### SCHEDULE OF EVENTS

**WEDNESDAY, JUNE 21, 2006**
- 9:00 a.m. – 1:00 p.m. Council Meeting Camas Room
- 3:00 p.m. – 7:00 p.m. Registration Limelight Foyer A
- 7:00 p.m. – 8:00 p.m. Kid’s Reception Sun Valley Bowling Center

**THURSDAY, JUNE 22, 2006**
- 6:00 a.m. Samson Fun Run Baldy Bus Loop
- 7:00 a.m. – 12:00 noon Registration Limelight Foyer A
- 7:00 a.m. – 12:00 noon Exhibits Open
- 7:00 a.m. – 12:00 noon Continental Breakfast Camas Room
- 7:00 a.m. – 8:00 a.m. Exhibits Open Camas Room
- 7:00 a.m. – 8:00 a.m. Hospital Suite Camas Room
- 8:00 a.m. – 12:00 noon Council Meeting Camas Room
- 8:00 a.m. – 12:30 p.m. Scientific Session Limelight A & B
- 9:10 a.m. Presidential Address, Limelight A & B
- “In Critical Condition” R. Scott Mitchell, MD
- 11:50 a.m. – 12:30 p.m. Controversies in Thoracic Surgery Limelight A & B
- 7:00 p.m. – 10:00 p.m. Trail Creek Theme Dinner Trail Creek Grounds

**FRIDAY, JUNE 23, 2006**
- 6:00 a.m. – 12:00 noon Speaker Ready Room Limelight Foyer B
- 8:00 a.m. – 8:30 a.m. Continental Breakfast Exhibit Hall, Continental Room
- 7:00 a.m. – 8:00 a.m. Exhibits Open Lodge Dining Room
- 7:00 a.m. – 11:00 a.m. Hospitality Suite Lodge Dining Room
- 7:00 a.m. – 11:00 a.m. Exhibits Open Lodge Dining Room
- 8:00 a.m. – 12:00 noon Scientific Session Limelight A & B
- 7:00 a.m. – 8:00 a.m. Hospitality Suite Lodge Dining Room
- 7:00 a.m. – 11:00 a.m. Hospitality Suite Lodge Dining Room
- 8:00 a.m. – 12:00 noon Scientific Session Limelight A & B
- 8:50 a.m. – 12:00 noon Scientific Session Limelight A & B
- 12:30 p.m. – 6:00 p.m. Golf Tournament* Sun Valley Resort Golf Course
- 2:00 p.m. – 5:00 p.m. Tennis Tournament* Sun Valley Tennis Center

**SATURDAY, JUNE 24, 2006**
- 7:00 a.m. – 11:00 a.m. Speaker Ready Room Limelight Foyer B
- 7:00 a.m. – 12:00 noon Exhibits Open
- 7:00 a.m. – 12:00 noon Continental Breakfast Camas Room
- 7:00 a.m. – 12:00 noon Registration Camas Room
- 7:00 a.m. – 11:00 a.m. Hospitality Suite Lodge Dining Room
- 7:15 a.m. – 8:15 a.m. Concurrent Poster Sessions
- 8:00 a.m. – 11:00 a.m. Scientific Session Limelight A & B
- 11:15 a.m. – 12:30 noon Scientific Session Limelight A & B
- 12:00 noon – 12:30 p.m. Business Meeting (Members Only)
- 12:30 p.m. Family Luncheon Lodge Terrace
- 7:00 p.m. – 11:00 p.m. President’s Reception & Banquet++ Young Summer Building
- 7:00 p.m. – 11:00 p.m. Kids’ Banquet Young Summer Building

*Separate Subscription Required  ++ Black Tie Optional

### POSTER SESSIONS
- **A) Adult Cardiac Session**
- **B) General Thoracic Session**
- **C) Congenital Heart Disease Session**

**Sponsored by:**
- White Memorial Medical Center and Foundation—Lyman A. Brewer, III Fund
- Irving L. Weissman, MD
- St. Jude Medical, Inc.

**SUN VALLEY RESORT**

**WESTERN THORACIC SURGICAL ASSOCIATION**

**32nd ANNUAL MEETING**

**JUNE 21-24, 2006**

**SUN VALLEY, IDAHO**
FUTURE MEETINGS

33rd ANNUAL MEETING
June 28-July 1, 2007
Hyatt Regency Tamaya Resort & Spa
Santa Ana Pueblo, New Mexico

34th ANNUAL MEETING
June 25-28, 2008
Sheraton Keauhou Bay Resort & Spa
Kona, HI

35th ANNUAL MEETING
June 24-27, 2009
The Fairmont Banff Springs
Banff, AB, Canada
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WESTERN THORACIC SURGICAL ASSOCIATION

OFFICERS AND COUNCIL

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Surgeons
                              Seattle, Washington
2005–2006 COMMITTEES

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LOCAL ARRANGEMENTS – 2006
Thomas A. Burdon and
Eva Weinlander, Co-Chairs
J. Scott Millikan, Golf Tournament
Richard I. Whyte, Tennis Tournament

REPRESENTATIVES
Representative to the Advisory Council, American College of Surgeons
Steven R. Gundry, MD
Palm Springs, California

Representative to the Thoracic Surgery Foundation for Research & Education
Daniel J. Ullyot, MD
Burlingame, California

Edward D. Verrier, MD
Seattle, Washington
WESTERN THORACIC SURGICAL ASSOCIATION

SCHEDULE OF EVENTS
(All events to occur at the Sun Valley Inn unless otherwise noted)

