M. J. Weyant; *M. Pomerantz
University of Colorado, Denver, Colorado

Backround: Chronic lung infections involving environmental mycobacteria (EM) are often inadequately treated due to the presence of concomitant lung parenchymal damage, leading to persistence of the offending organism(s). Little is known about the results of surgical therapy as part of a multi-modality approach to these infections.

Methods: A retrospective review of 215 consectutive patients who underwent anatomic lung resection for EM disease at our institution as part of a multi-modality treatment program.

Results: 215 patients underwent 238 operations. The average age was 54 years, range 23-77. 39 patients had prior ipsilateral thoracic procedures. All patients had in-vitro sensitivity testing of cultured organisms and had several months of guided antibiotic therapy. Special emphasis was placed on preoperative nutritional status. 72% of patients had Mycobacterium Avium Complex disease. Anatomic lung resection was performed in all patients, with 111 lobectomies, 45 segmentectomies, 42 pneumonectomies, and 40 mixed procedures. 67 patients had either muscle or omental transposition. Mortality rate was 3.6%. The major morbidity rate was 14.2%. Average length of stay was 8 days. Presence of postoperative bronchopleural fistula was associated with positive sputum at operation and completion pneumonectomy.

Conclusions: This series represents the largest cohort of patients in the literature to date who underwent operation for EM infection. Surgery for EM disease may be accomplished with minimal morbidity and mortality. Careful attention to factors such as preoperative sensitivity testing, nutrition, and complete anatomic resection are keys to success.

*STS Member

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2:15 p.m. – 2:30 p.m.

23. Outcomes in Survivors from Readmission to the Intensive Care Unit Following Initial Recovery From Major Thoracic Oncologic Surgery

*S. Song[1]; *J. Zo[2]; M. Kim[2]; J. Lee[2]; H. Lee[2]*
[1]Division of Cardiovascular Surgery, Cardiovascular Center, Yonsei University College of Medicine, Seoul, Republic of Korea; [2]Center for Lung Cancer, Research Institute and Hospital, National Cancer Center, Gyeonggi, Republic of Korea

Background: The information of the survivors from the life-threatening complications after thoracic surgery has been limited. The purposes of this study are to identify the risk factors that can predict the mortality of patients with intensive care unit (ICU) readmission after initial recovery from thoracic oncologic surgery and assess the outcomes in survivors.

Methods: From March 2001 to August 2005, 1087 patients underwent major resection for lung and esophageal cancer. The study involved a retrospective review of 94 patients (8.6%) who required salvage intensive care after initial recovery. The patient group included 85 males(90.4%), and mean age was 66 years old. Patients were classified as survivors(n=63, 67%) and non-survivors(n=31, 33%).

Results: The major reason for ICU readmission was pulmonary complication (n=73,77.7%); 64 patients(68.1%) required mechanical ventilation and 42(43.3%) renal support. Multivariate analysis showed that initial APACHE III score at readmission to ICU, duration of mechanical ventilation, and renal support were significant predictors for hospital mortality.

Multivariate Logistic Regression Analysis of In-Hospital Mortality Risk Factors

Variables	Category	No. of Patients	No.(%)of Non-survivors	Odds Ratio	95% Confidence Interval	p Value
APACHE III score	>= 50	52	28(53.8)	12.1000	2.859-51.206	0.001
	< 50	42	3(7.1)	1		
Duration of ventilation(days)	>= 5	39	24(61.5)	7.859	2.375-26.006	0.001
	< 5	55	7(12.7)	1		
Renal support	Yes	42	23(54.8)	3.611	1.096-11.895	0.035
	No	52	8(15.4)	1		

Overall 3-year survival was 50.6%. Cox analysis showed that survivors with tracheostomy had a poor prognosis(p=0.011). Of the twelve late mortalities with tracheostomy, nine patients(75%) died of cancer-unrelated causes(p=0.0016).

Conclusions: ICU readmission after thoracic oncologic surgery is significantly associated with high in-hospital mortality. Identification of patients with high APACHE score and prolonged ventilation at readmission may help to predict the risk in mortality. Preemptive strategies designed to optimize the high-risk patients may improve outcomes. Survivors from ICU readmission after thoracic oncologic surgery require meticulous and frequent follow-up because they are persistently exposed to the deteriorative risk after discharge.

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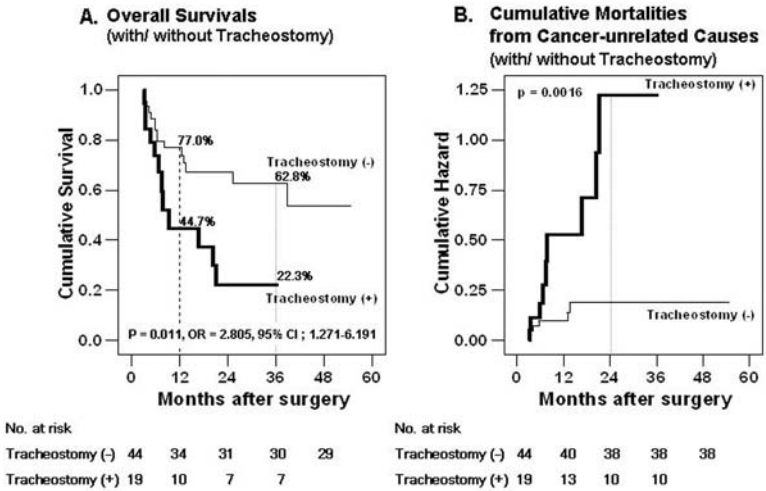
A. Overall Survivals
(with/ without Tracheostomy)
Cumulative Survival
1.0
0.8
0.6
0.4
0.2
0.0
77.0%
Tracheostomy (-)
62.8%
44.7%
22.3%
Tracheostomy (+)
P = 0.011, OR = 2.805, 95% CI ; 1.271-6.191
0
12
24
36
48
60
Months after surgery
No. at risk
Tracheostomy (-) 44 34 31 30 29
Tracheostomy (+) 19 10 7 7
B. Cumulative Mortalities
from Cancer-unrelated Causes
(with/ without Tracheostomy)
Cumulative Hazard
1.25
1.00
0.75
0.50
0.25
0.00
p = 0.0016
Tracheostomy (+)
Tracheostomy (-)
0
12
24
36
48
60
Months after surgery
No. at risk
Tracheostomy (-) 44 40 38 38 38
Tracheostomy (+) 19 13 10 10

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2:30 p.m. – 2:45 p.m.

24. Role of CT-PET in the Evaluation of Screening Detected Lung Nodules

*G. Veronesi[1]; G. Paganelli[1]; M. Bellomi[2]; G. Pelosi[2]; P. Solli[1]; *F. Leo[1]; G. Trifirò[1]; L. Preda[1]; *L. Spaggiari[2]*

[1]European Institute of Oncology, Milan, Italy; [2]European Institute of Oncology, University of Medicine, Milan, Milan, Italy

Background: Low dose CT of the chest is a promising tool for lung cancer screening but may be limited by the difficulty of non invasive differential diagnosis of frequently found non calcified lung nodules. We evaluated the sensitivity of PET scan to diagnose screening detected lung cancers.

Methods: Between October 2004 and October 2005, 5202 asymptomatic current or former smokers, older than 50 years, were enrolled in a single-institution screening trial using annual low-dose multidetector CT for 5 years. Of these, 157 patients presented one or more non calcified lung nodules larger than 8 mm at baseline CT and underwent a CT-PET. Lung nodules were classified in solids, partially solids or non solids. Pet was considered positive when the standardised uptake value (SUV) was higher than 2.

Results: 55 primary lung cancers were diagnosed and 7 patients underwent surgical biopsy for benign disease. Median and mean size of lung cancers were 14 and 18 mm respectively. Overall sensitivity of PET to diagnose a lung cancer in a screening setting was 91% (50/55). It reached 100% (40/40) in case of solid or partially solid nodules larger than 1 cm. On the contrary sensitivity was only 25% (1/4) in case of non solid nodules (ground gall opacities).

Conclusions: CT-PET presents a high sensitivity to diagnose screening detected lung cancers and seems useful to avoid extensive use of invasive diagnostic procedures in undetermined lung nodules. Longer follow up is needed to confirm these results.

*STS Member

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2:45 p.m. – 3:00 p.m.

25. Comparison of Open and Thoracoscopic Pulmonary Segmentectomy: Reduced Length of Stay After Minimally-Invasive Technique

*B. Atkins; G. D. Lappas; *D. H. Harpole, Jr.; E. M. Toloza; T. A. D'Amico; *W. R. Burfeind, Jr.*
Duke University School of Medicine, Durham, North Carolina

Background: Thoracoscopic lobectomy is a safe and effective alternative to open lobectomy. However, few data exist regarding thoracoscopic approaches to lung-sparing, anatomic resection (segmentectomy). This study compares thoracoscopic segmentectomy (TS) with open segmentectomy (OS).

Methods: This is a retrospective review of a prospectively collected database of 77 consecutive segmentectomies performed between 2000 and 2006. Preoperative, intraoperative, and postoperative variables for those undergoing TS (n=48) were compared with those undergoing OS (n=29). Student's t-tests were used for continuous variables and Fisher's exact tests for binomial variables.

Results: The indications for pulmonary resection included non-small cell lung cancer (n=39), metastatic disease (n=30), and other (n=8). All common segmentectomies were represented. No thoracoscopic cases were converted to open. Baseline characteristics were similar between groups. Table 1 summarizes the intraoperative and postoperative variables. Outcomes were similar except that the TS group went home 2.5 days sooner than the OS group. Two deaths occurred in the OS group (6.9%) while no deaths occurred in the TS group.

Conclusions: Thoracoscopic segmentectomy is both safe and feasible. For experienced thoracoscopic surgeons, TS appears to be a sound option for lung-sparing, anatomic pulmonary resections.

Table 1. Intraoperative and Postoperative Variables

	TS	OS	p-value
Op Time (minutes)	137+/- 45	130 +/- 65	0.6
EBL (mL)	250 +/- 200	283 +/-200	0.5
Nodal Stations Sampled	4.1 +/- 3	3.9 +/-3	0.8
Chest Tube Duration (days)	3.4 +/- 4	3.6 +/- 1	0.7
LOS (days)	4.3 +/- 3	6.8 +/- 6	0.01
Any Complications	15/48 (31%)	10/29 (34%)	ns

*STS Member

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3:00 p.m. – 3:15 p.m.

26. PET Scanning Predicts Response and Survival Following Induction Chemotherapy for Esophageal Carcinoma

*J. L. Port; *R. K. Korst; *P. C. Lee; A. L. Kansler; Y. Kerem; P. Christos; *N. K. Altorki
Weill Cornell Medical College, New York, New York

Background: The ability to predict response following preoperative chemotherapy may have an impact on treatment strategy. Many reports have focused on PET scanning in conjunction with induction chemoradiotherapy. This study evaluates the accuracy of PET scanning with induction chemotherapy alone.

Methods: Patients who underwent both a pre-and-post induction chemotherapy PET scan prior to surgical resection for esophageal carcinoma were included (1999-2005). The percent reduction in max SUV after therapy was determined and ROC analysis was performed. Sensitivity, specificity, predictive values, and area under the ROC curve (AUC) are reported. Kaplan-Meier survival analysis was performed.

Results: 62 patients (52 men, median age 62.3) with a median follow-up of 17.3 months were evaluated. Thirty-nine patients (62.9%) had a partial (n=32) or complete response (n=7) to induction therapy. Thirty-seven patients (59.7%) had a >50% reduction in the max SUV of their primary tumor and had a significant improvement in DFS compared to patients with a <50% reduction in max SUV (35.5 vs. 17.9 months, p=0.03). PET sensitivity and specificity for predicting either a partial or complete response was 73.7% and 60.9%, respectively. The positive and negative predictive value for PET was 75.7% and 58.3%, respectively. AUC was 70.5% (95% CI=57.4%, 83.6%). Of significance, 11 patients had a 100% reduction in max SUV despite the presence of residual tumor.

Conclusions: Utilizing a 50% reduction of the max SUV following induction therapy, PET can help predict response to therapy and improved survival. However, a complete reduction in PET signal cannot be equated with a complete response.

*STS Member

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3:15 p.m. – 3:30 p.m.

27. Roux-en-Y Gastric Bypass for Intractable Gastroesophageal Reflux Following Anti-Reflux Surgery

*O. Awais; J. Tam; K. Irshad; *J. Luketich*
UPMC, Pittsburgh, Pennsylvania

Background: Intractable gastroesophageal reflux disease (GERD) after reflux operation can be debilitating and present a difficult challenge. The role of Roux-en-Y gastric bypass (RYGBP) in magement of GERD is investigated.

Methods: Between June 2000 and October 2005, 25 patients with GERD following reflux surgery underwent RYGBP. Prior fundoplication was taken down and recurrent hiatal hernia was reduced before RYGBP. Clinical visits and telephone interviews were used to document subjective satisfaction and GERD improvement using GERD-Health Related Quality of Life (HRQL) scale.

Results: There were 4 males and 21 females with mean age of 51 years (range 35-74). 72% had Body Mass Index (BMI)>30. 44% had more than one reflux surgery. 40% had previous Collis gastroplasty. 60% underwent laparoscopic RYGBP and 40% underwent open RYGBP. Mean operative time was 386 minutes and median length of stay was 6 days. 6 patients (24%) developed major postoperative complication including anastomotic leak (N=2), Roux-limb intussusceptions (N=1), myocardial infarction (N=1), pneumonia, pulmonary embolism, and anoxic encephalopathy. Mortality rate is 0%. 80% reported satisfaction at mean follow-up time 495 days. BMI reduced from 35.8 to 27.7 ($p<0.001$). 35% of co-morbid conditions resolved. GERD-HRQL score improved from 29.9 to 7.3 ($p<0.001$).

Conclusions: RYGBP for persistent GERD after reflux surgery is technically challenging with high morbidity. Majority of patients reported satisfaction to surgical outcome with significant improvement in GERD symptoms. Many patients had associated benefits of weight loss and improvement of co-morbid conditions. RYGBP is an effective surgical modality for treatment of intractable GERD following reflux surgery.

*STS Member

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PARALLEL SURGICAL FORUM IV: CONGENITAL

Monday, January 29, 2007, 1:30 p.m. – 3:30 p.m.

Unless otherwise 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.

1:30 p.m. – 1:45 p.m.

28. Prevalence and Associated Risk Factors for Intervention in 313 Children with Subaortic Stenosis

*T. Karamlou; R. Gurofsky; A. Bojcevski; J. L. Russell; *G. S. Van Arsdell; *W. G. Williams; B. W. McCrindle*
Hospital for Sick Children, Toronto, Ontario, Canada

Background: We sought to determine prevalence of intervention and associated risk-factors in children with subaortic stenosis (SubAS). Our secondary objective was to investigate whether a protocol of early subaortic resection at a preoperative mean systolic gradient (MGr) across the left ventricular outflow tract > 30 mmHg was supported by recent outcome data.

Methods: Record review of all children (N=313) diagnosed with SubAS between 1971-1998 at our institution. Multivariable Cox proportional hazard models determined the prevalence and associated risk-factors for initial subaortic resection. Mixed linear regression analysis of serially obtained echo (N=933) established trends in MGr over time and identified those factors associated with more rapid LV gradient progression.

Results: Median age at presentation was 8 months. Risk-unadjusted freedom from initial subaortic resection were 73% at one year and 38% at 16 years following admission, with 159 (51%) patients undergoing at least one intervention. Subaortic resection was associated with patient demographic and anatomic characteristics at presentation, including higher initial MGr (P<0.001), larger aortic annulus z-score (P=0.005), longer LV ejection time (P<0.001), and smaller body surface area (P<0.001) and smaller mitral annulus z-score (P=0.003). Initial resection was also associated with a faster rate of MGr progression (P=0.003). MGr progressed nonlinearly in all patients over time (P 30 mmHg (P<0.001), initial aortic valve thickening (P=0.003), and attachment of SubAS to the mitral valve (P=0.003).

Conclusions: Subaortic resection before the development of a MGr > 30 mmHg will reduce the rate of MGr progression and should, therefore, also reduce recurrence and reoperation of SubAS.

*STS Member

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1:45 p.m. – 2:00 p.m.

29. Repair of Neonates and Young Infants with Ebstein's Anomaly and Related Pathology

*C. J. Knott-Craig[1]; K. E. Ward[1]; E. O. Overholt[1]; *J. K. Kirklin[2]
[1]OU Medical Center, Oklahoma City, Oklahoma; [2]University of Alabama, Birmingham, Alabama

Background: Severely symptomatic neonates and young infants with Ebstein's anomaly (EA) usually die without surgical intervention. The relative risks and benefits of single ventricle palliation vs a 2-ventricle repair is uncertain. In a recent series, Starnes reported 69% early survival with single ventricle palliation in 16 neonates with EA. Our institutional bias has been to do a 2-ventricle repair in all such patients.

Methods: In order to compare these two approaches, we reviewed our surgical experience with a 2-ventricle repair in the severly symptomatic neonate (n=20) and young infant (n=4) with EA. The indications for operation were ventilator dependance, severe cardiac failure, prostaglandin-dependant circulation, and gross cardiomegaly.

Results: Between 1994 and May 2006, 24 consecutive patients with EA underwent operation. Associated co-morbidity included anatomic or functional pulmonary atresia (n=14); VSD's (n=3), small LV size (n=3), hypoplastic branch pulmonary arteries (n=2), previous cardiac operation (n=3), and significant intra-cranial hemmorhage (n=3). Repair consisted of TV repair (n=21), partial closure of ASD (n=22), reduction atrioplasty (n=21), modified BT shunt (n=2), and repair of all associated defects (n=18). Hospital survival was 75% and there have been no late deaths during a median follow-up period of 4.5years (range .2-12yrs). Three patients have needed tricuspid valve replacement during the follow-up period. Late arhythmia requiring medication is present in one patient. All pts are currently in functional class I.

Conclusions: Two-ventricle repair currently has similar early survival compared to single ventricle palliation. The advantages of a better physiological repair can be anticipated over a longer follow up period.

*STS Member

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2:00 p.m. – 2:15 p.m.

30. Retrovirally Labeled Endothelial Progenitor and Mesenchymal Stem Cells Persist in Tissue Engineered Pulmonary Artery Augmentation Patches In Vivo

*B. A. Mettler[1]; V. L. Sales[1]; C. L. Stucken[1]; V. Anttila[1]; K. Mendelson[2]; J. Bischoff[1]; *J. E. Mayer, Jr.[1]*
[1]Children's Hospital Boston, Boston, Massachusetts; [2]Brigham and Women's Hospital, Boston, Massachusetts

Background: Reconstruction of the right ventricular outflow tract is a frequently encountered procedure of a congenital heart surgeon. We sought to tissue engineer (TE) pulmonary artery augmentation patches from endothelial progenitor (EPCs) and mesenchymal stem cells (MSCs) and to determine the fate of cells in the TE construct during in vivo maturation by retrovirally labeling implanted cells.

Methods: Autologous ovine EPCs and MSCs were labeled with a retroviral vector encoding green and red fluorescent proteins (GFP and RFP) respectively, coseeded onto polyglycolic acid biopolymers, and cultured for five days in a laminar fluid flow system. The TE patches were implanted into the main pulmonary artery with 1, 2, 4 and 6 week in vivo maturation(n=7). In vivo evaluation included ultrasonography and angiography with pre-implant and post-explant specimens evaluated using histology and immunofluorescence.

Results: No evidence of stenosis was observed with progressive tissue histogenesis correlating with in vivo maturation. Stable retroviral protein expression was demonstrated in 97% GFP+ and RFP+ progenitor cells with cellular phenotype and transgene expression maintained through serial passages in vitro. In vivo GFP+EPCs and RFP+MSCs persisted in the implanted TE patch at all time points; positive cells were detected by immunofluorescence. No EPCs or MSCs were detected in the adjacent native pulmonary artery.

Conclusions: These data demonstrate the successful creation of an autologous, functional, cardiovascular augmentation patch using coseeded progenitor cell sources. GFP and RFP labeling showed that the implanted cells persist in the TE construct and provide an effective method to track multiple cell types after implantation.

*STS Member

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2:15 p.m. – 2:30 p.m.

31. Right Ventricular Outflow Tract Reconstruction, What Conduit to Use? Homograft or Contegra®?

*J. T. Christenson[1]; J. Sierra[1]; N. H. Lahlaidi[1]; M. Beghetti[2]; *A. Kalangos[1]*

[1]Department of Cardiovascular Surgery, University Hospital of Geneva, Geneva, Switzerland; [2]Department of Pediatric Cardiology, University Hospital of Geneva, Geneva, Switzerland

Background: Both cryopreserved homografts and glutaraldehyde fixed bovine jugular vein grafts (Contegra®) are used as conduits for right ventricular outflow tract reconstructions (RVOT) in children. Both types of conduits have their pros and cons vividly described in the literature, but so far no truly comparative studies have been presented.

Methods: Between 1993 and 2005, 88 homografts (54 blood group compatible, ISO, and 34 non blood group compatible, Non-ISO) and 50 Contegra® conduits were implanted for RVOT reconstruction. Mean age was 4.9±3.6 years, ranging from 1 month to 15 years. The primary diagnosis was Tetralogy of Fallot (52%). Pulmonary artery stenosis or atresia (31%) and truncus arteriosus. There were no demographic differences between the groups. The mean graft diameter was 19mm (homografts) and 15mm (Contegra®).

Results: There were no hospital deaths in the homograft groups, while 2 patients died from graft unrelated causes in the Contegra®-group. Postoperative mean gradient was 15.5±13.2 mmHg (homografts) and 19.8±11.5 mmHg (Contegra®). Moderate valvar regurgitation was seen in 3.4% (homografts) and 8.0% (Contegra®). No supravalvar lesions were observed in either group.

Conclusions: Blood group compatible cryopreserved homografts and Contegra® conduits for RVOT reconstruction have very similar performance up to 7 years postoperatively and are significantly superior to non blood group compatible homografts.

Table 1. Freedom from graft dysfunction and /or reoperation at 2,5,7 and 10 years (patients at risk)

Type of conduit	2 years	5 years	7 years	10 years
Homograft, all	92.2% (88)	90.8% (65)	81.6% (46)	78.2% (24)
Homograft, ISO	100% (54)	97.4% (38)	93.8% (27)	88.6% (15)
Homograft, non-ISO	79.9% (32)	76.9% (23)	66.6% (15)	55.5% (6)
Contegra®	94.4% (50)	90.7% (17)	90.7% (5)	--

*STS Member

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2:30 p.m. – 2:45 p.m.

32. Long-Term Outcomes Following Surgical Treatment of 236 Children With Partial Anomalous Pulmonary Venous Connection

*B. Alsoufi; *W. G. Williams; *C. A. Caldarone; S. Cai; *G. S. Van Arsdell; *J. G. Coles
Hospital for Sick Children and University of Toronto, Toronto, Ontario, Canada

Background: We explore early results and long-term morbidity following surgical repair of partial anomalous pulmonary venous connection (PAPVC) at our institution.

Methods: Between 1982-2006, 306 consecutive patients underwent surgery for PAPVC. 236 (77%) were children. Median age was 5.3 years (0.47-18 years). Clinical and echocardiographic follow-up was obtained.

Results: 214 patients (90%) had right-sided, 17 (7%) had left-sided, and 5 (2%) had bilateral PAPVC. Anomalous veins were partial in 186 patients (79%) and involved the entire lung in 50 (21%).

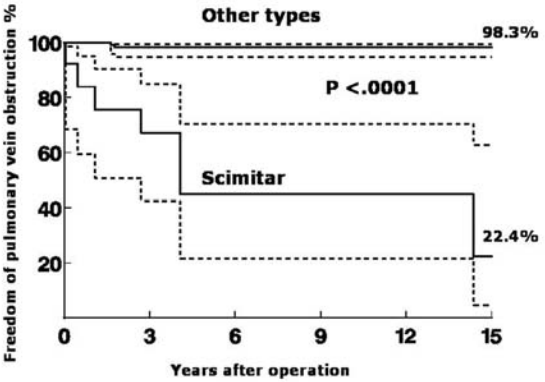
The most common type was right PAPVC into superior vena cava SVC (n=175, 74%), 87% associated with sinus-venosus atrial septal defect; followed by right PAPVC into right-atrium (n=29, 12%), left PAPVC into innominate-vein (n=22, 9%), and Scimitar syndrome (n=15, 6%).

Repair strategy included intra-cardiac baffle (n=203), pulmonary vein re-implantation (n=23), and SVC division with re-implantation into right atrial appendage (n=14). There was no early or late mortality. Freedom from re-operation, caval obstruction, pulmonary-vein obstruction, and pacemaker implantation at 15 years was 97%, 97.8%, 86%, and 99.1% respectively. Pulmonary vein obstruction was significantly more common in Scimitar patients compared to others (22.4% vs. 98.3%, P<0.0001). Freedom from morbid events for different groups is shown in the table. Post-operative quantitative Lung perfusion scan in 13/15 Scimitar patients showed decreased right lung flow (mean 22.5%).

Conclusions: Surgical treatment of PAPVC is associated with excellent outcomes and low long-term morbidity. However, children with scimitar syndrome have an exceptionally high incidence of post-operative pulmonary venous obstruction and abnormally low perfusion of the right lung.

At 15 years	Freedom from re-operation	Freedom from caval obstruction	Freedom from pulmonary vein	Freedom from obstruction pacemaker implantation
R PAPVC to SVC (n=175)	97.8%	99%	97.9%	100%
R PAPVC to SVC: Baffle surgery (n=161)	97.3%	100%	97.5%	100%
R PAPVC to SVC: SVC re-implantation (n=14)	100%	90.9%	100%	100%
R PAPVC to R atrium (n=29)	100%	100%	100%	100%
L PAPVC re-implantation (n=22)	100%	100%	100%	100%
Scimitar (n=15)	83.9%	83.3%	22.4%	92.3%

*STS Member


Other types
98.3%
P <.0001
Scimitar
22.4%
Freedom of pulmonary vein obstruction %
100
80
60
40
20
0
3
6
9
12
15
Years after operation

NOTES

2:45 p.m. – 3:00 p.m.

33. Melbourne Shunt Promotes Growth of Diminutive Central Pulmonary Arteries in Patients with Pulmonary Atresia, VSD and Major Aortopulmonary Collateral Arteries (MAPCA)

*M. A. Mumtaz; G. L. Rosenthal; A. Qureshi; L. R. Prieto; T. J. Preminger; R. Lorber; L. A. Latson; *B. W. Duncan
Cleveland Clinic, Cleveland, Ohio

Background: We manage patients with pulmonary atresia, VSD, MAPCAs and diminutive central pulmonary arteries with a staged approach. The first procedure is a central end-to-side aortopulmonary shunt [Melbourne shunt (MS)] intended to cause growth and development of the central pulmonary arteries. We report our results of central pulmonary artery [PA] growth and outcome following MS.

Methods: Forty consecutive patients were followed after MS. The maximum pulmonary artery [PA] diameter was measured at the time of surgery and at subsequent catheterizations or surgery.

Results: Median branch PA size was 2 mm at surgery, 5.5 mm at first assessment [median 6.35 months) and 7 mm at most recent assessment (19.7 months). Mean Modified Nakata index (see Table 1) increased from 27 mm^2/m^2 at surgery to 138 mm^2/m^2 at first assessment and 176 mm^2/m^2 at final assessment. There was one acute shunt failure from anastomotic stenosis. There were 4 deaths during a mean follow-up of 4.4 years. Four patients have irreversible pulmonary hypertension. Thirteen patients (32.5%) underwent 21 percutaneous interventions. Eight patients are in various stages of palliation. Twenty five patients [75%] have undergone complete repair, all requiring pulmonary artery augmentation at the time of complete repair. Two patients have undergone VSD fenestration after complete repair due to supra-systemic right ventricular pressure.

Conclusions: MS promotes growth of central pulmonary arteries allowing complete repair in majority of the patients. There is considerable need for additonal interventions in these patients to augment the size of the pulmonary arteries.

Table 1. Surgical Data

Total Patients	40
Median Weight	5.25 kg
Median age	4 months
Mean preoperative saturation	64%
Mean postoperative saturation	79%
Median initial PA size	2 mm
Median PA size at 2nd assessment	5.5 mm
Median Final PA size	7 mm
Initial Mean Modified Nakata Index*	27 mm^2/m^2
Mean Modified Nakata Index* at 2nd assessment (N=27)	138 mm^2/m^2
Final Mean Modified Nakata Index (N=27)	176 mm^2/m^2

Modified Nakata index = (Max. right pulmonary artery cross sectional area in mm^2 + Max. left pulmonary artery cross sectional area in mm^2)/ BSA in m^2.

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NOTES

3:00 p.m. – 3:15 p.m.

34. Right Ventricle to Pulmonary Artery Conduit Longevity: Is It Related to Valve Size?

*B. Askovich[1]; C. A. Albaro[2]; T. Sower[1]; L. L. Minich[1]; *J. Hawkins[1]; L. Tani[1]; M. Puchalski[1]*
[1]University of Utah, Salt Lake City, Utah; [2]Vermont Children's Hospital, Burlington, Vermont

Background: Homograft conduits are routinely over-sized to account for somatic growth in children requiring pulmonary valve replacement. The objective of this study is to determine the effect of over-sizing on valve longevity.

Methods: We reviewed records of all patients undergoing pulmonary homograft placement for diagnosis, age, homograft type, time to re-operation and indication for surgery, between 1988 and 2006. Conduit size at the time of insertion was compared to normal pulmonary valve size for BSA (z-score). Multivariate Cox regression models with cluster analysis were constructed to assess risk of homograft over-sizing for valve failure. Kaplan-Meier analysis was used to obtain median freedom from replacement time.

Results: One-hundred and fifty conduits (z-score range -1.6 to +4.92, mean +1.8[±1.2]) were implanted in 133 patients (median age 5.4 years). Re-operation was required in 69/133 patients. The major indications for conduit replacement were stenosis (30%), insufficiency (24%) or a combination (36%). In the final multivariable Cox regression model, z-score at the time of homograft placement was a significant risk factor for valve failure after adjustment for confounders (per one unit increase in z, Hazard Ratio=1.26, p=0.025). Modeling z-scores as a dichotomous variable revealed that risk increases 81% when homografts with z-scores >+2.76 are used, compared to z-scores <+2.76 (p=0.022). Median freedom from replacement was 4.7 (95% CI, 4-5.56) years in the largest conduits and 8.18 (95% CI, 5.98-9.49) years in the smaller conduit group.

Conclusions: Homograft conduit over-sizing in the pulmonary position results in an increased risk of failure and decreased longevity in children.

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3:15 p.m. – 3:30 p.m.

35. Accuracy of the Aristotle Basic Complexity Score for Classifying the Mortality and Morbidity Potential of Congenital Heart Surgery Procedures

*S. M. O'Brien[1]; *D. R. Clarke[2]; *J. P. Jacobs[3]; B. Maruszewski[4]; *M. L. Jacobs[5]; *H. L. Walters, III[6]; *C. I. Tchervenkov[7]; *K. F. Welke[8]; Z. Tobota[9]; G. Stellin[10]; *C. Mavroudis[11]; J. R. L. Hamilton[12]; *J. W. Gaynor[13]; M. Pozzi[14]; *F. G. Lacour-Gayet[15]*

[1]Duke University Medical Center, Durham, North Carolina; [2]Children's Hospital, Denver, Colorado; [3]The Congenital Heart Institute of Florida (CHIF) and Cardiac Surgical Associates (CSA), St. Petersburg and Tampa, Florida; [4]Memorial Hospital Child's Health Centre, Warsaw, Poland; [5]St. Christopher's Hospital for Children, Philadelphia, Pennsylvania; [6]Wayne State University School of Medicine, Detroit, Michigan; [7]Montreal Children's Hospital, Montreal, Quebec, Canada; [8]Division of Cardiothoracic Surgery, Oregon Health and Science University, Portland, Oregon; [9]Children's Memorial Health Institute, Warsaw, Poland; [10]Policlinico Universita, Padova, Italy; [11]Children's Memorial Hospital, Chicago, Illinois; [12]Freeman Hospital, Newcastle Upon Tyne, United Kingdom; [13]The Children's Hospital of Philadelphia, Philadelphia, Pennsylvania; [14]Royal Liverpool Children's Hospital Alder Hey, Liverpool, United Kingdom; [15]Children's Hospital Heart Institute, Denver, Colorado

Financial Disclosure: S.M. O'Brien, Statistician for Data Warehouse and Analysis Center of the STS Database, Employment (full or part-time) ; D.R. Clarke, Chief Operating Officer and Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; J.P. Jacobs, CardioAccessm Inc., Ownership Interest (stock, stock options, patent or other intellectual property); Chair of the STS Congenital Database Taskforce, Consultant/Advisory Board; Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; Medical advisor for CardioAccess, Inc., Consultant/Advisory Board; B. Maruszewski, Chair of the EACTS Database Committee, Consultant/Advisory Board; Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; M.L. Jacobs, Member of the Board of Directors, Aristotle Institute Inc., Consultant/Advisory Board; Z. Tobota, EACTS congenital database, Employment (full or part-time) ; C. Mavroudis, Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; J.R.L. Hamilton, Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; J.W. Gaynor, Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; M. Pozzi, Member of the Board of Directors of Aristotle Institute Inc., Consultant/Advisory Board; F.G. Lacour-Gayet, Aristotle Institute Inc. (President, CEO, Chairman of the Board), Consultant/Advisory Board.

Background: The Aristotle Basic Complexity Score (ABCS) was derived by consensus of an international surgeon panel to facilitate assessment of surgical performance for quality improvement in congenital heart surgery. The utility of ABCS depends on its ability to correctly classify procedures based on their potential for morbidity, mortality, and technical difficulty. This collaborative study compared the ABCS to actual observed rates of mortality and prolonged post-operative length of stay (PLOS) by combining two large multi-institution databases.

Methods: Procedure-specific probabilities of hospital mortality and PLOS>21 days were estimated in a hierarchical model for 83 congenital cardiac procedures (excluding procedures with N < 50) using both the EACTS congenital database (17,545 operations;

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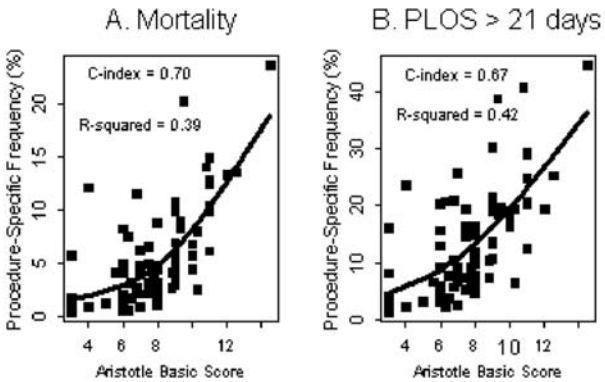
56 centers) and the STS congenital database (17,382 operations; 32 centers). The ability of the ABCS to discriminate low-risk vs. high-risk procedures was quantified by calculating the area under the receiver operating characteristics curve (C-index) and by estimating the proportion of explained variation in the procedure-specific event probabilities.

Results: While some individual procedures appear to be outliers (see Figure), the ABCS generally differentiates low-risk and high-risk procedures (C = 0.70 for mortality; C = 0.67 for PLOS) and explains a moderate amount of variation in procedure-specific event rates (R-squared = 0.39 for mortality; R-squared = 0.42 for PLOS).

Conclusions: The ABCS generally discriminates between high-risk and low-risk procedures making it a potentially useful covariate for case-mix adjustment in congenital heart surgery outcomes analysis. Future refinements to the Aristotle score will incorporate objective data for procedures with adequate sample sizes.



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STS PRACTICE EDUCATION SYMPOSIUM

Monday, January 29, 2007; 1:30 p.m. – 3:30 p.m.
Location: Room 32 A, B

Cardiothoracic Surgery Practice: State of the Art

Unless otherwise 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.

Symposium Description: The practice of cardiothoracic surgery is changing rapidly. The content of the practice, reimbursement and payor mix and the need to learn new skills have altered the terrain of traditional subspecialty practice. The practice education symposium offers insights into these changes and dealing with the new road maps of practice. Why are hospitals surviving better than surgical practices and can the surgeon benefit from this success? Do we need to really break from the past? Are there alternative tracks to individuals with an extensive education in cardiovascular and thoracic surgery? A series of expert speakers with practical experience address these and other pertinent matters of the modern medical environment.

1:30 p.m. **Welcome and Announcements**
Moderators: **James R. Edgerton, Plano, Texas;*
**Vinay Badhwar, St. Petersburg, Florida*

Financial Disclosure: V. Badhwar, Medtronic, Inc, MCRI, Consultant/Advisory (including volunteer roles).

1:35 p.m. **Roadmaps to Success: Forget the Rearview Mirror**
**Michael J. Mack, Dallas, Texas*

Financial Disclosure: M. J. Mack, Edward Lifesciences, Boston Scientific, Consultant/Advisory Board (including volunteer roles).

1:55 p.m. **Future Trends in Cardiothoracic Medicine**
Jim Field, Washington, District of Columbia

2:15 p.m. **How Does the Hospital Make Money Off of Heart Surgery & Thoracic Surgery**
**Robert J. McKenna, Jr., Los Angeles, California*

Financial Disclosure: R. J. McKenna, Jr., Gore (Monies to hospital to cover research project), Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received).

2:35 p.m. **Physicians Who Take Business Tracks**
**John R. Liddicoat, Boston, Massachusetts*

Financial Disclosure: J. R. Liddicoat, Medtronic, Employment (full or part-time), Viacor, Inc, (Founder, Shareholder), SentreHEART, Ownership Interest (e.g. stock options, patent or other intellectual property).

2:55 p.m. **Successful Cardiothoracic Practice Models**
Drew Rector, Palm Harbor, Florida

3:15 p.m. **Discussion – Questions and Answers**
**Robert W. Emery, Jr., Michael J. Mack, Jim Field, Robert J. McKenna, Jr.,*
**John Liddicoat, Drew Rector*

3:30 p.m. **Adjournment**

E 3:30 p.m. – 4:15 p.m. Break-Please Visit Exhibit Hall

BUSINESS MEETING (MEMBERS ONLY)

Monday, January 29, 2007, 4:15 p.m. – 6:00 p.m.
Location: Room 20

SURGICAL MOTION PICTURES

Monday, January 29, 2007
Location: Room 20

Moderators: **Malcolm M. DeCamp, Jr. and *Frank Pigula, Boston, Massachusetts*

Financial Disclosure: M.M. DeCamp, Jr., Accuray, (1. Was a consultant during protocol development; 2. Currently an institutional investigator on a multiinstituitional trial.) Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received). SuperDimension, (Between 9/05-2/06, was a consultant and physician advisor to the company for purposes of applying to CMS for a new Ambulatory Procedure Code (APC) for this new procedure/device.) Consultant/Advisory Board (including volunteer roles).

Unless otherwise 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.

7:00 p.m. – 7:12 p.m.

1. Distal Tracheal Resection of a Primary Tracheal Neoplasm
**M. Lanuti; *D. J. Mathisen*
Massachusetts General Hospital, Boston, Massachusetts

Long-term survival after surgical resection for adenoid cystic tracheal tumors is approximately 52% at five years and has been found to be independent of lymph node status. The locoregional extent of disease defines resectability. This video presentation depicts a 40-year-old woman who carries a diagnosis of adenoid cystic carcinoma involving the distal trachea. Her locoregional evaluation included bronchoscopy, esophagoscopy, endoscopic ultrasound and high-resolution chest imaging. She initially presented with presumed asthma and shortness of breath which did not improve on steriods. A large partially obstructing endoluminal mass was identified just about the tracheal bifurcation. She ultimatley underwent bronchoscopy, mediastinoscopy, right thoracotomy, right hilar release, tracheal resection and reconstruction.

7:12 p.m. – 7:24 p.m.

2. Training the Cardiac Surgeon of the Next Millennium: Simulator Training for Coronary Angiography and Intervention

*J. Walkes[1]; *M. J. Reardon[1]; P. Kougias[2]; A. B. Lumsden[2]
[1]Methodist DeBakey Heart Center, Houston, Texas; [2]Baylor College of Medicine, Houston, Texas

Background: Endovascular simulators have become common training tools for interventional cardiologists and vascular surgeons. We would like to report our early experience in the use of coronary simulation techniques for the training of cardiac surgeons and fellows.

Methods: A Simsuite Education System was used to train a practicing cardiothoracic surgeon to perform coronary angiography and PTCA. The simulator consisted of imaging controls, physiologic monitors, a gantry, a lab work station and an invasive drug control system. Training involved a three-phase learning process: a prebrief (patient presentation), simulation (procedure phase) and a postbrief (debriefing and metrics) protocol.

Results: In each of the scenarios, the cardiothoracic surgeon was able to successfully perform an intervention according to the guideline standards. Scoring of the aptitude to do coronary angiography was based on a metric system. The metric system, in addition to answers to self-assessment questions, was used to provide constructive feedback to the surgeon.

Conclusions: Endovascular techniques have gradually encroached on open coronary bypass volumes across the United States. The recent approval of drug eluting coronary stents further reduced the number of interventions required for restenosis. Very few cardiac surgeons have been trained to perform endovascular coronary interventions, although an increasing number are gaining similar peripheral endovascular skills. Coronary intervention training represents a potential additional pathway for training in endovascular skills. Validation of the quantitation process is currently underway to determine whether simulation training can be used to replace all or part of open case experience.

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7:24 p.m. – 7:36 p.m.

3. Aortic Translocation in the Treatment of Complex Forms of Transposition of the Great Arteries: An Expanded Indication

**B. Alsoufi; *W. G. Williams; *C. A. Caldarone; *G. S. Van Arsdell*
Hospital for Sick Children and University of Toronto, Toronto, Ontario, Canada

Background: Aortic translocation with biventricular outflow tract reconstruction, originally described by Nikaidoh, is a surgical alternative that may be superior to Rastelli procedure for the treatment of transposition of the great arteries (TGA) associated with ventricular septal defect and left ventricular outflow tract (LVOT) obstruction as it offers a more "normal" anatomy. This technique can be applied in the management of other complex forms of TGA.

Methods: Seventeen-year-old child, an extremely rare natural survivor with TGA, intact ventricular septum and fixed LVOT-obstruction. Following division of the ascending aorta, the coronary arteries were detached and mobilized to allow coronary transfer. The aortic root autograft was mobilized from the right ventricle similar to the pulmonary autograft in the Ross procedure. Pulmonary artery was opened, Pulmonary valve excised, and LVOT enlarged by debridement, myectomy and incision into the conal septum similar to the Konno procedure. LVOT was reconstructed with a Dacron patch, and the mobilized aortic root was repositioned into the LVOT. The Lecompte maneuver was performed. The left coronary was attached to the autograft. The aortic root was re-anastomosed to the distal aorta, followed by re-implantation of the right coronary button. The right ventricular outflow tract was reconstructed with a homograft.

Results: The patient had excellent hemodynamics, uneventful recovery, and great symptomatic relief on follow-up.

Conclusions: Aortic translocation is an excellent surgical technique. Its application can be expanded to other forms of complex TGA such as corrected TGA, double-outlet right ventricle, and TGA with intact septum and complex fixed LVOT-obstruction.

7:36 p.m. – 7:48 p.m.

4. Transcervical Thymectomy for Non-Thymomatous Myasthenia Gravis
**J. C. Kucharczuk; *J. Shrager; *L. R. Kaiser; *J. D. Cooper*
University of Pennsylvania, Philadelphia, Pennsylvania

Myasthenia gravis (MG) is an autoimmune disorder in which anti-acetylcholine receptor antibodies reduce the number of functionally available acetylcholine receptors at the neuromuscular end plate. Clinically, this is manifested by muscle weakness and muscle fatigability. The exact role the thymus plays in this disease remains poorly understood. Nevertheless, observations made more than 50 years ago by Blalock suggest that surgical thymectomy may be useful to induce remission of the disease. Currently, the practice parameter from the American Academy of Neurology suggests that "for patients with non-thymomatous autoimmune MG, thymectomy is recommended as a option to increase the probability of remission or improvement." Thus, once medically optimized, all patients with MG should be considered for thymectomy. Unfortunately, precise preoperative selection criteria for patients likely to achieve remission have not been defined. Likewise, the extent of operation required, either radical or simple thymectomy has not been established. This surgical video demonstrates the transcervical approach to thymectomy in autoimmune, non thymomatous, MG. Emphasis is placed on our operative technique and outcomes data.

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7:48 p.m. – 8:00 p.m.

5. Transapical Aortic Valve Implantation in Man

*S. V. Lichtenstein; A. Cheung; J. Ye; R. G. Carere; C. R. Thompson; J. G. Webb
University of British Columbia, Vancouver, British Columbia, Canada

Financial Disclosure: J.G. Webb, Consultant, Consultant/Advisory Board

This abstract describes the use of Cribier-Edwards Valve which has not been FDA approved.

An 87-year-old frail female, presented with SOBOE, chronic anemia and two pillow orthopnea. Angiography and echocardiography revealed CAD (60% LAD, 90% RCA) with severe MR and moderate TR. Severe AS (AVA = 0.6 sq cm., Grad = 44 mmHg mean). Prior AVR attempt at another center aborted because of "Porcelain Aorta." Because of iliofemoral disease she was referred for transapical aortic valve implantation.

With left chest slightly elevated a small incision (~5 cm.) was made in the left anterior chest wall in the 5th intercostal space. The pleura was entered and the apex of the heart identified. The pericardium was opened and secured to the chest wall. Pacing wires were attached to the LV and rapid pacing (160-200 beats /min.) used to decrease forward flow during balloon valvuloplasty and deployment of a 26mm Cribier-Edwards™ Valve (Edwards LifeSciences Inc., Irvine, CA). Fluoroscopy and TEE were used for positioning of the valve at the aortic annulus. The balloon and valve were introduced through a 24 French catheter advanced through the apex of the LV over a previously placed wire which extended through valve and down the thoracic aorta for stability. After deployment of the valve, gradient, orifice, mobility of leaflets and regurgitation were evaluated. The catheters were removed and initially placed pledgeted othogonal sutures tightened to secure hemostasis of the LV apex. Pericardium was approximated at mid point to prevent herniation. A left chest tube was inserted and thoracic incision closed.

8:00 p.m. – 8:12 p.m.

6. Cervico-Thoracic Approach for Vascular Resection in Anterior Pancoast Tumor

**L. Spaggiari; D. Galetta; M. D'Aiuto; G. Veronesi; F. Leo; P. Solli; F. Petrella; *R. Gasparri; A. Borri; P. Scanagatta*
Division of Thoracic Surgery, European Institute of Oncology, Milan, Italy

Background: Surgery of apical NSCLC often requires a cervico-thoracic vessel resection to achieve local control of the disease. We present our experience in cervico-thoracic vascular resection (subclavian, carotid, and SVC) and reconstruction associated with lung anatomic resection in the treatment of apical Pancoast tumor.

Methods: From May 1998 to May 2004, 41 consecutive patients with anterior Pancoast NSCLC were operated on using an anterior approach: transmanubrial approach (TMA) in 24 cases (58.5%), hemiclamshell approach (HA) in 15 (36.5%), and combined TMA + HA in 2 (5%). Eleven patients (26.8%) underwent vascular resection/reconstruction: subclavian artery (n=3), subclavian and carotid artery (n=1), subclavian/innominate vein (n=5), superior vena cava (n=3). The video reports the patient who underwent carotid and subclavian artery resection associated with lobectomy through TMA alone.

Results: Complete resection was achieved in 97.5% (40/41 cases). No intraoperative or postoperative mortality occurred. Morbidity rate was 41% (n=17); major complications occurred in 10 patients (24%). Eighteen patients (45%) had distant recurrence and 5 (12.5%) loco-regional relapse. Three- and five-year survival were 35% and 27%, respectively. At last follow-up 14 patients (36.8%) are still alive. Type of extended resection, T status, and pathological stage (IIB vs. IIIB) influenced survival (p=0.008, p=0.039, and p=0.033, respectively) A worse prognosis was seen in the group that required both chest wall and vascular resection (2-years survival: 0%).

Conclusions: The TMA allows a good exposure of cervico-thoracic structures and a feasible and safe vessel resection. Vascular involvement in anterior Pancoast tumor is a negative prognostic factor.

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8:12 p.m. – 8:24 p.m.

7. Monobloc Aorto Mitral Homograft Implantation Technique as a Treatment of Complex Cases of Endocarditis

**S. Chocron, Sr.; D. Kaili; D. Buklas; C. Taberlet; J. Etievent*
Hopital Jean Minjoz, Besancon, France

A 34-year-old male drug addict was admitted with a diagnosis of mitral staphylococcal endocarditis and operated in our hospital in December 2005. A complex mitral valvuloplasty was performed. Six months later he presented with a recurrent streptococcal endocarditis involving both the aortic and mitral valves and the intervalvular fibrous body. Aortic insufficiency was severe and mitral regurgitation graded as mild. This video shows the implantation technique of a monobloc aorto-mitral homograft.

8:24 p.m. – 8:36 p.m.

8. One-Stage Norwood-Rastelli Procedure with Regional Perfusion

W. Kim
Seoul National University Children's Hospital, Seoul, Republic of Korea

Hypoplastic left heart syndrome encompasses a spectrum of structural cardiac malformations. Among them, approximately 5% of neonates born with aortic atresia have a fully developed left ventricle (LV) in association with a ventricular septal defect (VSD) and a normal mitral valve (MV). This subgroup has a potential for biventricular repair.

A newborn boy was noted with severe heart failure after birth. Echocardiography revealed aortic atresia, a 2-mm ascending aorta, large VSD and normal LV and MV. He was taken to the operating room on day seven after birth (3.1 kg). Our approach was to perform biventricular repair at one stage. The arterial cannula was placed in the PDA initially. After cardioplegic arrest, the VSD was closed so as to baffle LV blood into the pulmonary valve. During Norwood procedure, the arterial cannula was transferred to the ascending aorta and maintained regional perfusion of the innominate artery. The rudimentary ascending aorta was transected and reimplanted onto the main pulmonary artery (MPA). After all ductal tissue was resected, the proximal MPA was anastomosed to the undersurface of arch and descending aorta. Continuity between the right ventricle and the distal MPA was established by non-valved conduit. Total cardiopulmonary bypass time, cross-clamp time, and circulatory arrest time were 233, 120, and 4 minutes, respectively. Weaning from cardiopulmonary bypass was uneventful. The patient was weaned from the ventilator on the 6th postoperative day. This patient underwent RV-to-PA conduit change three years later. Now he is five years old with good clinical state.

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8:36 p.m. – 8:48 p.m.

9. The Cox-Maze IV Procedure for Atrial Fibrillation

R. J. Damiano, Jr.; M. S. Bailey
Washington University School of Medicine, St. Louis, Missouri

Financial Disclosure: R.J. Damiano, Medtronic, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Atricure, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Consultant/Advisory Board; Atricure, Consultant/Advisory Board

Regulatory Disclosure: This abstract describes the use of Medtronic Cardioblate bipolar surgical ablation device which has been FDA approved for surgical treatment of atrial fibrillation.

This case is a 57-year-old woman who has been in paroxysmal atrial fibrillation for 18 months. She also had a coronary artery fistula from the left anterior descending coronary to the pulmonary artery. She had no other coronary disease and her echocardiogram showed a left atrial diameter of 4.6 cm with no valvular disease. The video describes our current technique to perform the entire lesion set. In this procedure, most of the incisions of the traditional cut-and-sew Cox-Maze procedure have been replaced with ablation lines. Most of the ablation lines are performed using a bipolar radiofrequency device. The lesions to the mitral and tricuspid annulus are made using a linear cryoprobe. The video details our technique and particularly our use of pacing to document pulmonary vein isolation. It also illustrates how to perform the left atrial isthmus lesion using a combination of bipolar radiofrequency ablation and cryoablation. We have now performed this procedure in over 150 patients with a one-year freedom from atrial fibrillation of over 90%. Using propensity matching, our results have been similar to those which we have obtained with the cut-and-sew Cox-Maze procedure in the past.

8:48 p.m. – 9:00 p.m.

10. Repair of Anomalous Origin of the Right Coronary Artery From the Left Sinus of Valsalva: The Unroofing Technique

*S. Emani; B. Z. Atkins; *J. Jaggers*
Duke University Medical Center, Durham, North Carolina

Anomalous aortic origin of the coronary artery is associated with sudden death. Although the indications for repair of anomalous right coronary artery from the left sinus of Valsalva are controversial, we present a patient with symptoms thought to be related to coronary ischemia. This video demonstrates coronary artery unroofing technique for repair of anomalous origin of the right coronary artery from the left sinus of Valsalva. This technique can be used if the anomalous coronary artery takes an intramural course.

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STS WORKFORCE ON INTERNATIONAL RELATIONSHIPS SYMPOSIUM

Current Issues for CT Surgeons Across All Borders
Monday, January 29, 2007; 7:00 p.m. – 9:00 p.m.
Location: Room 32 A, B

Symposium Description: The practice of cardiovascular medicine in general and cardiac surgery in particular has become internationalized, and there are increasing global forces that make the dynamics of cardiovascular surgery more challenging and competitive. In the past, trainees often remained in the country where they received their advanced clinical and research training. Recently, there has been a reversal of these trends and practitioners are returning to their home countries, providing world-class care and attracting a broad range of patients to their centers of excellence.

This "reverse migration," which could have a substantial impact on the U.S. health care system, has contributed to two new phenomena. Today, medical tourism no longer refers only to low-cost cosmetic procedures; it includes affordable major procedures for middle-income Americans who can't afford (or whose insurance company won't cover) expensive but necessary operations. And, as stem cell research continues to be a political football in the U.S., international transplant programs, once languishing, are now beginning to reinvent and revitalize themselves.

Attendees will gain insight into these trends and their implications. Internationally renowned speakers—Drs. Kitipan Arom, Michael Horowitz, Luis Felipe Rivas, and Noedir Stolf—will discuss the administrative structure, operation, marketing, and outcomes of these international centers, and provide analysis of the economic, legal, and ethical aspects of operations and management. Also, Drs. Jack Matloff, W. Gerald Rainer, Aurelio Chaux, and Tomas Salerno will also lead a panel discussion to allow opportunity for a lively and interactive exchange among panel members and attendees addressing these and other issues affecting cardiothoracic surgery around the world. The audience will also be actively encouraged to participate.

7:00 p.m. **Welcome and Opening Remarks**
**Jack Matloff, Los Angeles, California*

7:10 p.m. **Medical Tourism in a Global CT Arena**
**Kitipan Arom, Bangkok, Thailand; *Michael D. Horowitz, Kennesaw, Georgia*

7:50 p.m. **International Transplant Program Current Status and Future Potential (Including Stem Cell Research)**
*Noedir Stolf, Sao Paulo, Brazil; *Eduardo Cadavid-Alvear, Cali, Colombia*

8:30 p.m. **Panel Discuss, Q&A, Audience Feedback**
**Jack Matloff, Los Angeles, California/ *W. Gerald Rainer, Denver, Colorado/ *Aurelio Chaux, Los Angeles, California; *Tomas Antonio Salerno, Miami, Florida; All Participants*

TUESDAY AT-A-GLANCE

6:30 a.m.	– 4:30 p.m.	Registration: STS Annual Meeting, Spouse and Guest
7:00 a.m.	– 8:00 a.m.	Ticketed Breakfast Sessions (see page X)
7:00 a.m.	– 8:00 a.m.	Health Policy Forum: Performance Measurement and Public Reporting – How the 'Transparency Trend' Will Affect Your Patients and Your Payments
8:15 a.m.	– 9:15 a.m.	General Scientific Session II Oral Presentations: Abstracts #36-39
E 9:00 a.m.	– 4:30 p.m.	STS Exhibits and Scientific Poster Session Open
9:15 a.m.	– 9:35 a.m.	STS National Database Updates
E 9:45 a.m.	– 10:30 a.m.	Break – Please Visit Exhibits
10:30 a.m.	– 12:30 p.m.	General Scientific Session II (continued) Oral Presentations: Abstracts #40-43
E 12:30 p.m.	– 1:45 p.m.	Please Visit Exhibits
▶ 12:30 p.m.	– 1:45 p.m.	Ethics Debate (lunch included)
R 12:30 p.m.	– 1:45 p.m.	Residents' Luncheon
1:45 p.m.	– 6:05 p.m.	Parallel Surgical Forum I: Adult Cardiac I Parallel Surgical Forum II: Adult Cardiac II
1:45 p.m.	– 5:45 p.m.	Parallel Surgical Forum III: General Thoracic: Esophageal Parallel Surgical Forum IV: General Thoracic: Lungs Parallel Surgical Forum V: Congenital
7:00 p.m.	– 10:00 p.m.	Members' Social Event (See page 4 for more details)

▶ New or of special interest

E Exhibit Break R Resident Information Session

HEALTH POLICY FORUM

Performance Measurement and Public Reporting – How the "Transparency Trend" Will Affect Your Patients and Your Payments
Tuesday, January 30, 2007; 7:00 a.m. – 8:00 a.m.
Location: Room 31 A, B, C

Moderator: **Jeffry B. Rich, Norfolk, Virginia*
Introduction: **Kevin D. Accola, Orlando, Florida*

Financial Disclosure: K.D. Accola, Edwards Lifesciences (consultant/speaker), Speakers Bureau/Honoraria (e.g. speaker bureau, symposia, and expert witness), Global Medical, Inc. (Medical Director/Consultant), Ownership Interest (e.g., stock option, patent or other intellectual property).

