



37TH

Annual Meeting

June 22 - 25, 2011

WESTERN THORACIC SURGICAL ASSOCIATION
WWW.WESTERNTHORACIC.ORG

BROADMOOR HOTEL
Colorado Springs, Colorado

PROGRAM BOOK



WTSA

FUTURE MEETINGS

38th ANNUAL MEETING

June 27-30, 2012

Grand Wailea

Maui, Hawaii

39th ANNUAL MEETING

June 26-29, 2013

The Coeur d'Alene

Coeur d'Alene, Idaho

WESTERN THORACIC SURGICAL ASSOCIATION



*(Founded as the Samson
Thoracic Surgical Society)*

37th ANNUAL MEETING JUNE 22-25, 2011

* These sections available on site in Colorado Springs, Colorado, or by logging into the Members Only Area of the WTSA Website at <http://members.westernthoracic.org>.

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OFFICERS AND COUNCIL

President	Robbin G. Cohen Los Angeles, California
Vice President	Robert C. Robbins Stanford, California
Immediate Past President	J. Scott Millikan Billings, Montana
Secretary	Thomas A. Burdon Palo Alto, California
Treasurer	John D. Mitchell Aurora, Colorado
Councillors-at-Large	Ross M. Bremner (2013) Phoenix, Arizona Michael S. Mulligan (2012) Seattle, Washington Patricia A. Thistlethwaite (2011) San Diego, California
Councillor/Founder	Arthur N. Thomas Hillsborough, California
Historian	Marvin Pomerantz Aurora, Colorado
Representatives to the Board Governors, American College of Surgeons	John C. Chen Honolulu, Hawaii
Editor, JTCVS	Lawrence H. Cohn Boston, Massachusetts

2010-2011 COMMITTEES

LOCAL ARRANGEMENTS COMMITTEE	David and Christine Fullerton, Co-Chairs Craig J. Baker, Samson Fun Run Joseph C. Cleveland, Jr., Golf Tournament John C. Chen, Tennis Tournament
MEMBERSHIP COMMITTEE	Anees J. Razzouk, Chair (2011) James M. Douglas, Jr. (2011) Myles S. Guber (2012) P. Michael McFadden (2013) Michael A. Smith (2013) Chris J. Wehr (2012)
NOMINATING COMMITTEE	R. Scott Mitchell (2011), Chair David A. Fullerton (2013) Elliot T. Gelfand (2011) J. Scott Millikan (2014) Douglas E. Wood (2012)
PROGRAM COMMITTEE	Ross M. Ungerleider, Chair (2011) Gordon A. Cohen (2011) Anthony P. Furnary (2012) Sean C. Grondin (2013) Mark T. Metzdorff (2012) Paul H. Schipper (2013) Michael J. Weyant (2011) Thomas A. Burdon Ex-Officio (2011) Robbin G. Cohen Ex-Officio (2011) Lawrence H. Cohn Ex-Officio (2011)
REPRESENTATIVES	
Representative to the Board of Governors American College of Surgeons	John C. Chen Honolulu, Hawaii
Representative to the Advisory Council American College of Surgeons	Douglas E. Wood Seattle, Washington
Representatives to the Thoracic Surgery Foundation for Research & Education	D. Craig Miller Stanford, California R. Scott Mitchell Stanford, California

WESTERN THORACIC SURGICAL ASSOCIATION

SCHEDULE OF EVENTS

WEDNESDAY, June 22, 2011

8:00 a.m. – 1:00 p.m.	Council Meeting <i>Gaylord Boardroom</i>
1:00 p.m. – 6:00 p.m.	Registration <i>West Registration Desk in Lobby</i>
1:00 p.m. – 6:00 p.m.	Speaker Ready Room <i>Freymuth Room</i>
7:00 p.m. – 9:00 p.m.	New Members/Welcome Reception <i>Lakeside Pool</i>
7:00 p.m. – 9:00 p.m.	Kids & Teens Reception (Ages 3–18) <i>Kids Playground and Lawn (Lakeside Pool Area)</i>

THURSDAY, June 23, 2011

6:00 a.m.	Samson Fun Run <i>Golf Clubhouse Start</i>
7:00 a.m. – 8:00 a.m.	Continental Breakfast <i>Rocky Mountain C & D</i>
7:00 a.m. – 11:00 a.m.	Family Hospitality <i>Will Rogers Room & Patio</i>
7:00 a.m. – 12:00 p.m.	Registration <i>Rocky Mountain Foyer</i>
7:00 a.m. – 12:00 p.m.	Exhibits/Simulation & Robotics Area <i>Rocky Mountain C & D</i>
7:00 a.m. – 12:00 p.m.	Speaker Ready Room <i>Freymuth Room</i>
8:00 a.m. – 9:00 a.m.	Scientific Session I <i>Rocky Mountain A & B</i>
9:00 a.m. – 9:10 a.m.	New Member & Samson Prize Finalists Introductions <i>Rocky Mountain A & B</i>
9:10 a.m. – 9:55 a.m.	Presidential Address <i>Rocky Mountain A & B</i>
9:55 a.m. – 10:20 a.m.	Coffee Break, Visit Exhibits & Posters <i>Rocky Mountain C & D</i>
10:20 a.m. – 11:40 a.m.	Scientific Session II <i>Rocky Mountain A & B</i>

The Broadmoor, Colorado Springs, Colorado 37TH ANNUAL MEETING

11:40 a.m. – 12:30 p.m.	Controversies in Thoracic Surgery <i>Rocky Mountain A & B</i>
12:00 p.m. – 2:00 p.m.	Dedicated Simulation/Robotics Time in Exhibit Hall <i>Rocky Mountain C & D</i>
12:45 p.m. – 4:15 p.m.	Foothills Jeep Tour* <i>Transportation to Depart from the West Entrance of Hotel</i>
2:30 p.m. – 4:30 p.m.	US Olympic Training Center Tour* <i>Transportation to Depart from the West Entrance of Hotel (No Lunch Provided)</i>
6:30 p.m. – 10:00 p.m.	Go for the Gold Theme Dinner <i>Cheyenne Lodge</i> <i>Transportation to Depart from the West Entrance of Hotel</i>

FRIDAY, June 24, 2011

6:00 a.m. – 12:00 p.m.	Registration <i>Rocky Mountain Foyer</i>
6:00 a.m. – 12:00 p.m.	Speaker Ready Room <i>Freymuth Room</i>
6:30 a.m. – 7:50 a.m.	Breakfast Sessions* A) Improving Your Reimbursement <i>West Ballroom A</i> B) Working for Someone Else: What You Should Know About Contracting and Compensation <i>West Ballroom B</i> C) Managing Conflict and Giving (Receiving) Feedback: A Leadership Challenge <i>West Ballroom D</i>
7:00 a.m. – 11:00 a.m.	Family Hospitality <i>Will Rogers Room & Patio</i>
7:30 a.m. – 8:00 a.m.	Continental Breakfast <i>Rocky Mountain C & D</i>
7:30 a.m. – 12:00 p.m.	Exhibits/Simulation & Robotics Area <i>Rocky Mountain C & D</i>
8:00 a.m. – 8:50 a.m.	Postgraduate Course <i>Rocky Mountain A & B</i>

* Separate Subscription Required

SCHEDULE
AT A GLANCE

WESTERN THORACIC SURGICAL ASSOCIATION

- 8:50 a.m. – 10:30 a.m. Scientific Session III
Rocky Mountain A & B
- 10:30 a.m. – 11:00 a.m. Coffee Break, Visit Exhibits & Posters
Rocky Mountain C & D
- 11:00 a.m. – 12:00 p.m. Scientific Session IV
Rocky Mountain A & B
- 12:00 p.m. – 2:00 p.m. Dedicated Simulation/Robotics Time in Exhibit Hall
Rocky Mountain C & D
- 1:00 p.m. – 6:00 p.m. Golf Tournament*
Broadmoor Mountain Course
Transportation Provided from Golf Clubhouse
- 1:30 p.m. – 5:00 p.m. Tennis Tournament*
Broadmoor Clay Tennis Courts
(30 Minutes of Warm-Ups Conducted by Tennis Pro Prior to 2:00 pm Start)

Free Evening

SATURDAY, June 25, 2011

- 6:00 a.m. – 11:30 a.m. Speaker Ready Room
Freyemuth Room
- 6:00 a.m. – 12:00 p.m. Registration
Rocky Mountain Foyer
- 6:30 a.m. – 7:30 a.m. Continental Breakfast
Rocky Mountain C & D
- 6:30 a.m. – 10:30 a.m. Exhibits and Simulation Area
Rocky Mountain C & D
- 7:00 a.m. – 8:15 a.m. Concurrent Forums
 - A) Adult Cardiac Session
Rocky Mountain A & B
 - B) General Thoracic Session
West Ballroom A & B
 - C) Congenital Heart Disease Session
West Ballroom C & D
- 7:00 a.m. – 11:00 a.m. Family Hospitality
Will Rogers Room & Patio
- 8:30 a.m. – 9:50 a.m. Scientific Session V
Rocky Mountain A & B
- 9:50 a.m. – 10:10 a.m. Coffee Break, Visit Exhibits & Posters
Rocky Mountain C & D

* Separate Subscription Required

The Broadmoor, Colorado Springs, Colorado 37TH ANNUAL MEETING

- 10:10 a.m. – 11:10 a.m. Scientific Session VI
Rocky Mountain A & B
- 11:10 a.m. – 12:00 p.m. C. Walton Lillehei Point-Counterpoint
Rocky Mountain A & B
- 12:00 p.m. – 12:30 p.m. Business Meeting (*Members Only*)
Rocky Mountain A & B
- 12:30 p.m. – 2:00 p.m. Family Luncheon
Mountain View Terrace
- 7:00 p.m. – 10:00 p.m. Kids & Teens Banquet (Ages 3–18)
Specs Spot
- 7:00 p.m. – 11:00 p.m. President's Reception & Banquet (*Black Tie Optional*)
Pompeian Room (Main Building)

SCHEDULE AT A GLANCE

ACCREDITATION

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

The American Association for Thoracic Surgery designates this live activity for a maximum of 13.25 **AMA PRA Category 1 Credit(s)**[™]. Physicians should only claim credit commensurate with the extent of their participation in the activity.

CME MISSION STATEMENT

Purpose

The Western Thoracic Surgical Association (W TSA) is committed to improving patient care and enhanced patient quality of life through the provision of state-of-the-art continuing medical education (CME) to its members and non-member attendees at its sole CME activity, its annual meeting. The overarching goal of the W TSA CME program is to provide a high quality CME activity (its annual meeting) that will address the professional practice gap of its physician and allied health learners by facilitating change in participants' competence and performance.

Content Areas

The content areas of the W TSA's CME program annual meeting include but, are not limited to, acquired heart disease, thoracic oncologic issues, congenital heart disease, general thoracic disorders, pulmonary disorders, and adult cardiac disease. The scope of activities involves the body of knowledge and skills generally recognized and accepted by the profession and the specialty as within the basic medical/surgical sciences, surgical specialties, the discipline of clinical medicine, and providing healthcare to the public.

Target Audience

In the context of W TSA's role as a regional surgical membership association, the target audiences of the W TSA's CME program are its current members, as well as a potential member base including physicians and other healthcare professionals involved in the diagnosis and treatment of cardiothoracic disease. These include, among others, general thoracic surgeons, cardiothoracic surgeons,

interventional radiologists, cardiologists, and cardiothoracic anesthesiologists, as well as allied healthcare professionals who may benefit from team learning activities. The W TSA reaches throughout the western United States and the western provinces of Canada in its attempt to make the most current information available to as wide a medical/physician/surgical audience as possible.

Types of Activities Provided

Through its sole CME activity, the annual meeting, the W TSA provides topic based abstract sessions, a postgraduate course, a controversies in cardiothoracic surgery panel discussion, and a point/counterpoint debate session all of which foster audience participation through a designated question and answer period subsequent to the presentation. In addition, highly specialized techniques, protocols, and findings are offered in each of the three subspecialties of adult cardiac surgery, general thoracic surgery, and congenital heart disease through individual breakfast sessions, moderated poster sessions, and/or concurrent brief communications symposia offered during the course of the annual meeting.

Expected Results

The success of the CME mission is measured by the extent to which participants in the W TSA annual meeting have gained an enhanced understanding of the latest techniques and current research specifically related to adult cardiac surgery, general thoracic surgery, and congenital heart disease, and have incorporated these lessons learned into their practice environment. Furthermore, through these changes and individual practice environments, it is expected that positive changes in physician/surgeons competence and performance in limited instances will be accomplished. The overarching expected result of the W TSA's CME mission is improved patient care and enhanced patient quality of life through advanced medical education of the association's membership and active participants in its CME program, the annual meeting.

OBJECTIVE

The Annual Meeting of the Western Thoracic Surgical Association is designed to provide two-and-a-half days of comprehensive educational experience for W TSA members and guest physicians in the field of thoracic and cardiovascular surgery. It is the Association's intent to bring together the leading surgeon scientists in these specialties to freely and openly discuss their latest clinical and research efforts.

WESTERN THORACIC SURGICAL ASSOCIATION

This year's program begins on Thursday with a half-day scientific plenary session of original papers and concludes with the highly successful "Controversies in Thoracic Surgery". The controversies debate addresses whether **"We Are Headed for a Crisis in Manpower in CT Surgery by 2020"**.

Friday morning begins with three simultaneous breakfast sessions, featuring recognized leaders Norm Brooks, John R. Voigt, and Ross & Jamie Ungerleider. The scientific program continues with the annual Postgraduate Course and a scientific plenary session of original papers.

The Saturday scientific program begins with concurrent moderated forums of shorter-form oral presentations addressing a far ranging field of topics in each of the three subspecialties. The plenary science continues with additional original papers and concludes with the C. Walton Lillehei Point/Counter-Point Session. The debate this year will focus on whether **"Public Reporting Is Harmful and Should Be Abolished"**.

At the conclusion of the Annual Meeting, participants should have an enhanced understanding of the latest techniques and current research specifically related to the fields of adult cardiac, general thoracic, and congenital heart disease clinical surgery, experimental surgery and related sciences, surgical education, and the socioeconomic aspects of surgical care. Through the open discussion periods for each of the six plenary Scientific Sessions, the Controversies in Thoracic Surgery session, the three Simultaneous Breakfast sessions, the Postgraduate Course, the Concurrent Forums on Adult Cardiac, General Thoracic and Congenital Heart Disease, and the Point/Counterpoint session, participants will have the opportunity to hear the pros and cons of each paper and/or debate presented to gain an overall perspective of their current practices and utilize results presented to select appropriate surgical procedures and interventions for their own patients and integrate state-of-the-art knowledge into their current practice and/or research.

DISCLOSURE POLICY

It is the policy of the American Association for Thoracic Surgery, as the accredited provider of this live activity, that any individual who is involved in planning, presenting or is an author on a program designated for *AMA Physician's Recognition Award Category 1 Credit™* must disclose any financial interest or other relationship (grant, research support, consultant, etc.) that individual has with any manufacturer(s) of any commercial product(s) that may be discussed in the individual's presentation. This information is disclosed to the audience prior to an activity. The AATS has procedures in place if a conflict of interest should arise. In addition, faculty members are asked to disclose when any discussion of unapproved use of pharmaceutical or medical device occurs. Disclosures listed on pages 238–240 have been managed to the Associate's satisfaction.

For further information on the Accreditation Council for Continuing Medical Education (ACCME) Standards of Commercial Support, please visit www.accme.org.

GENERAL INFORMATION

REGISTRATION

The Registration Desk will be located in the **West Registration Desk Lobby** during the following hours:

Wednesday, June 22 1:00 p.m. – 6:00 p.m.

The Registration Desk will be located in the **Rocky Mountain Foyer** during the following hours:

Thursday, June 23 7:00 a.m. – 12:00 p.m.
 Friday, June 24 6:00 a.m. – 12:00 p.m.
 Saturday, June 25 6:00 a.m. – 12:00 p.m.

SPEAKER READY ROOM

The Speaker Ready Room will be located in the **Freytmuth Room**, outside the entrance to the West Ballroom. Presenting authors are requested to turn in their PowerPoint slides to the technician in the Speaker Ready Room at least 30 minutes prior to the opening of the session at which they are to present (presentation slides can be turned in as early as Wednesday, June 22nd). All presentations must be submitted in PowerPoint format only.

BREAKFAST SESSIONS:

Three optional breakfast sessions are scheduled for Friday morning, June 24 from 6:30 a.m. – 7:50 a.m. There is a separate registration fee of \$60 per person:

- A) **Improving Your Reimbursement****
 Norm Brooks
West Ballroom A
- B) **Working for Someone Else: What You Should Know About Contracting and Compensation****
 John R. Voigt
West Ballroom B
- C) **Managing Conflict and Giving (Receiving) Feedback: A Leadership Challenge****
 Ross M. Ungerleider & Jamie Ungerleider
West Ballroom D

EXHIBITS

Commercial Exhibits are located in **Rocky Mountain C & D** and open during the following hours:

Thursday, June 23 7:00 a.m. – 12:00 p.m.
 Friday, June 24 7:30 a.m. – 12:00 p.m.
 Saturday, June 25 6:30 a.m. – 10:30 a.m.

Continental Breakfast is available for all registered physicians in the Exhibit Hall during the following hours:

Thursday, June 23 7:00 a.m. – 8:00 a.m.
 Friday, June 24 7:30 a.m. – 8:00 a.m.
 Saturday, June 25 6:30 a.m. – 7:30 a.m.

Coffee and other beverages will be available during scheduled breaks.

SIMULATION & ROBOTICS AREA

The **Exhibit Hall** will feature a special **Simulation and Robotics Area** with extended hours (12:00 pm – 2:00 pm on Thursday and Friday) offering individual hands-on session times.

HOSPITALITY SUITE

A hospitality suite is available in the **Will Rogers Room & Patio** for all registered spouses, guests, and family members during the following hours:

Thursday, June 23 7:00 a.m. – 11:00 a.m.
 Friday, June 24 7:00 a.m. – 11:00 a.m.
 Saturday, June 25 7:00 a.m. – 11:00 a.m.

Breakfast is available from 7:00 a.m. to 10:00 a.m. each day; coffee and other beverages are available during all hospitality hours.

7:00 am – 8:00 am Continental Breakfast Served
 8:00 am – 10:00 am Full Breakfast Served
 10:00 am – 11:00 am Snacks & Beverages Served

BADGE IDENTIFICATION

Member and Spouse Cream
 Guest Physician and Spouse Blue
 Allied Personnel Green
 Exhibitor Orange

GENERAL INFORMATION

INCLUDED IN THE REGISTRATION FEE

Included in the registration fee are the New Members/Welcome Reception on Wednesday evening, the Thursday morning Samson Fun Run, the *Go for the Gold* Theme Dinner on Thursday evening, the Saturday Family Luncheon, the President's Reception and Banquet on Saturday evening, and daily breakfasts (served in the Exhibit Hall for meeting attendees and in the Hospitality Suite, located in the Will Rogers Room & Patio, for family members). Supervised Kids Receptions, for ages 3–18, will provide dynamic, entertaining, and safe programs during Wednesday's New Members/Welcome Reception and Saturday's President's Banquet.

NEW MEMBERS/WELCOME RECEPTION

Wednesday, June 22 7:00 pm – 9:00 pm

Join the WTSA in welcoming its new members at the **Lakeside Pool**.

Children ages 3–18 are invited to their own Kids Welcome Reception at the playground area by the Lakeside Pool, to be held concurrently. Games and arts and crafts will be among the entertainment offered for kids, along with dinner. *Please note that all children must be registered for the meeting to attend this function.*

SAMSON FUN RUN

Thursday, June 23 6:00 am

The morning 5K Fun Run will begin at the **Golf Clubhouse**. All participants will receive an official Samson Fun Run T-shirt at the finish line. Prizes will be presented at the Saturday luncheon. The winners of the Fun Run will play a match against the table tennis pro-athlete at the *Go for the Gold* Theme dinner.

Go for the Gold THEME DINNER

Thursday, June 23 6:30 pm – 10:00 pm

The Olympics are in town exclusively for The Western Thoracic Surgical Association with the *Go for the Gold* Theme Dinner! Interactive athlete demonstrations will thrill the attendees by showcasing their skills. Demonstrations of fencing, taekwondo, table tennis and gymnastics ribbon dancing will be highlighted and attendees will have the opportunity to play against these former and/or future Olympians in addition to learning the masterful skills to excel in these Olympic events. Additionally, former Olympic athletes including those that have medaled will be on hand to greet guests, have their picture taken and talk about their Olympic journey. Children in the group are sure to enjoy balloon artists, caricaturist and ribbon dancing.

Get into the Olympic spirit and go for the gold at The BROADMOOR's **Cheyenne Lodge!** All are encouraged to dress in patriotic red, white, and blue attire. Transportation will be provided from the West Building Lobby. *Please note that all children must be registered for the meeting to attend this function.*

SATURDAY LUNCHEON

Saturday, June 25 12:30 pm – 2:00 pm

Join registered physicians, spouses, guests, and family members for this outdoor luncheon at the **Mountain View Terrace** and applaud award winners from the Samson Fun Run and Golf and Tennis Tournaments. *Please note that all children must be registered for the meeting to attend this function.*

PRESIDENT'S RECEPTION AND BANQUET

Saturday, June 25 7:00 pm – 11:00 pm

The 37th Annual Meeting will conclude with the Presidential Reception and Banquet in the Pompeiian Room and the Main Ballroom located in the Broadmoor's Main Building. Swing dance the night away to the Broadmoor's own *Ken Miller Band*. *Dress is black tie optional.*

Family members aged 3–18 will be in for their own fun evening during the concurrent Kids & Teens Banquet at specs spot. *Please note that all children must be registered for the meeting to attend this function.*

GENERAL INFORMATION

GOLF/TENNIS TOURNAMENTS

(Separate Subscription Required)

GOLF TOURNAMENT

Broadmoor Mountain Course

Friday, June 24 1:00 pm

In 1959, Jack Nicklaus won his first national title and first major championship, the US Amateur Championship, on the links at THE BROADMOOR. Now, 49 years later, his company, Nicklaus Design, brings the legacy full-circle, with a redesign of one of the most beloved BROADMOOR golf venues, the Mountain Course. Working in collaboration with Nicklaus Design, a wonderfully scenic and playable golf course has been created. It gives the appearance of being in place since the opening of the property in 1918. The renovated Mountain Course plays to a maximum of 7,700 yards, par 72. The course features wide, forgiving fairways and large greens with beautiful vista views.

Pre-registration is required with indication of handicap.

\$250 per person includes transportation to the course, greens fees, box lunch, cart and prizes.

Golfers will need to meet at the front of the Golf Clubhouse at 12:30 pm and a dedicated W TSA shuttle will bring them over to the Mountain Course. Club rentals and balls are available at the pro shop.

TENNIS TOURNAMENT

Broadmoor Clay Tennis Courts

Friday, June 24 1:30 pm

This year's tennis tournament will take place on the clay courts of the Broadmoor. A Pre-Tournament Clinic will be provided, allowing participants to warm-up and receive pointers on hydration and how to play in high altitude and on clay courts. The tennis tournament is a perfect opportunity to mingle with colleagues and meet new friends. Open to all skill levels.

Pre-registration is required with indication of level of play.

\$50 per person includes courts, High Altitude and Clay Court Pre-Tournament Clinic, refreshments, High Altitude tennis balls and prizes.

CHILD CARE SERVICES

Bee Bunch (ages 3–12 years if children are completely potty trained):

- **Full Day Camp:** 9:00 am – 4:00 pm with costs starting at \$80.00 per child with family rates available.
 - Includes lunch, games, crafts, activities and more!
- **Half Day Camps:** 9:00 am – 12:00 noon or 1:00 pm – 4:00 pm with costs starting at \$40.00 per child
 - Lunch can be added for \$15.00 per child, which is served from noon – 1:00 pm
- **Evening Camps:** 6:00 pm – 10:00 pm with costs starting at \$70.00 per child with family rates available.
 - Includes dinner, games, crafts, activities and more!

In order to provide the highest quality Bee Bunch program, advance reservations are requested; please contact the Broadmoor Hotel Children's Concierge at (866) 837-9482.

Babysitting (ages 6 months to 3 years):

- \$12.00 per hour, plus \$3.00 per hour for each additional sibling, which must be paid in cash upon completion of each time period.
- Babysitters are independent contractors who come directly to guest rooms and will not take children swimming, bathe children, administer any medication, or leave the hotel property.

For babysitting services, please contact the Broadmoor Hotel Children's Concierge directly at **(866) 837-9482** for additional information. Rates vary depending on the number of children and location.

OPTIONAL TOURS/ACTIVITIES

FOOT HILLS JEEP TOUR

Transportation to depart from the West Building

Thursday, June 23 12:45 pm – 4:15 pm
Registration Required

Cost: \$115.00

Itinerary and Highlights:

Explore the foothills above Colorado Springs by jeep! A cowboy driver will meet guests at the hotel in an open-sided 4-wheel drive jeep. Within minutes, guests will find themselves on a winding mountain road that will take them through spectacular overlooks of Colorado Springs, Cheyenne Canyon, Manitou Springs, and Garden of the Gods. Site seeing in a jeep is a phenomenal way to see the extraordinary beauty of Colorado. Along the way, drivers will entertain guests with tales of the Old West and make this trip fun for everyone!

Includes: 4 x 4 adventure, guide, roundtrip transportation, box lunch, beverages, gratuities.

Note: Terrain ranges from paved city roads to unpaved mountain roads.

Skill Level: Beginner

US OLYMPIC TRAINING CENTER TOUR

Transportation to depart from the West Building

Thursday, June 23 2:30 pm – 4:30 pm
Registration Required

Cost: \$30.00

Itinerary and Highlights:

Located within the U.S. Olympic Training Center in Colorado Springs, the \$8 million Olympic Visitor Center is the primary facility providing the general public with information about the U.S. Olympic Committee, U.S. Olympic Training Centers, and the Olympic Movement. The Center includes the U.S. Olympic Hall of Fame Rotunda, and the U.S. Olympic Store. It also features numerous art exhibitions that change several times a year. Other Olympic memorabilia displays are scattered throughout the Visitor Center including interactive kiosks at which guests can obtain information on all American Olympic athletes. Just outside, the Carol Grotnes Belk Sculpture Garden features four bronze

sculptures and a 12-foot-tall Olympic Ring Wall amidst a landscape of flowers and foliage. Overhead, the rooftop terrace has an Olympic flame display and offers panoramic views of the entire complex and the Irwin Belk Olympic Path.

The tour includes a 12-minute film and 45-minute walking tour of the complex, led by a 2012 Olympic hopeful. Nearly 70% of the tour is outdoors. During the tour, guests will have the opportunity to view athlete training facilities including Sport Center Gymnasiums, weightlifting and wrestling facilities, the USA Shooting Center, Coaching & Sport Science, the Aquatics Center, and Sport Medicine. Life-size figures with narrative panels adorn the Irwin Belk Olympic Path and provide information about Olympic and Pan American Sports.

Includes: 2012 Olympic hopeful guide, transportation, and gratuities.

**Lunch will not be provided*

ADDITIONAL ACTIVITIES

With so much to see and do, the Broadmoor Concierge Services will be there to help you make the most of your precious time. Whether for sightseeing, dining reservations, child care, or tour and activity reservations, the concierge will gladly assist you to make your stay a memorable experience.

Be sure to utilize the concierge services by contacting them at **(866) 837-9482** or by visiting them directly.

GENERAL
INFORMATION

ACKNOWLEDGMENTS

The Western Thoracic Surgical Association wishes to thank the following companies and organizations for their educational and marketing support of the 37th Annual Meeting:

EDUCATIONAL GRANTS (Confirmed through May 21, 2011)

Silver Level

Medtronic, Inc.

Medtronic for their support of the Donald B. Doty Education Award

MARKETING SUPPORT (Confirmed through May 21, 2011)

Ethicon Endo-Surgery
 MAQUET Cardiovascular

EXHIBIT SUPPORT (Confirmed through May 21, 2011)

AtriCure, Inc.	MAQUET Cardiovascular
Baxter Healthcare	Medela, Inc.
Biomet Microfixation	Medtronic Inc.
Cardiac Assist, Inc.	On-X Technologies, Inc.
CareFusion	Precision Therapeutics
Cormatrix Cardiovascular, Inc.	Scanlan International, Inc.
Covidien	Sorin Group
CryoLife, Inc.	Spiration, Inc.
Edwards Lifesciences	St. Jude Medical, Inc.
ESTECH	Super Dimension, Inc.
Ethicon Endo-Surgery	Synovis Surgical Innovations
Genesee BioMedical, Inc.	Synthes CMF
HeartWare, Inc	Terumo Cardiovascular Systems
Intuitive Surgical, Inc.	Thoratec Corporation
Karl Storz Endoscopy-America, Inc.	Vitalcor, Inc.
KLS Martin, LP	ZymoGenetics
LifeNet Health	

GUIDELINES FOR SPEAKERS AND DISCUSSANTS

The Program Committee has determined that no slides are to be included in either the invited discussion or spontaneous discussion.

1. Scientific Session speakers will be allowed ten minutes for their presentations, and primary discussants will be allowed two minutes. Concurrent Forum speakers will be allowed five minutes for their presentations.
2. Speakers are requested to present their PowerPoint Presentations in the Speaker Ready Room located in the Freymuth Room, outside the entrance to the West Ballroom, at least 30 minutes prior to the opening of the session at which they are to present (presentation slides can be turned in as early as Wednesday, June 22nd. All presentations must be submitted in PowerPoint format only. Speakers with a disclosure will be asked to state the nature of their disclosure prior to the presentation. No personal laptops will be allowed at the podium.
3. Discussion of Papers: Only members of the Association and invited guests have the privilege of discussing papers. Non members may discuss a paper at the invitation of a member. All discussants should register with the Secretary in the science room (Rocky Mountain A & B) prior to the opening of the session during which the paper is to be presented. All discussions will be presented from floor microphones.
4. In publication, it is customary to group discussions together on a series of papers. Transcription of the discussions will be forwarded to discussants for review and correction. Any delay in the return of corrected discussions means that publication of all papers on the subject will be held up. Such a delay is manifestly unfair to those who are conscientious in the prompt submission of their remarks. Unreasonable delay will preclude publication.

GENERAL INFORMATION

PROGRAM OUTLINE

WEDNESDAY, JUNE 22, 2011

- 1:00 pm – 6:00 pm **REGISTRATION**, *West Registration Desk*
- 1:00 pm – 6:00 pm **SPEAKER READY ROOM**, *Freymuth Room*
- 7:00 pm – 9:00 pm **NEW MEMBERS/WELCOME RECEPTION**, *Lakeside Pool*
- 7:00 pm – 9:00 pm **KIDS & TEENS RECEPTION**, *Kids Playground & Lawn (Lakeside Pool Area)*

THURSDAY, JUNE 23, 2011

- 6:00 am **SAMSON FUN RUN**, *Golf Clubhouse Start*
- 7:00 am – 8:00 am **CONTINENTAL BREAKFAST**, *Rocky Mountain Ballroom C & D*
- 7:00 am – 11:00 am **FAMILY HOSPITALITY**, *Will Rogers Room & Patio*
 7:00 am – 8:00 am Continental Breakfast Served
 8:00 am – 10:00 am Full Breakfast Served
 10:00 am – 11:00 am Snacks & Beverages Served
- 7:00 am – 12:00 pm **REGISTRATION**, *Rocky Mountain Foyer*
- 7:00 am – 12:00 pm **SPEAKER READY ROOM**, *Freymuth Room*
- 7:00 am – 12:00 pm **EXHIBITS**, *Rocky Mountain C & D*
- 7:00 am – 2:00 pm **SIMULATION & ROBOTICS AREA**, *Rocky Mountain C & D*
 The *Exhibit Hall* will feature a special **Simulation and Robotics Area** with extended hours (12:00 pm – 2:00 pm on Thursday and Friday) offering individual hands-on session times.

8:00 am – 9:00 am **SCIENTIFIC SESSION I**

Rocky Mountain A & B

Moderators: Robbin G. Cohen
 Robert C. Robbins

(10 minutes presentation, 10 minutes discussion)

At the conclusion of this session, participants will be able to:

- Discuss current investigations and novel approaches in the management of adult cardiac, general thoracic and congenital heart disease patients suffering from an array of surgical conditions relating to the heart, lungs, organs of the thorax, and other airway/circulation diseases;
- Discuss current basic science investigations relating to advances in the treatment and management of cardiothoracic and/or congenital heart disease patients and conditions;
- Discuss current investigative studies in clinical outcomes for patients with surgical cardiothoracic and/or congenital heart disease disorders or pathologies.

+1. Quantifying the Incremental Cost of Complications Associated with Mitral Valve Surgery in the United States

Alexander Iribarne¹, John D. Burgener², Jai Raman², Shahab Akhter², Rachel Easterwood¹, Valluvan Jeevanandam², Mark J. Russo²

¹*Columbia University Medical Center, New York, NY;*
²*University of Chicago Medical Center, Chicago, IL*

DISCUSSANT: RICHARD J. SHEMIN

+2. The Development of a Cardiac Surgery Simulation Curriculum: From Needs Assessment Results to Practical Implementation

Raina Sinha, Maura E. Sullivan, *Craig J. Baker
University of Southern California, Los Angeles, CA

DISCUSSANT: JAMES I. FANN

+ Samson Resident Prize Essay
 * WISA Member

- 3. Surgical Resection Should be Strongly Considered for Stage I and II Small Cell Carcinoma of the Lung**
Benny Weksler, Rodney J. Landreneau, Arjun Pennathur
University of Pittsburgh Medical Center, Pittsburgh, PA
DISCUSSANT: PAUL H. SCHIPPER

9:00 am – 9:10 am **INTRODUCTION OF NEW MEMBERS AND RESIDENT ESSAY FINALISTS**, *Rocky Mountain A & B*

9:10 am – 9:55 am **PRESIDENTIAL ADDRESS**

Rocky Mountain A & B

Introduced By: Robert C. Robbins

Denying Our Default Future

Robbin G. Cohen

9:55 am – 10:20 am **COFFEE BREAK, VISIT EXHIBITS**, *Rocky Mountain C & D*

10:20 am – 11:40 am **SCIENTIFIC SESSION II**

Rocky Mountain A & B

Moderators: J. Scott Millikan

Patricia A. Thistlethwaite

(10 minutes presentation, 10 minutes discussion)

Learning objectives for this session are the same as those for Scientific Session I, on page 23.

- +4. Contemporary Results for Replacement of the Ascending Aorta and Arch in North America**
Judson B. Williams¹, Eric D. Peterson², Yue Zhao², Sean M. O'Brien², James S. Gammie³, Edward P. Chen⁴, G. Chad Hughes¹
¹*Duke University Medical Center, Durham, NC*; ²*Duke Clinical Research Institute, Durham, NC*; ³*University of Maryland Medical Center, Baltimore, MD*; ⁴*Emory University School of Medicine, Atlanta, GA*
DISCUSSANT: MICHAEL P. FISCHBEIN

+ Samson Resident Prize Essay

- 5. Decellularized Versus Standard Cryopreserved Valve Allografts for Right Ventricular Outflow Tract Reconstruction: A Single Institution Comparison**
Mark Ruzmetov, Jitendra J. Shah, Dale M. Geiss, *Randall S. Fortuna
Children's Hospital of Illinois, Peoria, IL
DISCUSSANT: JAMES JAGGERS

- +6. The Universal Bed Model for Patient Care Improves Outcome and Lowers Cost in Cardiac Surgery**
Philip C. Corcoran, **Abbas Emaminia**, Linda Krause, Michael P. Siegenthaler, Mary Evans, Jessica Nurmi, Melissa Means, Sarah Rassmussen, Keith A. Horvath
National Institutes of Health, Bethesda, MD
DISCUSSANT: JAMES K. BREVIG

- 7. Immediate Post-Operative Inflammatory Response Predicts Long-Term Outcome in Lung Transplant Recipients**
David J. Hall, Maher Baz, Michael J. Daniels, E. Denmark Staples, Charles T. Klodell, Lyle L. Moldawer, Thomas M. Beaver
University of Florida College of Medicine, Gainesville, FL
DISCUSSANT: MICHAEL A. SMITH

+ Samson Resident Prize Essay

* WISA Member

11:40 am – 12:30 pm **CONTROVERSIES IN THORACIC SURGERY**

Rocky Mountain A & B

We Are Headed for a Crisis in Manpower in CT Surgery by 2020

Moderator: Mark T. Metzdorff

Pro: Douglas J. Mathisen

Con: Sean C. Grondin

At the conclusion of this session, participants will be able to:

- Understand factors that are considered to contribute to the perception of an upcoming shortage of thoracic surgeons in the U.S.
- Understand how alternative healthcare delivery models can influence manpower needs.