WEDNESDAY, June 21, 2006
7:00 a.m. – 8:30 a.m.  Membership Committee Meeting, TBD
9:00 a.m. – 1:00 p.m.  Council Meeting, Camas Room
3:00 p.m. – 7:00 p.m.  Registration, Limelight Foyer A
7:00 p.m. – 9:00 p.m.  New Members Reception, Opera House Lawn
                      Kids’ Reception, Sun Valley Bowling Center

THURSDAY, June 22, 2006
6:00 a.m.  Samson Fun Run, Baldy Bus Loop
7:00 a.m. – 12:00 noon  Registration, Limelight Foyer A
7:00 a.m. – 12:00 noon  Exhibits Open, Continental Room
7:00 a.m. – 8:00 a.m.  Continental Breakfast, Exhibit Hall, Continental Room
7:00 a.m. – 12:00 noon  Speaker Ready Room, Limelight Foyer B
7:00 a.m. – 11:00 a.m.  Hospitality Suite, Lodge Dining Room
8:00 a.m. – 12:30 p.m.  Scientific Session, Limelight A & B
9:10 a.m.  Presidential Address, Limelight A & B
            “In Critical Condition”  
            R. Scott Mitchell, MD
11:50 a.m. – 12:30 p.m.  Controversies in Thoracic Surgery, Limelight A & B
7:00 p.m. – 10:00 p.m.  Trail Creek Theme Dinner, Trail Creek Grounds

FRIDAY, June 23, 2006
6:00 a.m. – 12:00 noon  Speaker Ready Room, Limelight Foyer B
6:30 a.m. – 8:00 a.m.  Breakfast Sessions:*  
  A) Adult Cardiac Session, Limelight C  
  B) General Thoracic Session, Camas Room  
  C) Congenital Heart Disease Session, Lupine Room
7:00 a.m. – 12:00 noon  Registration, Limelight Foyer A
7:00 a.m. – 8:00 a.m.  Continental Breakfast, Exhibit Hall, Continental Room
7:00 a.m. – 12:00 noon  Exhibits Open, Exhibit Hall, Continental Room
7:00 a.m. – 11:00 a.m.  Hospitality Suite, Lodge Dining Room

*Separate Subscription Required
Sun Valley Resort, Sun Valley, Idaho

32ND ANNUAL MEETING

8:00 a.m. – 8:50 a.m. Postgraduate Course, Limelight A & B
Sponsored by: White Memorial Medical Center and Foundation—Lyman A. Brewer, III Fund
Irving L. Weissman, MD, Stanford, California

8:50 a.m. – 12:00 noon Scientific Session, Limelight A & B

1:00 p.m. – 6:00 p.m. Golf Tournament,* Sun Valley Resort Golf Course
2:00 p.m. – 5:00 p.m. Tennis Tournament, * Sun Valley Tennis Center

Free Evening

SATURDAY, June 24, 2006

7:00 a.m. – 11:30 a.m. Speaker Ready Room, Limelight Foyer B
7:00 a.m. – 11:00 a.m. Exhibits Open, Exhibit Hall, Continental Room
7:00 a.m. – 8:30 a.m. Continental Breakfast, Exhibit Hall, Continental Room
7:00 a.m. – 12:00 Noon Registration, Limelight Foyer A
7:00 a.m. – 11:00 a.m. Hospitality Suite, Lodge Dining Room
7:15 a.m. – 8:30 a.m. Concurrent Poster Sessions
   A) Adult Cardiac Session, Limelight C
   B) General Thoracic Session, Camas Room
   C) Congenital Heart Disease Session, Lupine Room
8:30 a.m. – 11:10 a.m. Scientific Session, Limelight A & B
11:10 a.m. – 12:00 Noon C. Walton Lillehei Point-Counterpoint, Limelight A & B
12:00 noon – 12:30 p.m. Business Meeting (Members Only), Limelight A & B
12:30 p.m.
7:00 p.m. – 11:00 p.m. President’s Reception & Banquet**, River Run Lodge
7:00 p.m. – 10:00 p.m. Kids Banquet, Young Summer Building

* Separate Subscription Required
** Black Tie Optional
GENERAL INFORMATION

1. REGISTRATION:
The Registration Desk will be located in the Limelight Foyer A, of the Sun Valley Inn during the following hours:

- Wednesday, June 21st: 3:00 p.m. – 7:00 p.m.
- Thursday, June 22nd: 7:00 a.m. – 12:00 noon
- Friday, June 23rd: 7:00 a.m. – 12:00 noon
- Saturday, June 24th: 7:00 a.m. – 12:00 noon

2. MESSAGES:
A message center will be maintained in the Registration Area during registration hours. Please check it often. There will be no paging in the scientific sessions. The following number may be used to leave messages at the Message Center:
Phone: (208) 622-2869 or x 2869.

3. SPEAKER READY ROOM:
The speaker ready room will be located in the Limelight Foyer B. Presenting authors are requested to turn in their PowerPoint slides to the projectionist 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, 6/21). All presentations must be submitted in single slide, PowerPoint, format only.

4. ACCREDITATION:
The Western Thoracic Surgical Association is accredited by the Accreditation Council for Continuing Medical Education to sponsor continuing medical education for physicians.

The Western Thoracic Surgical Association designates the annual meeting program, a continuing medical education activity, for up to a maximum of the following Category 1 credits towards the Physician’s Recognition Award of the American Medical Association:

- Simultaneous Breakfast Sessions, up to 1.25 credits
- Postgraduate Course, up to 1 credit
- Scientific Sessions, up to 8.75 credits
- Concurrent Poster Sessions, up to 1.25 credits
5. OBJECTIVE:
The Annual Meeting of the Western Thoracic Surgical Association is designed to provide two-and-a-half days of comprehensive educational experience for WTSA 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.