Extra! Extra! Your quality ranking: public information. Your pricing structure: public information. This is what the U.S. government, insurance companies, and major employers seek to make public. Learn from our expert panelists how the new transparency trend will affect you and how you can influence its structure.

In late 2006, the U.S. Department of Health and Human Services (HHS), pursuant to an Executive Order signed by President Bush, launched a nationwide plan titled "Better Care, Lower Costs: You Deserve to Know…Health Care Transparency."

This initiative is being built on four cornerstones: publication of quality standards; publication of health care cost and prices charged; pay for performance incentives; and expansion of inter-operable health IT systems.

In support of this new transparency agenda, HHS Secretary James Leavitt stated:

- Every American should have access to a full range of information about the quality and cost of their health care options.
- Consumers need to know – and they deserve to know – the value of their health care.
- Transparency in quality and cost information will reform health care in America.
- Providing reliable cost and quality information empowers consumer choice.
- Consumer choice creates incentives at all levels, and motivates the entire system to provide better care for less money.
- Improvements will come as providers can see how their practice compares to others.

Please join us and hear the experts explain how you can influence the process.

TICKETED BREAKFAST SESSIONS

Tuesday, January 30, 2007; 7:00 a.m. – 8:00 a.m.

Tickets may be purchased at the registration desk for $40 each and will be required for admission. Sessions include continental breakfast. Each breakfast session is limited to 40 participants. Room locations will be printed on the tickets.

Regulatory Disclosure: This presentation describes the use of Cribier-Edwards Aortic Valve whose FDA status is investigational.

Ventricular Assist Devices for Children
**Christo I. Tchervenkov, Quebec, Canada*
**Gordon A. Cohen, Seattle, Washington*

Regulatory Disclosure: This presentation describes the use of the Berlin Heart, which is not FDA approved.

Financial Disclosure: G.A. Cohen, CardioMedics (stock holder), Ownership Interest (e.g. stock options, patent or other intellectual property).

Skeletonized IMA
**Rephael Mohr, Tel-Aviv, Israel*
Anthony M. Califiore, Catania, Italy

Meet the Experts I: How to Operate After Neoadjuvant Therapy of Lung Cancer
**Benedict D.T. Daly, Boston, Massachusetts*

Meet the Experts II: VATS Lobectomy
**Robert J. McKenna, Jr., Los Angeles, California*
**Michael S. Mulligan, Seattle, Washington*

Financial Disclosure: R. J. McKenna, Jr., Gore (Monies to hospital to cover research project), Research Grant (e.g. principal investigator, collaborator or consultant and pending grants as well as grants already received)

Meet the Experts III: Percutaneous Valves
**Joseph E. Bavaria, Philadelphia, Pennsylvania*
**Lars G. Svensson, Cleveland, Ohio*

Financial Disclosure: J.E. Bavaria, (Master speaker agreement) Bayer Pharmaceuticals Corp., (Speakers Bureau) CryoLife, Inc., (Speaker's Bureau) Medtonic USA, Inc., (Speaker's Bureau) Vascutek USA, Inc., Speaker's Bureau/Honoraria (speakers bureau, symposia, and expert witness). (Consulting Agreement. Course Director) CarboMedics Inc., (Past Primary Investigator) CryoLife, Inc., (Co-PI; Consulting Agreement) Cook Incorporated, (Primary Investigator; Consulting Agreement) W.L.Gore & Associates, Inc., (National Primary Investigator and Consulting Agreement) St. Jude Medical, Inc. Research Grant (Principal investigator, collaborator or consultant and pending grants as well as grants already received).

Financial Disclosure: L.G. Svensson, Medtronic, Edwards, Speakers Bureau/Honoraria (e.g. speaker bureau, symposia, and expert witness), Cook (Multicenter Study Committee and Local investigator). The money due to me is donated to AHA in my name, Consultant/Advisory Board (including volunteer roles)

Meet the Experts IV: Hybrid Surgery for HLHS
**Emile M. Bacha, Boston, Massachusetts*
**Christopher A. Caldarone, Toronto, Canada*

Meet the Experts V: Thoracic Endografting
**Nicholas T. Kouchoukos, St. Louis, Missouri*
**Grayson H. Wheatley, III, Phoenix, Arizona*

Financial Disclosure: G.H. Wheatley, III, W.L. Gore & Associates (Advisory Board), Medtronic (Consultant), Consultant/Advisory Board (including volunteer roles).

GENERAL SESSION II: CARDIOTHORACIC SURGERY MOVING FORWARD

Tuesday, January 30, 2007, 8:15 am - 12:30 pm

Unless otherwise 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.

8:15 a.m. – 8:30 a.m.

36. Can We Perform CABG on the Basis of CT Angio Alone? A Comparison of CT Angio With Conventional Coronary Angiography

*H. S. Bedi[1]; J. S. Gill[2]; T. P. Singh[2]; S. S. Bakshi[2]
[1]Ludhiana Mediciti, Ludhiana, Punjab, India; [2]Delta Heart Centre, Ludhiana, Punjab, India
Discussant: *Joseph F. Sabik, III, Cleveland, Ohio

Background: 64 slice computed tomography angiography (CTA) has recently emerged as a potential technique that can evaluate the coronaries in an accurate yet non-invasive manner. It has still not been shown whether the accuracy of the anatomy is precise enough to operate on the basis of CTA alone. The aim of this prospective clinical trial is to compare CTA to conventional coronary angiography (CAG), and to conclude whether CTA alone is adequate for proceeding for CABG.

Methods: 25 stable patients with proven severe CAD on CAG for elective CABG underwent CTA prior to CABG. The CTA images were compared with CAG and the accuracy, sensitivity and specificity of detecting significant stenosis cross checked. Lesion-by-lesion analysis was made. CAG (for degree of stenosis) and surgical confirmation (for the orientation of the vessels) was used as the reference standard.

Results: A 100% correlation was found between the CAG and CTA findings. The degree of stenosis correlated to within +/- 2.6%. Anomalous coronary arteries were easily picked up by CTA. The orientation of the vessels at CABG matched exactly the CTA findings. However intramural vessels were not identified by either CAG or CTA.

Conclusions: CTA is a valuable tool in the armamentarium of the cardiac scientist. For the cardiac surgeon performing off pump CABG it helps in precise planning of the procedure and prejudging the length of the conduit required. On the basis of our findings we recommend CTA as a sole criterion for proceeding for CABG without CAG.

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8:30 a.m. – 8:45 a.m.

37. Endovascular Stenting for Traumatic Aortic Injury: An Emerging New Standard of Care

*S. L. Moainie[1]; D. G. Neschis[2]; L. S. Magder[3]; T. M. Scalea[4]; *B. P. Griffith[1]*
[1]University of Maryland Division of Cardiac Surgery, Baltimore, Maryland; [2]University of Maryland Division of Vascular Surgery, Baltimore, Maryland; [3]University of Maryland Department of Epidemiology, Baltimore, Maryland; [4]University of Maryland R. Adams Cowley Shock Trauma Center, Baltimore, Maryland

Regulatory Disclosure: This abstract describes the use of Gore TAG Thoracic Aortic Endograft which has not been approved for the use for Aortic Transection.

Discussant: *Joseph S. Coselli, Houston, Texas

Background: Thoracic aortic injury remains a leading cause of death following blunt trauma. Thoracic aortic stents have the potential to treat aortic tears utilizing a less invasive approach, which makes this an attractive option in critically injured patients who are ill-suited to undergo a major surgical intervention. We have accumulated the largest series of patients treated with blunt thoracic aortic injury over a 12-month period and we review our experience to date.

Methods: From July 2005 to present, sixteen consecutive patients presenting with blunt aortic injury were treated with thoracic aortic endografting; these patients were retrospectively compared to the prior sixteen patients presenting with similar aortic injury that were treated by open surgical repair. A Severity Characterization of Trauma (ASCOT) score calculated on each patient predicts mortality based on severity of injury and degree of physiologic derangement on presentation.

Results: Results are summarized in the table below. Patients treated with endografting had a significantly shorter length of stay, less intra-operative blood loss, decreased 24 hour blood transfusion, and lower incidence of post-operative tracheostomy compared to patients undergoing open repair. Survival in both groups was similar despite a trend toward higher injury severity, as evidenced by lower ASCOT predicted survival, in patients treated with endografting.

Conclusions: This early experience suggests that endografting may provide a safe and efficient means for treatment of aortic tears and that cardiac surgeons can be successful in adopting these techniques and moving this technology forward.

Open Surgery Compared to Endovascular Therapy

	Open Surgery	Endovascular Stenting
Operative Timea	297.73	134.94
Operative Blood Loss[a]	1766.67	181.25
24 Hour Blood Transfusion[b]	8.19	2.88
Lenght of Stayb	29.71	14.85
ASCOT Score	0.87	0.78
Tracheostomya	53%	6%
Survival	81%	81%

[a]p<0.001
[b]p<0.05

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8:45 a.m. – 9:00 a.m.

38. Survival Outcomes for Rescue Extracorporeal Cardiopulmonary Resuscitation in Pediatric Patients with Refractory Cardiac Arrest

*B. Alsoufi; O. O. Al-Radi; R. I. Nazer; C. Gruenwald; C. Foreman; *W. G. Williams; *J. G. Coles; D. G. Bohn; *C. A. Caldarone; *G. S. Van Arsdell
Hospital for Sick Children and University of Toronto, Toronto, Ontario, Canada

Discussant: *Jeffrey P. Jacobs, St. Petersburg, Florida

Objectives: We report our experience with extracorporeal cardiopulmonary resuscitation (ECPR) utilizing extracorporeal membrane oxygenation (ECMO) in children having refractory cardiac arrest, and explore predictors for favorable outcome (survival with grossly intact neurologic status).

Methods: 80 children, median age 150 days (1day-17.6years), required veno-arterial ECPR (2000-05). Patients were post-cardiotomy (n=39), had un-operated congenital heart disease (n=17), cardiomyopathy (n=12), respiratory failure (n=9), or myocarditis (n=3). Cannulation sites were neck (n=45) or chest (n=36).

Multivariable regression analysis determined factors associated with favorable outcome and time-related survival.

Results: ECMO was successfully discontinued in 42 patients [wean (n=34), heart transplantation (n=8)]. Twenty-seven (34%) survived to discharge. Most common cause for mortality was ischemic brain injury (n=17).

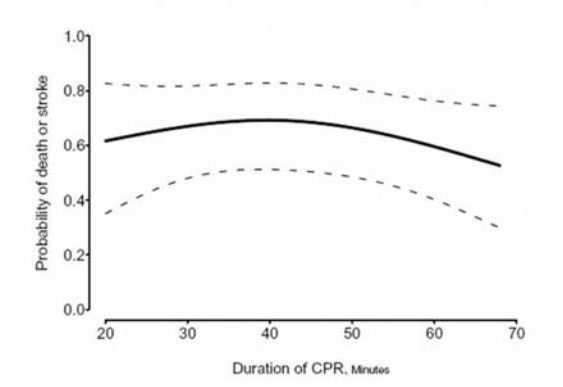
Twenty-four patients (30%) had favorable outcome. Median pre-ECMO CPR duration for patients with favorable versus unfavorable outcome was 45minutes (range:14-95,IQR:29-55) versus 41minutes (range:19-110,IQR:30-55).

Using logistic regression model, none of the following factors: age, weight, sex, etiology (cardiac vs. non-cardiac), CPR duration, cannulation site, blocked aortopulmonary shunts, timing or location of ECMO institution was significant predictor of favorable outcome.

Time-related survival at 1 and 3 years was 29% (CI:19-39%), and 27% (CI:17-37%). Risk factors for time-related mortality were female sex (HR:2.4,CI:1.2-4.8), and non-cardiac etiology (HR:3.4,CI:1.2-9.7).

Conclusions: Acceptable survival and neurologic outcomes can be achieved in children having prolonged cardiac arrest refractory to conventional resuscitation measures up to 95 minutes. Heart transplantation is often needed for successful ECMO exit strategy. Lack of predictors of poor outcome support aggressive attempts to initiate ECPR in all patients followed by subsequent assessment of organ salvage.

	Favorable outcome (n=24)	Unfavorable outcome (n=56)	P-value
Age (months)	4.8	5.1	0.655
Weight (Kg)	5.2	5.2	0.878
Female sex	29%	46%	0.151
Thoracic cannulation	50%	43%	0.556
ICU vs. other locations	92%	88%	0.509
Weekday vs. other	39%	30%	0.620
Blocked shunts	0%	5%	0.248
ECMO exit by heart transplantation	29%	2%	<0.001
Pre-ECMO CPR duration (minutes)	45	41	0.967
ECMO duration (days)	4	4	0.958


1.0
0.8
0.6
0.4
0.2
0.0
Probability of death or stroke
20
30
40
50
60
70
Duration of CPR, Minutes

NOTES

9:00 a.m. – 9:15 a.m.

39. 30-Day Preclinical Thoracic Artificial Lung Testing in Sheep

H. Sato; C. M. Hall; G.W. Griffith; J. M. Toomasian; R. B. Hirschl; R. H. Bartlett; K. E. Cook
University of Michigan, Ann Arbor, Michigan

Financial Disclosure: R.H. Bartlett, MC3, Ownership Interest (stock, stock options, patent or other intellectual property)

This abstract describes the use of MC3Biolung® which is not FDA approved.

Discussant: *Joseph B. Zwischenberger, Galveston, Texas

Background: Pre-clinical, 30-day testing of the MC3 Biolung® thoracic artificial lung (TAL) was initiated to prepare for future clinical testing.

Methods: The TAL inlet and outlet grafts were sewn to the pulmonary artery (PA) and left atrium, respectively, of a 35 kg sheep. The sheep was recovered, and the device was attached to the grafts the next day. Arterial, device inlet, and device outlet pressures and PA and device flow rates were recorded hourly and averaged daily. Arterial blood gases were measured every one to four hours, and device inlet and outlet blood gases were measured twice daily. The device was changed if device flow fell below one L/min. After 30 days, the sheep was euthanized and necropsied.

Results: Mean arterial pressure averaged 99 ± 6.0 mmHg, PA flow averaged 3.2 ± 0.3 L/min, and blood flow through the device averaged 58 ± 18% of PA flow. Arterial PO2 and PCO2 averaged 80 ± 9.9 mmHg and 34 ±1.6 mmHg, respectively. Device O2 transfer averaged 106 ± 51 ml/min. Baseline device resistance was 1.7 mmHg/L/min. The first device was changed at the 14th day when resistance was 7.0 mmHg/L/min, and the second device was changed at the 19th day when the resistance was 17 mmHg/L/min. No sign of infection or bleeding complications were observed.

Conclusions: Initial results indicate that the Biolung® is capable of pump-less respiratory support for periods of up to one month. A second experiment has since been undertaken, with this sheep currently on its 15th day.

*STS Member

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11:30 a.m. – 11:45 a.m.

40. Evidence-Based Approach to the Use of Anti-Platelet Drugs in Cardiac Operations - An Example of Practice Guideline Development from the STS Evidence Based Workforce

**V. A. Ferraris[1]; S. P. Ferraris[1]; *S. P. Saha[1]; *C. K. Haan[2]; B. D. Royston[3]; *C. R. Bridges[4]; *R. S. D. Higgins[5]; G. J. Despotis[6]*

[1]University of Kentucky, Lexington, Kentucky; [2]University of Florida, Jacksonville, Jacksonville, Florida; [3]Harefield Hospital, Harefield, United Kingdom; [4]University of Pennsylvania, Philadelphia, Pennsylvania; [5]Rush Presbyterian St. Lukes' Medical Center, Chicago, Illinois; [6]Washington University, St. Louis, Missouri

Financial Disclosure: V.A. Ferraris, American Heart Association, Aventis, Bayer, BioMarin Pharma, Guilford, Medtronic, NHLBI, and The Medicines Company, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Aventis, Bayer, Network for Advancement of Transfusion Alternatives (NATA), and The Medicines Company, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); S.P. Ferraris, Bayer, The Medicines Company, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received).

Discussant: *Robert A. Guyton, Atlanta, Georgia

Background: Preoperative anti-platelet drug use is common in patients undergoing cardiac operations. The STS Evidence Based Workforce reviewed available evidence to develop practice guidelines to help manage patients treated with these drugs during cardiac procedures.

Methods: Available evidence, including meta-analyses, randomized trials, observational studies, expert opinions, and unpublished reports regarding the effects of anti-platelet drugs on postoperative bleeding was reviewed and recommendations were developed using conventional methods for practice guideline development.

Results: Evidence suggests six preoperative variables are associated with excessive peri-operative bleeding including advanced age, low preoperative red blood cell volume, use of anti-thrombotic drugs before operation, prolonged CPB time, emergency operation, and non-cardiac co-morbidities.

Aspirin users have a slight, but significant, increased blood product usage after CABG. Other anti-platelet drugs like clopidogrel and glycoprotein 2b/3a inhibitors are more potent and significantly increase bleeding during cardiac operations. Variability in patient response to anti-platelet drugs is common.

Consensus recommendations for available blood conservation techniques for high-risk patients treated with anti-thrombotic drugs include: 1) preoperative identification of high risk patients, 2) limiting preoperative anti-platelet drug exposure, 3) intraoperative blood conservation interventions (e.g. aprotinin, blood salvage, hemodilution, etc.), 4) use of transfusion algorithms combined with point-of-care testing, and 5) multiple blood conservation interventions rather than a select few.

Conclusions: Anti-platelet drugs increase bleeding at operation, but the patient response to these drugs is variable. Evidence-based options for patients who take anti-platelet drugs before cardiac procedures are available. A multimodality approach to the high risk patient is likely to produce the best results.

*STS Member

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11:45 a.m. – 12:00 p.m.

41. Does the Number of Grafts Influence Surgeon Choice and Patient Benefit of OPCAB Over Conventional CABG for Multivessel Disease?

*O. M. Lattouf; J. Noora; *J. D. Puskas; P. Kilgo; *V. H. Thourani; *R. A. Guyton
Emory University, Atlanta, Georgia

Financial Disclosure: O.M. Lattouf, Guidant, MCRI, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); J.D. Puskas, MCRI, St Jude, Guidant, Cardiogenesis, NHLBI, Cardica, Medtronic, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Medtronic, Scanlan, Guidant, Consultant/Advisory Board; V.H. Thourani, Medtronic, Coulter Foundation, Edwards, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); R.A. Guyton, Guidant, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Medtronic, Consultant/Advisory Board.

Discussant: *Fred H. Edwards, Jacksonville, Florida

Background: It is not known whether surgeons preferentially assign patients requiring fewer grafts (1-3) to OPCAB and those requiring many grafts (4-7) to conventional CABG (ONCAB), nor whether risk-adjusted outcomes are similar for OPCAB and ONCAB in patients receiving 1-3 and 4-7 grafts.

Methods: A prospective database at an academic center was reviewed for 11,413 consecutive patients who underwent isolated, primary CABG between January, 1997 and May, 2005. Patients were divided into four groups: OPCAB 1-3 grafts (n=3,187), OPCAB 4-7 grafts (n=1,305), ONCAB 1-3 grafts (n=3,279) and ONCAB 4-7 grafts (n=3,642). Propensity score for surgery type was estimated from 33 risk factors. Multivariable logistic regression examined independent impact of surgery type and number of grafts on outcomes. Computed interactions determined whether the effect of surgery type on risk-adjusted outcomes was consistent across groups.

Results: Patients requiring 4-7 grafts had adjusted odds of receiving ONCAB 2.92 times higher than patients requiring 1-3 grafts (p<.001). Overall, OPCAB patients had adjusted odds ratios of 0.62 for death (p=.01) and 0.48 for stroke (p<.001) compared to ONCAB patients. These and other benefits of OPCAB were present for patients requiring 1-3 and 4-7 grafts. The interaction between OPCAB and number of grafts was insignificant:

Outcome	OPCAB vs ONCAB	OPCAB 1-3 vs ONCAB 1-3	OPCAB 4-7 vs ONCAB 4-7	Interaction p-value
Death	0.62*	0.55*	0.69	0.47
Stroke	0.48*	0.44*	0.56	0.49
MI	0.99	1.04	0.93	0.83
MACE#	0.57*	0.51*	0.69	0.16
Infection	0.74*	0.78	0.68	0.56
Renal Failure	0.75*	0.71*	1.02	0.56

*p<0.05,#(Death,Stroke,MI)

Conclusions: In a center with a large OPCAB experience, surgeons tend to perform OPCAB for patients requiring 1-3 grafts and ONCAB for those requiring 4-7 grafts. Overall, OPCAB is associated with reduced adjusted risk of adverse outcomes compared to ONCAB. This benefit is consistent for patients requiring 1-3 or 4-7 grafts.

NOTES

12:00 p.m. – 12:15 p.m.

42. Surgical Outcome of Patients with Hypoplastic Left Heart Syndrome and Intact or Highly Restrictive Atrial Septum

*V. L. Vida; L. A. Larrazabal; K. Gauvreau; *F. Fynn-Thompson; *F. Pigula; *J. E. Mayer, Jr.; *P. J. Del Nido; W. Tworetzky; A. C. Marshall; J. E. Lock; *E. A. Bacha*
Childrens Hospital Boston, Boston, Massachusetts

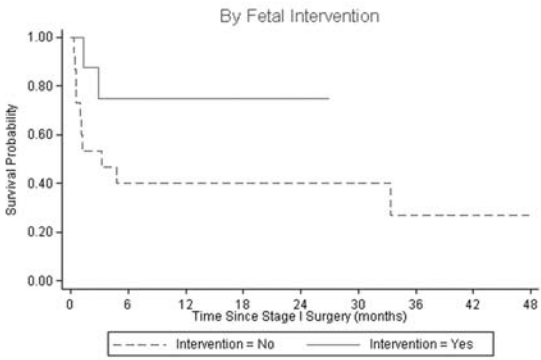
Discussant: *J. William Gaynor, Philadelphia, Pennsylvania

Background: Although surgical management of hypoplastic left heart syndrome has improved during the last few years, patients with intact or highly restrictive atrial septum continue to be a surgical challenge.

Methods: From January 2001 to December 2005, patients with hypoplastic left heart syndrome who: 1) had intact or highly restrictive atrial septum, 2) underwent urgent catheterization within the first 2 days of life to create or enlarge an interatrial communication and 3) underwent surgical palliation were included. We examined patient and operative characteristics associated with death. Kaplan-Meier analysis was used to assess survival.

Results: Twenty-four patients were included. Nine patients (38%) underwent fetal intervention (balloon atrial septectomy in 4, aortic balloon dilation in 4, and both procedures in 1). At surgical palliation, all except one patient had a modified Blalock-Taussig shunt. Nineteen patients (79%) required delayed sternal closure, and 8 (35%) required post-operative extra-corporeal membrane oxygenation support. Hospital mortality was 21% (5 patients). None of the patients who had fetal intervention died after surgery. Longer circulatory arrest time (p=0.008), postoperative extra-corporeal membrane oxygenation support (p=0.03), and to a lesser extent, longer cardio-pulmonary by-pass time (p=0.08), were associated with in-hospital death. Survival after surgical palliation was better in patients who previously underwent fetal intervention (Figure 1).

Conclusions: Fetal intervention seems to improve early surgical outcome and mid-term survival for this particular group of patients.



 *STS Member ▶ New or of special interest

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12:15 p.m. – 12:30 p.m.

43. Fast Tracking After Lobectomy

*R. J. McKenna, Jr.
Cedars Sinai Medical Center, Los Angeles, California
Discussant: *Robert J. Cerfolio, Birmingham, Alabama

Background: In the era of cost containment, a fast tracking protocol was developed to reduce cost and shorten the length of stay after a lobectomy.

Methods: 279 VATS lobectomies were performed by a single surgeon in 2004-5 in 143 women (51%) and 136 men (49%), mean age = 71.2years. With visualization on a monitor, anatomic hilar dissection and lymph node sampling or dissection were performed, primarily through a 5 cm incision without spreading the ribs. The protocol included consecutive lobectomies done via VATS with no routine lab work or chest X-rays. The chest tubes were discontinued once i) the output was less than 300cc in a twenty-four hour period and ii) there was no air leak present. If the chest tube output was less than 300cc in a twenty-four hour period, but there was an air leak, the patient was discharged home with a Heimlich valve.

Results: Following this protocol, the mean length of stay = 3.26 days, median = 3 days. 7/279 patients (2.5%) were discharged with a Heimlich valve. There were no mortalities. There were no complications in 263 (94%). One patient was readmitted to the hospital for a TIA.

Conclusions: Using a fast tracking protocol, VATS lobectomy with anatomic dissection can be performed with a short post operative length of stay and, in turn, reduced costs.

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R STS RESIDENTS' LUNCHEON

Tuesday, January 30, 2007; 12:30 p.m. – 1:45 p.m.
Location: Room 28 A, B, C

12: 30 – 12:35 p.m.	**Welcome and Introductory Remarks** **Walter H. Merrill, Cincinnati, Ohio* *Chair, Workforce on Graduate Medical Education and Thoracic Surgery Resident Isses*
12:35 – 12:45 p.m.	**How to Be a Good "Mentee": Working With Your Mentor to Maximize Benefits** **Cynthia S. Herrington, Minneapolis, Minnesota*
12:45 – 12:55 p.m.	**Preparation for Success as a Practicing Cardiac and General Thoracic Surgeon** **Peter L. Walinsky, Albuquerque, New Mexico*
12:55 – 1:05 p.m.	**Tales from the Front – What to Expect in the Early Career** **Grayson H. Wheatley, III, Phoenix, Arizona*
1:05 – 1:35 p.m.	**Questions & Answers** **Cynthia S. Herrington, *Walter H. Merrill, *Peter L. Walinsky, and *Grayson H. Wheatley, III*
1:35 – 1:45 p.m.	**Closing Remarks** **Frederick L. Grover, Denver, Colorado* *STS President* Financial Disclosure: F.L. Grover, Bayer, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); (Honoraria and Travel) Ethicon, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness).

ETHICS DEBATE

Professionalism Meets Commerce: Tighter Regulation of Conflicts of Interest in Surgeon-Industry Relations Is Needed

Tuesday, January 30, 2007; 12:30 p.m. – 1:45 p.m.
Location: Room 29

Moderator: **Robert M. Sade, Charleston, South Carolina*
Pro: *Jerome Kassirer, Boston, Massachusetts*
Con: *Thomas Stossel, Boston, Massachusetts*

Symposium Description: Surgeons' conflicts of interest within their relations to industry have recently received a great deal of attention in the national media, some targeting well-known cardiothoracic surgeons. Critics claim that these conflicts threaten the integrity of the specialty—and medical profession as a whole—and that industry-physician relations should be tightly regulated. Others argue that current laws and regulations are already too restrictive, are based on little or no evidence that they are needed, and unjustifiably restrain progress. Two well-known physician-scholars—Jerome Kassirer, former editor of the *New England Journal of Medicine*, and Thomas Stossel, health policy commentator and oncologist at Brigham and Women's Hospital—will debate whether greater regulation of such conflicts of interest is necessary.

PARALLEL SURGICAL FORUM I: ADULT CARDIAC I

Tuesday, January 30, 2007, 1:45 p.m. - 6:05 p.m.

Unless otherwise 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.

1:45 p.m. – 2:00 p.m.

44. INR Self-Management Lowers the Risk of Thromboembolic Events After Prosthetic Aortic Valve Replacements

T. Eitz; S. Schenk; O. Wagner; D. Seifert; M. Morshuis; R. Koerfer; H. Koertke
Heart Center NRW, Bad Oeynhausen, Germany

Background: Although prosthetic valves are durable and easy to implant, the need for a life-time warfarin based anticoagulation restricts their exclusive usage. We tested if anticoagulation self-management improves outcome in a single-center series.

Methods: Between 1994 and 1997, 678 patients were prospectively enrolled to receive a mechanical valve in aortic position and randomized into group (1), conventional anticoagulation management by their primary physician (n=267), or group (2), anticoagulation self-management (n=411).

Results: We implemented a study head office to coordinate and monitor anticoagulation protocols, international normalized ratios (INR), and adverse events. Patients were instructed to obtain and test their own blood samples as well as to adjust warfarin dosages according to the measured INR (target range 2.5-4.0). Both groups maintained within this target range, however INRs were slightly smaller in group (1) than in group (2) (INR of 2.76 ± 0.68 vs 2.97 ± 0.62; P<0.001).

Interestingly, 38.6% of INRs were measured off the target range in group (1) compared to only 25.0% in group (2), indicating less scatter of INR values if monitored and adjusted by the patients themselves. Thromboembolic events were more often observed in group (1) (6.0% vs 2.7%, P=0.026), however, bleeds were not different (4.5% vs 6.3%, P NS).

Conclusions: INR self-management optimizes anticoagulation in patients receiving mechanical aortic valve replacements. Thromboembolic events can be reduced by more than 50% while bleeding events are not increased.

*STS Member

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2:00 p.m. – 2:15 p.m.

45. A Change in Perspective: Results for Ischemic Mitral Valve Repair are Similar to Mitral Valve Repair for Degenerative Disease

*L. M. Gazoni; *J. A. Kern; *P. W. Smith; T. B. Reece; L. M. Fedoruk; *C. G. Tribble; *I. L. Kron*
University of Virginia, Charlottesville, Virginia

Background: While the benefits of mitral valve (MV) repair for degenerative disease are well-established, many consider the associated risks of surgery for ischemic mitral regurgitation (MR) less conducive to operative treatment. We hypothesized that MV repair for ischemic MR results in outcomes similar to MV repair for degenerative MR.

Methods: Retrospective review of non-emergent MV repairs over an eight-year period revealed 90 patients with ischemic MR(ISCHEMIC) and 220 patients with degenerative MR(DEGENERATIVE). Repair for the ISCHEMIC group utilized undersized rings in all patients and treatment of tethering in 31 patients. Pre-operative risk factors, post-operative complications, hospital mortality, and 5 year freedom from reoperation and survival were evaluated.

Results: ISCHEMIC patients had more comorbidities (P<0.01) and worse pre-operative left ventricular dysfunction (ejection fraction<30) compared to DEGENERATIVE patients; 28.9%(26/90) ISCHEMIC patients; 2.3%(5/220) DEGENERATIVE patients (P<0.01). Immediate post-repair transesophageal echocardiogram revealed 0 to 1+ MR in both groups (P=NS). The hospital mortality rate was 4.44%(4/90) in the ISCHEMIC group and 1.81%(4/220) in the DEGENERATIVE group (P=NS). The 5-year survival rate was 79.3% in the ISCHEMIC group and 92.4% in the DEGENERATIVE group (P=0.04). Five-year freedom from reoperation for recurrent MR was 100% and 96% in the ISCHEMIC and DEGENERATIVE groups, respectively (P=NS). Post-operative renal failure and stroke rates were similar between both groups (P=NS).

Conclusions: Despite the multiple comorbidities that afflict patients with ischemic MR, MV repair for ischemic and degenerative disease produces comparable and satisfactory outcomes. An aggressive approach to repair of ischemic MR, including treatment of tethering, leads to durable results.

NOTES

2:15 p.m. – 2:30 p.m.

46. Permanent Chronic Atrial Fibrillation: Pulmonary Vein Isolation Alone is Not Enough

*W. Wisser[1]; C. Aigner[1]; G. Stix[2]; R. Seitelberger[1]; D. Hutschala[3]; *E. Wolner[1]*
[1]Medical University Vienna, Department of Cardiothoracic Surgery, Vienna, Austria; [2]Medical University Vienna, Department of Cardiology, Vienna, Austria; [3]Medical University Vienna, Department of Cardiothoracic and Vascular Anaesthesia & Intensive Care, Vienna, Austria

Background: Left atrial endocardial maze has been proven to be efficient in treating chronic permanent atrial fibrillation. Whilst good results have been described in the treatment of paroxysmal atrial fibrillation, it remains debatable whether Pulmonary Vein Isolation is a good option for the treatment of permanent atrial fibrillation.

Methods: We prospectively collected and retrospectively analysed the outcome of 52 consecutive patients undergoing left atrial maze procedures using radiofrequency energy from 1/2003 to 8/2005. Ablations were performed in combination with valve and/or coronary procedures. Group I (n=18) received an endocardial left atrial modified Cox III maze using unipolar saline irrigated radiofrequency (Medtronic Pen). Group II (n=36) received epicardial isolation of the pulmonary veins using bipolar saline irrigated radiofrequency (Medtronic Cardioblate). Follow-up included 24h-ECG and echocardiography 6 and 12 months postoperatively, thereafter yearly.

Results: Mean follow-up was 513+194 days (521±223 days group I vs. 510±186 days group 2). Both groups were comparable with regard to duration of atrial fibrillation, Euroscore, LVEF, aortic cross clamp time, bypass time, ICU and hospital stay (all p=n.s.). No maze procedure related mortality was observed. Pacemaker implantation was necessary in 3 patients (n=1 and 2 in group I and II respectively). Freedom from atrial fibrillation at last follow up was 92,9% and 58,33% in group I and II respectively (p=0,019).

Conclusions: Pulmonary vein isolation alone is insufficient in treating permanent chronic atrial fibrillation. In case of chronic permanent atrial fibrillation, left atrial endocardial MAZE, providing the connection lines to the mitral annulus, seems to be mandatory.

*STS Member

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2:30 p.m. – 2:45 p.m.

47. Reoperation After Mitral Valve Repair for Degenerative Disease

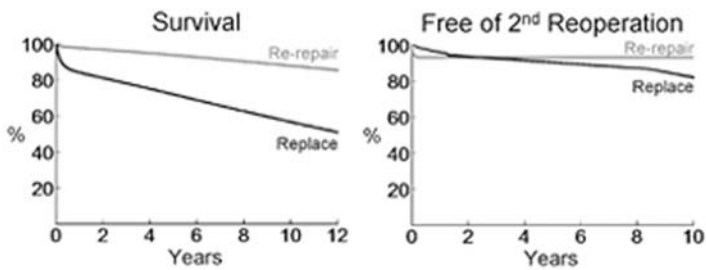
*E. Dumont; *A. M. Gillinov; E. H. Blackstone; P. L. Houghtaling; *J. F. Sabik; *L. G. Svensson; *T. Mihaljevic; *B. G. Pettersson; *B. W. Lytle*
Cleveland Clinic, Cleveland, Ohio

Background: As frequency of mitral valve repair for degenerative disease increases, surgeons will encounter more patients with recurrent mitral regurgitation requiring reoperation. Objectives of this study were to determine 1) indications for, timing of, and approach to reoperation for failed repair, and 2) long-term survival and freedom from second reoperation.

Methods: From 1980 to 2005, 188 patients underwent mitral valve reoperation for recurrent mitral regurgitation following mitral valve repair for degenerative disease. Follow-up averaged 6.5±5.0 years, with 15% of patients followed more than 13.5 years.

Results: Indication for reoperation was procedure-related failure (n=71), valve-related failure (n=84), both (n=25), or uncertain (n=8). Intervention was early (median 18 days) for procedure-related failure and later (median 5.6 years) for valve-related failure. Procedure-related failure was caused by suture dehiscence in 40 of 96 patients (42%), rupture of previously shortened chordae in 20 (21%), systolic anterior motion in 20 (21%), and incomplete initial correction in 11 (11%). Valve-related failure was caused by progressive disease in 100 of 109 patients (92%), hemolysis in 21 (19%), and endocarditis in 11 (10%) (not mutually exclusive). At reoperation, mitral valve replacement was performed in 64% and re-repair in 36%, but re-repair is being increasingly employed (P=.002). Unadjusted survival was higher after re-repair than replacement (Figure). Despite initial failures, re-repair was durable (Figure).

Conclusions: 1) Reoperation for recurrent mitral regurgitation after repair for degenerative disease is most frequently indicated because of new valve pathology, 2) reoperation for procedure-related failure occurs early, and 3) re-repair is feasible, durable, and increasingly employed.



*STS Member

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2:45 p.m. – 3:00 p.m.

48. Vascular Graft Replacement of the Ascending and Descending Aorta: Do Dacron Grafts Grow?

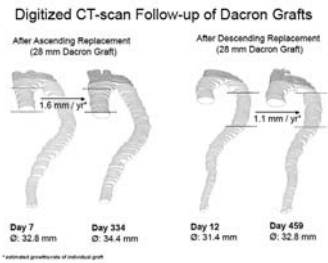
C. D. Etz; T. M. Homann; D. Silovitz; C. A. Bodian; M. Luehr; G. Di Luozzo; K. A. Plestis; R. B. Griepp
Mount Sinai School of Medicine, New York City, New York

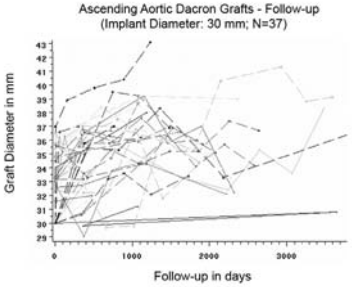
Background: The tendency of Dacron vascular grafts to expand after placement in the ascending and descending thoracic aorta has been noted, but never described in detail.

Methods: From 1986 to 2005, two or more CT studies were obtained as part of routine postoperative surveillance in patients with Dacron grafts implanted to replace diseased aortic segments. Scans were digitized to evaluate the entire thoracic aorta. The median diameters of 552 grafts (Ø: 20-32 mm) in the ascending (349) and descending (213) aorta were calculated from > 2000 postoperative CT scans.

Results: In scans obtained ≤7 days after implantation, the median graft diameters increased from the manufacturer's measurement by 21% in the ascending [n=169; IQ range 11 - 21%; p< .0001], and 15% in the descending aorta [n=79; IQ range 12 -25%; p<.0001]. From an initial scan within 30 days to at least one other within 18 months after implantation, ascending grafts dilated further, at a median rate of 3.3%/year [n=154; IQ-range: 2 - 7%; p=0.003]. Descending grafts dilated less markedly: 2.6%/year [n=94; IQ-range- 4 - 7%; p=0.06]. After 18 months, median graft expansion diminished to zero.

Conclusions: Significant initial and intermediate-term expansion of vascular Dacron grafts occurs; it is more pronounced in the ascending than in the descending aorta. Graft expansion should be anticipated when selecting grafts for aortic valve sparing procedures in order to prevent development of regurgitation, and, for endoluminal repair of thoracoabdominal aneurysms, to prevent development of Type III endoleaks in the projected landing zone.





*STS Member

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3:00 p.m. – 3:15 p.m.

49. Long Term Follow-Up Confirms Left Ventricular Reverse Remodeling Following Restrictive Mitral Annuloplasty and CABG in Ischemic Mitral Regurgitation

*J. Braun; N. Van de Veire; R. J. M. Klautz; J. Westenberg; M. I. M. Versteegh; J. J. Bax; *R. A. E. Dion*
Leids Universitair Medisch Centrum, Leiden, The Netherlands

Background: Restrictive mitral annuloplasty (RMA) and CABG in ischemic mitral regurgitation (IMR) has been shown to lead to reverse remodeling over a two year interval. Long-term follow up is necessary to show a sustained benefit of this procedure.

Methods: Eighty-five consecutive patients (67±9 years) with previous infarction, LV dysfunction (EF 30%) and severe MR (grade 3-4+) underwent CABG and RMA with stringent downsizing (2 ring sizes). Preoperative echocardiographic assessment included MR grade, LV dimensions and EF. Patients were re-evaluated at 4-year follow-up.

Results: Early mortality was 8% (7 pts, 4 cardiac deaths). Late mortality was 15% (13 pts, 7 cardiac deaths). Median follow-up of the survivors was 43 months an their NYHA class improved from 2.9±1 to 1.2±0.4 ($p<0.0001$). All patients were free of endocarditis or thrombo-embolism. Two (2%) needed re-operation for recurrent MR and 2 patients underwent PCI.

At four year follow up, LV end-diastolic and end-systolic dimensions decreased from 59.8±9.0 mm to 54.2±9.7 mm ($p<0.0001$) and from 46.3±10.6 mm to 39.3±11.6 mm ($p<0.0001$), respectively. LA dimension was reduced from 45±7mm to 42±7 mm ($p<0.01$). Leaflet coaptation improved from 0.3±0.2 mm to 0.8±0.2. MR grade decreased from 3.0±0.6 to 0.8±0.8 at follow-up ($p<0.0001$). Valve area was 2.8±0.6 cm2

Conclusions: The current data confirm excellent clinical results of restrictive annuloplasty in addition to revascularization in patients with ischemic MR. Residual MR was absent at 4-year follow-up, and associated with a significant reduction in LA dimension and significant LV reverse remodeling.

NOTES

4:00 p.m. – 4:15 p.m.

50. Aortic Enlargement and Late Reoperation Following Repair of Acute Type A Aortic Dissection

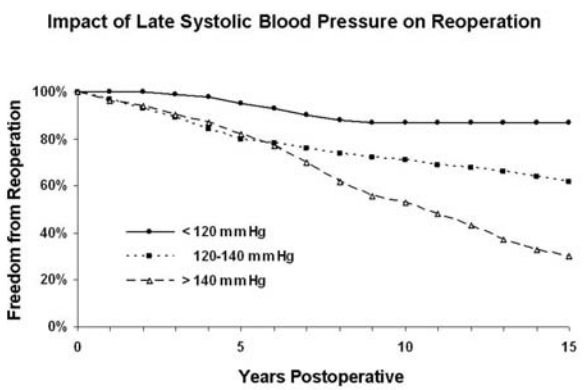
*A. Zierer; R. K. Voeller; K. E. Hill; *N. T. Kouchoukos; *R. J. Damiano, Jr.; *M. R. Moon*
Washington University, School of Medicine, St.Louis, Missouri

Background: The natural history of the residual aorta following repair of acute type A aortic dissection is incompletely understood.

Methods: Over a 22-year period, 201 patients underwent repair of acute type A dissection by 25 surgeons. For 168 operative survivors, mean late follow-up for reoperation or death was 6.5±5.5 years and was 100% complete. Late blood pressure (BP) and medication history were available for 136 patients. 412 CT scans were analyzed for segmental diameter and false lumen patency from all patients who underwent more than 2 follow-up imaging studies at our institution (n=69).

Results: Freedom from reoperation at 10 years was 79±5% (21 reoperations, 1-170 months). A non-resected primary tear (p=0.015), Marfan syndrome (p<0.001), and elevated late systolic BP (p=0.003) (Figure) were predictors of late reoperation while _-blockers were protective (p=0.008). Aortic growth between consecutive CT scans was detected in 18% (62/343) intervals affecting 49% (34/69) patients with mean growth rate of 5.3±4.5mm/year. Onset of enlargement was unpredictable and occurred 59±45 months postoperatively (range, 1-167). Risk factors for growth included aortic diameter (p<0.001), elevated late systolic BP (p=0.04), and patent false lumen (p=0.05). Descending aortic diameter <35mm predicted growth in 11% of intervals, 35-49mm in 22%, and >49mm in 39% (p<0.001). Different proximal or distal surgical strategies did not affect aortic growth or need for reoperation (p>0.17).

Conclusions: Thus, optimal long-term outcome of patients with acute type A dissection demands rigorous antihypertensive therapy (systolic BP < 120mmHg) and lifelong radiographic follow-up since enlargement can initially present more than a decade postoperatively.



 *STS Member

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4:15 p.m. – 4:30 p.m.

51. Straight Deep Hypothermic Arrest: Experience in 394 Patients Supports its Effectiveness as a Sole Means of Brain Preservation

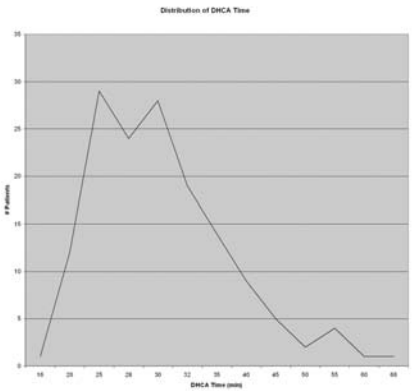
*A. Gega[1]; M. Tranquilli[1]; J. A. Rizzo[2]; M. H. Johnson[1]; Z. Golek[1]; *J. A. Elefteriades[1]*
[1]Yale University School of Medicine, New Haven, Connecticut; [2]State University of New York, Stony Brook, New York

Background: Controversy continues among three methods of brain preservation for aortic arch surgery: straight deep hypothermic circulatory arrest (DHCA) (without perfusion adjuncts), retrograde cerebral perfusion, and antegrade cerebral perfusion. Patients in this report underwent surgery solely with DHCA.

Methods: 394 patients (267M, 127 F) underwent surgery using straight DHCA (@19°C) over 10 years. Mean age was 61.3 (range 15 to 88). 87 cases (22.3%) were urgent or emergent. 38 (9.6%) were performed for thoracoabdominal pathology and the rest for ascending/arch (102 hemi-arch, 49 total arch). 91 (23.1%) patients had dissections. The head was packed in ice. No barbiturate coma was employed.

Results: DHCA lasted 31.0 min (mean) (range 10 to 66). Re-exploration for bleeding was required in 4.5% (18/394). Overall mortality was 6.35% (25/394). Mortality was 3.58% (11/307) for elective cases and 16% (14/87) for emergent. Stroke rate was 4.82% (19/394). Seizure rate was 3.1% (12/394). 45 patients with high professional cognitive demands (MD, PhD, Attorney, etc.) performed without detriment post-operatively. Among patients with DHCA > 40 minutes, stroke rate was 13.1% (8/61); neuroradiologist review of brain CT scans found 5/8 (62.5%) strokes to be embolic and 3/8 (37.5%) hypoperfusion related. By multivariate logistic regression, emergency operation and descending location increased morbidity and mortality.

Conclusions: Straight DHCA (without adjunctive perfusion) suffices as a sole means of cerebral protection. Stroke and seizure rates are low. Cognitive function, by clinical assessment, is excellent. Especially for straightforward ascending/arch reconstructions, there is little need for added complexity of brain perfusion strategies.



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4:50 p.m. – 5:05 p.m.

52. Fate of the Residual Distal and Proximal Aorta After Acute Type A Dissection Repair Using Contemporary Surgical Reconstruction Algorithm

*A. Pochettino; A. Geirsson; M. G. Keane; D. Swarr; *Y. J. Woo; *W. Y. Szeto; *J. E. Bavaria*
University of Pennsylvania, Philadelphia, Pennsylvania

Financial Disclosure: J.E. Bavaria, Bayer Pharmaceuticals Corp, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Cook Incorporated, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); W.L. Gore & Associates, Inc, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); St. Jude Medical, Inc, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); CryoLife Inc, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Medtronic USA, Inc, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Vascutek USA, Inc, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); CarboMedics, Inc, Consultant/ Advisory Board.

Background: This study evaluates the fate of the residual aorta and long-term results of our contemporary surgical management algorithm for repair of acute type A dissections. Prior reports usually include heterogeneous techniques and populations.

Methods: From 1993 to 2004, 221 consecutive patients underwent repair of acute type A dissection. Our approach consists of routine open-arch reconstruction, creation of aortic neomedia proximally and distally, and native root / valve preservation whenever possible. Hemiarch repair was performed in 97.2% (216/221), and total arch in 2.8% (5/221). 72.9% (161/221) underwent aortic valve preservation and 27.1% (60/221) had aortic root replacement.

Results: Freedom from proximal reoperation following aortic valve preservation was 94.0% at 5 years and 74.4% at 10 years. Freedom from distal reoperation was 89.2% at 5 years and 74.9% at 10 years. No significant risk factor was identified for reoperations by multivariate analysis. 30-day mortality for primary operation was 12.7% (28/221) and actuarial survival was 79.2% at 1 year, 62.5% at 5 years and 49.6% at 10 years. By multivariate analysis significant risk factors for decreased survival included prior stroke, cerebral malperfusion and length of cardiopulmonary bypass. Hospital mortality was 18.2% (2/11) following proximal reoperation and 30.8% (4/13) following distal reoperation.

Conclusions: We report improved early and long-term survival following surgery for acute type A aortic dissection. Our standardized technique has improved long-term durability in regards to the residual aorta but, in order to further improve outcomes, means to prevent progression of distal aortic disease need to be developed.

NOTES

5:05 p.m. – 5:20 p.m.

53. Subclavian Revascularization is Required More Frequently Than Predicted in Endovascular Thoracic Aortic Aneurysm Repair

*T. Reece; L. M. Gazoni; K. J. Cherry; B. B. Peeler; *C. G. Tribble; *J. A. Kern*
University of Virginia, Charlottesville, Virginia

Background: With increased utilization of endovascular approaches to thoracic aortic aneurysms, the longer term characteristics of these techniques are being elucidated. Subclavian exclusion is becoming commonplace with reports of the need for selective subclavian revascularization being in the range of 10-15%. We hypothesized that the need for subclavian revascularization in patients undergoing endovascular coverage of the left subclavian is higher than previously reported and that current preoperative evaluation poorly predicts the development of arm claudication.

Methods: All thoracic aortic stents deployed at a single tertiary care center were retrospectively reviewed from 1999-2006. The review included the preoperative radiologic evaluation of the aneurysm and the cerebral vasculature, the anatomic position of the proximal and distal landing zones, and, finally, the need for preoperative or postoperative subclavian revascularization.

Results: Sixty-four endovascular repairs were identified during this period. Twenty-seven of these endovascular repairs included coverage of the left subclavian takeoff. All of this subgroup underwent prestent cerebral imaging. Five required preoperative revascularization of the left subclavian artery due to an incomplete Circle of Willis, while 4 more developed left arm claudication necessitating postoperative subclavian artery revascularization.

Conclusions: For patients who required coverage of the left subclavian takeoff, 1/3 required subclavian revascularization, which is twice what is predicted by the literature. Present preoperative imaging was poorly predictive of the development of postoperative claudication, but minimized the incidence of posterior circulation stroke. Although this study represents our early experience with endovascular exclusion of thoracic aortic aneurysms, these data suggest that stent coverage of the left subclavian artery may necessitate subclavian revascularization not only more commonly than previously reported, but also much more commonly than predicted by preoperative imaging.

NOTES

5:20 p.m. – 5:35 p.m.

54. Risk Factors for Perioperative Stroke After Thoracic Endovascular Aorta Repair (TEVAR)

*J. T. Gutsche; A. T. Cheung; M. L. McGarvey; W. G. Moser; *W. Y. Szeto; *A. Pochettino; *J. E. Bavaria*
University of Pennsylvania, Philadelphia, Pennsylvania

Financial Disclosure: M.L. McGarvey, GORE TAG IV study clinical events advis, Consultant/Advisory Board; J.E. Bavaria, Principle or Co-Investigator in the Gore, Medtronic, and Cook sponsored FDA PMA clinical Thoracic Aorta phase II trials, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received).

Background: Stroke has emerged as a major complication of TEVAR. Identifying risk factors for stroke is important to define the risks of this procedure.

Methods: All neurologic complications were analyzed in a prospective database of patients in thoracic aortic stent graft trials from 1999-2006. Serial neurological examination were performed. Stroke was defined as any new onset focal neurologic deficit.

Results: TEVAR was performed on 171 patients; 52 had coverage of the proximal descending thoracic aorta (Extent A), 50 had coverage of the distal descending aorta (Extent B), and 69 had coverage of the entire descending thoracic aorta (Extent C). The incidence of stroke was 5.8%. All strokes occurred within 24 hours of operation. Stroke was associated with a 33% in-hospital mortality. Risk factors for stroke were prior stroke ($p<0.05$) or Extent A or C coverage ($p<0.001$). The stroke rate in patients with both prior stroke and Extent A or C coverage was 27.7% (Table). Severe atheromatous disease involving the aortic arch by CT scan was present in all patients with stroke. TEE demonstrated mobile atheroma in 2 patients with stroke.

Conclusions: Stroke after TEVAR was associated with a high mortality rate. Patients undergoing TEVAR of the proximal descending aorta (Extent A or C) with a history of stroke had the highest perioperative stroke rate. Prior stroke or mobile atheroma likely indicated the presence of unstable atheroma with a high potential for cerebral embolization. Endovascular instrumentation within or near the aortic arch in these patients led to perioperative stroke.

Table 1. TEVAR and Perioperative Stroke Risk

	Extent A	Extent B	Extent C
Prior Stroke and Periop Stroke(n=5)	3(60%)	0(0%)	2(15%)
Prior Stroke and No Periop Stroke(n=19)	2	6	11
Subtotal (n=24)	5	6	13
No Prior Stroke and Periop Stroke(n=4)	1(2%)	0(0%)	3(5%)
No Prior Stroke and No Periop Stroke(n=143)	46	44	53
Subtotal(n=147)	47	44	56

27.7% (5/18) stroke in extent A or C with prior Stroke
Bracketed percent= perioperative stroke rate in patients according to extent coverage of the descending thoracic aorta

NOTES

5:35 p.m. – 5:50 p.m.

55. Cardiac Risk Associated With Endoluminal Graft Repair of the Descending Thoracic Aorta

**G. H. Wheatley, III; J. Williams; J. Rodriguez-Lopez; V. Ramaiah; D. Olsen; *E. B. Diethrich*
Arizona Heart Institute, Phoenix, Arizona

Financial Disclosure: G.H. Wheatley, W.L. Gore & Associates, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness).

Background: Little information is available regarding potential cardiac-related complications associated with endoluminal graft repair (ELG) of the descending thoracic aortic (DTA). We reviewed our comprehensive thoracic endografting experience involving higher-risk surgical patients with diseases of the DTA to assess the incidence of cardiac complications and identify potential risk-factors.

Methods: Between 2/00 and 4/05, 216 high-surgical-risk patients with diverse thoracic aortic pathologies underwent ELG repair of the DTA as part of a single-center investigational device exemption protocol. Pre-operative comorbidities included: hypertension (162/216, 75.0%), coronary artery disease (77/216, 35.6%), chronic obstructive pulmonary disease (65/216, 30.1%), prior myocardial infarction (21/216, 9.7%) and renal insufficiency (56/216, 25.0%).

Results: Successful ELG repair was achieved in 214 patients (214/216, 99.1%). Mean patient age was 69.8±11.8years with a 1.4:1 M:F ratio. Vascular access was obtained through the common femoral artery in 185 patients (185/214, 86.4%) and through a retroperitoneal conduit to the common iliac artery or distal aorta in 29 patients (29/214, 13.6%). Cardiac incidents included exacerbation of CHF in (17/214, 7.9%), dysarythmia (16/214, 7.4%) and MI (1/214, 0.5%). Three patients (3/214, 1.4%) developed paraplegia and 5 patients (5/214, 2.3%) suffered a cerebrovascular accident. Mean length of stay was 4.5±3.7days. Thirty-day mortality was 6.5% (14/214), with 7 patients (7/214, 3.3%) expiring from cardiac complications. Multivariate analysis did not identify any associated risk factor.

Conclusions: ELG repair of the DTA can be performed safely compared to open surgical repair, even in patients with significant cardiac risk. Additional large-scale, prospective studies are needed to confirm this potential association.

NOTES

5:50 p.m. – 6:05 p.m.

56. Safety of Aortic Surgery in the Present Era

*H. E. Achneck[1]; J. A. Rizzo[2]; M. D. Tranquilli[1]; *J. A. Elefteriades[1]*
[1]Yale University, New Haven, Connecticut; [2]State University of New York, Stony Brook, New York

Background: Advances in graft materials, hemostasis, and surgical techniques have facilitated surgery on the thoracic aorta. We investigate the current safety level of these operations.

Methods: 506 consecutive patients (315M, 191F)(ages 14 to 88, mean 61.4) underwent surgery on the thoracic aorta at one institution from 1995 to 2004. 370 operations involved the ascending and arch (75.1%) and 136 (26.9%) involved the descending and/or thoracoabdominal aorta. Clinical data collected prospectively were analyzed retrospectively using chi-square and multivariable logistic regression statistics for the outcomes reoperation for bleeding, perioperative (hospital or 30 day) mortality, and stroke. Long-term survival was assessed by Kaplan-Meier methodology.

Results: Mortality for elective operations on the ascending/arch was 2.9%. Mortality for elective operations on the descending aorta was 2.9%. Mortality for elective thoracoabdominal operations was 11.9%. Probability of stroke was 3.0% for ascending/arch, 4.2% for descending, and 2.0% for thoracoabdominal. Paraplegia rate was 7.3% for all descending and thoracoabdominal operations. Age and emergency operation predicted increased risk of death, stroke, and reoperation for bleeding. Overall survival at 1, 3, 5, and 10 years was 84.7%, 78.3%, 72.6%, and 56%.