12:30 pm **ADJOURN**

12:45 pm – 4:15 pm **FOOTHILLS JEEP TOUR****

Transportation to Depart from the West Entrance of Hotel

2:30 pm – 4:30 pm **U.S. OLYMPIC TRAINING CENTER TOUR****

Transportation to Depart from the West Entrance of Hotel (No Lunch Provided)

6:30 pm – 10:00 pm **GO FOR THE GOLD THEME DINNER, Cheyenne Lodge**

Transportation to Depart from the West Entrance of Hotel

** Separate Subscription Required

FRIDAY, JUNE 24, 2011

6:00 am – 12:00 pm **REGISTRATION, Rocky Mountain Foyer**

6:00 am – 12:00 pm **SPEAKER READY ROOM, Freymuth Room**

6:30 am – 7:50 am **SIMULTANEOUS BREAKFAST SESSIONS****

A) **Improving Your Reimbursement****

West Ballroom A

Norm Brooks

At the conclusion of this session, participants will be able to:

- Interpret complex CMS reimbursement policy language to help avoid inaccurate coding and optimize reimbursement.
- Increase compliance with CMS rules.
- Successfully support and defend coding strategies for all CT Surgery services and procedures.
- Understand the resources available in order to keep up to date with dynamic regulatory environment.

B) **Working for Someone Else: What You Should Know About Contracting and Compensation****

West Ballroom B

John R. Voigt

At the conclusion of this session, participants will be able to:

- Know what they will actually be paid for in their practice.
- Know how they will be paid and for how long.
- Know what they can do if the practice doesn't work out.

** Separate Subscription Required

C) **Managing Conflict and Giving (Receiving) Feedback: A Leadership Challenge****

West Ballroom D

Ross M. Ungerleider & Jamie Ungerleider

At the conclusion of this session, participants will be able to:

- Be aware of their own conflict management style.
- Be aware of tools they can use to better manage conflicts.
- Learn how to give feedback that can create growth as opposed to defensive resistance.

7:00 am – 11:00 am

FAMILY HOSPITALITY, *Will Rogers Room & Patio*

7:00 am – 8:00 am Continental Breakfast Served

8:00 am – 10:00 am Full Breakfast Served

10:00 am – 11:00 am Snacks & Beverages Served

7:30 am – 8:00 am

CONTINENTAL BREAKFAST, *Rocky Mountain C & D*

7:30 am – 12:00 pm

EXHIBITS, *Rocky Mountain C & D*

7:30 am – 2:00 pm

SIMULATION & ROBOTICS AREA, *Rocky Mountain C & D*

The **Exhibit Hall** will feature a special **Simulation and Robotics Area** with extended hours (12:00 pm – 2:00 pm) offering individual hands-on session times.

** Separate Subscription Required

8:00 am – 8:50 am

POSTGRADUATE COURSE

Rocky Mountain A & B

Why Would Anyone Want to Be on Your Surgical Team

Robert C. Myrtle, DPA

USC School of Policy, Planning & Development,
Los Angeles, California

At the conclusion of this session, participants will be able to:

- Identify what contributes to effective surgical team performance.
- Describe the individual, team, and other influences on surgical team performance.
- Assess the role of the surgeon in creating and managing conditions that lead to high levels of surgical team performance.

8:50 am – 10:30 am

SCIENTIFIC SESSION III

Rocky Mountain A & B

Moderators: Gordon A. Cohen
Mark T. Metzdorff

(10 minutes presentation, 10 minutes discussion)

Learning objectives for this session are the same as those for Scientific Session I, on page 23.

8. Nationwide Trend and Regional/Hospital Variations of Open Versus Endovascular Repair of Thoracoabdominal Aortic Aneurysms

Joshua M. Liao¹, Faisal G. Bakaeen², Kiki Simpson², Joseph S. Coselli³, Scott A. LeMaire³, Joseph Huh³, Danny Chu²

¹Baylor College of Medicine, Houston, TX; ²Baylor College of Medicine/Michael E. DeBakey VA Medical Center, Houston, TX; ³Texas Heart Institute/Baylor College of Medicine, Houston, TX

DISCUSSANT: R. SCOTT MITCHELL

+9. Single Patch, Two Patch and Caval Division Techniques for Repair of Partial Anomalous Pulmonary Venous Connections: Does it Matter?

Sameh M. Said, Harold M. Burkhart, Hartzell V. Schaff, Frank Cetta, Jr., Sabrina D. Phillips, Roxann D. Barnes, Zhuo Li, Joseph A. Dearani

Mayo Clinic, Rochester, MN

DISCUSSANT: DAVID N. CAMPBELL

10. Implementation of a Comprehensive Blood Conservation Program Can Reduce Blood Utilization in a Community Cardiac Surgery Program

Steve Xydias¹, Christopher J. Magovern¹, James P. Slater¹, John M. Brown, III¹, Grant Parr¹, Robert L. Thurer²

¹Morristown Memorial Hospital, Morristown, NJ; ²Haemonetics Corporation, Braintree, MA

DISCUSSANT: JAMES M. MAXWELL

+11. Lung Cancer Cell Invasion and Expression of Intercellular Adhesion Molecule-1 (ICAM-1) Is Attenuated by Secretory Phospholipase A2 Inhibition

Jessica A. Yu, Miral R. Sadaria, Xianzhong Meng, *David A. Fullerton, *Michael J. Weyant

University of Colorado, Aurora, CO

DISCUSSANT: DAVID M. JABLONS

+ Samson Resident Prize Essay
* W TSA Member

12. Sternal Plating Is Superior to Wire Closure In Ensuring Sternal Osteosynthesis—Results of a Randomized Prospective, Multi-Center Trial

Jaishankar Raman¹, Heber MacMahon¹, Brian J. De Guzman², Michael S. Wong³, Kenton Zehr⁴, Michael Mochalski⁵, Sven Lehmann⁵, Edward Garrett⁶

¹University of Chicago Medical Center, Chicago, IL; ²St. Joseph's Hospital, Phoenix, AZ; ³University of California Davis, Sacramento, CA; ⁴Scott & White Clinic, Temple, TX; ⁵University of Leipzig Heart Center, Leipzig, Germany; ⁶Cardiovascular Surgery Clinic, Memphis, TN

DISCUSSANT: MATTHEW S. SLATER

10:30 am – 11:00 am **COFFEE BREAK, VISIT EXHIBITS**, Rocky Mountain C & D

11:00 am – 12:00 pm **SCIENTIFIC SESSION IV**

Rocky Mountain A & B

Moderators: John C. Chen
Michael J. Weyant

(10 minutes presentation, 10 minutes discussion)

Learning objectives for this session are the same as those for Scientific Session I, on page 23.

+13. Repair of Giant Paraesophageal Hernias Routinely Produces Improvement in Respiratory Function

Philip W. Carrott, Jr., Jean Hong, Madhan Kuppusamy, Steven Kirtland, Richard P. Koehler, *Donald E. Low

Virginia Mason Medical Center, Seattle, WA

DISCUSSANT: SEAN C. GRONDIN

+ Samson Resident Prize Essay
* W TSA Member

14. Comparison of Modified Blalock-Taussig Shunt and Ductal Stenting for Palliation of Duct-Dependent Cardiac Lesions

***David M. McMullan**, *Gordon A. Cohen,
*Lester C. Permut, Thomas K. Jones,
Troy A. Johnston, Augustin E. Rubio
Seattle Children's Hospital, Seattle, WA
DISCUSSANT: ROSS M. UNGERLEIDER

15. Do We Increase Operative Risk by Adding the Cox-Maze III Procedure to Aortic Valve Replacement and Coronary Artery Bypass Surgery?

Niv Ad, Linda Henry, Sharon Hunt, Sari D. Holmes
Inova Heart and Vascular Institute, Falls Church, VA
DISCUSSANT: JOHN R. DOTY

12:00 pm

ADJOURN

1:00 pm

GOLF TOURNAMENT**, *Broadmoor Mountain Course*
Transportation Provided from Golf Clubhouse

1:30 pm

TENNIS TOURNAMENT**, *Broadmoor Clay Tennis Courts*
(30 Minutes of Warm-Ups Conducted by Tennis Pro
Prior to 2:00 pm Start)

EVENING — FREE

* W TSA Member

** Separate Subscription Required

SATURDAY, JUNE 25, 2011

6:00 am – 11:30 am **SPEAKER READY ROOM**, *Freytmuth Room*

6:00 am – 12:00 pm **REGISTRATION**, *Rocky Mountain Foyer*

6:30 am – 7:30 am **CONTINENTAL BREAKFAST**, *Rocky Mountain C & D*

6:30 am – 10:30 pm **EXHIBITS AND SIMULATION & ROBOTICS AREA**,
Rocky Mountain C & D

7:00 am – 8:15 am **CONCURRENT FORUMS**
(5 minutes presentation, 3 minutes discussion)

Learning objectives for this session are the same as those for Scientific Session I, on page 23.

ADULT CARDIAC

Rocky Mountain A & B

Moderators: Thomas A. Burdon
David A. Fullerton

CF1. Mid-Term Results of the David V Aortic Root Replacement in High Risk Clinical Scenarios
Bradley G. Leshnower, Robert A. Guyton,
Richard J. Myung, John D. Puskas, LaRonica Hawkins,
Edward P. Chen
Emory University School of Medicine, Atlanta, GA

CF2. Long-Term Implications of Emergency Versus Elective Proximal Aortic Surgery in Marfan Syndrome Patients in the GenTAC Registry
***Howard K. Song¹**, Mark Kindem², Kathryn Holmes³,
Barbara L. Kroner², Richard B. Devereux⁴, Cheryl Maslen¹,
Joseph E. Bavaria⁵, Scott A. LeMaire⁶
¹*Oregon Health & Science University, Portland, OR*; ²*RTI International, Bethesda, MD*; ³*Johns Hopkins University School of Medicine, Portland, MD*; ⁴*Cornell University Weill Medical College, New York, NY*; ⁵*University of Pennsylvania School of Medicine, Philadelphia, PA*; ⁶*Baylor College of Medicine, Houston, TX*

* W TSA Member

CF3. Spinal Cord Protective Strategies During Descending and Thoracoabdominal Aortic Aneurysm Repair in the Modern Era: The Role of Intrathecal Papaverine

Brian Lima, Edward R. Nowicki, Eugene H. Blackstone, Eric E. Roselli, Joseph F. Sabik, Bruce W. Lytle, Lars G. Svensson
Cleveland Clinic, Cleveland, OH

CF4. Improved Survival in Heart Transplant Patients Living at High Altitude

Curtis J. Wozniak, Bradley C. Baird, *Craig H. Selzman
University of Utah, Salt Lake City, UT

CF5. Myocardial Tissue Elastic Properties Determined by Atomic Force Microscopy Following SDF-1 α Angiogenic Therapy for Acute Myocardial Infarction

William Hiesinger¹, Matthew J. Brukman², Ryan C. McCormick¹, J. Raymond Fitzpatrick, III¹, John R. Frederick¹, Elaine C. Yang¹, Jeffrey R. Muenzer¹, Nicole A. Marotta¹, Mark F. Berry³, Pavan Atluri¹, Y. Joseph Woo¹

¹*University of Pennsylvania, Department of Surgery, Division of Cardiovascular Surgery, Philadelphia, PA;*

²*University of Pennsylvania, Department of Materials Science and Engineering, Philadelphia, PA;* ³*Duke University, Department of Surgery, Durham, NC*

CF6. In Situ Regeneration of Heart Valves: A Novel, Rapid Method for Tissue Engineering Heart Valves

James E. Jordan, J. Koudy Williams, Sang Jin Lee, Devanathan Raghavan, Anthony J. Atala, James J. Yoo
Wake Forest University School of Medicine, Winston-Salem, NC

CF7. Evolving Surgical Techniques for Pulmonary Endarterectomy According to the Changing Features of Chronic Thromboembolic Pulmonary Hypertension Patients During 16-Year Single Center Experience

Andrea M. D'Armini¹, Marco Morsolini^{1,2}, Elisa Milanesi³, Salvatore Nicolardi^{1,2}, Gabriella Mattiucci¹, Giuseppe Silvaggio¹, Antonella Degani⁴, Marco Maurelli³, Mario Viganò¹

¹*Cardiac Surgery, University of Pavia School of Medicine, Foundation I.R.C.C.S "San Matteo" Hospital, Pavia, Italy;* ²*Surgery, University of Pavia School of Medicine, Foundation I.R.C.C.S "San Matteo" Hospital, Pavia, Italy;* ³*Anesthesia and Intensive Care Unit, Anesthesia and Intensive Care Unit III, University of Pavia School of Medicine, Foundation I.R.C.C.S "San Matteo" Hospital, Pavia, Italy;* ⁴*Service of Cardiovascular Perfusion, University of Pavia School of Medicine, Foundation I.R.C.C.S "San Matteo" Hospital, Pavia, Italy*

CF8. Baseline Metabolomic Profiles Predict Adverse Events Following Coronary Artery Bypass Grafting

Asad A. Shah, Damian M. Craig, Jacqueline K. Sebek, William E. Kraus, G. Chad Hughes, Svati H. Shah
Duke University Medical Center, Durham, NC

GENERAL THORACIC

West Ballroom A & B

Moderators: Ross M. Bremner
Paul H. Schipper

CF9. Oximetry-Derived Perfusion Index Confirms Sympathectomy During Minimally-Invasive Endoscopic Thoracic Sympathectomy for Hyperhidrosis

Charles T. Klodell, Jr., Kenneth E. Lamb, Nancy Staples, Nikolaus Gravenstein
University of Florida, Gainesville, FL

CF10. hNIS Expressing Oncolytic Virus GLV-1h153 Is a Promising Agent for the Imaging and Treatment of Non-Small Cell Lung Cancer

Joshua Carson¹, Dana Haddad¹, Sepideh Gholami¹, Taejin Song¹, Nanhai Chen², Qian Zhang², Kyonghwa Jun¹, Taejin Song¹, Joyce Au¹, Valerie Rusch¹, Aladar Szalay², Yuman Fong¹
¹Memorial Sloan Kettering Cancer Center, New York, NY; ²Genelux Corporation, San Diego, CA

CF11. Mutational Profiling for Lung Lesions: Long Term Results Favour It as a Standard of Care

Carmen Pellino, Scott Cackler, Patrick Ross, Sr., Charles Hitchcock, ***Susan D. Moffatt-Bruce**
 The Ohio State University Medical Center, Columbus, OH

CF12. The Effect of Leukocyte-Depleted Blood Transfusion on Survival in Resected Early Stage Lung Cancer

Thomas Ng, Hueylan Chern, Beth A. Ryder, Frank W. Sellke, David T. Harrington, William G. Cioffi
 Brown University, Providence, RI

CF13. Replacing Mediastinoscopy with Endobronchial Ultrasound: A Community Thoracic Surgeon's Perspective

Benjamin E. Lee, Robert Korst, Elaine Kletsman
 The Valley Hospital, Ridgewood, NJ

CF14. Tailored Approach to Minimally Invasive Esophagectomy

Jeffrey Javidfar, Jonathan Yang, Joanna Miller, Matthew Bacchetta, Frank D'Ovidio, Lyall A. Gorenstein, Mark E. Ginsburg, Marc Bessler, Joshua R. Sonett
 Division of Cardiothoracic Surgery, Columbia University Medical Center, New York City, NY

CF15. Right Lung Ischemia Induces Development of Contra-Lateral Pulmonary Vasculopathy

Edouard Sage, Olaf Mercier, Philippe Herve, Philippe Dartevelle, Saadia Eddahibi, Elie Fadel
 Hopital Marie Lannelongue, Le Plessis-Robinson, France

* WISA Member

CF16. Distribution of Donor Lungs in the United States: A Case for Broader Geographic Sharing

Alexander Iribarne¹, Joshua R. Sonett¹, Rachel Easterwood¹, Kimberly N. Hong¹, Jai Raman², Wickii Vigneswaran², **Mark J. Russo²**
¹Columbia University Medical Center, New York, NY; ²University of Chicago Medical Center, Chicago, IL

CONGENITAL HEART DISEASE

West Ballroom C & D

Moderators: David N. Campbell
 Ross M. Ungerleider

CF17. Left Ventriculotomy Is Safe in Infants and Young Children Requiring Cardiac Surgery

Steven P. Goldberg, Umar S. Boston, Vijaya M. Joshi, Mayte I. Figueroa, Jean A. Ballweg, Thomas K. Chin, Craig A. Mathis, Christopher J. Knott-Craig
 University of Tennessee Health Science Center/Le Bonheur Children's Hospital, Memphis, TN

CF18. Interrupted Aortic Arch Repair Outcomes Using Left Carotid Artery Swing Down Technique

Osama Eltayeb, Steven H. Todman, Mark Ruzmetov, Mark D. Rodefeld, Mark D. Turrentine, John W. Brown, **John P. Breinholt**
 Indiana University School of Medicine, Indianapolis, IN

CF19. Fast-Tracking Extubation After Modified Fontan Procedure

Masato Mutsuga¹, Luis G. Quinonez¹, Andrew S. Mackie², Colleen M. Norris³, Elaine B. Marchak⁴, Jennifer M. Rutledge², ***Ivan M. Rebeyka¹**, David B. Ross¹
¹University of Alberta, Department of Surgery, Division of Cardiac Surgery, Edmonton, AB, Canada; ²University of Alberta, Division of Pediatric Cardiology, Edmonton, AB, Canada; ³University of Alberta, Faculty of Nursing, Edmonton, AB, Canada; ⁴University of Alberta, Department of Anesthesiology, Edmonton, AB, Canada

* WISA Member

CF20. Size of the Right Ventricle to Pulmonary Artery Conduit Impacts Midterm Outcome After the Norwood Procedure in Patients Weighing Less Than 3 kg

Naruhito Watanabe, Petros V. Anagnostopoulos, Takeshi Shinkawa, Natalie C. Johnson, *Anthony Azakie
Division of Pediatric Cardiac Surgery, UCSF Benioff Children's Hospital, University of California San Francisco, San Francisco, CA

CF21. Preliminary Clinical Experience with a Bifurcated Y-Graft Fontan Procedure

Kirk R. Kanter¹, Christopher M. Haggerty², Maria Restrepo², Diane A. de Zelicourt², Jarek Rossignac², W. James Parks¹, Ajit P. Yoganathan²
¹Emory University School of Medicine, Atlanta, GA; ²Georgia Institute of Technology, Atlanta, GA

CF22. Impact of Surgery for Reflux or Feeding Intolerance on Mid-Term Outcomes for Single Ventricle Patients

Jane J. Keating¹, Janet M. Simsic², Brian E. Kogon¹, Kirk R. Kanter¹, Jeryl Huckaby¹, Patrick D. Kilgo¹, Paul M. Kirshbom¹
¹Emory University School of Medicine, Atlanta, GA; ²Children's Healthcare of Atlanta, Atlanta, GA

CF23. Prophylactic Amiodarone Prevents Junctional Ectopic Tachycardia After Tetralogy of Fallot Repair

Michiaki Imamura, Amy M. Dossey, Xiomara Garcia
 Arkansas
Children's Hospital, Little Rock, AR

CF24. Effects of Glutaraldehyde Concentration, Pretreatment Time and Type of Tissue (Porcine Versus Bovine) on Post-Implantation Calcification

Pranava Sinha¹, David Zurakowski², T.K. Susheel Kumar¹, Dingchao He¹, Christopher Rossi¹, Richard Jonas¹
¹Children's National Medical Center, Washington, DC; ²Children's Hospital Boston, Boston, MA

7:00 am – 11:00 am **FAMILY HOSPITALITY**, Will Rogers Room & Patio
 7:00 am – 8:00 am Continental Breakfast Served
 8:00 am – 10:00 am Full Breakfast Served
 10:00 am – 11:00 am Snacks & Beverages Served

8:30 am – 9:50 am **SCIENTIFIC SESSION V**

Rocky Mountain Ballroom A & B

Moderators: Anthony P. Furnary
 John D. Mitchell

(10 minutes presentation, 10 minutes discussion)

Learning objectives for this session are the same as those for Scientific Session I, on page 23.

+16. Post-Operative Vodka Consumption Significantly Reduces Pericardial Adhesions in Hypercholesterolemic Swine

Antonio D. Lassaletta, Louis M. Chu, Frank W. Sellke
Brown University, Providence, RI
 DISCUSSANT: NAHUSH A. MOKADAM

+17. Extent of Resection in Bronchoalveolar Cell Carcinoma: A Population-Based Evaluation

Bryan A. Whitson, Shawn S. Groth, Rafael S. Andrade, Mohi O. Mitek, Michael A. Maddaus, Jonathan D'Cunha
University of Minnesota, Minneapolis, MN
 DISCUSSANT: ROSS M. BREMNER

18. Risk Factors Associated with Readmission Following Pediatric Cardiothoracic Surgery

Brian E. Kogon¹, Ashish Jain¹, Matthew Oster², Kirk Kanter¹, Paul Kirshbom¹
¹Emory University, Atlanta, GA; ²Children's Healthcare of Atlanta, Sibley Cardiology, Atlanta, GA
 DISCUSSANT: DAVID R. CLARKE

19 Bilateral Internal Mammary Artery Grafting Improves Long-Term Survival in Patients with Reduced Ejection Fraction: A Propensity-Matched Study with Thirty-year Follow-Up

David Galbut¹, Paul Kurlansky², Ernest Traad², Malcolm Dorman³, Melinda Zucker³, George Ebra²
¹Aventura Medical Center, Aventura, FL; ²Florida Heart Research Institute, Miami, FL; ³JFK Medical Center, Atlantis, FL

DISCUSSANT: ANTHONY P. FURNARY

9:50 am – 10:10 am **COFFEE BREAK, VISIT EXHIBITS**, Rocky Mountain Ballroom C & D

10:10 am – 11:10 am **SCIENTIFIC SESSION VI**

Rocky Mountain Ballroom A & B
 (10 minutes presentation, 10 minutes discussion)

Moderators: Sean C. Grondin
 Michael S. Mulligan

Learning objectives for this session are the same as those for Scientific Session I, on page 23.

20. Simplified Non-Resectional Leaflet-Inverting Mitral Valve Repair for Degenerative Mitral Regurgitation: Technique and Outcomes

Y. Joseph Woo, John W. MacArthur, Jr.
 University of Pennsylvania, Philadelphia, PA

DISCUSSANT: JAMES M. DOUGLAS

21. Pulmonary Resection in High-Risk Patients for T1a Non-small Cell Lung Cancer

Andrea S. Wolf, Michael T. Jaklitsch, Martha Powell, Yolonda L. Colson, Steven J. Mentzer, Jon O. Wee, Ritu R. Gill, Lucian Chirieac, Raphael Bueno, David J. Sugarbaker, Scott J. Swanson

Brigham and Women's Hospital, Boston, MA

DISCUSSANT: JOSEPH B. SHRAGER

22. Experience with Over 100 Total Artificial Heart Implants

*Jack G. Copeland, III¹, **Hannah Copeland¹**, Monica Gustafson², Nicole Mineburg², Diane Covington², Richard Smith², Mark Friedman²
¹University of California San Diego, San Diego, CA; ²University of Arizona, Tucson, AZ

DISCUSSANT: HARI R. MALLIDI

11:10 am – 12:00 pm **C. WALTON LILLEHEI POINT/COUNTERPOINT SESSION**, Rocky Mountain Ballroom A & B

Public Reporting Is Harmful and Should Be Abolished

Moderator: David A. Fullerton

Pro: Ross M. Ungerleider

Con: David M. Shahian

At the conclusion of this session, participants will be able to:

- Know the benefits and disadvantages of public reporting of Cardiothoracic Surgery Outcome Data.
- Know some factors that influence validity of outcome reporting.
- Know where the future of outcome reporting might be going.

12:00 pm – 12:30 pm **ANNUAL BUSINESS MEETING (Members Only)**, Rocky Mountain Ballroom A & B

12:30 pm – 2:00 pm **FAMILY LUNCHEON**, Mountain View Terrace

7:00 pm – 10:00 pm **KIDS & TEENS BANQUET**, Specs Spot

7:00 pm – 11:00 pm **PRESIDENT'S RECEPTION AND BANQUET (Main Building)**
 (Black Tie Optional)

Reception: Pompeian Room

Banquet: Main Ballroom

* WISA Member

FULL SCIENTIFIC PROGRAM

THURSDAY, JUNE 23, 2011

- 6:00 am **SAMSON FUN RUN**, *Golf Clubhouse Start*
- 7:00 am – 8:00 am **CONTINENTAL BREAKFAST**, *Rocky Mountain Ballroom C & D*
- 7:00 am – 11:00 am **FAMILY HOSPITALITY**, *Will Rogers Room & Patio*
 7:00 am – 8:00 am Continental Breakfast Served
 8:00 am – 10:00 am Full Breakfast Served
 10:00 am – 11:00 am Snacks & Beverages Served
- 7:00 am – 12:00 pm **REGISTRATION**, *Rocky Mountain Foyer*
- 7:00 am – 12:00 pm **SPEAKER READY ROOM**, *Freymuth Room*
- 7:00 am – 12:00 pm **EXHIBITS**, *Rocky Mountain C & D*
- 7:00 am – 2:00 pm **SIMULATION & ROBOTICS AREA**, *Rocky Mountain C & D*
 The *Exhibit Hall* will feature a special **Simulation and Robotics Area** with extended hours (12:00 pm – 2:00 pm on Thursday and Friday) offering individual hands-on session times.

8:00 am – 9:00 am **SCIENTIFIC SESSION I**

Rocky Mountain A & B

Moderators: Robbin G. Cohen
 Robert C. Robbins

(10 minutes presentation, 10 minutes discussion)

+1. Quantifying the Incremental Cost of Complications Associated with Mitral Valve Surgery in the United States

Alexander Iribarne¹, John D. Burgener², Jai Raman², Shahab Akhter², Rachel Easterwood¹, Valluvan Jeevanandam², Mark J. Russo²

¹*Columbia University Medical Center, New York, NY;*

²*University of Chicago Medical Center, Chicago, IL*

DISCUSSANT: RICHARD J. SHEMIN

OBJECTIVES: To quantify the net increase in hospital costs associated with complications after mitral valve surgery.

METHODS: De-identified patient-level and claims data on all mitral valve operations performed in the United States from 1/1/07–12/31/07 were obtained from the National Inpatient Sample (n = 8,251). Patients with major concomitant cardiac procedures were excluded from the analysis (n = 3,038) for a net sample size of 5,213 patients. Total hospital charges were converted to total hospital costs, rounded to the nearest \$1,000, using hospital-specific cost-to-charge ratios. Risk-adjusted median total hospital costs were analyzed by major complication using bootstrapped multi-variable quantile regression. Major complications of interest included: pneumonia, sepsis, stroke, renal failure requiring hemodialysis, cardiac tamponade, and myocardial infarction.

RESULTS: The study cohort was associated with the following baseline characteristics: mean age of 60.1 ± 18.1 years, gender (% male) 47.5% (n = 2,477), elective procedure 64.3% (n = 3,351), primary payer: Medicare 46% (n = 2,398) versus private insurance 40.0% (n = 2,085), chronic pulmonary disease 17.9% (n = 935), diabetes 12.6% (n = 657), renal insufficiency 11.4% (n = 592), peripheral vascular disease 6.3% (n = 326), and obesity 6.2% (n = 322). The mean and median length of stay (LOS) were 12.8 ± 0.2 and 9 days, respectively. The mean and median total hospital costs were \$53,206 ± 601 and \$41,000, respectively. There were a total of 1,025 complication events in the series which occurred in 858 patients. The distribution of complications and associated incremental change in hospital costs are shown in Table 1. The most common complication was pneumonia (n = 365, 7.0%), which was

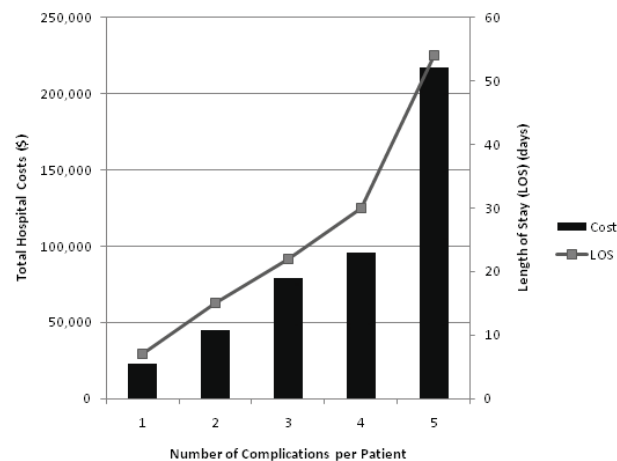
+ *Samson Resident Prize Essay*

THURSDAY

associated with a \$33,295 median increase in hospital costs and a 12 day increase in median LOS ($p < 0.001$). The most costly complication was cardiac tamponade which resulted in an increase in hospital cost of $\$44,600 \pm 9,677$ and an increase in LOS of 13 days ($p < 0.001$). Stroke was the next most costly complication with a median increase in hospital costs of $\$32,149 \pm 6,659$ ($p < 0.001$). There was a step-wise association between hospital costs and LOS, and the number of complications per patient ($p < 0.001$) (Figure 1). There was also a risk-adjusted stepwise increase in the probability of in-hospital mortality for one (OR = 2.8, [1.9-4.1]) versus two complications (OR = 10.7, [7.2-15.9]) ($p < 0.001$). There was a significant correlation between discharge location and occurrence of a complication ($p < 0.001$). Patients without a complication were most commonly discharged home (46.2%, $n = 2,015$) or with a health aide (34.7%, $n = 1,513$) whereas patients with a complication were most commonly discharged to a sub-acute care facility (33.2%, $n = 285$) or with a home health aide (26.3%, $n = 226$).

Table 1

Complication Category	Number of Events (%)	Median Net Increase in Hospital Costs Associated with Event (\$)	Median Increase in LOS Associated with Event (Days)
Pneumonia	365 (7.0%)	$\$33,295 \pm 2,840$ ($p < 0.001$)	12 ± 0.8 ($p < 0.001$)
Sepsis	236 (4.5%)	$\$29,597 \pm 2,822$ ($p < 0.001$)	8.3 ± 0.6 ($p < 0.001$)
Renal failure with dialysis	191 (3.7%)	$\$31,053 \pm 3,048$ ($p < 0.001$)	9.0 ± 1.5 ($p < 0.001$)
Stroke	105 (2.0%)	$\$32,149 \pm 6,659$ ($p < 0.001$)	10.1 ± 1.7 ($p < 0.001$)
Myocardial infarction	105 (2.0%)	$\$25,788 \pm 5,006$ ($p < 0.001$)	7.0 ± 1.8 ($p < 0.001$)
Cardiac tamponade	23 (0.4%)	$\$44,600 \pm 9,677$ ($p < 0.001$)	13.3 ± 3.1 ($p < 0.001$)



THURSDAY

CONCLUSIONS: Post-operative complications associated with isolated mitral valve surgery have a significant impact on mortality, hospital costs, and LOS. In addition, complications affect future costs by influencing discharge location. In an era with growing national attention to cost-effectiveness, efforts aimed at reducing potentially preventable complications have the potential for significant cost-savings.

+2. The Development of a Cardiac Surgery Simulation Curriculum: From Needs Assessment Results to Practical Implementation

Raina Sinha, Maura E. Sullivan, *Craig J. Baker
University of Southern California, Los Angeles, CA
 DISCUSSANT: JAMES I. FANN

BACKGROUND: Despite national efforts to incorporate simulation training into cardiothoracic (CT) surgical education, established comprehensive curricula as well as protocols for the development of simulation modules are nonexistent. Therefore we present a structured approach in developing and implementing a comprehensive cardiac surgery simulation. We also describe implementation of a fresh tissue dissection laboratory as a novel simulation tool for the purpose of cardiac surgery simulation training.

METHODS: We followed the established steps of curriculum development for our cardiac surgery simulation curriculum: problem identification, needs assessment, goals and objectives, educational methods, curriculum implementation, and evaluation. A list of 54 common cardiac surgical procedures was compiled and ranked on a scale of 1 to 5, from least to most important to warrant simulation training as surveyed by CT surgery residents (N = 6) and CT surgery faculty members (N = 9) at our institution. The data was entered in standard excel format and descriptive statistics were calculated and analyzed.

RESULTS: The needs assessment identified 23 procedures correlating to the 10 highest scores (>4.0) on the combined faculty and resident surveys (Table 1). These procedures were subsequently organized into 13 independent modules based on similar theme (Table 2). Each module was assessed in regards to the optimal available simulation methods to reach our learning objectives. A combination of inanimate, animate, and cadaveric facilities at our institution's Surgery Skills Training and Education Center were utilized for this purpose. These modules were implemented on a monthly basis in the form of a 2 hour focused simulation lab as part of the existing cardiac surgery education curriculum. Each session included demonstration of the surgical techniques by the instructor followed by opportunity for the CT surgery residents to practice at individual stations, ask questions, and receive feedback on their performance by the CT surgery faculty. Resident satisfaction with the sessions was collected using a standardized end-of-session evaluation form. In addition, resident self-confidence was evaluated using a retrospective pre-post test confidence rating for each skill.