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 the issue of VATS versus Open Lobectomy for Lung Cancer.

Friday morning begins with three simultaneous breakfast sessions, featuring recognized leaders in Adult Cardiac, General Thoracic and Congenital Heart Disease, who will provide state of the art techniques and procedures in each specialty. The scientific program continues with the annual Postgraduate Course, sponsored by an educational grant from White Memorial Medical Center and Foundation – Lyman A. Brewer, III Fund and a scientific plenary session of original papers.

The Saturday scientific session begins with concurrent moderated poster forum sessions addressing a far ranging field of topics in each of the three sub-specialties. The scientific session continues with additional original papers and concludes with the C. Walton Lillehei Point/Counter-Point Session, sponsored by an educational grant from St. Jude Medical. The debate this year will focus on Optimal Treatment of Multi-Vessel Coronary Disease.

At the conclusion of the Annual Meeting, participants should have an enhanced understanding of the latest techniques and current research specifically related to General Thoracic Surgery, Adult Cardiac Surgery, and Congenital Heart Disease. Through the open discussion periods, participants will have the opportunity to hear the pros and cons of each paper presented. Through presentation and discussion, the participant will gain an overall perspective of current practices and utilize results presented to select appropriate surgical procedures and interventions for their own patients and integrate this knowledge into their academic setting and/or clinical practice.

6. DISCLOSURE STATEMENT:
It is the policy of Western Thoracic Surgical Association that any individual who makes a presentation or is a co-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 policy is established neither to
imply any position regarding the propriety of such relationships nor to prejudice
any individual from making a presentation but to allow the participants to form
their own judgments regarding the presentation.

Authors who may have a possible conflict of interest are denoted in the pro-
gram book. Authors must disclose any material, financial, or other relationships
that may pose conflict of interest at the time of the presentation.

7. BREAKFAST SESSIONS
Three optional breakfast sessions are scheduled for Friday morning, June 23rd
from 6:30 a.m. – 8:00 a.m. There is a separate registration fee of $45 per person:

A) Adult Cardiac Session, Limelight C
   Current Techniques and Long-Term Results of Valve Sparing
   Aortic Root Surgery
   D. Craig Miller

B) General Thoracic Session, Camas Room
   Evolving Role of PET Scanning and Lung Cancer Staging
   Robert J. Cerfolio

C) Congenital Heart Disease Session, Lupine Room
   Current Status of Pediatric Mechanical Support Devices
   Marc Pelletier

8. EXHIBITS:
Commercial Exhibits will be located in the Continental Room during the follow-
ing hours:

    Thursday, June 22nd  7:00 a.m. – 12:00 noon
    Friday, June 23rd    7:00 a.m. – 12:00 noon
    Saturday, June 24th  6:30 a.m. – 10:30 a.m.

Continental Breakfast will be available for all registered physicians in the Exhibit
Hall, Continental Room, during the following hours:

    Thursday, June 22nd  7:00 a.m. – 8:00 a.m.
    Friday, June 23rd    7:00 a.m. – 8:00 a.m.
    Saturday, June 24th  7:00 a.m. – 8:30 a.m.

Coffee and other beverages will be available during scheduled breaks.
9. HOSPITALITY SUITE:
A hospitality suite will be available in the Lodge Dining Room of the Sun Valley Inn for all registered spouses, guests, and family members during the following hours:

- Thursday, June 22nd 7:00 a.m. – 11:00 a.m.
- Friday, June 23rd 7:00 a.m. – 11:00 a.m.
- Saturday, June 24th 7:00 a.m. – 11:00 a.m.

Continental breakfast will be available from 7:00 a.m. to 9:00 a.m. each day; coffee and other beverages will be available during all hospitality hours.

10. BADGE IDENTIFICATION:
- Member and Spouse: Cream
- Guest Physician and Spouse: Blue
- Exhibitor: Yellow
Sun Valley Inn Meeting Facilities
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 presentation. Primary discussants will be allowed three minutes.

2. Speakers are requested to present their PowerPoint Presentations in the Speaker Ready Room located in the Limelight Foyer B 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, 6/21). All presentations must be submitted in PowerPoint format only. Slides should be in order and marked with a speaker label, which will be available in the Speaker Ready Room. 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 Scientific Session room (Limelight 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.
SOCIAL PROGRAM

(Included in the Registration Fee)

Included in the registration fee for spouses/guests will be the New Members' Reception on Wednesday evening, the Trail Creek Theme Dinner on Thursday evening, the Saturday Luncheon, the President’s Reception and Banquet on Saturday evening and daily continental breakfasts (served in the Exhibit Hall for meeting attendees and in the Hospitality Suite, located in the Lodge Dining Room of the Sun Valley Resort, for family members).

New Members’ Reception

Wednesday, June 21st 7:00 pm – 9:00 pm

Join us in welcoming our new members to the WTSA. The reception will be held around the lovely Opera House Lawn behind the Inn. Children 5–12 are invited to their own Welcome Reception, to be held in the Sun Valley Lodge Bowling Alley. Children must be signed in and out. The bowling alley features 6 bowling lanes, exciting video games, a snack bar and pool table. Additional cost of $28 per young person.