Conclusions: Aortic surgery is quite safe in the current era and leads to good long-term survival for this patient group. These data support pre-emptive prophylactic replacement of the thoracic aorta in patients with poor expected natural history (based on aneurysm size or symptoms). As catheter-based therapies proliferate, surgical data provide a benchmark that must be equaled or exceeded by the newer approaches.

Mortality in Aortic Surgery

Ascending Aortic Aneurysm Repair	<55 yrs	55-64 yrs	65 yrs & over	Average
Elective	1.2%	3.3%	4.5%	3.0%
Urgent/Emergent	9.6%	22.1%	27.3%	19.7%
Overall	4.4%	9.0%	12.5%	8.6%
Descending Aortic Aneurysm Repair	<55 yrs	55-64 yrs	65 yrs & over	Average
Elective	1.3%	3.3%	4.2%	2.9%
Urgent/Emergent	11.0%	23.6%	28.2%	20.9%
Overall	5.1%	9.8%	13.1%	9.3%
	Emergency Operations		Age 65 & Over	
OR (Odds Ratio)	9.08		3.42	
	(p<0.0001)		(p<0.01)	

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Stroke in Aortic Surgery

Ascending Aortic Aneurysm Repair	<55 yrs	55-64 yrs	65 yrs & over	Average
Elective	0.9%	4.9%	3.2%	3.0%
Urgent/Emergent	3.3%	17.1%	11.8%	10.7%
Overall	1.9%	9.0%	6.5%	5.8%
Descending Aortic Aneurysm Repair	<55 yrs	55-64 yrs	65 yrs & over	Average
Elective	1.2%	7.0%	4.3%	4.2%
Urgent/Emergent	4.7%	23.5%	15.4%	14.5%
Overall	2.5%	12.3%	8.4%	7.7%
	Emergency Operation		Age 65 & over	
Odds Ratio (OR)	4.08		4.00	
	(p<0.001)		(p<0.031)	

NOTES

PARALLEL SURGICAL FORUM II: ADULT CARDIAC II

Tuesday, January 30, 2007, 1:45 pm - 6:05 pm

Unless otherwise 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.

1:45 p.m. – 2:00 p.m.

57. Genomic and Proteonomic Responses After Cardiopulmonary Bypass Indicate Innate Immune System Dysfunction

*M. J. Delano; P. O. Scumpia; *R. Ungaro; C. L. Tannahill; K. O' Malley; G. M. Janelle; A. Abouhamze; *T. D. Martin; *E. D. Staples; *W. W. Scott; L. L. Moldawer; *P. J. Hess, Jr.*
University of Florida, Gainesville, Florida

Financial Disclosure: G.M. Janelle, Bayer, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); P.J. Hess, Bayer, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received).

Background: Cardiopulmonary bypass (CPB) produces a systemic inflammatory response (SIRS) that can negatively impact outcome. However little is known about the response by individual inflammatory cell populations involved in innate immunity to CPB. In this report, we investigated peripheral blood monocyte activation and genome-wide expression analyses following CPB to examine their contribution to the SIRS response.

Methods: Enriched blood monocytes from 18 patients undergoing grafting were analyzed before, during, and after CBP. Genome-wide expression analysis was performed using U133 Plus oligonucleotide arrays. Monocyte phenotypes were examined by flow cytometry, and the plasma concentrations of 22 cytokines were analyzed at various time points before, during, and after CPB.

Results: The plasma concentrations of 19 of 22 cytokines changed following CPB, with dramatic transient increases in IL-1β, IP-10, MIP-1α, and RANTES ($p<0.001$). Furthermore, relative monocyte number and expression of HLA-DR was significantly reduced in both the $CD16^{brignt}$ and $CD16^{dim}$ cells ($p < 0.001$). Finally, the apparent expression of 1,468 probe sets exhibited significant changes 4 hrs after CPB with the expression of antigen-presenting (CD86, HLA-DR, DQ, DP, DO) and chemokine receptor (CCR2,3,6) genes most reduced; in contrast, members of the IL-1 and IL-1R superfamily, prostaglandin synthetase and lipoxygenase family genes were overexpressed.

Conclusions: CPB dramatically alters the synthetic program of peripheral blood monocytes, with increased expression of genes involved in inflammation, and decreased expression of genes involved in antigen-presentation and cell trafficking. These changes in gene expression contribute to the inflammation and innate immune system dysfunction seen following CPB.

NOTES

2:00 p.m. – 2:15 p.m.

58. External Application of Rapamycin-Eluting Film at Anastomotic Site Inhibits Neointimal Hyperplasia in a Canine Model

*S. Kawatsu[1]; K. Oda[1]; Y. Saiki[1]; Y. Tabata[2]; *K. Tabayashi[1]*
[1]Department of Cardiovascular Sugery, Tohoku University Graduate School of Medicine, Sendai, Japan; [2]Department of Bioterials, Field of Tissue Engineering, Institute for Frintier Medical Science, Kyoto University, Kyoto, Japan

Background: Restenosis at anastomotic site has been a significant clinical issue. We tested the hypothesis that rapamycin-eluting biodegradable poly L-lactic acid and epsilon-caprolactone copolymer (PLA-CL) film applied externally can inhibit neointimal hyperplasia in a canine vascular anastomosis model.

Methods: Femoral artery graft interposition was performed in 25 beagles. Beagles were divided into 5 groups (five in each); graft interposition without PLA-CL film (control), with PLA-CL film only, PLA-CL containing rapamycin 8μg, 80μg, and 800μg. Orthotopic arterial graft interposition was performed on the left side, and vein graft from the ipsilateral femoral vein was interposed on the right. Morphometric and immunochemical analysis were performed at 4weeks interval.

Results: In arterial graft models, the ratio of intimal area (intimal area divided by the entire vessel area) was significantly reduced in all the three rapamycin-eluting film groups compared to control. (0.19, 0.07, 0.05, and 0.38 in 8μg, 80μg, 800μg group and control, respectively, $p<0.05$) In vein graft models, the ratio of intimal area was significantly decreased only in the 800μg rapamycin group compared to control(0.33 vs 0.54, $p<0.05$). Inhibition of neointimal growth was associated with reduced cell proliferation as evidenced by PCNA immunostaining, and diminished alpha-actin positive vascular smooth muscle cells.

Conclusions: Rapamycin-eluting biodegradable PLA-CL film applied externally can inhibit neointimal hyperplasia of arterial and vein grafts in a canine model without an adverse effect. The inhibitory effect of rapamycin-eluting film against neointimal growth is more pronounced in the arterial graft than the vein graft.

NOTES

2:15 p.m. – 2:30 p.m.

59. Oxidative Stress Levels Associated to New Onset Atrial Fibrillation After Cardiac Surgery: A Case-Control Study

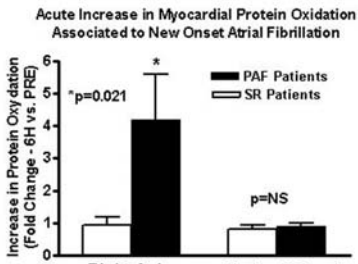
*B. Ramlawi; S. Mieno; N. R. Sodha; C. Bianchi; R. T. Clements; J. Feng; *F. W. Sellke*
Harvard Medical School, Boston, Massachusetts

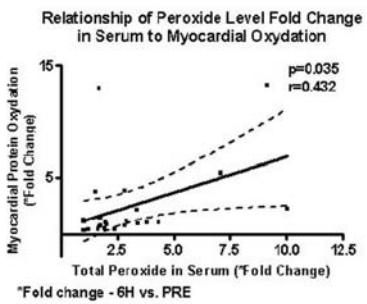
Background: New-onset postoperative atrial fibrillation (PAF) continues to be among the most common complications following cardiac surgery; leading to significant morbidity and cost. We studied the role of oxidative stress on patients after cardiopulmonary bypass(CPB).

Methods: Patients undergoing CABG and/or valve procedures using CPB, who developed new-onset PAF (PAF, N=11) and those who remained in sinus-rhythm (SR, N= 13) were prospectively matched based on pre-, intra- and post-operative characteristics (including medications). PAF was assessed via EKG and must have required initiation of anti-arrhythmic therapy and/or anticoagulation. Right atrial and skeletal muscle samples were harvested pre- and post-CPB for oxidative protein immunostaining (Oxyblot assay) and histological assessment of oxidative stress. Serum samples were collected preoperatively(PRE) and postoperatively at 6 hours (6H) and day 4 (POD4) to quantify total peroxide levels.

Results: PAF patients had significantly more elevation in total peroxide levels in serum compared to SR patients at 6H (5.83±1.9 vs.2.02±0.2 fold respectively, p=0.039) but not at POD4 (3.81±1.2 vs. 2.17±0.5 fold respectively, p=0.188). PAF patients also had significantly more myocardial oxidation compared to SR patients at 6H (4.19±1.4 vs. 0.94±0.3 fold respectively, p=0.021). There was no significant difference in myocardial or skeletal muscle oxidation at POD4. Increased serum peroxide levels in patients who developed PAF correlated to elevated myocardial protein oxidation, but not skeletal muscle oxidation (below).

Conclusions: Patients who develop new PAF after cardiac surgery have significantly increased acute oxidative stress which translates into increased myocardial oxidation. Limiting perioperative oxidative stress may be beneficial in reducing this common complication.





 *STS Member

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2:50 p.m. – 3:05 p.m.

60. Cardioprotective Effects of Methylprednisolone Treatment In Cardiac Surgery

O. J. Liakopoulos[1]; H. Dörge[1]; A. Bräuer[2]; J. Grabedünkel[1]; U. Nagorsnik[1]; F.A. Schöndube[1]
[1]Department of Thoracic and Cardiovascular Surgery, University of Göttingen, Göttingen, Germany; [2]Department of Anesthesiology, Emergency and Intensive Care Medicine, University of Göttingen, Göttingen, Germany

Background: Cardiopulmonary bypass (CPB) -related inflammatory response can be attenuated by glucocorticoid treatment, but its impact on postoperative cardiopulmonary function remains controversial. It was investigated whether the systemic and myocardial antiinflammatory effects of glucocorticoids are associated with improved cardiopulmonary function in cardiac surgery patients.

Methods: Eighty patients undergoing elective coronary artery bypass grafting were randomly assigned to receive methylprednisolone (MP; 15mg/kg) or placebo (PLA) before CPB. Parameters of myocardial and pulmonary function, and systemic hemodynamics were measured before, 1h, 4h, 10h and 24h after CPB. Blood was sampled for measurement of pro- (TNFα, IL-6, IL-8) and anti-inflammatory (IL-10) cytokines (ELISA), troponin T and C-reactive protein. Phosphorylation of IκBα and p38-MAPK was measured before and after CPB in right atrial biopsies (phosphoprotein-assay).

Results: Pre- and intraoperative characteristics of patients were not different between groups. MP attenuated postoperative TNFα, IL-6, IL-8 and C-reactive protein levels and increased IL-10 release. Myocardial IκBα was preserved with MP ($p<0.05$ vs. PLA), but p38-MAPK activation occurred in both groups after CPB. MP improved postoperative cardiac index which was associated with decreased troponin T levels when compared to PLA ($p<0.05$). Postoperative oxygen delivery index and pulmonary shunt flow were increased in MP. There was no difference in postoperative oxygenation index, ventilation time and clinical outcome between treatment groups.

Conclusions: Glucocorticoid treatment prior to CPB attenuates perioperative release of systemic and myocardial inflammatory mediators and improves myocardial function suggesting potential cardioprotective effects in patients undergoing cardiac surgery.

*STS Member

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3:05 p.m. – 3:20 p.m.

61. The Role of Somatosensory Evoked Potentials in Predicting Outcome During Repairs of the Descending Thoracic and Thoracoabdominal Aorta

*P. E. Achouh; *A. L. Estrera; C. C. Miller, III; M. Villa; A. Azizzadeh; *E. E. Porat; *H. J. Safi
University of Texas Medical School Houston, Memorial Hermann Heart and Vascular Institute, Houston, Texas

Background: Monitoring spinal cord function during thoracic aortic repair remains controversial. We evaluated the ability of somatosensory evoked potentials (SSEP) in predicting outcomes during these repairs.

Methods: Between January 2000 and April 2005, we studied SSEP in 444 consecutive patients who underwent DTA or TAA repairs. Median age was 68 years and 35.8% were woman. Two hundred sixty eight patients underwent TAAA repairs (I=73, II= 63, III=34, IV=72 and V=26), and 176 patients underwent DTAA repairs. SSEP abnormalities were defined as a 10% increase in latency or a 50% reduction in amplitude. Intraoperative spinal SSEP changes were classified into 3 categories: no spinal changes (group 1), reversible spinal changes (group 2) and persistent spinal changes (till the end of the surgical procedure) (group 3).

Results: Intraoperative SSEP changes occurred in 20% (87/444) of patients; reversible in 14.6% (65 patients) and persistent in 4.9% (22 patients). The incidence of neurological deficit according to the spinal SSEP change is depicted in Table1. The sensitivity and specificity of intraoperative SSEP monitoring in predicting combined neurological deficit (immediate and delayed) were 30.0 and 80.9 respectively, with a negative predictive value of 96.1. SSEP change was an independent predictor of mortality on multivariable analysis (30-day mortality: 11.4% in group 1, 27.7% in group 2 and 50% group 3).

Table 1: Incidence of neurological deficit according to spinal SSEP change

Neurologic Deficit	Group 1 (%)	Group 2 (%)	Group 3 (%)	Total (%)
Immediate Neurologic Deifict	3/357 (0.8)	3/65 (5)	0/22 (0)	6/444 (1.3)
Delayed Neurologic Deficit	11/357 (3)	2/65 (3)	1/22 (4.5)	14/438 (3)

Conclusions: Intraoperative SSEP monitoring is reliable in excluding spinal injury in TAA and DTA repairs but has a low sensitivity. Spinal SSEP change is an independent predictor of mortality during TAA and DTA repairs.

NOTES

3:20 p.m. – 3:35 p.m.

62. Myocardial Protection During Elective Coronary Artery Bypass Grafting Using High Dose Insulin Therapy

T. B. Albacker; G. Carvalho; T. Schricker; K. Lachapelle
Division of Cardiothoracic Surgery, Department of Surgery, Department of Anaesthesia, McGill University Health Center, McGill University, Montreal, Quebec, Canada

Background: Coronary artery bypass grafting (CABG) with cardioplegic cardiac arrest and cardiopulmonary bypass (CPB) is associated with myocardial injury. The aim of this study was to investigate whether high-dose insulin therapy has a myocardial protective effect by enhancing early metabolic recovery of the arrested heart during revascularization.

Methods: A total of 30 patients undergoing elective CABG were randomized to either receive insulin sliding scale (n=15) or intraoperative high dose systemic insulin infusion at 5mU/kg/min (n=15). Blood samples were collected simultaneously from the radial artery and the coronary sinus before starting CPB, 5 minutes and 10 minutes after release of the aortic cross clamp to determine lactic acid (Lac), Oxygen saturation and hemoglobin concentration. Coronary sinus-arterial Lac difference, Arterial O_2 content, coronary sinus-arterial O_2 content difference and myocardial oxygen extraction were calculated and compared between the two groups. Troponin level was determined 24 hours post operatively as an indicator of myocardial protection.

Results: Demographic and operative characteristics including CPB and cross clamp time were similar between the two groups. Arterial O_2 content was similar in both groups. However, high-dose insulin therapy group had early extraction of Lac and higher Arterial - Coronary sinus O_2 content difference and oxygen extraction compared to the standard group that had persistent excretion of Lac and higher Troponin level 24 hours post operatively as shown in the table below:

Post Aortic Clamp Removal	Standard (Mean±SEM) n=15	High Dose Insulin (Mean±SEM) n=15	P
Coronary sinus - Arterial Lac (mmol/L)			
5 min	0.05±0.03	-0.08±0.05	0.02
10 min	0.10±0.10	-0.08±0.16	0.34
Arterial - Coronary sinus O_2 content (ml O_2/ml blood)			
5 min	38±4	47±6	0.21
10 min	45±5	68±7	0.02
O_2 Extraction (%)			
5 min	37±4	42±4	0.39
10 min	42±6	59±3	0.02
Troponin level 24 hr post-operatively (ng/L)	8±2	3±1	0.03

Conclusions: High dose insulin therapy promotes early metabolic recovery of the heart during elective CABG leading to better myocardial protection.

*STS Member

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4:20 p.m. – 4:35 p.m.

63. Aortic Valve Replacement Using Real-Time MRI Guidance

*K. A. Horvath; M. Guttman; M. Li; R. Lederman; D. Mazilu; O. Kocaturk; P. Karmarkar; T. Hunt; S. Kozlov; E. McVeigh
National Institutes of Health, Bethesda, Maryland

Background: Percutaneous techniques to replace the aortic valve are limited by suboptimal visualization and untested prostheses. We investigated the use of real-time magnetic resonance imaging (rtMRI) to provide precise anatomic detail and visual feedback to implant a proven bioprosthesis.

Methods: Employing a minimally invasive transapical approach using rtMRI guidance 14 pigs underwent off pump aortic valve replacement. MRI was used to measure the aortic annulus and identify critical anatomic landmarks. Based on these measurements a series of appropriately sized bioprosthetic aortic valves (21-25mm) were inserted. Additional intraoperative perfusion, flow velocity and functional imaging were used to confirm adequacy of placement and function of the valve.

Results: Under rtMRI, multiple oblique planes were prescribed. Enhanced by the use of an active marker wire, this imaging allowed precise placement and orientation of the prosthetic valve with respect to the coronary ostia. The time to implantation and deployment of the valve was 77±12 seconds. In addition to anatomic confirmation of adequate placement of the prosthetic valve in relation to the aortic annulus and the coronary arteries, functional confirmation of the valve and left ventricle was also obtained with MRI. Intraoperative first pass perfusion scanning documented adequacy of blood flow throughout the myocardium after valve placement. Phase velocity confirmed appropriate opening of the prosthetic valve leaflets and lack of valvular or paravalvular regurgitation.

Conclusions: Real-time MRI provides excellent anatomic detail and intraoperative assessment that permits placement of clinically tested durable valve prostheses on the beating heart without the limitations of percutaneous approaches.

NOTES

4:35 p.m. – 4:50 p.m.

64. Reoperative Aortic Root Replacement After Previous Aortic Surgery

*W.Y. Szeto; *J. E. Bavaria; *F. W. Bowen; A. Geirsson; W. C. Hargrove; *A. Pochettino
University of Pennsylvania Medical Center, Philadelphia, Pennsylvania

Financial Disclosure: J.E. Bavaria, CarboMedics, Inc., Consultant, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); St. Jude Medical, Inc., Consultant, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Medtronic USA, speakers bureau, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); W.C. Hargrove, CarboMedics Inc., Consultant, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received).

Background: Bioprosthetic and reparative aortic root surgery are becoming more common. Our aim is to evaluate outcome of patients undergoing reoperative aortic root replacement after previous aortic surgery.

Methods: From March 1995 to March 2006, 155 consecutive patients underwent reoperative aortic root replacement after previous aortic valve (Group 1, n=108, 70%), ascending aorta (Group 2, n=24, 15%) and aortic root replacement (Group 3, n=23, 15%). Their records were retrospectively reviewed.

Results: The mean age was 58 ±14.3 years and 73% (n=113) were males. Reoperation was performed 96.5 months after previous operation with 11% (n=17) being their third or more cardiac operation. Indications for reoperations were endocarditis (n=54, 35%), prosthetic valve dysfunction or paravalvular leak, (n=39, 25%), aneurysms (n=31, 20%), dissections (n=13, 8%), and native valve dysfunction (n=18, 12%). Aortic root replacement was performed in all patients (n=155) with concomitant hemiarch reconstruction in 39% (n=61), Cabrol coronary reconstruction in 3% (n=5), CABG in 14% (n=21), and MV surgery in 15% (n=23). The CPB and aortic cross clamp time were 267.6±82.5 minutes and 206.4±64.4 minutes, respectively. Patients requiring hemiarch reconstruction had a HCA/RCP time of 30.6±15.9minutes. In-hospital mortality was 10.9% (n=17). Previous aortic root replacement and cabrol coronary reconstruction were not risk factors for in-hospital mortality. Actuarial survival was 81.8%±3.0% at 1 year, 70.3%±4.6% at 5 years, and 59.5%±9.0% at 9 years.

Conclusions: Reoperative aortic root replacement is becoming increasingly common. Our experience demonstrates that reoperative aortic root replacement can be performed with acceptable peri-operative mortality rate and satisfactory long term survival.

*STS Member

NOTES

4:50 p.m. – 5:05 p.m.

65. 10-Year Experience with Stentless Aortic Valves: Full Root vs. Subcoronary Implantation

**J. Ennker; *U. Rosendahl; *A. Albert; *I. C. Ennker; I. Florath*
Heart Institute Lahr/Baden, Lahr, Germany

Financial Disclosure: I. Florath, Medtronic Inc., Düsseldorf, Germany, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received).

Background: We compared the mid-term outcome after aortic valve replacement with the Freestyle bioprosthesis for full root and subcoronary implantation technique, while adjusting for patient and disease characteristics by a propensity score.

Methods: Between 1996 and 2005, 1014 patients underwent aortic valve replacement with the stentless Medtronic Freestyle bioprosthesis (168 full root). 148 matched-pairs were created based on a saturated propensity score. Mean age of the 296 patients was 73±3 years. Total follow-up were 393 and 400 patient-years (p=0.83) for the subcoronary (SC) and the full root (FR) group.

Results: Operative mortality was 2.7 and 4.7% (p=0.36) in the SC and FR group, respectively. Survival rate, freedom from reoperation, from prosthetic valve endocarditis, from major bleeding and from thromboembolism after 9.5 years were 38±11% and 33±24% (p=0.55), 90±7% and 98±1% (p=0.38), 92±7% and 95±3% (p=0.76), 98±2% and 72±21% (p=0.12), 84±7% and 75±8% (p=0.28), respectively for SC and FR group. Patients in the FR-group received larger valve sizes (p=0.03) and the mean transvalvular pressure gradients at discharge were lower for each valve size (p<0.008). Patients with gradients>16mmHg had an impaired quality of life in the categories of energy (p=0.08), emotional reaction (p=0.048), sleep (p=0.03) and physical mobility (p=0.09). In the FR-group 17% of the patients had gradients>16 mmHg, whereas in SC-group 58%.

Conclusions: As full root implantation technique does not increase the operative risk patients with a life expectancy of nearly 10 years have a benefit in the quality of life as a result of lower gradients.

NOTES

5:05 p.m. – 5:20 p.m.

66. Durability of Stentless Aortic Bioprostheses in the Subcoronary Position: A Comparison With Stented Porcine and Pericardial Bioprostheses

*N. D. Desai; *G. T. Christakis; G. N. Cohen; J. Y. Sever; *S. E. Fremes; *B. S. Goldman*
Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada

Background: The hemodynamic performance of stentless valves has been postulated to enhance their durability. The purpose of this study was to compare the longer-term durability of the St. Jude Toronto SPV stentless bioprosthesis to commonly used stented bioprostheses: the Carpentier-Edwards pericardial valve and the Medtronic Hancock II porcine valve.

Methods: Between 1993 and 2003, 201 subcoronary stentless and 719 stented bioprosthetic aortic valves were implanted. To adjust for selection biases inherent to a cohort design, Cox propotional hazard models and propensity matching were used to determine the impact of stented versus stentless valve design on outcomes.

Results: There were no differences in the operative indications for surgery including stenosis(66% stentless, 68% stented), insufficiency(13% stentless,12% stented), or mixed(21% stentless,20% stented). Stentless valve implantation was associated with poorer unadjusted freedom from prosthesis explantation at 10 years(78% stentless versus 94% stented, log rank p=0.004) Using a fully adjusted Cox proportional hazards model which included adjustment for geometric area, stentless valve implantation was associated with an increased rate of prosthesis explantation(Hazard Ratio(HR) 5.2, p=0.04), while advanced age(in years) was protective (HR 0.95, p=0.05). A propensity matched model of 110 matched pairs of stentless and stented valve patients, which eliminated baseline differences between groups including geometric valve area, demonstrated poorer 10-year freedom from valve explantation in the stentless valve group(84%) versus the stented valve group(100%), log rank p=0.03.

Conclusions: Compared to stented bioprostheses, stentless bioprostheses in the subcoronary position are associated with poorer durability based on unadjusted, adjusted Cox and propensity matched survival models.

NOTES

5:20 p.m. – 5:35 p.m.

67. High Risk Aortic Valve Replacement: Are the Outcomes as Bad as Predicted?

**E. A. Grossi; C. F. Schwartz; U. P. Jorde; P. Yu; *G. A. Crooke; *J. B. Grau; G. H. Ribakove; F. Baumann; P. Ursomanno; *A. T. Culliford; *S. B. Colvin; *A. C. Galloway*
NYU School of Medicine, New York, New York

Background: Percutaneous aortic valve replacement (PAVR) trials are ongoing in patients with elevated Euroscores, patients believed to have high mortality rates and poor long-term prognoses with valve replacement surgery. However, it is uncertain that the Euroscore model is well calibrated for such high risk AVR patients. We evaluated Euroscore prediction versus a single institution's surgical results in this target population.

Methods: From 1/96 thru 3/06 731 patients with Euroscore $\geq$ 7 underwent isolated AVR. In this cohort, 313(42.8%) were septuagenarians, 322(44.0%) were octo-nonogenarians, 233(31.9%) had previous cardiac surgery, 237(32.4%) had atheromatous aortas, and 127(17.4%) had cerebrovascular disease. A non-sternotomy approach was used in 469(64.2%). Data collection was prospective. Long term survival was computed from social security death index.

Results: Mean Euroscore was 9.7 with a median of 10; mean logistic Euroscore was 17.2%. Actual hospital mortality was 7.8% (57/731). Multivariate analysis showed ejection fraction (EF) <30% (p=0.033;OR=3.4) and peripheral vascular disease (p=0.076;OR=2.3) to be significant predictors of hospital mortality. 73(9.9%) patients had complication(s). Freedom from all cause death (including hospital mortality) was 72.4% at 5 years (n=152), with age (p<0.001;OR=1.05), previous cardiac surgery (p<0.045;OR=1.44), cerebrovascular disease (p0.007;OR=1.78), renal disease (p<0.038;OR=1.94), EF<30% (p<0.019;OR=1.70) and COPD (p<0.008;OR=1.32) being predictors of worse survival (OR=odds ratio, EF=ejection fraction).

Conclusions: Logistic Euroscore greatly over-predicts mortality in these patients. Five year survival is good, unlike suggestions from earlier Euroscore analyses. This raises concern over unknown long-term percutaneous prosthesis function. Clinical trials for these patients must include randomized surgical controls and have long-term endpoints.

NOTES

5:35 p.m. – 5:50 p.m.

68. Liberal Use of Aortic Root Replacement is Justified: Perioperative Risk is Low and Quality of Life is Excellent

*M. Stalder; S. Staffelbach; F. F. Immer; L. Englberger; P. A. Berdat; F. S. Eckstein; *T. Carrel*
Clinic for Cardiovascular Surgery, University Hospital, Bern, Switzerland

Background: Different studies have analyzed the potential impact of the underlying pathology and the use of deep hypothermic circulatory arrest on outcome and quality of life following surgery on the thoracic aorta. The aim of this study is to analyze the impact of different surgical procedures on outcome and quality of life (QoL).

Methods: Between June 2001 and December 2003 244 patients underwent surgery of the ascending aorta with or without involvement of the aortic valve. According to the operative procedure 3 groups were defined: 76(31.2%) patients underwent isolated replacement of the ascending aorta, 42(17.2%) patients received separate aortic valve replacement and supracoronary replacement of the ascending aorta, 126(51.6%) patients received a composite graft. All in-hospital data was assessed and a follow-up was performed in all survivors after 26.6±8.8 months, focusing on "outcome and QoL (SF 36).

Results: Overall in-hospital mortality was 6.1% (including acute aortic dissection cases) and late mortality was 5.7% with no significant difference between groups. Independently of the surgical technique and therefore of the extent of surgery, there was no difference in QoL between the surgical collective and an age and gender matched standard population.

Conclusions: Operations of the ascending aorta and aortic valve are very safe, with low in-hospital mortality and favorable mid-term outcome. QoL after operations of the ascending aorta and aortic valve is equal to a standard population and is not affected by the surgical procedure. Liberal use of aortic root replacement is therefore justified to radically treat the diseased aortic segment.

NOTES

5:50 p.m. – 6:05 p.m.

69. Stentless Aortic Valve Reoperation: A Surgical Challenge

*M. A. Borger; K. Prasongsukarn; S. Armstrong; *C. M. Feindel; *T. E. David
Toronto General Hospital, Toronto, Ontario, Canada

Financial Disclosure: M.A. Borger, Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Edwards Lifesciences, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness).

Background: Stentless aortic valve reoperations will become increasingly common as these bioprostheses reach the limits of their durability. Reoperation on stentless valves may be more challenging than stented valves and we therefore examined our results for these procedures.

Methods: All patients with stentless valves undergoing redo aortic valve replacement (AVR) at our institution were examined (n = 57). Ten patients had a Medtronic Freestyle valve and 47 patients had a St. Jude SPV.

Results: Redo AVR was performed 8.4±3.7 years after stentless valve implantation. The indication for redo AVR was structural valve dysfunction in 34 patients (60%), acute endocarditis in 7 patients (12%), aortic dissection in 4 patients (7%) and other in 12 patients (21%). Aortic insufficiency was present in 47 patients (82%). A total of 36 patients (63%) required aortic root replacement during redo surgery. Operative mortality was 11% (6 patients) for the entire group. Mortality was higher in patients undergoing redo AVR less than one year after stentless valve implantation vs more than one year (67% vs 7%, p=0.03), and was higher in patients with a Freestyle valve than a SPV (40% vs 4%, p=0.01). Long-term survival was 80±7% five years postoperatively and 82% of survivors were in NYHA class I or II.

Conclusions: Reoperation after stentless AVR is a challenging procedure that frequently requires aortic root replacement. Stentless valve reoperation is associated with an increased risk of mortality, particularly in patients operated on within one year of implantation and in patients with a Freestyle valve.

NOTES

PARALLEL SURGICAL FORUM III: GENERAL THORACIC I: ESOPHAGEAL

Tuesday, January 30, 2007, 1:45 p.m. - 5:45 p.m.

Unless otherwise 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.

2:20 p.m. - 2:35 p.m.

70. Validation of Soluble Mesothelin Related Peptide (SMRP) Level Elevation in Mesothelioma Serum and Pleural Effusions

**H. I. Pass[1]; F. Steiner[1]; A. Ivanova[1]; S. Ivanov[1]; J. Allard[2]*
[1]NYU School of Medicine, New York, New York; [2]Fujirebio Diagnostics, Malvern, Pennsylvania

Financial Disclosure: H.I. Pass, Fujirebio Diagnostics, Other Research Support (receipt of drugs, supplies, equipment or other in-kind support); J. Allard, Fujirebio Diagnostics, Employment (full or part-time).

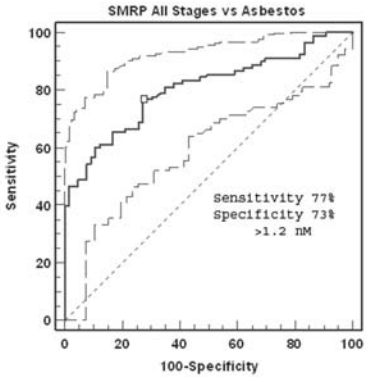
The abstract describes the use of MesoMark™ which is not FDA approved.

Background: Soluble mesothelin-related peptide (SMRP) is a potential marker for malignant mesothelioma (MM) which may be useful for screening high-risk asbestos exposed individuals (AE) cohorts.

Methods: We evaluated SMRP in serum from MM patients (n = 90), lung cancer (LC) patients (n=174), age and tobacco-matched AE individuals (n=66), and in MM pleural effusions (n=45), benign effusions (n=30), and non-MM effusions (n=20) using the MesoMark™ ELISA kit (Fujirebio Diagnostics). Receiver operating characteristic curves (ROC) were used to define true and false positive rates at various cut-offs.

Results: Mean serum SMRP levels were higher in MM compared to LC (9.47±3.39 nM [mean +/- SEM] vs 1.95±0.44 nM, p=0.029), and Stage I MM SMRP levels (n=12; 2.09±0.41 nM) were significantly higher than those in AE individuals (0.99±0.09 nM, p=0.02, respectively). Stage 2-4 SMRP serum levels were significantly higher (10.61±3.89 nM, p=0.03) than those for Stage 1. The area under the ROC (AUC) for serum SMRP was 0.805 for differentiating MM and AE, cut-off = 1.2 nM (sensitivity = 76.7%, specificity = 72.7%), see Figure. The positive predictive value was 69% and negative predictive value was 79.8% for serum. MM pleural effusion SMRP was significantly higher than benign or other non-MM pleural effusions (65.57±11.33 nM vs 18.99±7.48 nM [p=0.001]and 27.46±11.25 nM [p=0.021] respectively).

Conclusions: These data further validate SMRP as a promising marker for MM in both serum and pleural effusion and justify prospective screening studies of SMRP in combination with other markers for screening of AE cohorts.


SMRP All Stages vs Asbestos
Sensitivity
100-Specificity
Sensitivity 77%
Specificity 73%
>1.2 nM
0
20
40
60
80
100

NOTES

2:35 p.m. – 2:50 p.m.

71. Expression of Hypoxia-Inducible Factor (HIF)-1alpha and Vascular Endothelial Growth Factor as Outcome Predictors in Resected Esophageal Squamous Cell Carcinoma

*C. Tzao[1]; G. Sun[2]; J. Jin[3]; H. Tung[4]; C. Hsieh1; Y. Wang[5]
[1]Division of Thoracic Surgery, Tri-Service General Hospital, Taipei, Taiwan; [2]Department of Thoracic Surgery, Tri-Service General Hospital, Taipei, Taiwan; [3]Department of Pathology, Tri-Service General Hospital, Taipei, Taiwan; [4]Department of Social and Humanity Studies, National Defense Medical Center, Taipei, Taiwan; [5]Department of Life Sciences, National Taiwan Normal University, Taipei, Taiwan

Background: Hypoxia-inducible factor (HIF)-1α regulates expression of several genes related to cell growth and angiogenesis in human cancers. Vascular endothelial growth factor (VEGF) expression correlates with cancer progression and metastasis. We aim to investigate whether expression of HIF-1α and VEGF correlate with patients' clincopathological parameters and whether their expression correlates with each other in resected esophageal squamous cell cancer (ESCC).

Methods: We analyzed protein expression of HIF-1α and VEGF-D using immunohistochemistry in 96 resected tumor specimens. Results of immunohistochemistry were correlated with patients' clinicopathological parameters with survival analysis. Correlation between expression of HIF-1α and VEGF-D was determined using concordance analysis.

Results: High expression of HIF-1α and VEGF-D was observed in 56(58.3%) and 55 (57.3%) as opposed to low expression as 40 (41.7%) and 41(42.7%), respectively, of all samples examined. Expression of HIF-1α correlated well with staging (P = 0.01) and nodal involvement (P = 0.011), whereas expression of VEGF-D correlated only with T (tumor) factor (P = 0.035). The group of low HIF-1α showed better survival than that of high expression (P = 0.009). In contrast, no survival difference was noted between groups of high and low VEGF-D (P = 0.33). A concordance rate of 61.5% existed between expression of HIF-1α and VEGF-D (P = 0.032).

Conclusions: Protein expression of HIF-1α and VEGF-D may serve as outcome predictors in resected ESCC with the HIF-1α a more predominate one. A good correlation between protein expression of HIF-1α and VEGF-D suggests that they may play an integrated role in angiogenesis of ESCC.

NOTES

2:50 p.m. – 3:05 p.m.

72. Aberrant Promoter CpG Island Hypermethylation of the APC Gene Can Serve as a Good Prognostic Factor by Affecting Lymph Node Metastasis in Squamous Cell Carcinoma of the Esophagus

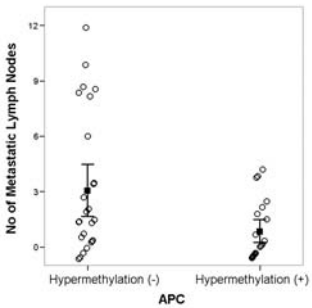
*Y. T. Kim; J. Park; S. J. Park; C. H. Kang; *S. W. Sung; J. H. Kim
Seoul National University, College of Medicine, Cancer Research Institute, Seoul, Republic of Korea

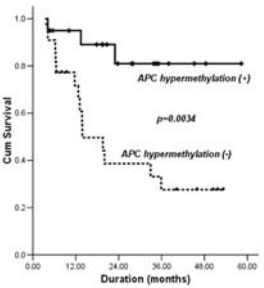
Background: There has been no clear evidence demonstrating whether DNA hypermethylation can affect the prognosis of esophageal cancer.

Methods: We collected tissue from 50 cases of squamous cell carcinoma of the esophagus and tested them for DNA hypermethylation using methylation-specific PCR(MSP). DNA hypermethylation status was analyzed along with clinical prognostic markers for its impact on clinical outcome after surgical resection.

Results: CpG island hypermethylations were observed in 10%(5/50) for p16INK4a(p16), 34%(17/50) for RAR_P2, 46%(23/50) for APC, 14%(7/50) for Rassf1A, 84%(42/50) for FHIT, and 8%(4/50) for hMLH1. APC promoter hypermethylation was frequently found in patients without lymph node metastasis compared to those with lymph node metastasis (62.5%;15/24 vs.30.8%;8/26, p=0.025). The number of metastatic lymph nodes were lower in patients with APC promoter hypermethylation (0.87±0.30 vs. 3.07±0.72, p=0.008). Excluding operative mortalities and incomplete resections, 42 patients were analyzed for long-term outcome. During the mean follow-up period of 30±16(4-60) months, 17(40.5%) developed recurrence and 16(38.1%) died. In univariable analysis, unmethylation of APC(p=0.0034) and FHIT(p=0.0061), as well as presence of lymph node metastasis(p=0.0049), were risk factors for recurrence. In multivariable analysis, lymph nodes metastasis (p=0.050) and unmethylation of APC promoter (p=0.035) remained as significant risk factors.

Conclusions: Promoter hypermethylation of the APC gene is related to a lower number of metastatic lymph nodes and to superior prognosis in terms of recurrence, which suggests it might be involved in the process of lymph node metastasis in esophageal cancer. Future study is mandatory to clarify its molecular mechanism for lymph node metastasis as well as effects on the prognosis.





*STS Member

NOTES

3:50 p.m. – 4:05 p.m.

73. Polyflex Expandable Stents in the Treatment of Esophageal Disease

*A. Pennathur[1]; *A. C. Chang[2]; K. M. McGrath[1]; G. Steiner[1]; M. Alvelo - Rivera[1]; O. Awais[1]; M. J. Schuchert[1]; S. Gilbert[1]; *R. J. Landreneau[1]; *G. Abbas[1]; *J. D. Luketich[1]
[1]University Of Pittsburgh Medical Center, Pittsburgh, Pennsylvania; [2]University Of Michigan, Ann Arbor, Michigan

Background: The new generation of expandable plastic esophageal stents (Polyflex), combines the features of plastic and self-expanding metallic stents. The main objective of this study is to evaluate Polyflex expandable stents in the treatment of esophageal disease from two institutions.

Methods: A total of 57 Polyflex stents were placed in 38 patients (21 malignant, 17 benign disease) over a 2 year period. There were 24 men and 14 women, with a median age of 63 years (range 25-83). The most common indication for placement was an esophageal stricture in 23 patients(61%); other causes included perforation or leak in 7 (18%), Tracheo-esophageal fistula (TEF) in 5 (13%), and gastric outlet obstruction in 3 (8%). We evaluated the hospital course, complications, and outcomes.

Results: The median postoperative stay was 1 day. Complications included migration in 27 patients (71%), retro-sternal chest discomfort in 9, reflux in 4, airway obstruction in 1, and food impaction in 3. Continued leak or a persistent TEF occurred in 4 patients (33%). Reintervention was required predominantly due to migration of the stent at a mean interval of 43.5 days (range 1-353). Patients with dysphagia improved significantly with dysphagia scores (1= no dysphagia; 5= unable to swallow saliva) improving from 3.44 to 2.15 ($P < 0.0001$).

Conclusions: Polyflex Stents were effective in the relief of dysphagia due to strictures. They were less effective in esophageal perforations or leaks. Their primary disadvantage is a high migration rate and further improvements in design are required to decrease this high incidence of migration.

NOTES

4:05 p.m. – 4:20 p.m.

74. Innovative Strategies for the Surgical Management of Esophageal Scleroderma

*M. S. Kent[1]; *J. Luketich[1]; K. Irshad[1]; O. Awais[1]; *H. Fernando[2]; *R. Landreneau[1]; M. Alvelo-Rivera[1]*
[1]University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania; [2]Boston Medical Center, Boston, Massachusetts

Financial Disclosure: J. Luketich, US Surgical, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Stryker, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Boston Scientific, Ownership Interest (stock, stock options, patent or other intellectual property); Stryker, Ownership Interest (stock, stock options, patent or other intellectual property); RITA Medical, Ownership Interest (stock, stock options, patent or other intellectual property).

Background: Scleroderma leads to esophageal dysmotility as well as gastroesophageal reflux. Results following antireflux surgery have been suboptimal due to the severe esophageal dysmotility associated with this disease. We hypothesized that laparoscopic Roux-en-Y gastric bypass (RNY) would lead to effective control of reflux and less dysphagia compared to other methods of treatment.

Methods: A retrospective review identified all scleroderma patients who underwent antireflux surgery from 1995 to the present. Complications and need for reintervention were recorded. Symptom control was assessed by validated questionnaires that measured dysphagia (0-4, 0: no dysphagia), gastroesophageal reflux (Heartburn-Related Quality of Life Index, 0-45, 0: best, 45: worst) and overall quality of life (Short Form-36).

Results: 23 patients were identified (fundoplication:, n = 10, RNY n = 8, esophagectomy: n =5). One patient treated with fundoplication required conversion to RNY for persistent reflux. Seventeen patients underwent evaluation by questionnaire at a median of 28 months post-operatively. There was a trend toward decreased dysphagia (0.43 vs. 1.67, p=.101), and abdominal bloating (14% vs. 83%, p=.029) in the RNY patients compared to fundoplication. In addition, we observed improved control of reflux (HRQOL score 4 vs.13, p=.08) and a higher physical component score (SF-36) (40.6 vs 32.5, p=.151) in the RNY group.

Conclusions: There was a trend towards improved control of reflux and decreased dysphagia after RNY compared to fundoplication. These results suggest that RNY may be suitable for the primary management of scleroderma-associated reflux, and also an acceptable option for those with persistent symptoms after fundoplication.

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4:20 p.m. – 4:35 p.m.

75. Long-Term Results of a Phase II Trial of Neoadjuvant Chemotherapy Followed By Esophagectomy For Locally Advanced Esophageal Neoplasm

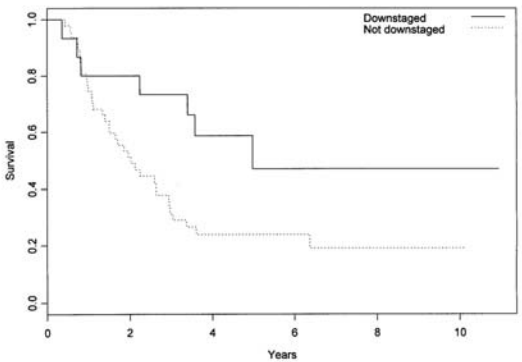
*A. Pennathur; *J. D. Luketich; M. Alvelo - Rivera; *R. J. Landreneau; J. Ward; K. Cooper; S. R. Land; C. P. Belani
University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania

Background: We conducted a prospective Phase II trial of neoadjuvant chemotherapy, followed by esophagectomy and adjuvant chemotherapy for resectable esophageal carcinoma (EC) and have previously reported our initial results (ASCO 2002). Here we report the long term results of this Phase II trial.

Methods: Patients were staged with CT scan(70/70,100%), Endoscopic ultrasound (63/70,90%), and laparoscopy+ thoracoscopy(70/70,100%). The pretreatment stages were T2N0(1), T2N1(15), T3N0(13), and T3N1(41). The protocol included 3 cycles of preoperative cisplatin, 5-Fluoro-uracil, and paclitaxel followed by esophagectomy, and adjuvant chemotherapy. Patients were monitored for recurrence and survival.

Results: A total of 70 patients were enrolled (66 adenocarcinoma, 4 squamous; 64 men and 6 women; median age 60 years). Esophagectomy was performed in 63 patients. Preoperatively 94% of patients underwent at least two cycles of chemotherapy and 61% received at least two cycles postoperatively. There was one mortality during preoperative chemotherapy; 30 day operative mortality was 0%. The median overall survival of the entire group was 26.9 months. 20 patients are alive at a median follow-up of 49.9 months. The median time to recurrence was 19.7 months. 14 patients are alive without recurrence at a median follow-up of 78.2 months (21.9-129 months). Patients who were downstaged experienced a significantly improved median survival of 60 months vs. 24 months and overall survival ($P<0.05$) (Figure).

Conclusions: This prospective Phase II trial for EC showed encouraging overall long term results. In particular, downstaging of the tumor was predictive of better long term outcome. Further prospective randomized studies are required to validate these findings.



*STS Member

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4:35 p.m. – 4:50 p.m.

76. Diagnosis of Esophageal Adenocarcinoma by Serum Proteomic Pattern

*Z. Hammoud; L. Dobrolecki; *K. Kesler; E. Rahmani; *K. Rieger; L. Malkas; R. Hickey
Indiana University School of Medicine, Indianapolis, Indiana

Background: Currently, endoscopic biopsy is the only method used to diagnose esophageal adenocarcinoma. Using Surface Enhanced Laser Desorption/Ionization (SELDI) ProteinChip technology, we sought to identify a potentially diagnostic serum protein pattern that can serve as a reliable blood test for the diagnosis of esophageal adenocarcinoma. In addition, we sought to identify potential biomarkers in esophageal adenocarcinoma carcinogenesis.

Methods: Whole serum was collected using standard techniques. The samples were spotted onto a hydrophobic (H50 ProteinChip) chip surface and allowed to incubate. All samples were run in duplicate. After several washes, matrix was added and a mass range of 1500-30000 Daltons was analyzed by SELDI-Time of Flight mass spectroscopy. Statistical analysis was performed using Biomarker Pattern Software (Ciphergen Biosystems, Inc.).

Results: A total of 46 adenocarcinoma serum samples were analyzed. As control, serum from 11 subjects without endoscopically identified esophageal abnormality were analyzed. Three cancer-specific potential serum biomarkers were identified (mass/charge values of 3317, 4393, and 8634). Using these 3 values, decision tree analysis correctly identified 11/11 normals and 45/46 cancers (sensitivity 98%, specificity 100%).

Conclusions: Serum proteomic pattern shows great promise in the diagnosis of esophageal adenocarcinoma. This technology may lead to the development of a noninvasive screening test as well as to identify potential novel biomarkers in the development of esophageal adenocarcinoma.

NOTES

4:50 p.m. – 5:05 p.m.

77. The Outcomes of Transhiatal Esophagectomy in the Profoundly Obese-Implications and Experience

*C. N. Scipione; *M. B. Orringer; *A. Chang; A. Pickens; C. Lau*
University of Michigan, Ann Arbor, Michigan

Background: Historically, obesity contraindicated an abdominal approach to the esophagogastric junction. The technique of transhiatal esophagectomy (THE) evolved without specific regard to body habitus. The dramatic increase in obese patients requiring an esophagectomy for complications of reflux disease prompted this evaluation to determine of the impact of obesity on the outcomes of esophagectomy and whether profound obesity should contraindicate the transhiatal approach.

Methods: Utilizing our esophageal resection database, 133 profoundly obese patients (BMI = or > 35) were identified among 2000 undergoing a THE from 1977 -2006. This group was matched to a randomly selected, non-obese (BMI 18.5- 30) control population of 133 patients. Intra-operative, postoperative, and long term follow-up results were compared retrospectively.

Results: Profoundly obese patients had significantly greater intra-operative blood loss (mean 492.2 cc vs. 361.8 cc, p=.0007), need for partial sternotomy (18 vs. 3, p=.001), and frequency of recurrent laryngeal nerve injury (6 vs. 0, p=.04). The 2 groups did not differ significantly in the occurrence of chylothorax, wound infection/dehiscence rates, length of hospital stay, need for ICU stay, hospital or operative mortality. Follow-up functional results, including dysphagia, dumping, regurgitation, and overall functional score, were comparable between the two groups as well.

Conclusions: With appropriate instrumentation, THE in profoundly obese patients has similar morbidity and outcomes as in non-obese patients.

NOTES

5:05 p.m. – 5:20 p.m.

78. Implications of a Positive Gastric Margin After Transhiatal Esophagectomy for Carcinoma of the Distal Esophagus and Cardia

*P. D. DiMusto; *M. B. Orringer*
University of Michigan, Ann Arbor, Michigan

Background: Transhiatal esophagectomy, proximal gastrectomy, and cervical esophagogastric anastomosis is a common operation for cancer of the esophagus and cardia. The oncologic adequacy of dividing the stomach 4-6 cm distal to palpable tumor is not well documented, and when there is a positive gastric margin on final pathology, the appropriate management is not established. This study was undertaken to determine the incidence of a positive gastric margin in these patients and the impact of adjuvant treatment.

Methods: A retrospective review was performed of 1,044 patients undergoing transhiatal esophagectomy for adenocarcinoma of the distal esophagus or cardia. Twenty three (2%) had a positive gastric margin on final pathology and met inclusion criteria for this study.

Results: Twelve patients (52%) received adjuvant therapy: radiation (4), chemotherapy (5), or both (3). Their average post-operative survival was 441 days, compared with 455 days in those not receiving adjuvant therapy (p=0.771). Two (17%) in the treatment group and three (27%) in the no-treatment group developed local tumor recurrence (p=0.568).

Conclusions: A transhiatal esophagectomy and proximal gastrectomy, dividing the stomach 4-6 cm from palpable tumor, for carcinoma of the distal esophagus and cardia provides a negative gastric margin in 98% of patients. In the few patients who have a positive gastric margin, 80% die with distant metastases which would not be influenced by more extensive gastric resection, and approximately 20% develop local tumor recurrence in the intrathoracic stomach seldom causing dysphagia. Adjuvant therapy for a positive gastric margin neither improves survival nor reduces local tumor recurrence.

NOTES

PARALLEL SURGICAL FORUM IV: GENERAL THORACIC II: LUNGS

Tuesday, January 30, 2007, 1:45 p.m. - 5:45 p.m.

Unless otherwise 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.

2:20 p.m. – 2:35 p.m.

79. N-Acetyl Cysteine Attenuates Ischemia-Reperfusion Injury After Lung Transplantation

*I. Inci; W. Zhai; S. Arni; S. Hillinger; *W. Weder*
University of Zurich, Zurich, Switzerland

Background: Early acute graft dysfunction continuous to be a problem after lung transplantation resulting in significant postoperative morbidity and mortality. The purpose of this study was to assess the protective effect of N-acetyl cysteine on post-transplant lung ischemia-reperfusion injury.

Methods: Rat single-lung transplantation was performed in two experimental groups (n=5/group) after 18 hours of cold (4°C) ischemia. Group I animals consisted the ischemic control group. In group II, donor and recipient animals were treated with intraperitoneal injection of 150 mg/kg N-acetyl cysteine 15 minutes prior to harvest and reperfusion, respectively. After 2 hours of reperfusion, oxygenation was measured. Lung tissue was assessed for lipid peroxidation, neutrophil infiltration and reduced glutathione level. Peak airway pressure (PawP) was recorded throughout the reperfusion period.

Results: N-acetyl cysteine treated group showed significantly better oxygenation (184.5 ± 83.3 mmHg versus 67.3 ± 16.4 mmHg, p=0.016), reduced lipid peroxidation (7.34 ± 1.9 micromol/g versus 17.46 ± 10.6 micromol/g, p=0.016).

Lung tissue reduced glutathione levels in IC and NAC groups were 6.8±0.9 μM and 20.6±2.4 μM, respectively (p=0.004).

Peak airway pressures at the end of the reperfusion period was 14.4±1.6 cm H_2O in NAC group, and 19.2±2.2 cmH2O in IC group (p=0.008).

Myeloperoxidase activity and wet to dry weight ratio did not differ between the groups.

Conclusions: In this model, exogenously administered N-acetyl cysteine effectively protected lungs from reperfusion injury after prolonged ischemia.

NOTES

3:20 p.m. – 3:35 p.m.

80. Early Donor Management, but Not Early Steroids Therapy, is Associated with Increased Retrieval Rate of Lungs for Transplantation

R. V. Venkateswaran[1]; V. B. Patchell[2]; I. C. Wilson[1]; J. G. Mascaro[1]; R. D. Thompson[1]; J. H. Coote[2]; R. S. Bonser[1]
[1]University Hospital Birmingham NHS Foundation Trust, Birmingham, United Kingdom; [2]University of Birmingham, Birmingham, United Kingdom

Background: Early steroids may increase donor lung yield but their effect on lung function has not been reported.

Methods: We studied donor lung yield in 182 potential donors (364 lungs) with a baseline PaO_2/FiO_2 ratio [PFI] ≥ 230). Relative consent allowed 60 to be randomized to receive Methylprednisolone (MP) 1G (n= 29) or placebo, following consent and baseline assessment. Randomized donors underwent protocol-guided optimization of ventilation, bronchoscopic toilet and judicious fluid management. Function was assessed by PFI, extravascular lung water index (EVLWI), pulmonary permeability index (PPI) and pulmonary vascular resistance (PVR). Randomized group yield was compared with the non-study cohort who received standard ITU care ± steroids at retrieval.

Results: In the randomized cohort, optimization commenced within 2±0.5 hours of consent, and continued for 6.7±1.5 hours. MP or placebo was administered 5.7±1.5 hours before final assessment. Overall, PFI deteriorated from 397±78 to 352±126 (p=0.015), EVLWI from 9.7±4.5ml.kg^{-1} to 10.8±5.2 (p=0.009) and PPI from 2.4±-0.9 to 2.7±1.2 (p=0.025) but PVR remained unchanged (p=0.28). High initial EVLWI (>10ml.kg^{-1}) was associated with decreased lung usability despite comparable initial PFI (p=0.019). MP did not increase yield or attenuate the changes in pO_2, EVLWI or PPI (p=1). Pre-operative EVLWI measurement correlated with gravimetric lung water measurement in un-used lungs (p=0.013). At end-optimization, 52/120(43%) of study lungs were used versus 70/244 (29%) in the non-study cohort (p<0.01).

Conclusions: Early management of lung donors improves the yield of suitable organs but early steroid administration affects neither yield nor function. Ventilatory, fluid and airway management would appear more important.

 *STS Member

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3:35 p.m. – 3:50 p.m.

81. Two-Year Improvement in Multidimensional Bode Index After Awake Nonresectional Lung Volume Reduction Surgery

E. Pompeo; T. C. Mineo
Thoracic Surgery Tor Vergata University, Rome, Italy

Background: To analyze 2-year comprehensive results of awake lung volume reduction surgery (LVRS) performed by a thoracoscopic nonresectional technique under sole thoracic epidural anesthesia.

Methods: The study cohort included 42 patients undergoing unilateral awake LVRS within a staged bilateral LVRS program entailing contralateral treatment performed at the reappearance of disabling symptoms. Outcome measures included procedure-related costs, calculation of the multidimensional BODE index (body mass index, degree of airflow obstruction assessed by spirometry, modified Medical Research Council dispnea grade and exercise capacity assessed by the 6-min walking distance) measured preoperatively and postoperatively every 6 months, actuarial survival and freedom from contralateral LVRS at 2 years. Results were compared with those of a control group undergoing resectional LVRS under general anesthesia.

Results: The groups were well matched in demographics and baseline measures. There was no operative mortality. At comparison of awake and control group results, hospital stay was significantly shorter in the awake group (6.1±3 days versus 9.8±4 days, P<0.0001); procedure-related costs were significantly lower in the awake group (5460±2064euros versus 9591±2980euros, P<0.0001). Postoperatively, BODE index decreased significantly (P<0.0001) in both groups (-2.23±1.0, versus -1.95±1.0, intergroup P=0.1) and remained significantly improved for up to 2 years (-1.95±1.3 versus -1.37±1.4, intergroup P=0.1); two-year survival and freedom from contralateral LVRS rates were 90% versus 94% (P=0.9)) and 71% versus 72% (P=0.9), respectively.

Conclusions: A significant decrease in BODE index, satisfactory survival and high rate of freedom from contralateral LVRS occurred both in the awake and control groups although awake LVRS proved more cost-effective.

NOTES

3:50 p.m. – 4:05 p.m.