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 * WTSA Member

Table 1: Procedures with the 10 Highest Scores from Combined Responses (Faculty & Resident Surveys)

Rank	Procedure	Mean Score
1	Beating heart anastomosis	4.60
2	Aortic root replacement	4.60
3	Mitral valve replacement (MVR)	4.60
4	Mitral valve posterior leaflet repair	4.60
5	Management of small aortic root	4.53
6	Redo sternotomy	4.40
7	Coronary artery anastomosis	4.40
8	Type B dissection Endovascular repair	4.33
9	Mitral valve anterior leaflet repair	4.29
10	Surgical treatment of Atrial fibrillation	4.27
11	Aortic valve replacement (AVR)	4.20
12	Tricuspid valve repair	4.20
13	Descending Thoracic Aneurysm Endovascular repair	4.20
14	Weaning from *CPB	4.13
15	Aortic homograft	4.13
16	Valve sparing root replacement	4.13
17	Minimally invasive MVR	4.13
18	Minimally invasive AVR	4.13
19	*AV resuspension	4.07
20	Total arch replacement	4.07
21	Endoscopic Saphenous Vein Harvest	4.00
22	*IMA Harvest	4.00
23	*LVAD	4.00

*CPB – cardiopulmonary bypass, AV – aortic valve, IMA – internal mammary artery, LVAD – left ventricular assist device

Table 2: Simulation Modules

Module #	Topic	Procedure Skills Objective	Rank	Simulation Tool
1	Basic Skills	Redo sternotomy *IMA harvest	6 22	Fresh tissue cadaver
2	Anastomosis	Coronary artery anastomosis Beating Heart Anastomosis	7 1	Task trainer, porcine heart, beating heart trainer
3	Aortic valve	*AVR Management of small aortic root	11 5	Porcine heart
4	Mitral Valve/ Afib	*MVR Surgical management of A fib	3 10	Porcine heart
5	Mitral and Tricuspid Repair	*MV posterior leaflet repair *MV anterior leaflet repair *TV repair	4 9 12	Porcine heart
6	Aortic Dissection	*AV Resuspension Total arch replacement	19 20	Fresh tissue cadaver
7	Minimally Invasive Valve Surgery	Minimally Invasive *MVR Minimally Invasive *AVR	17 18	Fresh tissue cadaver
8	Aortic Root Replacement	Root replacement Homograft	2 15	Porcine heart
9	Valve Sparing Root	Valve sparing aortic root replacement	16	Porcine heart
10	Vein Harvest	Endoscopic Saphenous Vein Harvest	21	Task trainer
11	*LVAD	*LVAD Placement	23	Fresh tissue cadaver
12	Endovascular	Type B Dissection Endovascular Descending Thoracic Aneurysm	8 13	TBD*
13	*CPB	Weaning from *CPB	14	Bypass circuit

*IMA - internal mammary artery, AVR - aortic valve replacement, MVR - mitral valve replacement, MV - mitral valve, TV - tricuspid valve, AV - aortic valve, LVAD - left ventricular assist device, CPB - cardiopulmonary bypass, TBD - to be determined

CONCLUSIONS: There is a pressing need to incorporate simulation based training into existing and future CT surgery residency programs. As mandates for quality measures and shorter training periods emerge, teaching alone via the traditional “apprenticeship” model in the operating room will no longer be sufficient. A comprehensive simulation curriculum highlighting high fidelity, low technology tools such as a fresh tissue cadaver will be essential for the widespread and local adoption of simulation based CT training.

3. Surgical Resection Should be Strongly Considered for Stage I and II Small Cell Carcinoma of the Lung
Benny Weksler, Rodney J. Landreneau, Arjun Pennathur
University of Pittsburgh Medical Center, Pittsburgh, PA
 DISCUSSANT: PAUL H. SCHIPPER

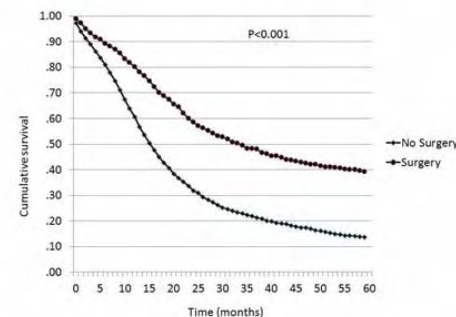
OBJECTIVES: Small cell carcinoma of the lung (SCC) is traditionally treated with chemotherapy and radiation. Surgery either alone or in combination with other modalities is rarely considered for the treatment of SCC. This study was designed to evaluate the efficacy of surgery in the treatment of limited stage (stage I and II) SCC.

METHODS: The Surveillance, Epidemiology and End Results (SEER) database was queried for all patients with SCC of the lung for the period of 1988 to 2007. Comparisons were done using Student's t-test and Chi Square. Survival was determined by the Kaplan Meier method and compared using log-rank test. We used the Cox proportional hazard model to identify relevant survival variables.

RESULTS: We identified 3,566 patients with stage I or II SCC. There were 1,832 (51.4%) females and the average age was 68.3 ± 9.8 years. Surgery was performed in 25.1% of patients (895/3,566). Wedge resection (WR) was performed in 251 patients (28.0%), lobectomy or pneumonectomy (LP) in 637 patients (71.2%), and lung resection not otherwise specified in 7 patients (0.78%). Table 1 summarizes patient's demographics. Median survival for patients undergoing surgery was 34.0 months (95% CI 29.0–39.0) versus 16.0 months (95% CI 15.3–16.7; p < 0.001) for those not operated on (Figure). In the surgical group, median survival after WR was 28.0 months (95% CI 23.2–32.8) compared to LP median survival of 39.0 months (p = 0.001). Cox hazard model for the whole cohort revealed that sex (p = 0.013), age at diagnosis (p < 0.001), stage at diagnosis (stage I vs II, p < 0.001), radiation therapy (received vs not received, p < 0.001) and surgery (surgery vs no surgery, p < 0.001) were significant factors affecting survival. Survival after WR resection (median survival 28 months) was significantly better than in patients not treated with surgery (median survival 16 months; p < 0.001). Cox hazard model applied to patients who underwent surgery demonstrated that sex (p = 0.001), age (p < 0.001), final stage (stage I vs II, p < 0.001), and type of lung resection (wedge vs lobectomy/pneumonectomy, p = 0.01), but not radiation therapy (p = 0.87) were important determinants of survival.

Table 1

	Surgery (n = 895)	No Surgery (n = 2,671)	p
Male sex (%)	431 (48.2%)	1,303 (48.8%)	0.76
Age (years)	67.8 ± 8.9	68.9 ± 10.0	0.003
Stage I (%)	683 (76.3%)	2,003 (75.0%)	0.45
Radiation therapy (%)	202 (22.6%)	1,567 (58.7%)	<0.001



CONCLUSIONS: Surgical resection as a component of treatment for limited stage (stage I and II) SCC is associated with significantly improved survival. Surgical treatment should be strongly considered in the management of early stage SCC.

WESTERN THORACIC SURGICAL ASSOCIATION

9:00 am – 9:10 am **INTRODUCTION OF NEW MEMBERS AND RESIDENT ESSAY FINALISTS**, *Rocky Mountain A & B*

9:10 am – 9:55 am **PRESIDENTIAL ADDRESS**

Rocky Mountain A & B

Introduced By: Robert C. Robbins

Denying Our Default Future

Robbin G. Cohen

9:55 am – 10:20 am **COFFEE BREAK, VISIT EXHIBITS**, *Rocky Mountain C & D*

NOTES

The Broadmoor, Colorado Springs, Colorado 37TH ANNUAL MEETING

10:20 am – 11:40 am **SCIENTIFIC SESSION II**

Rocky Mountain A & B

Moderators: J. Scott Millikan

Patricia A. Thistlethwaite

(10 minutes presentation, 10 minutes discussion)

+4. Contemporary Results for Replacement of the Ascending Aorta and Arch in North America
Judson B. Williams¹, Eric D. Peterson², Yue Zhao², Sean M. O'Brien², James S. Gammie³, Edward P. Chen⁴, G. Chad Hughes¹

¹Duke University Medical Center, Durham, NC; ²Duke Clinical Research Institute, Durham, NC; ³University of Maryland Medical Center, Baltimore, MD; ⁴Emory University School of Medicine, Atlanta, GA

DISCUSSANT: MICHAEL P. FISCHBEIN

OBJECTIVES: Current outcomes for replacement of the ascending aorta and arch remain unclear in general practice. As such, we sought to characterize results on a national scale and develop a risk model for mortality.

METHODS: We queried the Society of Thoracic Surgeons (STS) Adult Cardiac Surgery Database for patients undergoing replacement of the ascending aorta (\pm root) and/or arch between 2004 and 2009. Baseline and operative characteristics and clinical outcomes were analyzed. A parsimonious multivariable logistic regression model was constructed to predict risks of mortality using a backward variable selection algorithm. Risk model performance was assessed.

RESULTS: 45,894 patients underwent proximal (ascending \pm root) and/or aortic arch replacement, including 34,750 proximal only and 11,144 involving the arch. Overall, 59% were elective, 40% urgent/emergent, and 1% salvage. 94% of the emergent cases were for dissection. 26% of cases involved concomitant CABG and 14.2% were coded as re-do. Academic centers performed 34% of cases overall, but 47% of cases with arch involvement. Overall operative mortality was 8.9%, including 3.4% for elective and 15.4% for non-elective cases. Nonfatal outcomes included stroke >72 hours in 7%, renal failure in 8%, reoperation for bleeding in 7%, and prolonged ventilation in 28%. Outcomes stratified by those with and without arch involvement are presented in the Table. Median length of stay was 7 days [25th, 75th percentile = 5, 11]; 16% of patients underwent postoperative hospitalization greater than 14 days. A risk model for operative mortality [c-index 0.81] revealed a risk-adjusted odds ratio (OR) for death following emergent vs. elective operation of 5.8 [95% confidence

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THURSDAY

interval (CI) 5.3, 6.5]. Other important mortality predictors included: preoperative glomerular filtration rate ≤ 29 vs. >60 (OR 2.4 [95% CI 2.0, 2.9]); concomitant CABG (OR 2.2 [95% CI 1.9, 2.5]); and re-do status (OR 1.6 [95% CI 1.4, 1.9]); $P < 0.0001$ for all. Adjusted OR for mortality at academic centers was 0.7 [95% CI 0.6, 0.9], $P = 0.001$. OR for mortality with arch involvement was 1.2 [95% CI 1.1, 1.3], $P = 0.003$ and for root involvement was 1.0 [95% CI 0.9, 1.1], $P = 0.72$.

Table

	Overall (n = 45,894)	Ascending \pm Root (n = 34,750)	Ascending + Arch (n = 11,144)
Operative mortality	8.3	7.7	10.1
Stroke >72 h	6.6	5.8	9.2
Renal failure	8.3	7.7	10.4
Reoperation for bleeding	7.4	7.2	8.1
Prolonged ventilation	27.8	25.2	36.1

CONCLUSIONS: This study provides a first examination of outcomes for ascending aorta and arch replacement in a large North American sample. Outcomes for elective repair are excellent, although results deteriorate for non-elective status, suggesting that increased screening of at-risk populations as well as lowering aortic diameter thresholds for elective intervention could potentially improve outcomes. The improved results in academic centers suggest an opportunity for further systems analysis aimed at improving the overall quality of care provided to patients who require ascending aortic surgery. The predictive models presented may serve clinicians in developing risk stratification strategies.

5. Decellularized Versus Standard Cryopreserved Valve Allografts for Right Ventricular Outflow Tract Reconstruction: A Single Institution Comparison

Mark Ruzmetov, Jitendra J. Shah, Dale M. Geiss, *Randall S. Fortuna

Children's Hospital of Illinois, Peoria, IL

DISCUSSANT: JAMES JAGGERS

THURSDAY

OBJECTIVES: Standard cryopreserved valved allografts (SCA) are recognized as the benchmark for reconstruction of the right ventricular outflow tract (RVOT). However, SCAs frequently demonstrate early valve deterioration and may elicit an immune response. Decellularized cryopreserved valve allografts (SynerGraft, SG) are less immunogenetic and may be more durable. This study analyzed our results of RVOT reconstruction using SGs and compared it with the SCA used during the same period.

METHODS: We reviewed the outcome of all allografts (SG and SCA) which were implanted for RVOT reconstruction at a single center from 2000 to 2007. Echocardiographic data was reviewed to evaluate valve performance. Conduit failure is defined as the need for conduit replacement or reintervention either in the Cath lab or operating room. Conduit dysfunction is defined as right ventricular outflow tract obstruction with peak echo-Doppler gradient >40 mm Hg and/or \geq grade III/IV conduit valve regurgitation. Data were compared using Wilcoxon rank sum and Fisher's exact test.

RESULTS: From January 2000 and April 2007, 100 patients (mean age 19.3 ± 16.8 years) received SG (n = 39) or SCA (n = 61) conduits. The two cohorts were similar with respect to age, gender, BSA, weight, conduit indication, bypass and cross-clamp time, and conduit size. Follow-up time was not significant between two groups (SG, 4.2 ± 2.3 years vs SCA, 4.8 ± 2.8 years; $p = 0.27$). Early and late mortality were similar (SG, 8%; SCA, 5%; $p = 0.68$). No death was graft related. Freedom from dysfunction was improved with SG (SG, 82% vs SCA, 59%; $p = 0.02$). Freedom from failure was similar (SG, 87% vs SCA, 76%; $p = 0.15$). Freedom from explantation and more than moderate pulmonary insufficiency were significantly better for SG patients (SG, 97% and 93% vs SCA, 78% and 66%; $p = 0.01$).

* WISA Member

	SG (n = 39)	SCA (n = 61)	P value
Age (yrs)	19.3 ± 17.4	18.1 ± 16.5	0.74
Age < 1 yr (# of pts)	6	17	0.11
Vale size (mm)	21.0 ± 4.2	20.6 ± 6.2	0.69
Follow-up time (yrs)	4.2 ± 2.3	4.8 ± 2.8	0.27
Freedom from mortality	92%	95%	0.68
Freedom from dysfunction	82%	59%	0.02
Freedom from failure	87%	76%	0.15
Freedom from explantation	97%	78%	0.01
Freedom from >moderate PI	93%	66%	0.01

CONCLUSIONS: This study suggests that the mid-term performance of SGs may be superior to SCAs. Decellularization of the cryopreserved allografts may provide a more durable option for patients who need right ventricular outflow tract reconstruction. Further long-term follow-up is needed to see if this decellularization process improves long-term allograft durability.

+6. The Universal Bed Model for Patient Care Improves Outcome and Lowers Cost in Cardiac Surgery

Philip C. Corcoran, **Abbas Emaminia**, Linda Krause, Michael P. Siegenthaler, Mary Evans, Jessica Nurmi, Melissa Means, Sarah Rassmussen, Keith A. Horvath
National Institutes of Health, Bethesda, MD

DISCUSSANT: JAMES K. BREVIG

OBJECTIVES: With the escalating demands to increase the efficiency and decrease the cost, innovations in postoperative cardiac surgical patient care are needed. The universal bed (UB) model is an innovative care delivery system that allows patient care to be managed in one setting from operation through discharge. We hypothesized that a UB model in the context of cardiac surgery would aid in improving outcomes and efficacy.

METHODS: Postoperatively, 593 consecutive patients (CABG 426, valve 117, CABG + valve 50) were admitted to the UB unit and were prospectively entered into the STS National Cardiac Database. ICU level care was determined by acuity and staffing needs. Telemetry was employed from admission to discharge for all patients and multidisciplinary rounds were conducted twice daily. Post-operative variables were recorded during hospital stay and post discharge outcomes were obtained by direct contact. Outcome comparisons were made with the STS National Cardiac Database using identical variables over the same period of time.

RESULTS: The outcomes most closely related to the UB patient care model are listed in the Table. Decreased ICU and hospital stay and reduction in the incidence of atrial fibrillation and infectious complications yielded a financial benefit in UB group compared to traditional model of admission. Compared to regional and national Medicare data, there was an average cost savings between \$6.2 K and \$9.5 K per patient depending on the operation. Patient care satisfaction by independent survey was in the 99th percentile.

Universal Bed Patient Care Model Outcomes—LOS, Length of stay

	CABG	Valve	CABG+Valve
Postoperative Ventilation (h)	6	5.7	7.5
Reintubation	4.7%	3.8%	0
ICU Stay (h)	22	30	27
Readmission to ICU	1.8%	1.3%	0
Postoperative Atrial Fibrillation	13.6%	13.9%	16.2%
Sternal Wound Infection	0	0	0
Median LOS (days)	4	5	5.1
LOS < 6 days	81%	77%	42%
LOS > 14 days	2.3%	4.8%	0

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CONCLUSIONS: The UB patient care model allows for expedient and efficacious care as measured by length of stay, avoidance of morbidity, patient satisfaction and cost savings. Expanding this care model to other centers and settings could be beneficial.

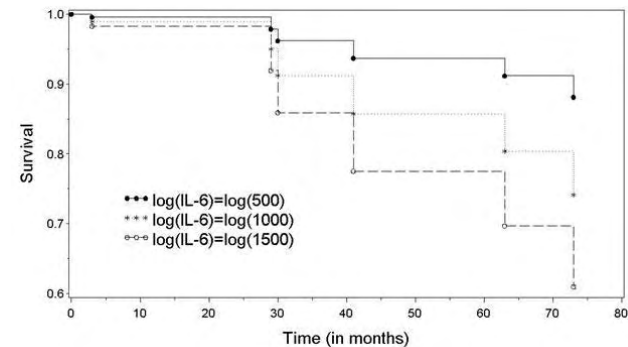
7. Immediate Post-Operative Inflammatory Response Predicts Long-Term Outcome in Lung Transplant Recipients

David J. Hall, Maher Baz, Michael J. Daniels, E. Denmark Staples, Charles T. Klodell, Lyle L. Moldawer, Thomas M. Beaver
University of Florida College of Medicine, Gainesville, FL
 DISCUSSANT: MICHAEL A. SMITH

OBJECTIVES: Although lung transplantation is an accepted therapy for end-stage disease, recipient outcomes continue to be hindered by early primary graft dysfunction (PGD) as well as late rejection and bronchiolitis obliterans syndrome (BOS). We have previously shown the pro-inflammatory cytokine response following transplantation correlates with the severity of PGD. We hypothesized that lung transplant recipients with an increased inflammatory response immediately following surgery would also have a greater incidence of unfavorable long-term outcomes including rejection, BOS, and ultimately death.

METHODS: Retrospective study of lung transplant recipients (n = 19) for whom serial blood sampling of cytokines was performed for 24 hours following transplantation between March 2002 and June 2003 at a single institution. Long-term follow-up was examined for rejection, BOS, and survival.

RESULTS: Thirteen single and six bilateral lung recipients were examined. Eleven (58%) developed BOS and eight (42%) did not. Subgroup analysis revealed a trend between elevated IL-6 concentrations 4 after reperfusion of the allograft and later development of BOS (p = .068). However, the correlation between IL-6 levels and survival time was significant (corr = -.46, p = 0.047), indicating that higher IL-6 response had shorter survival following transplantation.



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CONCLUSIONS: An elevation in interleukin-6 immediately following lung transplantation is associated with a development of bronchiolitis obliterans and greater probability of death. Further studies are warranted to confirm the correlation between the immediate inflammatory response, primary graft dysfunction, and bronchiolitis obliterans syndrome. Identification of patients at risk for BOS based on the cytokine response after surgery may allow for early intervention.

The Broadmoor, Colorado Springs, Colorado 37TH ANNUAL MEETING

11:40 am – 12:30 pm **CONTROVERSIES IN THORACIC SURGERY**

Rocky Mountain A & B

We Are Headed for a Crisis in Manpower in CT Surgery by 2020

Moderator: Mark T. Metzdorff

Pro: Douglas J. Mathisen

Con: Sean C. Grondin

12:30 pm **ADJOURN**

12:45 pm – 4:15 pm **FOOTHILLS JEEP TOUR****

Transportation to Depart from the West Entrance of Hotel

2:30 pm – 4:30 pm **U.S. OLYMPIC TRAINING CENTER TOUR****

Transportation to Depart from the West Entrance of Hotel (No Lunch Provided)

6:30 pm – 10:00 pm **GO FOR THE GOLD THEME DINNER, Cheyenne Lodge**

Transportation to Depart from the West Entrance of Hotel

NOTES

*** Separate Subscription Required*

THURSDAY

FRIDAY, JUNE 24, 2011

- 6:00 am – 12:00 pm **REGISTRATION**, *Rocky Mountain Foyer*
- 6:00 am – 12:00 pm **SPEAKER READY ROOM**, *Freytmuth Room*
-
- 6:30 am – 7:50 am **SIMULTANEOUS BREAKFAST SESSIONS****
- A) **Improving Your Reimbursement****
West Ballroom A
Norm Brooks
 - B) **Working for Someone Else: What You Should Know About Contracting and Compensation****
West Ballroom B
John R. Voigt
 - C) **Managing Conflict and Giving (Receiving) Feedback: A Leadership Challenge****
West Ballroom D
Ross M. Ungerleider & Jamie Ungerleider
- 7:00 am – 11:00 am **FAMILY HOSPITALITY**, *Will Rogers Room & Patio*
7:00 am – 8:00 am Continental Breakfast Served
8:00 am – 10:00 am Full Breakfast Served
10:00 am – 11:00 am Snacks & Beverages Served
- 7:30 am – 8:00 am **CONTINENTAL BREAKFAST**, *Rocky Mountain C & D*
- 7:30 am – 12:00 pm **EXHIBITS**, *Rocky Mountain C & D*
- 7:30 am – 2:00 pm **SIMULATION & ROBOTICS AREA**, *Rocky Mountain C & D*
The **Exhibit Hall** will feature a special **Simulation and Robotics Area** with extended hours (12:00 pm – 2:00 pm) offering individual hands-on session times.

** Separate Subscription Required

8:00 am – 8:50 am **POSTGRADUATE COURSE**

Rocky Mountain A & B
Why Would Anyone Want to Be on Your Surgical Team
Robert C. Myrtle, DPA
USC School of Policy, Planning & Development,
Los Angeles, California

8:50 am – 10:30 am **SCIENTIFIC SESSION III**

Rocky Mountain A & B
Moderators: Gordon A. Cohen
Mark T. Metzdorff
(10 minutes presentation, 10 minutes discussion)

8. Nationwide Trend and Regional/Hospital Variations of Open Versus Endovascular Repair of Thoracoabdominal Aortic Aneurysms

Joshua M. Liao¹, Faisal G. Bakaeen², Kiki Simpson², Joseph S. Coselli³, Scott A. LeMaire³, Joseph Huh³, Danny Chu²

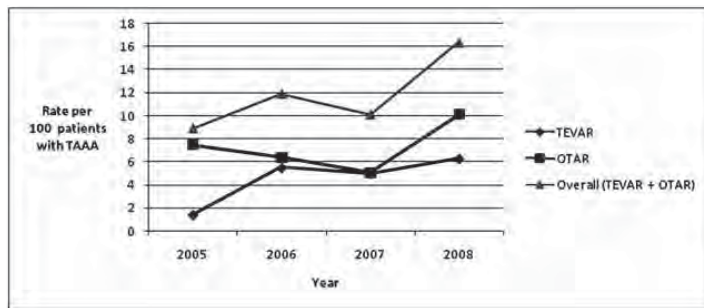
¹*Baylor College of Medicine, Houston, TX;* ²*Baylor College of Medicine/Michael E. DeBakey VA Medical Center, Houston, TX;* ³*Texas Heart Institute/Baylor College of Medicine, Houston, TX*

DISCUSSANT: R. SCOTT MITCHELL

OBJECTIVES: Thoracoabdominal aortic aneurysms (TAAA) have traditionally been treated with open surgical repair (OTAR). Since the U.S. Food and Drug Administration approval in 2005, thoracic endovascular aortic aneurysm repair (TEVAR) has been rapidly gaining popularity. The objective of our study is to determine the national trend and regional/hospital variations of TEVAR and OTAR for the treatment of TAAA using a non-voluntary database.

METHODS: From the 2005–2008 Nationwide Inpatient Sample database, we identified all patients with the diagnosis of TAAA who were treated with either TEVAR or OTAR. Rates of TEVAR and OTAR were compared during the study period, across geographic regions, and between hospitals of various bed-sizes.

RESULTS: The rate of OTAR remained relatively stable over the study period (range 7.5 per 100 TAAA patients in 2005 to 10.1 per 100 TAAA patients in 2008, $p = 0.26$) while the rate of TEVAR dramatically increased (range 1.4 per 100 TAAA patients in 2005 to 6.3 per 100 TAAA patients in 2008, $p < 0.0001$) (Figure 1). Based on the 2008 data, there were significant regional and hospital variations for TEVAR and OTAR. Specifically, 29% (211) of all TEVAR procedures were being performed in Western regions of the U.S. where only 11% (130) of all OTAR procedures were performed ($p = 0.03$), and 13% (95) of all TEVAR procedures were being performed in smaller hospitals where only 3% (35) of all OTAR procedures were performed ($p < 0.0001$).



CONCLUSIONS: The repair rates for TAAA by TEVAR increased significantly over the 4-year study period while OTAR rates remained relatively stable. There were significant regional and hospital variations for OTAR and less notably for TEVAR. Our findings suggest that more patients who were otherwise not surgical candidates or have not met the traditional surgical indication for OTAR were being treated with TEVAR, and more commonly in regions and/or hospitals where OTAR is less often performed. Given the complex nature of TAAA patients, these results may have significant implications for patient safety in the current era of heightened health care scrutiny.

+9. Single Patch, Two Patch and Caval Division Techniques for Repair of Partial Anomalous Pulmonary Venous Connections: Does it Matter?
Sameh M. Said, Harold M. Burkhart, Hartzell V. Schaff, Frank Cetta, Jr., Sabrina D. Phillips, Roxann D. Barnes, Zhuo Li, Joseph A. Dearani
Mayo Clinic, Rochester, MN

DISCUSSANT: DAVID N. CAMPBELL

OBJECTIVES: Single patch, two patch and caval division techniques are commonly used for repair of partial anomalous pulmonary venous connection (PAPVC). The primary concerns include the associated risk of sinus node dysfunction and superior vena cava (SVC) or pulmonary vein obstruction. We reviewed our experience with PAPVC repair.

METHODS: Between 1990 and 2009, 124 consecutive patients (65 males) (52%) underwent surgery for PAPVC. Single patch, two patch, and caval division techniques were utilized in 60 (49%), 24 (19%), and 40 (32%) patients respectively. Median age was 34.5 years (range, 1–76 years). Ninety nine patients (80%) had an atrial septal defect. The anomalous veins drained directly to the SVC in 106 (86%) patients, to the right atrium in 13 (11%), and to other in 5 (4%) patients. A left SVC was found in 16 (13%) patients. Autologous pericardium was used in 76 (61%) patients, while bovine pericardium was used in 43 (35%) patients. Echocardiogram and electrocardiogram follow-up were available for 110 patients (89%).

RESULTS: There was no early mortality. Survival at 5, 10, and 15 years was 99%, 95%, and 82%, respectively ($p = 0.9$). One patient (3%) in the caval division group required early reoperation for SVC obstruction. The incidence of rhythm change from sinus to low atrial or junctional rhythm was higher, although not significant ($p = 0.3$), in the two patch technique (25%) versus the caval division (20%), or the single patch technique (12%). All patients regained sinus rhythm at time of discharge. Late SVC obstruction developed in three patients (7.5%) in the caval division group, three (5%) in the single patch group, and one patient (4%) in the two patch ($p = 0.5$). Late pulmonary vein stenosis requiring reoperation developed in two patients; one patient (2%) in the single patch group and another (4%) in the two patch group ($p = 0.08$). Pacemaker placement was required in 3 patients (3%); two patients had tachy-brady syndrome and the other had dilated cardiomyopathy with recurrent syncope episodes.

CONCLUSIONS: Surgical treatment of PAPVC is associated with excellent outcomes. The overall incidence of late SVC or pulmonary vein stenosis is low. Although not significant, the two patch technique may be associated with a higher incidence of sinus node dysfunction and late pulmonary venous stenosis. Late development of SVC obstruction is a concern in all techniques, necessitating close follow-up.

+ Samson Resident Prize Essay

10. Implementation of a Comprehensive Blood Conservation Program Can Reduce Blood Utilization in a Community Cardiac Surgery Program

Steve Xydas¹, Christopher J. Magovern¹, James P. Slater¹, John M. Brown, III¹, Grant Parr¹, Robert L. Thurer²

¹Morristown Memorial Hospital, Morristown, NJ;

²Haemonetics Corporation, Braintree, MA

DISCUSSANT: JAMES M. MAXWELL

OBJECTIVES: To determine the effects of implementing a comprehensive blood conservation algorithm on blood product utilization and patient outcomes in a community cardiac surgery program.

METHODS: A blood management strategy including a lower routine hemoglobin threshold for transfusion (<7 gm/dL postoperatively) and algorithm-driven decisions for blood component transfusion was adopted following a baseline analysis of transfusion practices. Prospective patient data was collected on patient demographics, intraoperative and postoperative blood utilization and postoperative morbidity and mortality. All patients undergoing isolated CABG, combined valve and CABG, and isolated valve procedures were included. Intraoperatively, point of care testing (Ichor PlateletWorks, Helena Laboratories, Beaumont, Texas; i-STAT, Abbott Point of Care, Princeton, NJ) was utilized to avoid inappropriate red cell and component transfusion. A low prime perfusion circuit (Terumo Cardiovascular Systems, Ann Arbor, MI) was adopted for all cases. Blood was routinely withdrawn from patients with intraoperative hemoglobin values of ≥ 10 gm/dL before initiating bypass, stored and transfused after protamine administration. Data was collected for 6 months prior to strategy implementation (July to December 2009) as a baseline group for comparison (Group I). A 3 month period of program implementation was allotted from January to March 2010. Data was subsequently collected prospectively for 6 months from April to September 2010 (Group II). Outlier patients defined as those receiving > 10 units PRBCs were excluded from the study.

RESULTS: 69% of patients were male, and the mean age was 69.5 ± 11.6 years. Group I comprised 505 of 523 total patients, with 18 exclusions, and Group II 528 of 538 patients, with 10 exclusions. Group II received significantly fewer units of PRBCs, FFP, and cryoprecipitate than Group I (Table I). There was no difference in the number of platelets transfused in the patient cohorts. Total blood product usage was reduced by 41% in Group II ($p = 0.0001$). The overall 30 day mortality was 2.0 percent (21 of 1033 patients). There were no significant differences in mortality, reoperation for bleeding, new atrial fibrillation, renal failure, sternal wound infection, or stroke rates between the groups.

Table 1: Blood Product Usage by Group

	Group I	Group II	Relative Reduction (%)	P-value
PRBCs (units)	2.11	1.49	29.5	<0.0001
Platelets (units)	0.47	0.48	-2.6	0.9809
FFP (units)	1.62	0.97	40.1	0.0063
Cryoprecipitate (units)	1.86	0.64	65.6	<0.0001
Total Blood Product Usage (units)	6.05	3.58	40.9	0.0001

CONCLUSIONS: Systematic implementation of a comprehensive blood conservation algorithm can be rapidly introduced, leading to significant reductions in blood and blood component utilization and with no detrimental effect on mortality and morbidity. Point of care testing can direct blood component transfusion in cases of coagulopathy, with most patients requiring platelets. Further research will determine the effects of reduced transfusions on long-term patient outcomes.

+11. Lung Cancer Cell Invasion and Expression of Intercellular Adhesion Molecule-1 (ICAM-1) Is Attenuated by Secretory Phospholipase A2 Inhibition

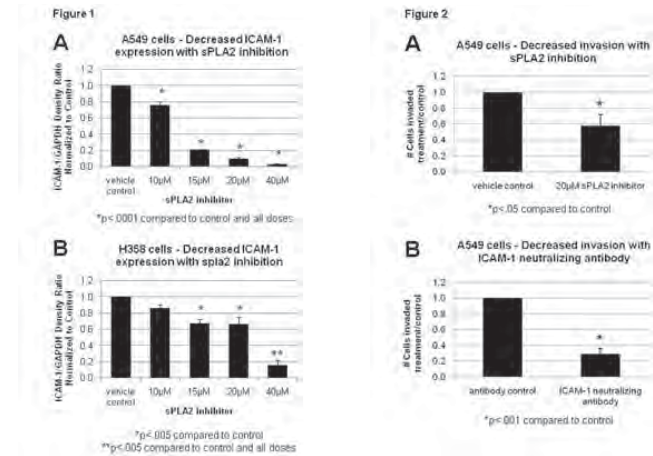
Jessica A. Yu, Miral R. Sadaria, Xianzhong Meng,
*David A. Fullerton, *Michael J. Weyant
University of Colorado, Aurora, CO
DISCUSSANT: DAVID M. JABLONS

OBJECTIVES: Lung cancer is the leading cause of cancer deaths with limited options for prevention or treatment. Aggressive disease phenotypes are associated with tumor cell invasion and expression of ICAM-1. Secretory phospholipase A2 (sPLA2) enzymes produce many of the inflammatory mediators that stimulate ICAM-1 expression, and sPLA2 activity in tumor cells has also been associated with invasiveness. We hypothesize a link between sPLA2 activity, ICAM-1 expression, and tumor cell invasion. We propose that inhibition of sPLA2 modulates ICAM-1 expression in tumor cells and thus attenuates their ability to invade.

METHODS: A549 and H358 cells derived from human lung adenocarcinoma were cultured with standard techniques. Total cellular ICAM-1 expression at baseline and after pretreatment with a specific group IIa sPLA2 inhibitor was assessed by western blot. The effect of group IIa sPLA2 inhibition on lung cancer cell invasion was evaluated using a matrigel invasion assay. To implicate the role of ICAM-1 expression in cell invasion, the matrigel assay was then performed using cancer cells pretreated with a neutralizing ICAM-1 antibody.

RESULTS: Treatment of A549 and H358 cells with a specific group IIa sPLA2 inhibitor led to greater than 80% decrease in ICAM-1 expression (Figure 1A and B, $p < .005$). A549 cell invasion through a collagen matrix was significantly decreased after pretreatment with the sPLA2 inhibitor (Figure 2A, $p < .05$). Furthermore, cells pretreated with a neutralizing ICAM-1 antibody demonstrated significantly decreased invasion, over 70% compared to an antibody control (Figure 2B, $p < .001$).

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* W TSA Member



CONCLUSIONS: Lung cancer cell invasion in vitro is strongly promoted by ICAM-1 expression and ICAM-1 is tightly regulated by sPLA2. Inhibition of sPLA2 significantly reduces the invasive potential of lung cancer cells. This data suggests a critical link between the malignant potential of lung cancer cells, sPLA2 activity, and ICAM-1 expression. These findings justify further evaluation of both secretory phospholipase A2 and mediators of ICAM-1 expression as potential therapeutic targets in lung cancer.

FRIDAY

12. Sternal Plating Is Superior to Wire Closure In Ensuring Sternal Osteosynthesis—Results of a Randomized Prospective, Multi-Center Trial

Jaishankar Raman¹, Heber MacMahon¹, Brian J. De Guzman², Michael S. Wong³, Kenton Zehr⁴, Michael Mochalski⁵, Sven Lehmann⁵, Edward Garrett⁶

¹University of Chicago Medical Center, Chicago, IL;

²St. Joseph's Hospital, Phoenix, AZ; ³University of California Davis, Sacramento, CA; ⁴Scott & White Clinic, Temple, TX; ⁵University of Leipzig Heart Center, Leipzig, Germany; ⁶Cardiovascular Surgery Clinic, Memphis, TN

¹University of Chicago Medical Center, Chicago, IL; ²St. Joseph's Hospital, Phoenix, AZ; ³University of California Davis, Sacramento, CA; ⁴Scott & White Clinic, Temple, TX; ⁵University of Leipzig Heart Center, Leipzig, Germany; ⁶Cardiovascular Surgery Clinic, Memphis, TN

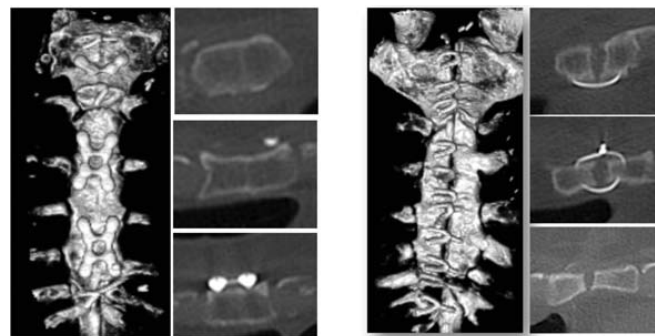
DISCUSSANT: MATTHEW S. SLATER

OBJECTIVES: Sternal stability is a critical factor in mitigating the incidence of sternal wound complications. The objective of this study was to measure sternal healing and stability using CT scans in patients undergoing rigid plate fixation (RPF) compared to conventional wire circlage (CWC), in a randomized, prospective, multi-center trial (ClinicalTrials.gov:NCT00819286).