Samson Fun Run

Thursday, June 22nd 6:00 am

Join your friends & colleagues for this year’s Samson Fun Run. This 5K Fun Run kicks off from the Baldy Bus Loop and leads you along the paved bike path of the Sun Valley Resort. As you jog along the gentle rises of the Sun Valley Resort Grounds, don’t forget to take in the beautiful early morning scenery that Sun Valley has to offer. The Fun Run is open to all physician attendees, spouses, guests, family members and exhibitor representatives, and pre-registration is requested. All participants will receive an official Samson Fun Run T-shirt at the finish line.

Trail Creek Theme Dinner

Thursday, June 22nd 7:00 pm – 10:00 pm

The Thursday night Theme Dinner will be held outside at the Trail Creek Grounds. We will be transported to the dinner and into the Old West aboard horse drawn wagons. Cowboys young and old should be prepared to test their skills while we learn how to line dance country western style, rope horses while singing along to the sounds of the Old West and much more. Don’t forget to listen for the chuck wagon bell as it calls us to dinner.

Additional cost of $40 (5–11 years) and $68 (12–21 years) for the Theme dinner.
Saturday Luncheon
Saturday, June 24th 12:30 pm – 2:00 pm

We’ve put a new spin on this year’s Family Luncheon, which will be held on Saturday afternoon, at the Lodge Terrace, around the resort’s beautiful outdoor ice rink. The entire family is invited to lace up their skates and practice their Olympic caliber spins and jumps or sit back and enjoy watching your friends & colleagues attempt these Olympic feats. Award winners from the Golf Tournament, Tennis Tournament & Samson Fun Run will be announced during the lunch.

Additional cost of $16 (5–11 years) and $28 (12–21 years) for the Saturday Luncheon

President’s Reception and Banquet
Saturday, June 24th 7:00 pm – 11:00 pm

The 32nd Annual Meeting will conclude with the Presidential Reception and Banquet at the stunning River Run Lodge, located at the base of Bald Mountain. The legendary California band Papa Doo Run Run will keep you dancing for hours. Their act encompasses all the great Classic Rock hits of the 60s and 70s, with a special emphasis on their award winning re-creation of the hits of the Beach Boys. Their best kept secret . . . Papa Doo Run Run is who the Beach Boys call when they need someone to fill in for their band. You will not want to miss this evening! Dress is black tie optional.

Children will be in for a special treat all their own—enjoying a delicious dinner and activities followed by the evening’s ice show at the resort’s outdoor ice rink. Over the summer months, the Sun Valley Skating Rink has often been home to some of skating’s biggest names, and this summer’s ice shows will be no exception. Please note that the ice show begins at sunset (approx. 9:30 pm) and will end at 10:45 pm. If you would like to pick up your children prior to the end of the show, please let the staff know when you drop off your children.

Additional cost of $28 (5–12 years)
Western Thoracic Surgical Association

Golf/Tennis Tournaments

Golf Tournament (Separate Subscription Required)
Sun Valley Golf Course
Friday, June 23rd, 12:30 pm – 6:00 pm

The motto of the Sun Valley golf course is "How can something so beautiful be so cruel?" The feathered greens and crystal blues of the stunning landscape combine with club-snapping challenges and towering tee shots to create a golf experience like nothing else in the country. This 72-par masterpiece consistently ranks among the nation's top resort courses and was ranked #1 in Idaho by Golf Digest. The Tournament will take place on Friday, June 23, 2006, with tee times ranging from 12:30 pm – 2:50 pm. Pre-registration is required with indication of handicap. Attendees should check in with the golf pro shop 15 minutes prior to scheduled tee time. The course is located right on resort property, east of the Sun Valley Inn. $140 per person includes greens fees, box lunch, cart and prizes.

Tennis (Separate Subscription Required)
1:00 pm – 5:00 pm

The Annual Tennis Tournament will take place on Friday, June 23, 2006 from 2:00 pm – 5:00 pm at the resort's beautiful courts located on property just an easy walk from the Lodge or Inn. Pre-registration is required with indication of level of play. $50 per person includes courts, refreshments and prizes.

For Kids Only

Sun Valley Play School
Infants (3 months – 2 years) $74 Half Day/$92 Full Day
2 yrs – 5 yrs—$65 Half Day/$76 Full Day

Summer in Sun Valley is a perfect time for children to enjoy various activities. Besides the well equipped playground, children enjoy walks around the picturesque Sun Valley Village, swimming, picnics, hayrides & ice skating. Sun Valley Play School is open daily from 8:30 am to 4:30 pm. Half Day sessions are held from 8:30 am to 12:30 pm or 12:30 pm to 4:30 pm. To make reservations or for more information, call (208) 622-2288.

"After Hours” Sitter Services
The Sun Valley Play School also offers “after hours” babysitting services. Prices are as follows:

1 Child – $12 per/hour 2 Children – $14 per/hour 3 Children – $16 per/hour
Sun Valley Day Camp
Ages 6–14
Half Day $65 (9:00 am – 12 noon or 1:00 pm – 4:00 pm)
Full Day $76 (9:00 am – 4:00 pm)
Sun Valley’s Youth Program offers a variety of activities on a daily schedule to enable your children to enjoy a special summer in Sun Valley. Emphasis is placed on a coordinated weekly program to enhance your child’s awareness of the facilities offered by Sun Valley and a fun-filled experience supervised by carefully selected personnel. To make reservations or for more information, please call (208) 622-2133.