82. Obesity is Not Associated With Increased Complications Following Anatomic Resection for Non-Small Cell Lung Cancer

*P.W. Smith; H. Wang; L. M. Gazoni; *K. R. Shen; *T. M. Daniel; *D. R. Jones
University of Virginia, Charlottesville, Virginia

Background: The effect of obesity on complications following resection for lung cancer is unknown. We hypothesized that obesity is associated with increased complications following anatomic resections for non-small cell lung cancer (NSCLC).

Methods: A review of our prospective general thoracic database identified 499 consecutive anatomic resections for NSCLC from 11/02 to 5/06. Body mass index (BMI) was used to group patients as non-obese (BMI<30) and obese (BMI≥30). Patient characteristics, oncologic, and operative variables were compared between groups. Multivariable stepwise logistic regression models were fit with BMI included in every model. Outcomes examined included in-hospital morbidity, mortality, length of stay (LOS), and readmission.

Results: By BMI, 75% (372/499) of patients were non-obese, and 25% (127/499) were obese. Pre-operative variables were similar except for a greater incidence of diabetes ($p<0.02$) in the obese group. Overall mortality was 1.4% (7/499) and was not different between groups ($p=0.85$). Thirty-day readmission rates ($p=0.76$) and length of stay ($p=0.30$) were similar. Obese patients had a higher incidence of acute renal failure ($p=0.001$). A complication occurred in 33% (124/372) of non-obese and 31% (39/127) of obese patients ($p=0.59$). Respiratory complications occurred in 22% (81/372) of non-obese and 14% (18/127) of obese patients ($p=0.06$). Significant predictors of any complication include performance status, DLCO%, and tumor stage. Significant predictors of respiratory complications include performance status, DLCO%, chronic renal insufficiency, and prior thoracic surgery.

Conclusions: In contrast to our hypothesis, obesity does not increase the incidence of perioperative complications, mortality, or LOS following anatomic resection for NSCLC.

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4:05 p.m. – 4:20 p.m.

83. Prognostic Factors in Resected Satellite-Nodule T4 Non-Small Cell Lung Cancer

*J. Rao; R. Sayeed; *G. Darling; S. Tomaszek; S. Fischer; *S. Keshavjee*
Toronto General Hospital, Toronto, Ontario, Canada

Background: The 1997 UICC and AJCC staging revisions assigned a T4 (Stage IIIB) descriptor to satellite nodules in the primary tumor lobe. We reviewed our experience of satellite-nodule T4 NSCLC following these revisions and evaluated prognostic factors for this group.

Methods: All patients who underwent surgical resection of NSCLC between April 1997 and June 2005 with satellite nodule(s) confirmed at pathology were identified from our institutional Lung Tumor Registry. Case-notes and pathology reports were reviewed and data collected on possible prognostic factors. Survival was modeled using the Kaplan-Meier method and survival differences between groups analyzed using the log-rank test.

Results: Thirty-five patients staged T4 (satellite nodules) were identified. Median follow-up was 25 months (range 1-90). Median main tumor size was 3.0 cm (1-9.8 cm). Adenocarcinoma/BAC was the predominant histology (n=28; 80%). 1-, 3- and 5-year survival was 88%, 71%, and 63%; median survival was 68 months. Over the same period, 137 patients underwent surgical resection for all T4 lesions: 1-, 3-, and 5-year survival for all resected T4 tumors was 68%, 53%, and 22%. Adenocarcinoma/BAC histology (adenocarcinoma/BAC vs. squamous, 75% vs. 67% 3-year survival, p=0.0035) and absence of vascular invasion (no vascular invasion vs. vascular invasion, 73% vs. 18% 5-year survival, p=0.0144) were significant predictors of better survival.

Conclusions: Survival for resected T4 NSCLC with satellite nodule(s) in the primary lobe is better than for other T4 lesions and the T4 descriptor may unduly upstage these cases. Stage IIIB cases have become a more heterogenous population.

NOTES

4:20 p.m. – 4:35 p.m.

84. Efficacy of Anatomic Segmentectomy and the Importance of Surgical Margin: Tumor Diameter Ratio in the Treatment of Stage I Non-Small Cell Lung Cancer (NSCLC)

*M. J. Schuchert; B. L. Pettiford; *S. B. Keeley; *T. A. D'Amato; A. Kilic; R. Santos; *A. El-Sherif; *J. D. Luketich; *R. J. Landreneau*
Heart, Lung and Esophageal Surgery Institute, UPMC Health System, Pittsburgh, Pennsylvania

Background: Segmentectomy for early-stage NSCLC remains controversial and has been previously associated with high recurrence rates. We compared the outcomes of anatomic segmentectomy with lobectomy for Stage I NSCLC and investigated the impact of surgical resection margins on recurrence.

Methods: A total of 170 anatomic segmentectomies (112 Open, 58 VATS) were performed for Stage 1A (n=103) or 1B (n=67) NSCLC over the last 4 years. During this time, 213 lobectomies were performed (1A-100; 1B-113). Variables analyzed included hospital course, mortality, and patterns of recurrence and survival.

Results: All segmentectomy surgical margins were free of tumor (average margin=17.2 mm). Hospital stay (7.8 vs. 9.1, p=0.048) and pulmonary complications (15% vs. 25%, p=0.0096) were significantly reduced following segmentectomy vs. lobectomy. Thirty-day mortality (1.2 vs. 3.8%), total complications, recurrence and two-year actuarial survival (78 vs. 79%) were similar between segmentectomy and lobectomy (mean follow-up= 17.5 and 24.5 months, respectively). Thirty recurrences following segmentectomy (17.7%) occurred at a mean of 13.5 months [11 locoregional (6.5%), 19 distant (11.2%)]. Eighty-eight percent of recurrences were seen when tumor margins were <2 cm. Margin: tumor diameter ratios >1 were associated with a significant reduction in recurrence rates compared to ratios <1 (8.8vs.26.0%, p=0.038).

Conclusions: Anatomic segmentectomy can be performed safely by either an open or VATS approach. Segmentectomy outcomes compare favorably with standard lobectomy for stage I NSCLC. Margin: Tumor ratio <1 is associated with a higher rate of recurrence. Lobectomy should be considered as primary therapy when such margins are not obtainable with segmentectomy in the good risk patient.

NOTES

4:35 p.m. – 4:50 p.m.

85. Incidence and Risk Factors for Lung Injury Following Lung Cancer Resection

*N. Alam; *B. J. Park; D. Amar; A. Wilton; *M. S. Bains; *R. M. Flores; *R. J. Downey; N. Rizk; *V. W. Rusch*
Memorial Sloan-Kettering Cancer Center, New York, New York

Financial Disclosure: B.J. Park, NIH P20 Grant, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Intuitive Surgical, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); Baxter Healthcare, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness).

Background: Lung injury is a major cause of morbidity and mortality following major anatomic pulmonary resection. Our objective was to identify the incidence and risk factors for the development of postoperative lung injury.

Methods: A retrospective case-control study of consecutive patients undergoing resection for lung cancer at a single institution was performed. The severity of lung injury was identified using the American European Consensus Conference criteria. Patients with lung injury were compared with matched controls, based on age, gender and extent of resection, for examination of a priori defined risk factors.

Results: From 1/01 to 6/04 1428 patients underwent resection. Lung injury occurred in 76 (5.3%) cases, 44 (3.1%) of whom met criteria for acute lung injury (ALI) or acute respiratory distress syndrome (ARDS). Following matching, there were no differences between cases and controls with respect to use of induction therapy, perioperative transfusions or tumor laterality. On univariate and multivariate analysis increasing perioperative fluid administration and decreasing postoperative predicted lung function were significant risk factors for the development of lung injury (Table). The overall mortality for patients with lung injury was 25%, compared with 2.6% for the control group.

Conclusions: Lung injury after lung resection has a high mortality. Lower predicted postoperative lung function, especially DLCO, in combination with greater perioperative fluid administration were significant predictors of postoperative lung injury.

*STS Member

Univariate Analysis

Factors		Cases (n=76)	Controls (n=76)	p-value	Odds Ratio*(95% CI)
Perioperative transfusion	No Yes	68 (89) 8 (11)	73 (96) 3 (4)	0.22	1.00 1.59 (0.7-3.5)
Induction chemotherapy	No Yes	61(80) 15 (20)	64 (84) 12 (16)	0.66	1.00 1.18 (0.6-2.2)
Induction radiotherapy	No Yes	69 (91) 7 (9)	73 (96) 3 (4)	0.31	1.00 1.57 (0.7-3.8)
Laterality	Left Right	30 (39) 46 (61)	36 (47) 40 (53)	0.40	1.00 1.22 (0.7-2.0)
Perioperative fluids, ml (range)	-	2775 (1350-5000)	2500 (1400-4500)	0.05	1.20 (1.0-1.4)
FEV1 % ppo† (range)	-	59.2 (25-91)	68.8 (35.6-106.8)	0.01	1.11 (1.02-1.21)
DLCO % ppo† (range)	-	47.5 (16-104.2)	60 (24.6-126.2)	0.007	1.10 (1.03-1.19)

†ppo = postoperative predicted
* Odds ratio per 500 mL increments of fluids or per 5% decrement of FEV1 or DLCO

NOTES

4:50 p.m. – 5:05 p.m.

86. Use of Video-Assisted Thoracic Surgery (VATS) for Lobectomy in the Elderly Results in Fewer Complications – Geriatric Patient Care Award

*S. M. Cattaneo, II; *B. J. Park; A. S. Wilton; *M. S. Bains; *R. J. Downey; *R. M. Flores; N. Rizk; *V. W. Rusch
Memorial Sloan-Kettering Cancer Center, New York, New York

Background: To determine if the utilization of VATS for lobectomy for clinical stage I non-small cell lung cancer (NSCLC) in elderly patients results in decreased complications compared with lobectomy via thoracotomy (THOR).

Methods: A retrospective, matched case-control study was performed evaluating the perioperative outcomes following lobectomy by VATS versus THOR performed in elderly patients (age ≥ 70 years) at a single institution. All complications were graded according to the NCI Common Terminology Criteria for Adverse Events version 3.0.

Results: Between 5/1/02 and 12/31/05, 333 patients (245 THOR, 88 VATS) ≥ 70 years old underwent lobectomy for clinical stage I NSCLC. After matching based on age, gender, presence of comorbid conditions, and preoperative clinical stage, there were 82 patients in each group. Patients had similar preoperative characteristics (Table). A VATS approach resulted in a significantly lower rate of complications compared with THOR (28% versus 45%, p=0.04) and a shorter median length of stay (5 days, range 2-20 versus 6 days, range 2-27, p<0.001). No patients undergoing VATS lobectomy had higher than grade 2 complications, whereas 16% of complications in the THOR group were grade 3 or higher (p=0.23). There were no perioperative deaths in the VATS group compared with an in-hospital mortality rate of 3.6% (3/82) for THOR patients.

Conclusions: A VATS approach to lobectomy for stage I NSCLC in the elderly results in significantly fewer complications and a shorter hospital stay with a trend toward decreased grades of complications.

Preoperative Characteristics and Results

Factor	Levels	THOR (N=82)**	VATS (N=82)**	p-value***
Preoperative Stage	IA IB	74 (90) 8 (10)	74 (90) 8 (10)	****
FEV1 (%)	Continuous	88 (37-255)	88 (29-136)	0.77
Diffusion (%)	Continuous	82 (36-129)	85 (43-196)	0.30
Pathologic Stage	IA IB II-IV	49 (60) 15 (18) 18 (22)	56 (68) 19 (23) 7 (9)	0.13
Length of Stay	Continuous	6 (2-27)	5 (2-20)	<0.001
Any Complications	Yes No	37 (45) 45 (55)	23 (28) 59 (72)	0.04
Maximum Grade of Complications*	1 2 3 4 5	6 (16) 25 (68) 2 (5) 1 (3) 3 (8)	4 (17) 19 (83) 0 0 0	0.23

*Of those patients with complications
**Data presented as N (%) or Median (Range)
***Based on Wilcoxon rank-sum, Chi-square, or Fisher's Exact test
****Used as a matching variable

NOTES

5:05 p.m. – 5:20 p.m.

87. Predictors of Survival and Disease-Free Survival in Patients With Resected N1 Non-Small Cell Lung Cancer

*R. J. Cerfolio; A. S. Bryant
Univeristy of Alabama at Birmingham, Birmingham, Alabama

Background: Factors that predict poor survival or increased risk of recurrence for patients with N1 disease may be dependent on tumor characteristics.

Methods: A retrospective review of a prospective database of consecutive patients who had N1 non-small cell lung cancer (NSCLC) who underwent preoperative FDG-PET scans and complete resection with thoracic lymphadenectomy.

Results: There were 128 patients (82 men). The 5-year survival was 53%. Kaplan-Meier analysis showed that male gender (p=0.043), advanced T stage (p=0.011), multiple nodes within one station (p=0.020), multiple station involvement (p=0.045) and #10 lymph node involved (p=0.041) were associated with a lower survival. Multivariate survival analysis found only multiple nodes as a significant predictor of poor outcome. The 5-year disease-free rate was 73%. Kaplan-Meier analysis showed that the lack of neo-adjuvant treatment (p=0.022), advanced T stage (p=0.009), having a #10 station involved (p=0.023), multiple stations (p=0.014) and multiple nodal involvement (p=0.004) were associated with a shorter 5-year disease-free interval. Multivariate disease-free analysis found that multiple stations and multiple nodal involvement remained significant predictors of worse outcome.

Conclusions: Factors that predict poor outcome in patients with resected N1 NSCLC are: the involvement of multiple N1 stations, multiple N1 nodes and having a #10 node involved. These data may influence preoperative therapy.

*STS Member

NOTES

5:20 p.m. – 5:35 p.m.

88. Single Fraction Stereotactic Radiosurgery (SFSR) for the Treatment of Stage I Non-Small Cell Lung Cancer (NSCLC)

*J. S. Donington; L. S. Schumacker; B. Loo; H. A. Wakelee; *R. I. Whyte; Q. Le
Stanford University, Stanford, California

Background: Stereotactic radiosurgery is a new treatment option for lung tumors in patients unfit for surgery. We are reporting early results in inoperable patients with primary Stage I NSCLC treated with SFSR as part of a phase I dose escalation trial.

Methods: The cohort included medically inoperable patients with primary stage I NSCLC. Treatments were delivered via a linear accelerator mounted on a computer-control robotic arm (Cyberknife, Accuray, CA). Prior to treatment, CT-guided metallic fiducials were placed for image guided targeting. Targeted volume encompassed the gross tumor plus 5 mm margins.

Results: Twenty patients with NSCLC were treated (6 T1, 14 T2). Median age was 75 (range 51-83). Maximal tumor diameter ranged from 2.0 to 6.2 cm. Five patients were treated at 15 Gy/fraction dose, one at 20 Gy, 12 at 25 Gy and two at 30 Gy. Follow up was complete in all patients with a median of 17.9 months (range 5.6-37.5). Complications included persistent air leak following fiducial placement in one, grade 3 pneumonitis and atrial fibrillation in one and 2 treatment related deaths. There was no decline in pulmonary function in surviving patients. Overall survival at one and two years was 83% and 44% (median 23 months). One-year freedom from local progression was 81%. Local control was improved in T1 tumors (100%) and those treated at >25 Gy dose (86%).

Conclusions: SFSR is feasible and well tolerated in surgically unfit patients with Stage I NSCLC. It provides excellent local control and promising early survival.

NOTES

PARALLEL SURGICAL FORUM V: CONGENITAL

Tuesday, January 30, 2007, 1:45 pm - 5:45 pm

Unless otherwise 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.

1:50 p.m. – 2:05 p.m.

89. Excellent Midterm Outcome of Extra-Cardiac Conduit Total Cavopulmonary Connection: Results of 126 Cases

T. Nakano; H. Kado; H. Sonoda; T. Tachibana; N. Boku; Y. Andou
Fukuoka Children's Hospital, Fukuoka, Japan

Background: Extra-cardiac conduit total cavopulmonary connection (EC-TCPC) has shown good early results, however, its long term outcome has yet to be reported.

Methods: Of 282 patients who underwent EC-TCPC since 1994, 126 patients followed up for more than 5 years were included in this retrospective study. Actuarial survival rate, incidence of late complications, hemodynamic variables, and results of exercise tolerance test were reviewed.

Results: Follow up time was 96.4±23.0 months. There were no early death and 6 late deaths (4.8%). Actuarial survival rate was 95.2% at 5 and 10 years. Six patients developed late complication including protein loosing enteropathy in 2, thromboembolism in 1 and new onset supraventricular arrhythmia in 3. One patient underwent reoperation not related to conduit. Freedom from cardiac related events was 91.3% at 5 years and 90.1% at 10 years. Late cardiac catheterization for 120 survivors showed central venous pressure of 9.9±2.9 mmHg, cardiac index of 3.6±0.8L/kg/min and arterial oxygen saturation of 94.5±2.3%. No patient showed conduit stenosis. Plasma concentrations of atrial and brain natriuretic polypeptide (pg/ml) were 28.9±20.0 and 25.8±44.5. Exercise test performed in 101 patients showed endurance time of 75.7±12.9% of normal value (%N), peak heart rate of 92.3±14.4%N and maximum oxygen consumption of 90.0±20.0%N. The latest echocardiogram showed ejection fraction of 60.4±11.7%. Three patients had pace maker rhythm, 1 had junctional rhythm and 116 patients had sinus rhythm.

Conclusions: Midterm outcome of EC-TCPC was satisfactory with low incidence of late mortality and morbidity and excellent hemodynamic state.

NOTES

2:05 p.m. – 2:20 p.m.

90. Perfusion-Contractility Relationship in the Fontan Circulation

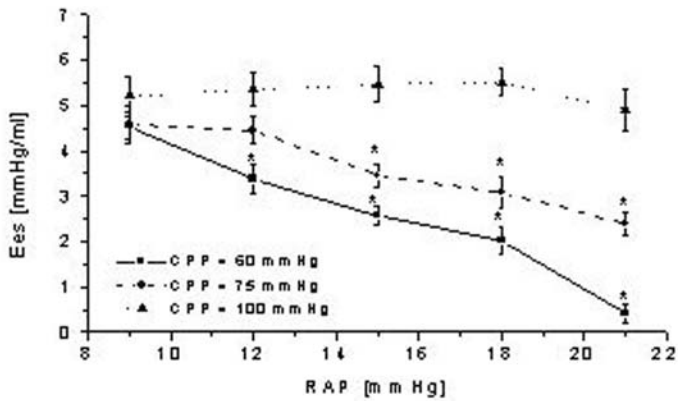
*G. Szabó; *S. Hagl*
Department of Cardiac Surgery, University of Heidelberg, Heidelberg, Germany

Background: The aim of the study was to investigate the relationship between coronary perfusion pressure (CPP) and myocardial contractility and the effects of an acute elevation of right atrial pressure (RAP) on this relationship in an experimental model of Fontan circulation.

Methods: In 6 anesthetized open-chest dogs with isolated perfused coronary arteries, myocardial contractility was described by the slope of the end-systolic pressure-volume relationship (Ees). During the first protocol, Ees was assessed at CPPs decreased from 240 to 45 mmHg. Then, Fontan-circulation was initiated and the measurements were repeated. During the second protocol, Ees was assessed at CPP=60, 75 and 100 mmHg, respectively, with an increase of RAP from 9 to 21 mmHg.

Results: The CPP/Ees relationship could be described by nearly identical biphasic J-shaped curves before and under Fontan circulation. While above a "critical" CPP (72±9 mmHg vs. 81±8 mmHg, n.s.) the changes of CPP did not affect Ees, below this level the decrease of CPP resulted in a progressive decrease of Ees. Under Fontan circulation, the progressive increase of RAP did not influence Ees at CPP=100 mmHg, led to a moderate decrease of Ees at CPP=75 mmHg and severe decrease at CPP=60 mmHg (Figure1, *p<0.05 vs. RAP=9 mmHg/CPP=100 mmHg,).

Conclusions: Fontan circulation per se does not impair the perfusion-contractility relationship. The effects of coronary venous pressure on left ventricular contractility depend on the actual CPP: at CPP below the "critical" pressure an increase of RAP results in a subsequent decrease of contractility.



*STS Member

NOTES

2:20 p.m. – 2:35 p.m.

91. Extubation in the Operating Room After Fontan's Procedure: Effect on Practice and Outcomes

*D. L. S. Morales[1]; K. E. Carberry[1]; A. Juergens[2]; M. Butler[2]; *J. S. Heinle[1]; *E. D. McKenzie[1]; *C. D. Fraser, Jr.[1]; L. K. Diaz[1]

[1]Texas Children's Hospital, Houston, Texas; [2]Baylor College of Medicine, Houston, Texas

Post-operative Hospital Endpoints (means are reported)

	EOR	Non-EOR	p-value
Duration of inotropic support	1.1	2.4	< 0.05
Intensive care length of stay	3	4.7	<0.05
Duration of chest tube drainage	5.8	7.2	0.05
Hospital length of stay	8.6	11.3	0.01

Background: Timely extubation is a well-accepted strategy in the post-operative ICU management of Fontan patients to minimize the deleterious effects of positive-pressure ventilation. In October 2002, we extended this strategy and began to selectively extubate Fontan patients in the operating room (EOR). This retrospective study examines how EOR has affected outcomes and practice.

Methods: Between 7/1995-6/2006, 216 patients underwent the Fontan procedure. A subset of these patients (n=112) beginning in October 2002, when EOR began, was the study group; 38 (34%) were EOR and 74 (66%) non-EOR. These two cohorts were not significantly different ($p<0.05$) with respect to: age, weight, surgery time, dominant ventricular morphology, hypoplastic left heart syndrome, prior bidirectional Glenn, concomitant procedures, atrioventricular valve regurgitation, and ventricular function. Analysis of variance (ANOVA) was used to compare pulmonary artery pressure (PAP), mean arterial blood pressure (MAP), and common atrial pressure (CAP) at 5 time-points within the first 12-hours post-operatively.

Results: In the initial postoperative period, PAP and CAP were significantly lower and MAP was significantly higher in the EOR group than in the non-EOR group, $p<0.0001$. No EOR patient required re-intubation. Hospital endpoints (Table 1). Average ICU & hospital costs for non-EOR patients were 53% and 46% higher, ($p<0.02$) than for EOR patients. Kaplan-Meier survival for the overall Fontan experience (n=216) was 99.5% at 30-days, 97.3% at 1-year, 96.5% at 5-years, and 92.5% at 7-years.

Conclusions: After the Fontan procedure, selective EOR can be performed safely and improves post-operative hemodynamics, decreases hospital resource utilization, and reduces hospital recovery time.

*STS Member

NOTES

2:35 p.m. – 2:50 p.m.

92. Persistent Antegrade Pulmonary Blood Flow Post-Glenn Does Not Alter Early Post-Fontan Outcomes in Single Ventricle Patients

*R. G. Gray[1]; K. Altmann[1]; *J. M. Quaegebeur[1]; *R. S. Mosca[1]; *J. M. Chen[2]*
[1]Columbia University College of Physicians and Surgeons, New York, New York;
[2]Weill Medical College of Cornell University, New York, New York

Background: Significant controversy persists as to the effects of allowing persistent antegrade pulmonary blood flow (APBF) at the time of Glenn procedure in single ventricle (SV) patients. Some have postulated that antegrade pulsatile flow may confer increased interstage pulmonary artery (PA) growth and arterial oxygen saturations, while decreasing collateral vessel formation, thereby altering post-Fontan outcome. We evaluated the effect of persistent APBF in staged SV patients over a decade.

Methods: All SV patients with APBF at birth whose Glenn and Fontan procedures were performed at our institution were included. Study cohorts were based upon the presence (+) or absence (-) of persistent APBF post-Glenn. At the time of Glenn and Fontan, cardiac catheterization data, measurements of PA size, and intraoperative and postoperative variables were acquired including morbidities and early mortality. Patients undergoing hemifontan procedures were excluded.

Results: 59 SV patients presented for Glenn with APBF between 1995 and 2005; 39 (66%) were rendered APBF (+), and 20 (34%) APBF (-) post-Glenn. No differences in demographic, intra- or postoperative data were demonstrated between cohorts at the time of Glenn. All Fontan intra- and postoperative variables were comparable, including intubation time, chest tube drainage, and hospital and ICU lengths of stay. 1 patient in each cohort died.

Conclusions: Persistent APBF was associated with an interstage improvement in PA growth (by Nakata index), increased mean PA pressure and arterial 02 saturation, and decreased collateral formation. However, this did not confer a benefit in postoperative morbidities or mortality post-Fontan.

Variable	APBF (+)	APBF (-)	p-value
Percent change in Nakata Index (pre-Glenn to pre-Fontan	-17.6	-38.8	0.0336
Pre-Fontan mean PA pressure (mmHg)	13.3	10.9	0.0148
Pre-Fontan arterial 02 saturation (%)	85.8	80.9	0.0001
Number of collaterals coiled pre-Fontan	0.9	1.6	0.0245

NOTES

2:50 p.m. – 3:05 p.m.

93. Outcomes of Surgical Management Strategies for Neonates with Aortic Coarctation and Associated Ventricular Septal Defects

*B. Alsoufi; *W. G. Williams; *J. G. Coles; S. Cai; *G. S. Van Arsdell; *C. A. Caldarone
Hospital for Sick Children and University Of Toronto, Toronto, Ontario, Canada

Background: We review the results of surgical treatment of aortic coarctation (COA) associated with ventricular septal defect (VSD) in neonates. We examine morbidity associated with 2 different therapeutic strategies: single versus two-stage repair; and attempt to identify pre-operative predictors to guide optimal surgical management.

Methods: Between 1990-2006, 141 neonates with COA and VSD were treated surgically. They were divided into two groups. Two-stage group (n=89): initial simple COA repair done through postero-lateral approach, with concomitant pulmonary artery band (PAB) in 54, followed by VSD closure as guided clinically. Single-stage group (n=52): both defects were repaired through midline approach.

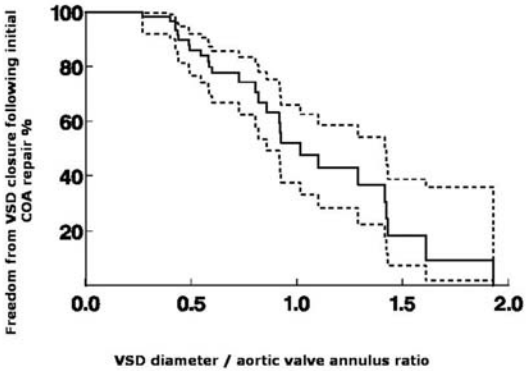
Results: In two-stage group, 42 Patients (47%) required secondary VSD closure. Median interval was 48 days (range 9 days-10.4 years) from initial COA repair. Freedom from VSD surgery at 1-month and 5-years was 78.5% and 45.8% versus 97.8% in single-stage group.

Overall 5-year survival was 90.8%. Freedom from arch re-operation at one year was 93.5%, while 12-year freedom from re-operation for sub-aortic obstruction was 86.2%. (Comparison in table).

In two-stage group, pre-operative predictors for requirement for later VSD closure were VSD type other than muscular (P=0.0055), and larger VSD, identified by higher VSD diameter/ aortic valve annulus ratio. (Graph)

Conclusions: Surgical results of both treatment strategies are good. Neonates with larger VSD, especially outlet mal-alignment and peri-membranous types are likely to require VSD closure. While midline sternotomy and single-stage approach is necessary in neonates with proximal arch hypoplasia; two-stage approach is valid at the expense of increased hospital stay and additional surgery requirement.

	All patients	Two-stage	Single-stage	P value
5-year survival	90.8%	91.3%	88.7%	0.71
1-month freedom from VSD closure after initial surgery		78.5%	97.8%	<0.0001
5-year freedom from VSD closure after initial surgery		45.8%	97.8%	<0.0001
1-year freedom from arch re-operation	93.5%	92.2%	95.7%	0.94
12-year freedom from redo bypass after initial surgery	47.9%	36.6%	72.6%	0.0002
12-year freedom from sub-aortic obstruction	86.2%	91.2%	74.8%	0.01
12-year freedom from recurrent arch stenosis on echocardiogram	78.4%	80.8%	73.4%	0.24


Freedom from VSD closure following initial COA repair %
100
80
60
40
20
0.0
0.5
1.0
1.5
2.0
VSD diameter / aortic valve annulus ratio

NOTES

3:05 p.m. – 3:20 p.m.

94. Lessons Learned in the Management of Pulmonary Atresia/Intact Ventricular Septum

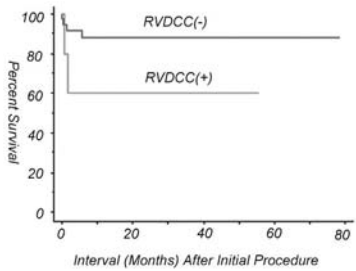
*Y. Hirata; *J. M. Chen; R. *S. Mosca; *J. M. Quaegebeur*
Columbia University, New York, New York

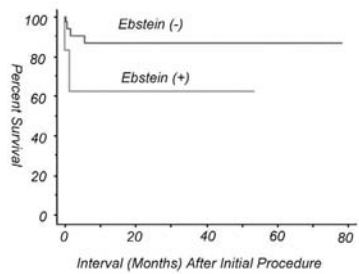
Background: Pulmonary atresia with intact ventricular septum (PAIVS) has a wide spectrum of anatomical heterogeneity with a variety of surgical strategies possible. We compared the outcome of our patients with PAIVS undergoing a biventricular approach to those with a single ventricular repair, so as to delineate strategies for the optimal management of PAIVS.

Methods: All patients undergoing catheter valvotomy or surgical intervention for PAIVS from 1/99 through 12/05 comprised the study cohort. Demographic and anatomic variables were analyzed by univariate and multivariable analyses to determine association with in-hospital mortality.

Results: 44 infants with PAIVS underwent catheter valvotomy (n=17) and/or surgical intervention (n=42). The mean age and weight of the infants were 6 days and 3.1 kg, and the average follow-up was 20.2±21.6 months. 5 (11%) had RV dependent coronary circulation (RVDCC) and 6 (14%) had Ebstein anomaly. 5 (11%) patients died. Of those who underwent catheter valvotomy, 3 (18%) underwent shunt placement, 12 (71%) underwent RVOTR with shunt placement, and only two (12%) did not require a further surgery. Multivariable analyses demonstrated RVDCC (Odds ratio 21.3, p=0.025) and Ebstein anomaly (Odds ratio 16.0, p=0.038) to be risk factors for mortality. Of those patients with Ebstein anomaly, single ventricle approach had a better outcome.

Conclusions: We demonstrated excellent recent outcomes for patients with PAIVS. While catheter-based techniques were useful diagnostic modalities, rarely did balloon intervention avoid surgical repair. RVDCC was associated with high mortality. In patients with Ebstein anomaly, single ventricular pathway may be the better strategy for this specific patient population.





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4:05 p.m. – 4:20 p.m.

95. Complete Atrioventricular Canal: A Comparison of the Modified Single-Patch Technique to the Two-Patch Technique

*C. L. Backer; *R. D. Stewart; F. Bailliard; A. M. Kelle; C. L. Webb; *C. Mavroudis
Children's Memorial Hospital, Chicago, Illinois

Background: The purpose of this study was to compare the modified single-patch technique to the two-patch technique for infants with complete atrioventricular canal (CAVC) defects.

Methods: Between January 2000 and June 2006, 55 infants underwent CAVC repair. Twenty-six patients had a modified single-patch technique; 29 patients had a two-patch technique. Mean age was 0.37±0.11 (single-patch) vs. 0.46±0.16 years (two-patch, $p<0.02$). Mean weight was 4.74±0.92 vs. 5.28±1.67 kilograms (p=ns). Rastelli classification was type A (18 vs. 14), B (1 vs. 0), and C (7 vs. 15). Mean size of the ventricular septal defect (VSD) as assessed by transesophageal echocardiogram was 0.9±0.2 (single-patch) vs. 1.0±0.3 (two-patch) centimeters (p=ns).

Results: There was 1 death in the modified single-patch group (postoperative day 130, liver failure) and no deaths in the two-patch group. Cross-clamp time was shorter in the modified single-patch group (97.3±19.9 vs. 123.3±28.2 minutes, $p<0.01$). Median postoperative length of stay did not differ (10 vs. 8 days). One patient (4%) required reoperation for mitral insufficiency in the modified single-patch vs. three patients in the two-patch group (10%, p=ns). There were no patients with third degree atrioventricular block in the modified single-patch and 1 patient (3%) with third degree block in the two-patch group (p=ns). No patient in either group required reoperation for left ventricular outflow tract obstruction.

Conclusions: The modified single-patch technique produced results comparable to the two-patch technique in younger patients with similarly sized VSDs. Furthermore, the modified single-patch technique was able to be performed with significantly shorter cross-clamp times.

NOTES

4:20 p.m. – 4:35 p.m.

96. Role of Edge-to-Edge Technique in Repair of Tricuspid or Common Atrioventricular Valve Associated With Functional Single Ventricle

M. Ando; Y. Takahashi
Sakakibara Heart Institute, Tokyo, Japan

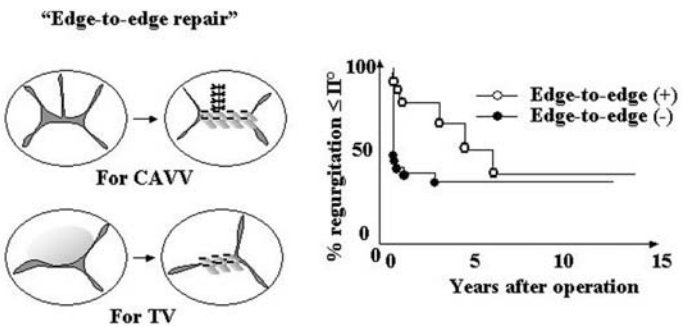
Background: Tricuspid (TV) or common atrioventricular valve (CAVV) associated with functional single ventricle (SV), which is structurally unsuited to sustain systemic circulation, may have a significant regurgitation present in early childhood. Annuloplasty is seldom successful in this context due to a severely decreased leaflet coaptation, and valve replacement carries a high risk.

Edge-to-Edge repair (E-E) is an option of mitral valve repair in adults. In the TV or CAVV with SV, this technique may be feasible even in small children without causing stenosis, because of the large annulus and the less need for cardiac output.

Methods: Between October 1989 and March 2006, 49 patients with TV or CAVV regurgitation (>or=moderate) with SV underwent valve repair for 53 times. E-E was performed in 5 of 23 with TV and 17 of 30 with CAVV.

Results: Despite that more patients in the E-E group had severe regurgitation (13/22) compared with the other patients (10/31) before repair, postoperative regurgitation was less than mild in 21/22 of the E-E group compared with 15/31 of the other patients (p=0.0003). No patient had valve stenosis. In the long term, the recurrent rate of regurgitation was similar between the 2 groups. Ten year freedoms from recurrent regurgitation (>or=moderate) were 42.5% in the E-E group and 36.4% in the other patients (Figure).

Conclusions: E-E is an effective adjunct in repairing TV or CAVV associated with SV. It may not assure long-term prevention of regurgitation but may have a role in improving interim survival and successful completion of Fontan operation.



*STS Member

NOTES

4:35 p.m. – 4:50 p.m.

97. Current Risk Factors and Outcomes for the Arterial Switch Operation

*Z. Qamar; *E. J. Devaney; *E. L. Bove; *R. G. Ohye*
University of Michigan, Ann Arbor, Michigan

Background: The arterial switch operation (ASO) is the preferred treatment for d-transposition of the great arteries (dTGA) and some forms of double outlet right ventricle (DORV).

Methods: All patients undergoing an ASO at a single institution from 1/1/99 to 9/1/05 were reviewed.

Results: Of the 168 patients, median age at presentation was 2d (range, 0-358d). Eleven patients were <36wks gestational age (GA). Median weight was 3.5kg (range, 1.9-11.8kg). Forty percent had coronaries patterns other than usual. Mean cardiopulmonary bypass (CPB) time was 147 ± 45min, and mean cross clamp time was 77 ± 27min. At a mean follow-up of 19 ± 21mo, there were 10 (6%) hospital and 4 (3%) late deaths. Actuarial 1-month, 1-year and 3-year survivals were 94%, 90% and 89%, respectively. Bivariate analysis revealed weight <2.5kg (p=0.032), GA <36wks (p=0.020), and CPB time >150min (p=0.0075) adversely affected hospital survival. Intermediate-term survival was worse for weight <2.5kg (p=0.017), GA <36wks (p=0.0096), CPB time >150min (p=0.0050), and age at presentation >4wks (p=0.034). By multivariate analysis, GA <36wks (p=0.024) and CPB time >150min (p=0.018) are independent risk factors for hospital mortality (Table 1). Coronary anatomy could not be shown to affect survival, including no deaths among the 12 patients with intramural coronaries.

Conclusions: The ASO can be performed with low mortality regardless of diagnosis or coronary pattern. Late presentation may adversely affect intermediate-term survival, perhaps due to the progression of subclinical pulmonary vascular disease. The premature patient and minimizing CPB time remain as challenges to optimize outcomes for the ASO.

Table 1. Independent Risk Factors for Hospital Mortality

Risk Factor	p Value	Odds Ratio (95%CI)
Gestational age <36wks	0.024	8.85 (1.33-58.8)
CPB time >150min	0.018	7.94 (1.43-43.5)

*STS Member

NOTES

4:50 p.m. – 5:05 p.m.

98. Aortic Annulus Size and Coronary Artery Pattern are Associated With RVOTO Following Arterial Switch Operation (ASO) for Complex D-Transposition of the Great Arteries (D-TGA)

*D. Gottlieb; M. L. Schwartz; K. Bischoff; K. Gauvreau; *J. E. Mayer, Jr.*
Children's Hospital, Boston, Massachusetts

Background: Despite low overall reoperation rates for the arterial switch operation (ASO), patients with D-TGA, VSD and aortic arch obstruction (AAO) comprise a high risk subpopulation; we hypothesized that anatomic risk factors could be identified for reoperation, suggesting mechanisms of RVOTO following ASO.

Methods: Eighty-two patients undergoing ASO at a single institution, 1983-2005, with D-TGA, VSD (or TGA-like DORV) and AAO were identified. Echocardiograms for 74 patients were reviewed by a single blinded cardiologist. Sixty-five patients survived ASO and were analyzed. Coronary patterns were determined by operative report and/or preoperative echocardiogram. STATA was used for statistical comparison of patients who required (R) or did not require (NR) reoperation.

Results: The R and NR groups were similar in baseline clinical characteristics including era of surgery. Ten of 65 patients (15.4%) underwent reoperation for RVOTO, one with associated neoaortic dilation. Mean aortic annulus z-score was smaller (-0.69±0.83 vs. 0.03±1.43, p=0.048) in R than NR. Posterior origin of the left coronary artery (LCA; LAD, LCx or both from posterior facing sinus (PFS)) was associated with higher reoperation risk (LCA anterior: 2/34 (5.9%), LCA posterior: 8/30 (26.7%)). Hazard ratio of earlier reoperation in patients with a posterior LAD was 5.2 ([1.1, 24.5], p=0.022, figure).

Conclusions: Aortic annulus z-score and LCA arising from the PFS were associated with RVOTO requiring reoperation post-ASO. These results indicate that early conotruncal developmental variations exert important influences on post-repair outcomes in patients with D-TGA, VSD and AAO.

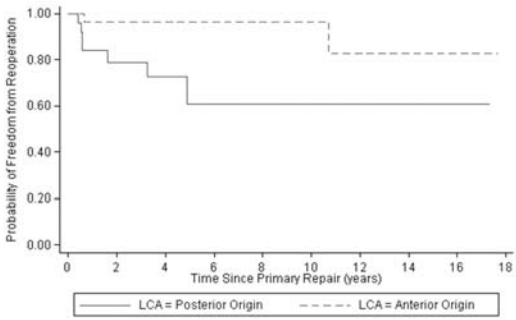


Figure. Time to reoperation for patients with left coronary artery from anterior or posterior facing sinus.

*STS Member

NOTES

5:05 p.m. – 5:20 p.m.

99. A Ten-Year Experience with Continuous SvO2 Monitoring Following Stage 1 Palliation (S1P) for Hypoplastic Left Heart Syndrome (HLHS): The Evolution and Impact of Goal-Directed Therapy

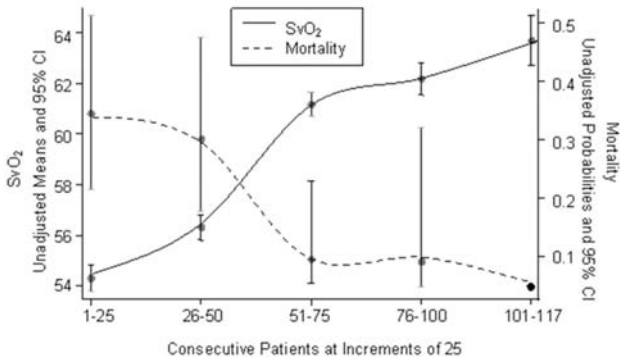
*J. S. Tweddell[1]; N. S. Ghanayem[1]; K. A. Mussatto[2]; M. E. Mitchell[1]; L. J. Lamers[1]; N. Musa[1]; S. Berger[1]; *S. B. Litwin[1]; G. M. Hoffman[1]
[1]Medical College of Wisconsin, Milwaukee, Wisconsin; [2]Children's Hospital of Wisconsin, Milwaukee, Wisconsin

Background: In the mid 1990s our approach to postoperative care for infants undergoing S1P for HLHS shifted from manipulation of pulmonary vascular resistance to balance the circulation to an approach targeting systemic oxygen delivery with goal-directed therapy led by continuous systemic venous oxygen saturation (SvO2) monitoring.

Methods: Since July 1996 we have performed 178 S1P procedures. Among these are a consecutive cohort of 117 patients with true HLHS that underwent S1P with a modified Blalock-Taussig shunt. A prospective database containing 48 hours of postoperative hemodynamic data on all patients was maintained. The incidence of major organ failure, ECMO and mortality during S1P hospitalization and the relationship with hemodynamics including SvO2 was reviewed.

Results: Hospital survival for this cohort was 93% (109/117). Of the117 patients, 3 (3%) developed renal failure, no patient developed necrotizing enterocolitis, 4 (3%) had clinical seizures and 1 (1%) had a stroke. ECMO support was instituted postoperatively in 11 (9%) patients. SvO2 was lower in patients requiring ECMO, 46% vs 59% ($p<0.01$), although the mean blood pressure was similar (51 vs 50 mmHg, p=ns). The figure illustrates the inverse relationship between SvO2 and S1P risk of hospital mortality over the past decade.

Conclusions: Goal-directed therapy with SvO2 as an indicator of systemic oxygen delivery is associated with excellent early survival and a low incidence of organ failure in infants after S1P for HLHS. Inability to optimize SvO2 in the early postoperative period is associated with an increased risk of organ failure, ECMO and mortality.



 *STS Member

NOTES

5:20 p.m. – 5:35 p.m.

100. The Hybrid Approach for the Management of HLHS: Intermediate Results After the Learning Curve

**M. Galantowicz; J. Cheatham; T. Feltes; T. Hoffman; *A. Phillips; J. A. Bauer; A. C. Cook; R. Rodeman*
Columbus Children's Hospital, Columbus, Ohio

Background: Lessons learned during the development of a novel hybrid approach has resulted in a reliable, reproducible alternative treatment for hypoplastic left heart syndrome(HLHS). Herein we report our results using this hybrid approach as compared to a traditional Norwood staged palliation.

Methods: A retrospective chart review of patients treated for HLHS using a hybrid approach (n=30) or traditional strategy (n=7) between 10/2002-6/2006. The hybrid approach includes pulmonary artery bands, PDA stent, and atrial septostomy as a neonate, comprehensive stage 2 procedure resulting in Glenn shunt physiology at 6months, and Fontan completion at 2years.

Results: Cumulative mortality was 0/7 and 5/30, traditional versus hybrid groups. Deaths included 1 at stage 1, 1 between 1&2, 2 at stage 2, and 1 between 2&3. There was no difference in morbidities between groups with no incidence of permanent end organ damage. Other than a significantly greater duration of circulatory arrest in the traditional group no other indicator of resource utilization (bypass, crossclamp, ventilator, ICU, LOS) was different when cumulative, stage 1&2 combined data were evaluated.

Conclusions: The hybrid approach can yield acceptable intermediate results that are comparable to a traditional strategy. Potential advantages of the hybrid approach include the avoidance of circulatory arrest and shifting the major surgical stage to later in life. These data provide the platform for a prospective trial comparing these two surgical options to assess whether there is less cumulative stress with the hybrid approach thereby improving end organ function, quality and quantity of life.

NOTES

5:35 p.m. – 5:50 p.m.

101. Role of Nitric Oxide and cGMP In Placental Dysfunction Following Fetal Bypass

*C. T. Lam[1]; R. Baker[1]; W. C. Lubbers[1]; L. C. Spezzano[1]; C. Teuschler[1]; J. L. McNamara[1]; R. E. Ferguson[1]; A. Gardner[1]; J. P. Lombardi[1]; K. E. Clark[2]; *P. Eghtesady[1]*

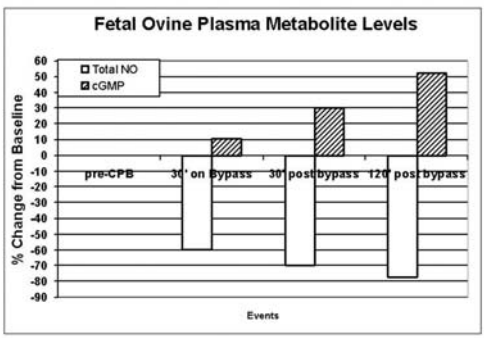
[1]Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio; [2]University of Cincinnati, Cincinnati, Ohio

Background: The etiology of the placental dysfunction following fetal bypass remains unknown. We had previously shown significant reduction in real-time nitric oxide (NO) production during and following bypass, suggesting involvement of the placental NO pathway in this pathophysiology. We set out to examine the mechanism(s) involved.

Methods: Ovine fetuses (n=12) 100-104 day gestational age were placed on bypass for a 30 minutes and followed post-bypass for 2 hours. Fetal plasma samples were taken every 30 minutes and analyzed for total NO metabolite (Nitrite & Nitrate) and cGMP levels by immunoassay. Placental tissue samples were analyzed for PDE-5 and eNOS expression by immunohistochemistry over similar time points. Measured changes in tissue expression and metabolites were correlated to measured NO in-vivo concentrations, fetal hemodynamics, umbilical flows, and arterial blood gas values. Statistical analysis utilized Student's 2-tailed t-test (significance at $p<0.05$).

Results: There was a significant linear increase in cGMP levels and a decline in NO metabolite concentrations from baseline to post-bypass recovery ($p<0.05$). The increase in cGMP levels was most marked at 120 minutes post bypass ($p=0.02$). The preceding correlated with decreasing umbilical flows and worsening placental gas exchange. Simultaneously, placental eNOS expression remained stable, while PDE-5 expression increased significantly.

Conclusions: Fetal bypass leads to significant perturbations in placental NO pathway as manifested by increased cGMP and PDE5 and a marked decline in NO production and metabolite levels. These changes correlate with observed deterioration in placental gas exchange.



*STS Member

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WEDNESDAY-AT-A-GLANCE

6:30 a.m. – 12:00 p.m. Registration: STS Annual Meeting
7:00 a.m. – 10:00 a.m. STS University: Hands-On Courses
10:00 a.m. – 10:30 a.m. Break
10:30 a.m. – 12:30 p.m. STS University: Live Surgery
1:00 p.m. – 5:30 p.m. Patient Safety Symposium
(This session will be held at the San Diego Marriott Hotel.)

*STS Member

STS UNIVERSITY 2007

7:00 a.m. – 10:00 a.m.

Course #1: Congenital Surgery: Cardiopulmonary Bypass Updated: "Nuts and Bolts of CPB"

Course Directors: **Charles D. Fraser and *Jeffrey S. Heinle, Houston Texas*

Cardiopulmonary bypass (CPB) remains a widely applied and necessary tool in cardiac surgery. Despite advances in off-pump cardiac surgery and the effects of percutaneous coronary interventions on the volume of coronary artery bypass surgery, the successful application of CPB methods has and predictably will continue to be mainstay of cardiac surgery. Unfortunately, didactic education in the elements of CPB is lacking in many cardiothoracic residency programs. Futhermore, significant advances continue to occur in the field of CPB, making it challenging for the practicing cardiac surgeion to maintain an up-todate, current working knowledge of the technical and scientific advances. This issue is perhaps most striking in the fields of minimally invasive cardiac surgery and pediatric cardiac surgery. This course is designed for recently certified residents, seasoned cardiac surgeons, and perfusionists. The goals include a basic understanding of "standard" CPB, a review of the known deleterious effects of exracorporeal support and review of current advances in the use of CPB in special circumstances including antegrade cerebral perfusion and minimally invasive (including robotic) cardiac surgery.

Course #2: Endoesophageal Therapies

Course Director: **Thomas J. Watson, Rochester, New York*

This course on endoesophageal therapies is intended to update the practicing thoracic surgeon on endoscopic techniques for management of a variety of malignant and benign esophageal disorders. Endoscopic therapies have been increasingly utilized to treat esophageal pathology, and clinically applicable natural orifice transluminal endoscopic surgery (NOTES) is on the horizon. As newer, less invasive and potentially less morbid procedures are developed for management of esophageal cancer, ablation of Barrett's esophagus and treatment of esophageal strictures and perforations, the surgeon will need not only to understand their appropriate indications, but also to develop competencies in the use of these technologies in order to be positioned in the forefront of therapy and to remain competitive in the marketplace. Specific technologies to be reviewed in this course include endoscopic mucosal resection (EMR), photodynamic therapy (PDT), radiofrequency ablation of Barrett's metaplasia (BÂRRX procedure) and esophageal stenting for benign and malignant disease. Both didactic lectures and a laboratory session will be utilized to expose the participant to the relevant background data and proper use of these technologies. Ample time will be provided for questions and answers as well as a panel discussion.

Course #3: Esophageal, Bronchoscopic, and Pleural Ultrasound

Course Director: **Robert J. Cerfolio and Mohamad A. Eloubedi, Birmingham, Alabama*

Ultrasound techniques have been gaining in importance for the general thoracic surgeon. Esophageal ultrasound guided biopsies (EUS) of medaistinal lymph nodes, ultrasound guided transbronchial biopsies (EBUS) of lung lesions and mediastinal lymph nodes, and transthoracic ultrasound for diagnosis and drainage of pleural fluid will be the tools of the future for evaluating and treating diseases of the chest. This course will provide a didactic introduction to EUS, EBUS, and General chest ultrasound followed by hands on experience with these techniques on models and simulators. Participants will gain familiarity with the instrum entation used for these techniques and how to get the additional training needed to make them part of their practice.

Course #4: RFA – Navigational Bronchoscopy

Course Director: **Malcolm M. DeCamp, Jr., Boston, Massachusetts*

Financial Disclosure: M.M. DeCamp, Jr., Accuray,(1. I was a consultant during protocol development. 2. Currently an institutional investigator on a multiinstituitional trial.) Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received). superDimension, (Between 9/05-2/06, I was a consultant and physician advisor to the company for purposes of applying to CMS for a new Ambulatory Procedure Code (APC) for this new procedure/device.) Consultant/Advisory Board (including volunteer roles).

A variety of ablative therapeutic options exist for small peripheral pulmonary neoplasms. These technologies compete with standard open thoracic surgical techniques and video-assisted thoracic surgical resection. Moreover, the ablative strategies may provide a non-invasive or percutaneous treatment option for medically inoperable patients. This course highlights two image-guided, ablative technologies (RFA and stereotactic radiosurgery) with a particular emphasis on the role of thoracic surgeons in their utilization. An initial, didactic introduction to these approaches includes the introduction of a novel electromagnetic navigation system for fiber optic bronchoscopy which facilitates access to and localization of lesions for either therapy. A panel discussion between the faculty and course participants will place these technologies into perspective with standard and video-assisted surgical treatments.

Course #5: Management of Tracheobronchial Disease: Stenting, Ablation Therapy and Surgery

Course Director: **Daniel S. Miller, Atlanta, Georgia*

This course on Ventricular Assist Devices provides the participant the most up-to-date information on the proper selection of ventricular assist devices for congestive heart failure including post-cardiotomy support. It is crucial to recognize that there are now multiple outcome options for patients on ventricular assist devices including recovery, destination therapy and cardiac transplantation and so the principles for each indication are reviewed. This course is particularly important as the boundary between these indications becomes less clear at the time of implantation of the device. Proper patient selection and timing of implantation will be discussed in conjunction with medical and surgical therapy. Particular attention is paid to isolated left and isolated right ventricular support indications and strategies as well as the indications for biventricular support. In addition, there is a summary of the major complications including, bleeding, infection, thromboembolism and right heart failure and a review of the strategies to avoid or treat them. Protocols for assessing weanability from a ventricular assist device are reviewed. The utilization of transition type devices as a pathway to the more complex implantable systems used for longer term support are presented. Specific surgical implant tips and techniques are discussed for each of the most commonly used approved devices with emphasis on reducing post-operative complications. There will also be a practical review of appropriate device choices and therapeutic pathways for the community cardiac surgeon. Finally, the utilization of assist devices in the pediatric population is increasing and a review of available systems will be presented.

Course #6: Mitral Valve Repair: Basic and Advances Techniques

Course Director: **A. Marc Gillinov, Cleveland, Ohio*

Financial Disclosure: A.M. Gillinov, (Speakers/Honoraria) Medtronic, (Speakers/Honoraria) Guidant, (Speakers/Honoraria) St. Jude, Speakers Bureau/Honoraria(speakers bureau, symposia, and expert witness); Viacor, (Equity) Ownership Interest (Stock options, patent or other intellectual property); Edwards,(consultant) Consultant /Advisory Board (including volunteer roles).

This course on surgical mitral valve repair provides the participant the most up-to-date information on basic and advanced techniques for mitral valve reconstruction. Beginning with analysis of the mitral valve by intraoperative transesophageal echocardiography, experts detail their approach to the mitral valve. Surgeons with expertise in minimally invasive surgery illustrate both mini-thoracotomy and partial sternotomy approaches to the mitral valve. Basic and advanced techniques for posterior leaflet repair (quadrangular resection, sliding repair, foletingplasty) are covered, as well as approaches for anterior leaflet repair (chordal replacement, chordal transfer, edge-to-edge repair). At the conclusion, a panel discussion with case presentations is presented by the faculty along with opportunities for discussion by the participants.

Course #7: Adult Cardiac Valve Surgery: Techniques and Tips

Course Director: **Joseph E. Bavaria, Philadelphia, Pennsylvania*

This course will introduce attendees to a wide variety of cardiac valve prostheses and rings offering a state-of-the-art learning experience. The faculty has been specially selected for each valve implantation and reparative procedure. The hands-on lab experience will provide participants the opportunity to either practice or observe an expert perform a variety of procedures utilizing the latest technology. Each attendee will have ample opportunity for interaction with expert faculty on a variety of procedures using this technology to include: aortic valve sparing root surgery (reimplantation), mitral valve repair, aortic valve replacement, mechanical aortic root replacement, full stentless Bioroot implantation, MVR, subcoronary stentless valves, and tricuspid valve repair.

Course #8: Surgery for Atrial Fibrilation

Course Director: **Ralph J. Damiano, St. Louis, Missouri*

Financial Disclosure: R. Damiano, (Principal Investigator) Atricure, (Principal Investigator) Guidant, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); (Speakers Bureau/Honoraria) Edwards, (Speakers Bureau/Honoraria) Medtronic, Speakers Bureau/Honoraria (speakers bureau, symposia, and expert witness); (Consultant) Atricure, (Consultant) Medtronic, (Consultant) Cryocath, Consultant/Advisory Board (including volunteer roles).

This course on endoesophageal therapies is intended to update the practicing thoracic surgeon on endoscopic techniques for management of a variety of malignant and benign esophageal disorders. Endoscopic therapies have been increasingly utilized to treat esophageal pathology, and clinically applicable natural orifice transluminal endoscopic surgery (NOTES) is on the horizon. As newer, less invasive and potentially less morbid procedures are developed for management of esophageal cancer, ablation of Barrett's esophagus and treatment of esophageal strictures and perforations, the surgeon will need not only to understand their appropriate indications, but also to develop competencies in the use of these technologies in order to be positioned in the forefront of therapy and to remain competitive in the marketplace. Specific technologies to be reviewed in this course include endoscopic mucosal resection (EMR), photodynamic therapy (PDT), radiofrequency ablation of Barrett's metaplasia (BÂRRX procedure) and esophageal stenting for benign and malignant disease. Both didactic lectures and a laboratory session will be utilized to expose the participant to the relevant background data and proper use of these technologies. Ample time will be provided for questions and answers as well as a panel discussion.