METHODS: 140 patients undergoing cardiac surgery in 6 centers at high risk for sternal wound complications were randomized to sternotomy closure via CWC or RPF following a median sternotomy. RPF (n = 70) was accomplished using three plates and bi-cortical screws utilizing the SternalLock System (Biomet Microfixation). Wire closure (n = 70) was achieved using simple wires (a minimum of 7 wires and typically 1 wire/10 kg body weight). Risk factors for inclusion were two or more of: diabetes, COPD, obesity, renal failure, chronic steroid use, immunosuppression, redo sternotomy, neurological function affecting ambulation, BIMA harvest, off midline sternotomy, bypass > 2 hours, or transverse sternal fracture. Patients were randomized to a CT scan at either 3 or 6 months post-operatively. Objective criteria were developed at the core radiology facility with all scans being scored with a consensus of two independent radiologists. CT evaluation was performed at 5 levels in each chest (manubrium, top of aortic arch, main PA, aortic root, lower sternum). A 6-point scale, with 0 indicating no healing and 5 indicating complete bony synthesis, was utilized. For purposes of analysis, osteosynthesis was defined as having a mean CT score of >3.

RESULTS: Mean ages in the RPF and CWC groups were 65.3 ± 10.2 and 64.3 ± 8.2, respectively. Mean BMI in the same 2 groups were 34.2 ± 3.1 and 33.7 ± 3.9. Diabetes (>64% in both groups), and obesity (>71% in both groups) were the most common risk factors. CT scans at 3 months showed mean scores of 1.8 ± 1.2 in RPF versus 1.0 ± 0.8 in CWC (p = 0.009), and 3.6 ± 1.4 (RPF) versus 1.9 ± 0.9 (CWC) at 6 months (p < 0.0001). At 6 months, 80% of RPF patients had achieved osteosynthesis, compared to 9.1% of CWC patients. At 3 months, no sign of bone healing was observed at 45.6% of sites evaluated in CWC patients, and 26.1% of sites still had no evidence of healing at 6 months.

Complications included death (4 RPF and 3 CWC), emergent re-entry (4 RPF and 4 CWC), sternal wound complications (3 RPF and 2 CWC), and plate removal (2 RPF).



FRIDAY

CONCLUSIONS: This study represents the first prospective randomized trial evaluating sternal osteosynthesis using CT scans. Sternal osteosynthesis is better achieved with RPF at both 3 and 6 months. CT scans are a convenient and reliable way of assessing sternal healing. This methodology may have future applications in comparing osteosynthesis with various fixation methods, and in correlating bone healing with clinical outcomes such as pain and wound complications.

NOTES

Rocky Mountain A & B

Moderators: John C. Chen
Michael J. Weyant

(10 minutes presentation, 10 minutes discussion)

+13. Repair of Giant Paraesophageal Hernias Routinely Produces Improvement in Respiratory Function

Philip W. Carrott, Jr., Jean Hong, Madhan Kuppusamy, Steven Kirtland, Richard P. Koehler, *Donald E. Low
Virginia Mason Medical Center, Seattle, WA

DISCUSSANT: SEAN C. GRONDIN

OBJECTIVES: Symptoms assessment for giant paraesophageal hiatus hernias (PEH) have historically focused on upper gastrointestinal issues, including reflux. This study critically assesses the effect of PEH repair on respiratory function in a large group of elderly patients.

METHODS: All patients undergoing PEH repair at our institution are prospectively entered into an IRB-approved database. Patients had symptoms documented pre-operatively, including dyspnea. Whenever possible, patients had standard spirometric and diffusion capacity studies (PFTs) done pre-operatively and repeated a median of 106 days post repair (range 16–660 days).

RESULTS: Pre- and post-operative PFTs were obtained in 120 patients treated for PEH at our institution between 2000–2010. Patients' median age was 74 (range 45–91), 74 (62%) were female, and median BMI was 28.0 (range 16.8–46.6). Type of PEH was II in 3 patients (3%), III in 92 (77%), and IV in 25 (21%). Percent intrathoracic stomach (%ITS) was estimated from pre-operative contrast studies and grouped < 50% (n = 6, 5%), 50–74% (n = 35, 29%), 75–99% (n = 29, 24%), and 100% (n = 50, 42%). Cases were elective in 116 (97%), and an open Hill repair was performed in 119 patients (99%). Major co-morbidities included obesity (BMI > 30) in 43 (39%), cardiac 42 (35%), pulmonary 35 (29%), renal 14 (12%), and diabetes 7 (5%). Median length of stay was 4 days (range 3–10), and peri-operative mortality was zero. Pre-operative symptoms included heartburn in 71 (59%), early satiety 65 (54%), dyspnea 63 (52%), chest pain 48 (40%), dysphagia 56 (47%), regurgitation 47 (39%), and anemia 44 (37%).

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* WISA Member

Mean PFT Changes Following PEH Repair in 120 Patients

PFT	Mean Change	95% CI	p	% Ref Change	95% CI	p
FVC	+0.30L	0.24-0.36	p < 0.001	+10.3	8.2-12.4	p < 0.001
FEV1	+0.23L	0.19-0.28	p < 0.001	+10.4	8.2-12.5	p < 0.001
FEF25-75	+0.23L	0.15-0.32	p < 0.001			
VC	+0.29L	0.22-0.35	p < 0.001	+9.9	7.8-12.0	p < 0.001
DLCO	+0.58	0.19-0.98	p = 0.004	+2.9	1.1-4.6	p = 0.002

Significant spirometric improvements were documented in patients with higher %ITS ($p < 0.01$), and spirometric values and DLCO were significantly improved for patients who reported subjective improvement in respiratory status post-operatively ($p < 0.01$). Additionally, in 43 (36%) patients with reduced FEV1 ($\leq 75\%$ ref) pre-operatively, 36 (83%) reported subjective respiratory improvements following operation ($p < 0.001$), with significant improvements noted in vital capacity (+0.45 vs. +0.23L, $p = 0.018$) and DLCO (+1.23 vs. +0.23, $p = 0.004$) compared to patients with FEV1 $> 75\%$ ref. When the 41 patients (34%) showing minimal or no objective improvement post-procedure ($< +5\%$ ref FEV1) are compared to the 35 patients (29%) with greater ($> +15\%$ ref FEV1) objective improvement post repair, patients showing the greatest improvements were older (70.7 vs. 74.3, $p = 0.04$), had greater %ITS (68% vs. 87%, $p < 0.001$), and demonstrated greater subjective respiratory improvement (46% vs. 71%, $p = 0.036$).

CONCLUSIONS: Giant PEH has a significant effect on respiratory function, which is largely under-appreciated. Those patients who benefit most from repair are older, have poorer baseline PFT values, and have larger hernias. This study demonstrated that these repairs can be done safely and supports routine elective repair even in older patients with borderline respiratory function, who may achieve substantial improvements in their baseline respiratory status and quality of life.

14. Comparison of Modified Blalock-Taussig Shunt and Ductal Stenting for Palliation of Duct-Dependent Cardiac Lesions

*David M. McMullan, *Gordon A. Cohen,
*Lester C. Permut, Thomas K. Jones,
Troy A. Johnston, Augustin E. Rubio
Seattle Children's Hospital, Seattle, WA
DISCUSSANT: ROSS M. UNGERLEIDER

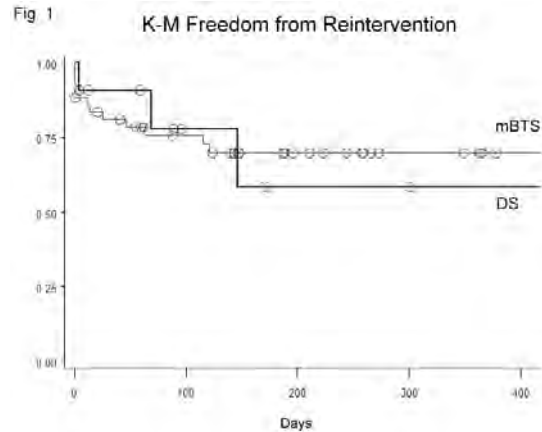
OBJECTIVES: The modified Blalock-Taussig aortopulmonary shunt (mBTS) is the most commonly utilized palliative procedure for infants with duct-dependent lesions. Although the mBTS generally provides a reliable source of regulated pulmonary blood flow, these patients remain at risk for early and late shunt occlusion. Recently, percutaneous placement of endovascular stents to maintain patency of the ductus arteriosus (DS) has been introduced as an alternative to the mBTS. A potential advantage of this approach is reduction of risks associated with an open surgical procedure. We compared the use of palliative mBTS and DS in patients with duct-dependent congenital heart disease.

METHODS: A retrospective review of all patients who underwent primary mBTS or DS at our institution between December 2002 and December 2010. Patients who underwent ductal stenting as part of hybrid palliation (DS + bilateral pulmonary artery bands) for single ventricle heart disease were excluded from analysis. The use of mBTS vs. DS was primarily based on estimated procedural risk, appropriateness of pulmonary artery/ductal anatomy, and comorbidities. Outcome variables include survival and freedom from reintervention prior to definitive surgical correction.

RESULTS: During the study period, 54 patients primary underwent mBTS ($n = 43$) or DS ($n = 11$). The groups were similar with respect to mean age (32 vs. 16 days; $p = 0.23$) and weight (3.6 vs. 3.3 kg; $p = 0.36$) at time of procedure, length of follow-up (266 vs. 211 days; $p = 0.61$). Survival to second-stage palliation, definitive repair, or 6 months was 87% in mBTS patients and 80% in DS patients ($p = 0.44$). Overall mean interval to second-stage palliation or definitive repair was 245 days (242 days mBTS vs. 257 days DS; $p = 0.83$). Surgical or catheter based reintervention to maintain adequate pulmonary blood flow prior to second stage palliation or definitive repair was required in 33% of mBTS patient and 38% of DS patients ($p = 0.18$). Median interval to reintervention was shorter in patients with mBTS (Figure 1). Three (7%) mBTS patients required surgical or catheter based intervention to address contralateral pulmonary artery stenosis prior to or at time of second stage palliation or definitive repair. No DS patients required contralateral intervention. Surgical reintervention for non-pulmonary blood flow related complications was required in 4 (9%) mBTS patients (1 postoperative bleeding, 3 wound infection). No DS patients required surgical intervention for these complications. Surgical or catheter based interventions

* WISA Member

were required to address ipsilateral branch pulmonary artery narrowing at the time of or subsequent to second stage palliation or definitive repair in 6 (20%) mBTS patients vs. 2 (29%) DS patients ($p = 0.38$).



CONCLUSIONS: Freedom from reintervention to maintain adequate pulmonary blood flow appears to be similar between infants undergoing DS or mBTS as the initial palliative procedure. However, patients supported with mBTS experience earlier reinterventions, increased rate of procedural complications, and increased rate of contralateral branch pulmonary artery stenosis. Ductal stenting appears to be a safe alternative to mBTS in infants with duct-dependent lesions.

15. Do We Increase Operative Risk by Adding the Cox-Maze III Procedure to Aortic Valve Replacement and Coronary Artery Bypass Surgery?

Niv Ad, Linda Henry, Sharon Hunt, Sari D. Holmes
Inova Heart and Vascular Institute, Falls Church, VA

DISCUSSANT: JOHN R. DOTY

OBJECTIVES: Several recent reports from Europe and the USA have suggested that patients presenting for surgery with persistent or permanent atrial fibrillation (AF) have reduced survival if AF is left untreated. However, surgeons are reluctant to treat AF using atriotomies when these are not required (AVR and CABG). The objective of this study was to explore the impact of the addition of Cox-Maze III (CM III) procedure on patient outcomes when combined with AVR and/or CABG.

METHODS: Since 2005, 485 patients have undergone surgical ablation at our institution of which 90 patients had a full Cox Maze procedure with an AVR and/or CABG (Maze/AVR = 24; Maze/CABG = 44; Maze/AVR/CABG = 22). In addition, 3,963 patients who were not experiencing atrial fibrillation underwent AVR and/or CABG without surgical ablation (AVR = 387; CABG = 3284; AVR/CABG = 292). Data from our CABG, Valve and AF registries were used for analyses. Patients with and without the CM III were propensity score matched using a 0.10 caliper to improve balance on clinical and demographic variables. Differences in peri and postoperative outcomes by group were evaluated using Fisher's Exact Test and a Kaplan-Meier survival analysis was completed. Health related quality of life (HRQL; SF-12) was obtained at baseline and 6 months post-surgery (n = 58).

RESULTS: Eighty eight patients were propensity score matched- mean age was similar between the groups ($p = 0.82$), but the CMIII group had a higher additive EuroSCORE (6.6 vs 5.6, $t = 2.18$, $p < 0.04$). There were no significant differences in peri and postoperative morbidities between the groups despite the CMIII patients being on bypass longer (Table 1). Survival during follow-up (mean = 36 months) was no different between patients with and without the CMIII procedure (Log Rank = 1.16, $p = 0.28$). Improvement in HRQL was similar for both groups ($F = 0.13$, $p = 0.72$). At 1 year, 93% (50/54) of the patients who underwent the CM III procedure were in sinus rhythm (81% off AA medications).

FRIDAY

Table 1: Postoperative Complications Comparison Between Patients Who Underwent a Cox Maze Procedure and AVR, AVR/CABG, CABG and Those Without a Cox Maze Procedure

	Cox Maze III Procedure n=88	No Cox Maze III Procedure n=88	p value
Postoperative Death	3	3	1.00
Permanent Stroke	1	3	0.62
Prolonged Ventilation (>24h)	9	5	0.40
Renal Failure	9	4	0.25
Perioperative AF	0	15	<0.001
Cardiopulmonary Bypass time (mean minutes)	168	112	<0.001
Total Readmissions within 30 days	12	7	0.33

CONCLUSIONS: The addition of the CM III procedure to an AVR and/or CABG did not convey increased operative risk. In fact, patients who had the CM III procedure demonstrated similar survival over time with improvement in HRQL. The CM III should not be denied to patients in whom the cardiac surgical procedure does not include atriotomies due to the perceived increased operative risk as it may significantly improve their outcome.

12:00 pm

ADJOURN

1:00 pm

GOLF TOURNAMENT**, Broadmoor Mountain Course
Transportation Provided from Golf Clubhouse

1:30 pm

TENNIS TOURNAMENT**, Broadmoor Clay Tennis Courts
(30 Minutes of Warm-Ups Conducted by Tennis Pro
Prior to 2:00 pm Start)

EVENING — FREE

NOTES

FRIDAY

* W TSA Member

** Separate Subscription Required

SATURDAY, JUNE 25, 2011

- 6:00 am – 11:30 am **SPEAKER READY ROOM**, *Freyrnuth Room*
- 6:00 am – 12:00 pm **REGISTRATION**, *Rocky Mountain Foyer*
- 6:30 am – 7:30 am **CONTINENTAL BREAKFAST**, *Rocky Mountain C & D*
- 6:30 am – 10:30 pm **EXHIBITS AND SIMULATION & ROBOTICS AREA**, *Rocky Mountain C & D*
- 7:00 am – 8:15 am **CONCURRENT FORUMS**
(5 minutes presentation, 3 minutes discussion)

ADULT CARDIAC

Rocky Mountain A & B

Moderators: Thomas A. Burdon
David A. Fullerton

CF1. Mid-Term Results of the David V Aortic Root Replacement in High Risk Clinical Scenarios
Bradley G. Leshnower, Robert A. Guyton,
Richard J. Myung, John D. Puskas, LaRonica Hawkins,
Edward P. Chen
Emory University School of Medicine, Atlanta, GA

OBJECTIVES: Valve sparing aortic root replacement (VSRR) is an established therapy for aortic root disease, which has been shown to provide excellent long-term valve function and low rates of valve-related complications. Current AHA Guidelines for the Diagnosis and Management of Patients with Thoracic Aortic Disease state that VSRR with the modified David reimplantation operation is a Class I recommendation for elective aortic root replacement. However, the safety and durability of this procedure in more high-risk clinical scenarios is presently unclear. In this study, mid-term clinical results of performing the VSRR in the setting of emergent type A dissection, >3+ aortic insufficiency (AI), and reoperative surgery were examined.

METHODS: From 2005–2010, 134 David V valve sparing aortic root replacements were performed within a high volume aortic surgery academic institution. 67 high risk patients (HIGH) who had the David V performed in the setting of emergent type A dissection (n = 27), >3+AI (n = 44), or reoperative cardiac surgery (n = 12) were evaluated and compared to a low risk group (LOW) comprised of 67 patients

with <3+ AI undergoing elective VSRR. Patients were followed prospectively and had annual post-operative echocardiograms. Mean follow-up was 17 months (1-71 months) and 89% complete.

RESULTS: There were three operative deaths (2.2%) in the series, two occurring in the HIGH group and one in the LOW group. Overall patient survival at five years was 93%. Three patients required aortic valve replacement: two for severe AI and one for fungal endocarditis. Cusp repair procedures were performed in 25 patients. At 6 year follow-up for the entire series, freedom from greater than 2+AI was 97%, and freedom from aortic valve replacement was 98%. The average age did not differ between the two groups. There was no significant difference between the incidence of concomitant ascending and arch replacement performed in each group (HIGH 64% vs. LOW 51%, p = 0.08). Cardiopulmonary bypass times were equivalent. There were no differences in postoperative stroke or renal failure, but the HIGH group had a significantly higher rate of prolonged ventilation >24 hours (HIGH 22% vs. LOW 6.0%, p < 0.05). Patients in the HIGH group had longer ICU and overall hospital lengths of stay. There was no significant difference observed in freedom from greater than 2+AI in the HIGH group compared to the LOW patients at 6 years (HIGH 96% vs. LOW 100%, p = 0.16), (Table).

Mid-Term Results of VSRR in HIGH and LOW Risk Populations

	LOW (n = 67)	HIGH (n = 67)	P
Redo AVR	1	2	0.18
Concomitant Ascending+Arch Replacement	34 (51%)	43 (64%)	0.08
Cardiopulmonary bypass (min)	223	258	<0.01*
Prolonged Ventilation >24 hrs	4 (6.0%)	15 (22%)	<0.05*
ICU Length of Stay (days)	2.1	3.4	0.07
Hospital Length of Stay (days)	6.8	8.4	0.13
Freedom from > 2+ AI	100%	96%	0.16

CONCLUSIONS: Valve sparing aortic root replacement can be safely and effectively performed in the setting of aortic dissection, severe aortic insufficiency, and reoperative cardiac surgery with acceptable operative risk. These mid-term results provide evidence of durability, as valve function remains excellent at 6 years, and rates of valve-related complications are low. The indications for VSRR should be expanded to include these high-risk clinical scenarios with equivalent mid-term results to VSRR done in more traditional elective settings.

SATURDAY

CF2. Long-Term Implications of Emergency Versus Elective Proximal Aortic Surgery in Marfan Syndrome Patients in the GenTAC Registry

***Howard K. Song¹**, Mark Kindem², Kathryn Holmes³, Barbara L. Kroner², Richard B. Devereux⁴, Cheryl Maslen¹, Joseph E. Bavaria⁵, Scott A. LeMaire⁶

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OBJECTIVES: Marfan syndrome (MFS) patients with proximal aortic aneurysms undergo elective aortic root replacement to avoid the immediate life-threatening risks of aortic dissection and emergency repair. The long-term implications of failed surveillance and emergency dissection repair are poorly defined. This study was undertaken to compare the long-term clinical course of MFS patients surviving emergency vs. elective proximal aortic surgery.

METHODS: The GenTAC Registry is an NIH-funded, multicenter clinical database and biorepository enrolling patients with genetically-triggered thoracic aortic aneurysms and was queried for this analysis. As of April 2010, 489 patients with MFS have been enrolled in GenTAC. Among these, 140 patients had survived 165 proximal aortic replacement procedures, 36 (21.8%) of which were performed emergently for dissection. Patients surviving proximal aortic replacement were grouped according to emergency (EM) or elective (EL) status at the time of surgery.

RESULTS: At long-term follow-up (mean > 6 years), EM patients had a higher incidence of chronic dissection of the distal aorta and had significantly larger aortic diameters in each distal aortic segment compared to EL patients (see Table). Patients in the EM group also reported significantly lower functional status by Karnofsky performance score and had undergone a larger number of surgeries (1.35 vs. 1.12 procedures per patient, p = 0.0380). Patients in the EM group were more likely to have incomplete proximal aortic resection; only 69% of emergency procedures included aortic root replacement compared to 93% of elective procedures (p = 0.0002).

Chronic Dissection Involvement, Aortic Diameter, and Performance Scores of EM vs. EL MFS Patients

	EM Group	EL Group	p-value
Chronic Dissection of the distal aorta (%)	73.7	11.3	<0.0001
Mean Diameter (cm)			
Aortic Arch	4.02	2.87	0.0035
Descending thoracic aorta	4.99	2.91	<0.0001
Suprarenal abdominal aorta	4.38	2.99	0.0268
Infrarenal abdominal aorta	4.53	3.29	0.0456
Karnofsky performance score	75.5	87.3	0.0103

CONCLUSIONS: There are significant long term implications for MFS patients who fail aortic surveillance and require emergency aortic dissection repair with regard to status of the distal aorta, quality of life, and requirement for multiple procedures. Elective aortic root replacement is effective prophylaxis against the early life-threatening risks of proximal aortic dissection as well as the late effects of chronic dissection on the distal aorta. These findings emphasize the importance of aortic surveillance and timely elective aortic root aneurysm repair for MFS patients.

SATURDAY

CF3. Spinal Cord Protective Strategies During Descending and Thoracoabdominal Aortic Aneurysm Repair in the Modern Era: The Role of Intrathecal Papaverine

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OBJECTIVES: An array of neuroprotective strategies has evolved to limit spinal cord injury during descending thoracic (DTAA) and thoracoabdominal aneurysm (TAAA) repair. However, intrathecal papaverine (IP), an additional adjunct with documented protective effects in previous small series, has not gained widespread clinical adoption. This study assessed the neuroprotective impact of IP along with other techniques in a large series of DTAA and TAAA repairs.

METHODS: From 1/2002 to 1/2010, 398 consecutive patients underwent DTAA and TAAA repairs at a single institution, with 68 performed under deep hypothermic circulatory arrest. This study focused on the remaining 330 patients, in whom a combination of neuroprotective adjuncts were used intraoperatively to mitigate spinal cord ischemia. These measures included distal aortic perfusion or partial bypass with moderate hypothermia, cerebrospinal fluid (CSF) drainage and IP. Two patient groups were identified based on whether IP was (IP Group, n = 250) or was not (Non-IP Group 2, n = 80) a part of the neuroprotective strategy. Postoperative outcomes were analyzed based on a prospectively maintained clinical database.

RESULTS: Preoperative patient characteristics were similar in both treatment groups: age (62 ± 13 vs. 62 ± 12 years), female gender (37% vs. 36%), history of hypertension (90% vs. 89%), COPD (35% vs. 43%), renal insufficiency (8.4% vs. 10%), and prior stroke (22% vs. 18%). Extent of aortic disease was also similar in both: DTAA (34% vs. 28%) and Crawford Type I (25% vs. 34%), II (27% vs. 24%), III (13% vs. 13%) and IV (2% vs. 2.5%). IP Group patients experienced reduced ICU (170 vs. 237 h, $P = .03$) and postoperative lengths of stay (14 vs. 17 days, $P = .01$). Between groups, there was similar prevalence of hospital mortality (6.4% vs. 11%, $P = .11$), permanent stroke (4.4% vs. 7.5%, $P = .3$), and hemorrhage requiring reoperation (4% vs. 2.5%, $P = .5$). Permanent paraparesis or paraplegia was lower in the IP Group (5.2% vs. 14%, $P = .01$), as was need for postoperative reinsertion of a CSF drain for lower extremity weakness/paralysis (1.6% vs. 8.3%, $P = .005$).

CONCLUSIONS: Addition of IP to the neuroprotective protocol for DTAA and TAAA repairs may enhance spinal cord perfusion and provide additional spinal cord protection. This effect may translate into improved patient safety and reduction in ICU and hospital lengths of stay.

CF4. Improved Survival in Heart Transplant Patients Living at High Altitude

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OBJECTIVES: Living at higher altitudes is associated with chronic hypoxia and elevated pulmonary vascular resistance, generally thought to be harmful to advanced heart failure patients. In contrast, athletes often will train at high altitude to optimize physiologic performance. As such, higher altitude can be either helpful or detrimental to cardiovascular performance and, potentially, outcome. We sought to determine if altitude negatively impacts survival among patients undergoing heart transplant.

METHODS: We retrospectively analyzed the United Network of Organ Sharing (UNOS) database for adult patients undergoing heart transplant between 1990–2008 (n = 36,529). Each patient was assigned an altitude based on their home zip code. Post transplant survival was compared between those living above and below 2,000 feet. To analyze the impact of “extreme” altitude, additional analysis was performed on patients living above and below 4,000 feet. Adjusted survival was calculated using Cox proportional hazard regression. Survival models were corrected for age, gender, listing status, presence of left ventricular assist device (LVAD), pulmonary artery (PA) pressures, ischemic time, antigen matching, diabetes, and oxygen consumption. Logistic regression was performed to identify factors predicting survival.

RESULTS: Patients living above 2,000 feet had an 18% reduction in the risk of death at 1 year post-transplant ($p = 0.0018$). At 5 and 10 years, risk reduction was 7% ($p = 0.0819$) and 7% ($p = 0.0507$), respectively. Logistic regression identified younger age, lower PA pressure, and shorter ischemic time as the most significant factors contributing to survival at one year. Survival at 5 and 10 years was predicted by lower age and shorter ischemic time. When comparing factors between those that survived above and below 2000 feet, no significant variables were identified at one year. However, at 5 and 10 years significant differences were observed in patients with improved pre-transplant VO_2 and diabetes. Trends were identified for Status I listing, HLA mismatch, and LVAD patients. Finally, further survival analysis in patients living at even higher elevations demonstrated a more striking survival advantage. Among patients living above 4,000 feet, 1, 5, and 10-year reduction in the risk of death was 22% ($p = 0.0080$), 14% ($p = 0.0174$), and 16% ($p = 0.0016$), respectively.

CONCLUSIONS: Patients living above 2000 feet have improved survival after heart transplantation. This survival advantage is even more pronounced in patients living above 4,000 feet. Ischemic times, age, and PA pressures do not fully explain the differences observed. Since high altitude patients had a higher VO_2 , one could speculate that these patients were not as ill prior to their transplant. Indeed, this might reflect a higher percent of Status II transplant patients at some centers prior to more recent change in heart allocation.

* WISA Member

CF5. Myocardial Tissue Elastic Properties Determined by Atomic Force Microscopy Following SDF-1 α Angiogenic Therapy for Acute Myocardial Infarction

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BACKGROUND: Ventricular remodeling after myocardial infarction (MI) begins with massive extracellular matrix deposition and resultant fibrosis at sites of cardiomyocyte ischemia and necrosis. This loss of functional tissue and the stiffening of myocardial elastic and contractile elements starts the vicious cycle of mechanical inefficiency, adverse remodeling, progressive dilatation, and eventual heart failure. SDF-1 α (SDF) is a powerful endothelial progenitor cell chemokine. Experimental delivery of SDF to ischemic myocardium has been shown to significantly increase myocardial microvascular perfusion and to preserve ventricular geometry and function. We hypothesize that SDF therapy to microvascularize ischemic myocardium will rescue salvageable peri-infarct tissue and subsequently improve myocardial elasticity, thereby optimizing mechanical efficiency and preserving ventricular geometry.

METHODS: CD-1 mice (n = 12) underwent LAD ligation to generate an anterolateral MI of approximately 30% of the left ventricle. Immediately following ligation, animals were randomized to receive intramyocardial injection into the peri-infarct borderzone of either saline (30 μ l, n = 6) or SDF (6 μ g/kg in 30 μ l, n = 6). Six weeks after surgery, the animals were sacrificed and two myocardial samples were taken from the peri-infarct borderzone, the infarct scar, and remote left ventricle of each animal. Samples were also taken from the left ventricle of non-infarcted control mice (n = 6). Determination of the tissues' elastic moduli was carried out by mechanical testing in an atomic force microscope. Utilizing silicon nitride cantilevers (Mikromasch CSC38, k=0.1 N/m), force-distance measurements were performed on the myocardial regions at 1 Hz with cantilever deflection reaching up to 100 nm. The resultant force-distance curves were analyzed with custom-written Matlab scripts which calculated the slope of cantilever deflection distance vs. the square of the indentation distance, yielding the elastic modulus. Each tissue sample was probed at an average of 25 positions (range 14-41) for a total of 1966 data points. The measurements for each separate group were then aggregated and compared.

RESULTS: Ventricular tissue from non-infarcted mice was significantly more elastic (60.4 \pm 2.6 kPa, p < 0.02) than any of the tissue regions measured from mice that had undergone LAD ligation, whether or not they received SDF. However, SDF treated peri-infarct borderzone most closely approximated the elasticity of normal left ventricle and was significantly more elastic than peri-infarct myocardium treated with saline (109 \pm 22.9 kPa vs. 295 \pm 42.3 kPa, p < 0.0001). Consistent with the presumed angiogenic mechanism of action of SDF, the myocardial scar proper, the strength of which is dependent of on fibroblast and collagen deposition from vasculature at the peri-infarct edge, was stiffer in SDF treated animals when compared to controls (804 \pm 102.2 kPa vs. 144 \pm 27.5 kPa, p < 0.0001).

CONCLUSIONS: This novel work directly quantifies myocardial tissue elastic properties following SDF based endogenous revascularization. This study has demonstrated the ability of SDF to re-engineer the evolving myocardial infarct and peri-infarct tissue. By increasing the elasticity of the ischemic and dysfunctional peri-infarct borderzone and bolstering the weak aneurysm prone scar, SDF therapy may confer a mechanical advantage to resist adverse ventricular remodeling following infarction.

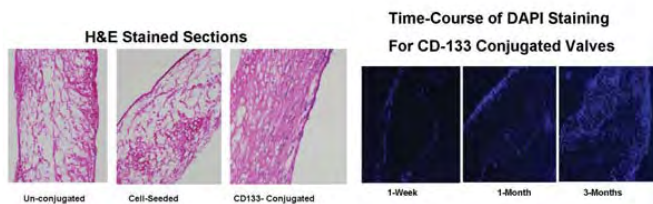
CF6. *In Situ* Regeneration of Heart Valves: A Novel, Rapid Method for Tissue Engineering Heart Valves

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OBJECTIVE: Valvular heart disease is a common diagnosis worldwide, with about 300,000 valve replacement surgeries performed annually in the United States. Tissue engineering provides a means of constructing “living” valves by utilizing autologous cellularization of valve constructs. Current methods of tissue engineering heart valves require the time consuming (many weeks) isolation and culturing of cells prior seeding valve constructs. We hypothesize that *in vitro* conjugation of decellularized pulmonary valve (PV) constructs with CD-133 antibodies (an endothelial progenitor cell marker) can promote rapid *in situ* self-seeding, remodeling and maturation resulting in normal heart valve structure and cell function in an “off the shelf” manner.

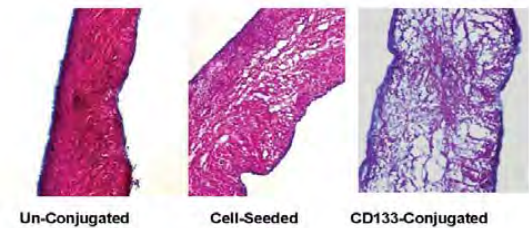
METHODS: Decellularized PV constructs were derived from porcine hearts using established detergent-based protocols. Thirteen juvenile sheep were anesthetized and placed on right atrial to carotid artery bypass through a thoracotomy. Decellularized pulmonary grafts were implanted into the sheep with one of three preparations: 1) untreated (Unconjugated); 2) Re-seeded with autologous endothelial progenitor cell-derived endothelial cells (Cell-seeded); or 3) conjugated with an antibody directed against CD133 (CD133-Conjugated). At either 1 or 3 months after implantation, the pulmonary grafts were removed. Evidence of maturation and remodeling, including cell and matrix content and biomechanical properties, were then assessed.

RESULTS: After 1 month, few cells were observed in either the Unconjugated or Cell-Seeded constructs while significant numbers of cells could be seen on Conjugated valves. CD133-Conjugated valves showed progressive cell accumulation, initially on the luminal surface (near confluence within 1 week) before progressing across the interstitium with increasing density.



Cell-specific antibodies reveal the accumulation of endothelial cells (von Willebrand factor) mostly along the luminal surfaces while α -smooth muscle actin positive myofibroblasts have populated the interstitial regions. CD133-Conjugated valves were the only group to show evidence of newly formed structural proteins. Herovici’s stain demonstrated widespread collagen deposition across both the luminal and interstitial regions.

Herovici’s Stain for New (blue) Vs. Old (red) Collagen



The increase in matrix proteins was confirmed by biochemical analysis of both collagen and glycosaminoglycans. Additionally, matrix metalloproteinase-9 activity was detected at 3 months throughout the interstitium in CD133-conjugated valves.

CONCLUSIONS: These data demonstrate that conjugation of an antibody to extract specific circulating progenitor cells from the circulation *in situ* results in a rapid and complete repopulation of decellularized valve constructs. Furthermore, both endothelial and myofibroblast interstitial cells are properly distributed across the valve and are biologically active within 3 months of valve implantation. Such biologic activity suggests that these valves are remodeling which may allow them to grow with a patient and self-repair. These results suggest that tissue engineering “off the shelf” valve replacement constructs may be feasible using these techniques.

SATURDAY

CF7. Evolving Surgical Techniques for Pulmonary Endarterectomy According to the Changing Features of Chronic Thromboembolic Pulmonary Hypertension Patients During 16-Year Single Center Experience

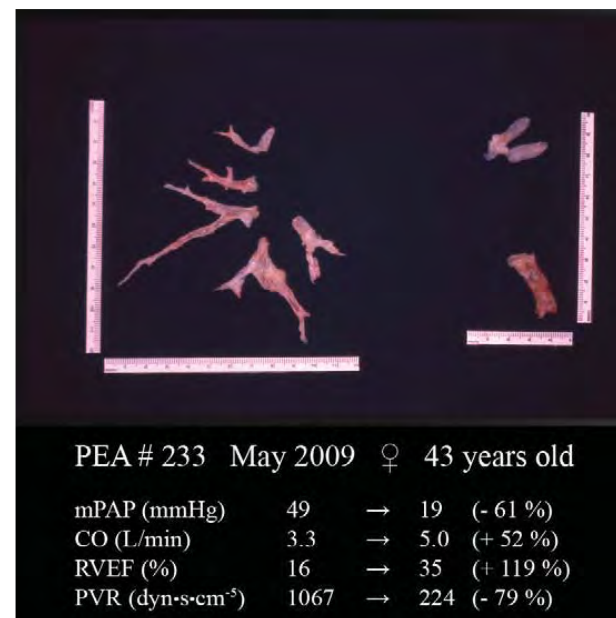
Andrea M. D'Armini¹, Marco Morsolini^{1,2}, Elisa Milanese³, Salvatore Nicolardi^{1,2}, Gabriella Mattiucci¹, Giuseppe Silvaggio¹, Antonella Degani⁴, Marco Maurelli³, Mario Viganò¹

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OBJECTIVE: Pulmonary endarterectomy (PEA) is definitely the treatment of choice for chronic thromboembolic pulmonary hypertension (CTEPH). Since population is rapidly aging, an increasing number of elderly are referred for PEA. Moreover, due to the continuous surgeon's learning curve, the crucial border between operable and inoperable patients has been pushed more and more distally over time. Hence, at the same time, we developed alternative cardiopulmonary bypass (CPB) management and cerebral protection strategies for obtaining satisfactory surgical results during PEA, as CTEPH patients were getting more complex and frail.