**TO ENSURE TOUR AVAILABILITY, PLEASE REGISTER BEFORE FRIDAY, JUNE 9, 2006**

THURSDAY, JUNE 22, 2006

Ernest Hemmingway Tour
10:00 am – 12:00 pm
Depart at 9:45 am from Baldy Bus Loop
Cost $40 per person
This tour is led by long time resident & Hemmingway expert, Jim Jaquet. Highlights include:

- Ketchum/Sun Valley Heritage, which houses a Hemmingway Exhibit.
- The Sun Valley Lodge to view photographs in the lobby which show scenes of the early years of Sun Valley when Hemmingway first visited in 1939. It was here that he wrote most of “For Whom the Bell Tolls.”
- Hemmingway Memorial.
- Trail Creek Cabin, where Hemmingway and his friends including Gary Cooper, Ingrid Bergman, Lloyd and Tillie Arnold, Taylor Williams and his third wife, Martha Gellhorn often had dinner parties.
- Ketchum Cemetery to visit the Hemmingway gravesite.
WESTERN THORACIC SURGICAL ASSOCIATION

White Water River Rafting
12:15 pm – 6:00 pm
Depart from Baldy Bus Loop
Cost: $150 per person
You will be taken to Stanley, in the heart of the Sawtooth Mountains, amid one of the largest recreation areas in the United States. Your afternoon trip on the Salmon River will include beautiful scenery and the thrill of paddling some of the most pristine waters in America. Two hour round trip drive, 3 hour river trip.

FRIDAY, JUNE 23, 2006

Horse Back Riding
10:00 am – 1:00 pm
Depart at 9:00 am from Baldy Bus Loop
Cost: $85 per person
Wild Horse Creek Ranch will be the site of your ride into the heart of the Pioneer Mountains. You will ride to the base of the Devil’s Bedstead and experience the raw beauty of the high desert and the mountains that engulf Sun Valley. It’s an experience not to be forgotten by horse lovers and nature enthusiasts. You will enjoy lunch at the rustic yet elegant Wild Horse Creek Ranch.

SATURDAY, JUNE 24, 2006

Cooking Class with Your Own Personal Chef
10:00 am – 12:00 pm
Depart at 9:45 am from Baldy Bus Loop
Cost: $70 per person
Enjoy learning the art of fine cooking in this private class with Chef Russ Linter in a Sun Valley private home. Here you will have the opportunity to learn the culinary arts in a relaxed atmosphere from a chef with over 20 years experience. Russ focuses on all aspects of cooking and will share his favorite recipes and culinary tips with you. Classes include food and beverage tasting, including Russ’ choice of wine.

Fly Fishing
1:00 pm – 6:00 pm
Depart at 12:30 pm from Baldy Bus Loop
Cost: $225 per person
Silver Creek Outfitters will be your guides to a memorable outdoor Idaho experience. In either a private Alpine Lake, the Big Wood River or renowned Silver Creek, there is a place to experience the art of fly fishing for both beginner and experienced anglers. The scenery is magnificent and the moments are unforgettable.
ACKNOWLEDGMENTS
The Western Thoracic Surgical Association wishes to thank our sponsors and exhibiting companies for their support of the 32nd Annual Meeting:

EDUCATIONAL GRANTS
White Memorial Medical Center and Foundation – Lyman A. Brewer, II Fund for their support of the Postgraduate Course
St. Jude Medical, Inc. for their support of the C. Walton Lillehei Point/Counterpoint Debate
Medtronic Cardiac Surgery for their support of the Donald B. Doty Education Award

OTHER SPONSORS
Boston Scientific – Gold Sponsor
Medtronic Cardiac Surgery – Silver Sponsor

EXHIBITING COMPANIES
Abiomed
Atricure, Inc.
ATS Medical, Inc.
Bayer Healthcare Pharma
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CarboMedics, A Sorin Group Company
CardiacAssist, Inc.
Ceremed
Cryolife, Inc.
Edwards Lifesciences
Ethicon, Inc.

Gore & Associates
Medical Carbon Research Institute
Medtronic, Inc.
Scanlan International
St. Jude Medical
Synovis Surgical Innovations
Synthes CMF
Terumo Cardiovascular Systems
Thoracic Surgery Foundation for Research & Education
Vascutek. A Terumo Company
Vitalcor Inc. and Applied Fiberoptics
WESTERN THORACIC SURGICAL ASSOCIATION

PROGRAM

WEDNESDAY, JUNE 21, 2006

3:00 pm  Registration Opens, Limelight Foyer A
         Speaker Ready Room Open, Limelight Foyer B
7:00 pm  New Members Reception, Opera House Lawn
         Kids Reception, Sun Valley Bowling Center

THURSDAY, JUNE 22, 2006

6:00 am  Samson Fun Run, Baldy Bus Loop
7:00 am  Registration, Limelight Foyer A
         Speaker Ready, Limelight Foyer B
         Continental Breakfast, Exhibit Hall, Continental Room
         Hospitality Suite, Lodge Dining Room
8:00 am  Introduction of New Members and Resident Essay Finalists,
         Limelight A & B

8:10 am  SCIENTIFIC SESSION

Limelight A & B
Moderators: R. Scott Mitchell*
            David A. Fullerton*

1. Women with Pathologic Stage I, II, and III Non-Small Cell Lung Cancer have Better Survival than Men
   A. S. Bryant, R. J. Cerfolio
   University of Alabama at Birmingham, Birmingham, AL
   DISCUSSANT: RICHARD I. WHYTE*