Course #9: Surgical Ventricular Remodeling

Course Director: **John V. Conte, Baltimore, Maryland*

Financial Disclosure: J. Conte, (Research Grant 2005) Chase Medical, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); (Medical Advisory Board) Abiomed Inc. Consultant/Advisory Board (including volunteer roles).

This course will provide the participant with the most up to date information on Surgical Ventricular Remodeling (SVR). The course will consist of a didactic and wet lab component. In the didactic component the instructors will describe the pathophysiology of ischemic cardiomyopathy, the indications for SVR, describe the various surgical techniques used, and report contemporary outcomes. The wet-lab component will allow the participants the opportunity to perform SVR in an animal model of ischemic cardiomyuopathy. Actual case presentations complete with video presentations of the surgical procedure and patient follow up will be presented to end the program.

Course #10: Practical Ventricular Assist Device Strategies for the Cardiac Surgeon

Course Director: **Robert L. Kormos, Pittsburgh, Pennsylvania*

This course provides the participant the most up-to-date information on the proper selection of ventricular assist devices for congestive heart failure including post-cardiotomy support. It is crucial to recognize that there are now multiple outcome options for patients on ventricular assist devices including recovery, destination therapy and cardiac transplantation and so the principles for each indication are reviewed. This course is particularly important as the boundary between these indications becomes less clear at the time of implantation of the device. Proper patient selection and timing of implantation will be discussed in conjunction with medical and surgical therapy. Particular attention is paid to isolated left and isolated right ventricular support indications and strategies as well as the indications for biventricular support. In addition, there is a summary of the major complications including, bleeding, infection, thromboembolism and right heart failure and a review of the strategies to avoid or treat them. Protocols for assessing weanability from a ventricular assist device are reviewed. The utilization of transition type devices as a pathway to the more complex implantable systems used for longer term support is presented. Specific surgical implant tips and techniques are discussed for each of the most commonly used approved devices with emphasis on reducing post-operative complications. There will also be a practical review of appropriate device choices and therapeutic pathways for the community cardiac surgeon. Finally, the utilization of assist devices in the pediatric population is increasing and a review of available systems will be presented.

Course #11: Catheter Based Techniques for Surgeon

Course Director: **Todd M. Dewey, Dallas, Texas*

Financial Disclosure: T. Dewey, (Consultant on catheter based aortic valve development) Edwards LifeSceinces, Consultant/Advisory Board (including volunteer roles).

With the rapid increase in the use of catheter-based techniques to treat cardiac and vascular disease it is critical for the cardiac surgeon of the future to attain the skill set necessary to adopt these procedures. With thoracic aortic Endografting, now a clinical reality and percutaneous valve interventions in clinical trials, catheter-based therapy will encompass an ever expanding role of the clinical management of cardiovascular disease. While most surgeons are conversant with disease processes and surgical techniques, very few have the skill set necessary to offer these new and emerging approaches. Fundamental to the teaming of these advanced techniques is the necessity for learning the fundamentals of catheter-based therapy. This session will serve as an introduction to the practitioner with little or no background in catheter-based skills. The session will include didactic presentations of basic technology and techniques and will employ hands-on opportunities with simulator trainers to introduce these techniques. It is anticipated that this session will serve as a platform for embarking on further more intensive training in catheter-based therapy.

*STS Member

STS UNIVERSITY SURGERIES

10:30 – 12:30 p.m.

1. Minimally Invasive Esophagectomy (Live)
   James D. Luketich, Pittsburgh, Pennsylvania

   Financial Disclosure: J. D. Luketich, US Surgical, Stryker, Axcan (PI), Research Grant (e.g., prinicipar investigator, collaborator or consultant and pending grants as well as grans already received), Intuitive Surgical, RITA Medical (Stock Options, Recipient), Ownership Interest (e.g. stock options, patent or other intellectual property).

2. Congenital Tricuspid Valve Replacement and Maze Procedure for Ebstein's Anomaly (Edited Video)
   Jeffrey P. Jacobs, St. Petersburg, Florida
   Joseph A. Dearani, Rochester, Minnesota

   Financial Disclosure: J. P. Jacobs, CardioAccess (Medical Advisor), Consultant/Advisory Board (including volunteer roles).

3. Endobronchial Ultrasound and Navigational Bronchoscopy (Live)
   David J. Feller-Kopman, Boston, Massachusetts

4. Robotic Mitral Valve (Live)
   Randolph W. Chitwood, Jr., Greenville, North Carolina

5. Aortic Valve Sparing (Unedited Video)
   Duke Cameron, Baltimore, Maryland

6. Simulator Demonstration – Catheter Based Techniques
   Michael J. Mack, Dallas, Texas

   Financial Disclosure: M. J. Mack, Edward Lifesciences, Boston Scientific, Consultant/Advisory Board (including volunteer roles).

PATIENT SAFETY SYMPOSIUM

1:00– 5:30 p.m.
Location: San Diego Marriott Hotel

The STS University Patient Safety program combines two unique features. The first is the application of highly successful aviation safety protocols to improve cardiothoracic surgical care. The second is to link completion of the program to malpractice/professional liability insurance premium reductions of between 5 and 15 percent.

The program will include modules in aviation-based safety programs, team building, recognizing the warning signs of impending adverse situations and cross check communication and be surgically oriented to specifically address those behaviors necessary to maximize safe surgery. Surgeons from across the country will come together during this symposium to discuss the initiatives and techniques they use to improve outcomes with their patients. As cardiothoracic surgeons put their knowledge into practice, the ripple effect back to individual hospitals is expected to be substantial.

The Society of Thoracic Surgeons is seeking agreements from insurers to provide at least a 5 percent malpractice/professional liability insurance premium reductions to those who attend the patient safety program.

CONGENITAL POSTERS P1-P23

Unless otherwise 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.

P1

Steroid Replacement Therapy Improves Hemodynamics in Infants With Adrenal Insufficiency After Surgery for Congenital Heart Disease

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Background: Several reports show that steroid replacement therapy improves hemodynamics in infants after surgery for congenital heart disease (CHD). However, the response to steroid seems different among the patients. To test a hypothesis that steroid improves hemodynamics only in infants with adrenal insufficiency, we prospectively investigated adrenal function and effects of steroid in infants after surgery for CHD.

Methods: Consecutive 36 infants with age < 3 months were enrolled after surgery for CHD. We performed a corticotropin stimulation test by injecting 3.5 μg/kg of corticotropin at 6-12 hours after ICU admission. According to baseline level of cortisol, the patients were classified into two groups: normal (> 15 μg/dL) and low baseline (< 15 μg/dL). After the test, we started steroid replacement therapy by injecting hydrocortisone (1 mg/kg every 6 hours). Hemodynamics was compared between before and after hydrocortisone injection.

Results: After the stimulation test, cortisol increased by > 9 μg/dL in all patients but one. However, there were 9 patients with low baseline level of cortisol. In the group with low baseline, hydrocortisone increased mean blood pressure and urine output (53±8 to 68±9 mmHg, 53±18 to 95±33 mL in 6 hours, respectively, $p < 0.05$). In contrast, in the group with normal baseline, hydrocortisone did not improve blood pressure or urine output (55±8 to 58±8 mmHg, 64±57 to 59±54 mL in 6 hours, respectively).

Conclusions: After surgery for CHD, one-fourth of the infants had low baseline of cortisol. Steroid replacement therapy improved hemodynamics only in a subgroup with low baseline of cortisol.

*STS Member

P2

The Extracardiac Fontan Procedure Using a Homograft Conduit: Advantages, Outcomes, and Risk Factors

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Background: Arrhythmias and pleural effusion remain the main causes of morbidity after the Fontan operation. The extracardiac Fontan (ECF) procedure may have significant advantages by maximizing pulmonary blood flow velocity, eliminating intra-atrial suture lines, and avoiding exposure to the circuit oxygenator. Use of a homograft eliminates long-term use of anti-coagulation.

Methods: From 1997 to 2005, 128 consecutive patients (mean age 4.8±2.0 years) underwent the ECF operation using a homograft conduit. Full CPB was used in 84 patients (66%), extracorporeal support without an oxygenator in 9 (7%), and no support in 35 (27%). No patient was anti-coagulated for greater than three months.

Results: 124 patients (97%) survived to hospital discharge. Risk factors for death included atrioventricular valve regurgitation (AVVR, p=0.001), preoperative arrhythmias (p=0.005), and high end-diastolic pressure (EDP, p=0.04). Risk factors for arrhythmias included low Nakata index (p=0.01), single right ventricle (p=0.04), and high EDP (p=0.04). Risk factors for pleural effusions included closed or no fenestration (p<0.001), low Nakata index (p=0.001), and high EDP (p=0.001). At 5.6±1.3 years follow-up there was no Fontan takedowns, conduit replacement, or thromboembolic complications.

Conclusions: The extracardiac Fontan operation using a homograft conduit is a safe and effective procedure that is applicable to virtually all forms of cardiac morphologies. The ECF operation avoids exposure to an oxygenator in many cases and eliminates the need for long-term anti-coagulation. Right ventricular morphology, low Nakata index, high EDP, and AVVR are the principal risk factors for early and mid-term morbidity and mortality.

*STS Member

P3

Role of Nitric Oxide in Endothelial Dysfunction Following Fetal Cardiopulmonary Bypass

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Background: Previous studies have suggested endothelial dysfunction follows initiation of fetal bypass as manifested by a sudden rise in fetal mean arterial pressure (MAP) and systemic vascular resistance. The mechanism(s) leading to this remain unknown. We set out to investigate the potential role of the nitric oxide (NO) pathway in this pathophysiology.

Methods: Ovine fetuses (n=10) at 100-110 days gestation underwent 30 minute fetal bypass or sham surgery and were then followed for 2 hours. Real time NO was assessed with an NO-T Nitric Oxide measurement system (Harvard Apparatus; Holliston, MA) placed in the common umbilical vein. Changes in NO production were correlated to fetal hemodynamics, umbilical flows and gas exchange. Student's t-test was used for statistical analysis with $p<0.05$ considered significant.

Results: As noted before, fetal MAP increased significantly with initiation of bypass (79±34%, Mean±SD). This correlated with a simultaneous and significant rise in NO, (21±16%). NO levels remained elevated throughout bypass, then significantly decreased with bypass cessation compared to controls, ($p<0.01$ for all). The post-bypass period was characterized by a progressive and significant decline in fetal MAP and NO compared to baseline, ($p<0.04$ by 1 hour). Furthermore, declining NO correlated with decreasing umbilical flows and worsening fetal respiratory acidosis ($pCO2>70$; normal=50mmHg).

Conclusions: Fetal NO increases rapidly and persistantly with fetal bypass initiation mirroring changes in fetal MAP. Post-bypass, however, there is marked decline in NO that correlates with fetal hemodynamics and gas exchange. These results suggest derangement of endothelial NO pathway(s) in response to fetal bypass.

*STS Member

P4

Neo-Aortic Bicuspid Pulmonary Valve in Arterial Switch Operation-Medium Term Follow Up

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Background: Aim of this study was to identify the incidence of bicuspid pulmonary valve (BPV) in patients with Transposition of Great Arteries (TGA) undergoing arterial switch operation (ASO) and evaluate their medium term integrity in neo-aortic position.

Methods: 391 patients had ASO for TGA and its variants between 1986 and 2001. Perioperative information and follow-up data were reviewed from medical records. Echocardiograms of patients with BPV were reviewed. Neo-aortic valve was serially assessed by measuring degree of aortic insufficiency, indexed aortic valve diameter (Aortic Annulus size/BSA) and pressure gradients.

Results: Complete data for 342 patients were retrieved. Twenty-four patients (age 5 days - 12 years) had BPV (incidence 7.02%). Follow-up data were available on 22 patients with mean follow-up 5.3 years (1.6 months - 13 years). Twenty-one patients were alive at last follow-up. Two patients were lost to follow-up. Seven patients had no aortic regurgitation (AR), eight had mild and two developed severe AR. One patient with Taussig Bing anomaly developed severe AR four years after ASO and underwent prosthetic AVR. Neo-aortic showed increase in annular diameter, a marker of growth (Mean Aortic Valve Area 24mm). No patient developed significant valve stenosis (average peak instantaneous gradient, 9.6 mm Hg, (Range 4-30 mm Hg).

Conclusions: Although incidence of BPV in TGA is not insignificant, its integrity in the neo-aortic position is maintained as evident from serial echocardiographic evaluations.

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P5

Outcome Following Unroofing Procedure for Anomalous Aortic Origin of Left or Right Coronary Artery

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Background: Anomalous aortic origin of a coronary artery (AAOCA) from an incorrect sinus is a congenital defect that is associated with sudden death and can be treated by coronary artery unroofing if an intramural course is identified. Indications for treatment of anomalous right coronary artery (ARCA) are still controversial, partly due to the lack of significant data regarding surgical outcomes. We report the results of coronary artery unroofing in a series of patients with AAOCA.

Methods: We prospectively analyzed 20 patients who underwent coronary artery unroofing for either anomalous origin of the left coronary artery (ALMCA, n=7) or ARCA (n=13) between 1995 and 2005. Study tools included a questionnaire, echocardiography and treadmill stress testing.

Results: Preoperatively, symptoms of coronary ischemia were present in 13 patients (6/7 with ALMCA, 7/13 with ARCA). Coronary artery unroofing was performed in all patients. At a mean follow-up time of 28 months there was no mortality. Echocardiogram demonstrated antegrade coronary flow and stress test was normal in each patient. Two patients with ARCA had persistence of presenting symptoms postoperatively; one patient had persistent chest pain, and another had persistent ventricular tachyarrhythmias, despite normal echocardiogam and stress test.

Conclusions: Coronary artery unroofing procedure for AAOCA can be carried out with minimal risk and good functional results. Asymptomatic presentation is more common with ARCA than ALMCA. Although most patients experience relief of presenting symptoms, those with ARCA are more likely to experience persistence of symptoms postoperatively, likely due to the non-ischemic nature of these symptoms.

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P6

Over Twenty Years of Pediatric Heart Transplantation

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Background: In 1985, the first successful human pediatric heart transplantation was performed at our center. This is a review of over 20 years of experience with pediatric heart transplantation comparing 2 eras.

Methods: Between 11/20/1985 and 12/31/2005, 423 orthotopic heart transplants were performed out of 574 listed. Characteristics: mean age: 2.4 ± 4.3 years (0 days-17.7 years). Of those, 25% died waiting for transplantation. Diagnosis at transplant: HLHS (classic/ variant) 39.7% (168), other congenital heart defect 34.3% (145) cardiomyopathy 23.9% (101), retransplant 10.6% (45). Risk factors for death were analyzed.

Results: Mean follow-up was 8.5 ± 6.0 years. Overall actuarial survival was 84% at 1 year, 74% at 5 years, 65% at 10 years and 57% at 20 years. Hospital mortality was 9.2% (39). Prior to 1995; hospital and 1-year survival were equal to after 1995 (p=0.15, p=0.36). 263 patients (62%) are alive to date. Risk factors for mortality were 1) post-transplant renal failure and dialysis (p=0.008), 2) presence of asplenia/ polysplenia (p=0.01); 3) profound circulatory arrest (p=0.002). Diagnosis, ethnicity, preoperative intubation was not a risk factor. 12 patients in the series had a PVR > 5 Wood units, in 10 pulmonary hypertension was the primary cause of death in 2 pulmonary hypertension was a contributing factor.

Conclusions: Pediatric heart transplantation remains safe and effective therapy. Long-term survival remains unchanged after more than 2 decades. Pulmonary hypertension increases the risk of mortality.

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Endothelin Single Nucleotide Polymorphism is Linked to Transplant-Free Survival for Single Ventricle Patients

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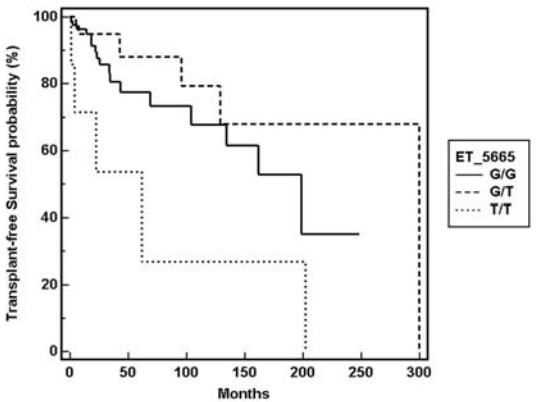
Background: Survival for children with single ventricle congenital heart disease (SV-CHD) has improved, but long-term attrition due to late ventricular dysfunction remains a serious problem. Genetic factors have been identified which affect outcomes for adults with heart failure. The goal of this study was to evaluate the influence of 5 candidate gene single nucleotide polymorphisms (SNPs) upon transplant-free survival for children with SV-CHD.

Methods: 138 children born with SV-CHD were enrolled. DNA was isolated from peripheral blood. The following five SNPs were genotyped by sequencing or Taqman 7000 analyzer: angiotensinogen M235T, angiotensin II type 2 receptor G1675A, β1 adrenergic receptor C1165G, endogenous nitric oxide synthase G894T, and endothelin-1 G5665T. Potential confounding variables were recorded including birth weight, syndromes or anomalies, and ventricular morphology at birth. A combined end-point including transplant evaluation or death was identified. Kaplan-Meier survival curves were generated and compared by the log-rank test. Cox proportional hazard models were used to evaluate potential covariates.

Results: Endothelin-1 G5665T genotype was significantly associated with transplant-free survival (p=0.01, Figure) with median actuarial survivals of 62, 199, and 300 months for the T/T, G/G, and G/T genotypes. The other 4 SNPs had no significant correlation (p>0.2) and there were no significant covariates.

Conclusions: Long-term survival of SV-CHD patients is dependent upon many factors. These data suggest that vascular resistance modifiers, such as endothelin-1, may play an important role. Future studies should include correlation of endothelin genotype to plasma levels and possibly therapeutic trials of endothelin blockers in high-risk patients.



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P8

Complete Atrioventricular Septal Defect with Coarctation of the Aorta: Single Stage Complete Repair vs. Staged Repair?

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Background: Management of complete atrioventricular septal defect (cAVSD) with coarctation of the aorta (CoA) is controversial. We compared the outcome of single-stage versus multi-stage repair.

Methods: All children with cAVSD and CoA or hypoplastic aortic arch were identified. Patients with severe ventricular hypoplasia requiring single ventricle palliation, or associated transposition of the great arteries were not included. Baseline characteristics and morphologic data were described. Outcomes of initial and subsequent interventions were analyzed. The difference between the proportion of survivors was tested with fisher-exact test.

Results: From 1982 to 2006, 67 children were identified with cAVSD and CoA. Twelve patients were not included in the analysis due to; single ventricle palliation, mild CoA not requiring intervention, cAVSD repair prior to CoA repair, transposition, and partial AVSD. The remaining 55 children were the focus of the study. Group1 (n=20) single-stage complete repair. Group2 (n=35) multi-stage repair, CoA repair (with pulmonary artery banding in 6) followed by cAVSD repair. The median interval between the two interventions was 156 days (range 5-886). The median age (25th-75th percentiles) at first intervention was 55 (15-140) days in group1, and 18 (7-111) days in group2. Three children in group1 died (3/20,15%). Eight children in group2 died (8/35,23%), 3 after CoA repair with PA banding, and 5 after the 2nd operation of cAVSD repair (p=0.7).

Conclusions: The operative mortality of repair of cAVSD with CoA is high. Single stage complete repair is feasible; however, we failed to identify a significant difference in operative mortality between single-stage and multi-stage repair.

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Coarctation of the Aorta (CoA) With Ventricular Septal Defect (VSD) in Neonates and Infants: One-Stage (I-S) vs. Two-Stage (II-S) Repair

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Background: The results of I-S and II-S repair of CoA with VSD have improved, but the optimal treatment strategy remains controversial. This study compares our results with these two approaches.

Methods: A retrospective analysis of 46 patients (pts), 23 pts with I-S repair and 23 pts with II-S repair, who underwent completed surgical treatment of CoA with VSD at the Children's Hospital of Michigan between March 1994 and June 2006, were analyzed. No patients were excluded from analysis.

Results: The average number of operations in group I-S was 1.5 ± 0.6 and in group II-S was 2.2 ± 0.4 (P=< 0.0001). Postoperative complications were similar except the number of planed re-operation to perform delayed sternal closure in I-S (N=7) compared to II-S (N=1) (P=0.023). The patient age in group I-S at time of discharge (completed repair time) was a median of 38.0 days (19-250) compared to a median of 128.0 days (26-1614) in group II-S after stage II (P=<0.0001). Freedom from specific cardiac re-interventions was 91.7% in I-S vs. 85.7% in II-S (P=0.333). The hospital mortality was 4.4% (1 pts) in each group. The actuarial survival rate after surgery was 95.7% in I-S vs. 89.3% in II-S (P=0.5).

Conclusions: The advantages of single-stage over two-stage repair of VSD with CoA include an earlier age at completion of repair, fewer operations, and fewer incisions. Postoperative complications and hospital mortality are similar. The one disadvantage of a single-stage repair was the increased need for delayed sternal closure compared to the two-stage approach.

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P10

Early Post-Operative Hyperglycemia Does Not Adversely Impact Neurodevelopmental Outcome at One Year of Age Following Infant Cardiac Surgery

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Background: Hyperglycemia has been associated with worse outcome following traumatic brain injury and cardiac surgery in adults. It is not known if post-operative hyperglycemia results in worse neurodevelopmental outcome after infant cardiac surgery.

Methods: Post-hoc analysis of post-operative glucose levels in infants < 6 months undergoing repair of 2-ventricle cardiac defects enrolled in a prospective study of genetic polymorphisms and neurodevelopmental outcomes. Outcomes were hospital length of stay (LOS) and neurodevelopmental outcome at 1-year of age assessed with the Bayley Scales of Infant Development-II yielding 2 indices: Mental Developmental Index (MDI) and Psychomotor Developmental Index (PDI).

Results: Surgical repair was performed in 248 infants with 1 hospital and 3 late deaths. Neurodevelopmental evaluation was performed in 188/244 (77%) survivors. Glucose levels at CICU admission and during the first 48 post-operative hours were available for 180/188 patients. Mean admission glucose was 328±106mg/dl, maximum glucose was 340±109mg/dl, 160/180 (89%) patients had at least 1 glucose > 200 mg/dl and 49/180 (27%) had a glucose > 400mg/dl. Only 1 had a glucose < 50mg/dl. Female gender (p=0.02), but no other patient or operative variable, was associated with higher glucose levels. Mean LOS was 11±13 days. Mean MDI and PDI were 90.6±14.9 and 81.6±17.2, respectively. Hyperglycemia was not associated with longer LOS or lower MDI and PDI scores for the entire cohort, or for neonates alone.

Conclusions: Hyperglycemia is common early after infant cardiac surgery but is not associated with longer hospital LOS or worse neurodevelopmental outcome at 1 year of age.

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P11

Aristotle Score Predicts Mortality and Morbidity in Pediatric Heart Transplantation

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Background: We sought to look at the association between the Aristotle complexity score and outcome after heart transplantation in children.

Methods: We designed a system for calculating Aristotle score for pediatric heart transplant patients. This scoring system is based on a combination of previous surgeries, existing pathology, preoperative laboratory and cardiac catheterization numbers, ventilator dependence, and history of prior transplantation. Scores for each patient were then calculated and compared using a multivariate analysis.

Results: There were a total of 247 patients who underwent heart transplantation at our institution from 1988 to 2005. Complete data was available for 213 patients. There were 37 patients who died within a year of transplantation, and these patients had a significantly higher Aristotle score when compared to the survivors (13.6 vs 8.4, $p<0.05$). There were 53 patients who had more than 2 episodes of rejection during the first year, they had a higher Aristotle score when compared to patients who had fewer episodes of rejection (11.4 vs 7.9, $p<0.05$). There were no differences in the Aristotle score for patients who required post-transplant percutaneous interventions or post-transplant lymphoproliferative disorders.

Conclusions: This study validates the utility of the Aristotle score in being able to predict mortality and morbidity after pediatric heart transplantation. This scoring system can help us accurately predict outcome after pediatric heart transplantation.

*STS Member

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High Near Infra-Red Spectroscopy Measurements: What Do They Mean?

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Background: Near Infra-Red Spectroscopy (NIRS), to measure cerebral tissue oxygen content, has been proposed as an intra-operative neuromonitoring technique to improve neurological outcome following congenital cardiac surgery. The focus has been on avoiding low NIRS measurments. High NIRS measurements however, may represent a harmful excess in cerebral oxygen delivery. We sought to determine the frequency and predictors of significant NIRS increases (20% increase or absolute value > 90%).

Methods: In 50 consecutive bypass congenital cardiac cases, data on predictor variables (pH, paCO2, paO2, hematocrit, temperature, mean arterial pressure (MAP), and indexed pump flow) was collected. Logistic regression was used to model the dichotomous outcome variable (i.e. an increase in NIRS reading).

Results: The population included 19 neonates, 28 infants, and 3 children. 74% (37/50) manifested at least one monitoring event, lasting 1 to 220 minutes (mean 31.1). 54% (32/59) of significant events occurred before/after the patient was on bypass. 8.5% (5/59) occurred during each: cooling, cross clamp placement, cross clamp removal, and weaning from bypass. In simple and multiple univariate regression, only PaCO2 was found to be a statistically significant predictor of NIRS increases ($p<0.01$). The coefficient for PaCO2 was 0.874 (95% CI 0.79-0.96). An one unit increase in PaCO2 was associated with a 2.7 fold increase in odds of a significant increase in NIRS reading.

Conclusions: Significant increases in NIRS occur in a majority of patients and are related to increases in PaCO2. The relationship between PaCO2 and NIRS may be the result of cerebro-vasodilatory effects of increased CO2.

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AVSD-TOF Can Be Repaired With Good Results by Transatrial, Transpulmonary Approach

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Background: The outcome of surgical correction of AVSD-TOF has improved in recent years but is still associated with high mortality. Controversy exists about the need of a right ventriculotomy and/or RV to PA conduit. Our objective was toevaluate our results of AVSD-TOF repair avoiding ventriculotomy and RV to PA conduit by a transatrial transpulmonary approach and transannular patch.

Methods: Between 1979 and 2005, 20 patients underwent correction of AVSD-TOF. Five patients had undergone prior palliative shunts. The two-patch technique was used to correct the AVSD. In all AVSD-TOF patients a transatrial, transpulmonary approach was used and repair accomplished without conduit. Clinical data were obtained by review of clinical and outpatient clinical chart.

Results: There was no hospital mortality and one late, non-cardiac death. Six patients were reoperated: 5 for left AV-valve insufficiency (repair:4; replacement:1), one for residual VSD and PA-branch obstruction. Follow-up was complete for all patients (mean 13 ± 8.4 years; range:1 to 26 years; median :17 years; 238 patient years). All 19 survivors were in good clinical condition at last control, without medication and in NYHA functional class 1 (n=18) or class 2 (n=1). TEE revealed good right ventricular function, low RVOT gradients (mean 9 ± 7,4 mmHg), and mild pulmonary insufficiency (n=11).

Conclusions: ASVD-TOF can be repaired with low mortality by transatrial-transpulmonary approach without the use of a conduit.

*STS Member

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The Embedding of the Aorta and the Pulmonary Artery in the Ventricles is Different in TGA: Relevance for Later Dilatation of the Neo-Aortic Root

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Background: To study the embedding of the arterial roots in the ventricles in specimens with TGA and in normal hearts. Neo-aortic root dilatation is sometimes seen after the arterial switch operation for TGA. Although structural differences in the vessel walls and valvar sinuses of these patients may be of influence, we hypothesize, based on developmental concepts that the embedding of the arterial roots in TGA differs from that of normal hearts. This might be an additional factor providing an explanation for neo-aortic root dilatation.

Methods: Histological sections of 2 normal heart specimens and 2 unoperated heart specimens with TGA were studied. Three-dimensional reconstructions of the outflow tract of one normal heart and one heart with transposition of the great arteries were created and compared.

Results: The fibrous to myocardial anchorage of both arterial roots in the myocardium was found to be far less extensive in TGA than in the normal heart. Furthermore there was an altered distribution and a marked diminished amount of collagen in the fibrous annulus of the arterial orifices in TGA.

Conclusions: Developmental data link these abnormalities to deficient epicardial contribution to the fibrous heart skeleton. The differences in collagen distribution and quantity in the arterial roots in TGA, as well as the less extensive anchorage as described in this study might form the basis of the neo-aortic root dilatation that occurs after the arterial switch operation.

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Two Thousand Blalock-Taussig Shunts: A Six-Decade Experience

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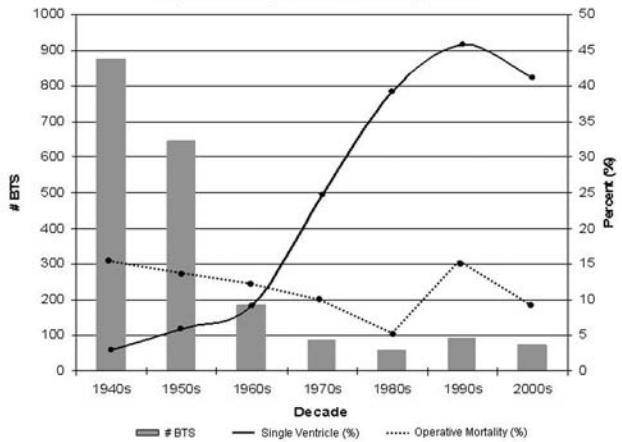
Background: The Blalock-Taussig shunt (BTS) remains valuable for the palliation of congenital heart disease, but its role has evolved significantly. We reviewed our total institutional experience with BTS to examine changes in its use and outcomes.

Methods: A retrospective review was performed of all patients undergoing BTS at our institution from November 1944 to May 2006. Hospital records and autopsy records were evaluated to determine demographics, diagnoses, operative data, hospital complications, and long-term outcomes.

Results: Over the last 62 years, 2,029 BTS were performed by 28 surgeons on 1,877 patients from 35 countries. Classic BTS were performed in 82% (1665/2029). Diagnosis was tetralogy of Fallot (TF) in 69% (1293/1877), though diagnoses were imprecise in the early half of the series. Overall operative mortality was 14% (236/1687). On follow-up, 31% of TF patients (399/1293) underwent subsequent total correction (TCTF) at our institution, and an additional 116 patients for whom follow-up was available had TCTF at other institutions, a combined TCTF rate of 40%. Of patients with complex congenital heart defects, 25% (101/397) had cavopulmonary connection or atrial/arterial switch procedures. A comparison of the first and second halves of the series revealed several trends: decreasing mean annual number of BTS (66/yr. vs. 9/yr.), decreasing operative mortality (15% vs. 11%), and increasing proportion of single ventricle diagnoses (5% vs. 38%).

Conclusions: Evolution of the BTS has seen a decrease in overall use, particularly in TF, but greater application to single ventricle cardiac lesions and improved operative survival.

Figure 1. Number of BTS Procedures, Operative Mortality, and Proportion of Single Ventricle Patients by Decade



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RVOT Reconstruction With the Bovine Jugular Vein Graft: Results of 5 Years Experience in 133 Patients

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Regulatory Disclosure: This abstract describes the use of Contegra® Heart Valve, which has not been FDA-approved, but has been approved under the Humanitarian Device Exemption (HDE) as a Humanitarian Use Device.

Background: To analyze the results of the Contegra® bovine jugular vein graft used for RVOT reconstruction.

Methods: From April 1999 to July 2005, 133 children with a median age of 30.9 months (4 days-19 years) underwent graft implantation. All echocardiography was retrospectively reviewed. The log rank test was used for statistical analysis.

Results: Non-graft related early mortality occurred in 8 patients. Late mortality occurred in 11 patients, 2 late deaths were graft-related (endocarditis). Median follow-up was 31.6 (1- 73) months. Twelve patients received a new graft because of endocarditis (3), distal PA branch stenosis (4), graft obstruction caused by fibrosis (4) or thrombosis (1). Pulmonary artery branch obstructions occurred in 25 patients and were significantly ($p < 0.001$) related to pre-existing small pulmonary arteries. A significant relation was found between younger age (< 1 year) at operation or small graft size (< 14 mm) and the occurrence of pulmonary stenosis ($p = 0.036$ and $p = 0.013$, respectively). 92% of the patients had absent, trivial or only mild valve regurgitation at last follow-up. Significant graft dilatation was observed in 4 grafts and was related to PA branch obstruction or pulmonary hypertension. Calcification was not observed in 5 years time. After 5 years survival was 85.7%, freedom from conduit explantation was 91% and freedom from intervention for pulmonary artery branch stenosis was 80%.

Conclusions: The bovine jugular vein graft is a valuable RVOT conduit, but younger age and small pulmonary arteries increase the risk of distal conduit stenosis.

*STS Member

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Two-Year Neurodevelopmental Outcome After the Norwood Procedure: A Comparison Between the BT and the RV-PA Surgical Groups

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Background: Technical advancements of the Norwood procedure have led to improvement in survival of patients with hypoplastic left heart syndrome (HLHS). The RV-PA modification was recently introduced, replacing the modified BT shunt technique in certain centers. We sought to compare the 2-year neurodevelopmental outcome between the two surgical groups.

Methods: Between September 1996 and August 2004, 82 patients with HLHS underwent the Norwood procedure: 63 BT shunt (September 1996-August 2002) and 19 RV-PA shunt (August 2002-August 2004). Two-year neurodevelopmental follow-up of 100% of survivors, using The Bayley Scales of Infant Development-II, determined Mental and Psychomotor Developmental Indices (MDI, PDI). Delay was defined as scores <70. Comparisons were made using t-test and two-sided Fisher's Exact Test analyses.

Results: The two-year mortality was 49% (31/63) and 16% (3/19) for the BT and RV-PA groups, respectively ($p = 0.015$). The MDI score was 77 ± 19 for the BT group ($n = 32$) and 83 ± 18 for the RV-PA group ($n = 16$) ($t = 1.014$, $p = 0.316$). The PDI score was 66 ± 19 for the BT group and 79 ± 16 for the RV/PA group, ($t = -2.4$, $p = 0.019$). Motor delay was reduced among survivors from 63% (20/32) in the BT group to 25% (4/16) in the RV-PA group ($p = 0.03$).

Conclusion: These preliminary results reveal a significant survival and motor development advantage for the RV-PA group as compared to the BT shunt group.

*STS Member

P18

Mitral Valve Reconstruction in Children: Early and Long-Term Results in 109 Cases

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Background: We studied early and long-term survival and freedom from reoperation following mitral valve reconstruction (MVR) in children using a variety of surgical techniques.

Methods: Between June 1986 and December 2005, 109 consecutive children with congenital and acquired mitral valve diseases underwent MVR Patients with atrioventricular septal defects were excluded. Mean age was 4.1±3.6 (range 11 days-18 years). Children were categorized according to age group: <3 months (n=9), 3 months - 1.9 years (n=31) and 2-18 years (n=69). Congenital MV lesions were seen in 78 (71.6%) patients. MV regurgitation was the predominant pathophysiology in 79 (72.4%) patients, with isolated MV disease in 59 (54.1%). Various surgical techniques were used according to the type of lesion.

Results: Hospital mortality was 5.5% and late mortality 7.3%. Actuarial survival and actuarial reoperation-free survival were 87.1% and 87.4%, respectively. Freedom from MV replacement was 90.8%. Mean follow-up was 9.5±5.4 years. Multivariate analysis demonstrated age <3 months (p=0.0379) and associated cardiac anomalies (p=0.003) as strong predictors for poor overall freedom from reoperation and mortality. Different surgical techniques are independent positive factors in early and late survival and freedom from reoperation.

Conclusions: Mitral valve reconstruction in children achieves satisfactory early and long-term survival and reoperation rates. Risk factors for mortality and reoperation were age <3 months and associated cardiac anomalies. Use of the most appropriate surgical technique yielded beneficial effects on early and long-term clinical outcome.

*STS Member

P19

Prevention of Post-Repair Pulmonary Vein Stenosis in Patients With Total Anomalous Pulmonary Venous Return

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Background: Pulmonary vein stenosis (PVS) after repair of total anomalous pulmonary venous return (TAPVR) is still serious complication although several surgical techniques for the treatment of PVS have been introduced. We reviewed our experience from a technical point of view to prevent post-repair PVS (PR-PVS).

Methods: Between Jan. 1995 and Jan. 2006, 76 patients suitable for two-ventricle underwent TAPVR repair. Extra-cardiac anastomosis was done between left atrium (LA) and common pulmonary vein chamber (CPVC) in supra- and infra-cardiac type. In all patients posterior wall of LA was excised for sufficient stoma size and if necessary for exposure. SVC, MPA, or ascending aorta was transected in supra-cardiac type and IVC in infra-cardiac type. CPVC opening, if it had been small, was fixed to adjacent tissue to function as splint. Mean follow-up duration was 41.4±29.1 months and follow-up was possible in all patients.

Results: The median age and body weight at operation were 26.5days (0-478 days) and 3.4kg (1.4-9kg). Early mortality was 3.9%(3/76). Causes of death were pulmonary hypertensive crisis, sepsis, and sudden death of unknown origin. There was PR-PVS in 2 patients (early:1, late:1). Both patients were cardiac type drained to coronary sinus. They underwent re-operations but only one patient has survived. Overall survival at 5 years and 5-year freedom from PVS were 94.6±2.6% and 97.2±2.0%, respectively.

Conclusions: There was no PVS in patients who underwent extra-cardiac anastomosis between LA and CPVC. Therefore it could be said that our technical modifications might be effective in preventing PR-PVS.

*STS Member

P20

Intitial Experience With Hybrid Palliation for Neonates With Single Ventricle Physiology

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Background: Hybrid palliation (bilateral pulmonary artery banding and ductal stenting) is an emerging method to palliate neonates with functional single ventricles.

Methods: Outcomes were reviewed for a newly established Hybrid program (18 patients) including three indications: Norwood-Alternative (n=11), Pre-transplant palliation (n=5), Salvage (n=2). Comparison is made with a concurrent group of patients treated with a Norwood procedure (n=25).

Results: Among Norwood-Alternative patients, there were 2 deaths followed by 8 Stage II procedures with one death. One salvage patient died. All pre-transplant palliation patients underwent subsequent transplantation with one post-transplant death. Three of the deaths were due to clearly defined technical errors and one death (salvage patient) due to an error in patient selection. Kaplan-Meier survival at one year was 68% for the Hybrid patients. By indication, survival at one year was: Norwood-Alternative (80.0%), Pre-transplant palliation (69.7%), and Salvage (50.0%) (p=0.31). Overall Norwood survival at one year was 71.4% (p=0.56 vs overall Hybrid). Among Norwood-Alternative survivors, combined (Stage I + Stage II) intubation times, ICU times, and hospital length of stay tended to be shorter than Norwood survivors but did not reach statistical significance (9.6+/-6.9, 15+/-8, and 35.7+/-15.3 vs 15.4+/-4.9, 23.5+/-16.7, and 50.5+/-43.6 days respectively, p=NS).

Conclusions: Despite comparison between a newly established Hybrid program and a well-established Norwood program, the Hybrid strategy provides initial results which are comparable to those obtained with the Norwood procedure. As refinements in the Hybrid strategy are made in terms of patient selection and technical issues, survival can be expected to rapidly improve.

*STS Member

P21

Scimitar Syndrome: A 20-Year Single Institution Experience

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Background: To review our experience in management of Scimitar Syndrome over the last 20 years.

Methods: Clinical records, echocardiographic images, catheterization data, operative reports and follow-up information were recorded and reviewed. The patients (pts) were divided into infant (<1 year) and adult (>1 year) forms. Those who had complete repair of the anomalous vein were subdivided into baffling or reimplantation of the anomalous scimitar pulmonary vein to the back of the left atrium.

Results: Between 1986-2006, 36 patients (pts) presented with Scimitar Syndrome. There were 20 females and 16 males (mean age 29 months) with 22 pts in the infant group. Higher proportion of infants had right lung hypoplasia and 4 had primary right pneumonectomy as sole therapy with good outcome. Thirty pts had systemic collateral supply to the right lung; 20 had coil embolization. Coil embolization was the only intervention in 5 pts. Surgical repair of the Scimitar vein was accomplished in 21 pts with 10% mortality. No major differences encountered in the incidence of pulmonary hypertension, early mortality and late survival of the 2 age groups. Also, no differences in the early mortality, late outcome and rates of obstruction between different methods of surgical repair.

Conclusions: Comparable good results are achievable in infants and older children with Scimitar Syndrome with aggressive approach comprising liberal coil embolization of collateral vessels and early surgical repair of the anomalous pulmonary vein. Primary pneumonectomy may be optimal in selected pts. Both baffling and reimplantation techniques provide similar outcomes.

*STS Member

P22

Right Ventricular Outflow Tract Reconstruction in Patients With Congenital Heart Disease: Is Contegra Conduit a Real Alternative to Homografts?

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Background: Pulmonary homografts (PH) have been the preferred valved conduits for RVOT reconstruction in the US since the mid-1980s. Although PHs have worked well for Ross patients, the extracardiac conduits used for congenital heart surgery suffer from degeneration and develop regurgitation and obstruction that require replacement within 4-6years. Recently a valve-containing bovine jugular vein (Contegra®) has been introduced in clinical trials for a variety of patients requiring RVOT reconstruction.

Methods: Between 1999 and 2006, 65 patients received Contegra conduits for RVOT reconstruction. Preoperative diagnoses were: as an initial conduit (n=44), as a reconstruction of RVOT after previous conduit repair(n=19), and as a part of double switch (n=1) or one and haft ventricular repair(n=1). These 65Contegra conduits were compared to 59 PH conduits implanted during the same time period.

Results: All patients are well on follow-up from 4 months to 7 years with 2 early and 5 late deaths. A comparison of outcomes of RVOT reconstruction with PH and Contegra conduits on follow-up in non-Ross patients are shown.

	Mean age(yrs)	Mean follow-up(yrs)	Number of patients with distal stenosis	Mean peak RVOT gradient(mmHg)	PI(>moderate)	Reintervention	Conduit Explant
PH(n=59)	9.5	3.7	15	20.1	23	20	18
Contegra(n=65)	8.4	3.0	14	14.4	2	9	1
	P=NS	P=NS	P=NS	P=0.05	P<0.001	P=0.02	P<0.001

Conclusions: These data demonstrate excellent results with the Contegra conduit for RVOT reconstruction in children and young adults. The Contegra conduit may serve as an alternative for RVOT reconstruction for older children and young adults, particularly since mid term insufficiency is less. Our data suggest Contegra conduit function early is comparable to the PH. Contegra conduits develop less obstruction and regurgitation than PHs at mid-term. Questions of long-term durability and significance of echocardiographic stenosis remain unanswered. The Contegra valved conduit is currently our conduit of choice for RVOT reconstruction in children and young adults.

*STS Member

P23

Myocardial Cytochrome Oxidase is Inhibited After Cardioplegic Arrest

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Background: Post-cardiopulmonary bypass (CPB) ventricular dysfunction is a major cause of morbidity and mortality. Cardioplegic cardiac arrest during CPB may result in myocardial ischemia-reperfusion injury. Mitochondrial dysfunction and impaired oxidative phosphorylation may be a mechanism of post-CPB myocardial dysfunction.

Methods: Neonatal piglets underwent CPB with cardioplegic cardiac arrest (CPLG), CPB without cardiac arrest (PUMP) or sham sternotomy (n=8 per group). CPLG and PUMP piglets underwent sternotomy with cannulation of the external jugular vein and internal carotid artery. CPB was initiated for 1.5 hours. Only CPLG piglets underwent 1 hour of cardiac arrest induced by administration of cold crystalloid cardioplegia during CPB. Animals were observed for 4 hours following separation from CPB. Sham piglets underwent sternotomy, neck dissection, and observation without cannulation or CPB. Left ventricular shortening fraction (LVSF) was measured by trans-thoracic echocardiography at baseline and prior to euthanasia. LV mitochondria were isolated. Cytochrome oxidase (CcOx) activity and heme a,a3 content were determined. Protein immunoblotting for LV CcOx subunit I was performed.

Results: CcOx activity significantly decreased in a pattern of noncompetitive inhibition following cardioplegic arrest. LVSF significantly decreased after CPLG compared to PUMP and sham controls. Heme content and steady state levels of CcOx subunit I were not significantly different between groups.

Conclusions: Cardioplegic cardiac arrest causes noncompetitive inhibition of myocardial CcOx and is associated with decreased LV function. Mitochondrial injury with impairment of oxidative phosphorylation is a likely mechanism of myocardial dysfunction. Cardioprotective strategies using crystalloid cardioplegia do not prevent cardiac mitochondrial damage.

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ADULT CARDIAC SCIENTIFIC POSTERS P24 – P62

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P24

Therapeutic Benefit of Intrathecal Injection of Marrow Stromal Cells on Previous Ischemic Spinal Cord in Rabbits

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Background: Transplantation of marrow stromal cells (MSCs) before the spinal cord ischemia has been shown to attenuate neurologic injures. We sought to investigate the therapeutic effects of MSCs on previous ischemic spinal cord.

Methods: MSCs were expanded in vitro and pre-labeled with bromodeoxyuridine. Spinal cord ischemia was induced in rabbits by infrarenal aorta occlusion for 30 minutes. Four groups were enrolled. About 1x108 MSCs were intrathecally injected 2 hours (group MSC-2h), 1 day (group MSC-1d) or 2 days (group MSC-2d) after spinal cord ischemia, respectively. The control group received intrathecal injection of medium alone. Hind-limb motor function was assessed during a 4-week recovery period with Tarlov criteria, and then histologic examination was performed.

Results: MSCs still could be found in the spinal cord 4 weeks after transplantation. Compared with the control group, MSCs transplantation significantly increased the capillary density in the host spinal cord. Severe neurologic deficits occurred in the control animals and no functional recovery was found 4 weeks later. After a 4-week recovery, marked functional improvement was found in groups MSC-2h and MSC-1d, but not in group MSC-2d. The intact motor neurons were much greater in group MSC-2h. Although more neurons were preserved in group MSC-1d, the difference was not statistically significant. The neurons of group MSC-2d was similar to that of the controls.

Conclusions: Intrathecal injection of MSCs enhances angiogenesis in the host spinal cord and improves the motor functional recovery after spinal cord ischemia. The therapeutic time window is critical for the therapeutic effects of MSCs.

*STS Member

P25

Apoptosis Inhibition Improves Cardiac Allograft Protection During Long-Term Ischemic Storage

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Background: Cardioplegic arrest (CA) is associated with myocardial apoptosis induction. Data suggest that apoptosis inhibition during regional myocardial ischemia reduces infarct size and improves regional contractility. We sought to investigate whether inhibition of the apoptosis-signal-pathway would also improve left ventricular (LV) function following prolonged cold CA.

Methods: Fourteen adult rats were anesthetized and mechanically ventilated. Hearts were arrested by administration of ice-cold crystalloid cardioplegia (Bretschneider solution, Custodiol® , 10 ml/kg) with and without supplementation of a cell permeable non-selective caspase-inhibitor (z-VAD-fmk, 10 μM, n=7 each). Hearts were stored for 18h in cardioplegia (4°C). Subsequently, hearts were reperfused with modified Krebs-Henseleit-Solution (37°C) on a Langendorff-System. A balloon connected to a pressure transducer was inserted in the LV and inflated to a diastolic pressure of 10 mmHg. LV pressure, dp/dtmax and heart rate were recorded continuously for 90 min.

Results: After 18h cold CA, hearts with apoptosis-inhibition had higher left ventricular pressures throughout 90 min reperfusion as compared to those without apoptosis-inhibition (25.4±4.3 vs 13.3±5.0 mmHg, 28.1±4.3 vs 13.9±5.1 mmHg, 29.7±4.8 vs 13.7±5.3 mmHg, and 29.9±5.0 vs 14.4±5.2 mmHg at 60, 70, 80, am 90 min, respecitvely; $p < 0.02$). Dp/dtmax was significantly higher with apoptosis inhibition at 70, 80, and 90 min reperfusion (486±79 vs 258±93 mmHg/s, 512±90 vs 263±98 mmHg/s, and 544±96 vs 282±99 mmHg/s, respectively; $p < 0.05$).

Conclusions: Apoptosis-inhibition preserves LV-function and represents a new promising strategy in myocardial protection for long-term cardiac allograft ischemic storage.

*STS Member

P26

Aortic No-Touch Techniques Have a Favorable Effect on Neurologic Causes of Mortality After CABG

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Background: It is hypothesized that avoidance of aortic manipulations may decrease neurologic morbidity after coronary artery bypass grafting (CABG).

Methods: The hospital records of 11.702 consecutive patients that underwent isolated CABG in a ten year period between 03/1996 and 04/2006 were retrospectively investigated, to evaluate the causes of in-hospital mortality (30-days) in different subsets of patients. Three groups of patients were identified: Group 1 consisted of 7851 patients who underwent off-pump CABG without touching the aorta (proximal anastomoses of free grafts on the internal thoracic artery pedicles). Group 2 patients consisted of 2533 patients who underwent off-pump CABG with proximal anastomoses on the aorta. Group 3 patients consisted of 1318 patients who underwent conventional CABG utilizing cardiopulmonary bypass.

Results: The demographic characteristics as well as operative variables of patients were not significantly different between the three groups. Causes of mortality are depicted in the Table. Group 3 patients had significantly lower cardiac causes of mortality ($p<0.05$). Off-pump CABG presented no benefit regarding pulmonary causes of mortality. In-hospital mortality was significantly lower in the Group 1, due to decreased neurologic causes of mortality ($p<0.05$ vs. Group 2, $p<0.001$ vs. Group 3).

Conclusions: Avoidance of aortic manipulations and cardiopulmonary bypass may decrease neurologic causes of mortality in patients undergoing CABG.

Causes of Mortality

Cause	Group 1	Group 2	Group 3
Cardiac	16 (32.6%)	7 (30.4%)	4 (21%)
Pulmonary	11 (22.4%)	5 (21.7%)	4 (21%)
Neurologic	11 (22.4%)	9 (39.1%)	9 (47.3%)
Other	11 (22.4%)	2 (8.7%)	2 (10.5%)
TOTAL	49/7851 (0.6%)	23/2533 (0.9%)	19/1318 (1.4%)

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P27

Twenty-Five Years of Heart-Lung Transplantation: A Single Center Study

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Background: The purpose of this study was to evaluate the long-term outcomes of heart-lung transplantation (HLTx) at a single center over 25 years and to compare contemporary outcomes with previous years.

Methods: A retrospective analysis of patients receiving HLTx at our institution from 1982 to 2006 was performed. During this period 116 patients underwent HLTx. For analysis, patients were divided into two groups. Patients in group A (n=80) underwent HLTx between May 1982 and June 1993, and in group B (n=36) between July 1993 and June 2006. During the latter period, current organ preservation techniques and immunosuppressive protocol have been implemented including prostaglandin E1 and nitroglycerin injection to the donor lungs at the start of the perfusion of 70mL/kg of Perfadex, 1 liter of Celsior infusion to the heart, cold blood cardioplegia and pulmonoplegia during implantation, controlled reperfusion with terminal warm blood cardioplegia and pulmonoplegia, and immunosuppression with Campath induction and tacrolimus maintenance.

Results: Mean age of 116 recipients (50 male and 66 female) was 35.8+/-10.1 years. Indications for HLTx were primary pulmonary hypertension (n=52), congenital heart disease with secondary pulmonary hypertension (n=40), dilated cardiomyopathy with fixed pulmonary hypertension (n=5), and others (n=19).

	Recipient Age (yr)	Donor Age (yr)	Ischemic Time (min)	Transpulmonary gradient (mmHg)
Group A	33.8+/-8.9	22.8+/-9.1	193+/-65	47.0+/-19.4
Group B	40.6+/-11.2	31.5+/-15.7	271+/-79	45.3+/-22.5
p value	0.0006	0.0004	<0.0001	0.8604

Survival (%)	30-day	1-year	5-year	10-year
Group A	73.8+/-4.9	47.5+/-5.6	30.0+/-5.1	22.5+/-4.7
Group B	75.0+/-7.2	68.0+/-8.1	55.7+/-9.2	50.1+/-9.9

Group B had better (p=0.021, Log Rank) survival compared to group A.

Conclusions: We conclude that in this large single center experience, short and long term survival following HLTx have improved significantly in the current era compared to previous years despite a more aggressive posture of accepting older recipients and older donors.

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P28

Oral Pretreatment With Phlorotannin, a Polyphenolic Compound Derived From Brown Algae, Attenuates Surgical Ischemia-Reperfusion Injury After Cardioplegic Arrest

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Background: Several epidemiological studies suggest that polyphenols, natural antioxidants in foods and beverages, can reduce the mortality from ischemic heart disease. The aim of this study was to evaluate the possible role of oral pretreatment with phlorotannin, a polyphenolic compound derived from brown algae, in cardioprotective effects against surgical ischemia-reperfusion injury.

Methods: Rats were divided into two groups as follows: In polyphenol group (n=10), rats were given the water, in which phlorotannin were dissolved (3.11 mg/ml equivalent to 1 mM), for two weeks. In control group (n=10), rats were given regular water. Isolated hearts were set on a Langendorff apparatus and perfused. After 20 minutes of equilibration, the heart was subjected to hypothermic surgical global ischemia for 90 minutes by administrating cold St. Thomas' Hospital cardioplegic solution every 30 minutes. The hearts were reperfused for 60 minutes.

Results: Positive dP/dt values at 60 minutes after reperfusion were significantly greater in polyphenol group than in control group. 8-OHdG index, a marker for oxidative DNA damage, in polyphenol-group was significantly lower than in control group. TUNEL-positive cardiomyocytes were significantly less identified in polyphenol group than in control group. In Western blotting analysis, the ratio Bcl-2/Bax expression was significantly higher in polyphenol group compared with control group.

Conclusions: Oral pretreatment with brown algae polyphenolic compound provides efficient cardioprotective effects against surgical ischemia-reperfusion injury after standard cardioplegic arrest by suppressing oxidative stress and apoptotic change. Pre-operative supplementation of polyphenolic compound may enable patients to get more rapid recovery from surgical ischemia reperfusion injury.

Results after reperfusion

Variables	Control group	Polyohenol group
Heart rate (beats/min)	246.0 ± 48.9	268.2 ± 55.9 *
+dP/dT (mmHg/sec)	1050 ± 590	1608 ± 654 *
Coronary flow (ml/min)	11.3 ± 3.9	12.0 ± 4.9
8-OHdG index	285.9 ± 45.1	74.5 ± 8.6 *
%TUNEL positive cardiomyocytes	10.3 ± 2.5	4.0 ± 3.0 *

*p<0.001 vs. Control group

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P29

Left Ventricular Mass Regression Following Aortic Valve Replacement is Not Influenced By Elevated Residual Transvalvular Gradients

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Background: Left ventricular mass (LVM) regression following aortic valve replacement (AVR) is presumed to be related to the extent of reduction in left ventricular afterload. We analyzed the impact of persistently elevated transvalvular gradients on resolution of left ventricular hypertrophy (LVH) in patients who underwent AVR.

Methods: Patients with severe aortic stenosis undergoing AVR in a prospective randomised controlled trial were analysed. Tranthoracic echocardiography was performed pre-operatively and at 1-year post-operatively to document transvalvular gradients and LVM. In order to evaluate the impact of elevated gradients at 1-year on LVM regression, these patients were stratified into 2 groups A) low residual gradient (<25 mm Hg) and B) elevated residual gradient (>25 mm Hg).

Results: Of 161 patients who underwent AVR, 41 patients had a peak gradient of > 25 mm Hg at 1-year. The effective orifice area (EOA) was significantly smaller in group B. Despite an average peak gradient almost double that of the low gradient group (A; 16 +/- 5 VS. B; 31 +/- 7 mm Hg, $p < 0.001$), LVM regression was not significantly different between groups (A; 41 +/- 86 vs. B; 30 +/- 70 g, $p = 0.34$). There was no difference between groups in mean arterial blood pressure during follow-up.

Conclusions: Resolution of LVH occurs to a similar extent in patients with persistent elevated transvalvular gradients compared with those with lower gradients following AVR. LVM regression measured by echocardiography at rest may be an insensitive means for evaluating the hemodynamic performance of prosthetic heart valves.

*STS Member

P30 (Thoracic Surgery Education)
The Practice of Routine Coronary Angiography: Is There a Role for Cardiovascular Surgeons?
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Background: Currently, the practice of cardiovascular surgeons is restricted to the operating room and prevents them from performing diagnostic and therapeutic coronary catheter based procedures. The purpose of this study is to validate the potential for involvement of cardiac surgeons in the practice of diagnostic coronary angiography in the catheter laboratory.

Method: The author subjected himself to a one-year training by interventional cardiologists. Subsequently the author became comfortable in performing procedures unassisted. Between November 2005 and May 2006 the author performed 102 diagnostic coronary angiographies as principal operator. The catheter laboratories consisted of Phillips Integra and General Electric OEC 9800 systems.