METHODS: From April 1994 to December 2010, 328 PEAs were performed at our Center. Cerebral protection strategy has changed over time, in order to reduce invasiveness and to get more time to perform PEA in a bloodless surgical field, which is mandatory for a complete removal of all thrombotic materials, especially in patients with distal disease (CTEPH with Jamieson type III lesions, as shown in figure). We started according to the original technique, adopting a single period of deep hypothermic circulatory arrest (HCA) for each side (Group A 83 patients). Since 2003 we began to perform shorter (10–15 min) periods of intermittent deep HCA followed by short (≥ 5 min) periods of reperfusion (Group B 70 patients), monitoring cerebral near-infrared spectroscopy (NIRS). We then combined intermittent periods of HCA with moderate instead of deep hypothermia (Group C 91 patients). Finally, we further modified such technique performing even shorter (5–7 min) periods of moderate HCA (Group D 84 patients). In this study we analyzed postoperative outcomes according to the different strategies of cerebral protection used.

Figure legend
mPAP: mean pulmonary arterial pressure
CO: cardiac output
RVEF: right ventricular ejection fraction
PVR: pulmonary vascular resistances



RESULTS: Hemodynamic results after PEA were excellent over time: pulmonary vascular resistances (PVR) dramatically decreased in all groups, although patients of group C and D were older and had more distal lesions. Operative parameters analysis reflected the changes made to our protocol in order to both reduce invasiveness and obtain satisfactory results. In fact, despite higher preoperative risk, patients of group D had a better outcome in terms of incidence of reperfusion oedema and infections, intensive care unit stay and operative mortality. Furthermore, despite increased total circulatory arrest time, moderate hypothermia and intermittent circulatory arrest allowed a reduced incidence of neurological events (see table for details).

CONCLUSIONS: In our 16-year experience, short intermittent periods of moderate HCA seem to guarantee the better combination of surgical accuracy and cerebral protection, thus allowing for favourable postoperative outcomes. Therefore, we do support such strategy as the technique of choice during PEA.

	Group A (83 pts)	Group B (70 pts)	Group C (91 pts)	Group D (84 pts)	p < 0.05
Mean preoperative PVR	1,166 ± 451	1,029 ± 531	861 ± 441	894 ± 450	A vs. C and D
Mean post-operative PVR	341 ± 237	270 ± 179	276 ± 129	322 ± 215	A vs. B and C
Mean age at PEA (yrs)	52 ± 15 (17-78)	56 ± 16 (11-81)	60 ± 15 (19-84)	62 ± 15 (25-83)	A vs. B, C and D B vs. C and D
Age > 70 yrs at PEA	10.8% (9/83)	22.9% (16/70)	34.1% (31/91)	39.3% (33/84)	A vs. B, C and D B vs. D
Jamieson III-IV	21.7% (18/83)	27.1% (19/70)	26.4% (24/91)	31.0% (26/84)	A vs. D
CPB time (min)	237 ± 77 (105-620)	309 ± 101 (130-620)	332 ± 79 (172-640)	343 ± 84 (115-640)	A vs. B, C and D B vs. C and D
Temperature (°C)	17.5 ± 1.5 (15-25)	17.9 ± 2.0 (16-28)	23.3 ± 1.9 (18-25)	24.0 ± 0.9 (23-29)	A vs. C and D B vs. C and D
Total HCA time (min)	26 ± 15 (0-82)	51 ± 29 (4-127)	86 ± 36 (11-192)	84 ± 37 (0-181)	A vs. B, C and D B vs. C and D
Number of HCA	2.0 ± 0.7 (0-4)	3.6 ± 1.5 (1-8)	8.9 ± 3.9 (2-22)	13.0 ± 5.0 (0-26)	All Groups
Median ICU stay (days)	6 [13-4] (1-76)	5 [9-3] (1-67)	5 [8-3] (0-83)	4 [5-2] (1-75)	A vs. B, C and D
Reperfusion oedema	20.5% (17/83)	5.7% (4/70)	3.3% (3/91)	4.8% (4/84)	A vs. B, C and D
Infections	31.3% (26/83)	44.3% (31/70)	30.8% (28/91)	14.3% (12/84)	D vs. A, B and C
Neurologic events	15.7% (13/83)	14.3% (10/70)	9.9% (9/91)	1.2% (1/84)	D vs. A, B and C
Operative mortality	10.8% (9/83)	7.1% (5/70)	8.8% (8/91)	8.3% (7/84)	Not significant

CF8. Baseline Metabolomic Profiles Predict Adverse Events Following Coronary Artery Bypass Grafting

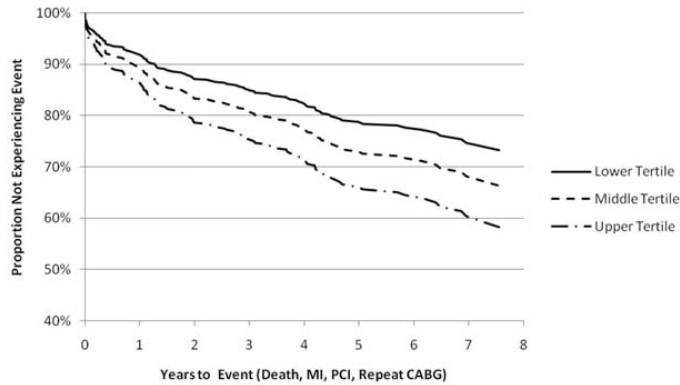
Asad A. Shah, Damian M. Craig, Jacqueline K. Sebek, William E. Kraus, G. Chad Hughes, Svati H. Shah
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OBJECTIVES: Clinical models incompletely predict outcomes following coronary artery bypass grafting (CABG). Novel molecular technologies may identify novel biomarkers to improve risk stratification and better understand disease mechanisms. Therefore, we sought to determine if metabolomic profiles can independently predict adverse outcomes in patients undergoing CABG.

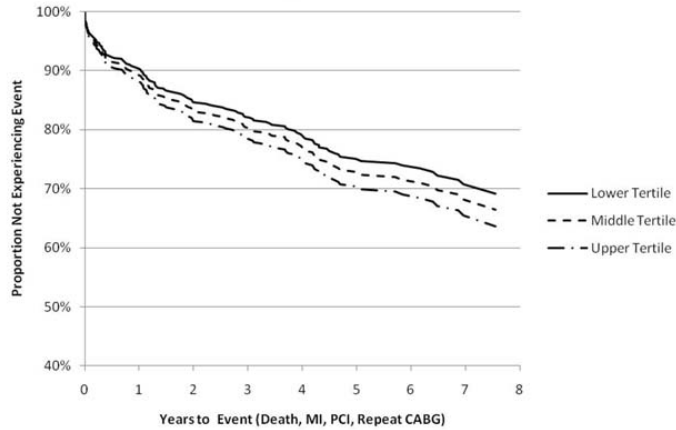
METHODS: The study population consisted of subjects from the CATHGEN biorepository of patients referred for cardiac catheterization who subsequently underwent CABG after enrollment. Adverse events were defined as incident myocardial infarction (MI), percutaneous coronary intervention (PCI), repeat CABG, or death, occurring after CABG. Targeted mass spectrometry-based profiling of 69 metabolites was performed in frozen, fasting plasma samples from these subjects. Principal-components analysis (PCA) was used to reduce the large number of correlated metabolites into a smaller number of uncorrelated factors. Univariate and multivariable linear regression and Cox proportional hazards were used to assess the independent relationship between metabolite factor levels and adverse outcome.

RESULTS: In 478 subjects with a median follow-up after CABG of 4.1 years (2,48), 126 patients (26.4%) suffered at least one adverse outcome (MI [n = 19], PCI [n = 28], repeat CABG [n = 4], death [n = 75]). Twelve PCA-derived factors were identified, three of which were significantly associated with adverse outcome in univariate analysis: factor 2, consisting of dicarboxylacetylcarnitines (P = 0.002); factor 5, consisting of ketone-related metabolites (P = 0.01); and factor 6, consisting of short-chain acylcarnitines (P = 0.01). In multivariable time-to-event analysis, two of these factors remained independently associated with adverse outcome: factor 2 (adjusted hazard ratio [HR] 1.23; 95% confidence interval [CI] 1.10-1.39; P < 0.001) and factor 6 (adjusted HR 1.13 [1.00-1.26], P = 0.04). Time to event curves for significant factors are presented in Figures 1 and 2.

Time to Event - Adjusted Factor 2 Tertile Plots



Time to Event - Adjusted Factor 6 Tertile Plots



CONCLUSIONS: Peripheral blood metabolomic profiles can predict adverse outcomes following CABG independently of standard clinical predictors of risk. These findings suggest that metabolites may be novel cardiovascular risk biomarkers, which may shed light on novel biochemical pathways of disease and supplement clinical risk assessment models in patients undergoing CABG.

GENERAL THORACIC

West Ballroom A & B

Moderators: Ross M. Bremner
Paul H. Schipper

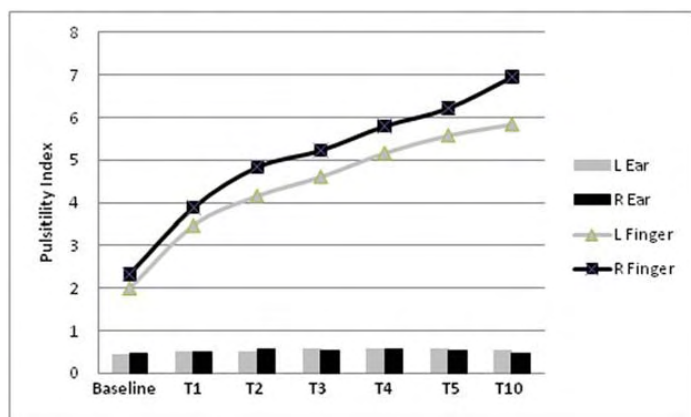
CF9. Oximetry-Derived Perfusion Index Confirms Sympathectomy During Minimally-Invasive Endoscopic Thoracic Sympathectomy for Hyperhidrosis
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Nancy Staples, Nikolaus Gravenstein
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OBJECTIVES: Endoscopic thoracic sympathectomy (ETS) is indicated for treatment of patients with refractory hyperhidrosis. Advances in surgical instrumentation and technique enable safe sympathectomy with 3 mm instrumentation. The pulse oximetry-derived perfusion index (PI) is used to quantify pulsatile blood flow at the oximeter. Thoracic sympathectomy is associated with increased blood flow to the upper extremity; thus we postulate that it will reliably increase PI. We evaluated the PI as a predictor of sympathectomy during the ETS operation.

METHODS: After institutional review board approval and informed consent, 100 adult patients undergoing bilateral ETS under general anesthesia were studied. Finger pulse-oximetry probes were placed on each hand, and reference probes on each earlobe. Hemodynamic variables and PI were continuously monitored. Data were collected immediately before and every minute after sympathectomy for five minutes, and then at 10 minutes. Anesthetic management remained constant throughout. A successful sympathectomy was defined by a twofold increase in PI on the ipsilateral arm. A Repeated Measures ANOVA was conducted to determine overall model significance ($P \leq 0.05$).

RESULTS: Baseline oximetric waveforms were adequate in all 100 subjects (64% female). Left sympathectomy was associated with a 135% increase in PI while the right side exhibited a 148% increase when averaged across all time intervals. This was in drastic contrast to the left and right reference probes which only increased 25% and 16%, respectively. Highly significant differences were observed between the mean baseline PI and all subsequent time intervals, occurring as early as one minute after sympathectomy. Moreover, in comparing PI increase of the ear versus finger probe, the finger probe exhibited over five- and nine-fold times greater PI than the ear probe on the left and right side, respectively, when averaged across all time intervals. The hemodynamics remained constant throughout the study period. All patients had post-operative resolution of their hyperhidrosis symptoms.

SATURDAY



CONCLUSIONS: In patients with hyperhidrosis of the upper extremities, the intraoperative PI derived from ipsilateral pulse oximeter is an additional useful intraoperative indicator of successful thoracic sympathectomy.

CF10. hNIS Expressing Oncolytic Virus GLV-1h153 Is a Promising Agent for the Imaging and Treatment of Non-Small Cell Lung Cancer

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OBJECTIVES: Genetically engineered vaccinia virus strains have shown promise as oncolytic vector against several cancers. The human sodium iodide symporter (hNIS) is a naturally occurring protein in human thyroid cells which enables these cells to actively take up radioactive iodide and technetium. hNIS has long been exploited for the imaging and treatment of thyroid cancers. GLV-1h153, a novel vaccinia oncolytic vector, was engineered to augment the potential utility and efficacy of earlier vaccinia vectors through the addition of an hNIS amplicon. This study aimed to determine if GLV-1h153 can be used to treat and image non-small cell lung cancer (NSCLC).

METHODS: GLV-1h153 was modified from its parent strain, GLV-1h68, via homologous recombination to carry hNIS, as well as enhanced Green Fluorescent Protein (GFP). GLV-1h153 was tested in vitro against NSCLC cell lines H157, H480, H1299 and A549 for replication and killing via cytotoxicity and plaque assays.

In vivo, flank tumors were established in athymic nude mice by direct inoculation with H1299 cells, and allowed 4 weeks to grow. Tumors were then treated with intratumoral injection of either 5e6 pfus of GLV-1h153 diluted in PBS, or PBS alone. 36 hours later, mice were administered 500 uC of tc-99m pertechnetate via tail vein injection, and then assessed by gamma imaging three hours later.

RESULTS: *In vitro*, infection by GLV-1h153 was confirmed by GFP-fluorescopy in all cell lines. Standard viral plaque assay confirmed viral replication all four cell lines after treatment with a dose as low as a 0.01 multiplicity of infection. Cell death occurred in a dose-dependent fashion, with over 95% cytotoxicity in all cell lines by one week post infection with an MOI of 1. Immunofluorescent staining with anti-hNIS antibody confirmed the expression of hNIS as well as cell membrane localization following infection at all doses.

In vivo, post-infection tc-99mm pertechnetate administration and gamma-scanning identified radioactivity uptake in those tumors injected with virus, whereas those treated with PBS showed no such activity. Digital conversion of radiouptake allowed for clear visualization of tumors.

CONCLUSIONS: GLV-1h153 is an effective oncolytic agent against NSCLC cancer in vitro, which both kills NSCLC cells and induces hNIS expression. In vivo, GLV-1h153 induces enhanced radiouptake, and thus facilitates deep tissue tumor imaging. The ability of GLV-1h153 to induce tumor-specific uptake of radioactive material suggests the potential as a vehicle for delivering ultralocalized radiation therapy to complement the directly viral-mediated oncolysis.

CF11. Mutational Profiling for Lung Lesions: Long Term Results Favour It as a Standard of Care

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OBJECTIVES: Discerning primary versus metastatic lung lesions is problematic. Comparative mutational profiling (CMP) involves genetic and point mutation analysis of lesions to facilitate differentiation which key to planning aggressive surgical management versus palliative chemotherapy. We present 24 cases of two lung lesions or a head and neck cancer and lung lesion with long term follow up.

METHODS: Between January 1st, 2007 and December 31st, 2008, 24 cases of two lung lesions or a head and neck cancer and a lung lesion underwent CMP. The corresponding tumor sections were routinely embedded in paraffin and 4 µm sections were obtained. Microdissection was carried out under stereomicroscopic observation sampling each deposit at multiple sites. Comparative mutational profiling involved both DNA sequencing for specific oncogene point mutation detection (k-ras-2) and a broad panel of loss of heterozygosity (LOH) cancer associated markers. LOH was quantitative (PCR/capillary electrophoresis) enabling not only the detection of marker LOH but also defining the specific allele copy affected by imbalance (copy 1 vs. copy 2) as well as the temporal sequence of mutational acquisition over time. The marker panel targeted 1p, 3p, 5q, 9p, 10q, 17p, 17q, 18q, 21q and 22q. A diagnosis of metastatic cancer required demonstration of concordant mutations affecting the same allele copy acquired early in temporal acquisition between different cancer deposits. A diagnosis of independent primaries required complete discordance with respect to temporal sequence of acquisition and/or specific allele copy involvement

RESULTS: The mean patient age was 62 years. The cases involved two lung lesions (n = 13), or a head and neck cancer and a lung lesion (n = 11) all of which were squamous cell carcinomas. Standard pathological examination was unable to discriminate the lesions and they were subsequently differentiated by CMP. 15 cases were found to be discordant (62%) representing independent primaries. In 11 of the 15 discordant cases, the management of the patient was altered with 9 having additional surgery. Median follow up is now 38 months (range: 25–45 m) with three patients having died, two with recurrent disease. Since introducing the use to of CMP into our routine practice in 2009, a discordance (two separate primaries) rate of greater than 50% has been persistent.

CONCLUSIONS: CMP was found to be a useful and reliable tool to assess the relatedness of multiple cancer lesions when routine pathological assessment was unable to. Our long term follow up suggests that CMP continues to be invaluable considering a persistently high percentage of patients with two primaries which could have inadvertently been perceived as metastatic disease.

* WISA Member

CF12. The Effect of Leukocyte-Depleted Blood Transfusion on Survival in Resected Early Stage Lung Cancer

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OBJECTIVES: Blood transfusion has been shown to have deleterious effect on cancer survival but little data is available that assess whether leukocyte-depleted (LD) blood has a similar adverse effect. Our institution has been using LD red cells since 2001. We sought to determine if LD blood has an effect on survival following resection of early stage lung cancer.

METHODS: We evaluated all patients with pathological stage I (AJCC 7th edition) non-small cell lung cancer resected by, at minimum, lobectomy. Patients receiving LD blood were compared with those receiving no transfusion. Survival was estimated using Kaplan-Meier method and compared using log-rank test. Multivariate analysis by Cox regression model was used to identify independent risk factors affecting survival.

RESULTS: From 2001 to 2005, 136 patients were evaluated; 30 received LD red cell transfusion and 106 received no transfusion. Median follow-up was 77 months. Disease-free survival (DFS) was worse in patients receiving LD blood (43.3% vs 70.8% at 5 years, $p < .001$). Stratifying for stage, DFS continued to be worse with transfusion for IA (60.0% vs 85.5% at 5 years, $p = .002$) and IB (35.0% vs 54.9% at 5 years, $p = .002$). Similarly, overall survival (OS) was worse in patients receiving LD blood (47.7% vs 75.5% at 5 years, $p < .001$). Stratifying for stage, OS continued to be worse with transfusion for IA (60.0% vs 89.1% at 5 years, $p < .001$) and IB (40.0% vs 60.8% at 5 years, $p < .001$). For DFS, univariate analysis revealed increase age ($p = .001$), transfusion ($p < .001$), and higher stage ($p < .001$) to be adverse factors; with transfusion ($p = .015$) and stage ($p = .003$) continuing to be significant factors after multivariate analysis. For OS, univariate analysis revealed increase age ($p = .001$), transfusion ($p < .001$), and higher stage ($p < .001$) to be adverse factors; with transfusion ($p = .005$) and stage ($p = .003$) continuing to be significant factors after multivariate analysis.

CONCLUSIONS: Transfusion of LD blood is associated with worse disease-free and overall survival in patients with resected stage I non-small cell lung.

CF13. Replacing Mediastinoscopy with Endobronchial Ultrasound: A Community Thoracic Surgeon's Perspective

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OBJECTIVES: Invasive mediastinal biopsy is necessary either to confirm or disprove radiographic findings in the evaluation of non-small cell lung cancer (NSCLC). Mediastinoscopy has long been considered the gold-standard given its low false negative rate but has specific detriments including surgical complications, the development of mediastinal scarring, and the need for a cervical incision. Thus we chose to implement endobronchial ultrasound (EBUS) as a replacement for cervical mediastinoscopy in the evaluation of the mediastinum in patients with NSCLC.

METHODS: Over a one year period, all newly diagnosed patients with NSCLC that required mediastinal biopsy were prospectively subjected to EBUS. Indications included confirmation of a positive finding by positron emission tomography (PET) or enlarged (>1 cm) lymph nodes by computed tomography (CT) as well as to rule out occult disease in patients with large (T2 or greater), central tumors, or presence of N1 disease. Patients with biopsies showing benign lymphocytes proceeded to undergo surgical resection with mediastinal lymph node dissection. Patients with non-diagnostic biopsies underwent subsequent cervical mediastinoscopy.

RESULTS: Fifty-nine patients with newly diagnosed NSCLC were prospectively followed and underwent mediastinal staging by EBUS. Of these, 11 patients had a radiographically normal mediastinum and 48 patients had a positive finding on PET and/or CT. In total, 23 patients had benign findings by EBUS (including all 11 patients with a normal mediastinum) and all underwent subsequent surgical resection. Within this group 1/23 patients (4% false negative rate) had a positive N2 lymph node. The remaining 35 patients had malignancy confirmed by EBUS but one patient had a non-diagnostic biopsy (no lymphocytes) and underwent mediastinoscopy to confirm malignancy. Altogether the sensitivity, specificity, PPV, NPV, and accuracy were 95% (35/37), 100% (22/22), 100% (35/35), 92% (22/24), and 97% (57/59), respectively. One patient had the complication of atrial fibrillation 1.7% (1/59).

CONCLUSIONS: EBUS in the hands of an experienced thoracic surgeon may produce results similar to cervical mediastinoscopy in the staging of NSCLC. Excellent EBUS results can be attained outside of a major academic setting without having rapid-on-site evaluation available. Thoracic surgeons should evaluate the efficacy of EBUS at their institutions to determine the feasibility of replacing mediastinoscopy with EBUS.

CF14. Tailored Approach to Minimally Invasive Esophagectomy

Jeffrey Javidfar, Jonathan Yang, Joanna Miller, Matthew Bacchetta, Frank D'Ovidio, Lyall A. Gorenstein, Mark E. Ginsburg, Marc Bessler, Joshua R. Sonett
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OBJECTIVES: Minimally invasive esophagectomy (MIE) is emerging as a technique that promises potentially decreased morbidity compared to open esophagectomy (OE). The surgical approach, oncologic dissection, and technical options should not be degraded when using a minimally invasive technique. Given the challenges of learning the MIE techniques, many centers adopt a singular operative approach. We have adopted a tailored MIE surgical approach that is dictated by patient anatomy, tumor location and stage.

METHODS: This is an Institutional Review Board-approved, retrospective study of our experience with both open and minimally invasive esophagectomy. From February 2000 to June 2010, 257 patients underwent esophagectomy by one of three surgical approaches: transhiatal (TH), Ivor-Lewis (IL) or three-hole (3H). Survival estimates and statistical comparisons were calculated using Stata/IC 11.0 (Stata Corporation, College Station, Texas).

RESULTS: Of the 257 cases (194 males, median age 67 years, interquartile range 58-74), 92 were performed by MIE (TH: n = 49, 53%; 3H: n = 17, 18%; IL: n = 26, 29%). The open esophagectomy (TH: n = 81, 49%; 3H: n = 31, 19%; IL: n = 53, 32%) and minimally invasive groups were equally matched in terms of gender, age, pathological tumor staging, surgical approach (TH, IL, 3H), and induction chemotherapy and radiation. The overall median follow up was 29.5 months (interquartile range, 9.9-61.5).

When comparing the minimally invasive to the open group, MIE had significantly shorter: operative times, length of stay, intensive care unit (ICU) admission rate, ICU length of stay, and estimated blood loss. There were significantly more lymph nodes harvested in the MIE group.

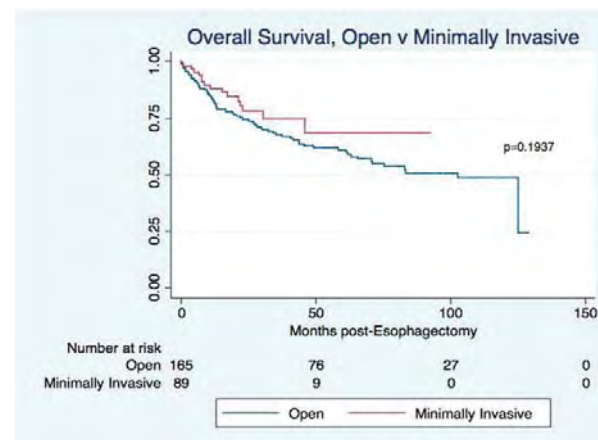
There was not a significant difference between the rates of: anastomotic or chyle leak requiring reoperation, strictures requiring intervention, recurrent laryngeal nerve injury, and conduit torsion or bleeding requiring reoperation.

After correcting for tumor staging and surgical approach there was no statistically significant difference in the 30-day mortality rate (MIE 2.2% versus OE 3.0%, $p = 0.93$) or the overall survival rate ($p = 0.19$). There was also no significant survival difference in the cohort that received neoadjuvant chemotherapy ($p = 0.25$).

Results

	Minimally Invasive Esophagectomy ¹	Interquartile Range	Open Esophagectomy ¹	Interquartile Range	p value
Operative Time ²	330 min	28-411	365 min	319-472	$p=0.04$
Length of Stay	9 days	8-14	12 days	10-21	$p<0.01$
ICU Admission Rate	55%		81%		$p<0.01$
ICU Length of Stay	1 day	0-2	2 days	1-4	$p<0.01$
Estimated Blood Loss	100 mL	50-300	400 mL	250-600	$p<0.01$
Number of Nodes Harvested					
Overall	17	12.5-24.5	11	7-16	$p<0.01$
Transhiatal	16	14-22.5	13	5-15	$p<0.01$
Ivor-Lewis	19	13-27	12	9-19	$p=0.03$
3-Hole	17	11-22	10	11-19	$p=0.39$

¹All non-percentile figures are median values
²Operative times from anesthesia ready to skin closed



CONCLUSIONS: Minimally invasive esophagectomy that is tailored to a patient's needs can be performed safely and may have certain clinical advantages, as it is associated with significantly fewer ICU admissions, shorter ICU and hospital LOS, and lower EBL. The minimally invasive technique maintains oncologic equivalence while providing identical-to-improved lymph node dissection. There are no short- or long-term survival differences between minimally invasive and open esophagectomy. As with the open esophagectomy, the practicing thoracic surgeon may safely tailor the minimally invasive surgical approach (TH, IL, 3H) to the anatomy and oncologic demands of each patient.

SATURDAY

CF15. Right Lung Ischemia Induces Development of Contra-Lateral Pulmonary Vasculopathy

Edouard Sage, Olaf Mercier, Philippe Herve,
Philippe Darteville, Saadia Eddahibi, Elie Fadel
Hopital Marie Lannelongue, Le Plessis-Robinson, France

OBJECTIVES: Chronic thromboembolic pulmonary hypertension (CTEPH) is due to mechanical obstruction by unresolved clots and vasculopathy in the non obstructed vascular lung regions. We tested whether flow induced vascular lesions or factors released by the ischemic lung account for development of vasculopathy in non obstructed regions

METHODS: Three groups of 5 piglets were studied 5 weeks after right pulmonary artery (PA) ligation (PAL group), right pneumonectomy (RP group) or right PA dissection (Sham group). We measured pulmonary vascular resistance, pulmonary arterial vasoreactivity and morphometry, and quantified gene expression of factors involved in vascular smooth muscle cell proliferation (Insulin-like growth factor [IGF], Platelet-derived growth factor [PDGF], Vascular endothelial growth factor [VEGF]) and endothelium-dependent vasoreactivity pathways (Endothelin-1 [ET-1], Endothelin-1 Receptors A [ETAr] and B [ETBr], Endothelial nitric oxide synthase [eNOS]).

RESULTS: Left lung blood flow was similarly increased in RP and PAL groups. By contrast, as compared to RP, PAL animals developed pulmonary vasculopathy in the left lung as assessed by increase in pulmonary vascular resistances ($p = 0.0006$), medial hypertrophy of the distal PA ($p < 0.0001$), decrease in both maximal relaxation to acetylcholine ($p = 0.013$) and eNOS gene expression ($p = 0.041$). These values were similar in sham and RP groups. Left lung IGF ($p = 0.034$), PDGF ($p = 0.0006$) and VEGF (0.0105) gene expressions increased in the PAL group when compared to both RP and Sham. Although ET-1 gene expression was not affected, ETAr and ETBr expression was downregulated in both RP ($p = 0.048$ and $p = 0.039$, respectively) and PAL ($p = 0.033$ and $p = 0.028$, respectively) groups.

CONCLUSIONS: Pulmonary vasculopathy is absent in the remaining lung 5 weeks after pneumonectomy and developed in the non obstructed pulmonary territories 5 weeks after right PA ligation suggesting that factors released by the ischemic lung induced vascular remodelling in the contra-lateral lung. This endocrine regulation might implicate release of factors involved in vascular smooth muscle cell proliferation.

CF16. Distribution of Donor Lungs in the United States: A Case for Broader Geographic Sharing

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Wickii Vigneswaran², **Mark J. Russo²**
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²*University of Chicago Medical Center, Chicago, IL*

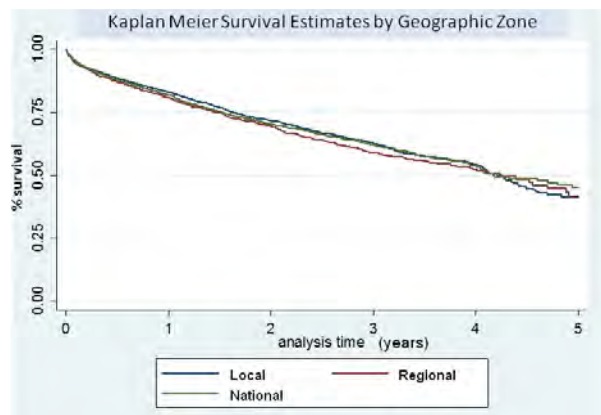
OBJECTIVES: Previously, we demonstrated that the vast majority of lung transplant recipients have a lung allocation score (LAS) < 50 , while candidates with higher LAS die while on the waitlist. This observation may result, in part, from the preference for local allocation of donor organs, before they are offered to broader geographic zones (regional or national). The purpose of this study was to describe the origin (local, regional, or national) of donor organs matched with recipients of various LAS strata. We hypothesize that recipients with lower LAS receive a large proportion of organs from local donors.

METHODS: UNOS provided de-identified patient-level data. Analysis included lung transplant candidates aged ≥ 12 years-old transplanted between 5/4/05–12/31/09 ($n = 6,964$). Geographic allocation zones were collapsed by UNOS into three categories: local, regional, and national. All recipients were grouped by UNOS according to zone (local, $n = 3,504$; regional, $n = 1,206$; national, $n = 2,254$). Recipients were further stratified by LAS at the time of transplant. Kaplan-Meier analysis was used to assess long-term recipient survival by geographic zone.

RESULTS: There was a significant difference in the mean LAS at transplant between the three geographic zones (local: 41.4 ± 12.8 ; regional: 45.2 ± 15.7 ; national 46.5 ± 16.7 ; $p < 0.001$), with the highest mean LAS in the national zone and the lowest LAS in the local zone. The number of recipients per geographic zone stratified by LAS at the time of transplant is shown in Table 1. There was a significant association between transplant and zone and LAS at the time of transplant ($p < 0.001$). Within each of the three zones, the majority of recipients had a LAS < 50 , and the majority of recipients received transplants from locally allocated donors. In Kaplan-Meier analysis, there was no difference in long-term survival by geographic allocation zone ($p = 0.305$) (Figure 1).

Table 1

LAS at Transplant	Local	Regional	National	Total
<40	2,255 (64.4%)	635 (52.7%)	1,123 (49.8%)	4,013 (57.6%)
40-49	741 (21.2%)	298 (24.7%)	542 (24.1%)	1,581 (22.7%)
50-59	212 (6.1%)	96 (8.0%)	194 (8.6%)	502 (7.2%)
60-69	103 (2.9%)	54 (4.5%)	109 (4.8%)	266 (3.8%)
70-79	62 (1.8%)	41 (3.4%)	99 (4.4%)	202 (2.9%)
80-89	77 (2.2%)	43 (3.6%)	110 (4.9%)	230 (3.3%)
≥90	54 (1.5%)	39 (3.2%)	77 (3.4%)	170 (2.4%)



CONCLUSIONS: The majority of lung transplant recipients in the United States have an LAS <50, and receive organs from locally allocated donors. The majority of the donors for these organs were from local donors. Conversely, recipients with higher LAS received the majority of their organs from regional and national matches. A policy to more broadly allocate local donors to recipients with higher LAS and thus higher waitlist mortality, may result in improved national transplant outcomes given existing data demonstrating minimal transplant benefit for recipients with low lung allocation scores.

CONGENITAL HEART DISEASE

West Ballroom C & D

Moderators: David N. Campbell
Ross M. Ungerleider

CF17. Left Ventriculotomy Is Safe in Infants and Young Children Requiring Cardiac Surgery

Steven P. Goldberg, Umar S. Boston, Vijaya M. Joshi, Mayte I. Figueroa, Jean A. Ballweg, Thomas K. Chin, Craig A. Mathis, Christopher J. Knott-Craig
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OBJECTIVES: Incisions in the left ventricle (LV) during cardiac repair have previously been associated with increased mortality and morbidity, particularly in infants. In order to determine if this assumption is still true in the current era of early cardiac repairs, we reviewed our recent experience with left ventriculotomy in neonates and infants.

METHODS: The records of five consecutive patients requiring a left ventriculotomy between 2007-2010 were reviewed. Weight and age ranged from 2.6-16 kg and 5 days-2 years. The diagnoses were multiple ventricular septal defects (VSDs, n = 3), rhabdomyoma (n = 1) and LV apical aneurysm (n = 1). The primary endpoint was left ventricular ejection fraction (LVEF), with other endpoints being ICU length of stay, time to extubation, inotrope requirement, arrhythmias, and mitral valve function.

RESULTS: There were no early or late deaths. Although lower than their preoperative values, early postoperative ejection fractions were >50% in all patients. No (n = 2) or minimal (n = 3) inotropic support was required after surgery. Hospital length of stay was 9 ± 7 days for the multiple VSD patients, with ICU stays of 3-5 days. There were no postoperative arrhythmias requiring pharmacological therapy, and one patient had a significant reduction in mitral insufficiency postoperatively. See Table for additional results.

SATURDAY

Results of Left Ventriculotomy

	Multiple VSD Patients (n = 3) (Mean ± SD)	LV Aneurysm	Rhabdomyoma
Age	11 ± 3 months	2 years	5 days
Weight	7 ± 2 kg	15 kg	2.6 kg
Postop LVEF	61 ± 8%	54%	58%
Extubated ≤ 48 hrs	3/3	Yes	No
Hospital LOS	9 ± 7 days	5 days	18 days
ICU LOS	4 ± 1 days	2 days	7 days
Arrhythmias	0	PVC's	0
Inotropes	Dopamine (n = 2) 3 mcg/kg/min	None	Epinephrine 0.05 mcg/kg/min

CONCLUSIONS: Based on our experience, we believe that a left ventriculotomy does not significantly impair LV function even in small infants, and is not associated with significant morbidity. Although the long-term effects are still unknown, early results suggest that a left ventriculotomy may safely be used when alternative approaches are inadequate to repair complex cardiac defects.

CF18. Interrupted Aortic Arch Repair Outcomes Using Left Carotid Artery Swing Down Technique

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Indiana University School of Medicine, Indianapolis, IN

OBJECTIVES: Interrupted aortic arch (IAA) is a complex congenital heart defect that may associate with other anomalies including left ventricular outflow tract obstruction (LVOTO). Neonatal repair of IAA involves an early choice between a single-stage or two-staged approach. We report our results of two-staged repair using left carotid artery swing down (LCASD) approach.

METHODS: Between 1982 to 2010, 53 patients with IAA underwent surgical management using the two-staged approach with LCASD. Median age was 6 days (range, 2 days to 5 months), 94% of patients were neonates. IAA types were A in 4 (8%) and B in 49 (92%). All except two had VSD. Sixteen patients (30%) were with DiGeorge syndrome and 15 (28%) patients had LVOTO. Ten patients (19%) patients were associated with complex anomalies (single ventricle in 6, Taussig-Bing anomaly in 2, and truncus arteriosus in 2).