2. Right Ventricular Outflow Tract Reconstruction with a PTFE Monocusp: A 10-Year Experience
   J. W. Brown, M. Ruzmetov, P. Vijay, M. D. Rodefeld, M. W. Turrentine
   Indiana University School of Medicine, Indianapolis, IN
   DISCUSSANT: GORDON A. COHEN*

* Samson Resident Prize Essay
* WTSA Member
32ND ANNUAL MEETING

Sun Valley Resort, Sun Valley, Idaho

*3. Cardiac Surgery after Mediastinal Radiation: Impact of Extent of Radiation Exposure on Outcomes
A. S. Y. Chang, J. Feng, E. H. Blackstone, B. W. Lytle,
C. L. Chang, N. G. Smedira
Cleveland Clinic, Cleveland, OH
DISCUSSANT: THORALF M. SUNDT

9:10 am PRESIDENTIAL ADDRESS

Limelight A & B
Introduced by: Elliot T. Gelfand*
R. Scott Mitchell*

“In Critical Condition”

10:00 am Coffee Break—Visit Exhibits, Exhibit Hall, Continental Room

10:30 am SCIENTIFIC SESSION (cont.)

Limelight A & B
Moderators: Elliot T. Gelfand*
John A. Hawkins*

*4. Have We Gone Too Far? Endovascular Stent Graft Repair of Aortobronchial Fistulas
G. H. Wheatley, A. Nunez, O. Preventza, V. Ramaiah,
J. Rodriguez-Lopez, J.
Williams, D. Olsen, E. B. Diethrich*
Arizona Heart Institute, Phoenix, AZ
DISCUSSANT: D. CRAIG MILLER*

*5. Implantable Cardioverter-Defibrillators Improve Survival after Coronary Artery Bypass Grafting in Patients with Impaired Left Ventricular Function
A.S. Al-Dadah, P. Rahgozar, A. Zierer, J. S. Lawton,
M. R. Moon, M. K. Pasque, R. J. Damiano, N. Moazami
Department of Surgery, Division of Cardiothoracic Surgery at Washington University School of Medicine, St. Louis, MO
DISCUSSANT: KENT W. JONES*

* Samson Resident Prize Essay
* WTSA Member
6. Long-Term Results of Repair for Aortic, Neo-Aortic and Truncal Valve Insufficiency in Children

Primary Children's Medical Center, Salt Lake City, UT
DISCUSSANT: JOHN J. LAMBERTI*

7. Role of Lymph Nodes Dissection in Lung Metastasectomy

Division of Thoracic Surgery, European Institute of Oncology, Milan, Italy
DISCUSSANT: ERIC VALLIERES*

11:50 am  CONTROVERSIES IN THORACIC SURGERY

Limelight A & B

VATS Versus Open Lobectomy for Lung Cancer
Moderator: Douglas E. Wood*
  VATS: John D. Mitchell*
  Open: Douglas J. Mathisen

12:30 pm  ADJOURN

7:00 pm  Trail Creek Theme Dinner, Trail Creek Grounds
Depart from Baldy Bus Loop, starting at 6:30 pm

FRIDAY, JUNE 23, 2006

6:30 am  SIMULTANEOUS BREAKFAST SESSIONS

A) Adult Cardiac Session, Limelight C
  Current Techniques and Long-Term Results of Valve Sparing Aortic Root Surgery
  D. Craig Miller*

B) General Thoracic Session, Camas Room
  Evolving Role of PET Scanning and Lung Cancer Staging
  Robert J. Cerfolio

C) Congenital Heart Disease Session, Lupine Room
  Current Status of Pediatric Mechanical Support Devices
  Marc P. Pelletier

* Samson Resident Prize Essay
* WTSA Member
8:50 am **SCIENTIFIC SESSION**

* Limelight A & B

Moderators: James I. Fann*, Patricia A. Thistlethwaite*

8. Molecular Markers as Surrogates for Chemotherapy Resistance in Non-Small Cell Lung Cancer
   T. D’Amato2, R. Landreneau2, W. Huang1, R. Parker*1, E. Mechetner1, I. Yu1
   1Oncotech, Inc., Tustin, CA, 2University of Pittsburgh Medical Center, Pittsburgh, PA
   DISCUSSANT: DAVID M. JABLONS*

9. Early Results of the 1.5 Ventricle Repair for Ebstein’s Anomaly and the Failing Right Ventricle
   L. G. Quinonez, J. A. Dearani, F. J. Puga, D. J. Driscoll, H. M. Connolly, G. K. Danielson
   Mayo Clinic, Rochester, MN
   DISCUSSANT: VAUGHN A. STARNES*

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* Samson Resident Prize Essay
* WTSA Member
10. Advances in Positron Emission Tomography (PET) Technology Have Increased the Need for Surgical Staging in Non-Small Cell Lung Cancer (NSCLC)
B. E. Lee, D. Von Haag, T. Lown, D. Lau, R. Calhoun, D. Follette*
UC Davis Medical Center, Sacramento, CA
DISCUSSANT: JOHN D. MITCHELL*

11. A Novel Biomarker for the Detection of Esophageal Adenocarcinoma
Z. Hammoud, S. Badve, R. Saxena, K. Kesler, K. Rieger, L. Malkas, R. Hickey
Indiana University School of Medicine, Indianapolis, IN
DISCUSSANT: MICHAEL WEYANT

12. Medium Term Results of Cut-and-Sew MAZE III Versus Ablation Devices for the Treatment of Chronic and Paroxysmal Atrial Fibrillation
M. J. Davidson, N. Narayanasamy, S. McGurk, G. S. Couper, L. H. Cohn
Brigham and Women’s Hospital, Boston, MA
DISCUSSANT: ROBBIN G. COHEN*

10:30 am Coffee Break—Visit Exhibits, Exhibit Hall, Continental Room

11:00 am SCIENTIFIC SESSION (cont.)