Results: All diagnostic procedures were completed successfully. In two cases it was difficult to cannulate the right coronary artery ostia due to anatomical abnormalities but were pictured using aortic root shots. Twenty-eight of the 102 patients proceeded with further catheter based intervention: 13 immediately and 15 at a later session. Diagnostic procedures were completed between 8 and 21 minutes from puncture time. Two patients developed groin hematomas which were treated conservatively by compression.

Conclusions: We conclude that with adequate training cardiovascular surgeons can perform diagnostic coronary angiography safely and efficiently. In the current status in which at least 80% of bypassable coronary artery disease is treated by catheter based intervention it is recommended that cardiac surgeons be encouraged to train and perform coronary catheter procedures as a second track. Policies must be initiated by cardiovascular surgical boards and societies to enable cardiac surgeons to enter the catheter laboratory and perform coronary catheter procedures.

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P31

Toll-like Receptor 4 on Human Aortic Valves Mediates Mechanisms of Aortic Stenosis

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Background: Calcific aortic stenosis may be an inflammatory disease with active bone formation in the valve leaflets rather than a "degenerative" process in which calcium passively accumulates. However, the mechanisms are unknown. Toll-like Receptors (TLRs) mediate inflammatory diseases. We hypothesized that TLR 4 stimulation on human aortic valve myofibroblasts (AVMs) produces pro-inflammatory cytokines which in turn are associated with up-regulation of bone forming genes.

Methods: Human AVMs were isolated from normal aortic valves obtained from explanted hearts at the time of transplantation (n=5) and grown in cell culture. 4 hours after stimulation of TLR 4 (endotoxin 200ng/ml, LPS), proinflammatory cytokines (IL-6, IL-8) were measured in the cell growth media (ELISA). Gene expression in the AVMs for bone-forming genes was determined by gene chip (Integrin-ß2, Osteopontin, TGF-ß1). Statistics employed unpaired t-test ($p<0.05$ significant).

Results: TLR 4 stimulation produces pro-inflammatory cytokines and up-regulation of bone-forming genes in human aortic valve cells.

Conclusions: For the first time, this study demonstrated that functional TLR 4s are present on human aortic valve cells. Their activation produces pro-inflammatory cytokines and up-regulates genes associated with bone formation in the human aortic valve. These data provide significant insight into the inflammatory mechanisms leading to calcific aortic stenosis.

Cytokine	Control	TLR 4 Stimulation
IL-6 (pg/ml)	415 +/- 23	1396 +/- 145*
IL-8 (pg/ml)	33 +/- 9	312 +/- 51*

Gene	TLR4 Stimulation vs control (fold)
Integrin-B2	93*
Osteopontin	65.7*
TGF-B1	4.8*

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P32

A Novel Subpopulation of CD34+ Stem Cells Expressing Early Cardiac and Endothelial Markers: Evidence for In Vitro Differentiation Potential and In Vivo Engraftment With Functional Improvement in an Animal Model

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Background: Clinical cellular transplantation for post-infarction myocardial ischaemia is mainly linked at present with crude bone marrow preparations. Minimal information is provided regarding the regenerative potential of these cell populations based on molecular/differentiation studies. We have identified a multipotent subpopulation of adult bone marrow-derived stem cells that may be isolated from the CD34+ fraction.

Methods: G-SCF mobilised peripheral blood progenitor cell samples were obtained in excess of clinical requirements. Following positive selection of the CD34+ fraction, the candidate subpopulation of interest is isolated via adherence to tissue culture plastic. Cells were analysed with PCR, microarray, immunocytochemistry, western blot and flow cytometry for stem cell, endothelial and cardiac markers. In vitro differentiation studies were also carried out. Finally, cells labelled with iron oxide nanoparticles were injected in the peri-infarct area of rats having suffered myocardial infarctions.

Results: Positive expression for specific cardiac markers including GATA-4, Nkx2.5, MEF-2C, NPPA and phospholamban was detected. Positive expression was also documented for primitive endothelial markers such as TAL-1 and CD133. Cells were also positive for mature endothelial markers including PECAM, VEGF-R2, ICAM-2, CDH5 and von Willebrand factor amongst others. These findings were further verified via demonstration of protein expression. In vitro culture under pre-defined conditions was indicative of directional differentiation potential. Expression of homing to injury receptors was shown. Finally preliminary animal work showed evidence of engraftment (assessed by MRI and histology) as well as functional improvement.

Conclusions: The candidate CD34+ subpopulation appears to be an expandable autologous multipotent population suitable for clinical scale application.

*STS Member

P33

Off-Pump vs. On-Pump Coronary Revascularization in High-Risk Respiratory Patients

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Background: Cardiopulmonary bypass (CPB) results in lung injury that may be more severe in those with reduced respiratory reserve. We hypothesize that off-pump coronary artery bypass grafting (OPCAB) limits this injury, resulting in reduced rates of postoperative complications. This study compares the rate of respiratory complications in patients with chronic obstructive pulmonary disease (COPD) undergoing myocardial revascularization with and without CPB.

Methods: Data from 261 patients (133 OPCAB, 128 conventional coronary artery bypass (CAB)) with COPD who underwent myocardial revascularization were retrospectively analyzed for differences in respiratory complications. The OPCAB and CAB groups were compared for atelectasis, pleural effusion, reintubation, pneumonia, acute respiratory distress syndrome (ARDS), pulmonary embolism (PE), extubation time, ICU stay, hospital stay, 30-day readmission, mortality, re-exploration, and cerebral vascular accidents (CVA).

Results: Preoperatively, the OPCAB and CAB groups were similar with regard to severity of COPD, smoking history, age, left ventricular ejection fraction, intra-aortic balloon pump use, body surface area, congestive heart failure, diabetes mellitus, and CVA. Postoperatively, the OPCAB group demonstrated a significantly lower incidence of re-exploration (0 vs. 3.9% [n=5], p=0.03) and CVA (0.8% [n=1] vs. 5.5% [n=7], p=0.03). Significant differences could not be demonstrated between the OPCAB and CAB groups for atelectasis, pleural effusion, reintubation, pneumonia, ARDS, PE, extubation time, ICU stay, hospital stay, readmission, or mortality.

Conclusions: Despite a significant reduction in re-exploration and CVA, OPCAB does not reduce the rate of pulmonary complications in patients with COPD. This suggests that the presence of COPD alone is not a reason to avoid CPB.

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P34

Intraoperative Graft Assessment Reduces Myocardial Injury After Coronary Bypass Surgery

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Financial Disclosure: N.D. Desai, Speaking Honoraria, D. Speakers Bureau/Honoraria (Speakers bureau, symposia, and expert witness); S.E. Fremes, Advisory Board, F. Consultant/Advisory Board.

Background: Graft failure is associated with perioperative myocardial infarction after coronary artery bypass grafting. The purpose of this study was to determine if intraoperative angiography to detect graft problems decreased perioperative myocardial infarction(MI) rates in a prospectively followed cohort.

Methods: Between January 2001 and April 2006, 2738 patients underwent coronary bypass surgery and had routine post-operative troponins measurements. 195 of these patients underwent routine intraoperative angiography with the Novadaq Spy™ fluorescence angiography system to verify graft patency. Enzymatic perioperative MI was defined as peak 12-48 hour postoperative level of cardiac troponin(T) in the highest quintile (≥1.3ng/ml).

Results: Among intraoperative angiography patients, there were 7(3.6%) perioperative graft revisions. Postoperative MI occurred in 11.8% of patients undergoing intraoperative angiography versus 20.0% in the control group (univariate $\chi 2$ p= 0.005). A fully adjusted logistic regression model (including adjustment for disease severity, preoperative MI, cardiopulmonary bypass[CPB] use) revealed that use of intraoperative angiography was strongly protective against perioperative MI(OR 0.6, 95%CI 0.4-0.9). Increasing age, preoperative creatinine, preoperative MI, use of CPB, and greater coronary disease burden were independently associated with an increased risk of perioperative MI. Patients undergoing intraoperative angiography were matched to controls using propensity matching with 20 preoperative variables (192 pairs=98% match rate). Matched patients in the intraoperative angiography group had significantly less perioperative MI (12.0% versus 20.3% in controls,$\chi 2$ p= 0.027).

Conclusions: Intraoperative angiography with graft revision led to significantly less perioperative myocardial infarctions by enzymatic criteria. These data support the increasing use of intraoperative graft assessment to verify graft patency.

*STS Member

P35

Cripto Stimulates Myocardial Proliferation and Enhances Ventricular Function in Ischemic Cardiomyopathy

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Background: Cripto-1 (CR-1) is a member of the EGF-CFC protein family and performs an essential role in cardiac lineage specification and differentiation. CR-1 also activates the MAPK and AKT pathways, which are involved in cellular proliferation and survival. In this study, we examine the therapeutic use of CR-1 to induce myocardial proliferation and enhance left ventricular function in a rat model of ischemic cardiomyopathy.

Methods: Wistar rats underwent left anterior descending coronary artery ligation followed by peri-infarct injection of CR-1 or saline control. Cellular proliferation was examined by western blot detection of proliferating cell nuclear antigen (PCNA) in hearts explanted 48 hours after surgery. Borderzone myofilament density was quantified using Masson's Trichrome staining two weeks after surgery. Echocardiography and left ventricular pressure catheter evaluated myocardial function also two weeks post-ligation.

Results: PCNA showed increased expression in borderzone tissue (36.1 ±11.7 RVU vs 4.47 ± 4.47 RVU, $p<0.03$). Remote myocardial tissues showed no expression. Myofilament density was also increased (31.3 ± 1.4 myofibrils/hpf, n=3 vs. 23.6 ± 2.5 myofibrils/hpf, n=4, $p<0.025$). CR-1 therapy improved function as illustrated by increased maximal left ventricular pressure (80.4 ± 2.8 mmHg vs. 71.0 ± 3.8 mmHg; $p<0.03$; n=9) and dP/dtmax (4371 ± 389 mmHg/s vs. 3342 ± 411 mm/Hg/s; $p<0.04$). Echocardiography (n=9) revealed increased ejection fraction (50.7 ± 4.0% vs. 38.4 ± 5.5%; $p<0.045$) and fractional shortening (22.9 ± 2.3% vs. 15.4 ± 3.3%; $p<0.043$).

Conclusions: CR-1 induces cardiac cellular proliferation and enhances hemodynamic function in ischemic cardiomyopathy.

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A Prospective, Randomized Controlled Trial Comparing Off-Pump Coronary Artery Bypass Surgery With Conventional Coronary Artery Bypass Surgery Utilizing Cardiopulmonary Bypass

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Background: Preliminary reports have documented the safety of Off-Pump Coronary Artery Bypass (OPCAB) compared with Conventional Coronary Artery Bypass Graft (CCAB) surgery. While OPCAB may be associated with improvement in some short-term outcomes, long-term outcomes and influence on neurocognitive function have not been fully assessed. We proposed to examine short-term morbidity and mortality and long-term neurocognitive outcomes following coronary artery bypass surgery performed with and without the use of extracorporeal circulation.

Methods: We prospectively randomized 201 patients to CCAB (102) or OPCAB (99) undergoing non-emergent isolated CABG surgery. The primary endpoints of the study included index-admission mortality, and a combined morbidity (defined as stroke, TIA, low cardiac output syndrome, or return to OR for bleeding). Neurocognitive function was assessed using an 11 test neurocognitive battery at baseline (T1), discharge (T2), and 6 months (T3). Neurocognitive deficit was defined as 20% reduction from baseline in 20% of the tests. Risk ratios (RR) and 95% confidence intervals (95%CI) were calculated based on intention to treat analysis.

Results: There was one death in the CCAB group. Combined morbidity for CCAB and OPCAB were 9.8% (10/102) and 8.1% (8/99), respectively (RR: 0.89, 95%CI: 0.52-1.53). There was no difference in neurocognitive function at discharge (T2 vs. T1: 0.81, 0.61-1.07) or at 6 months (T3 vs. T1: 0.94, 0.71-1.26).

Conclusions: There is no significant difference in combined postoperative morbidity or mortality, or neurocognitive function by method of revascularization. Further work remains to identify whether these findings persist beyond 6 months.

Morbidity and Neurocognitive Outcomes

Outcome	Discharge RR (95%CI)	6 Month Follow-up RR (95%CI)
Combined Morbidity	0.89 (0.52-1.53)	-
Neurocognitive Deficit	0.81 (0.61-1.07)	0.94 (0.71-1.26)

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P37

Coronary Surgery in Octogenarians: Is Age Just a Number?

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Background: Coronary surgery in octogenarians may infer higher perioperative risk and greater comorbidities. We sought to establish whether our experience justifies any age-related concerns.

Methods: Retrospective analysis of prospectively compiled pre-, peri- and post-operative data from 2737 patients undergoing isolated coronary surgery over a 4-year period. Data were analysed comparing 3 age groups (70-74, 75-79, >80 years) comprising 547, 349 and 135 consecutive patients respectively.

Results: Most preoperative risk factors for perioperative mortality or complications did not differ significantly between age groups but there was a higher incidence of recent infarction, urgent operation, left mainstem and multivessel disease among octogenarians. There were no significant operative differences other than lower usage of multiple arterial grafts in octogenarians. Use of off-pump technique did not differ significantly between age groups (41%, 40%, 47% of cases). Post-operative mortality did not increase with age (1.1%, 2.9%, 2.2%: p=ns) unlike the median post-operative stay (6, 6, 8 days: p<0.01). There was no significant increase in the incidence of any single complication, including stroke, but octogenarians were less likely overall to have an uncomplicated course (p=0.008). On logistic regression analysis use of cardiopulmonary bypass, unstable angina and age>80 were independent predictors of non-fatal complication.

Conclusions: Preoperative data might imply some bias against less pressing cases among octogenarians. Outcomes, however, indicate that they do not necessarily carry unacceptable perioperative risk, and equivalent mortality can be achieved with only a modest increase in hospital stay and non-fatal complication. The effect of off-pump technique in octogenarians merits further investigation.

Summary of data

	70-74 years (n=547)	75-79 years (n=349)	>80 years (n=135)	p value
Euroscore excluding age	2	2	3	ns
Preoperative infarct within 90 days	14.8% (81)	21.5% (75)	28.9% (39)	p=0.001
3 vessel disease	80.1% (438)	87.1% (304)	91.9% (124)	p=0.03
Left mainstem stenosis	33.3% (182)	42.1% (147)	45.9% (62)	p=0.004
Unstable coronary syndrome	25.6% (140)	33.8% (117)	47.4% (64)	p<0.001
Impaired left ventricular function	26.5% (145)	30.1% (105)	32.6% (44)	ns
Mean number of grafts	3.02	3.10	3.27	ns
Multiple arterial grafts	38.6% (211)	27.5% (96)	23.7% (32)	p=0.02
Median ITU days(interquartile range)	1 (1-2)	1 (1-2)	1 (1-2)	ns
Post-operative renal failure	2.7% (15)	4.6% (16)	3.0% (4)	ns
Post-operative stroke	2.0% (11)	2.0% (7)	0.7% (1)	ns
Prolonged ventilation (>5 days)	0.9% (5)	2.3% (8)	0.7% (1)	ns
Any non-fatal complication	15.7% (86)	20.1% (70)	26.7% (36)	p=0.008
30 day mortality	1.1% (6)	2.9% (10)	2.2% (3)	ns

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P38

Is the Total Artificial Heart Superior to BIVAD Therapy as a Method of Bridging Patients to Heart Transplantation?

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Financial Disclosure: R.G. Smith, Syncardia Systems, Employment (full or part-time); J.G. Copeland, Syncardia Systems, Employment (full or part-time)

Background: The optimal treatment for end-stage heart failure is transplantation. The lack of donor organs has led to the development of ventricular assist devices(VADs) and total artificial hearts(TAHs), which can bridge patients to transplant. These two devices represent different strategies of circulatory support. In order to determine the optimal method of circulatory support in patients with biventricular failure awaiting transplantation, we compared the results of patients who received total cardiac replacement to those who received support of their native heart with BIVAD therapy.

Methods: A review of the VAD database at the University of Pennsylvania identified 90 patients who received BIVADs from October 1995-August 2005. These results were compared to 61 patients who received the Cardiowest TAH at the University of Arizona from January 1993 to December 2001.

Results: The two cohorts were matched with regards to age and body surface area. Ischemic heart disease was the predominant etiology of heart failure in both groups. Patients receiving the TAH had higher pre-implant ejection fractions (20% vs 16%, $p<0.05$). The length of mechanical support prior to transplantation was longer in TAH patients (93 vs. 29 days, $p<0.05$). The incidence of stroke (5% vs. 29%, $p<0.05$), and reoperation (20% vs. 70%, $p<0.05$), was lower in the TAH group. Patients receiving the TAH had a higher incidence of survival to transplantation (77% vs. 46%, $p<0.05$), and were more likely to be discharged from the hospital (67% vs. 38%, $p<0.05$).

Conclusions: When bridging patients with biventricular failure to heart transplantation, total cardiac replacement may confer morbidity and mortality benefits over biventricular support with VADs.

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P39

Prognostic Factors and Clinical Outcome in Patients With ST-Elevation Myocardial Infarction Undergoing Coronary Artery Bypass Surgery in the Era of PCI

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Background: Treatment of ST-elevation myocardial infarction (STEMI) has undergone great evolution since introduction of percutaneous coronary intervention (PCI). The purpose was therefore to assess the outcome of patients with STEMI undergoing surgical revascularization with coronary artery bypass grafting (CABG).

Methods: A total of 123 consecutive patients underwent CABG therapy with STEMI between 01/2000 and 01/2006 at our institution. Prospectively recorded preoperative, intra-operative and postoperative data were retrospectively screened for in-hospital mortality and major adverse cardiac events (MACE).

Results: Thirty-seven, 20, 10, 19, and 36 patients underwent CABG with STEMI ≤ 6h, 7-24h, 1-3days, 4-7days, and 8-14 days from onset of symptoms to surgery, respectively. Cardiogenic shock (Killip class ≥ 3) was present in 34 patients (28%) and 32 patients (26%) were referred to CABG after failed PCI. Overall in-hospital mortality was 9.8%, but mortality varied between 10.8% (≤6h), 24% (7-24h), 10% (1-3days), 5.3% (4-7days), and 2.8% (8-14days) depending on time interval from symptom onset to surgery. Overall, more non-survivors were females (58% versus 23%; P<0.01), had higher preoperative cardiac troponin I (cTnI) levels (12.8±10.0 versus 4.2±4.4ng/ml; P<0.0001), and were more frequently in cardiogenic shock (83% versus 22%; P<0.0001). Unadjusted univariate and risk-adjusted multivariate logistic regression analysis revealed age, female sex, preoperative cTnI, and cardiogenic shock to be the most potent predictors of in-hospital death and MACE.

Conclusions: CABG with STEMI can be performed with acceptable risk incorporating adequate management strategies. However, age, female sex, preoperative cTnI level extent, preoperative cardiogenic shock, as well as time to surgery are major variables of mortality and morbidity results.

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P40

Surgical Atrial Fibrillation Ablation Risk Score: Using Patient Specific Characteristics to Predict Treatment Success in Persistent AF

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Financial Disclosure: M.R. Williams, Edwards LifeSciences, B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); M. Argenziano, Edwards LifeSciences, B. Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received).

Background: Although surgical atrial fibrillation ablation (SAFA) offers good success in treating AF, a significant subset of patients fail therapy regardless of energy source, lesion set, or concomitant procedures. The purpose of this study is to examine how patient specific characteristics affect SAFA success in the persistent AF population.

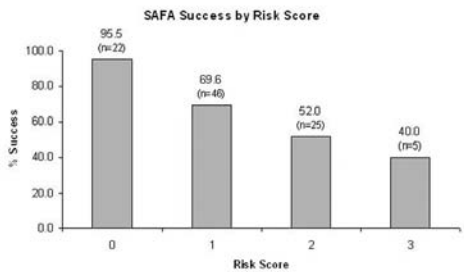
Methods: Analysis included 245 patients with persistent AF who underwent SAFA at a single institution. Multivariate analysis included demographics, AF duration (DUR), left atrial size (LAS), pre-op atrial flutter (AFLUT), concomitant procedures, lesion sets and energy source. Stratum-specific likelihood ratios (SSLRs) were generated for continuous variables. Weights determined by relative risk ratios were assigned to each statistically significant variable (p-value=0.05), and an aggregate risk score was calculated for each patient. SAFA success was classified as freedom from AF following post-op month 6. Receiver Operating Characteristic (ROC) curve analysis was used to evaluate the final risk model.

Results: LAS, DUR, AFLUT and age were predictive of SAFA failure (Table). SAFA was successful in 95.6% (n=22) of patients with a risk score of "0", 69.6% (n=46) with a score of "1", 52.0% (n=25) with a score of "2" and 40.0% (n=5) with a risk score of "3" (Graph). The corresponding area under the ROC curve for the score was 0.7076 (CI: 0.6105 - 0.8047).

Conclusions: These findings suggest that persistent AF alone should not be a contraindication for SAFA, and that if appropriately selected, SAFA is effective in a subset of the persistent AF patient population.

Risk Score Variables and Weights

Variable	Threshold	Relative Risk	Weight
Left Atrial Size	≥7.8 cm	1.49	1
Preoperative AF Duration	≥5.5 years	1.74	1
Age	≥77 years	1.58	1
Preoperative Atrial Flutter	N/Ap	1.54	1



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P41

Processing of Shed Mediastinal Blood Improves Cardiac and Pulmonary Function Following Cardiac Surgery: A Randomized, Double-Blind Study

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Background: Shed mediastinal blood contains fat, particulate matter, and vasoactive mediators that can affect the pulmonary and systemic vasculature and potentially impair gas exchange. Our aim was to evaluate the effects of shed mediastinal blood processing on cardiopulmonary function following cardiac surgery.

Methods: Patients undergoing coronary artery bypass and/or aortic valve surgery using cardiopulmonary bypass (CPB) were randomized to receiving processed (treated, n=132) or unprocessed shed blood (control, n=134). Pulmonary function, arterial and venous blood gas, and hemodynamics were measured before, immediately after, and 2 hours post-CPB in a subset of patients (n=154). In the treated group, shed blood was processed by centrifugation, washing, and additional filtration. Patients and treating physicians were blinded to treatment assignment. Mixed models were used to analyze repeated measures data.

Results: Pre-operative characteristics were similar between groups. There were no differences between groups in indices of pulmonary mechanical function including tidal volume, peak inspiratory pressure, and positive end-expiratory pressure. Patients in the treatment group demonstrated reduced pulmonary and systemic vascular resistance ($p<0.01$; Figure 1) and increased cardiac index (2.6±0.07 vs. 2.3±0.06 l/min/m2, $p=0.03$) in the peri-operative period. Increased alveolar-arterial gradients were observed in treated patients, but pulmonary shunt and oxygen extraction rate was similar between groups. Treated patients demonstrated a trend towards reduced length of ventilation (13.3±2.8 vs. 16.4±3.7 hours, $p=0.11$).

Conclusions: Processing of shed mediastinal blood improves cardiopulmonary hemodynamics and may reduce ventilatory requirements following cardiac surgery.

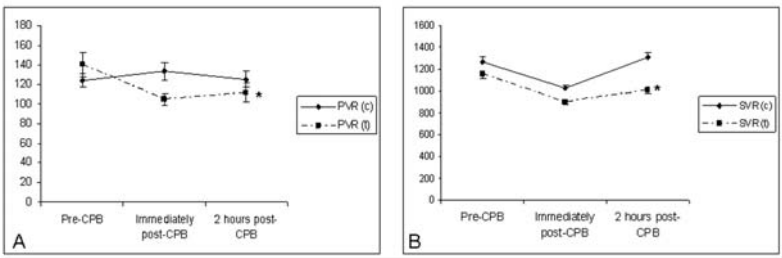

Figure 1. Pulmonary (PVR) and Systemic Vascular Resistance (SVR) in control (c) and treated (t) patients (* -p<0.01)

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P42

Technical Advances Improved Outcome in Thoracic Aortic Surgery: A Ten-Year Experience

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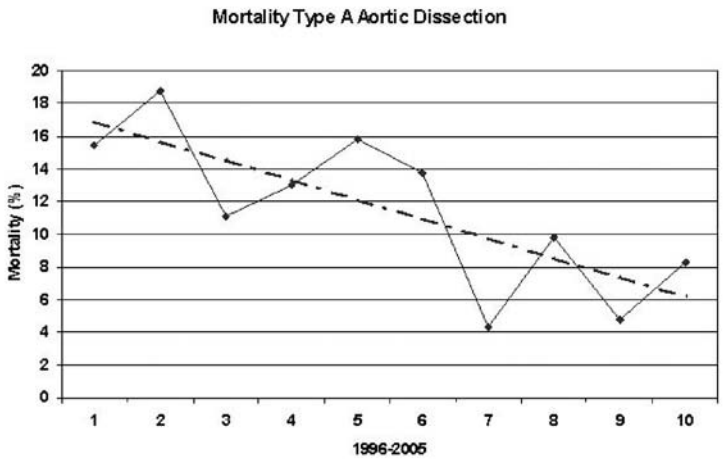
Background: Several technical advances in thoracic aortic surgery, such as the use of antegrade cerebral perfusion, avoidance of cross clamping and the application of glue, have beneficially influenced postoperative outcome. Aim of the present study was to analyse the impact of these developments on outcome of patients undergoing surgery of the thoracic aorta.

Methods: Between 01/96 and 12/05 833 patients (37.6%), out of 2215 aortic patients, underwent surgery on the thoracic ascending aorta or the aortic arch at our institution. All in-hospital data were assessed and a follow-up was performed.

Results: 239 patients (28.7%) suffered from AADA. Overall aortic case load increased from 41 patients in 1996 to 141 in 2005 (+339%). The increase was more pronounced for TAA (+367.9%), than for AADA (+276.9%). Especially in TAA, combined procedures increased and the amount of patients with impaired left ventricular function (EF<50%) raised up from 14% in 1996 to 24% in 2005. Average age remained stable. Logistic regression curve revealed a significant decrease in mortality (especially following surgery of AADA, see figure) and in the overall incidence of neurological deficits. Long-term survival improved and QoL was in the majority of patients similar to an average age- and gender matched standard population.

Conclusions: Technical advances in the field of thoracic aortic surgery lead to a decrease of mortality and morbidity, especially in the incidence of adverse neurological events, in a large collective of patients. Long-term outcome and QoL are better, since antegrade cerebral perfusion has been introduced.



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P43

Is Emergency Total Arch Replacement With Modified Elephant Trunk Technique Justified for Acute Type A Aortic Dissection?

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Background: To assess the outcome of emergency total arch replacement with a modified elephant trunk technique for acute type A aortic dissection.

Methods: Between 2001 and 2006, consecutive 55 patients underwent emergency total arch replacement for acute type A aortic dissection. The right axillary artery perfusion was a routine adjunct in conjunction with femoral artery perfusion for cardiopulmonary bypass and for selective antegrade cerebral perfusion under moderate hypothermia. Extended total arch replacement with individual arch-vessel reconstruction was carried out in the following settings; A) with the intimal tear on the transverse arch or the proximal descending aorta, B) with massive arch dissection, C) with Marfan syndrome. At the distal anastomosis, a modified elephant trunk procedure was used for secure anastomosis and early closure of the false channel in the descending aorta. During this period, the incidence of total arch replacement was 56.5%, while the other patients underwent hemiarch replacement.

Results: Only two patients (3.6%) died from low cardiac output syndrome, who had developed cardiac arrest preoperatively due to rupture or left coronary artery malperfusion. No late death was found. On the follow-up CT scans, early closure of the false channel of the dissected descending aorta was favorably revealed at the higher incidence than that after hemiarch repair.

Conclusions: Extended total arch replacement with a modified elephant trunk procedure is justified for acute type A aortic dissection in certain patients. For that, adjunct of right axillary artery perfusion for cardiopulmonary bypass and for selective antegrade cerebral perfusion is useful.

*STS Member

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Off-pump Right Atrial Surgery: Adult Vena Caval Inflow Occlusion in Dealing With Difficult Right Sided Lesions

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Background: Vena Caval inflow occlusion (VCIO) is an old technique that has been used with success in the pediatric population. However, few reports exist of its use in adults. We report on the use of inflow occlusion in removing infected material and foci from the right atrium, tricuspid valve.

Methods: Between Jan. 1999 and Aug. 2006, 21 patients in two hospitals in Australia and North America presented with right sided endocarditis and worsening respiratory status and systemic sepsis, in spite of maximal medical therapy . Fourteen of the patients were immunosuppressed due to concomitant medical conditions or malignancy. Seven patients had heparin induced thrombocytopenia. Tricuspid vegetectomy was performed in 18 under VCIO, while closure of PFO was performed in three patients, and tricuspid valve repair in 3. Removal of infected pacing leads was performed in one and removal of a migrated IVC filter in another. Fifteen patients had a single 2 minute period of VCIO, while the others had additional periods of VCIO after a period of reperfusion. All procedures were performed through a sternotomy with bilateral decortication of lungs with drainage of effusions in twelve.

Results: There were no deaths. All patients had resolution of sepsis. Three patients had moderate tricuspid regurgitation (TR), while the others had trivial to mild TR. One patient had a transient neurological deficit post-operatively and one patient required a late decortication of an empyema.

Conclusions: Tricuspid and right atrial procedures can be performed safely off-pump using vena caval inflow occlusion in high risk patients.

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Stentless Bioprostheses Provide Greater Improvement in Ventricular Function After Aortic Valve Replacment in Patients With Impaired Ventricular Contractility: Findings From a Randomized Controlled Trial

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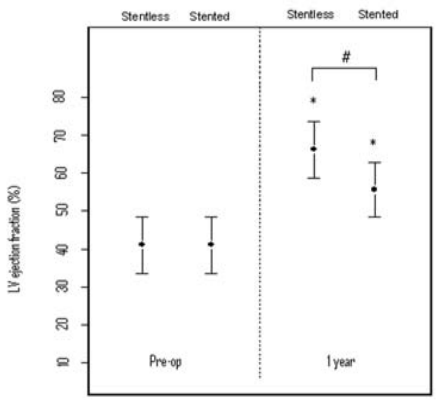
Background: Stentless bioprostheses may allow for greater improvement in left ventricular (LV) function after aortic valve replacement (AVR) compared to stented valves. Patients with impaired ventricular contractility stand to benefit most from this characteristic of stentless valves. We analysed improvement in postoperative ventricular function by measuring changes in left ventricular ejection fraction (LVEF) following AVR in the context of a randomised controlled trial.

Methods: 161 patients with severe aortic valve stenosis requiring AVR were randomized to recieve either the Prima plus stentless valve (n=80) or the C-E Perimount stented valve (n=81). A subgroup of 31 patients with reduced ventricular function defined as a LVEF < 50% was analysed. This subset included 14 patients who underwent stented AVR, and 17 patients who recieved a stentless prosthesis. Transthoracic echocardiography was used to measure LVEF at baseline and 1 year post-operatively.

Results: Baseline characteristics of the stented and stentless valve recipients within the reduced LVEF group were comparable (stentless LVEF 40 +/- 9% vs. stented LVEF 41 +/- 9%, P = 0.60). Patients receiving either stentless or stented AVR were found to have a significant increase in LVEF at 1-year compared to baseline (stentless 65 +/- 12% vs. stented 56 +/- 14%, p = 0.06) This improvement was significantly greater in patients who underwent stentless AVR (stentless 26 +/- 13% vs. stented 15 +/- 14%, p = 0.04).

Conclusions: LVEF increases 1-year following AVR in patients with impaired ventricular contractility. In these patients, stentless bioprostheses may allow for greater improvement in ventricular function.



* p < 0.05 compared to baseline
\# p < 0.05

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P46

Ventricular Assist Device Support for Acute Myocardial Infarction Cardiogenic Shock: Is Recovery Sustainable?

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Financial Disclosure: D. Raess, Abiomed Consultant, Consultant/Advisory Board

Background: Although the role of the Ventricular Assist Device (VAD) as a bridge-to-transplant technology has been well documented in the setting of Cardiogenic Shock (CS) post Acute Myocardial Infarction (AMI), few studies have examined the feasibility of long-term native heart recovery for those patients. We report a multicenter US experience that demonstrates sustainable cardiac recovery for AMI CS patients implanted with a VAD.

Methods: 50 patients at 25 US centers were implanted with the AB5000 VAD (ABIOMED, Inc.) between October 2003 and July 2005 after aggressive therapies failed to restore hemodynamics post-AMI CS. Pre implant conditions included inotropes 100%, IABP 88%, arrhythmia 71%, hypercreatineamia 52%, and hyperbilirubinemia 50%. Bi-ventricular support was required in 48% of the patients.

Results: The overall 30-day survival rate was 42% (n=21). Restoration of native cardiac function was reported in 71% (n=15) of those who survived. Of all survivors with a known one-year outcome (n=18), 78% remain alive. Of the patients with native heart recovery at discharge and with known follow-up outcome at 1 year post-VAD explant (n=12), 75% were still alive, demonstrating sustained cardiac recovery.

Conclusions: Restoration of myocardial function post-AMI CS is feasible with VAD technology. This recovery is sustainable, suggesting the VAD should be used primarily to bridge patients to recovery after aggressive therapies fail to reverse refractory CS.

*STS Member

P47

Transplantation of Smooth Muscle Cell Sheets for Ischemia Therapy

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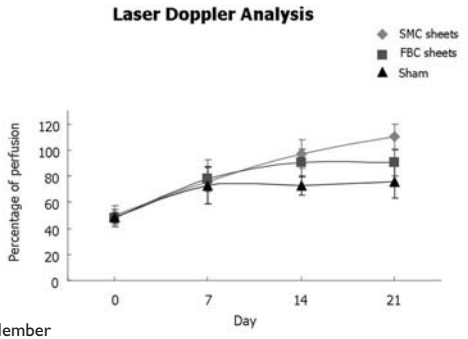
Financial Disclosure: T. Okano, Investor in CellSeed, Inc. investor in CellSeed, Inc., Ownership Interest (stock, stock options, patent or other intellectual property); T. Shin'oka, Grant for the Center of Excellence (COE) Program for the 21st Century and the High-Tech Research Center Program from the Ministry of Education, Culture, Sports, Science, and Technology, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received).

Background: Currently, revascularization therapies for peripheral and myocardial ischemic disease are effective only in specific scenarios. The greatest of limitations for cell transplantation relates to dispersion and impaired survival. We developed a means of producing intact sheets of layered cells using temperature-responsive cell culture dishes which permit cells to preserve cell-to-cell junction and growth factor receptors. This sheet can then be transplanted en bloc to provide a stable and localizable biologic effect. We examined the angiogenic potential of autologous cell sources and chose human smooth muscle cells (SMC) and human fibroblast cells (FbC) since these cells are obtainable without systemic invasion.

Methods: Athymic rats in ischemic hind-limb model were divided into three groups and treated with SMC sheet, FbC sheet or control animals receiving no cell sheet transplantation. After 3 weeks, blood perfusion was analyzed by laser doppler imaging, micro CT angiography and immunostaining. Proangiogenic growth factor secretion was assayed by ELISA.

Results: Enhanced blood perfusion in SMC groups were demonstrated by laser doppler imaging with quantitation compared to FbC or Control groups (109.9±10.0, 90.3±10.4, 75.6±13.3% $p<0.01$, expressed as a percentage of perfusion compared to the non-ischemic control limb) and large number of capillaries (16.85±5.12, 14.8±3.46, 10.6±3.03 vessels/hpf $p=0.00001$). ELISA measurement revealed that SMC secreted significantly greater amounts of VEGF, b-FGF and HGF compared to FbC. (4564.6±1058.8 vs 122.4±1.8 $p=0.002$, 109.5±33.5 vs 29.2±18.6 $p=0.006$, and 1163.1±3.7 vs 614.9±192.1pg/dish $p=0.005$, respectively).

Conclusions: SMC sheet transplantation enhanced angiogenesis and may provide an adjunct to established revascularization strategies in patients with ischemic diseases.



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P48

A Logistic Risk Model for Prolonged Ventilation Following Adult Cardiac Surgery

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Background: To develop a multivariate risk prediction model for prolonged ventilation following adult cardiac surgery.

Methods: Retrospective analysis of prospectively collected data on 12,662 consecutive patients undergoing adult cardiac surgery between 1997 and 2005. Data was randomly split into a development dataset (n=6000) and a validation dataset (n=6662). With a forward stepwise multivariate logistic regression, independent risk factors for prolonged ventilation; defined as ventilation >48 hours, were identified. Area under the receiver operating characteristic (ROC) curve and the Hosmer-Lemeshow goodness-of-fit statistic were calculated to assess the performance and calibration of the model respectively. Patients were split into low, medium, and high-risk groups based on their predicted probability of prolonged ventilation and additive scores developed from the odds ratios.

Results: 330 patients had prolonged ventilation (5.5%). Independent variables identified with an increased risk of prolonged ventilation are shown in Table 1, with relevant co-efficient values for calculation of risk using the logistic equation. The ROC curve for the predicted probability of prolonged ventilation was 0.79, indicating a good discrimination power. The prediction equation was well calibrated, predicting well at all levels of risk. In the validation dataset, 5.1% patients had prolonged ventilation compared to 5.4% expected. The ROC curve for the validation datasets was 0.75. The predicted risk of prolonged ventilation within low, medium and high-risk groups against the observed are shown in figure 1.

Conclusions: This contemporaneous multivariate risk prediction model has a good fit to predict low, medium and high risk of prolonged ventilation following cardiac surgery. Independent variables for prolonged ventilation risk:

Variable	Co-efficient	Odds Ratio	p value
Age:65 - 75	0.7762	2.2	<0.001
Age:75:80	1.5463	4.7	<0.001
Age:>80	1.7044	5.5	<0.001
FEV1 % predicted	-0.0121	0.98	0.003
Current smoker	0.5140	1.7	0.002
Creatinine 125-175	0.6807	1.9	<0.001
Creatinine >175	0.7386	2.1	0.015
Peripheral vascular disease	0.6147	1.8	<0.001
Ejection fraction <30%	0.7585	2.1	<0.001
MI <90 days	0.7361	2.1	<0.001
Pre-op ventilation	1.3172	3.7	0.005
Prior cardiac surgery	0.8717	2.4	<0.001
Urgent surgery	0.4189	1.5	0.006
Emergency surgery	0.6769	2	0.009
Mitral valve surgery	0.7393	2.1	<0.001
Aortic surgery	1.6830	5.4	<0.001
On-pump CABG surgery	0.3854	1.5	0.033
Intercept	-3.7121	N/A	N/A

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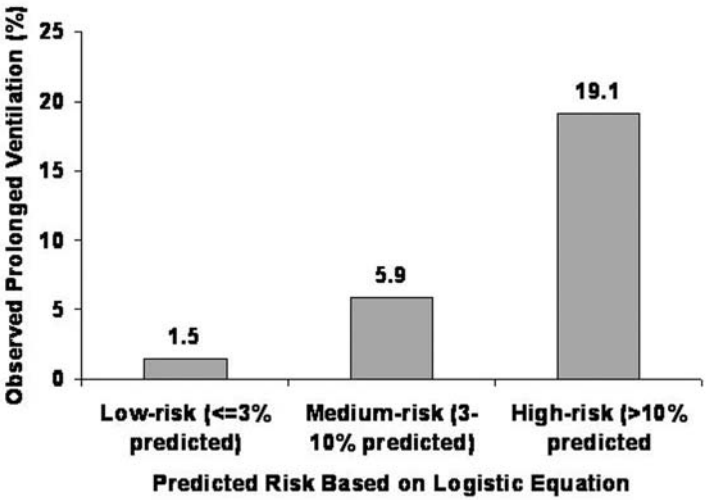
Observed Prolonged Ventilation (%)
25
20
15
10
5
0
19.1
5.9
1.5
Low-risk (<=3% predicted)
Medium-risk (3-10% predicted)
High-risk (>10% predicted
Predicted Risk Based on Logistic Equation

P49

Clinical Evaluation of Surface Coated Extracorporeal Circuits With Leukocyte Filtration, Aprotinin and Combined Therapy as an Adjunct to Cardiopulmonary Bypass in High Risk Patients

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Background: Relative benefits of strategic leukofiltration on polymer coated extracorporeal circuits (ECC), aprotinin and combined therapy were studied in EuroSCORE 6+ (high risk) patients.

Methods: Over a three-year period, 800 patients (EuroSCORE 6+) undergoing coronary revascularization were prospectively randomized to one of the four perfusion protocols: Group 1: Polymethoxyethylacrylate (PMEA)-coated circuits (Capiox SX 18 , Terumo, Ann Arbor, MI) + Leukocyte filters (LG6B and BC2, Pall, East Hills, NY) (N=200); Group 2- : Uncoated ECC (Capiox SX 18) + Full Hammersmith Aprotinin (N=200); Group 3: PMEA-coated ECC + Leukofilters + Full Hammersmith Aprotinin (N=200) and Group 4: Control-No Treatment (N=200). Blood samples were collected at T1: Following induction of anesthesia; T2: Following heparin administration; T3: 15 min after CPB; T4: Before cessation of CPB; T5: 15 min after protamine reversal and T6: ICU. Complete blood count, leukocytes and fibrinogen levels were evaluated. Serum albumin fractions, C3a and IL-2 levels were documented. Hematologic outcome was evaluated by thromboelastography. CD11b/CD18 expressions were determined by flow cytometry. Blood cell adhesion on fibers was analyzed by optical microscopy and scanning electron microscopy. Desorbed protein amount on circuits was evaluated by spectrophotometer. ECC were placed in tissue culture, attached cells were counted and phagocytic capacity was documented. Perioperative follow-up was thoroughly monitored.

Results:

	Neutrophil CD11b/CD18 Expression (% Change)	Postoperative Bleeding (mL)	Atrial Fibrillation (%)	Renal Insufficiency (%)	Phagocytic Capacity on ECC
PMEA-Coated ECC + Leukofiltration	13.2±2*	675±50*	14* (28 pts)	2 (4 pts)	1.33±0.5*
Aprotinin	19.2±2	705±50*	20 (40 pts)	9* (18 pts)	2.7±0.5
Combined Therapy	15.3±2*	660±50*	15* (30 pts)	7* (14 pts)	1.25±0.5*
Control	24.4±2	878±50	28 (56 pts)	3 (6 pts)	3.4±0.5

*: $p<0.05$ vs. control

Conclusions: PMEA-coated ECC and leukofiltration technique reduced bleeding and inflammatory response related to CPB signifcantly with no adverse effects. Aprotinin even as a combination therapy should be cautioned for serious safety issues.

*STS Member

P50

Mechanical Stress is an Independent Determinant of Bioprosthetic Valve Calcification

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Background: Mechanical stress (stress) is considered one of the contributing factors for bioprosthetic calcification. However separating the role of stress from other biological factors in calcification is very difficult in human study. A HeartMate left ventricular assist device (LVAD) has two identical porcine valves, one used as inflow valve (Inflow-V) and the other as outflow valve (Outflow-V). Inflow-V endures a higher stress than Outflow-V. Thus an implanted LVAD offers an ideal human model to study the independent effect of stress on calcification.

Methods: X-ray was taken under the same condition for 46 pairs of LVAD Inflow-V and Outflow-V explanted since 2003. The degree of calcification was determined by the area involved by calcium. We used the following Calcification Score: 0=no calcium; 0.5=involving less than 50% of one cusp; 1 =>50% of cusp; 1.5=1_ cusps; 2=2 cusps; 21/2=2.5 cusps 3=3 cusps. Calcification of both valves in relationship to the days of implantation was also analyzed.

Results: The mean age of patients supported with LVAD was 52.5+13.3 years (18-68). The mean duration of LVAD implantation was 237+151days (8-609). The Inflow-V and Outflow-V Calcification Scores were 1.35+1.20 and 0.74+0.89 respectively ($p<0.001$, paired t-test). There was a positive relationship between calcification and days of implantation for both valves: Inflow-V calcification=0.28+0.004 Days, Outflow-V calcification=0.94+0.004 Days ($p<0.001$ for both, linear regression).

Conclusions: Under the same human biological condition, Inflow-V developed more calcification than Outflow-V. The degree of calcification was implantation time dependent. This observation confirmed that stress was an independent determinant of human bioprosthetic calcification.

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P51

Selective Reconstruction of Preoperatively Identified Adamkiewicz Artery During Repair of Thoracoabdominal Aortic Aneurysm

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Background: Paraparesis and paraplegia after repair of the thoracoabdomonal aortic aneurysm (TAAA) remains devastating complication.. The purpose of this study was to determine the effects of selective reconstruction of Adamkiewicz artery (ARM) preoperatively identified with Multi -Slice CT (MSCT) upon surgical and neurological outcome.

Methods: Forty-eight consecutive patients operated on since 2003 (group I) were compared with 45 earlier patients (group II). Preoperative characteristics such as age, sex, ethiology of aneurysm and reoperation did not differ between groups. In group I the segmental intercostals arteries (ICA) connected with ARM were reconstructed selectively according to the identification of ARM with MSCT. In group II all patent segmental ICA between Th9-L2 were reconstructed during TAAA repair. Adjunctive spinal protective measures included distal perfusion, maintainace of high normal pressure, MEP monitoring and cerebrospinal fluid drainage.

Results: The ARMs were detected in 43(89.5%) of the 48 patients in group I. The number of reconstructed ICA during the surgery were 1.2 ±0.6 in Grou p I and 3.7±1.8 in Group II ($p<0.05$). The early mortality rate was 4.6 % in group I. and 5.2% in group II. No paraplegia but one paraparesis (2.0%) occurred in group I and 4 (8.8%) paraplegia occurred in group II ($P<0.05$).

Conclusions: Selective reconstruction of preoperatively identified ARM during repair of thoracoabdominal aortic aneurysm is safe and effective reducing the incidence of ischemic injury of spinal cord.

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P52

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) Treatment Could Be Linked to Perioperative Myocardial Infarction in Coronary Artery Bypass Grafting Patients

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Background: CABG patients exposed to COX-2 inhibitors are at risk for adverse cardiovascular events. NSAID use for the control of surgical pain in this population is common. The cardiovascular risk linked to this practice has not been determined. Our aim is to investigate if the use of such medications would be associated with increased risk of unfavorable cardiac outcomes.

Methods: Retrospective review of existing data from the Society of Thoracic Surgeons and pharmacy billing (administrative) databases of a high CABG volume (~ 1300 cases annually) tertiary care center between 2004 and 2006. Our analysis includes only data verified by independent chart audit. Primary endpoints included in-hospital myocardial infarction (MI), stroke, and 30-day mortality. The study cohort consisted of patients receiving NSAIDs within 60 days preprocedure and/or up to 30 days after-surgery (N= 284), and a propensity matched control group of patients not exposed to NSAIDs within the same time frame (N=284).

Results: Our preliminary results indicate that the risk of perioperative MI could be as much as 3 times greater in NSAID (n=6, 2.1 %) versus non NSAID (n=2, 0.7 %) CABG patients [p=0.28]. No differences were found for stroke or death.

Conclusions: Although not statistically significant, a three-fold increase in the relative risk of MI was found for CABG patients taking NSAIDs. The remaining unverified data will perhaps confirm the apparent trend found for the increased risk of perioperative MI. These findings are relevant in light of the emergent evidence regarding safety issues related to this class of medications.

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P53

Less Invasive Intracardiac Surgery Performed Without Aortic Clamping

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Background: Aortic clamping and cardioplegia delivery add difficulty to performing intracardiac procedures through a right minithoracotomy. Recent publications have shown excellent patient outcomes following mitral valve procedures undertaken through thoracotomy on the fibrillating heart. We reviewed our experience with this approach.

Methods: Since March 2000, 100 patients underwent complex MV repair (n=42), MV annuloplasty (n=28), MV replacement (n=18), ASD closure (n=10), tricuspid valve repair (n=1), and LA myxoma excision (n=1). A modified maze procedure (n=4) or left MIDCAB (n=2) was combined in 6 cases. The mean age was 57 years (range 22-89); the mean NYHA Class was 2.5+07; 20 patients had an EF of less than 30%; 24 cases where first or second time reoperations. All the operations were carried out on the fibrillating heart without cross-clamping the aorta via a right minithoracotomy using normothermic cardiopulmonary bypass and peripheral cannulation.

Results: Mean fibrillation time was 73+31 minutes (range 10-198 minutes). There was no conversion to sternotomy. Postoperative inotropic support was needed in 20 cases. One patient who underwent a third time reoperation died within 30 days of mesenteric ischemia (hospital mortality=1%). Complications were: reoperation for bleeding (n=4), stroke (n=2). Postoperative median hospital length of stay was 5 days (range 2-58 days). None of the patients has required reoperation. Mean NYHA Class was 1.2+0.3 among survivors at last follow-up (n=93).

Conclusions: Ventricular fibrillation simplifies less invasive intracardiac procedures and carries lower complication rates and perioperative mortality compared to conventional surgery.

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P54

The Impact of Ablative Energy on Surgical Outcome Following the Maze Procedure: Cryoablation Alone or in Combination with Bipolar Radiofrequency

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Background: Ablation technology has rapidly evolved to become the standard surgical choice to perform the maze procedure. Cryoablation (CR) and bipolar radiofrequency (RF) technologies are widely utilized. This study is designed to assess the surgical outcome of patients in which both CR+RF were applied versus CR only.

Method: One hundred and twenty-nine consecutive maze patients were operated over 18 months and stratified into 2 groups by energy source: CR (n=44) or CR+RF (n=85). Ninety-nine patients were available for ≥ 3 months follow-up. Odds ratios (OR) and 95% CI were calculated to compare perioperative morbidity and mortality rates and return to sinus rhythm.

Results: The operative mortality was 3.9% for CR+RF and 2.3% for the CR ($p>0.05$). Isolated maze procedure was performed in 42% and 18 % of the patients for the CR and CR+RF groups respectively. CR patients were younger and with lower incidence of diabetes. Previous valve surgery was more common in the CR group (14% vs. 1.3%). Patient follow-up averaged 234 days (CR 164 days, CR+RF 273 days). At latest follow-up 96% of patients were free from atrial fibrillation (94.4% CR, 96.8% CR+RF, $p<0.64$). No pulmonary vein stenosis or new onset coronary artery stenosis were reported for both groups. The incidence of new pacemaker implantation was 7% (CR) and 10% (CR+RF) $p>0.05$.

Conclusions: Both ablation technologies are safe and easy to use. Comparable results to the historical cut and sew maze procedure can be expected by using cryoablation either as a sole therapy or in combination with bipolar radiofrequency.

*STS Member

P55

Comparison of the Maze Procedure Between Mini-thoracotomy and Sternotomy Approach: A Case Matched Study

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Background: The efficacy of maze procedure for treating atrial fibrillation (AF) has been well documented. Recently, mini-thoractomy has been widely accepted for the maze procedure. However, there has been no comparative study to show the results between mini-thoracotomy and sternotomy.

Methods: We compared the early results of the maze procedure using mini-thoracotomy(TM) with sternotomy(SM). Forty eight consecutive TM patients underwent the maze procedure via right mini-thoracotomy using AESOP 3000® system. They were matched with SM patients in age, sex, left atrium(LA) dimension > 60 mm, duration of AF >10 years and etiology of mitral valve disease. LA reduction plasty was performed in both groups (TM: 52.1%, SM: 58.3%). All patients were operated by a single surgeon and perioperative data had been collected prospectively.

Results: There was one early death (2.1%) and two late deaths(4.2%) in SM whereas no mortality in TM. No postoperative bleeding was noted in both groups. The postoperative hospital stay (P = 0.001) and aortic cross clamping time(P = 0.046) were shorter in TM. Between the two groups, no significant difference was observed in the need for ardioversion, pacemaker insertion and antiarrhythmic medication (P>0.1). LA size was similarly decreased in both groups(TM: 12.0 ± 8.9mm, SM: 13.0 ± 11.8mm, P=ns). Trans-mitral A wave(TM: 91.7%, SM: 85.4%), sinus rhythm restoration rate at last follow up (TM: 89.6%, SM: 87.5%) were comparable between two groups.

Conclusions: Maze procedure using mini-thoracotomy provided shorter hospital stay than sternotomy patients however sinus rhythm restoration rate and reduction in LA size were comparable between the two groups.

*STS Member

P56

Improved Endoscopic Vein Harvesting with Single Incision Technique

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Background: Many studies have validated the superiority of Endoscopic Vein Harvesting (EVH) in coronary bypass operation. The usual technique employs three incisions with the main incision at knee level and two counter-incisions proximally and distally. We are reporting a single incision technique.

Methods: A technique of single incision in EVH was employed in 950 patients in five-year period using the Guidant system. The length of the procedure and harvested vein were recorded. The 2.5 cm. main incision is made directly over the vein at distal medial epicondyle. Proximal and distal dissection of the vein is carried out. The tributaries are transected with the bisector. The distal saphenous vein is then engaged with the bisector and is cauterized distally. The bisector is retracted approximately 1-2 cm and re-engage the vein pushing it distally creating a "venoplication" approximately 1 cm. proximal to the cauterization point before transection. The port and bisector are repositioned proximally to employ the same technique in transecting the saphenous vein below the fossa ovalis. An endoloop can be employed if the vein is large.

Results: The single incision technique was employed in 950 cases and was successful in 99%. A counter-incision was used in 10 patients. The endoloop ligation was used in eight patients. There was no bleeding complication. The overall procedure time was 38 minutes per case. The conduit lengths were 28 cm. to 70 cm.

Conclusions: A less invasive single incision EVH can be performed consistently.

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P57

Heat Shock Protein 27 Downregulation in Aortic Aneurysm: Bicuspid vs. Tricuspid Aortic Valve

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Background: Bicuspid aortic valve (BAV) is often associated with acquired lesions of the ascending aorta. Recent studies have demonstrated increased smooth-muscle-cell (SMC) apoptosis and alterations in matrix metalloproteinases (MMP) in aortic tissue of patients with BAV compared with tricuspid aortic valve (TAV). We undertook proteomic analyses to assess differences at the protein level associated with aortic aneurysm formation in BAV patients.

Methods: Aortic wall segments were excized from 10 male patients undergoing ascending aortic aneurysm surgery, five patients had a BAV, and five a TAV. The median age of patients with BAV was 56 years (range 40-67) compared with 66 (52-72) in patients with TAV ($p=0.3$). Other baseline characteristics did not differ significantly. Aortic samples were dissected, solubilized and 2-D gelelectrophoresis performed. Proteins of interest were defined using mass spectrometry.

Results: Two-dimensional gel pattern analysis showed a high correlation of protein expression between BAV and TAV samples (correlation coefficient 0.93): few proteins showed statistically significant differences in expression. Among those two heat shock protein (HSP) 27 isoforms were significantly down-regulated in BAV specimens ($p=0.02$, $p=0.04$). Mass spectrometry analysis revealed that both HSP 27 isoforms differed from each other by phosphorylation.

Conclusions: Two HSP 27 isoforms were significantly down-regulated in BAV compared to TAV aortas. One of these HSP 27 isoforms is phosphorylated. Our results are consistent with a decreased stress resistance in BAV aortic specimens leading to increased SMC apoptosis and alterations in MMPs.

*STS Member

P58

The Safety and Efficacy of Factor IX Complex (Bebulin®) for Severe Bleeding Post-Cardiac Surgery

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Regulatory Disclosure: This abstract describe the use of Bebulin® which has been FDA approved for the off label use for post-operative bleeding in non-hemophiliac patients.

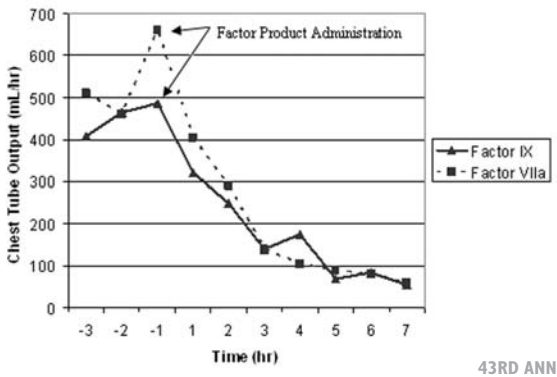
Background: Severe bleeding is an unusual, but devastating complication after cardiac surgery. The purpose of this study is to report our results with Factor IX Complex in cases of postoperative coagulopathy and intractable bleeding.

Methods: A retrospective cohort study of adult patients who underwent cardiac surgery and experienced severe postoperative bleeding, defined as an average chest tube output >300 mL/hr. The primary outcomes were change in chest tube output and blood product usage pre- and post-Factor IX Complex.

Results: Since 1999, 72 patients have received Factor IX Complex for post-operative bleeding. Ten patients met the above definition for severe bleeding and received Factor IX Complex at a mean dose of 33.2 units/kg. Procedures performed included coronary artery bypass grafting (CABG) in 5 patients, isolated valve repair/replacements in 3, combined CABG/valve in 1, and aortic dissection repair in 1. Average chest tube output immediately prior to Factor IX Complex was 487 mL/hr. Following Factor IX Complex, output dropped to <100 mL/hr within 5 hours (table). Adverse events included 1 pulmonary embolism and 2 episodes of acute renal failure requiring dialysis. The mortality rate was 30% (3 of 10 patients).