RESULTS: There were 2 early deaths (4%). No patients needed early arch reintervention. After a mean follow-up of 9.4 years, 14 late deaths occurred, for 20-year survival of 70%. Presence of complex cardiac anomaly ($P < 0.01$), earlier year of surgery ($P < 0.001$), bad preoperative clinical condition and acidosis ($P < 0.05$) represented statistically significant risk factors for death in the whole series. Freedom from reoperation for arch enlargement has been 76% at both 10 and 20 years. During the postoperative course there were no neurological deficit, seizures, and growth disturbances. Freedom from reoperation for left ventricular outflow tract obstruction has been 82% at both 10 and 20 years.

CONCLUSIONS: Two-staged repair of the IAA using the left carotid artery swing down can be safely applied in IAA patients with or without other intracardiac anomalies with good results. Usage of the left carotid artery for arch reconstruction did not result in any detectable neurological events or growth disturbances later in life. Associated anomalies played an important role in the outcomes.

CF19. Fast-Tracking Extubation After Modified Fontan Procedure

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OBJECTIVES: Avoiding positive pressure ventilation may improve post-operative hemodynamics and lead to better clinical outcomes in patients with a Fontan circulation. In 2007, we introduced an *a priori* policy to try and extubate all patients after a modified Fontan procedure in the operating room (fast-track). Our objective was to determine if this approach was feasible and would be associated with improved clinical outcomes.

METHODS: We reviewed the charts of all pediatric patients who underwent a modified Fontan operation between May 2004 and May 2010. Patients who had undergone a Fontan revision were excluded.

RESULTS: Since our fast-track policy was introduced, 46 of 70 patients (66%) were extubated in the operating room (80% in 2009). A total of 97 patients underwent a modified Fontan operation (mean age 3.95 years; mean weight 15 kg) at our institution during the overall study period; 46 (47%) were extubated in the operating room (OR group) and 51 (53%) were extubated in the ICU (ICU group). The two groups were not significantly different with respect to age, sex, weight, and diagnosis of HLHS; as well as pre-operative mean pulmonary arterial pressure, systemic oxygen saturation, degree of systemic AVV regurgitation and ventricular function ($p > 0.05$). Cardiopulmonary bypass and cross-clamp times were similar between the two groups ($p > 0.05$). Four patients were re-intubated in the OR group. Three of them were re-intubated because of bleeding or tamponade that required re-exploration within the first 24 hours. One of these patients was listed for transplant, but later died. A fourth patient was re-intubated after 5 days because of seizures. In the ICU group, there were no deaths, 2 had takedown of their Fontan, 3 were transplanted and 1 remains listed but is extubated. Twenty-four hours postoperatively, patients in the OR group had a lower mean CVP (mmHg) (13 vs. 16, $p < 0.001$); a higher base excess (0.4 vs. -2.6, $p < 0.001$); a lower fluid balance (ml) (234 vs. 730, $p < 0.001$); a lower inotrope score (4.61 vs. 10.75, $p < 0.001$) and were less likely to receive blood products (33% vs. 43% of patients, $p = 0.06$). Patients in the ICU group remained intubated a

median of 61 hours (4–2,400, mean 176). The ICU group had a longer median LOS in the ICU (6 vs. 2 nights, $p = 0.04$); kept their chest tubes longer (14 vs. 8 days, $p = 0.004$); and stayed longer in hospital (16 vs. 9 days, $p = 0.011$).

CONCLUSIONS: A majority of patients can be extubated in the operating room after a modified Fontan operation. Extubation in the operating room is associated with a lower fluid balance, need for less inotropes, and less likely to need blood products in the intensive care unit. Patients who are extubated in the operating room also have their chest tubes removed sooner, and spend less time in the ICU and in hospital.

CF20. Size of the Right Ventricle to Pulmonary Artery Conduit Impacts Midterm Outcome After the Norwood Procedure in Patients Weighing Less Than 3 kg

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OBJECTIVES: The optimal shunt size for patients weighing less than 3 kg who have the Norwood operation with a right ventricle to pulmonary artery (RV to PA) conduit is controversial. The goal of this study is to compare outcomes of two shunt sizes in this population.

METHODS: Between 2002 and 2010, 75 consecutive patients diagnosed with hypoplastic left heart syndrome and variants had Norwood operation with an RV to PA conduit. The outcomes of 20 neonates weighing less than 3 kg were analyzed.

RESULTS: The overall 30 day stage I mortality was 97% for all patients (73/75). Nine patients had a 6 mm (group I) and 11 patients had a 5 mm (group II) RV to PA conduit. The mean body weight was similar in both groups (2.6 ± 0.3 vs 2.5 ± 0.2 kg, $p = 0.46$). The incidence of aortic atresia/mitral stenosis, restrictive atrial septal defect, more than moderate tricuspid regurgitation and the presence of a genetic syndrome did not differ between the two groups. 30-day stage I survival was 88% (8/9) in group I and 90% (10/11) in group II patients ($P = 0.88$). There was no difference in the interstage mortality between the 2 groups (1/8 vs 1/10, $p = 0.49$) and one group II patient was referred for cardiac transplantation. The median age at bidirectional cavopulmonary shunt (BCPS) was higher in group I patients (194 days [range 104 to 693 days] vs 111 days [range 72 to 172 days], $p = 0.028$) but the weight was similar in both groups (5.2 ± 1.7 vs 4.9 ± 0.3 kg, $p = 0.78$). No patient in either group developed ventricular arrhythmias or more than mild ventricular dysfunction. The ventricular end diastolic pressure was similar in both groups (9 ± 2 vs 10 ± 4 mmHg, $P = 0.60$). Mean coronary perfusion pressure was higher in group I patients (39 ± 2 vs 33 ± 6 mmHg, $P = 0.026$). The mean central pulmonary artery (PA) confluence size at pre-BCPS catheterization was 4.5 ± 1.2 mm in group I and 2.5 ± 1.0 mm in group II patients ($P = 0.009$). The mean transpulmonary gradient was higher in group II patients (7.8 ± 3.1 vs 4.2 ± 1.9 mmHg, $P = 0.036$). The incidence of PA intervention (surgical or balloon arterioplasty ± PA stent insertion) was 16% (1/7) in group I and

75% (6/8) in group II patients ($P = 0.030$). All group I patients had BCPS without cardiopulmonary bypass whereas no group II patient could have an off-pump BCPS ($P < 0.001$). No patient required tricuspid valve repair in either group. Survival rate at 6 months was 66% (6/9) in group I, and 70% (7/10) in group II patients ($P = 0.89$).

CONCLUSIONS: In patients who weigh less than 3 kg and have the Norwood operation with an RV to PA conduit, use of a 6 mm conduit may lead to better PA growth, improved transpulmonary gradient and less need for PA intervention when compared to a 5 mm conduit and should be considered the conduit of choice.

* WTSA Member

CF21. Preliminary Clinical Experience with a Bifurcated Y-Graft Fontan Procedure

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 Jarek Rossignac², W. James Parks¹, Ajit P. Yoganathan²
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²Georgia Institute of Technology, Atlanta, GA

OBJECTIVE: Optimizing flow and diminishing power loss in the Fontan circuit can improve hemodynamic efficiency and potentially improve long-term outcomes. Based on improvements in flow dynamics for the Fontan connection predicted by computerized modeling, we used a commercially available polytetrafluoroethylene bifurcated Y-graft directing inferior vena caval (IVC) flow with separate graft limbs to the right (RPA) and left pulmonary arteries (LPA).

PATIENTS AND METHODS: From August to December, 2010, five children aged 2.1–18.9 years (mean 6.5 years) weighing 10.3–50.1 kg (mean 21.8 kg) had a completion Fontan (n = 3) or a Fontan revision (n = 2; one for unilateral pulmonary arteriovenous malformations, one for a Fontan baffle leak; interval after original Fontan 14.0 and 2.6 years) using a bifurcated polytetrafluoroethylene Y-graft (18 × 9 in 2, 20 × 10 in 3). Two patients had prior Norwood palliation, 2 had pulmonary atresia with intact ventricular septum, and 1 had heterotaxy/unbalanced atrioventricular septal defect/interrupted IVC.

Patient Characteristics

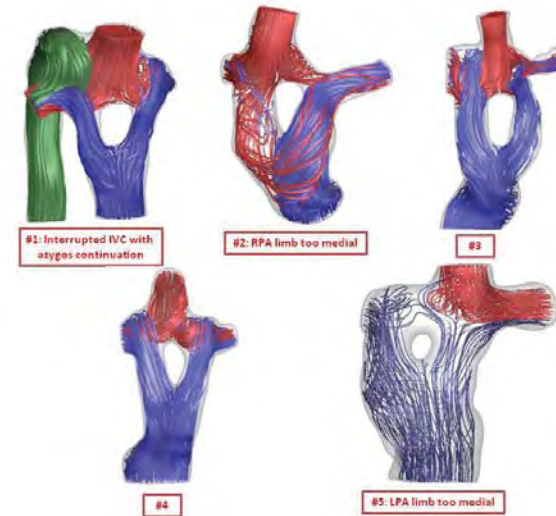
#	Age (y)	Wt (kg)	Primary Diagnosis	Indication for Operation	Other Operation at Fontan
1	18.9	50.1	Left atrial isomerism, interrupted IVC	Fontan revision for unilateral AVM's	Common AV valve repair
2	5.4	17.8	PA/IVS	Completion Fontan	Atrial septectomy
3	2.1	12.3	Unbalanced CAVSD; hypopl LV/aorta	Completion Fontan	None
4	3.7	18.4	PA/IVS	Fontan revision for baffle leak	Remove septal occluder
5	2.3	10.3	HLHS (AA/MA)	Completion Fontan	None

AVM = arteriovenous malformation; AV = atrioventricular; PA/IVS = pulmonary atresia with intact ventricular septum; CAVSD – complete atrioventricular septal defect; LV = left ventricle; HLHS = hypoplastic left heart syndrome

All patients had a fenestration. Before discharge, the Fontan baffle was imaged by magnetic resonance imaging (MRI; n=4) or chest computerized tomography (CT; n = 1). Computational flow dynamics (CFD) based on phase contrast MRI or echocardiography/catheterization derived flows were used to assess Fontan hemodynamics, power loss, and IVC flow splits to the branch pulmonary arteries.

RESULTS: Mean aortic cross clamp and cardiopulmonary bypass times were 67 ± 34 and 113 ± 58 minutes respectively. Mean ventilation was 18.8 ± 3.4 hours; mean hospitalization was 8.4 ± 3.4 days. Systemic saturation rose from 82.6 ± 7.8% preoperatively to 91.0 ± 8.5% postoperatively. Other than two readmissions for pleural effusions managed with increased diuretic therapy, on 1–5 months follow-up (mean 99 days), all five patients have done well.

Postoperative flow modeling generally demonstrated balanced distribution of IVC flow to both pulmonary arteries with minimal flow disturbance. Slight improvements in hemodynamics and efficiency were noted when the Y-graft branches were anastomosed distally and aligned tangentially with the branch PAs.



Flow distribution and power loss calculations:

Postoperative Flow Results

#	Flow (L/min)			Power Loss (mW)	IVC Flow Split (% to LPA)	IVC Flow Split (% to LPA)	IVC Flow Split (% to LPA)
	IVC	LPA	RPA				
1	0.50	0.43	1.95	0.79	35%	35%	35%
2	0.74	1.12	1.18	2.47	100%*	100%*	100%*
3	0.48	0.15	0.35	2.46	47%	47%	47%
4	0.80	0.32	0.63	0.42	48%	48%	48%
5	0.37	0.64	0.23	0.25	29%*	29%*	29%*

*Postoperative MRI showed RPA or LPA limb of graft directly opposite Glenn

CONCLUSIONS: This preliminary surgical experience demonstrates that the bifurcated Y-graft can be performed safely with good early clinical results. CFD shows favorable hemodynamics with low calculated power losses and balanced distribution of IVC flow to the pulmonary arteries as long as the branch grafts are anastomosed distally.

CF22. Impact of Surgery for Reflux or Feeding Intolerance on Mid-Term Outcomes for Single Ventricle Patients

Jane J. Keating¹, Janet M. Simsic², Brian E. Kogon¹, Kirk R. Kanter¹, Jeryl Huckaby¹, Patrick D. Kilgo¹, Paul M. Kirshbom¹

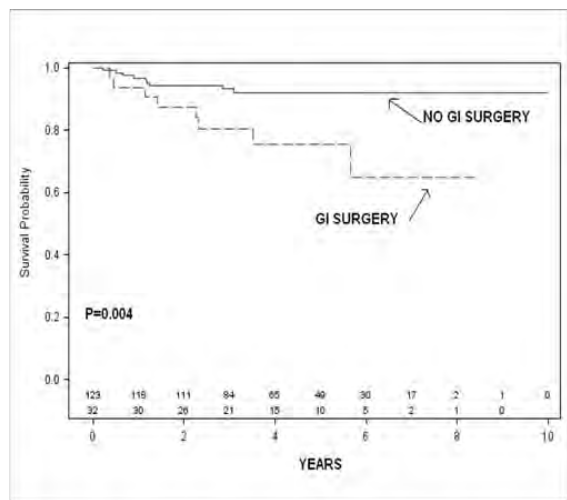
¹Emory University School of Medicine, Atlanta, GA;

²Children's Healthcare of Atlanta, Atlanta, GA

OBJECTIVES: Single ventricle patients who undergo staged palliation experience continued low-level attrition after Fontan completion. The risk factors associated with late attrition have not been well defined. This study investigates the impact of early gastric surgery for reflux disease or feeding intolerance on mid-term transplant-free survival in single ventricle patients.

METHODS: One hundred and fifty five single ventricle patients who survived first stage palliation were enrolled in a research registry. Demographic and anatomic variables were collected and the families were contacted every 6 months for prospective documentation of their clinical status. Medical records were reviewed for details of non-cardiac surgical procedures. Univariate and multivariate regression analyses were performed to determine the impact of early fundoplication, gastrostomy tube placement, or both, on mid-term transplant-free survival.

RESULTS: There were 93 males and 62 females. Median gestational age was 38 weeks and birth-weight was 3.2 kg. 42% (65/155) had hypoplastic left heart syndrome. 8% (12/155) had an identified genetic syndrome. 21% (33/155) had a gastric procedure at a median of 2 months of age (1–23 months). Median follow-up was 4.3 years (range 79 days–10 years). Race, gender, gestational age, birth weight, and genetic syndrome did not affect mid-term transplant-free survival. There was no peri-operative mortality associated with the abdominal procedure. The occurrence of gastric surgery early in life was found to be an independent risk factor for decreased transplant-free survival at mid-term follow-up (76% at 5 years vs 92%, $p = 0.003$, HR 0.27 for no gastric surgery vs surgery). This finding was unchanged when adjusted for all covariates.



CONCLUSIONS: The need for early gastric surgery is associated with decreased transplant-free survival for patients with palliated single ventricle heart disease. This sub-group may be at risk for early pulmonary injury or the need for gastric surgery may be a marker for other variables not included in this study. Further analysis is required to determine the implications of this finding.

CF23. Prophylactic Amiodarone Prevents Junctional Ectopic Tachycardia After Tetralogy of Fallot Repair

Michiaki Imamura, Amy M. Dossey, Xiomara Garcia
Arkansas
Children's Hospital, Little Rock, AR

OBJECTIVES: Junctional Ectopic Tachycardia (JET) is common after pediatric heart surgery (2-15%). After Tetralogy of Fallot (TOF) repair the incidence of JET is between 14-22%. This arrhythmia may delay hospital discharge. We introduced prophylactic amiodarone for TOF repair. This study was conducted to evaluate effectiveness of this prophylactic amiodarone.

METHODS: Prophylactic amiodarone continuous infusion was started at the time of rewarming in the operating room during cardiopulmonary bypass at the rate of 2 mg/Kg/day. Amiodarone infusion is continued until postoperative day 2. Between 2005 November and 2009 November 63 patients who had primary repair of TOF were identified. 20 patients had prophylactic amiodarone (amiodarone group), and 43 did not get prophylactic amiodarone (control group). Variable studied included demographic and bypass data, surgical procedure (transannular or non-transannular patch), pre and post operative echocardiography finding, and post operative inotropic support. For statistical analysis univariate and stepwise multivariate analyses with stepwise backwards selection procedure with retention p value set at 0.05 were conducted to determine factors associated with the occurrence of JET.

RESULTS: In control group 16 patient (37%) and in amiodarone group 2 (10%) had JET. There are no difference between two groups in age, weight, bypass time, rate of transannular patch and pre and post gradient through the right ventricular outflow tract. Both univariate and multivariate analyses show prophylactic amiodarone significantly negatively associated with JET (p = 0.026 and p = 0.027). Also epinephrine usage contrary positively associated with JET with both univariate and multivariate analysis (p = 0.015 and p = 0.014). No adverse event was reported with prophylactic amiodarone Usage. Univariate Analysis

	Odds Ratio	95% CI	P-value
Older than 6 months old	1	0.18-5.7	1
Early and Late Series	0.365	0.116-1.148	0.080
Prophylactic Amiodarone	0.19	0.04-0.9	0.039
Transannular Patch	1.7	0.33-9.1	0.52
Dopamine	1.6	0.48-5.2	0.45
Epinephrine	4.31.9	1.3-14.90	0.0190.31
Milrinone	1.9	0.54-6.9	0.31

SATURDAY

Multivariate Analysis

	Odds Ratio	95% CI	p-value
Prophylactic Amiodarone	0.15	0.027–0.81	0.027
Epinephrine	5.5	1.4–22	0.014

CONCLUSIONS: Prophylactic amiodarone starting during rewarming is well tolerated and significantly decreased the incidence of post-operative JET after TOF repair.

CF24. Effects of Glutaraldehyde Concentration, Pretreatment Time and Type of Tissue (Porcine Versus Bovine) on Post-Implantation Calcification
Pranava Sinha¹, David Zurakowski², T.K. Susheel Kumar¹, Dingchao He¹, Christopher Rossi¹, Richard Jonas¹
¹Children's National Medical Center, Washington, DC;
²Children's Hospital Boston, Boston, MA

OBJECTIVES: To evaluate the effects of Glutaraldehyde (GA) concentration, time of pretreatment, and type of tissue (Porcine vs. Bovine) on quantitative and qualitative post implant calcification of tissues.

METHODS: Freshly obtained porcine and bovine pericardial tissues were each treated with increasing concentrations of Glutaraldehyde (GA) [controls, 0.3125%, 0.625% and 1.2%] for a fixed time [15 minutes]; or increasing exposure times [5 minutes, 10 minutes, 20 minutes and 30 minutes] at a fixed concentration of GA [0.625%].

Pretreated tissues were subcutaneously implanted in 10-week-old Sprague Dawley rats for 45 days, before explantation.

Quantitative calcium analysis was performed by flame atomic spectrophotometry. Histological examination of tissue samples with Hematoxylin-Eosin and Van-Kossa staining was performed for cellular and inflammatory response, and area of calcification expressed as a percentage of total area.

RESULTS: Two-way ANOVA indicated significantly greater calcium levels at 1.2% compared to each lower concentration for both porcine and bovine samples (P < 0.01). Significantly lower calcium levels were detected with increased exposure time in porcine samples (F = 6.97, P < 0.001), however no significant differences in calcium levels were observed between different exposure times for bovine samples (F = 1.46, P = 0.23).

Histological evidence of intense inflammatory response with infiltration with mononuclear cells, fibroblasts and histiocytes was seen in all grafts. There were no differences in degree or pattern of inflammatory response according to GA concentration or time of exposure. Estimation of amount of calcification by histology correlated with the quantitative assay.

CONCLUSIONS: Increasing GA concentration leads to greater calcification with a sharp rise in calcium levels above a concentration of 0.625%, in both bovine and porcine pericardial tissues.

At a concentration of 0.625%, increasing pretreatment time is inversely related to tissue calcification, for porcine pericardium, but not for bovine pericardium.

Differences in the tissue composition in terms of cellular content and composition of the extracellular matrix could account for the observed findings. Human pericardium is similar to and expected to behave more like porcine tissue.

WESTERN THORACIC SURGICAL ASSOCIATION

7:00 am – 11:00 am **FAMILY HOSPITALITY**, *Will Rogers Room & Patio*
7:00 am – 8:00 am Continental Breakfast Served
8:00 am – 10:00 am Full Breakfast Served
10:00 am – 11:00 am Snacks & Beverages Served

NOTES

The Broadmoor, Colorado Springs, Colorado 37TH ANNUAL MEETING

8:30 am – 9:50 am **SCIENTIFIC SESSION V**

Rocky Mountain Ballroom A & B

Moderators: Anthony P. Furnary
John D. Mitchell

(10 minutes presentation, 10 minutes discussion)

+16. Post-Operative Vodka Consumption Significantly Reduces Pericardial Adhesions in Hypercholesterolemic Swine

Antonio D. Lassaletta, Louis M. Chu, Frank W. Sellke
Brown University, Providence, RI

DISCUSSANT: NAHUSH A. MOKADAM

BACKGROUND/OBJECTIVE: Re-operative cardiac surgery is complicated in part because of extensive adhesions encountered during the second operation. Previous studies in hypercholesterolemic swine demonstrated that the administration of the polyphenol resveratrol reduces oxidative stress and inflammation. The purpose of this study was to examine the effects of alcohol with and without the polyphenol resveratrol (red wine vs. vodka), on post-operative pericardial adhesion formation.

METHODS: Twenty-eight male Yorkshire swine were fed 500 mg/day of a high-cholesterol diet starting at 4 weeks of age to simulate conditions of coronary artery disease. At 8 weeks of age all animals underwent ameroid constrictor placement to the left circumflex artery via a left thoracotomy to induce chronic ischemia. Post-operatively, high-cholesterol control pigs continued their pre-operative diet (HCC, n = 10), high-cholesterol wine pigs were supplemented with 375 ml of pinot noir daily (10%/V EtOH, HCW, n = 9), and high-cholesterol vodka pigs were supplemented with 100 ml of vodka daily (40%/V EtOH, HCV, n = 9). Seven weeks after ameroid placement, all animals underwent median sternotomy and pericardial adhesions were graded with an established 0–3 grading system. The heart was harvested and myocardium from the anterior left ventricular wall in the non-ischemic territory was probed by western blot for expression of extracellular matrix adhesion proteins focal adhesion kinase (FAK) and integrin β -1 ($I\beta 1$), anti-oxidative protein superoxide dismutase 1 (SOD1), and pro-proliferative protein kinase C- ϵ (PKC ϵ).

RESULTS: Pericardial adhesion grade 7 weeks after left thoracotomy was markedly reduced in the HCV group compared to the HCC group. There was no difference in adhesion grade between HCC and HCW (Figure 1). FAK and SOD1 expression were significantly increased in the HCW and HCV groups compared to the control group. Expression of $I\beta 1$ and PKC ϵ was not only significantly higher in the HCW and HCV groups compared to controls, but also higher in the HCW group compared to HCV (Table 1).

+ *Samson Resident Prize Essay*

SATURDAY

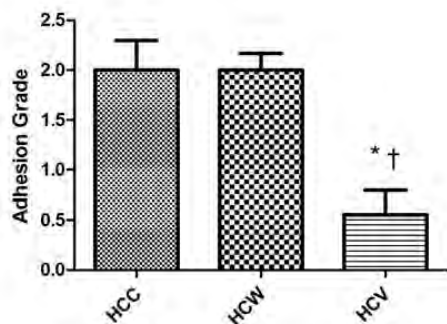


Figure 1. Adhesion Grade. * † = p<0.002 HCV vs. HCC and HCV vs. HCW

Table 1: Numbers Represent FC ± SEM (Fold Change ± Standard Error of the Mean)

	HCC	HCW	HCV	p < 0.05
FAK	1.00 ± 0.068	2.17 ± 0.216	1.56 ± 0.188	HCW > HCC HCV > HCC
β1	1.00 ± 0.121	2.61 ± 0.273	1.77 ± 0.186	HCW > HCC HCV > HCC HCW > HCV
PKCε	1.00 ± 0.165	3.69 ± 0.438	2.22 ± 0.255	HCW > HCC HCV > HCC HCW > HCV
SOD1	1.00 ± 0.113	2.47 ± 0.211	1.85 ± 0.294	HCW > HCC HCV > HCC

CONCLUSIONS: Post-operative vodka consumption markedly reduced the formation of pericardial adhesions while red wine had no effect. Western blot analysis did not reveal any obvious explanation for this phenomenon, suggesting a non-specific effect of alcohol on signaling of fibrous tissue formation. However, differences in β1 and PKCε implicate an up-regulation in adhesion formation and signal transduction in the wine group, which may account for normal adhesion formation in these animals. These findings suggest that ingestion of alcohol, but not red wine, after surgery may reduce pericardial adhesion formation.

+17. Extent of Resection in Bronchoalveolar Cell Carcinoma: A Population-Based Evaluation

Bryan A. Whitson, Shawn S. Groth, Rafael S. Andrade, Mohi O. Mitiek, Michael A. Maddaus, Jonathan D’Cunha
University of Minnesota, Minneapolis, MN
 DISCUSSANT: ROSS M. BREMNER

OBJECTIVES: As compared with other non-small cell lung cancer histologies, there is a lack of population-based data on the effect of the extent of resection for bronchoalveolar carcinoma (BAC) on survival.

METHODS: Using the Surveillance Epidemiology and End-Results (SEER) database (1988–2007), we identified patients with BAC who underwent wedge resection, anatomic segmentectomy, or lobectomy. BAC histologies included were: mucinous, nonmucinous, mixed, not otherwise specified and alveolar carcinomas. We assessed for association between extent of resection and survival using the Kaplan-Meier method. To adjust for potential confounders, we used a Cox proportional hazards regression model.

RESULTS: There were 6810 patients who met inclusion criteria. As compared with sublobar resections (wedge resections and segmentectomies), lobectomy conferred superior 5-year overall (59.5% vs. 43.9%) and cancer-specific survival (67.1% and 53.1%) (p < 0.0001). After adjusting for potential confounding patient (age, race and gender) and tumor characteristics (size and differentiation), we found that patients who underwent an anatomic resection had significantly better overall (segmentectomy, hazard ratio [HR] 0.59, 95% confidence interval [CI]; 0.43–0.81; lobectomy, HR 0.50, 95%CI: 0.44–0.57) and cancer-specific survival rates (segmentectomy, HR 0.51, 95% CI: 0.34–0.75; lobectomy, HR 0.46, 95% CI 0.40–0.53) as compared with patients who underwent wedge resection. There was no significant difference in overall (p = 0.29) or cancer-specific survival (p = 0.46) between segmentectomy and lobectomy patients. We also found that gender (men), race (African Americans), and increasing age, tumor size, and degree of tumor de-differentiation were negative prognostic factors. Our results were unchanged when we limited our analysis to early-stage disease.

CONCLUSIONS: Using a population-based dataset, we found that anatomic resections for BAC confer superior overall and cancer-specific survival rates as compared with wedge resection. BAC’s propensity for intra-parenchymal spread may be the underlying biologic basis of our observation of improved survival after an anatomic resection.

+ Samson Resident Prize Essay

SATURDAY

18. Risk Factors Associated with Readmission Following Pediatric Cardiothoracic Surgery

Brian E. Kogon¹, Ashish Jain¹, Matthew Oster², Kirk Kanter¹, Paul Kirshbom¹

¹Emory University, Atlanta, GA; ²Children's Healthcare of Atlanta, Sibley Cardiology, Atlanta, GA

DISCUSSANT: DAVID R. CLARKE

OBJECTIVES: Approximately 10–20% of children get readmitted following congenital heart surgery. Readmissions are now being viewed by payers as preventable complications of the original surgery and/or hospitalization, and there have been proposals by insurance agencies to deny coverage of the additional expenses incurred by the readmission. With hopes to reduce the potential impact, we analyzed patients undergoing congenital heart surgery at our institution in order to identify risk factors for readmission.

METHODS: We performed a retrospective cohort study of 685 patients who underwent congenital heart surgery at Children's Healthcare of Atlanta between January 1, 2009 and December 31, 2009 and were subsequently discharged. Readmission was defined as an admission within 30 days following discharge. Demographic, preoperative, operative, and post-operative variables were evaluated. Univariate comparisons were made between the readmission and non-readmission groups, and multivariate Poisson regression analysis was performed to identify potential risk factors for readmission.

RESULTS: There were 74 readmissions in 70 patients. Reasons for readmission included effusive (18, 24%), gastrointestinal (19, 26%), respiratory (4, 5%), infectious (14, 19%), cardiac (11, 15%), and other (8, 11%) complications. In comparisons between admitted and non-readmitted patients, significant demographic variables included decreased age, decreased weight, and Hispanic ethnicity in the readmitted group. Significant pre-operative variables included genetic anomaly, failure to thrive, and mechanical ventilation. Significant operative variables included risk adjusted congenital heart surgery score, and significant post-operative variables included palliated cardiac physiology, longer ICU stay, and longer hospital stay. In multivariate analysis, Hispanic ethnicity (RR 1.85; 95% CI [1.10-3.11]; $p = 0.021$), preoperative failure to thrive (RR 2.74; 95% CI [1.50-4.99]; $p = 0.001$), and length of stay >10 days (RR 4.38; 95% CI [2.34-8.20]; $p < 0.001$) were significant risk factors for readmission.

CONCLUSIONS: Potential risk factors for readmission following congenital heart surgery have been identified. Hopefully, altering the discharge process and the early post-operative care in these high-risk patients can minimize the impact of hospital readmissions following congenital heart surgery.

19. Bilateral Internal Mammary Artery Grafting Improves Long-Term Survival in Patients with Reduced Ejection Fraction: A Propensity-Matched Study with Thirty-year Follow-Up

David Galbut¹, Paul Kurlansky², Ernest Traad², Malcolm Dorman³, Melinda Zucker³, George Ebra²
¹Aventura Medical Center, Aventura, FL; ²Florida Heart Research Institute, Miami, FL; ³JFK Medical Center, Atlantis, FL

DISCUSSANT: ANTHONY P. FURNARY

OBJECTIVE: Bilateral internal mammary artery (BIMA) grafting has been shown to improve long-term survival following coronary artery bypass (CABG) surgery. Patients with reduced ejection fraction (EF) present a higher operative risk and reduced long-term survival. We studied the perioperative and long-term results of BIMA vs. single IMA (SIMA) grafting in a large population of patients with reduced EF in which BIMA grafting was broadly applied.

METHODS: Between February 1972 and May 1994, 4532 consecutive isolated CABG patients underwent either SIMA (2335) or BIMA (2197) grafting. Prospectively collected clinical database recorded EF categorically as either <30% (very low, VLEF; $n = 228$), 30–50% (reduced, REF; $n = 1256$) or >50% (normal, NEF; $n = 3048$). Optimal matching using propensity scoring was used to create matched SIMA and BIMA cohorts.

RESULTS: In both the NEF and REF group, there was no difference in OM between matched groups of SIMA and BIMA patients (NEF, SIMA vs. BIMA 3.2% vs. 2.0%, $p = 0.086$; REF 4.7% vs. 4.5%, $p = 0.873$). There was no difference in the incidence of any postoperative complication, including sternal wound infection (SWI) between matched SIMA and BIMA patients in either the NEF or REF groups (SWI, SIMA vs. BIMA, 1.1% vs. 1.5% in NEF, $p = 0.462$; 1.1% vs. 1.6% in REF, $p = 0.561$). Late survival was significantly enhanced with the use of BIMA grafting in both the NEF and REF groups (10 and 20 year survival, SIMA vs. BIMA, in NEF $67.1 \pm 1.4\%$ and $35.8 \pm 1.7\%$ vs. $74.6 \pm 1.3\%$ and $38.1 \pm 2.1\%$, $p = 0.012$; and in REF $57.7 \pm .3\%$ and $19 \pm 2.5\%$ vs. $62.0 \pm 2.3\%$ and $33.1 \pm 3.4\%$, $p = 0.016$). Similarly, choice of SIMA vs. BIMA was a significant predictor of late mortality on Cox regression in both the NEF ($p < 0.001$) and REF ($p = 0.007$) groups. In the VLEF group, use of BIMA grafting was not associated with OM, perioperative complications, including SWI, or late survival.

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CONCLUSIONS: Broadly applied BIMA grafting, compared with SIMA grafting in propensity matched patients, provides enhanced long-term survival with no increase in operative mortality or morbidity for patients with both normal and reduced EF.

The Broadmoor, Colorado Springs, Colorado 37TH ANNUAL MEETING

9:50 am – 10:10 am **COFFEE BREAK, VISIT EXHIBITS,** *Rocky Mountain Ballroom C & D*

NOTES

SATURDAY

0:10 am – 11:10 am **SCIENTIFIC SESSION VI**

*Rocky Mountain Ballroom A & B
(10 minutes presentation, 10 minutes discussion)*

Moderators: Sean C. Grondin
Michael S. Mulligan

20. Simplified Non-Resectional Leaflet-Inverting Mitral Valve Repair for Degenerative Mitral Regurgitation: Technique and Outcomes

Y. Joseph Woo, John W. MacArthur, Jr.
University of Pennsylvania, Philadelphia, PA

DISCUSSANT: JAMES M. DOUGLAS

BACKGROUND: Mitral valve repair techniques for degenerative disease focused upon leaflet resection and neochordal replacement, while effective, do possess some intrinsic drawbacks. Leaflet resection may require extensive leaflet reconstructive suturing and posterior annular arc length reduction. Aggressive leaflet resection is irreversible and may markedly reduce available functional posterior leaflet tissue, yielding a monoleaflet valve and potential for inducible mitral stenosis. Neochordal implantation requires precise chordal measuring and may leave excessive redundant posterior leaflet tissue prone to systolic anterior motion. We sought to achieve a simplified repair technique which functionally eliminates excessive redundant leaflet tissue by remodeling instead of resecting leaflet tissue, and avoids the need for neochordal construction.

METHODS: 76 consecutive patients, mean age 60.8 years, with degenerative mitral regurgitation (MR) (63 isolated posterior leaflet disease, 13 anterior or bileaflet disease) underwent a leaflet remodeling mitral valve repair whereby a small portion of the diseased leaflet tissue was inverted into the left ventricle and suture fixated. Preoperative, perioperative and mid-term patient outcomes and echocardiographic findings were analyzed.

RESULTS: Patients had a mean preoperative MR grade of +3.8 out of 4 and a mean left ventricular ejection fraction (LVEF) of 57%. 47 out of the 76 patients (62%) were operated upon with non-sternotomy minimally-invasive techniques. The three intraoperative photos below demonstrate a typical patient with a prolapsed P2 segment from chordal rupture; a small portion of this segment inverted into the left ventricle and fixated with a CV5 GoreTex suture; and pressure testing demonstrating complete competency of the leaflet repair prior to ring annuloplasty. This technique is accomplished expeditiously and obviates any need for sliding leaflet reconstruction or chordal measuring. All 76 patients had a successful inverting mitral repair with a mean postoperative MR grade of +0.07/4. 71 patients had zero mitral regurgitation and 5 patients had +1 residual MR. There were no adverse perioperative outcomes.

All patients have been followed postoperatively. 75 of 76 patients are alive and asymptomatic. Of the 37 patients operated upon greater than one year ago, 34 have had subsequent outpatient echocardiograms (average follow up of 10 months) with a mean MR grade of +0.5/4.



CONCLUSIONS: For degenerative mitral valve disease, we have utilized a simplified repair technique of inverting a small portion of prolapsed leaflet into the left ventricle. This has been successfully applied in a consecutive series of 76 patients. Clinical and echocardiographic follow-up suggest excellent outcomes and durability of repair.