Limelight A & B
Moderators: Donald B. Doty*
Michael S. Mulligan*

13. Aortic Root Enlargement Versus Small Valves in Small Patients: What are the Operative Risks?
J. Dhareshwar, T. M. Sundt, J. A. Dearani, H. V. Schaff, D. J. Cook, T. A. Orszulak
Mayo Clinic, Rochester, MN
DISCUSSANT: DAVID A. FULLERTON*
14. "Extended Pneumonectomy" for Broncogenic Carcinoma: Surgical and Survival Outcomes
   A. Borri, D. Galetta, F. Leo, F. Petrella, R. Gasparri, P. Scanagatta, D. Radice, G. Veronesi, L. Spaggiari
   Division of Thoracic Surgery, European Institute of Oncology, Milan, Italy
   DISCUSSANT: DOUGLAS E. WOOD*

15. Outcomes of Cardiac Surgery in Abdominal Solid Organ Transplant Recipients
   R. John¹, S. Huddleston¹, K. Lietz¹, K. Liao¹, S. Shumway¹, L. Joyce¹, M. Bolman²
   ¹University of Minnesota, Minneapolis, MN, ²Harvard University, Boston, MA
   DISCUSSANT: PATRICIA A. THISTLETHWAITE*

12:00 pm ADJOURN
12:30 pm Golf Tournament, Sun Valley Golf Course
2:00 pm Tennis Tournament, Sun Valley Tennis Club
EVENING—FREE

SATURDAY, JUNE 24, 2006

6:00 am Speaker Ready Room, Limelight Foyer B
7:00 am Registration, Limelight Foyer A
Continental Breakfast—Exhibit Hall, Exhibit Hall, Continental Room
Hospitality Suite, Lodge Dining Room
7:15 am CONCURRENT POSTER FORUM SESSIONS

* Samson Resident Prize Essay
* WTSA Member
WESTERN THORACIC SURGICAL ASSOCIATION

ADULT CARDIAC

Limelight A & B
Moderators: Robert C. Robbins*
Robbin G. Cohen*

P1. A Double-Blind Randomized Trial of Diazoxide Supplemented Cardioplegia
Medical University of Silesia, Katowice, Poland

P2. Eight-Year Experience of Total Arterial Off-Pump CABG With Early And Postoperative One-Year Angiography
K. Kim, K. R. Cho, D. S. Jeong
Seoul National University Hospital, Seoul, Republic of Korea

P3. The Five and Ten Year Outcomes for Coronary Artery Bypass Graft (CABG) Surgery Patients Discharged Alive With Left Ventricular Dysfunction
V. Guru, S. E. Femes, J. V. Tu
Institute For Clinical Evaluative Sciences, Toronto, ON, Canada

P4. Toll-Like Receptor 4 Mediates Myocardial Ischemic Preconditioning
M. L. Agnew1, D. J. Spring1, C. L. Rothnie1, A. J. Fleisig1, A. Shimamoto2, S. Shomura1, E. D. Verrier*1
1University of Washington School of Medicine, Seattle, WA, 2Mie University Graduate School of Medicine, Tsu, Japan

P5. Long-Term Outcome of Mitral Annuloplasty with or without Left Ventricular Restoration Surgery for Idiopathic Dilated Cardiomyopathy
T. Horii1, T. Isomura2, H. Suma3
1Kagawa University, Kagawa, Japan, 2Hayama Heart Center, Hayama, Japan, 3Cardiovascular Institute Japan, Tokyo, Japan

* Samson Resident Prize Essay
* WTSA Member
P6. Aortic Root Reconstruction with Bioprosthetic Valved Conduits: Reviewing a Consecutive Series of 275 Procedures
C. D. Etz, T. M. Homann, N. Rane, C. A. Bodian, F. Kilburn-Toppin, G. Diluozzo, K. Plestis, R. B. Griepp*
Mount Sinai School of Medicine, New York, NY

P7. A New Device for Heart Failure: Quantitative Ventricular Restraint Reduces Transmural Myocardial Pressure in a Post-Infarction Ovine Model of Heart Failure
Brigham and Women’s Hospital, Boston, MA

P8. Clinical Risk Factors and Predictors of Cerebrovascular Accidents in Patients with a Ventricular Assist Device
H. Tsukui, A. Abla, J. J. Teuteberg, S. Winowich, E. Stanford, S. A. Weaver, M. Mathier, D. M. McNamara, L. M. Cadaret, M. A. Simon, R. L. Kormos
University of Pittsburgh Medical Center, Pittsburgh, PA

P9. Annulus Size, Valve Labels, And Geometric Orifice Area: A Therapeutic Conundrum
B. A. Youdelman, H. Jain, H. Hirose, J.W. Entwistle, A.S. Wechsler*
Drexel University College of Medicine, Philadelphia, PA

National Cardiovascular Center, Osaka, Japan

* Samson Resident Prize Essay
* WTSA Member
P11. Sleeve Lobectomy and Pneumonectomy: A Functional Comparison
Zuin1, G. Marulli1, R. Bulf1, C. Breda1, C. Schiraldi2, G. Rizzardi1, F. Sartori1, F. Rea1
1Thoracic Surgery—University of Padua, Padua, Italy, 2Division of Respiratory Medicine—University of Padua, Padua, Italy