Conclusions: Factor IX Complex effectively treats severe bleeding after cardiac surgery. Previous reports have been published on the use of recombinant Factor VIIa post-cardiac surgery for intractable bleeding. Our results suggest that Factor IX Complex may have similar efficacy and safety to recombinant Factor VIIa (figure) while costing $4,000 less per dose (Ann Thorac Surg 2005;79:1303-6).

Outcome (n=10)	Pre-Factor IX	Post-Factor IX	p-value
Chest Tube Output (mL/hr)	452.6	173.2	0.002
Blood Product Usage (mL/hr)	429.3	173.8	0.04



*STS Member

P59

Power M-Mode TCD Predicts Perioperative Malperfusion and Neurological Outcome

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Financial Disclosure: M.L. McGarvey, co-investigator, $5000 salary support, Terumo Cardiovascular Systems, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); J.E. Bavaria, Principle Investigator, research grant,$130,000, terumo cardiovascular systems, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); S.R. Messe, co-investigator, $5000 salary support, Terumo Cardiovascular Systems, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received).

Background: Neurological complications after Cardiac and Aortic Surgery are a significant concern. Power M-Mode Transcranial Doppler Ultrasound (TCDUS) may identify potential mechanisms contributing to neurological injury, and prompt potential interventions.

Methods: Bilateral middle cerebral artery TCDUS was performed on patients undergoing cardiac and aortic surgery. Bilateral middle cerebral artery velocities (MCAV) and high intensity transient signal (HITS) were continuously monitored. Timing of HITS and MCAV changes were recorded. Patients were serially assessed with National Institutes of Health Stroke Scale, modified Rankin score, Barthel index, and subjective cognitive scores.

Results: Between 11/04 and 4/06, we recorded TCDUS signals in 66 patients. This cohort included 36 cardiac surgeries and 30 aortic repairs with deep hypothermic circulatory arrest (DHCA). Adverse neurological outcomes included 3 strokes (1 major intraoperative, 1 minor intraoperative, 1 major postoperative), 2 deaths (both patients with major strokes) and 6 patients reported subjective cognitive decline at 4 weeks. TCDUS monitoring led to perioperative intervention in 6/66 cases (5/30 aortic, 1/36 cardiac), 1 was due to HITS, 2 were due to cerebral malperfusion with canullation, 3 due to cerebral hypoperfusion. HITS immediately after discontinuation of cardiopulmonary bypass (CPB) correlated with immediate neurological outcome ($p=<0.001$).

Conclusions: TCDUS can detect emboli and malperfusion of the brain in cardiac and aortic surgery allowing for interventions to potentially avert neurological injury. HITS detected by TCDUS after CPB predicted immediate neurological outcome, but further studies are required to determine whether intervention to decrease the HITS rate after CPB improves neurological outcomes.

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P60

Importance of Intraoperative Verification of Conduction Block to Avoid Surgical Failure in Atrial Fibrillation Surgery

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Background: Incomplete surgical ablation during atrial fibrillation (AF) surgery can cause atrial tachycardia (AT) postoperatively. Intraoperative verification of conduction block for surgical ablation would detect incomplete ablation lesions and prevent postoperative AT by application of additional ablations. The purpose of this study was to determine the effectiveness of intraoperative verification of conduction block to prevent postoperative AT.

Methods: From November 1994 to March 2006, 187 patients underwent AF surgery. In first 128 patients, conduction block of any ablation lesion was never confirmed intraoperatively (Group C). The postoperative ATs in Group C were characterized by electro-anatomical mapping. Isolation of each pulmonary vein (PV) was verified by intraoperative PV pacing (Group PV: n=54). In the recent consecutive 5 patients, in addition to PV isolation, conduction block in the coronary sinus (CS) was confirmed by intraoperative CS pacing and differential pacing techniques (Group PV/CS). The incidence of postoperative AT in groups PV and PV/CS was compared with group C.

Results: The postoperative electro-anatomical mapping revealed that the mechanisms of the AT were macro-reentry though incomplete CS ablation lesions (n=9), and focal activation in the CS (n=1). Intraoperative verification of conduction block provided additional ablations to the PVs or CS in groups PV and PV/CS. While the incidence in Groups C and PV was 9% and 2%, respectively (P=0.2), no patients had postoperative AT in Group PV/CS.

Conclusions: The majority of the postoperative ATs were associated with an incomplete CS ablation. Intraoperative verification of conduction block can prevent the occurrence of postoperative AT.

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P61

Radical Surgical Approach to Acute Type A Aortic Dissection: Replacement of the Ascending Aorta/Arch and Stentgrafting of the Descending Aorta Using an Integrated Hybrid Stentgraft/Polyester Prosthesis

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Financial Disclosure: H. Jakob, JOTEC GmbH, Consultant/Advisory Board; U. Herold, JOTEC GmbH, Consultant/Advisory Board.

Regulatory Disclosure: This abstract describes the use of E-Vita Open which has not been FDA approved.

Background: Classic surgical repair of acute type A dissection (AAA) does not avoid ongoing perfusion of the distal false lumen. To prevent late complications like aneurysm formation or rupture, the radical concept of ascending aorta/arch replacement with simultaneous antegrade descending aorta stentgrafting was applied.

Method: Between December 2002 and May 2006, 14 patients (12 male, mean age 59 years) were operated upon within 24 hours. Six patients (pts) were in cardiogenic shock, and 10 pts had cerebral, cardiac or abdominal malperfusion. Diagnosis was established by CT scan (12/14 pts), angiography (9/14 pts) and TEE (14/14 pts) in a hybrid room setting. Four pts received a Talent® stentgraft, and 10 pts had a E-vita open® hybridstentgraft/polyester prosthesis.

Results: There was no intraoperative mortality. The peri-stentgraft space thrombosed within minutes after protamine administration in all pts. Hospital mortality was 14% (2/14 pts) due to mesenteric malperfusion sequelae. Mean follow-up is 13±13 months. Late mortality was 17% (2/12 pts) due to severe neurological dysfunction. Serial CT scans demonstrate complete trombosis of the thoracic false lumen in 90% (9/10 pts 1 endoleak at the Talent® stentgraft anastomosis), and full restoration of normal configuration of the complete aorta in 40% (4/10).

Conclusions: This radical surgical hybrid approach is technically feasible without increasing the operative risk and offers the chance of definite healing of the thoracic aorta. In some cases, obviously the complete aorta gets fully restored thus influencing natural history of operated type A dissection.

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P62

Evaluation of Atrial Function After MAZE Procedure in Patients with Chronic Atrial Fibrillation Using Steady State Free Precession MRI

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Background: The MAZE procedure is an established surgical procedure for restoration of sinus rhythm and reestablishment of atrial function in patients with chronic atrial fibrillation. Purpose of this study was to evaluate atrial function after MAZE procedure using steady state free precession (SSFP) MRI.

Methods: 16 patients (7 women and 9 men, mean age 67 years, range 42-83) being at least 6 months after MAZE procedure, who stable sinus rhythm, documented by holter ECG, were selected for the study. They underwent cardiac MRI (Philips Intera 1T) using SSFP pulse sequence. Acquisition of 8-10 slices (thickness 6 mm, 15-20 phases) in the long-axis 4-chamber-view captured both atria entirely. Two experienced readers evaluated the images independently using a workstation and commercially available dedicated software. End-diastolic and end-systolic volumes were measured using Simpson's rule. The presence of visual contraction (atrial kick) was visually assessed.

Results: Mean end-diastoloc volume of the right atrium (RA) and left atrium (LA) after MAZE procedure was 134±47ml and 159±52ml, respectively. Mean stroke volume was 22±14ml and 25±12ml for the RA and LA. Mean ejection fraction of RA was 18±13% and 18±11% for LA. An atrial kick of both atria was observed in 4/16 patients. An atrial kick of only the RA was observed in additional 4/16 patients. Mean interobserver variability for all parameters was 4.3±1.5%

Conclusions: Evaluation of atrial function after MAZE procedure using SSFP MRI is feasible and allows a standardized documentation of post-operative atrial function, thus allowing to evaluating the surgical outcome.

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GENERAL THORACIC SCIENTIFIC POSTERS P63 – P81

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P63

Does a Gastrostomy Tube vs. Jejunostomy Tube Prior to Esophagectomy for Primary Esophageal Cancer Patients Have Additional Risk?

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Background: The purpose of this study was to determine the effect of a preoperative gastrostomy tube (GT) or jejunostomy tube (JT) on patients undergoing esophagectomy with a gastric conduit after induction chemoradiation for esophageal cancer.

Methods: 320 consecutive patients from January 1998 to December 2005 were reviewed. 13 patients had GT and 45 patients had JT prior to esophagectomy. Additionally, GT and JT groups were given a propensity score by using a univariate analysis. Fourteen variables were used for matching. Thirteen patient pairs were matched and compared. Endpoints included tube-related complications, postoperative leak, stricture, wound infection, locoregional recurrence, perioperative mortality, and survival.

Results: There was no statistically significant difference between the groups (GT versus JT; GT versus no FT; JT versus no FT; and GT versus propensity matched JT) with respect to anastomotic leak, stricture, wound infection, locoregional recurrence, or perioperative mortality.

Conclusions: Pre-operative placement of a GT or JT does not appear to have increased adverse outcomes when compared to other patients with primary esophageal cancer undergoing induction chemoradiation and having a gastric conduit used for reconstruction.

Variable	GT n=13	JT n=45	No FT n=262
Leak	0%	11.1%	11.5%
Stricture	23.1%	15.6%	19.2%
Wound infection	23.1%	17.8%	10.3%
Locoregional recurrence	7.7%	2.2%	9.9%
Perioperative mortality	7.7%	4.4%	3.4%

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Laparoscopic "Clam Shell" Partial Fundoplication Achieves Effective Reflux Control with Reduced Postoperative Dysphagia and Gas Bloating

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Financial Disclosure: J.D. Luketich, US Surgical, Stryker, Research Grant (principal investigator, collaborator or consultant and pending grants as well as grants already received); Boston Scientific, Stryker, RITA Medical, Ownership Interest (stock, stock options, patent or other intellectual property)

Background: We describe a novel laparoscopic "clam shell" partial fundoplication, incorporating a modified Toupet with an anterior fundic flap for the management of medically recalcitrant GERD. We hypothesize that this "clam shell" like mechanism allows a "dynamic" rather than rigid circumferential anti-reflux barrier allowing effective reflux control (compared to partial fundoplication) with reduced occurrence of postoperative dysphagia, gas bloating and vagal nerve injury (compared to 'Nissen' fundoplication).

Methods: Between November 2002 - May 2006, 140 patients (82 female, mean age 53 years) underwent laparoscopic "clam shell" procedure. Preoperative invasive (endoscopy, manometry, pH monitoring) and non-invasive (barium swallow and radionuclide gatroesophageal motility) studies revealed large paraesophageal hernia (n=37) and esophageal dysmotility (n=26). Routine barium swallow and radionuclide studies were performed at six months postoperatively.

Results: There was no mortality or conversions to open procedures. Mean operative time was 45 minutes; median hospital stay was 1 day (range 1-4). Overall control of reflux symptoms and absence of dysphagia / gas-bloats was noted in 95% and 94% of patients respectively. Five patients (3.6%) had postoperative complications (pneumonia 2, re-do fundoplication 2 and pleural effusion drainage 1). Postoperative studies demonstrated reflux (3%, n=4) and hiatal hernia (0.7%, n=1) during a mean follow-up 27 months. Seventeen percent of the patients (n=24) underwent esophageal dilation (median dilation one, range 1-3) for dysphagia (one-third had preoperative esophageal dysmotility).

Conclusions: "Clam shell" near circumferential fundoplication may be considered as an attractive alternative anti-reflux approach to Nissen fundoplication, particularly among patients at risk for postoperative dysphagia or gas-bloats.

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P65

Novel Hypoxic Mechanisms in Malignant Pleural Mesothelioma

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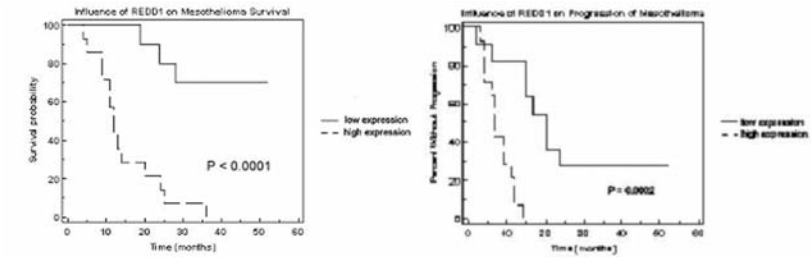
Background: We describe a novel hypoxia-inducible anti-apoptotic gene in malignant pleural mesothelioma (MPM), REDD1 (Regulated in Development and DNA Damage Responses), which may modulate MPM prognosis and PET glucose utilization via altered glucose transporter status.

Methods: Tumor and normal peritoneum (NP) RNA from 25 cytoreduced MPM patients had Affymetrix U133 gene chip analysis with real time (rt) PCR validation.

Results: 48 genes segregated these patients into two groups: 8 patients alive without disease > 12 months from surgery vs.17 other patients. REDD1 was elevated in 1/8 patients who remained free of disease compared to 9/17 progressors. RtPCR for REDD1 revealed a 0.95 correlation (p=0.001) with REDD1 microarray results, and a strong correlation existed between REDD1 and hypoxia inducible protein 2 (r=0.73, p<0.0001), facilitated glucose transporters (r=0.78,p<0.0001) and HIF1_ (r=0.52, p=0.008). Median survival (MS) for all patients was 22 months and median time to progression (TTP) was 11 months. 14 patients with MPM REDD1 expression values > NP had significantly shorter MS and TTP (12 month MS and 7 months TTP) compared to those with MPM REDD1 < NP (MS not reached and 20 months TTP), see Figure. Multivariate analysis revealed elevated REDD1 was the most significant risk for (1) decreased survival (hazard ratio 32.5, p<0.005) and (2) TTP (hazard ratio 14.6, p<0.01), along with age and male gender.

Conclusions: Activation of the novel REDD1 hypoxic pathway may explain poor prognosis in MPM reflected by high PET SUV values, and targeted inhibition of this gene may influence intrinsic resistance to therapy.



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P66

Obesity and Underweight Do Not Impact Lung Transplantation Outcomes: A Single Institution Study of 517 Patients

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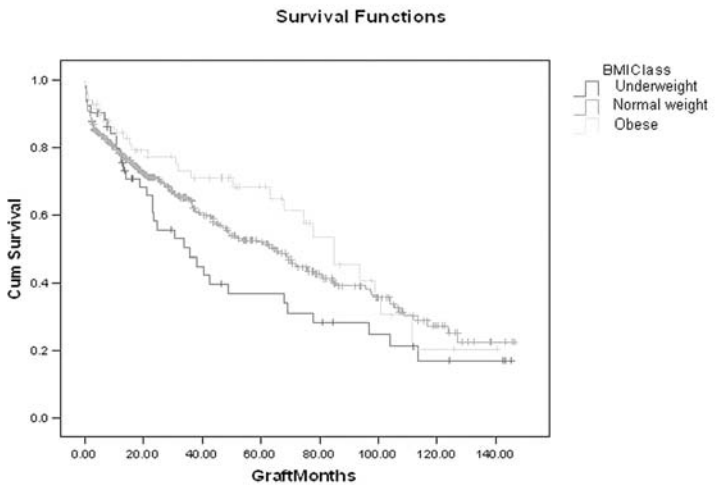
Background: Published studies assessing the impact of obesity and underweight on lung transplantation yielded conflicting results confounded by small sample size population and short term follow-up. The objective of this study was: (a) to evaluate the prevalence of obesity and underweight in lung transplantation recipients, and (b) to assess the impact of obesity and underweight on lung transplantation recipients short and long term survival.

Methods: All 517 lung transplant recipients (1994 to 2005) were stratified by Body Mass Index (< 18.5 = underweight; 18.5 to 30 = normal weight; >30 = Obese). Post operative mortality, length of stay and Kaplan Meier estimated survival was analyzed ($p<0.05$ = significant).

Results: One in four lung transplantation recipients were either obese (n=68) or underweight (n=51). In 45% of underweight patients cystic fibrosis was the indication for lung transplantation. Seventy five percent of obese patients had COPD or IPF (n=51). There was no statistically significant difference in length of stay, 90-day mortality, or 1-, 5- 10-year long term survival (log rank) between groups (underweight v/s normal weight v/s obese). Younger age (38 ± 13) in underweight patients did not result in survival advantage compared to older normal weight (52 ± 11) or obese recipients (54 ± 10).

Conclusions: Based on this largest series reported to date, we conclude that: (a) the prevalence of obesity and underweight is high in lung transplant recipients; and (b) obesity or underweight are not independent predictors of short- or long-term survival following lung transplantation.



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P67

Lung Transplantation for Idiopathic Pulmonary Fibrosis: One Lung or Two?

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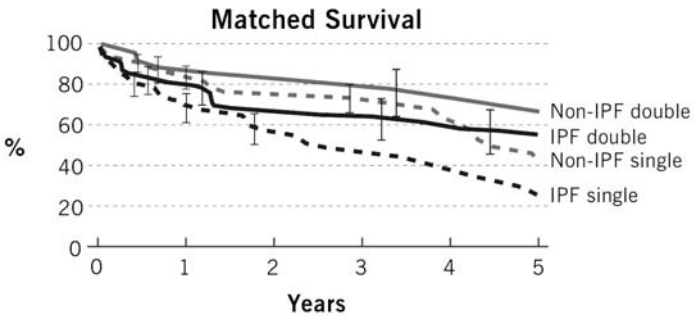
Background: Outcomes of transplantation for idiopathic pulmonary fibrosis (IPF) are worse than for other indications. We sought to identify risk factors for short- and long-term mortality of these patients, particularly with respect to single versus double lung transplantation.

Methods: From 2/1990 until 11/2005, 469 patients underwent lung transplantation, 82 for IPF. Multiphase hazard modeling was used to identify risk factors for early (<1 year) and late death. Propensity matching was used to compare survival of IPF and non-IPF patients and to assess the effect of single vs. double lung transplant.

Results: Survival after transplant was 95%, 72%, 62%, and 43% at 30 days and 1, 2, and 5 years. Risk factors for early mortality were greater recipient body mass index (P=.04), higher systolic blood pressure (P=.04), and earlier date of transplant (P=.05); lower cardiac index (P=.0003) was associated with increased late risk. Propensity-matched IPF patients had worse survival than non-IPF patients (P=.03); survival after double lung transplant was better than after single lung transplant (P=.009) and was comparable for IPF and non-IPF indications (P=.9). Survival for double vs. single lung transplant among IPF patients was 83% vs. 69% at 1 year and 57% vs. 29% at 5 years; among matched non-IPF patients, the corresponding survivals were 88% vs. 84% at 1 year and 77% vs. 45% at 5 years (Figure).

Conclusions: Short- and long-term survival after lung transplantation for IPF is worse than after other indications for transplant. Survival is better when these patients receive two lungs rather than one.



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P68

Extracorporeal Membrane Oxygenation (ECMO) Use in Lung Transplant Recipients with Primary Graft Dysfunction (PGD): Long Term Survival

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Background: PGD following lung transplantation is a major cause of morbidity and mortality. ECMO [venovenous (VV) and venoarterial (VA)] has been used to support patients and allow lung recovery, however the optimal approach is unclear and long term survival is unknown. We analyzed outcomes of ECMO use for lung PGD and assessed long term survival at a single large center.

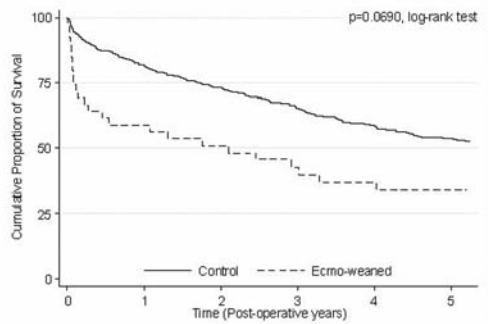
Methods: Retrospective analysis of 763 recipients of lung transplants from March 1991 to March 2006. 58 patients (7.6%) required ECMO early (0-7 days) to treat PGD. VA or VV ECMO was implemented (26 and 32 cases) depending on the patient's hemodynamic stability as well as programmatic philosophy. Mean duration of support was 5.6 days (range 1-20). Mean follow-up was 4.5 years.

Results: 30 day, 1 and 5 year survival was 56%, 40% and 25% for the entire group. 39 patients (67.2%) were weaned from ECMO (21 VV, 18 VA) with 1 and 5 year survival of 59% and 33%, inferior to recipients not requiring ECMO (n=705, figure 1). Survival at 30 days, 1 and 5 years was similar for the patients supported with VA or VV ECMO (58% vs. 55% p=0.7, 42% vs. 39% p=0.8, 29% vs. 22% p=0.6).

Conclusions: ECMO provides acceptable support for PGD irrespective of the method utilized. Long- term survival of patients with PGD requiring ECMO (overall and weaned) is inferior to patients that do not require ECMO.

Figure 1
5 yrs.-Control vs Ecmo(weaned)

705 control Lung Transplants and 31Ecmo(weaned)



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Extended Donor Criteria in Lung Transplantation: A Large Single Institution Experience

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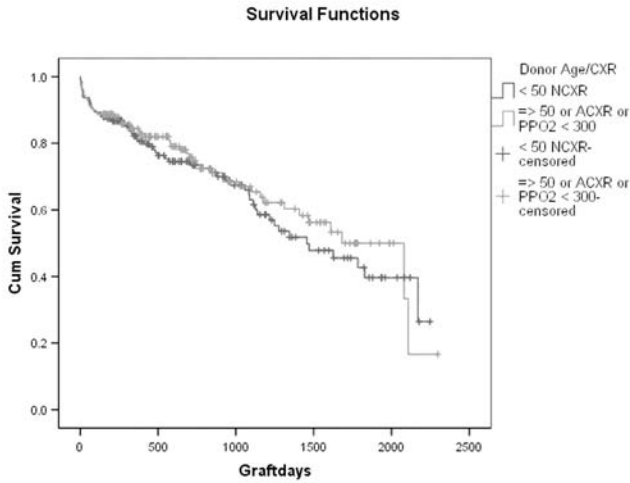
Background: A shortage of donors has led to expansion of criteria for donor selection in lung transplantation. Early reports suggested equivalent survival; however, some recent reports have suggested a higher early mortality and greater mortality following double lung (DL) transplantation with extended donor organs.

Methods: We performed a retrospective review of 337 consecutive lung or heart-lung transplants from 1/2000 to 12/2005. Donors were considered extended if any of the following criteria were met: age > 50, abnormal CXR, or PO2 < 300.

Results: 337 recipients underwent primary (n=306) or redo (n=20) lung transplantation or heart-double lung transplantation (n=11). One Hundred fifty-nine (47%) were recipients of extended criteria lungs. One Hundred thirty-one met one criteria, 26 met 2 and 2 met 3. Recipient age, sex, indication for transplant, mean graft ischemic time and type of transplant (double versus single) did not differ significantly between the extended and standard donor groups [p= 0.36-0.82]. There was no difference in mean hospital stay (35 versus 31 days [p= 0.26]) There was no significant difference in 30 day, one year and three year survival between recipients from the two donor groups [p=0.54] [Figure] or double versus single lung recipients [p=0.71] from the extended donor group.

Conclusions: This is the largest reported single center series examining the impact of extended donor criteria on lung transplant outcomes. These data suggest that equivalent short and long term outcomes in lung transplantation can be achieved with use of lungs from selected extended donors.



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Segmental Resection of Larynx and Trachea for Invasive Thyroid Carcinoma

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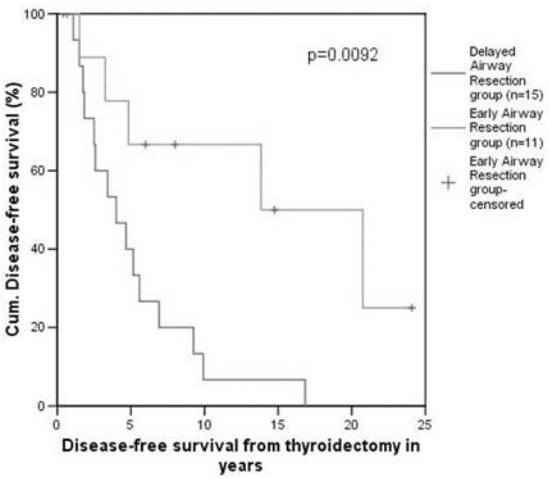
Background: Laryngotracheal invasion worsens prognosis in patients with thyroid carcinoma. The extent of resection is controversial.

Methods: We performed a retrospective study of patients with thyroid carcinoma and invasion of larynx or trachea between 1964 and 2005.

Results: Eighty-two patients underwent segmental airway resection. Differentiated carcinoma was present in 76% (62/82), prior "shave" resection in 40% (33/82), transmural invasion in 58% (48/82), and preoperative vocal cord paralysis in 35% (29/82). There were 29 tracheal and 40 laryngotracheal resections (Reconstruction group); 5 had laryngectomy and 8 cervical exenteration (Salvage group). Operative mortality was 1.2% (1/82), anastomotic dehiscence 4.3% (3/69), and bilateral cord paresis 8.7% (6/69). Tracheostomy was permanent in 4.3% (3/69). Follow-up was complete and mean follow-up was 6.1 years. Following Reconstruction, mean survival was 9.4 years and 10-year survival 40%, after Salvage, 5.6 years and 15%. In differentiated carcinoma, overall survival of 15 patients after thyroidectomy, shave resection and late (mean delay 67 months) resection of airway recurrence was 13.1 years; in 11 patients after thyroidectomy and early (mean delay 3 months) airway resection 17.9 years. The Figure shows disease-free survival. Presentation with airway symptoms or metastases, recurrent disease and salvage operation was associated with decreased survival and airway resection early after thyroidectomy, complete resection and well-differentiated tumors with improved prognosis.

Conclusions: Segmental airway resection for invasive thyroid cancer is safe, preserves voice, and relieves airway obstruction. Complete resection of laryngeal and tracheal invasion during or early after thyroidectomy is associated with improved survival.



*STS Member

P71

Long-Term Results of Pleural Perfusion Thermochemothearpy (PPTCT) for Stage IV-a and Recurrent Pleural Thymoma

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Regulatory Disclosure: This abstract describes the use of Cisplatinum which has been approved for the off-label use of intrapleural.

Background: Previously we showed that resection plus PPTCT (R+PPTCT) offers favorable mid-term survival, except for type C thymoma. Presently we analyze long-term results comparing de-novo stage IV-a thymoma (DNIV-a) to thymoma recurring in the pleura (TRP).

Methods: Eleven pts with DNIV-a and 9 with TRP, types A-B3, underwent 26 R+PPTCTs using a standard roller-pump and modified heat exchanger with CDDP ± Adriamycin. Follow-up was 12-136 mo. (median 50.6). Disease specific survival (DSS) and disease free survival (DFS) were studied by the Kaplan-Meier method.

Results: DNIV-a had more females and R0 resections and less type B3 than TRP. Groups were similar in age, associated myasthenia (45%), Adriamycin installation and perfusion temperature. There was one late operative death (8 mo.), one major complication in each gr. and no hematological, renal ,or neurological morbidity. Late myasthenic crisis and respiratory insufficiency occurred once each in both groups. Additional S+PPTCT was required twice in DNIV-a (1 ipsilateral) and 4 times in TRP (3 ipsilateral). One pt died of disease progression (DNIV-a). In TRP, 2/3 late deaths were indirectly related to thymoma (myasthenia and chemotherapy). All were NED at death. The 11-yrs DSS and 5-yrs DFS were 82%; 73% and 80%; 57% in DNIV-a and TRP respectively.

Conclusions: In pts with pleural thymoma, R+PPTCT is associated with a low mortality rate (4%), low major morbidity (8%) and acceptable late morbidity (15%). It offers outstanding loco-regional control, excellent long-term results in DNIV-a thymoma and good results in TRP. Repeated operations with or w/o PPTCT may be required.

*STS Member

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Can the Cell Microenvironment of Mediastinal Lymph Nodes in Non-Small Cell Lung Cancer Help Predict the Risk of Metastases?

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Background: The aim of this study was to analyze the properties of the immune cell microenvironment of regional lymph nodes (LNs) positive for lung cancer.

Method: Twenty patients stage (T1, T2) of NSCLC, operated on were enrolled to the study. Peripheral blood and LN tissue were examined. LNs were obtained separately at different lymph node levels. As the control sample, the LN tissue from patients diagnosed with emphysema were taken. The cells from randomly chosen LNs tested in multi-color flow cytometry. Separate portions of LNs were snap-frozen and preserved for cytokeratin (CK). Propensity for apoptosis, TCR zeta chain expression of T cells, number and maturation status of dendritic cells were confronted with the presence of CK-positive cells.

Results: The presence of metastases correlated with the downregulation of TCR zeta, especially CD8(+) T cells. The most striking effect was the decreased content of the myeloid CD11c(+) dendritic cells in the LNs as well as in peripheral blood of patients with LNs metastases. This could be an equivalent of the immunodeficient state, observed in lung cancer patients. Even in the absence of metastases in the regional LNs, the same type of change in the LN microenvironment were observed in those located closer towards the primary tumor.

Conclusions: The preliminary results of this study suggest that this approach may be helpful as an independent tumor staging factor. It is worthwhile to underline the part of staging process can be also based on features describing the immune cells in the peripheral blood.

*STS Member

P73

Risk Factors for Occult Mediastinal Metastases in Clinical Stage I Non-Small Cell Lung Cancer Screened by Computerized Tomography and Positron Emission Tomography

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Background: In patients deemed clinical stage I for non-small cell lung cancer (NSCLC) after computerized tomography (CT) and positron emission tomography (PET) scans, the utility of mediastinoscopy to detect occult mediastinal metastases is unclear. The goal of this study was to analyze histopathological risk factors for occult mediastinal metastases in these patients.

Methods: We conducted a retrospective review over a 6.5-year period to identify patients with potentially operable clinical stage I NSCLC with a CT- and PET-negative mediastinum. Medical records were reviewed, and the prevalence of pathologic N2 disease and risk factors were analyzed.

Results: Of 178 patients identified, 13 patients had histologically-confirmed N2 disease by mediastinoscopy(10) or after resection(3). The prevalence of N2 disease was 4.9% in clinical T1 patients and 12.5% in clinical T2 patients. Larger clinical tumor size predicted a higher prevalence of N2 disease($p < 0.001$) (Table). Central tumors had a higher prevalence of N2 disease compared to peripheral tumors, 30.4% vs. 6.3%($p=0.016$). All 13 patients with occult N2 metastases had adenocarcinoma as the cell type. They also had a higher PET uptake in the primary tumor compared to others, with median SUVmax of 5.8g/ml vs. 3.4g/ml($p=0.05$).

Conclusions: For patients deemed clinical stage I NSCLC by CT and PET, the prevalence of occult N2 metastases increased significantly with larger tumor size and central location. Adenocarcinoma cell type and a high PET uptake in the primary tumor were other risk factors. Mediastinoscopy may have improved yield in this subset of patients with one or more risk factors.

Clinical Tumor Size	% Occult N2 Metastases
0 - 2.0 cm	4.5
2.1 - 4.0 cm	11.4
4.1 - 6.0 cm	16.7
> 6.0 cm	100

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P74

Recent Survival Trends for Clinically Staged Stage I Lung Cancer

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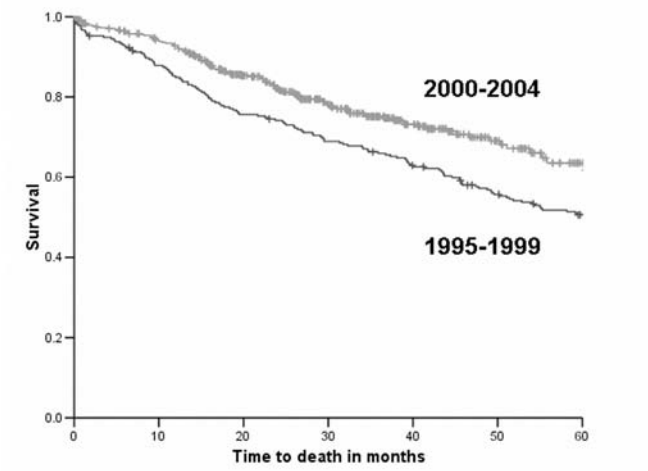
Background: Survival for clinical stage I non-small cell lung cancer (NSCLC) typically is less than that for pathologically staged patients. Because of recent improvements in preoperative staging modalities, notably PET scannig, we questioned whether survival of patients with cStage I NSCLC has improved.

Methods: We perfromed a retrospective analysis of 759 patients with cStage I NSCLC who underwent surgery from 1995 to 2004. Two time cohorts were compared, 1995-1999 and 2000-2004. Univariate and multivariate Cox and logistic regression analyses were perfomed to identify factors which influenced survival.

Results: Three-year and five-year survival in the later cohort were significantly better than the earlier one (75% and 64% vs. 66% and 51%, respectively, p = 0.001). In multivariate analysis (n=759), early time period, increasing tumor size, age, male gender, increasing pT and pN stage and subanatomic resection predicted worse survival. Comparing time periods, more patients in the earlier cohort had FEV1<60% (13.5% vs 10.3%, p=0.022), hypertension (69% vs 61%, p=0.49), bronchoalveolar histology (8.1% vs 1.8%, p<0.001), less tobacco use (73% vs 84%,p=0.002) and were more likely to be male (57% vs 51%, p=0.025). Time cohorts were similar with respect to pstage and type of surgery. Although PET scanning was significant on univariate analysis, it did not independantly predict survival.

Conclusions: Survival of patients with clinical stage I NSCLC has recently improved, and now approaches that of pstage I (5-yr: 64% vs 70%, p=NS). This trend does not seem to clearly be related to improvements in preoperative staging but rather to changes in patient demographics.



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P75

Patient-Centered Quality Indicators for Patients Undergoing Pulmonary Resection

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Financial Disclosure: S.D. Cassivi, Spiration Inc., Member of Data Safety Monitoring Board, Other

Background: Quality of care is increasingly scrutinized in medicine. No standard quality measures exist for surgical care of patients undergoing pulmonary resection.

Methods: Our thoracic surgical team developed a set of patient-centered quality of care measures, specific to patients undergoing pulmonary resection. Measures were chosen that demonstrate evidence-based preoperative assessment, adequate mediastinal staging, and interventions to prevent/expeditiously treat postoperative morbidity. Medical records of all patients undergoing pulmonary resection in 2005 were analyzed.

Results: 606 patients (male: female=330:276) underwent 628 pulmonary resections. Median age was 65.8 years (range, 2-93). Operative mortality was 2.1%. There were no National Quality Forum "27 Never" events. Pulmonary function testing was documented within 1 year before surgery in 74.2%. Electrocardiogram within 90 days before surgery was documented in 81.6% of patients 50 years and older. Smoking history was documented in all patients and smoking cessation consultation was offered to 85.7% of current smokers. Deep venous thrombosis prophylaxis was appropriate in 99.7%. Mediastinal staging was documented in 94.0% of patients undergoing lung cancer resection (n=333). 92.4% of patients employed postoperative incentive spirometry. Atrial fibrillation treatment occurred within 45 minutes of onset in 70.5%. Postoperative analog pain scores were above 6 in only 7.4% of assessments. Treatment and reassessment occurred within 2 hours in 81.0%. Follow-up planning was documented at hospital discharge in 100%.

Conclusions: Patient-centered and clinically relevant quality measures can be developed and assessed in general thoracic surgery. These quality indicators highlight and guide areas for potential improvement in the care of patients undergoing pulmonary resection. Quality Measures in Patients Undergoing Pulmonary Resection:

Quality Measure	Result	%
Operative mortality	13/606	2.1%
NQF "27 Never" events	0/628	0%
Preoperative Pulmonary function testing within 365 days prior to surgery	466/628	74.2%
Preoperative Electrocardiogram within 90 days prior to surgery (≥ 50 years old)	474/583	81.6%
Smoking history documented	606/606	100%
Smoking cessation consultation offered to current smokers	36/42	85.7%
Mediastinal staging for lung cancer resections (cervical mediastinoscopy, positron emission tomography, mediastinal lymphadenectomy)	313/333	94.0%
Deep venous thrombosis prophylaxis	626/628	99.7%
Postoperative incentive spirometry	580/628	92.4%
Treatment for atrial fibrillation with rapid	31/44	70.5%
Postoperative pain assessments ≥ 6/10	1683/22754	7.4%
Treatment and reassessment of pain within 2 hours (for scores ≥ 6/10)	1363/1683	81.0%
Follow-up planning documented at time of discharge from hospital	615/615	100%

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P76

When is it Best to Repeat an FDG-PET/CT Scan in Patients with Non-Small Cell Lung Cancer Who Have Received Neo-Adjuvant Chemo-Radiotherapy?

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Background: The ideal time to repeat an FDG-PET scan to accurately restage a patient after neoadjuvant radiotherapy for non-small cell lung cancer is unknown.

Methods: A retrospective review of prospective database of patients who underwent: neo-adjuvant chemo-radiotherapy, an initial and repeat FDG-PET/CT scan and pathologic staging. The accuracy of the clinical stage suggested by repeat FDG-PET/CT was compared to the actual pathologic stage. Receiver Operating Characteristics (ROC) curves were used to determine when it was best (most accurate) to repeat the FDG-PET/CT after the completion of the last dose of chest radiation.

Results: There were 108 patients. The median time to restaging was 24 days (range 2-88 days). ROC statistical analysis showed the optimal time to restage patients was 26 days for overall staging (AUC=0.88) and 29 days for N2 re-staging (AUC = 0.82). The accuracy for overall stage was: 3/8 patients (38%) for less than 10 days, 28/39 (72%) patients between 11 and 20 days, 42/49 (88%) between 21 - 30 days and 8/13 (62%) for 31 days or more. The accuracy for these time intervals for the N2 nodal disease restaging was: 1 / 2 patients, 2/5 (40%), 7/8 (88%) and 3/3, respectively.

Conclusions: The optimal time to perform a repeat FDG-PET/CT scan after the completion of neo-adjuvant chemo-radiotherapy to maximize its accuracy for restaging patients with NSCLC is about one month for the overall accuracy and for the N2 lymph nodes.

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P77

Is an Intercostal Chest Drain Necessary After VATS Lung Biopsy?

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Background: Video Assisted Thoracoscopic Surgery (VATS) lung biopsy is a frequently performed procedure as part of the pulmonary diagnostic approach. However there is no evidence in the literature concerning the need for an intercostal chest drain after the procedure.

Method: A prospective randomised control trial was set up to assess the need for intercostal chest drainage after VATS lung biopsy. Patients who did not have any air leak after the procedure (lung tested while patient still under anaesthetic) was randomised to either having a chest drain or not. The study was powered using an alpha=0.01 and P= 0.9.

Results: 30 patients were recruited in each group. There were no significant differences between the two groups in terms of patients' age (mean age: 59 v/s 54 years), gender, history of steroid use, immediate post-op pain scores and wound complications. No significant pneumothoraces occurred in either group. However in the immediate post-op phase, 28% and 15% of patients with and without chest drains respectively, had a small pneumothorax (<10%) on their chest radiograph. Moreover, there was significantly increased in-hospital stay in the chest drain group (median 3 v/s 1 days, $p < 0.001$). At follow-up, all of the patients had fully expanded lungs bilaterally.

Conclusions: There in no need for an intercostal chest drain in patients undergoing VATS lung biopsy if no air leak is identified at the time of surgery. Patients without a drain are discharged home within 24-hours post-op raising the possibly of this procedure being a day-case practice.

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P78

Getting to the #5 and #6 A-P Window Lymph Nodes in Patients With Non-Small Cell Lung Cancer: How, Why and What For?

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Background: To assess the efficacy of the different techniques of lymph node biopsies in patients with suspected metastatic non-small cell lung cancer (NSCLC) to the aortopulmonary window (#5, #6) lymph nodes.

Methods: A retrospective review of a prospective database of patients between January, 2003 and June, 2006 with suspected N2 disease only in the #5 and/or #6 lymph nodes (LN). All patients had integrated FDG-PET/CT, nodal biopsy or thoracotomy with thoracic lymphadenectomy.

Results: There were 112 patients with suspected N2 disease in only the #5 and/or #6 lymph node stations. Primary tumor was in the left upper lobe in 94 (84%) and in the LLL in 13 (12%). Mediastinoscopy, used in all patients found unsuspected N3 disease in four patients and N2 (#4L) disease in 12 (11%). EUS-FNA, implemented in 62 (56%) patients had an accuracy of 66%. Left single incision VATS used in 39 patients had an accuracy of 100% ($p<0.001$). Of the 58 patients with proven N2 disease, 53 (91%) completed neoadjuvant chemoradiotherapy and subsequently underwent resection and their 2 year survival was 76%.

Conclusions: EUS-FNA is less accurate for the #5 and/or #6 lymph node stations than left VATS. We prefer left VATS over the Chamberlain procedure for patients with suspected nodal metastases isolated only to #5 and/or #6 stations. Finally, since the survival for patients with N2 disease in these stations only is relatively high, the role of neoadjuvant chemo-radiotherapy (and hence the need for biopsy) remains controversial.

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P79

Risk Factors for Aspiration Following Major Pulmonary Resection

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Background: Aspiration is likely a source of major morbidity following major pulmonary resection. We sought to identify risk factors for aspiration with evocative clinical and radiographic evaluation.

Methods: Demographic, operative and outcomes data was collected prospectively for consecutive patients undergoing thoracotomy for pulmonary resection starting in April 2005 by a single surgeon. All patients underwent evaluation by a licensed speech therapist on postoperative day one. Patients failing clinical examination underwent diagnostic video esophagram (DVE). Univariate data analysis included descriptive statistics, student's t-test, and chi-squared test when appropriate.

Results: 177 consecutive patients (83 males (46.9%); mean age 65.2) underwent clinical evaluation for aspiration following thoracotomy for pulmonary resection. 37 patients (20.9%) failed clinical examination and underwent DVE, and 30 of these (16.9%) demonstrated radiographic evidence of aspiration. Only one patient (0.6%) aspirated following negative clinical examination. Demographic risk factors associated with aspiration included increased age ($p<.07$), neoadjuvant chemotherapy ($p<.03$), and previous or current head and neck cancer ($p<.001$). Operative factors associated with an increased risk of aspiration included posterolateral thoracotomy ($p<.05$) and mediastinal lymphanedectomy ($p<.01$). All patients with a positive DVE received dietary modification, and most demonstrated amelioration of swallowing within 30 days.

Conclusions: Aspiration following thoracotomy for pulmonary resection may affect greater than 15% of patients and is currently underappreciated as a potential complication. Operative and demographic risk factors will help in identification of high risk patients. Early identification of at-risk patients may lead to improved outcomes.

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P80

Risk Model for In-Hospital Mortality in 7,716 Patients Requiring Thoracic Surgery for Primary Resectable Lung Cancer: Results From a Nationally Representative Database

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Background: To identify factors associated with in-hospital mortality among patients operated on for primary resectable lung cancer and to construct a risk model.

Methods: Data from a nationally representative thoracic surgery database were collected prospectively in 59 hospitals, between June 2002 and June 2006. Logistic regression analysis was used to predict the risk of in-hospital mortality. A risk model was developed with a training set of data (50% of patients) and validated on an independent test set (50% of patients). Its fit was assessed by the Hosmer-Lemeshow test and predictive accuracy, by the c-index.

Results: Of the 7,716 original patients, 251 (3.2%) died during the same hospital admission. Within the data used to develop the model, the factors found to be significantly associated with the occurrence of in-hospital mortality in a multivariate analysis were: age, gender, performance status classification, side, class of procedure, tumor histology, TNM stages and co-morbid disease. The model was reliable (Hosmer-Lemeshow test = 7.61; p=0.47) and accurate: c-index (95% confidence interval) = 0.81 (0.79 to 0.83) for the training set and 0.78 (0.80 to 0.76) for the test set of data. The correlation between the expected and observed number of deaths was 0.99.

Conclusions: The validated multivariate model for risk of in-hospital mortality among adult patients requiring surgery for primary resectable lung cancer described in this report was developed with national data, uses only 8 variables and has good performance characteristics. It appears to be a valid clinical tool for predicting the risk of death.

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P81

Pulmonary Complications After Lung Resection For Lung Cancer: A Prospective Multicentric Study on 1,006 Patients

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Background: Pulmonary complications are the main postoperative problems after thoracotomy. Unfortunately, their incidence, clinical impact and mortality have not been extensively investigated. The aim of the study was to create a prospective database to answer these questions.

Methods: Data regarding 1006 patients undergoing lung resection for cancer were prospectively collected from 5 different centers from September 2004 to March 2006. A uni and multivariate analysis was performed to search for predictors of respiratory complication and respiratory failure.

Results: Two-hundred nineteen patients developed postoperative pulmonary complications (21.7%), and in 59 of them (26.9%) respiratory failure occurred. Thirty-one patients died as a result of postoperative pulmonary complications. The first pulmonary complication recorded was atelectasis in 113 patients, pneumonia in 60 patients, progressive respiratory failure in 18 patients, ARDS in 14 patients, pulmonary edema in 11 patients and pulmonary embolism in 8 patients. In complicated patients, clinical modifications were evident at least 24 hours before the onset of complication, compared to uncomplicated patients ($p<0.05$). Age (>70 years), preoperative FEV1 and right upper lobectomy were confirmed as predictors of respiratory complication. Age (>70 years), alcoholism, previous head&neck cancer and recurrent atelectasis resulted as predictors of respiratory failure.

Conclusions: Respiratory complications evolve into respiratory failure in more than 25% of cases. In such a situation, mortality is in the order of 50%. Further strategies should be developed to improve clinical management of patients with one or more risk factors.

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STS GUIDELINES FOR ETHICAL RELATIONS WITH COMMUNICATIONS MEDIA

The following guidelines are provided to members of The Society of Thoracic Surgeons for their interrelations with the public media. Adherence to these guidelines is a condition of membership. Noncompliance may subject a member to disciplinary action under the Society's Bylaws, Article XI.

I. News releases about STS members are considered appropriate when they report:
   A. election or appointment to important posts.
   B. receipt of awards, prizes or research grants.
   C. participation in scheduled lectures or programs.
   D. opening of practice.

II. Press reports or television appearances are considered to be appropriate when they:
   A. are of professional interest and/or educate the public.
   B. emphasize techniques, methods or other relevant information.
   C. present information about a publication or presentation at a scientific meeting.

III. Other truthful and non-deceptive communications to the public media also are considered appropriate.

IV. Live broadcasts of surgical procedures to the general public are to be avoided. The Society believes a possibility exists wherein participating surgeons might fail to follow proper medical procedures or might be distracted because of the media and, thereby, deprive the patient of the highest quality care.

V. Members should not communicate a patient's medical history or condition to the media without the patient's authorization, except for certain factual information which is in the public domain.

VI. Responsibility for what becomes published, televised or related via radio or electronic media shall lie with the surgeon who releases the information.

**These revised Guidelines were recommended by the Society's Committee on Standards and Ethics, and approved by the STS Board of Directors on January 23, 2005.*

STS ADVERTISING AND PUBLICITY POLICY

There are no restrictions on advertising by physicians except those that can be specifically justified to protect the public from deceptive practices. A physician may publicize him or herself as a physician through any commercial publicity or other form of public communication (including any newspaper, magazine, telephone directory, Web site, radio, television, direct mail, or other advertising) provided that the communication shall not be misleading because of the omission of necessary material information, shall not contain any false or misleading statement, and shall not otherwise operate to deceive.

Because the public can sometimes be deceived by the use of medical terms or illustrations that are difficult to understand, physicians should design the form of communication to communicate the information contained therein to the public in a readily comprehensible manner. Aggressive, high pressure advertising and publicity should be avoided if they create unjustified medical expectations or are accompanied by deceptive claims. The key issue, however, is whether advertising or publicity, regardless of format or content, is true and not materially misleading.

The communication may include: (1) the educational background of the physician; (2) the basis on which fees are determined (including charges for specific services); (3) available credit or other methods of payment; and (4) any other nondeceptive information.

Nothing in this opinion is intended to discourage or to limit advertising and representations which are not false or deceptive within the meaning of Section 5 of the Federal Trade Commission Act. At the same time, however, physicians are advised that certain types of communications have a significant potential for deception and should therefore receive special attention. For example, testimonials of patients as to the physician's skill or the quality of the physician's professional services tend to be deceptive when they do not reflect the results that patients with conditions comparable to the testimoniant's condition generally receive.

Objective claims regarding experience, competence and the quality of physicians and the services they provide may be made only if they are factually supportable. Similarly, generalized statements of satisfaction with a physician's services may be made if they are representative of the experiences of that physician's patients.

Because physicians have an ethical obligation to share medical advances, it is unlikely that a physician will have a truly exclusive or unique skill or remedy. Claims that

imply such a skill or remedy therefore can be deceptive. Statements that a physician has an exclusive or unique skill or remedy in a particular geographic area, if true, however, are permissible. Similarly, a statement that a physician has cured or successfully treated a large number of cases involving a particular serious ailment is deceptive if it implies a certainty of result and creates unjustified and misleading expectations in prospective patients.

Consistent with federal regulatory standards which apply to commercial advertising, a physician who is considering the placement of an advertisement or publicity release, whether in print, electronic, broadcast, or other media, should determine in advance that the communication or message is explicitly and implicitly truthful and not misleading. These standards require the advertiser to have a reasonable basis for claims before they are used in advertising. The reasonable basis must be established by those facts known to the advertiser, and those, which a reasonable, prudent advertiser should have discovered. Inclusion of the physician's name in advertising may help to assure that these guidelines are being met.

Based upon AMA policy issued prior to April 1977, updated in June 1996; approved by the STS Board of Directors (then "Council") on May 6, 2001, amended on January 23, 2005.

STATEMENT ON THE PHYSICIAN ACTING AS AN EXPERT WITNESS

Physicians who choose to act as an expert understand that they have an obligation to testify in court as an expert witness on behalf of the plaintiff or defendant as appropriate. One of the most important and controversial figures in malpractice litigation is the physician expert witness. With the increasing number of malpractice suits in the country – and the growing size of awards for damages – the number of available "expert witnesses" has greatly increased in the past few years. In response to the need to define the recommended qualifications for the physician expert witness and the guidelines for his or her behavior, The Society of Thoracic Surgeons has adopted the following statement as STS policy. The statement is an adaptation of guidelines developed by the Council of Medical Specialty Societies, the American College of Surgeons and several other medical groups.

I. Recommended qualifications for the physician who acts as an expert witness

A. The physician expert witness must have a current, valid, and unrestricted license to practice medicine in the state in which he or she practices.

B. The physician expert witness should be a diplomate of a specialty board recognized by the American Board of Medical Specialties, as well as be qualified by experience or demonstrated competence in the subject of the case.

C. The specialty of the physician expert witness should be appropriate to the subject matter in the case.

D. The physician expert witness should be familiar with the standard of care provided at the time of the alleged occurrence and should have been actively involved in the clinical practice of the specialty or the subject matter of the case at the time of the alleged occurrence.

E. The physician expert witness should be able to demonstrate evidence of continuing medical education relevant to the specialty or the subject matter of the case.

F. The physician expert witness should be prepared to document the percentage of time that is involved in serving as an expert witness. In addition, the physician expert should be willing to disclose the amount of fees or compensation obtained for such activities and the total number of times the physician expert has testified for the plaintiff or defendant.

II. Recommended guidelines for behavior of the physician acting as an expert witness

Physicians have an obligation to testify in court as expert witnesses when appropriate. Physician expert witnesses are expected to be impartial and should not adopt a position as an advocate or partisan in the legal proceedings.

A. The physician expert witness should review all the relevant medical information in the case and testify to its content fairly, honestly, and in a balanced manner. In addition, the physician expert witness may be called upon to draw an inference or an opinion based on the facts of the case. In doing so, the physician expert witness should apply the same standards of fairness and honesty.

B. The physician expert should be prepared to distinguish between actual negligence (substandard medical care that results in harm) and an unfortunate medical outcome (recognized complications occurring as a result of medical uncertainty).

C. The physician expert witness should review the standards of practice prevailing at the time and under the circumstances of the alleged occurrence.

D. The physician expert witness should be prepared to state the basis of his or her testimony or opinion, and whether it is based on personal experience, specific clinical references, evidence-based guidelines, or a generally accepted opinion in the specialty field. The physician expert witness should be prepared to discuss important alternate methods and views.

E. Compensation of the physician expert witness should be reasonable and commensurate with the time and effort given to preparing for deposition and court appearance. It is unethical for a physician expert witness to link compensation to the outcome of a case.

F. The physician expert witness is ethically and legally obligated to tell the truth. Transcripts of depositions and courtroom testimony are public records, and subject to independent peer reviews. Moreover, the physician expert witness should willingly provide transcripts and other documents pertaining to the expert testimony to independent peer review if requested by his or her professional organization. The physician expert witness should be aware that failure to provide truthful testimony exposes the physician expert witness to criminal prosecution for perjury, civil suits for negligence, revocation or suspension of his or her professional license, and disciplinary action by the Society.

Amended by the Board of Directors of The Society of Thoracic Surgeons: April 10, 2005

Exhibitors

3M Health Care **Booths #312-313**
St. Paul, MN
3M Health Care is a global supplier of medical devices and supplies with specific expertise in infection prevention, skin and wound care and rapid diagnostic solutions for the prevention of health care acquired infections.

A&E Medical Corporation **Booth #1101**
Durham, NC
The second generation Direct View Retractor (DVR2) to assist in minimally invasive saphenous vein harvest, MYO/Wireä temporary pacing wires, MYO/Wire II sternum wires and DoubleWire high-strength sternal closure system will be displayed.

ABIOMED, Inc. **Booth #426**
Danvers, MA
ABIOMED develops, manufactures and markets cardiac assist and recovery devices. Products include: the BVS®5000, the AB5000™, and in Europe, the Impella® Cardiac Support Systems. The AbioCor® received FDA approval in September 2006.

Accumetrics **Booths #833-835**
San Diego, CA
Accumetrics develops and manufactures the VerifyNow® System for assessing platelet function. VerifyNow® provides an easy to use, automated, rapid and accurate way to monitor platelet function in response to aspirin, Plavix® and GP IIb/IIIa inhibitors.

Accuray Incorporated **Booth #525**
Sunnyvale, CA
The CyberKnife Robotic Radiosurgery System is the world's first and only radiosurgery system capable of treating tumors anywhere in the body with proven sub-millimeter accuracy. Using image guidance technology and computer controlled robotics, the CyberKnife System is designed to continuously track, detect and correct for tumor and patient movement throughout the treatment.

Acorn Cardiovascular **Booth #726**
St. Paul, MN
Acorn Cardiovascular's CorCap™ Cardiac Support Device is a mesh wrap, implanted around the heart to provide gentle support. It is intended to prevent heart failure progression by improving cardiac structure and function leading to improved quality of life.

American Association for Thoracic Surgery **Booth #214**
Beverly, MA
The AATS is dedicated to excellence in research, education and innovation in thoracic surgery. More than 2,500 medical professionals are expected to participate in the 87th Annual Meeting, May 4-9, 2007 in Washington DC. Visit www.aats.org or stop by the AATS booth for more information.

Applied Fiberoptics **Booth #602**
Westmont, IL
The lightweight Gemini Headlight's low-profile design does not interfere with loupes and has a diagonally positioned cable for optimum weight balance. The 300-watt Sunbeam light source brings the clarity of sunlight into the operating room.

Army Medical Recruiting **Booths #1715-1719**
Fort Knox, KY

Arrow International **Booth# 1012**
Reading, PA
ProActive CounterPulsation™, exclusive to AutoCAT 2 WAVE®—the only IABP system that anticipates AV closures before they occur, even during severe arrhythmias. Aortic flow timing, FiberOptix™ sensor, and WAVE® software optimize and simplify IABP management.

Association of Physician Assistants in Cardiovascular Surgery **Booth #1709**
Denver, CO
The APACVS represents surgical physician assistants in the field of cardiovascular and thoracic surgery. The primary objectives of the Association are to promote clinical and academic excellence for members and to enhance quality medical care for patients.

AtriCure, Inc. **Booth #1312**
West Chester, OH
Come on an amazing journey! Get your passport to attend expert talks on increasing success rates in arrhythmia patients, experience the latest in surgical ablation tools and discover programs to help you recruit clinical patients.

Atrium Medical Corporation **Booth #1401**
Hudson, NH
See Atrium's complete line of Mobile Chest Drains, Water Seal, Dry Suction and Dry Seal drains. Atrium also offers coated and uncoated PVC and silicone thoracic catheters, PleuraGuide Disposable Chest Tube Kit and Ultramax™ knitted double velour vascular grafts.