SATURDAY

21. Pulmonary Resection in High-Risk Patients for T1a Non-small Cell Lung Cancer

Andrea S. Wolf, Michael T. Jaklitsch, Martha Powell, Yolonda L. Colson, Steven J. Mentzer, Jon O. Wee, Ritu R. Gill, Lucian Chiriac, Raphael Bueno, David J. Sugarbaker, Scott J. Swanson
Brigham and Women's Hospital, Boston, MA

DISCUSSANT: JOSEPH B. SHRAGER

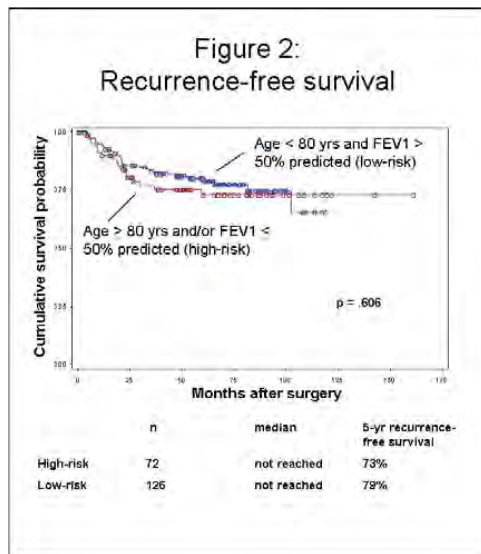
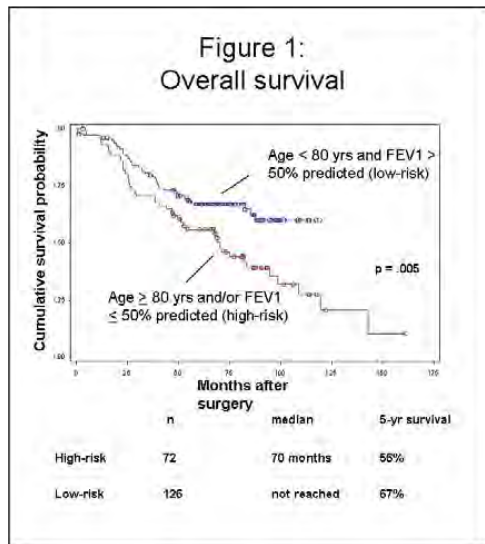
BACKGROUND: As non-surgical treatment gains popularity for high-risk non-small cell lung cancer (NSCLC) patients, there is a paucity of data regarding the results of surgical resection. We evaluated our recent experience with high-risk patients who underwent resection for T1a NSCLC to characterize morbidity, mortality, and long-term results.

METHODS: We reviewed 72 consecutive patients age 80 years and older or with an FEV1 \leq 50% predicted ("high-risk") who underwent resection for T1a NSCLC at our institution between 1997 and 2006. We excluded patients who had neoadjuvant therapy, other active malignancies, pure bronchioalveolar carcinoma, lymph node or distant metastases at diagnosis, or multicentric cancers. Overall and recurrence-free (other-cause death censored) survival from surgery to death or radiologic recurrence were assessed. These patients were compared to a consecutive cohort of 126 patients younger than 80 years with an FEV1 $>$ 50% predicted ("low-risk") treated during a similar time period.

RESULTS: Of the high-risk patients, 44 (61%) had a preoperative FEV1 \leq 50% and 32 (44%) were at least 80 years old, while 4 (5%) met both criteria (Table). Histology was similar for high and low-risk patients, with 17 (24%) high-risk patients having squamous (vs. non-squamous) histology, compared to 23 (18%) low-risk patients ($p = NS$). More low-risk patients underwent lobar (vs. sublobar) resection, 50 (40%) vs. 11 (15%), $p = .0003$. Major morbidity was similar for the high-risk (8 patients, 11%) and low-risk (17, 13%) cohorts, as was perioperative mortality, with 0 vs. 3 (3%) deaths for high and low-risk patients, respectively ($p = NS$). At a median follow-up of 5.1 years, the rates of local (within the resection or drainage bed of the primary tumor) recurrence, (11 [15%] for high-risk vs. 13 [10%] for low-risk) and any recurrence (17 [24%] for high-risk vs. 27 [21%] for low-risk) were similar for the two cohorts ($p = NS$). Overall (Figure 1) and recurrence-free survival (Figure 2) are shown.

CONCLUSIONS: Surgical resection proved to be safe and provided excellent long-term results for high-risk patients. Perioperative outcomes and recurrence-free survival were comparable to those of low-risk patients, although overall survival was influenced by underlying disease and age. High risk as measured by age and/or pulmonary reserve should not preclude patients from operative candidacy. These results provide standards to which non-surgical technologies should be compared.

	High-Risk	Low-Risk	p value
BASELINE CHARACTERISTICS			
n	72	126	
Median age (range)	77 yrs (51-90)	66 yrs (40-78)	<.0001
Median % predicted FEV1 (range)	46% (12-133)	83% (51-147)	<.0001
Male (%)	31 (44%)	49 (39%)	.5655
HISTOLOGY			
Adenocarcinoma (%)	47 (65%)	91 (72%)	.5821
Squamous cell carcinoma (%)	17 (24%)	23 (18%)	
Poorly-differentiated NSCLC (%)	8 (11%)	12 (10%)	
SURGERY			
Lobectomy (%)	11 (15%)	50 (40%)	.0008
Segmentectomy (%)	5 (7%)	11 (9%)	
Wedge resection (%)	56 (78%)	65 (51%)	
PERIOPERATIVE OUTCOMES			
Patients with at least one complication (%)	8 (11%)	17 (13%)	.6275
In-hospital or 30-day death (%)	0 (0%)	3 (2%)	.5550
RECURRENCE			
Local recurrence (%)	11 (15%)	13 (10%)	.3036
Distant recurrence (%)	14 (19%)	22 (17%)	.7277
Any recurrence (%)	17 (24%)	27 (21%)	.7223
SURVIVAL			
Percent 5-year survival	56%	67%	
Median overall survival (years)	5.8	Not reached	.0051
Median recurrence-free survival (years)	Not reached	Not reached	



22. Experience with Over 100 Total Artificial Heart Implants

*Jack G. Copeland, III¹, **Hannah Copeland¹**,
 Monica Gustafson², Nicole Mineburg²,
 Diane Covington², Richard Smith², Mark Friedman²
¹University of California San Diego, San Diego, CA;
²University of Arizona, Tucson, AZ

DISCUSSANT: HARI R. MALLIDI

BACKGROUND: The SynCardia Total Artificial Heart-t (TAH) has been used as a bridge to cardiac transplantation in 900 patients worldwide. Data is accumulating on indications, survival, and complications. We have reviewed our own experience with the TAH-t in order to better understand its use in cases of severe end stage heart failure.

METHODS: Data regarding preoperative condition, mortality, and morbidity from bridge to transplantation with the TAH have been reviewed. Two patient groups, “in protocol” (84) and “out of protocol” (17) were evaluated.

RESULTS: From 1993 to 2010, there were 101 patients with 103 implants, 14 female, 87 male, ages 14–64 years (mean 47.9) including 3 under 18 years old. Patient weights averaged 83 kg, and body surface areas 2.02 sq M. Nine were ≤1.77 sq M. Forty-one were on mechanical ventilation, 26 on mechanical circulatory support, 26 had experienced a recent cardiac arrest, and 4 were on ECMO. Duration of support ranged from 1–637 days, average 70.9 days. Pump outputs were 7–9 liters /min with central venous pressures of <10 mmHg. Survival to transplantation was 74% in the protocol group and 53% in the out of protocol group (72% overall). Most common causes for being out of protocol were: “on VAD” (5), on dialysis (3), and previous heart transplant (2). Causes of death on device support for both groups included multiple organ failure (11), sepsis (3), stroke (2), pulmonary edema (2), and hemorrhage (2). Most deaths were within the first 2 weeks post implantation. Neurologic events included 9 embolic strokes (9%).

CONCLUSIONS: Survival of the entire patient population on TAH-t support was 72%. These patients were not candidates for LVAD therapy and were expected to die. Risks for death and complications are similar to those reported for LVADs. This pump is orthotopic replacing the diseased ventricles thus eliminating risks of native heart retention. It restores cardiac output to above normal, leading to return of renal, hepatic, pulmonary, cerebral, and gastrointestinal function. It thus allows rescue of mortally ill patients, not possible with other devices.

* WISA Member

SATURDAY

WESTERN THORACIC SURGICAL ASSOCIATION

11:10 am – 12:00 pm **C. WALTON LILLEHEI POINT/COUNTERPOINT SESSION**, *Rocky Mountain Ballroom A & B*

Public Reporting Is Harmful and Should Be Abolished

Moderator: David A. Fullerton

Pro: Ross M. Ungerleider

Con: David M. Shahian

12:00 pm – 12:30 pm **ANNUAL BUSINESS MEETING (Members Only)**,
Rocky Mountain Ballroom A & B

12:30 pm – 2:00 pm **FAMILY LUNCHEON**, *Mountain View Terrace*

7:00 pm – 10:00 pm **KIDS & TEENS BANQUET**, *Specs Spot*

7:00 pm – 11:00 pm **PRESIDENT'S RECEPTION AND BANQUET (Main Building)**
(Black Tie Optional)

Reception: Pompeian Room

Banquet: Main Ballroom

The Broadmoor, Colorado Springs, Colorado 37TH ANNUAL MEETING

CONSTITUTION AND BYLAWS

THE WESTERN THORACIC SURGICAL ASSOCIATION

Founded as The Samson Thoracic Surgical Society

CONSTITUTION

ARTICLE I. NAME

The name of this Corporation is The Western Thoracic Surgical Association (hereinafter "the Association").

ARTICLE II. PURPOSES

The purposes of the Association shall be:

To succeed to, and to continue to carry on, the activities formerly conducted by The Samson Thoracic Surgical Society, a corporation.

To associate persons residing in the western United States and Canada who desire to advance the quality and practice of thoracic and cardiovascular surgery as a specialty.

To encourage research and study of thoracic and cardiovascular functions and disorders so as to increase knowledge and improve treatment.

To hold scientific meetings for the presentation and discussion of topics of interest to thoracic and cardiovascular surgeons and to encourage publication to these proceedings.

ARTICLE III. MEMBERSHIP

Section 1.

The membership of this Association shall consist of surgeons whose principal professional activities are devoted to the practice of thoracic and cardiovascular surgery, and who either fulfill the qualifications specified in Section 4 below or both fulfill the qualifications specified in Section 3 below and who are admitted to membership pursuant to the procedure specified in the By-Laws.

Section 2.

There shall be four types of membership: Active, Senior, Honorary and Charter, as defined in the By-Laws.

Section 3.

A candidate for active membership must:

- a. Be a Diplomat of the American Board of Thoracic Surgery of the United States, a Fellow in the Cardiovascular and Thoracic Surgery in the Royal College of Surgeons of Canada, or possess such educational credentials as judged equivalent by the Council.
- b. Reside within or have completed a cardiothoracic residency training program within the geographic limits of the Association, which are the states of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming, and the provinces of Alberta, British Columbia, Manitoba, and Saskatchewan.
- c. Have been engaged in the practice of thoracic and cardiovascular surgery either outside of or within the geographic limits of the Association for at least three years following completion of postgraduate training. If a candidate has completed his/her thoracic surgical residency in an institution within the geographic limits of the Association, such completion may count towards one of the three years of practice as noted above.
- d. Have demonstrated interest in advancing the practice of thoracic and cardiovascular surgery through continuing professional contributions and scientific publications.
- e. Have obtained the sponsorship of members of the Association as provided in the By-Laws.

Section 4.

All members in good standing of The Samson Thoracic Surgical Society in June, 1983 shall become members of the Association.

Section 5.

Charter members. Charter membership in the Association shall be accorded to those members who were charter members in good standing of The Samson Thoracic Surgical Society in June, 1983.

Section 6.

The privilege of continuing membership shall be subject to adherence to the provisions of the Constitution and By-Laws of the Association.

ARTICLE IV. OFFICERS

Section 1.

The officers of the Association shall be a President, a Vice President, a Secretary, a Treasurer, an Editor, and an Historian.

Section 2.

The term of office of the President, Vice President, Secretary and Treasurer shall be one year. The President and Vice President shall not be eligible for re-election. The Secretary and Treasurer shall be eligible for re-election but may serve for no more than four (4) consecutive years. The term of Editor and Historian shall be defined in the By-Laws.

Section 3.

Neither the Secretary nor the Treasurer may serve concurrently as the President.

Section 4.

The Officers shall be elected at the Annual Meeting of the Association in accordance with the procedures set forth in the By-Laws.

ARTICLE V. COUNCIL

Section 1.

The governing body of the Association shall be the Council and its composition shall be as provided in the By-Laws.

ARTICLE VI. MEETINGS

Section 1.

The Association shall hold Annual Business and regular Scientific Meetings, the time and place to be determined by the Council. Only members of the Association may attend the Business Meetings.

Section 2.

Special meetings of the Council or of the members may be called as provided in the By-Laws.

ARTICLE VII. AMENDMENTS

Proposed amendments to the Constitution shall be submitted in writing to the members at least 30 days prior to a regular business meeting at which the proposed amendments shall be presented to the membership. Notice of such proposed amendments shall be mailed to each member at least thirty days prior to the next regular meeting at which the vote shall be taken. An affirmative vote of two-thirds of the members present is required to adopt an amendment to the Constitution.

BY-LAWS

ARTICLE I. APPLICATION FOR ACTIVE MEMBERSHIP

Section 1. Applicant.

- a. An applicant for Active membership shall obtain a sponsor who is a member of the Association and who, attesting to the applicant's professional competence and ethical behavior, shall obtain for him from the Chairman of the Membership Committee the application form and a list of the qualifications for Active membership.
- b. An applicant for Active Membership shall (1) have a full and unrestricted license to practice medicine in his or her respective state or province, and (2) have a current appointment on the surgical staff of a hospital with no reportable action pending which could adversely affect such applicant's staff privileges at any hospital.
- c. Any applicant for Active Membership must possess ethical and moral fitness, as well as professional proficiency, as determined, in part, on the basis of reports from members consulted as references, reports from other references and other information.

Section 2. Candidate.

An applicant shall become a candidate for membership upon receipt by the Chairman of the Membership Committee of a properly executed application form and the written recommendation of three members, including his sponsor, attesting to his professional competence and ethical behavior. The names of all candidates shall be included in the notice of the regular meeting.

Section 3. Election to Membership.

Candidates recommended by the Membership Committee and approved by the Council shall be submitted to a vote at the Annual Business Meeting. Election to Active membership shall require an affirmative vote of the majority of members present.

Section 4. Notice of Election.

Every newly elected member shall be furnished by the Secretary with an official notice of election, accompanied by a copy of the Constitution and By-Laws. A Certificate of Membership signed by the President, the Secretary, and the Chairman of the Membership Committee bearing the Seal of the Association shall be presented to the newly elected members at the first session of the next regular meeting immediately following their election.

Section 5. Candidates Not Elected.

The Secretary shall notify the primary sponsor of candidates not recommended for election and separately notify the candidate.

Section 6. Re-application.

An unsuccessful candidate may reapply for membership by submitting a written request and obtaining new sponsor letters, which may be obtained from the same persons who previously submitted sponsor letters. Re-application shall not be permitted more than two times.

ARTICLE II. MEMBERS

Section 1. Active Members.

- a. **Duties and Rights.** It shall be the duty of each Active member to attend regularly the meetings of the Association, to participate in the Scientific Programs, and to uphold the ideals and objectives of the Association. Each Active member shall be entitled to one vote and may hold any office in the Association.
- b. **Dues.** All Active members shall pay dues. The amount of dues may be changed upon the recommendation of the Council and approval of the majority of the members present at the Annual Business Meeting. Dues shall be payable on April 16th of each year. Members may not attend a meeting unless their dues are current.
- c. **Number of Members.** The number of Active members residing within the geographic limits of the Association shall be limited to two hundred and fifty (250).
- d. **Moving Outside Geographic Limits.** Active members who move outside the geographic limits of the Association may maintain their status and shall not be limited in number. They shall be exempt from the Annual Meeting attendance requirement under Section 1(f) below.
- e. **Delinquency.** The Treasurer shall submit to the Council a list of the members who have failed to pay their dues by March 31st of each year, and notice of such delinquency shall be mailed to each such member at the address recorded in the records of the Association. If the delinquency is not made good within three (3) months of the mailing of such notice, or excused for adequate cause by the Council, the membership of each delinquent member shall be subject to termination pursuant to Section 1(g) following.

- f. **Nonattendance.** The membership of any member who fails to attend three (3) consecutive meetings of the Association, unless such nonattendance is excused by the Council for adequate cause, shall be subject to termination pursuant to Section 1(g) below.
- g. **Termination Procedure.** Any member whose membership has become subject to termination for delinquency or nonattendance shall be given written notice of such prospective termination not less than forty (40) days before the effective date of the termination. Any member who is subject to termination may apply for reconsideration by filing a written request with the Council, addressed to the Secretary, within thirty (30) days following the mailing of notice of such termination, which request shall state the reasons why such membership should not be terminated. If such a request is received within the requisite period, termination will be delayed until after the next Council meeting. If the Council finds the reasons given in the request to be adequate, membership shall not be terminated, conditioned upon payment of any arrears, where applicable. If the Council finds the reasons given in the request not to be adequate, the termination shall become effective on the sixth day after the Council meeting.
- h. **Disability.** A member who becomes disabled may petition the Council for senior membership status and the Council may grant such request for a period of time until the member can return to practice.
- i. **Resignation.** A member may resign from the Association at any time by tendering a resignation in writing and paying in full any dues or obligations owing the Association at the time.

Section 2. Senior Members.

Senior membership shall be obtained by written request and Council approval for members retired from active practice at age 60 or shall be automatic at age 70 provided that continuing active membership without respect to age shall be granted on written request. Senior members shall have the same duties, rights and privileges as active members except that they shall be exempt from dues and meeting attendance requirements and shall not hold office, except the office of the Historian. Their numbers shall not be limited.

Section 3. Honorary Members.

Honorary membership shall be granted to persons deemed suitable by reason of special contributions in the field of thoracic and cardiovascular surgery or professional accomplishments. Such persons need not be certified thoracic

surgeons. Persons deemed suitable as Honorary members may become such when proposed by two members, endorsed by the Membership Committee and the Council, and approved by a majority of the members present at the next meeting. Honorary members shall be exempt from dues and meeting attendance requirements and shall have no rights to vote or hold office except as provided below. The Editor of THE JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY shall be an honorary member of the Association and ex-officio member of the Council without vote.

- a. **Conduct.** A member of the Association shall conduct his relationship with patients, fellow physicians, and the public at large in a manner consistent with the Principles of Medical Ethics of the Society of Thoracic Surgeons, and with the purposes of this Association.
- b. **Discipline.** Upon the recommendation of the Ethics Committee, the Council may take disciplinary action against a member for conduct inconsistent with the provisions of this Section or with the purposes of the Association. Any question concerning the conduct or discipline of a member shall be directed to the Chairman of the Ethics Committee. In the event that the Ethics Committee determines that disciplinary action should be considered in a particular case, the Committee shall submit to the Council a written recommendation of the disciplinary action which the Committee proposes be taken. Such determination by the Ethics Committee shall be made only after the member has been given not less than thirty (30) days written notice of the date, time and place of the Committee's meeting, and of the nature of the complaint regarding the conduct of the member or charges against the member which are considered by the Committee, and informing the member that he may appear in person and/or by a representative and may submit whatever information he deems proper to refute the charges under consideration.

In the event that the Ethics Committee recommends to the Council that disciplinary action be taken against a member, such member shall be given thirty (30) days written notice of the time and place of the Council meeting at which such recommendation is to be considered, and of his right to appear in person or by representative to submit whatever information he deems appropriate to refute the recommendation of the Committee. Disciplinary action may consist of censure, probation, suspension, or expulsion from membership, as deemed appropriate by a majority of the Council following hearing and consideration as

set forth above. No such disciplinary action shall become effective less than five (5) days after the scheduled date of the Council meeting at which the member had the opportunity to refute the Committee's recommendation.

ARTICLE III. OFFICERS

Section 1. Nomination and Election.

Candidates for election as Vice President, Secretary, Treasurer and Councilor-at-Large shall be placed in nomination by the Nominating Committee. Nominations for any of these offices may also be made from the floor. An affirmative vote by the majority of the members present at an Annual Meeting shall be required for election to office. The Vice President, Secretary and Treasurer shall be elected annually, and will hold office from the termination of the meeting at which elected until the termination of the next regular meeting when their successor will be elected. The Vice President shall become the President upon completion of his term as Vice President.

Section 2. Duties of the President.

The President shall be the chief executive officer of the Association and shall have general supervision over the business of the Association, subject to the control of the Council. He shall preside at all meetings and generally shall perform all duties incident to the office of President, together with such other duties as may from time to time be delegated to him by the Council.

Section 3. Duties of the Vice President.

The Vice President shall perform the duties of the President in the absence or inability to act of the President, and such other duties as set forth in these By-Laws or as may from time to time be delegated to him by the Council.

Section 4. Duties of the Secretary.

The Secretary shall certify and maintain the records of the Association, including a copy of the Constitution and By-Laws, together with any amendment thereto, and a record of the names, classifications, and addresses of the members. The Secretary shall keep minutes of the meetings of the Association, shall file all non-financial reports required by law and shall send all notices required by law, by these By-Laws, or by direction of the Council, and shall perform such other duties as may be assigned by the Council.

Section 5. Duties of the Treasurer.

The Treasurer shall receive and have charge of all funds of the Association, subject to the direction of the Council. He shall perform the usual duties incident to the office of the Treasurer, including the collection of dues, the payment of the Association's bills and obligations as approved by the Council, and the preparation, submission to the Council and presentation to the members of an annual financial report, including any that may be required by statute, together with such additional duties as may from time to time be assigned to him by the Council. The financial affairs and the financial statements of the Association shall be audited by an Audit Committee of members, or by an outside auditor as determined from year to year by the Council.

Section 6. Duties of the Editor.

The Editor of THE JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY shall be the Editor of the Association and shall be an ex-officio member without vote of the Program Committee and the Council. The Editor shall be appointed annually by the Council. The Editor shall serve as advisor to the Association on standards for editing and review for publication of manuscripts and proceedings of the Association.

Section 7. Duties of the Historian.

The Historian shall be the Parliamentarian and Historian of the Association and shall act as its public relations and press representative, and perform such other duties as may from time to time be delegated to him by the Council. The Historian shall be appointed annually by the Council.

Section 8. Duties of the Representative to the American College of Surgeons Board of Governors.

The representative to the Board of Governors of the American College of Surgeons shall represent the membership of the Association to the American College of Surgeons' Board of Governors in accordance with the duties of a specialty society Governor. Such Governor shall be appointed by the American College of Surgeons from nominees submitted by the Council of the Association and shall serve on the Council as an ex-officio member without vote.

Section 9. Compensation of Officers.

No Officer of the Association shall receive any compensation for his services, but may be reimbursed for expenses when authorized by the Council.

ARTICLE IV. COUNCIL

Section 1. Composition of the Council.

The Council shall be composed of the President, Vice President, Secretary, Treasurer, Immediate Past President, (3) Councilors-at-Large, up to (2) Councilors/Founders and ex-officio, without vote, the Historian, Editor, and Representative to the Board of Governors of the American College of Surgeons.

Section 2. Councilors-at-Large.

One Councilor-at-Large may be elected at each Annual Business Meeting by majority vote and serve three years.

Section 3. Duties of the Council.

The Council shall exercise all corporate powers, excepting as otherwise provided in the By-Laws. The Council shall appoint the Historian and the Editor, and may in its discretion appoint an Assistant Secretary or Assistant Treasurer.

Section 4. Liability of Councilors.

A Councilor shall have no liability based upon any alleged failure to discharge his obligations as a Councilor, except for any self-dealing transaction prohibited by law.

Section 5. Compensation of the Council.

No Councilor shall receive any compensation for serving as a Councilor of the Association, but may be reimbursed for expenses when authorized by the Council.

Section 6. Council Meetings.

- a. **Regular and Special Meetings.** The Council shall hold regular meetings just before the beginning of the Annual Meeting of members, and shall hold such additional meetings as shall be called from time to time by the President or by any two voting members of the Council.
- b. **Notice.** Meetings of the Council shall be held upon four days' notice by first class mail or 48 hours' notice delivered personally by telephone or telegraph. Notice of regular meetings need not be given if the time and place of such meeting has been set previously by the Council. Notice of a meeting need not be given to any Councilor who signs a waiver of notice or a written consent to holding the meeting or an approval of the minutes thereof, whether before or after the meeting,

who attends the meeting without protesting, prior thereto or at its commencement, the lack of such notice to such Councilor. All such waivers, consents and approvals shall be filed with the corporate records or made a part of the minutes of the meetings.

- c. **Quorum.** The presence of five (5) voting members of the Council shall constitute a quorum for a Council meeting.
- d. **Telephone Conference.** Council members may participate in a meeting through the use of a conference telephone or similar communications equipment, so long as all members participating in such meeting can hear one another. Participation in a meeting pursuant to this section constitutes presence in person at such meeting.
- e. **Manner of Acting.** Every act or decision done or made by a majority of the Councilors present at a meeting duly held at which a quorum is present is an act of the Council. A meeting at which a quorum is initially present may continue to transact business, notwithstanding the withdrawal of Councilors, if any action taken is approved by at least a majority of the required quorum for such meeting.
- f. **Adjournment.** A majority of the Councilors present, whether or not a quorum is present, may adjourn any meeting to another time and place. If the meeting is adjourned for more than 24 hours, notice of such adjournment shall be given prior to the time of the adjourned meeting to the Councilors who were not present at the time of the adjournment.

ARTICLE V. EXECUTIVE DIRECTOR

The Council may appoint an Executive Director, who shall be responsible for the operational management of the affairs of the Association, under the executive direction of the Officers in their respective areas of responsibility. The Executive Director shall be bonded in an amount sufficient to safeguard the financial assets of the Association.

ARTICLE VI. COMMITTEES

Section 1. Standing Committees.

The Standing Committees of the Association shall be:

- a. **Membership.** The Membership Committee shall consist of a Chairman and five members, each to serve for a term of three years provided that the terms are initially arranged such that two members retire each year. The Committee shall formulate and recommend to the Council, rules governing the qualifications and procedure with respect to elections of new members and, when appropriate, a recommendation as to the numerical limitations upon each type of membership. The Committee shall consider all applications for membership and report their recommendations to the Council for review and for presentation to the meetings of the members.
- b. **Program.** The Program Committee shall consist of a Chairman and five members, each to serve for a term of three years, provided that the terms are initially arranged so that two members retire each year. The President, Secretary, and Editor shall also serve as members ex-officio without vote. It shall be the responsibility of the Program Committee to make all arrangements necessary to provide scientific sessions of high quality. The Program Committee shall submit a budget of expenses for the program, and the names of persons to be invited as guest speakers, to the Council for approval before making any final commitments regarding the expenses and guest speakers. The Program Committee shall have the additional responsibility of the initial editorial review of all manuscripts presented at the regular meeting before they are submitted to the Editor.
- c. **Local Arrangements.** The Local Arrangements Committee shall consist of a Chairman and as many members as are deemed appropriate by the Council. The Committee shall serve for a term of one year. The responsibility of the Committee shall be to make the general arrangements for the Annual Meeting and to submit a report and budget for such arrangements to the Council at least thirty days before such Annual Meeting.
- d. **Nominating.** The Nominating Committee shall consist of the five most recent surviving Past Presidents of the Association. The most senior Past President shall serve as Chairman. The Committee shall prepare a slate of nominees to fill any vacancies among the Officers and Council which exist or will occur at the time of the Annual Meeting. The Committee shall submit its proposed slate to the Council before presentation to the members at the Annual Meeting.

- e. **Ethics.** The Ethics Committee shall consist of the three most recent surviving Past Presidents of the Association. The most recent Past President shall serve as Chairman. The Committee shall consider questions of conduct of members and make recommendations to the Council pursuant to Article II, Section 4 of these By-Laws.

Section 2. Appointment.

Appointment to vacant chairmanships or memberships of each Standing Committee, except the Nominating and Ethics Committees, shall be made by the Vice President for the year during which he will be President. The Vice President shall make known to the Nominating Committee and the Council for review and approval his selection of members for the Committee appointments. Vacancies on Committees occurring between regular meetings shall be filled by the President.

Section 3. Special Committees.

The Council from time to time may create such Special Committees and appoint the Chairman and members thereof as it deems appropriate for carrying out the purposes and activities of the Association.

ARTICLE VII. MEETINGS OF MEMBERS

Section 1. Special Meetings.

Special meetings of the members may be called by the President or by 5 percent or more of the members. Any special business meeting of the members called by the President to act on an amendment to the By-Laws shall be approved by the Council.

Section 2. Notice of Meetings.

Notice of each Annual or Special Meeting shall be given appropriately as determined by the President or by the Council to members of record at the close of business on the business day preceding the day on which notice is given, provided that such notice of the Annual Meeting or Special Meeting of the members shall be given to each member by the Secretary in writing at least thirty (30) and not more than ninety (90) days prior to the date thereof.

Section 3. Quorum.

No fewer than fifty (50) member shall constitute a quorum for the transaction of the business of the Association at any meeting. However, if fewer than one-third (1/3) of the members are present at the meeting, the only matters which may be voted upon are those matters as to which proper notice was given.

Section 4. Proposals to the Members.

Proposals concerning the operation or policies of the Association may be brought before meetings of the members upon majority vote of the Council or written request of a majority of the voting members delivered to the Secretary not less than thirty (30) days prior to such meeting. A decision reached at the meeting regarding such a proposal shall be a two-thirds (2/3) vote of the members, assuming a quorum, shall be binding on the Council and the Association.

Section 5. Proxies.

Attendance or voting at a meeting of members by proxy is prohibited and shall be invalid and of no effect.

Section 6. Reports and Papers.

All reports and papers read before the Association at the Annual Meeting shall be deposited with the Secretary at the time of their presentation.

ARTICLE VIII. GENERAL

Section 1. Operation of the Association.

The Association shall operate as set forth in its Articles of Incorporation, Constitution and By-Laws, and its funds, both income and principal, shall be used solely for the purposes therein set forth, no part of the same being available for the benefit of any member or other person, firm or society.

Section 2. Annual Financial Report.

The Treasurer's financial report referred to in Article III, Section 5, shall be considered the Annual Financial Report of the Association and the Council shall have no duty to cause any other financial report to be prepared. The financial report shall be distributed in writing to the members at the Annual Meeting or mailed to the members as the Council determines.

Section 3. Fiscal Year.

The fiscal year of the Association shall be from January 1 through December 31 of the next calendar year.

Section 4. Parliamentary Procedure.

The meetings of the members and Council, excepting as otherwise provided in the By-Laws shall be conducted pursuant to Sturgis Standard Code of Parliamentary Procedure, as set forth in the then current edition of said work.

Section 5. Reserve and Endowment Funds.

The Council may establish a reserve fund and from time to time direct that funds of the Association not required for current operations be transferred to such fund to provide long term financial stability to the Association and to be a means for accumulating funds for future projects. The reserve fund shall be deposited in an insured account or accounts in a savings bank and/or savings and loan association or invested in whole or in part in investments which legally may be made by trustees under the laws of the State of California. The Council may create a Reserve Fund Committee to make recommendations concerning the investment and deposit of the fund. The Council may in its discretion withdraw and use in the current operations of the Association the income of the fund, but withdrawals of principal shall be made only with the approval of the proposed withdrawal and use of the funds by a majority of the Council members present at a meeting.

Section 6. Samson Endowment Fund.

The Council shall establish a Paul C. Samson Endowment Fund to perpetuate the educational activities of the Association and to underwrite in whole or in part the Paul C. Samson Resident Prize Award.

ARTICLE IX. ASSESSMENTS

If in the judgment of the Council special needs of the Association so require, it may propose an assessment of a specified amount to be charged to each member. Notice of such proposal shall be mailed to the members at least thirty (30) days in advance of the meeting at which the vote is to be taken, and shall be effective if approved by two-thirds (2/3) of the members present at such meeting.

ARTICLE X. GUESTS

Section 1. Guests of the Members.

Each member may invite one guest and accompanying person to meetings of the Association. Members shall notify the Secretary in advance of the names of their guests. The Council shall determine the charge to be made for guests and the expenses relating to the guests' attendance shall be the responsibility of the member who has issued the invitation.

Section 2. Guests of the Program Committee.

The Program Committee may invite guests to participate in the scientific programs. Such guests shall be expected to bear the expenses related to their participation and attendance at meetings except as provided in Article X, Section 3.

Section 3. Guest of the Council.

The Council may invite guests to attend the meetings of the Association without charge when deemed appropriate and in the interest of carrying out the purposes of the Association.

Section 4. Participation of Guests.

Guests shall be expected to withdraw when the business of the Association is to be conducted, as an announcement by the President.

ARTICLE XI. INDEMNIFICATION

The Association shall indemnify any person, who is or was a Councilor, officer, employee or other agent of the Association, to the extent allowed by law, so long as such person acted in good faith, in a manner such person believed to be in the best interests of the Association and with such care, including reasonable inquiry, as an ordinary prudent person in a like position would use under similar circumstances.

ARTICLE XII. DISSOLUTION

Section 1. Voting.

The Association shall not be dissolved except by the affirmative vote of two-thirds (2/3) of the members entitled to vote.

Section 2. Conditions.

In the event of dissolution of the Association in any manner and for any cause, after the payment or adequate provision being made for payment of all of its debts, and liabilities, all of the remaining funds and assets of the Association shall be transferred to a nonprofit fund, foundation or corporation which is organized and operated exclusively for educational or scientific purposes related to the purpose of the Association, and which has established its tax exempt status under Section 501 (c) (3) of the Internal Revenue Code and Section 23701 (d) of the Revenue and Taxation Code of California, or equivalent statutes then in effect.

ARTICLE XIII. AMENDMENTS

Proposed amendments to these By-Laws shall be submitted in writing to the members at a business meeting called for that purpose immediately preceding the one at which the vote is taken. An affirmative vote of two-thirds (2/3) of the members present is required to adopt an amendment to the By-Laws.

Revised: June 1999
June 2000
June 2001
June 2007
June 2009
June 2010

GUIDELINES FOR EXPERT WITNESS TESTIMONY

The Western Thoracic Surgical Association joins with other specialty organizations in emphasizing the obligation of objectivity when its members respond to requests to serve as expert witnesses in the judicial system. The perceived need for a guideline outlining policies and standards for expert testimony was recognized by the Council following a report by the Association's Ethics Committee of a complaint against a member. Within the legal system the definition of an "expert" is far less stringent than what the medical profession might acknowledge. In a trial the attorneys introduce the qualifications of their experts and their testimony generally embodies relevant facts, the expert's knowledge and experience, and the expert's best judgment. Attacks on the credibility of an expert witness are termed impeachments and tactics can be employed during cross-examination to question the expert's qualifications. It is this issue that the Association wishes to specifically address, the qualifications of an expert. An expert witness should have current experience and ongoing knowledge about the areas of clinical medicine in which they are testifying as well as familiarity with practices during the time and place of the episode being considered as well as the circumstances surrounding the occurrence. The expert witness should be an impartial practicing physician. He or she must not become an advocate or a partisan in a legal proceeding. Truthfulness is essential and misrepresentation or exaggeration of facts or opinions in an attempt to establish an absolute right or wrong may be harmful both to the individual parties involved and to the profession as a whole. The experts's views must not narrowly reflect applicable standards to the exclusion of the other acceptable choices. The ultimate test for accuracy and impartiality is a willingness to prepare testimony that could be presented unchanged for use by either the plaintiff or the defendant. The solicitation of physicians to serve as expert witnesses by plaintiff's attorneys who offer large fees may result in highly biased and inaccurate testimony. The expert witness should possess excellent special knowledge but be cognizant of the limitations of his competence in his own special field, and recognize the possibility of multiple accepted avenues of therapy. The expert witness gives testimony that educates the court and the jury rather than obfuscates and distorts for personal gain.