Exhibitors

ATS Medical, Inc. **Booth #719**
Minneapolis, MN
ATS Medical features the ATS Open Pivot® Heart Valve, Simulus™ flexible annuloplasty products, and 3F tissue valves. ATS partners to provide SurgiFrost® probes and FrostByte™ clamps, allografts from RTI-CV, and the Enclose II anastomosis assist device.

Baxter **Booth #1204-1206**
Deerfield, IL
Baxter is a global medical products and services company with expertise in medical devices, pharmaceuticals and biotechnology. Key products include FLOSEAL Hemostatic Matrix, COSEAL Surgical Sealant, TISSEEL [VH Fibrin Sealant].

Baxter Anesthesia & Critical Care **Booth #930**
New Providence, NJ
Baxter's pharmaceutical products include the inhalation anesthetics SUPRANE (desflurane, USP), SEVOFLURANE and FORANE (isoflurane, USP), BREVIBLOC (esmolol HCl) injection in vials, BREVIBLOC concentrate in ampules for dilution, BREVIBLOC PREMIXED (esmolol HCl in sodium chloride) injection.

Bayer Pharmaceuticals Corporation **Booth #219**
West Haven, CT
Bayer Healthcare Corporation, Pharmaceutical Division invites you to visit with our professional medical representatives to discuss our full range of health care products including TRASYLOL® (aprotinin injection).

BFW, Inc. **Booth #213**
Louisville, KY
BFW, Inc. provides fiber optic headlights and xenon or quartz halogen light sources known for comfort, quality, brilliance, durability and customer service that is second-to-none.

Blackwell Futura **Booth #732**
Malden, MA
Blackwell Publishing is one of the world's leading publishers, representing the very best in research and practice. Visit our booth to browse bestselling books and pick up free journal samples.

Boston Scientific **Booths #1501, 1701-1705**
Santa Clara, CA
Boston Scientific is a worldwide developer, manufacturer and marketer of medical devices whose products are used in a broad range of interventional medical specialties. For more information, visit www.bostonscientific.com.

Bryan Corporation **Booth #1713**
Woburn, MA
Bryan Corporation's (www.bryancorp.com) product line consists of the FDA-approved sterile talc products for prevention of malignant pleural effusion, and the Bryan-Dumon Series II Rigid Bronchoscope and Stent Placement Kit, Dumon-style silicone stents and other bronchoscopy accessories.

California Medical Laboratories, Inc. **Booths #501-503**
Costa Mesa, CA
A manufacturer of cardiovascular cannulae, catheters, an array of cardioplegia delivery products, suction and venting devices, accessories, and minimally invasive products, (www.calmedlab.com) please visit the booth to discuss recent developments in our Cannulae Line.

CAOS **Booth #928**
Winston Salem, NC
CAOS provides a full service line for the cardiothoracic community, including STS submission, EHR, practice management, billing, CT coding, collections and consulting. Also available are automated reports, leveled surgical consults with electronic faxing and signatures.

CardiacAssist, Inc. **Booths #1227-1229**
Pittsburgh, PA
The TandemHeart PTVA System can provide up to 5.0 lpm of short-term extracorporeal support during interventional therapies performed by cardiologists and cardiac surgeons. The System is implemented through a cardiac catheterization procedure in as little as 30 minutes.

Cardica, Inc. **Booth #328**
Redwood City, CA
Cardica manufactures automated anastomotic systems used by surgeons to perform CABG surgery. Cardica's products provide cardiovascular and cardiothoracic surgeons with automated systems to perform consistent, rapid and reliable anastomoses of the vessels.

CardioAccess **Booth #224**
Ft. Lauderdale, FL
CardioAccess' provides a fully relational, comprehensive database for congenital and adult cardiovascular and thoracic surgery that functions as a tool for patient care, teaching, research and practice management.

CardioGenesis Corporation **Booths #627-629**
Foothill Ranch, CA
Cardiogenesis is a progressive medical device company committed to innovating tools for the treatment of advanced cardiovascular disease and is the clinical/market leader in laser revascularization and angiogenic therapies for the treatment of severe angina.

CardioMEMS, Inc. **Booth #728**
Atlanta, GA
CardioMEMS, Inc. is the leading developer of innovative wireless medical pressure sensors. The EndoSure™ Wireless AAA Pressure Sensor is available for sale in the U.S. With one product successfully launched, several others are under development.

CAS Medical Systems, Inc. **Booth #1513**
Branford, CT
CAS Medical Systems (www.CASMed.com), a leader in vital signs monitoring systems, is proud to introduce the FORE-SIGHT™ Cerebral Oximeter, a compelling new technology for the non-invasive, continuous monitoring of absolute cerebral tissue oxygen saturation.

Ceremed, Inc. **Booths #829-831**
Los Angeles, CA
Makers of Ostene, a new water-soluble bone hemostasis material. Ceremed (www.Ceremed.com) is committed to reducing the risk of complications following cardiac surgery.

Chase Medical **Booth #412**
Richardson, TX
Chase Medical develops innovative heart failure solutions. Surgical Ventricular Restoration (SVR®), utilizing the Mannequin™ shaper, provides improved survival and quality of life for heart failure patients around the world.

Cook Incorporated **Booths #407-409**
Bloomington, IN
Cook Incorporated is the pre-eminent endovascular company in the world. With collaboration dating back to Charles Dotter, Cook today offers stents and stent grafts for treating the entire aorta.

CryoCath Technologies, Inc. **Booth #619**
Montreal, Quebec, Canada
CryoCath Technologies, the global leader in surgical and catheter based cardiac cryotherapy products, features the SurgiFrost® & FrostByte® CryoAblation Systems used to create transmural lesions for the treatment of cardiac arrhythmias.

CryoLife, Inc. **Booth #1329**
Kennesaw, GA
CryoLife®, Inc. is a leader in the development and implementation of advanced technologies associated with allograft processing and cryopreservation. Additionally, CryoLife continues to expand its protein hydrogel technology platform, which currently includes BioGlue® Surgical Adhesive.

CTSNet, Inc. **Booths #1002-1004**
St. Louis, MO
CTSNet is the premier electronic community and portal of information for cardiothoracic surgery, providing the most comprehensive, heavily trafficked and reliable online source of information about cardiothoracic surgery available worldwide.

Cubist Pharmaceuticals **Booths #1231-1233**
Lexington, MA
CUBICIN® (daptomycin for injection) is the only once-daily agent approved for the treatment of MRSA and MSSA in bacteremia, including right sided endocarditis and cSSSI. (www.cubist.com)

Datascope Corp. **Booth #712**
Fairfield, NJ
Datascope provides counterpulsation and conduit harvest solutions for cardiothoracic surgeons. Featuring CS100® pump and Linear® catheter, Datascope is the leader in counterpulsation therapy. ClearGlide® EVH products offer flexible, efficient options for single, small incision conduit harvest.

Delacroix-Chevalier/Peters Surgical **Booths #1200-1202**
Paris, France
Peters Surgical, a premium manufacturer of CV sutures best known for Cardionyl, a mono-suture for MVR. Delacroix-Chevalier designs and manufactures retractors and instruments for CV surgery. www.medalliancegroup.com (888) 891-1200

Denver Biomedical, a Cardinal Health Company **Booth #907**
McGaw Park, IL
Displaying the Pleurx® Catheter Systems, indwelling catheter and drainage systems for home management of malignant ascites and pleural effusions. Outpatient placement and home drainage reduce hospital time allowing patients to drain as frequently as necessary. Also on display the Denver® Ascites Shunts.

Designs for Vision, Inc. **Booth #1018**
Ronkonkoma, NY
Finest Surgical Telescopes (2.5x, 3.5x, 4.5x, and 6.0x) available and the brightest illumination: DayLite Xenon™ and DayLite Metal Halide™.

Doctors Research Group, Inc. **Booth #1428**
Oxford, CT
Kryptonite Bone Cement™ is a non-toxic, osteoconductive, calcified triglyceride, which is extremely adhesive, cohesive and minimally exothermic. During the 30 minute curing process, the material transforms from a liquid to a solid (pending FDA clearance).

European Association for Cardio-Thoracic Surgery **Booth #1105**
Windsor, United Kingdom
The EACTS is the largest European association devoted to the practice of Cardio and Thoracic surgery. EACTS' aim is to advance education in cardio-thoracic surgery, promote research and disseminate the useful results thereof. Activities include meetings and journals.

Edwards LifeSciences **Booth #701**
Irvine, CA
Edwards LifeSciences, the number-one heart valve company in the world, is focused on providing innovative technologies to four cardiovascular areas: heart valve disease, coronary artery disease, peripheral vascular disease and congestive heart failure.

Elsevier, Inc. **Booth #1223**
Philadelphia, PA
ELSEVIER is dedicated to being your integral partner in delivering exceptional health care. Trust ELSEVIER to offer superior resources, expand knowledge, foster communication, and enable individual and collective advancement in the health care field.

Encyclopaedia Britannica Products/United Educators **Booth #1030**
Lake Bluff, IL
Encyclopaedia Britannica is available in print, CD/DVD and premium online service. New Standard Encyclopedia, The Great Books of the Western World and Webster's Dictionaries.

ESTECH **Booth #812**
San Ramon, CA
ESTECH enables procedures cardiac surgeons specialize in—ablations, CABG, valve and heart failure—with COBRA® RF Ablation Products, including stabilizers and positioners, valve exposure and cannulation systems for traditional and minimally invasive approaches and Blue Egg Sizer for LVR.

Ethicon Endo-Surgery **Booth #609**
Cincinnati, OH
Ethicon Endo-Surgery, Inc. (www.ethiconendo.com) develops medical devices for minimally invasive and open surgical procedures, focusing on procedure-enabling devices for the interventional diagnosis and treatment of conditions in general and bariatric surgery.

ETHICON, Inc./CardioVations **Booth #507**
Somerville, NJ
CARDIOVATIONS® and ETHICON PRODUCTS®, innovations for cardiovascular surgery, including PORT ACCESS® products: catheters, cannulae and instruments for minimally invasive valve repair; ETHICON cardiovascular products: PROLENE® Suture, ETHIBOND® Excel Suture, PLUS Antibacterial Sutures; and MULTIPASS® Needles.

Fehling Surgical Instruments, Inc. **Booths #1032-1034**
Acworth, GA
Fehling Surgical features the CERAMO Instrument Line, SUPERPLAST Coronary Probes and THOREXPO Retractor System. CERAMO surface means high efficiency through enhanced performance, increased endurance and minimal maintenance. See and feel the difference.

Fresenius Medical Care **Booths #206-208**
Houston, TX
Fresenius Medical Care Extracorporeal Alliance (FMCEA) provides extracorporeal services to hospitals, including cardiovascular perfusion, autotransfusion, apheresis and other extracorporeal therapies. Serving approximately 450 hospitals, FMCEA (www.fmcea.com) provides a multi-disciplinary team of perfusionists, nurses and technicians.

Gore & Associates **Booth #1027**
Flagstaff, AZ
W. L. Gore & Associates, Inc. is the worldwide leader in expanded polytetrafluoroethylene (ePTFE) technology. The Medical Division of Gore specializes in the design and manufacture of innovative medical devices.

Haemonetics Corporation **Booth #1518**
Braintree, MA
In addition to offering a portfolio of innovative autotransfusion and suction systems, Haemonetics® is an easy company to work with. We are dedicated to helping our customers meet the world's need for a safe and available blood supply.

Heart Hugger/General Cardiac Technology, Inc. **Booth #315**
Santa Cruz, CA
Heart Hugger Sternum Support Harness is fitted after heart bypass or thoracic surgery. It splints surgical wounds with encircling pressure, offering pain relief for a quicker recovery with fewer complications.

Hodder Arnold Publishers **Booth #1326**
New York, NY
Please visit our booth featuring the latest titles from both Arnold and Oxford University Press including Operative Thoracic Surgery, Fifth Edition, edited by Larry R. Kaiser and Glyn G. Jamieson, and other leading books.

HRA Research **Booths #1328 and 1721**
Parsippany, NJ
Our team of experienced interviewers will be distributing carefully developed questionnaires. We'll be gathering the answers to vital marketing and clinical questions-answers that affect the introduction of new products or the continuation of existing health care products and services.

I-FLOW Corporation **Booths #932-934**
Lake Forest, CA
ON-Q PainBuster, Redefining Recovery: ON-Q delivers local anesthetic continuously to the incision site up to 5 days post-surgery, providing satisfied patients with lower pain scores, shorter lengths of stay and less recovery—reducing costs and increasing referrals.

International Society for Minimally Invasive Cardiothoracic Surgery **Booth #216**
Beverly, MA
Advancing innovative techniques and technologies in less invasive cardiothoracic surgery, ISMICS offers cutting-edge science and hands-on demonstrations at its Annual Meeting and Winter Workshop; the ISMICS 10th Annual Meeting will be June 6-9, 2007, Aurelia Convention Centre and Expo, Rome, Italy. www.ismics.org

Intuitive Surgical, Inc. **Booth #319**
Sunnyvale, CA
Intuitive Surgical, Inc. is the global technology leader in robotic-assisted, minimally invasive surgery. The Company's da Vinci® Surgical System offers breakthrough capabilities that enable cardiac surgeons to use a minimally invasive approach and avoid sternotomy.

Kapp Surgical, Inc. **Booths #506-508**
Cleveland, OH
Kapp Surgical is a custom design house for surgical instruments. We are the manufacturer of the Original Cosgrove Valve Retractor, representing the MCRI Mechanical Heart Valve and Shelhigh Tissue Valves and Implants.

Karl Storz Endoscopy—America, Inc. **Booths #1519-1618**
Culver City, CA
Karl Storz Endoscopy—America, Inc., a leader in endoscopic devices, offers a range of innovative products for thoracic applications, including video-assisted thoracic surgery, mediastinoscopy and bronchoscopy procedures, including early detection of pulmonary tumors using autofluorescence technology.

Kimberly-Clark Corporation **Booths #1327-1329**
Roswell, GA
Visit Kimberly-Clark at booth 1327-1329 and experience the Kimberly-Clark Patient Warming System and new InteguSeal* Microbial Sealant, our newest solutions to help facilities reduce surgical site infections and complications and improve patient outcomes.

King Pharmaceuticals, Inc. **Booth #1525**
Bridgewater, NJ
King Pharmaceuticals, Inc., focuses on development, growth and promotion of innovative and trusted medicines. Dedicated to improving and protecting quality of life for people around the world, King works diligently to successfully develop and deliver superior pharmaceutical products while operating in a socially responsible manner.

KLS-Martin L.P. **Booths #220-222**
Jacksonville, FL
KLS-Martin is a craniomaxillofacial surgical company that specializes in titanium, resorbable (Resorbx) fixation, distraction osteogenesis devices, surgical instrumentation and hand held micro power equipment.

Koros USA, Inc. **Booths #1318-1320**
Moorpark, CA

Lippincott, Williams & Wilkins Medical Publishers **Booth #734**
La Mesa, CA

Luna Innovations Incorporated **Booth #633**
Roanoke, VA
Luna Innovations Incorporated is pleased to introduce the EDAC™ QUANTIFIER, an innovative medical device that uses quantitative ultrasound technology to non-invasively count and classify emboli in the blood stream. www.lunamedicalproducts.com

M2S, Inc. (formerly Medical Metrx Solutions, or MMS) **Booth #314**
West Lebanon, NH
M2S provides 3-D modeling, measurement and patient data registry services for vascular applications (specifically AAA, TAA and carotid) to assist with pre-operative strategy, surgery, post-operative evaluation and long-term surveillance.

MedicalCV, Inc. **Booth #631**
Inver Grove Heights, MN
MedicalCV has developed the SOLAR™ Minimally Invasive Cardiac Ablation System to enable unilateral, closed-chest, beating heart cardiac tissue ablation for the potential treatment of atrial fibrillation.

Medi-Stim **Booth #1727-1729**
Oslo, Norway
Search, detect, verify and document! The VeriQ system from Medi-Stim combines velocity and volume flow measurement; the surgeon can locate intra mural vessels, detect and quantify stenosis, as well as the conventional graft patency verification.

Medtronic, Inc. **Booth #201**
Minneapolis, MN
Medtronic, global leader in medical technology, offers arrested heart surgery products (aortic endografting system, 3rd generation tissue valves and heart lung machine); OPCABG products (irrigated radio frequency ablation devices, anastomotic/graft patency measurement devices); and Medtronic EDGE(SM) skills-based training program.

Micro Touch, Inc. **Booth #1322**
Phoenix, AZ
Distributor of Shiatsu Therapeutic Massaging Recliners and Portable Massage Units. The healing benefits of massage involve both the relaxation of the body and its positive effects on the mind.

Nadia International, Inc. **Booth #1103**
Austin, TX
Nadia International will be displaying educational/surgical bronze sculptures specifically for the thoracic surgeon. These museum quality limited editions are created by Ronadro. Ronadro will be introducing the award winning sculpture "Critical Beat" at the 2007 meeting.

New England Compounding Center **Booth #1426**
Framingham, MA

Novadaq Technologies, Inc. **Booths #202-204**
Toronto, Ontario, Canada
Novadaq® develops and markets the SPY® Imaging System, an intra-operative fluorescence vascular angiography system enabling surgeons to visually assess the coronary vasculature, including native and bypass grafts during cardiac surgery.

Olympus Surgical America, Inc. **Booth #519**
Orangeburg, NY
Olympus has established a new level of imaging performance for surgical endoscopy with the introduction of its HD EndoEYE™ video laparoscope and the BF-180 series bronchovideoscopes, which are powered the company's new HD imaging platform, EVIS EXERA II™.

ONCOTECH **Booth #1625**
Tustin, CA
ONCOTECH is a molecular oncology laboratory that performs Extreme Drug Resistance (EDR®) Assays, along with prognostic and predictive marker testing to assist the physician in selecting the most appropriate therapy for each unique cancer patient.

ON-X Valves MCRI **Booth #401**
Austin, TX
On-X® Heart Valves: Patented natural design and On-X® Carbon offer reduced turbulence in a mechanical valve to rival the clinical performance and surpass the hemodynamic performance of prosthetic tissue valves. Lowered anticoagulation trial underway in the U.S.

Peninsula Medical Products, LLC **Booth #1532**
Livonia, MI

PM Devices, Inc. **Booth #1433**
Richmond, BE, Canada
PM Devices Inc. utilizes a proprietary collagen tissue processing technology to manufacture its two core products: PeriPatch™ Sleeve and PeriPatch™ Sheet; also produces the Sterna-Band™ self-locking sternotomy sutures for closure of median sternotomies and lateral thoracotomies.

Pioneer Surgical Technology **Booth #1707**
Marquette, MI
The Pioneer Sternal Cable System consists of multi-strand stainless steel cable which is tensioned to a known degree and then crimped in place using a patented instrument. The cable is smooth, flexible and remarkably strong, contributing to a consistently stable, secure closure.

Quest Medical, Inc. **Booths #1107-1109**
Allen, TX
Features MPS®2 System, providing flexibility and control to optimize myocardial protection strategy with microplegia and cyclic flow (pulsatile) and pediatric protocols, including cardioplegia delivery catheters/accessories, Retract-O-Tapeâ silicone vessel loops; CleanCut™, PerfectCut™, and the bullet-nose rotating aortic punches.

Rultract/Pemco, Inc. **Booth #903**
Cleveland, OH
Rultract Retractor provides gentle uniform lift of the chest wall for I MA dissection. The Retractor also provides exposure for subxiphoid, minimally invasive and parasternal procedures.

Saunders—Mosby—Elsevier, Inc. **Booth #1221**
Philadelphia, PA
Saunders, Mosby, Churchill Livingstone, Butterworth Heinmann, under the umbrella of Elsevier, presents our latest titles in thoracic surgery. Browse through our complete selection of publications: books, periodicals and software. Elsevier: Building insights, breaking boundaries.

Scanlan International, Inc. **Booth #601**
St. Paul, MN
Highest quality surgical products designed and manufactured by the Scanlan family since 1921. Specialty surgical instrumentation (titanium and stainless steel) SuperCut™ scissors and new Puskas™ instrumentation, single-use and instrument care products.

Scios, Inc., a Johnson & Johnson Company **Booths #1723-1725**
Fremont, CA
Scios Inc., a Johnson & Johnson company, is dedicated to changing the way heart failure is treated with Natrecor® (nesiritide), a breakthrough therapy for acutely decompensated congestive heart failure.

Shelhigh, Inc. **Booth #925**
Union, NJ

Shumsky Therapeutic Pillows **Booth #931**
Dayton, OH
Shumsky® Therapeutic Pillows help patients recover physically and emotionally from any surgery. Backed by our patented educational diagrams, each pillow provides irreplaceable comfort and support during the patient's critical post-op care.

Somanetics Corporation **Booth #1407**
Troy, MI
Somanetics' INVOS® System provides cerebral oximetry, somatic oximetry or both simultaneously. It generates site-specific oxygenation data for up to four brain and body areas to help detect ischemic issues. The CorRestore® System is for cardiac repair and reconstruction.

Sontec Instruments, Inc. **Booths #1006-1008**
Englewood, CO
Sontec offers the most comprehensive selection of exceptional hand held surgical instruments available to the discriminating surgeon. There is no substitute for quality expertise and individualized service.

Sorin Group **Booth #1019**
Arvada, CO
The Sorin Group provides a wide variety of original CarboMedics® brand mechanical valves, mitral repair rings and ascending aortic prostheses. The Sorin Group also introduces the new Memo 3D™ semi-rigid annuloplasty ring.

SSI Ultra Instruments **Booth #215**
Nashville, TN
SSI Ultra featuring the finest German handcrafted specialty surgical instruments. Featuring our "Big Blue" general catalog for all specialties; individual specialty books available.

St. Jude Medical, Inc. **Booth #1201**
St. Paul, MN
St. Jude Medical, in St. Paul, MN, is dedicated to improving life for cardiac and neurological patients worldwide through medical device technology and services, with a portfolio comprising solutions focused on cardiac rhythm management, atrial fibrillation, cardiac surgery, cardiology and neuromodulation.

Sunoptic Technologies **Booth #905**
Jacksonville, FL
Sunoptic Technologies is an illumination and video documentation company specializing in surgical fiber-optic, high-intensity light sources, headlight, cables, video cameras and digital video documentation.

Surge Medical Solutions, LLC **Booths #1520-1521**
Grand Rapid, MI
Surge Medical is proud to present a full line of venous, arterial and cardioplegia cannula and accessories including adapters for cardioplegia administration systems.

Surgical PA Consultants **Booth #1711**
Lynchburg, PA
Surgical Physician Assistant Consultants provides advertising and recruiting services for cardiothoracic surgical practices seeking Physician Assistants. Reasonable fees and guaranteed performance have made Surgical PA Consultants the leader in specialty surgical PA advertising and recruiting.

Surgitel/General Scientific Corporation **Booth #909**
Ann Arbor, MI
Introducing SurgiCam Camera System, the first loupe-mounted digital camera. SurgiTel offers a complete line of ultra lightweight loupes and lights. All SurgiTel products improve the user's working posture and prevent neck and back fatigue.

SyntheMed, Inc. **Booth #1020**
Little Silver, NJ
REPEL-CV Adhesion Barrier is a thin, bioresorbable film that is placed on the epicardial surface at the conclusion of a cardiac surgical procedure to reduce post-operative adhesions. REPEL-CV is marketed outside the U.S. and pending FDA approval in the U.S.

Synthes CMF **Booth #218**
West Chester, PA
Synthes CMF develops, produces and markets instruments and implants for the surgical reconstruction of the human skeleton and soft tissues. They offer systems for closure and repair of the sternum.

Teleflex Medical **Booth #1427**
Research Triangle Park, NC
Teleflex Medical will debut our newest Pleur-evac chest drainage product and latest addition to the Weck Hem-o-Lok family of polymer clips. Other featured products will be Deknatel sutures, and Pilling and Weck surgical instrumentation.

Terumo Cardiovascular Systems Corporation **Booth #1112**
Ann Arbor, MI
Terumo's CV businesses develop new technologies to treat CV diseases. Terumo will display the VirtuoSaph™ Endoscopic Vein Harvesting System, perfusion systems and its new line of pediatric cannulae. Vascutek Terumo will feature Gelweave™ thoracic grafts, many designed by surgeons.

The Annals of Thoracic Surgery **Booth #1219**
Philadelphia, PA
Elsevier proudly publishes *The Annals of Thoracic Surgery*, official publication of The Society of Thoracic Surgeons. Trust Elsevier to offer superior resources, expand your knowledge, foster communication, enable individual and collective advancement in the health care field. Elsevier: Building insights and breaking boundaries.

The Society of Thoracic Surgeons **Booth #1001**
Chicago, IL
Learn about The Society of Thoracic Surgeons' latest activities and events. Meet the STS staff and obtain information on the STS National Database, educational programs, current government issues, STS products and services, as well as updating your member records.

The Thoracic Surgery Foundation for Research and Education **Booth #901-1000**
Beverly, MA
Founded by the AATS, STS, WTSA and STSA, The Thoracic Surgery Foundation for Research and Education (TSFRE) is the focal point for research and education programs within cardiothoracic surgery. Visit www.TSFRE.org for more information about awards and giving opportunities.

Thompson Surgical Instruments, Inc. **Booth #1620**
Traverse City, MI
Come see the new innovations that make our instruments and retractor systems quicker and easier to use. Stop by booth 1620 to sign up for a free trial and see for yourself.

Thoramet Surgical Products, Inc. **Booth #607**
Rutherford, NJ
Thoramet offers the Lewis VATS Instruments, conventional ring-handled thorascopic instruments with a unique "switchback" feature designed for access and maneuverability in minimally invasive lung and chest procedures. See our new innovative pericardial pickup for our window procedures.

Thoratec Corporation **Booth #612**
Pleasanton, CA
With nearly 10,000 patient implants, Thoratec® is proud of our role in helping improve the treatment of patients with heart failure.

Transonic Systems, Inc. **Booth #1208**
Ithaca, NY
Fast, easy and reproducible Transonic intraoperative blood flow measurements improve surgical outcomes. Flow-based assessment of coronary bypass grafts ensures surgical success by confirming patency in off-pump and on-pump cases while still in the OR.

Tyco Healthcare **Booths #933-935**
Norwalk, CT
Tyco Healthcare manufactures, distributes and services an extensive product line. Industry-leading brand names such as Autosuture, Kendall, Syneture and Valleylab, Tyco Healthcare products are found in virtually every health care setting. For more information, visit www.tycohealthcare.com.

Velos, Inc. **Booth #730**
Fremont, CA
Velos, Inc., www.velos.com, is a leading medical software company that supports the clinical, research and operational needs of the cardiology and cardiovascular surgery medical specialties including STS and ACC registries.

Vitalcor, Inc. **Booth #600**
Westmont, IL
Introducing the reusable dingo clamp; replaces the bulldog. Titanium specialty instruments. Reuseable stabalizer for beating heart surgery. Latex-free coronary artery balloon cannulae with balloon. Axiom wound drains.

Vitalitec International Inc./Geister Inc. **Booth #200**
Plymouth, MA
Vitalitec will be showing a full range of atraumatic vascular clamps, inserts, delicate spring clips, Greyhound™ Bulldog adjustable spring clips, as well Geister® high quality titanium and stainless surgical instruments.

VNUS Medical Technologies **Booth #1619**
San Jose, CA
VNUS® is a leader in treatment of venous insufficiency. VNUS Closure® uses radiofrequency (RF) energy to occlude diseased veins. The VNUS ClosureFAST™ catheter makes procedures faster and easier, with favorable patient recovery expected from RF.

W. Lorenz Surgical **Booths #210-212**
Jacksonville, FL
SternaLock™, the new gold standard, is intended for primary sternal closure in "high-risk" patients. SternaLock™ is proven to provide greater stability, decrease infection, promote earlier bone healing and increase patient comfort while saving time and money.

Wexler Surgical Supplies **Booth #706-708**
Houston, TX
Wexler Surgical Supplies designs and manufactures a variety of titanium and stainless steel specialty surgical instruments for cardiac, vascular, thoracic and micro surgery. Visit www.wexlersurgical.com for information about our products and services.

World Heart Corporation **Booths #919-921**
Oakland, CA
World Heart Corporation is a global medical device company that is currently focused on the development and commercialization of pulsatile ventricular assist devices. WorldHeart's Novacor® LVAS is well established in the marketplace and is in development of next-generation and rotary devices.

AtriCure, Inc.
Saturday, Jan. 27, 2007
6:30 p.m. – 10:00 p.m.
Belle Amie Yacht Room, Charter Connection
Late-Breaking A-Fib Clinical Trials and Real-World Results: A View To A Cure

Medtronic, Inc.
Sunday, Jan. 28, 2007
7:30 p.m. – 10:00 p.m.
San Diego Marriott
The Medtronic EDGE℠: The Future of Structural Heart Disease

St. Jude Medical
Sunday, Jan. 28, 2007
7:30 p.m. – 10:00 p.m.
San Diego Marriott
Left Heart Focus: The Concommitant Procedure

Vascutek, A Terumo Company
Sunday, Jan. 28, 2007
7:30 p.m. – 10:00 p.m.
San Diego Marriott
Advances in Aortic Root Surgery

Boston Scientific
Monday, Jan. 29, 2007
6:15 a.m. – 7:30 a.m.
San Diego Marriott
Interviews With Experts: A Collaborative Approach to Resolving Atrial Fibrillation

Member Roster

Aaron, Benjamin L. - Lakeside, CA
Abbas, Ghulam - Pittsburgh, PA
Abbassi, Mohamed Zuheir - Aleppo, Syrian Arab Republic
Abbruzzese, Pietro A. - Torino, Italy
Abdelhady, Khaled M. - Chicago, IL
Abdul Majid, Osama A. - Safat, Kuwait
Abdulal, Rafik Abdulrahman - Latakia, Syria
Abdul-Ghani, Ayman A - Liverpool, United Kingdom
Abe, Tomio - Sapporo, Japan
Aberg, Torkel H. J. - Nuriootpa, Australia
Ablan, Charles John - St. Charles, MO
Ablaza, Sariel G. G. - Moorestown, NJ
Abolhoda, Amir - Orange, CA ♥
Abou-Khalil, Bassam M. - Lexington, KY ♥
Abraham, Reginald G.M. - Fountain Valley, CA ♥
Abrishamchian, Ahmad Reza - Owings Mills, MD
Abrol, Sunil - Brooklyn, NY ♥
Accola, Kevin D. - Orlando, FL ♥
Achouh, Paul E. - Houston, TX
Acinapura, Anthony J. - Brooklyn, NY
Acker, Michael A. - Philadelphia, PA ♥
Acosta, Jerry L. - Greenville, SC ♥
Acree, Page W. - Baton Rouge, LA
Acuff, Tea E. - Denton, TX ♥
Ad, Niv - Falls Church, VA
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Agnew, Richard C. - Jacksonville, FL ♥
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Akins, Cary W. - Boston, MA ♥
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Alamanni, Francesco - Milano, Italy
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Alayunt, Emin Alp - Izmir, Turkey
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Albert, Alexander Artur - Lahr, Germany
Albert, James D. - Colorado Springs, CO ♥
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Albes, Johannes M. - Bernau-Berlin, Germany
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Bassett, Joseph S. - Troy, MI ♥
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Baue, Arthur E. - Fishers Island, NY
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Bauer, Stefan F. - Lahr, Germany
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Bayes, Alexander J. - Calgary, AB Canada
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Beaudet, Regent L. - Outremont, QC Canada
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Becker, Ronald M. - Chico, CA ♥
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Beckman, Daniel J. - Indianapolis, IN ♥
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Beghi, Cesare - Parma, Italy
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Bello, Ricardo A. - Bronx, NY
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Benetti, Federico - Rosario, Argentina
Benfield, John R. - Los Angeles, CA
Bennett, Austen L. - Birmingham, AL
Bennett, Edward V. - Albany, NY ♥
Bennett, Robert D. - Pittsburgh, PA ♥
Bennink, Gerardus - Cologne, Germany
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Benton, Gary S. - Andover, KS ♥
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Berger, Robert L. - Brookline, MA
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Bernal, Jose M. - Santander, Spain
Bernatz, Philip E. - Rochester, MN
Bernhard, William F. - Framingham, MA
Bernhardt, Louis Charles - Madison, WI
Bernstein, R. Varick - Las Vegas, NV
Berrizbeitia, Luis D. - Princeton, NJ
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Berry, William R. - Needham, MA
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Best, Lael-Anson E. - Haifa, Israel
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Bethencourt, Daniel M. - Long Beach, CA ♥
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Beveridge, Robert J. - Salt Lake City, UT
Beyer, Erik - Temple, TX
Beyersdorf, Friedhelm - Freiburg im Breisgau, Germany
Beygui, Ramin E. - Los Angeles, CA
Beyruti, Ricardo - Sao Paulo, SP Brazil
Bhama, Jay K. - Pittsburgh, PA
Bharadwaj, B. - Calgary, AB Canada
Bhatia, Devinder S. - Houston, TX ♥
Bhattacharya, Samir Kumar - Montreal, QC Canada
Bhayana, Joginder N. - East Amherst, NY
Bhora, Faiz - New York, NY
Bibler, Michael - Kearney, NE ♥
Bichell, David P. - Nashville, TN
Bidstrup, Benjamin P. - Queensland, Australia
Bietz, Duane S. - Portland, OR
Bigelow, John Charles - Portland, OR
Bigsby, Richard J. - Saskatoon, SK Canada
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Bilfinger, Thomas V. - Stony Brook, NY
Binford, Robert S. - Nashville, TN ♥
Binns, Oliver A.R. - Asheville, NC ♥
Bircks, Wolfgang - Neuss, Germany
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Birjiniuk, Vladimir - Weston, MA ♥
Bitran, Dani - Jerusalem, Israel
Bittner, Hartmuth B. - Leipzig, Germany
Bixler, Thomas J. - Tallahassee, FL ♥
Black, Harrison - Westwood, MA
Black, Michael D. - San Francisco, CA ♥
Blackmon, Shanda - Houston, TX
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Blankenship, Robert C. - Tulsa, OK ♥
Blatchford, James W. - Montgomery, AL
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Blizzard, John D. - Bend, OR ♥
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Booth, A. Michael - Bismarck, ND ♥
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Borst, Hans G. - Munich, Germany
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Boruchow, Irwin B. - Miami, FL
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Carroll, Samuel Edwin - London, ON Canada
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Chedrawy, Edgar G. - Evanston, IL ♥
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Chen, Chun - Shanghai, China
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Chen, John C. - Honolulu, HI ♥
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Cheung, Edson H. - Dallas, TX ♥
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Chiesa, Giuseppe - Bergamo, Italy
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Cho, Peter W. - Baltimore, MD ♥
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Choong, Cliff K. - Cambridge, United Kingdom
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Choudhry, Modassir S. - Boston, MA
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Chowdhury, Nepal C. - Yakima, WA
Christakis, George T. - Toronto, ON Canada
Christenson, Jan T. - Chambesy-Geneva, Switzerland
Christian, Karla G. - Nashville, TN ♥
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Christie, Neil A. - Pittsburgh, PA
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Chung, Byung H. - Killeen, TX
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Cicci, Christopher K. - Concord, NC ♥
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Crittenden, Michael D. - West Roxbury, MA
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Crouch, Ray D. - Jefferson Borough, PA ♥
Croyle, Philip H. - Waco, TX ♥
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D'Alessandro, David A. - Bronx, NY
Dalichau, Harold G. J. - Goettingen, Germany
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Dalton, Martin L. - Macon, GA
Daly, Benedict D. T. - Boston, MA
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Damiano, Ralph J. - Saint Louis, MO ♥
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Damle, Ajit - Fargo, ND ♥
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Dang, Collin Robert - Honolulu, HI ♥
D'Angelo, George J. - Erie, PA
Daniel, Thomas M. - Charlottesville, VA
Daniell, Malcolm Butler - Chattanooga, TN
Daniels, Larkin J. - Mobile, AL
Danielson, Gordon K. - Rochester, MN
Dans, Nestor F. - Charleston, WV ♥
Danza, Anthony L. - New Rochelle, NY
Daon, Emmanuel - Kansas City, MO ♥
Darbinian, Sevak H. - Mission Viejo, CA
Dark, John Henry - Newcastle upon Tyne, United Kingdom
Darling, Gail E. - Toronto, ON Canada
D'Armini, Andrea M. - Pavia, Italy
Darrell, John C. - Lebanon, PA ♥
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Lonchyna, Vassyl A. - Hinsdale, IL ♥
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Long, Richard W. - Erie, PA ♥
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Longoria, James - Sacramento, CA ♥
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Rhee, John W. - Falls Church, VA ♥
Rheinlander, Harold F. - Weston, MA
Rhenman, Birger - Tucson, AZ
Rhie, Sangho - Jinju, Republic of Korea
Rhoads, Jonathan E. - York, PA
Riahi, Mohammad - E. Grand Rapids, MI
Ricci, Costante - Rome, Italy
Ricci, Marco - Miami, FL ♥
Rice, David C. - Houston, TX
Rice, Philip L. - Boalsburg, PA
Rice, Thomas W. - Cleveland, OH ♥
Rich, Andrew A. - Chico, CA ♥
Rich, Jeffrey B. - Norfolk, VA ♥
Richards, Kenneth M. - Greeley, CO ♥
Richards, L. Stephen - Salt Lake City, UT
Richardson, John B. - Birmingham, AL ♥
Richardson, Kevin A. - Albuquerque, NM ♥
Richardson, Robert L. - Memphis, TN
Richenbacher, Wayne E. - Iowa City, IA ♥
Richter, Richard C. - San Francisco, CA ♥
Riebman, Jerome B. - Santa Rosa, CA
Rieger, Karen M. - Indianapolis, IN ♥
Rigby, Carl S. - Baton Rouge, LA ♥
Riggins, Lee S. - Birmingham, AL ♥
Riggs, Orval E. - Little Rock, AR
Riley, Stancel M. - Cambridge, MA
Ring, W. Steves - Dallas, TX ♥
Riordan, Christopher J. - Toledo, OH ♥
Riordan, John P. - Wellington, New Zealand
Ris, Hans-Beat - Lausanne, Switzerland
Risher, William H. - Bethlehem, PA ♥
Rivas de Andres, Juan J. - Zaragoza, Spain
Rivas-Plata, Alfonso J. - Lima, Peru
Rivera, Ramiro - Madrid, Spain
Riveron, Emilio - Saint Petersburg, FL
Riveron, Fernando A. - Wausau, WI ♥
Rizvi, Sajjad H. - Slayton, MN
Rizzo, Robert J. - Boston, MA ♥
Rizzoni, Walter E. - Macon, GA
Roach, Harry A. - Metairie, LA ♥
Robaczewski, David L. - Raleigh, NC ♥
Robbins, Bruce E. - Henderson, NV
Robbins, Robert C. - Stanford, CA ♥
Robbins, Robert J. - Hattiesburg, MS ♥
Robbins, S. Gwin - Memphis, TN ♥
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Roberts, Arthur J. - Little Silver, NJ
Roberts, Charles S. - Winchester, VA ♥
Roberts, Harold G. - Coral Springs, FL ♥
Roberts, Jack C. - Oak Lawn, IL
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Roberts, Shauna R. - Kansas City, MO
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Robinson, Barbara L. - Boston, MA
Robinson, George C. - Gadsden, AL
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Robinson, Newell B. - Roslyn, NY ♥
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Robison, Paul D. - Branson, MO ♥
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Rocco, Gaetano - Seriano (Avellino), Italy
Rodefeld, Mark D. - Indianapolis, IN ♥
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Rodriguez, Evelio - Philadelphia, PA
Rodriguez, Francisco B. - Laredo, TX
Rodriguez, Jose A. - San Jose, CA
Rodriguez, Roberto - Boston, MA
Rodriguez-Salinas, Filiberto - McAllen, TX
Rodriguez-Zambrano, Camilo A. - Miami, FL
Rodrigus, Inez E.R. - Antwerp, Belgium
Roe, Benson B. - San Rafael, CA
Rogers, James - Grand Blanc, MI ♥
Rogers, William K. - Knoxville, TN
Rohan, Darren I. - Steubenville, OH
Rohn, Vilem - Prague, Czech Republic
Roitstein, Alexander - Green Bay, WI
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Romanoff, Henry - Jerusalem, Israel
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Rubin, Harvey P. - Port St Lucie, FL
Rubin, Joseph W. - Charleston, SC
Rubin, Robert - Long Beach, NY
Rubinson, Richard M. - Miami, FL
Rubis, Lorraine J. - Saint Petersburg, FL
Rucker, Charles M. - Scottsdale, AZ
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Russell, John C. - San Antonio, TX ♥
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Russo, Pierantonio - Columbia, MO
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Ryan, Patrick E. - Everett, WA ♥
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Ryzoff, Ronald I. - Long Beach, NY
Saab, Salim B. - Beirut, Lebanon
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Sabiston, David C. - Durham, NC
Sachdev, Vishal - Tupelo, MS ♥
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Sacksteder, William A. - Larsen, WI
Sadarangani, Nari T. - Springfield, TN
Sade, Robert M. - Charleston, SC
Sadeghi, Ali M. - Beverly Hills, CA
Sadeghi, Hossein - Lausanne, Switzerland
Sadighi, Parvis - Pittsfield, MA
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Sadler, Theodore R. - Grand Junction, CO
Sadoff, John D. - Belleville, IL ♥
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Saha, Sibu P. - Lexington, KY ♥
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Saini, Virender K. - Cambridge, MA
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Saita, Salvatore - Catania, Italy
Sajja, Lokeswara Rao - Hyderabad, India
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Sakamoto, Takahiko - Tokyo, Japan
Sakamoto, Tohru - Tokyo, Japan
Sako, Edward Y. - San Antonio, TX
Saksena, Devendra S. - Bombay, India
Sakurai, Hideki - Bronx, NY
Sakwa, Marc P. - Troy, MI ♥
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Salazar, Jorge D. - San Antonio, TX
Saleh, Mohey K. - Dayton, OH ♥
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Salemi, Arash - New York, NY
Salenger, Rawn - Lancaster, OH
Salerno, Christopher T. - Indianapolis, IN
Salerno, Tomas Antonio - Miami, FL
Salley, Robert K. - Lexington, KY ♥
Salomon, Neal W. - Lutherville, MD
Saltman, Adam E. - Brooklyn, NY ♥
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Salyer, John M. - Indian Wells, CA
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Samuels, Louis E. - Wynnewood, PA ♥
Sanabria, Guillermo - Rockledge, FL
Sanborn, Earl B. - Lewiston, NY
Sanchez, Juan A. - Monroe, CT
Sand, Mark E. - Orlando, FL ♥
Sanders, John H. - Lebanon, NH
Sanders, John Ira - West Boylston, MA
Sanderson, Richard G. - Tucson, AZ
Sandhu, Aqeel A. - Canton, OH ♥
Sandoval, Nestor F. - Bogota, Colombia
Sandoval, Wellington G. - Quito, Ecuador
Sanfelippo, Peter M. - Tyler, TX
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Sanoffsky, Stephen J. - Canton, OH ♥
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Santamarina, Luis F. - Olympia, WA ♥
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Santos, Arthur D. - Laredo, TX
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Santoscoy, Robert - El Paso, TX ♥
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Sarabu, Mohan R. - Poughkeepsie, NY
Sardella, Gerald L. - Voorheesville, NY
Sardesai, Prabhaker G. - Erie, PA
Sarkaria, Jasbir S. - Edison, NJ
Sarraj Asil, Anas - Madrid, Spain
Sarris, George E. - Athens, Greece
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Sastry, Narendra S. - Brandon, FL ♥
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Sauer, Paul E. - Rogersville, MO
Sauls, F. Clark - Enid, OK
Saum, Kenneth Edward - Carterville, IL ♥
Saunders, Craig R. - Newark, NJ ♥
Saute, Milton - Petah-Tikva, Israel
Savage, David H. - Marysville, CA
Savage, Edward B. - Saint Louis, MO
Savitt, Michael A. - Milwaukee, WI ♥
Saw, Huat-Seong - Singapore, Singapore
Sawabata, Noriyoshi - Tochigi, Japan
Sawyer, Philip N. - Brooklyn, NY
Saxena, Amarkanth R. - Denville, NJ
Saxena, Naresh C. - Tarzana, CA
Saxon, Eugene I. - Encino, CA
Sayeed-Shah, Umer - Cambridge, MA ♥
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Scalia, Domenico - Padova, Italy
Scarano, Domenico - Wilkes-Barre, PA ♥
Scavo, Vincent A. - Fort Wayne, IN ♥
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Schaerf, Raymond H. M. - Burbank, CA
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Schaff, Hartzell V. - Rochester, MN ♥
Scheinerman, S. Jacob - Hartford, CT ♥
Scheinin, Scott A. - Houston, TX ♥
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Schepens, Marc - Nieuwegein, Netherlands
Schier, John J. - Carmel, IN ♥
Schipper, Paul H. - Portland, OR
Schlosser, Ralph J. - Ada, MI
Schmahl, Terence M. - River Hills, WI ♥
Schmaltz, Richard A. - Columbia, MO
Schmelzer, Victor - Edgewood, KY ♥
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Schmid, Christof R. - Muenster, Germany
Schmidt, Carlos A. - Denver, CO
Schmidt, Frank E. - Springfield, MO ♥
Schmidt, Frank E. - New Orleans, LA
Schmitt, Gregory S. - Fort Wayne, IN
Schmoker, Joseph D. - Burlington, VT
Schneeberger, Eric W. - Cincinnati, OH ♥
Schneider, Joel A. - Springfield, IL
Schneider, Kurt E. - Zurich, Switzerland
Schneider, Paul - Berlin, Germany
Schneider, Robert F. - Des Moines, IA ♥
Schoettle, G. Phillip - Memphis, TN ♥
Scholl, Frank G. - Hollywood, FL ♥
Scholz, Peter M. - New Brunswick, NJ ♥
Schor, John S. - Miami Beach, FL ♥
Schorlemmer, Gilbert R. - Salt Lake City, UT
Schorn, Larry W. - Irving, TX ♥
Schowengerdt, Carl G. - Zanesville, OH
Schreiber, J. Tracy - Cincinnati, OH
Schrump, David S. - Bethesda, MD
Schubach, Scott L. - Mineola, NY ♥
Schuch, Douglas R. - Sacramento, CA ♥
Schuchmann, George F. - Knoxville, TN
Schultz, Richard D. - Omaha, NE
Schultz, Scot C. - Naples, FL ♥
Schwabe, Jane L. - St. Joseph, MO
Schwann, Thomas A. - Toledo, OH ♥
Schwartz, Andrew M. - Shawnee Mission, KS ♥
Schwartz, Daniel S. - New Hyde Park, NY ♥
Schwartz, Jess - Albuquerque, NM
Schwartz, Steven M. - Campbell, CA ♥
Sciolaro, Charles M. - Leawood, KS
Scott, Benjamin F. - Memphis, TN
Scott, Meredith L. - Shell, WY ♥
Scott, Randolph P. - East Setauket, NY
Scott, Rosalyn P. - Marina Del Rey, CA
Scott, Steven S. - Athens, GA ♥
Scott, Walter J. - Philadelphia, PA
Scott, Walter W. - Gainesville, FL
Scott, William C. - Saint Louis, MO
Scully, Hugh Edwards - Toronto, ON Canada
Scully, Niall M. - Kamuela, HI
Sears, Nicholas J. - Tampa, FL
Seaver, Philip R. - North Caldwell, NJ
Sebening, Fritz - Loiching, Germany
Seccombe, John F. - De Pere, WI ♥
See, W. Mike - Columbia, MO ♥
Sees, David W. - Fort Sam Houston, TX ♥
Segurola, Romualdo J - Miami, FL
Seifert, Frank Charles - Stony Brook, NY

Seifert, Paul E. - Waukesha, WI ♥
Seinfeld, Fredric I. - Trenton, NJ
Seirafi, Peter A. - Jasper, AL
Seitter, Girard - San Antonio, TX
Sekela, Michael E. - Lexington, KY ♥
Sekhon, Baldev S. - Cleveland, OH ♥
Selby, John H. - Houston, TX
Seligson, Frederic L. - Kansas City, MO ♥
Selinger, Samuel L. - Spokane, WA ♥
Sell, Jeffrey E. - Cockeysville, MD ♥
Sellers, Robert D. - Council Bluffs, IA
Sellke, Frank W. - Boston, MA ♥
Selmonosky, Carlos A. - Falls Church, VA
Selzman, Craig H. - Chapel Hill, NC
Senderoff, Elliot - Eastchester, NY
Sequeira, Alejandro J. - Baltimore, MD ♥
Seremetis, Michael G. - Washington, DC
Sergeant, Paul T. - Leuven, Belgium
Sermier, Eustace George - Riverview, FL
Serra, Antonio Jorge - Porto, Portugal
Serry, Cyrus - Chicago, IL
Sethi, Gulshan K. - Tucson, AZ ♥
Sethi, Sushil M. - Mansfield, OH
Sethia, Babulal - London, United Kingdom
Setina, Marek - Ceske Budejovice, Czech Republic
Setser, Edward R. - Huntington, WV ♥
Setty, Shaun P. - Brunswick, Australia
Sewell, David H. - Kingsport, TN
Shabahang, Behrooz - Grand Rapids, MI ♥
Shabb, Basem Ramzi - Sidon, Lebanon
Shackelford, Howard L. - Saint Clairsville, OH ♥
Shafii, Esfandiar - Tampa, FL
Shah, Hasmukhlal H. - Dallas, TX
Shah, S. Salman A. - Lahore, Pakistan
Shah, Sachin - Oak Park, IL
Shahian, David M. - Sudbury, MA
Shaikh, M. Nasir - Greensburg, PA
Shake, Jay - St. Paul, MN
Shallal, John A. - Savannah, GA
Shamji, Farid Moham - Ottawa, ON Canada
Shammash, J. B. - Bonita Springs, FL
Shani, Hezekiah G. P. - Cincinnati, OH
Shankar, Kuppe G. - Sacramento, CA ♥
Shannon, Francis L. - Troy, MI ♥
Shapira, Nadiv - Wilmington, DE
Shapira, Oz M. - Boston, MA ♥
Shapiro, Ivan L. - Fort Fairfield, ME
Shariati, Nazly M. - Morristown, NJ ♥
Shariatzadeh, Ali N. - Arlington Heights, IL ♥
Sharma, Baljit K. - Yakima, WA
Sharma, Mahesh S. - London, United Kingdom
Sharma, Sanjeev Kumar - Middleburg Heights, OH ♥
Sharp, Thomas G. - Indianapolis, IN ♥
Shaw, Richard K. - New Haven, CT ♥
Shaz, Sol - Rockville, MD
Shears, Larry L. - York, PA
Sheely, Carlton H. - Baton Rouge, LA ♥
Sheffield, Cedric D. - Tampa, FL
Sheka, Kedambady P. - Brooklyn, NY
Shelby, James S. - Shreveport, LA
Sheldon, Murray I. - Martinez, CA
Shemin, Richard J. - Boston, MA ♥
Shen, Irving - Portland, OR ♥
Shen, Robert - Charlottesville, VA
Shende, Manisha R. - Pittsburgh, PA
Shennib, Hani - Montreal, PQ Canada
Shepard, Barclay M. - Boothbay Harbor, ME
Shepard, Richard B. - Birmingham, AL
Sheppard, Barry B. - Burlingame, CA ♥
Sheridan, Brett C. - Chapel Hill, NC
Sherif, Hisham M. F. - Newark, DE
Sherman, Mark Melvin - Springfield, MA
Shetler, Paul L. - Granby, CO
Shields, Earl Francis - Naples, FL
Shields, Thomas W. - Scottsdale, AZ
Shiiya, Norihiko - Sapporo, Japan
Shimamoto, Akira - Tsu, Mie, Japan
Shimazaki, Yasuhisa - Wakayama, Japan
Shimizu, Nobuyoshi - Okayama, Japan
Shin, Choon S. - Brooklyn, NY
Shin, Yong - New York, NY
Shinoka, Toshiharu - Tokyo, Japan ♥
Shiraishi, Yuji - Tokyo, Japan
Shirkey, Albert L. - Tulsa, OK
Shirley, James H. - Tupelo, MS
Shoemaker, Robert E. - Indianapolis, IN ♥
Shook, C. David - Mansfield, OH
Short, Herbert David - Tyler, TX
Shortt, Kevin G. - Cooperstown, NY
Shrager, Joseph B. - Philadelphia, PA
Shragge, Bernard W. - St. Catharines, ON Canada
Shumacker, Harris B. - Delray Beach, FL
Shumakov, V. I. - Moscow, Russia
Shuman, Robert L. - Long Beach, CA ♥
Shuman, Todd A. - Nashville, TN ♥
Shum-Tim, Dominique - Montreal, PQ Canada
Shumway, Sara J. - Minneapolis, MN ♥
Siderys, Harry - Indianapolis, IN ♥
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Siebenmann, Robert P. - Zurich, Switzerland
Siegel, Sharon B. - Monte Sereno, CA
Siegman, Ira L. - Hudson, FL ♥
Siewers, Ralph D. - Sedgwick, ME
Silbergleit, Allen - Pontiac, MI
Silberman, Shuli - Jerusalem, Israel
Sills, Charles - Rumson, NJ
Silver, Arthur W. - Coronado, CA
Silver, David G. - Cheyenne, WY ♥
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Simpson, William Ford - Tuscaloosa, AL
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Singh, Arun K. - Providence, RI ♥
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Sirois, Marco - Sherbrooke, QB Canada
Sisler, Glenn E. - Ponte Vedra Beach, FL
Sisto, Donato A. - Portsmouth, NH
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Slaughter, Mark S. - Oak Lawn, IL ♥
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Sloan, Herbert E. - Ann Arbor, MI
Slovin, Alvin Jay - Far Rockaway, NY
Smail, W. Carlyle - Goodyear, AZ
Smedira, Nicholas G. - Cleveland, OH ♥
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Smeloff, Edward A. - Kihei, HI
Smiley, Robert H. - Tiki Island, TX
Smith, Charles H. - Bryan, TX
Smith, Charlie D. - Florence, SC ♥
Smith, Claude W. - Columbia, SC ♥
Smith, Craig Richey - New York, NY
Smith, Daniel L. - Denver, CO ♥
Smith, G. B. - Bloomington, IL ♥
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Smithwick, Walter - Jacksonville, FL
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Soberman, Mark S. - Washington, DC ♥
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Sohn, Kwang-Hyun - Seoul, The Republic Korea
Sohn, Young-sang - Vancouver, BC Canada
Sokol, David M. - Villanova, PA
Solit, Robert W. - Philadelphia, PA
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Soltero, Ernesto R. - Ponce, PR
Somers, Jonathan - Chicago, IL ♥
Sommerhaug, Rolf G. - Concord, CA ♥
Sommers, Keith E. - Tampa, FL
Sonett, Joshua R. - New York, NY
Song, Howard - Portland, OR
Sortino, Antonio - Pittsburgh, PA ♥
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Sowden, David T. - Fort Wayne, IN ♥
Sowka, Lawrence R. - Lakeland, FL
Soyer, Robert M. - Rouen Cedex, France
Spaggiari, Lorenzo - Milan, Italy
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Spann, James C. - Tulsa, OK
Spear, Harold C. - Miami Beach, FL
Spector, Michael Lew - Akron, OH ♥
Spector, S. David - Orlando, FL ♥
Speir, Alan M. - Falls Church, VA ♥
Spence, Paul A. - Louisville, KY ♥
Spencer, Frank C. - New York, NY
Sperling, Jason S. - Ridgewood, NJ
Spielvogel, David - Valhalla, NY
Spinazzola, Angelo J. - Hobbs, NM
Spooner, Ted H. - Minneapolis, MN ♥
Spotnitz, Alan Jeffrey - Piscataway, NJ ♥
Spotnitz, Henry Michael - New York, NY
Spotnitz, William D. - Gainesville, FL
Spoto, George - St. Petersburg, FL ♥
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Spratt, John A. - Charleston, SC
Spray, Thomas L. - Philadelphia, PA ♥
Squillaro, Anthony J. - Ocean, NJ
Srinivasan, Venkatesan - San Antonio, TX ♥
Srisomboon, Chaisit - Pathum-Thani, Thailand
Srivastava, Sudhir P. - Midland, TX ♥
St. Louis, James D. - Evans, GA ♥
Stabile, Jerome G. - Lehigh Valley, PA
Stadlan, Carmi Y. - Atlantis, FL ♥
Stahl, Kenneth D. - Weston, FL
Stahl, Richard D. - La Jolla, CA ♥
Stahl, Russell F. - Scranton, PA
Stahmann, Fred D. - Hendersonville, TN
Stam, M. Denton - Winchester, VA ♥
Stamatis, Georgios - Essen, Germany
Stanfield, T. Mark - Madisonville, KY ♥
Stanford, John R. - Fort Wayne, IN ♥
Stanten, Russell D. - Oakland, CA ♥
Stanton, Michael W. - Fort Collins, CO
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