NECROLOGY

Robert M. Anderson, M.D., Tucson, Arizona

Richard S. Hahn, M.D., Belvedere, California

John A. Hawkins, M.D., Salt Lake City, Utah

Don R. Miller, M.D., Lawrence, Kansas

Charles M. Parrish, M.D., Salt Lake City, Utah

WESTERN THORACIC SURGICAL ASSOCIATION

PAST PRESIDENTS



David J. Dugan
1974-1977



Bertrand V. Meyer
1980-1981



John C. Callaghan
1984-1985



Quentin R. Stiles
1988-1989



John E. Connolly
1977-1978



Paul A. Ebert
1981-1982



Richard M. Peters
1985-1986



John R. Benfield
1989-1990



Norman E. Shumway
1978-1979



Robert W. Jamplis
1982-1983



Ivan A. May
1986-1987



Richard P. Anderson
1989-1991



Harold V. Liddle
1979-1980



Arthur N. Thomas
1983-1984



Lucius D. Hill
1987-1988



Richard G. Fosburg
1991-1992

The Broadmoor, Colorado Springs, Colorado

37TH ANNUAL MEETING



James B.D. Mark
1992-1993



Daniel J. Ulyot
1996-1997



David R. Clarke
2000-2001



Steven W. Guyton
2004-2005



Marvin Pomerantz
1993-1994



Winfield J. Wells
1997-1998



Donald B. Doty
2001-2002



R. Scott Mitchell
2005-2006



D. Craig Miller
1994-1995



Kent W. Jones
1998-1999



Edward D. Verrier
2002-2003



Elliot T. Gelfand
2006-2007



Richard G. Sanderson
1995-1996



Bradley J. Harlan
1999-2000



Vaughn A. Starnes
2003-2004



Douglas E. Wood
2007-2008

ROSTER



David A. Fullerton
2008-2009



J. Scott Millikan
2009-2010

THE SAMSON ENDOWMENT/SAMSON WTSA FUND



In 1984, on the tenth anniversary of its founding, the Samson Thoracic Surgical Society changed its name to the Western Thoracic Surgical Association in order to better describe its scope and to gain professional recognition as the major surgical specialty organization it had become. Thereafter, the Council sought a means to perpetuate the name of Paul C. Samson, the patron and inspiration of the society during its early years. Mindful of Paul's legendary warmth and generosity to young surgeons and his lifelong dedication to both graduate and postgraduate surgical education, it was decided to link his name with the activities of the Association that pertained to these interests and in 1985 the Samson Endowment Fund was created.

The Fund is managed as an endowment and the interest accruing to the principal is used exclusively for specific educational purposes. One such purpose is the funding of the Samson Resident Prize Essay which each year brings to the scientific program the best work of residents from thoracic surgical education programs throughout North America and from abroad.

The Samson Endowment Fund has reached its goal and has now been capped. A new, unrestricted Samson WTSA Fund has been opened, the purpose of which is to help the WTSA achieve its ongoing mission of: associating persons who desire to advance the quality and practice of thoracic and cardiovascular surgery as a specialty; encouraging research and study of thoracic and cardiovascular functions and disorders so as to increase knowledge and improve treatment; and holding scientific meetings for the presentation and discussion of topics of interest to thoracic and cardiovascular surgeons and to encourage publication to these proceedings. It is suggested that each member make a contribution of \$500 to the Samson Endowment and WTSA Funds. This may be viewed as a lifetime obligation to be discharged in any manner over any time period the Member chooses. Previous contributions to the now capped Samson Endowment Fund are totaled with any new donations to the Samson WTSA Fund when calculating whether a member has fulfilled his/her suggested lifetime contribution of \$500. Contribution is entirely voluntary and failure to contribute is not penalized or singled out in any way. A line item for optional contribution is included on the annual dues statement only as a reminder.

DAVID J. DUGAN DISTINGUISHED SERVICE AWARD



The David J. Dugan Distinguished Service Award of the Western Thoracic Surgical Association is presented to members of the Association in recognition of distinguished achievement and outstanding contributions to the field of thoracic surgery in the areas of science or leadership over a sustained period of time. Nominations for this award are made by the Nominating Committee and are presented to the Council for consideration & approval.

- 1994 **George E. Miller, Jr**
Pebble Beach, California
- 1997 **Edward A. Smeloff**
Sacramento, California
- 1999 **Jack M. Matloff**
Los Angeles, California
- 2002 **Albert Starr**
Portland, Oregon
- 2004 **Leonard L. Bailey**
Loma Linda, California
- 2005 **Bruce A. Reitz**
Stanford, California
- 2007 **W. Gerald Rainer**
Denver, Colorado
- 2009 **Richard P. Anderson**
Seattle, Washington
- 2010 **John A. Hawkins**
Salt Lake City, Utah

DONALD B. DOTY EDUCATIONAL AWARD



The Donald B. Doty Educational Award is a \$10,000 educational grant with a twofold purpose: 1) to foster innovative educational initiatives in cardiothoracic surgery by WTSA members, and 2) to provide an opportunity for the dissemination of this information to other training centers and academic institutions.

- 2005 **LDS Hospital**
Salt Lake City
- 2006 **James I. Fann**
Stanford, CA
- 2007 **Gordon A. Cohen**
Seattle, WA
- 2008 **John D. Mitchell**
Aurora, CO
- 2009 **Robbin G. Cohen**
Los Angeles, CA
- 2010 **Michael S. Mulligan**
Seattle, WA

PAST MEETING HIGHLIGHTS

1975 The Santa Barbara Biltmore Hotel, Santa Barbara, California

- President David J. Dugan
Oakland, California
- Secretary Arthur N. Thomas
San Francisco, California
- Local Arrangements Chairman John F. Higginson
Santa Barbara, California
- Samson Resident Prize Essay Award William R. Brody
Bethesda, Maryland

1976 The Banff Springs Hotel, Banff, Alberta, Canada

- President David J. Dugan
Oakland, California
- Secretary Arthur N. Thomas
San Francisco, California
- Local Arrangements Chairman John C. Callaghan
Edmonton, Alberta, Canada
- Samson Resident Prize Essay Award Joe W. Ramsdell
San Diego, California

1977 The Broadmoor Hotel, Colorado Springs, Colorado

- President David J. Dugan
Oakland, California
- Secretary Arthur N. Thomas
San Francisco, California
- Local Arrangements Chairman Richard G. Sanderson
Tucson, Arizona
- Samson Resident Prize Essay Award J. Nilas Young
Oakland, California

1978 Hotel Del Coronado, Coronado, California

- President John E. Connolly
Irvine, California
- Secretary Arthur N. Thomas
San Francisco, California
- Local Arrangements Chairman Richard G. Fosburg
San Diego, California
- Samson Resident Prize Essay Award James M. Wilson
San Francisco, California

PAST MEETING HIGHLIGHTS

1979 Sun Valley Lodge, Sun Valley, Idaho

President Norman E. Shumway
Stanford, California

Secretary Arthur N. Thomas
San Francisco, California

Local Arrangements Chairman Harold V. Liddle
Salt Lake City, Utah

Samson Resident Prize Essay Award Thomas H. Hoffmann
San Antonio, Texas

1980 Tamarron Lodge, Durango, Colorado

President Harold V. Liddle
Salt Lake City, Utah

Secretary Arthur N. Thomas
San Francisco, California

Local Arrangements Chairman W. Gerald Rainer
Denver, Colorado

Samson Resident Prize Essay Award Robert H. Breyer
Chicago, Illinois

1981 Hyatt Regency Hotel, Maui, Hawaii

President Bertrand W. Meyer
Los Angeles, California

Secretary Lucius D. Hill
Seattle, Washington

Local Arrangements Chairman Quentin R. Stiles
Los Angeles, California

Samson Resident Prize Essay Award Clifford M. Kitten
San Antonio, Texas

1982 Hotel del Coronado, Coronado, California

President Paul A. Ebert
San Francisco, California

Secretary Lucius D. Hill
Seattle, Washington

Local Arrangements Chairman Richard G. Fosburg
La Jolla, California

Samson Resident Prize Essay Award Douglas A. Murphy
Atlanta, Georgia

PAST MEETING HIGHLIGHTS

1983 The Broadmoor, Colorado Springs, Colorado

President Robert W. Jamplis
Palo Alto, California

Secretary Lucius D. Hill
Seattle, Washington

Local Arrangements Co-Chairmen James B.D. Mark
Stanford, California
 W. Gerald Rainer
Denver, Colorado

Samson Resident Prize Essay Award Michael L. Dewar
Montreal, Quebec, Canada

1984 Hyatt Regency Hotel, Maui, Hawaii

President Arthur N. Thomas
San Francisco, California

Secretary Lucius D. Hill
Seattle, Washington

Local Arrangements Chairman David J. Dugan
Oakland, California

Samson Resident Prize Essay Award Keith D. Dawkins
Stanford, California

1985 Hyatt Lake Tahoe, Incline Village, Nevada

President John C. Callaghan
Edmonton, Alberta, Canada

Secretary Lucius D. Hill
Seattle, Washington

Local Arrangements Chairman Edward A. Smeloff
Sacramento, California

Samson Resident Prize Essay Award George T. Christakis
Toronto, Ontario, Canada

1986 Silverado Country Club, Napa, California

President Richard M. Peters
San Diego, California

Secretary Richard G. Fosburg
Del Mar, California

Local Arrangements Chairman John R. Benfield
Duarte, California

Samson Resident Prize Essay Award David E. Hansen
Stanford, California

PAST MEETING HIGHLIGHTS

1987 The Broadmoor, Colorado Springs, Colorado

President Ivan A. May
Oakland, California

Secretary Richard G. Fosburg
Del Mar, California

Local Arrangements Chairman Leigh I.G. Iverson
Oakland, California

Samson Resident Prize Essay Award Louis A. Brunsting
Durham, North Carolina

1988 Royal Waikoloa, Waikoloa, Hawaii

President Lucius D.Hill
Seattle, Washington

Secretary Richard G. Fosburg
Del Mar, California

Local Arrangements Chairman Richard P. Anderson
Seattle, Washington

Samson Resident Prize Essay Award George E. Sarris
Stanford, California

1989 Hyatt Regency Resort, Monterey, California

President Quentin R. Stiles
Los Angeles, California

Secretary Richard G. Fosburg
Del Mar, California

Local Arrangements Co-Chairmen Richard L. Murtland
Monterey, California
Winfield J. Wells
Los Angeles, California

Samson Resident Prize Essay Award Michael A. Breda
Los Angeles, California

1990 Hotel Del Coronado, San Diego, California

President John R. Benfield
Sacramento, California

Secretary D. Craig Miller
Stanford, California

Local Arrangements Chairman Richard G. Fosburg
La Jolla, California

Samson Resident Prize Essay Award David Fullerton
Denver, Colorado

PAST MEETING HIGHLIGHTS

1991 Westin Hotel, Seattle, Washington

President Richard P. Anderson
Seattle, Washington

Secretary D. Craig Miller
Stanford, California

Local Arrangements Chairman Philip C. Jolly
Seattle, Washington

Samson Resident Prize Essay Award John S. Pirola
St. Louis, Missouri

1992 Hyatt Regency Hotel, Kauai, Hawaii

President Richard G. Fosburg
La Jolla, California

Secretary D. Craig Miller
Stanford, California

Local Arrangements Co-Chairmen Edward L. Hurley
Sacramento, California
Philip W. Wright
Honolulu, Hawaii

Samson Resident Prize Essay Award Luis J. Castro
Stanford, California

1993 La Costa Resort, Carlsbad, California

President James B. D. Mark
Stanford, California

Secretary D. Craig Miller
Stanford, California

Local Arrangements Chairman Walter B. Cannon
Palo Alto, California

Samson Resident Prize Essay Award Paul J. Pearson
Rochester, Minnesota

1994 Resort at Squaw Creek, Olympic Valley, California

President Marvin Pomerantz
Denver, Colorado

Secretary Kent W. Jones
Salt Lake City, Utah

Local Arrangements Chairman Daniel L. Smith
Denver, Colorado

Samson Resident Prize Essay Award Barbara L. Robinson
Rochester, Minnesota

PAST MEETING HIGHLIGHTS**1995 The Coeur d'Alene Resort, Coeur d'Alene, Idaho**

President	D. Craig Miller <i>Stanford, California</i>
Secretary	Kent W. Jones <i>Salt Lake City, Utah</i>
Local Arrangements Chairman	Ronald P. Grunwald <i>Spokane, Washington</i>
Samson Resident Prize Essay Award	Michael J. Moulton <i>St. Louis, Missouri</i>

1996 The Grand Wailea Resort, Wailea, Maui, Hawaii

President	Richard G. Sanderson <i>Tucson, Arizona</i>
Secretary	Kent W. Jones <i>Salt Lake City, Utah</i>
Local Arrangements Chairman	Edward A. Smeloff <i>Sacramento, California</i>
Samson Resident Prize Essay Award	Daniel S. Schwartz <i>New York, New York</i>

1997 The Silverado Country Club & Resort, Napa, California

President	Daniel J. Ulyot <i>Burlingame, California</i>
Secretary	Kent W. Jones <i>Salt Lake City, Utah</i>
Local Arrangements Chairman	Michael K. Wood <i>Hillsborough, California</i>
Samson Resident Prize Essay Award	Edward M. Boyle, Jr. <i>Seattle, Washington</i>

1998 The Chateau Whistler Resort, Whistler, B.C., Canada

President	Winfield J. Wells <i>Los Angeles, California</i>
Secretary	Vaughn A. Starnes <i>Los Angeles, California</i>
Local Arrangements Co-Chair	W.R. Eric Jamieson <i>Vancouver, B.C., Canada</i>
	Patricia A. Penkoske <i>Edmonton, Alberta, Canada</i>
Samson Resident Prize Essay Award	Vivek Rao <i>Toronto, Ontario, Canada</i>

PAST MEETING HIGHLIGHTS**1999 The Resort at Squaw Creek, Olympic Valley, California**

President	Kent W. Jones <i>Salt Lake City, Utah</i>
Secretary	Vaughn A. Starnes <i>Los Angeles, California</i>
Local Arrangements Chairman	J. Edward Okies <i>Portland, Oregon</i>
Samson Resident Prize Essay Award	Leonard Y. Lee <i>New York, New York</i>

2000 The Orchid at Mauna Lani, The Big Island, Hawaii

President	Bradley J. Harlan <i>Sacramento, California</i>
Secretary	Vaughn A. Starnes <i>Los Angeles, California</i>
Local Arrangements Co-Chairs	Paul B. Kelly and Linda M. Kelly <i>Fair Oaks, California</i>
Samson Resident Prize Essay Award	Murray H. Kown <i>Stanford, California</i>

2001 Rancho Bernardo Inn, San Diego, California

President	David R. Clarke <i>Denver, Colorado</i>
Secretary	Vaughn A. Starnes <i>Los Angeles, California</i>
Local Arrangements Co-Chairs	Myles S. Guber and Debbie Bishop <i>Denver, Colorado</i>
Samson Resident Prize Essay Award	Baiya Krishnadasan <i>Seattle, Washington</i>

2002 Big Sky Resort, Big Sky, Montana

President	Donald B. Doty <i>Salt Lake City, Utah</i>
Secretary	R. Scott Mitchell <i>Stanford, California</i>
Local Arrangements Chairman	John A. Hawkins <i>Salt Lake City, Utah</i>
Samson Resident Prize Essay Award	Susan D. Moffatt-Bruce <i>Stanford, California</i>

PAST MEETING HIGHLIGHTS

2003 La Costa Resort, Carlsbad, California

President Edward D. Verrier
Seattle, Washington

Secretary R. Scott Mitchell
Stanford, California

Local Arrangements Chairman Douglas E. Wood
Seattle, Washington

Samson Resident Prize Essay Award Albert J. Chong
Seattle, Washington

2004 Wailea Marriott, Wailea, Maui, Hawaii

President Vaughn A. Starnes
Los Angeles, California

Secretary R. Scott Mitchell
Stanford, California

Local Arrangements Chairman Winfield J. Wells
Los Angeles, California

Samson Resident Prize Essay Award Frederick A. Tibayan
Stanford, California

2005 Fairmont Empress Hotel, Victoria, BC, Canada

President Steven W. Guyton
Seattle, Washington

Secretary John A. Hawkins
Salt Lake City, Utah

Local Arrangements Chairman W. R. Eric Jamieson
Vancouver, BC, Canada

Samson Resident Prize Essay Award Matthew G. Whitten
Salt Lake City, Utah

Donald B. Doty Award LDS Hospital
Salt Lake City, Utah

2006 Sun Valley Resort, Sun Valley, Idaho

President R. Scott Mitchell
Stanford, California

Secretary John A. Hawkins
Salt Lake City, Utah

Local Arrangements Chairman Thomas A. Burdon
Stanford, California

Samson Resident Prize Essay Award T. Brett Reece
Charlottesville, VA

Donald B. Doty Award James I. Fann
Stanford, California

Norman E. Shumway Award John A. Hawkins
Salt Lake City, Utah

PAST MEETING HIGHLIGHTS

2007 Hyatt Regency Tamaya Resort & Spa, Santa Ana Pueblo, New Mexico

President Elliot T. Gelfand
Edmonton, AB, Canada

Secretary John A. Hawkins
Salt Lake City, Utah

Local Arrangements Chairman Jorge A. Wernly
Albuquerque, New Mexico

Samson Resident Prize Essay Award Jayan Nagendran
Edmonton, Canada

Donald B. Doty Award Gordon A. Cohen
Seattle, Washington

Norman E. Shumway Award Michael J. Weyant
Aurora, Colorado

2008 Sheraton Keauhou Bay Resort and Spa, Kona, Hawaii

President Douglas E. Wood
Seattle, Washington

Secretary John A. Hawkins
Salt Lake City, Utah

Local Arrangements Chairman Michael S. Mulligan
Seattle, Washington

Samson Resident Prize Essay Award John Keech
Seattle, Washington

Donald B. Doty Award John D. Mitchell
Denver, Colorado

Norman E. Shumway Award Joseph S. Carey
Torrance, California

2009 The Fairmont Banff Springs, Banff, Canada

President David A. Fullerton
Aurora, Colorado

Secretary Thomas A. Burdon
Palo Alto, California

Local Arrangements Chairman Michael J. Weyant
Aurora, Colorado

Samson Resident Prize Essay Award David C. Mauchley
Denver, Colorado

Donald B. Doty Award Robbin G. Cohen
Los Angeles, California

Norman E. Shumway Award Anthony D. Caffarelli
Stanford, California

WESTERN THORACIC SURGICAL ASSOCIATION

2010 Ojai Valley Inn, Ojai, California

President	J. Scott Millikan <i>Billings, Montana</i>
Secretary	Thomas A. Burdon <i>Palo Alto, California</i>
Local Arrangements Co-Chairs	Dominic and Carolyn Tedesco <i>Ventura, California</i>
Samson Resident Prize Essay Award	Phillip D. Smith <i>Aurora, Colorado</i>
Donald B. Doty Award	Michael S. Mulligan <i>Seattle, Washington</i>
Norman E. Shumway Award	Phillip D. Smith <i>Aurora, Colorado</i>

POSTGRADUATE COURSES AND SPEAKERS

- 1979 Management of the (Re-Do) Coronary Artery Patient**
Edward B. Stinson, MD, Stanford, CA
- The Infected Artificial Heart Valve**
Edward J. Hurley, MD, Sacramento, CA
- Changing Concepts in the Interpretation of Ventricular Filling Pressures**
Gregory A. Misbach, MD, San Francisco, CA
- Are Randomized Trials Possible for Devices or Surgical Procedures**
Lawrence I. Bonchek, MD, Milwaukee, WI
- 1980 Preoperative Assessment of the Patient with Marginal Pulmonary Function**
Richard M. Peters, MD, San Diego, CA
- Airway Management**
G. Hugh Lawrence, MD, Portland, OR
- Postoperative Care of the Patient With Marginal Pulmonary Function**
Alan Hilgenberg, MD, Denver, CO
- 1981 Historical Perspective**
John C. Callaghan, MD, Edmonton, Alberta, Canada
- Dysoxia of Cells**
Eugene Robin, MD, Palo Alto, CA
- Crystalloid Solution for Myocardial Protection**
R. Leighton Fisk, MD, Phoenix, AZ
- Blood Cardioplegia for Myocardial Protection**
Gerald D. Buckberg, MD, Los Angeles, CA
- Before and After – Myocardial Preservation**
Shahbudin Rahimtoola, MD, Los Angeles, CA
- 1982 Current Diagnostics and Drug Therapy For Thoracic Infections**
Arnold Weinberg, MD, Boston, MA
- Surgical Therapy of Pleural Space Infections**
G. Hugh Lawrence, MD, Portland, OR
- Post-Operative Mediastinal Wound Infections**
E.A. Rittenhouse, MD, Seattle, WA
- Current Therapy of Esophageal Perforations**
Arthur N. Thomas, MD, San Francisco, CA

POSTGRADUATE COURSES AND SPEAKERS

- 1983 The Thymus: Master Gland of the Immune System**
Robert A. Good, MD, PhD, New York, NY
- The Mediastinal Imaging Techniques**
James B.D. Mark, MD, Stanford, CA
- Surgical Approaches to the Mediastinum**
Philip C. Jolly, MD, Seattle, WA
- Surgical Oncology of Mediastinal Tumors**
John R. Benfield, MD, Los Angeles, CA
- 1984 The Surgical Management of Aortic Dissection**
Paul A. Ebert, MD, San Francisco, CA
- Routine Use of the Internal Mammary Artery Conduit for Coronary Bypass: Late Clinical and Angiographic Follow-Up Studies**
U. Scott Page, MD, Portland, OR
- Cardiac Trauma**
F. William Blaisdell, MD, Sacramento, CA
- Physiologic Principles of Coronary Blood Flow as Applied to the Cardiac Surgical Patient**
Julien J.E. Hoffman, MD, San Francisco, CA
- 1985 Cardiac Support Devices**
J. Donald Hill, MD, San Francisco, CA
- Cardiac Transplantation – Present Status and Future Prospects**
Jack G. Copeland, III, MD, Tucson, AZ
- Will the Real Cass Study Stand up?**
Richard P. Anderson, MD, Seattle, WA
- 1986 Cell Membranes – Implications on Cancer Control**
Jonathan Singer, MD, San Diego, CA
- Pathophysiology of Left Ventricular Dysfunction in a Surgical Perspective**
Kirk Peterson, MD, San Diego, CA
- 1987 Anti-Platelet Therapy – Practical Clinical Strategies for Bypass Graft Patients**
Laurence A. Harker, MD, La Jolla, CA
- Platelets, Vasospasm, and Aspirin – Thoughts on the Pathogenesis and Prevention of Arteriosclerosis**
Laurence A. Harker, MD, La Jolla, CA

POSTGRADUATE COURSES AND SPEAKERS

- 1988 Single Lung Transplantation**
F. Griffith Pearson, MD, Toronto, Ontario, Canada
- 1989 Challenges of the Heights: Limits For Survival**
Michael Wiedman, MD, Boston, MA
- The Western Thoracic Surgical Association Multi-Institutional Study of Results In Cardiac Surgery**
Forrest L. Junod, MD, Sacramento, CA
Daniel J. Ulyot, MD, San Francisco, CA
- 1990 Cellular and Molecular Biology of Lung Cancer: Clinical Implications**
Martin F. McKneally, MD, Albany, NY
John D. Minna, MD, Bethesda, MD
- 1991 Modern Statistical Analysis of Surgical Risks and Outcomes**
Gary L. Grunkemeier, PhD, Portland, OR
Eugene Blackstone, MD, Birmingham, AL
- 1992 Growth Factors in the Injury Response: Developing Strategies To Promote (And Prevent) Cell Growth**
Andrew Baird, MD, PhD, La Jolla, CA
Alain Carpentier, MD, Paris, France
- 1993 Doing Better, Feeling Worse**
Donald Kennedy, PhD, Stanford, CA
- 1994 Esophageal Carcinoma from Molecular Biology to Esophagectomy**
Mark Orringer, MD, Ann Arbor, MI
David Beer, PhD, Ann Arbor, MI
- 1995 Molecular Genetics of the Marfan Syndrome and Related Connective Tissue Disorders**
Hal Dietz, MD, PhD, Baltimore, MD
- Practical Update on Biostatistics for Cardiothoracic Surgeons**
Gary Grunkemeier, PhD, Portland, OR
- 1996 Regulation of Intimal Thickening and Luminal Narrowing After Vascular Reconstruction: Molecular Mechanisms and Pharmacological Control**
Alexander W. Clowes, MD, Seattle, WA

POSTGRADUATE COURSES AND SPEAKERS

- 1997 What is Wrong with the Failing Heart**
William W. Parmley, MD, San Francisco, CA
- 1998 The Surgical Treatment of End-Stage Heart Disease by Transplants and Mechanical Devices: Outcomes and Costs**
Keith Reemtsma, MD, New York, New York
- 1999 The Surgical Profession at the Turn of the Century: Challenges and Opportunities**
Samuel A. Wells, Jr., MD, Chicago, Illinois
- 2000 The Current Status of Therapy for Thoracic Aneurysms**
Denton A. Cooley, MD, Houston, Texas
- 2001 Thinking Beyond the Third Dimension**
Marc R. DeLeval, MD, FRCS, London, England
- 2002 Advances in Aortic Surgery**
Nicholas T. Kouchoukos, MD, FACS, St. Louis, Missouri
- Advances in Congenital Heart Disease Surgery**
Frank L. Hanley, MD, San Francisco, California
- Advances in Cardiac Valve Surgery**
Robert Karp, MD, Snowmass, Colorado
- 2003 Cell Transplantation to Prevent Heart Failure**
Richard D. Weisel, MD, Toronto, Ontario Canada
- 2004 Where, When and How it all Started**
Norman E. Shumway, MD, Stanford California
- 2005 Progress Toward A Tissue Engineered Heart Valve**
John E. Mayer, Jr., MD, Boston, MA
- 2006 Stem Cell Research**
Irving Weissman, MD, Stanford, CA
- 2007 Frontiers in Disease Phenotyping: The Example of Organ Transplantation**
Philip F. Halloran, MD, Edmonton, AB, Canada
- 2008 Allogeneic Stem Cell Transplantation for Malignant and Nonmalignant Hematologic Disorders**
Rainer F. Storb, MD, Seattle, Washington

- 2009 Cardiac Surgery and Translational Research—A Critical Partnership in Critical Condition**
Francis G. Spinale, MD, Charleston, South Carolina
- 2010 The Emerging Science of Healthcare Delivery**
Nicholas Wolter, MD, Billings, Montana

TSFRE is your Foundation for Research and Education. . .

Unlike other organizations to which you make philanthropic contributions, the Thoracic Surgery Foundation for Research and Education (TSFRE) works directly for your specialty. TSFRE supports research and education initiatives to increase knowledge and enhance treatment of patients with cardiothoracic diseases; develops the skills of cardiothoracic surgeons as surgeon-scientists and health policy leaders; and, strengthens society's understanding and trust in the profession.

TSFRE is making a difference in cardiothoracic surgery. This is possible only because of your support. TSFRE is entirely supported through private donations.

If you have not yet made your annual gift to TSFRE, now is the time! If you make an annual gift of appreciated stocks, bonds or mutual funds, you avoid capital gains tax and earn an income tax deduction by donating rather than selling these assets. This may be better for you than a gift of cash.

If you have been thinking of making a charitable contribution to TSFRE, this may be the time to consider a planned gift. Often, this type of giving enables an individual to give a larger gift at a cost that is actually lower than if the gift were to be made outright. You may also find that planned giving enables you to meet other personal financial goals while making significant charitable gifts.

You may give to TSFRE through a revocable instrument, such as a bequest in your will, or through an irrevocable instrument like a charitable lead trust or a charitable remainder trust. You may also give through a life insurance policy or your retirement plan.

For more information about your annual gift or a deferred gift, contact the Thoracic Surgery Foundation for Research and Education at 900 Cummings Center, Suite 221-U, Beverly, Massachusetts, 01915.

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Thoralf M. Sundt, MD, Chair, Education Committee

Donna S. Gurnett
Executive Director
900 Cummings Center, Suite 221-U
Beverly, MA 01915
978-927-8330
Fax 978-524-0461
dgurnett@prri.com

2011 TSFRE RESEARCH AWARD RECIPIENTS

TSFRE RESEARCH FELLOWSHIPS provide support of up to \$35,000 a year for up to 2 years for surgical residents who have not yet completed cardiothoracic surgical training.

Antonio D. Lassaletta, MD, Alpert Medical School, Brown University
“Improving Myocardial Perfusion in a Diabetic Swine Model of Chronic Cardiac Ischemia”

Smita Sihag, MD, Massachusetts General Hospital
“Gene Expression Signatures and Mechanistic Pathways of Tolerance and Rejection in Orthotopic Swine Lung Allografts ”

TSFRE RESEARCH GRANTS provide operational support of original research efforts by cardiothoracic surgeons who have completed their formal training, and who are seeking initial support and recognition for their research program. Awards of up to \$40,000 a year for up to 2 years are made each year to support the work of an early-career cardiothoracic surgeon (within 5 years of first faculty appointment).

Jules Lin, MD, University of Michigan
“The Role of Dkk-3 Overexpression in the Invasion and Metastasis of Esophageal Adenocarcinoma as a Downstream Mediator of the TGF-beta Pathway”

2011 EDUCATION AWARD RECIPIENTS

SIMULATION IN THORACIC SURGERY EDUCATION GRANTS

Provides grants to support the demonstration study for the application of simulation in thoracic surgery education.

Michael Argenziano, MD, Columbia University College of Physicians and Surgeons
“Coronary Anastomosis Simulation: A New Paradigm in Surgical Education?”

Thomas Bilfinger, MD, Stony Brook University School of Medicine
“Cardiothoracic Surgical Simulation: Identifying Achievable Benchmark Comparisons (ABCs) for Surgical Education Programs”

John S. Ikonomidis, MD, Medical University of South Carolina
“Multi-Disciplinary Simulation and Training in Cardiac Surgical Crisis Management”

FACULTY DISCLOSURE/CONFLICT OF INTEREST STATEMENT

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For further information on the Accreditation Council for Continuing Medical Education (ACCME) Standards of Commercial Support, please visit www.accme.org.

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SCHEDULE OF EVENTS

WEDNESDAY, June 22, 2011

8:00 a.m. – 1:00 p.m.	Council Meeting	Gaylord Boardroom
1:00 p.m. – 6:00 p.m.	Registration	West Registration Desk in Lobby
1:00 p.m. – 6:00 p.m.	Speaker Ready	Freymuth Room
7:00 p.m. – 9:00 p.m.	New Members/Welcome Reception	Lakeside Pool
7:00 p.m. – 9:00 p.m.	Kids & Teens Reception (<i>Ages 3 – 18</i>)	Kids Playground and Lawn (Lakeside Pool Area)

THURSDAY, June 23, 2011

6:00 a.m.	Samson Fun Run	Golf Clubhouse Start
7:00 a.m. – 8:00 a.m.	Continental Breakfast	Rocky Mountain C & D
7:00 a.m. – 11:00 a.m.	Family Hospitality	Will Rogers Room & Patio
7:00 a.m. – 12:00 p.m.	Registration	Rocky Mountain Foyer
7:00 a.m. – 12:00 p.m.	Exhibits	Rocky Mountain C & D
7:00 a.m. – 12:00 p.m.	Speaker Ready Room	Freymuth Room
7:00 a.m. – 2:00 p.m.	Simulation & Robotics Area	Rocky Mountain C & D
8:00 a.m. – 9:00 a.m.	Scientific Session I	Rocky Mountain A & B
9:00 a.m. – 9:10 a.m.	New Member & Samson Prize Finalists Introductions	Rocky Mountain A & B
9:10 a.m. – 9:55 a.m.	Presidential Address	Rocky Mountain A & B
9:55 a.m. – 10:20 a.m.	Coffee Break, Visit Exhibits & Posters	Rocky Mountain C & D
10:20 a.m. – 11:40 a.m.	Scientific Session II	Rocky Mountain A & B
11:40 a.m. – 12:30 p.m.	Controversies in Thoracic Surgery	Rocky Mountain A & B
12:45 p.m. – 4:15 p.m.	Foothills Jeep Tour*	Transportation to Depart From
2:30 p.m. – 4:30 p.m.	US Olympic Training Center Tour*	West Building Entrance of Hotel
6:30 p.m. – 10:00 p.m.	<i>Go for the Gold</i> Theme Dinner	Cheyenne Lodge

FRIDAY, June 24, 2011

6:00 a.m. – 12:00 p.m.	Registration	Rocky Mountain Foyer
6:00 a.m. – 12:00 p.m.	Speaker Ready Room	Freymuth Room
6:30 a.m. – 7:50 a.m.	Simultaneous Breakfast Sessions*	
	A) Improving Your Reimbursement	West Ballroom A
	B) Working for Someone Else: What You Should Know About Contracting and Compensation	West Ballroom B
	C) Managing Conflict and Giving (Receiving)	
	Feedback: A Leadership Challenge	West Ballroom D
7:00 a.m. – 11:00 a.m.	Family Hospitality	Will Rogers Room & Patio
7:00 a.m. – 2:00 p.m.	Simulation & Robotics Area	Rocky Mountain C & D
7:30 a.m. – 8:00 a.m.	Continental Breakfast	Rocky Mountain C & D
7:30 a.m. – 12:00 p.m.	Exhibits	Rocky Mountain C & D
8:00 a.m. – 8:50 a.m.	Postgraduate Course	Rocky Mountain A & B
8:50 a.m. – 10:30 a.m.	Scientific Session III	Rocky Mountain A & B
10:30 a.m. – 11:00 a.m.	Coffee Break, Visit Exhibits & Posters	Rocky Mountain C & D
11:00 a.m. – 12:00 p.m.	Scientific Session IV	Rocky Mountain A & B
1:00 p.m. – 6:00 p.m.	Golf Tournament*	Broadmoor Mountain Course
1:30 p.m. – 5:00 p.m.	Tennis Tournament*	Broadmoor Clay Tennis Courts
	Free Evening	

SATURDAY, June 25, 2011

6:00 a.m. – 11:30 a.m.	Speaker Ready Room	Freymuth Room
6:00 a.m. – 12:00 p.m.	Registration	Rocky Mountain Foyer
6:30 a.m. – 7:30 a.m.	Continental Breakfast	Rocky Mountain C & D
6:30 a.m. – 10:30 a.m.	Exhibits and Simulation & Robotics Area	Rocky Mountain C & D
7:00 a.m. – 8:15 a.m.	Concurrent Forums	
	A) Adult Cardiac Session	Rocky Mountain A & B
	B) General Thoracic Session	West Ballroom A & B
	C) Congenital Heart Disease Session	West Ballroom C & D
7:00 a.m. – 11:00 a.m.	Family Hospitality	Will Rogers Room & Patio
8:30 a.m. – 9:50 a.m.	Scientific Session V	Rocky Mountain A & B
9:50 a.m. – 10:10 a.m.	Coffee Break, Visit Exhibits & Posters	Rocky Mountain C & D
10:10 a.m. – 11:10 a.m.	Scientific Session VI	Rocky Mountain A & B
11:10 a.m. – 12:00 p.m.	C. Walton Lillehei Point-Counterpoint	Rocky Mountain A & B
12:00 p.m. – 12:30 p.m.	Business Meeting (<i>Members Only</i>)	Rocky Mountain A & B
12:30 p.m. – 2:00 p.m.	Family Luncheon	Mountain View Terrace
7:00 p.m. – 10:00 p.m.	Kids & Teens Banquet (<i>Ages 3-18</i>)	Specs Spot
7:00 p.m. – 11:00 p.m.	President's Reception & Banquet (<i>Black Tie Optional</i>)	Pompeian Room

*Separate Subscription Required