P12. Tumor FDG-Avidity on PET Scan Predicts Long-Term Survival in Patients with Stage I Bronchioloalveolar Carcinoma
D. J. Raz, A. Y. Odisho, D. M. Jablons*
University of California San Francisco, San Francisco, CA

P13. Randomized Controlled Phase III Trial of Paravertebral Catheter Versus Epidural Catheter for Post Thoracotomy Pain Control
M. J. Liptay1, Z. T. Hammoud2, E. Merwitz1, J. McGee1, F. Clark1, K. Culiner1
1Evanston Northwestern Healthcare, Evanston, IL, 2Indiana University, Indianapolis, IN

P14. Temporal Trends and Outcomes in the Management of Pleural Space Infections
F. Farjah, R. G. Symons, B. Krishnadasan, D. E. Wood*, D. R. Flum
University of Washington, Seattle, WA

P15. Routine Mediastinoscopy and Esophageal Ultrasound Fine Needle Aspiration in Patients with Non-Small Cell Lung Cancer Who are Clinically N2 Negative: A Prospective Study
R. J. Cerfolio, A. S. Bryant
University of Alabama at Birmingham, Birmingham, AL

* Samson Resident Prize Essay
* WTSA Member
Y. C. Lee, C. T. Wu, S. W. Kuo, Y. T. Tseng, Y. L. Chang
National Taiwan University Hospital, Taipei, Taiwan Republic of China

P17. The Effect of Interleukin 6 on Mitogen Activated Protein Kinase and Suppressors of Cytokine Signalling 3 Expression in Lung Ischemia Reperfusion
H. E. Merry, A. S. McCourtie, A. S. Farivar, M. F. Delgado, M. S. Mulligan*
University of Washington, Seattle, WA

P18. Effect of Sympathectomy Level on the Incidence of Compensatory Hyperhidrosis After Sympathectomy for Palmar Hyperhidrosis
D. L. Miller, A. S. Bryant, S. D. Force, J. I. Miller
Emory University School of Medicine, Atlanta, GA

P19. Design, Development and Hemodynamic Analysis of a Low-Pressure Cavopulmonary Assist Device within the Total Cavopulmonary Connection
R. Wang1, J. Hertzberg1, F. Lacour-Gayet2, R. Shandas3
1University of Colorado at Boulder, Boulder, CO, 2Childrens Hospital Heart Institute, University of Colorado Health Sciences Center, Denver, CO, 3University of Colorado at Boulder, University of Colorado Health Sciences Center, Boulder/Denver, CO

P20. Neonatal Repair of Hemitruncus—Excellent Short and Long Term Outcomes
M. Nathan, D. Rimmer, G. Piercey, P. del Nido, J. E. Mayer, E. Bacha, F. Pigula
Childrens’ Hospital, Boston, MA
P21. Endotoxin Preconditioning Induces Robust Protection Against Brain Injury Resulting from Deep Hypothermic Circulatory Arrest
E. J. Hickey, J. You, V. Kaimaktsiev, M. Stenzel-Poore, R. M. Ungerleider*
Oregon Health Sciences University, Portland, OR

P22. Infants with Congenital Heart Disease Have Elevated Biochemical Markers of Brain Injury Prior to Cardiac Surgery
J. M. Simsic1, S. Dambinova2, G. Izykenova2, W. Mahle1, P. M. Kirshbom3, P. Bokesch3
1Children’s Healthcare of Atlanta, Atlanta, GA, 2Cis-Biotech, Atlanta, GA, 3Emory University, Atlanta, GA

P23. The Training of Congenital Heart Surgeons
B. E. Kogon
Emory University, Atlanta, GA

P24. Effects of Single Ventricle Physiology with Aorto-Pulmonary Shunt on Regional Myocardial Blood Flow in a Piglet Model
M. Ricci, P. Lombardi, A. Galindo, S. Schultz, A. Vasquez, E. Rosenkranz
University of Miami Miller School of Medicine, Miami, FL

P25. Impact of Pulmonary Vascular Compliance on Pleural Effusion Duration after Extracardiac Fontan Procedure
T. J. Yun, Y. M. Im, S. H. Jung, J.J.Park, D. M. Seo, W. K. Jahng, Y. H. Kim, I. S. Park, J. K. Ko, M. S. Lee
Asan Medical Center, Seoul, Republic of Korea
8:30 am  SCIENTIFIC SESSION

**Limelight A & B**
Moderators: Donald E. Low*
David R. Clarke*

16. Surgical Teaching Predicts ICU Length of Stay in CABG Surgery
T. M. Yau, M. A. Borger, S. J. Brister, M. Maganti, V. Rao
Toronto General Hospital, Toronto, ON, Canada
DISCUSSANT: EDWARD D. VERRIER*

*17. Systolic Anterior Motion After Mitral Valve Repair: Is Surgical Intervention Necessary?
M. L. Brown, M. D. Abel, R. L. Click, H. V. Schaff
Mayo Clinic, Rochester, MN
DISCUSSANT: JAMES I. FANN*

18. Impact of Anastomotic Airway Complications Following Lung Transplantation
S. C. Murthy, G. V. Gonzalez-Stawinski, T. R. Gildea,
M. M. Budev, J. M. Alster, G. Pettersson, D. P. Mason,
E. H. Blackstone, A.C. Mehta
Cleveland Clinic, Cleveland, OH
DISCUSSANT: MICHAEL S. MULLIGAN*

*19. Central Aortic Cannulation Does Not Increase Adverse Events in Repair Of Acute Ascending Dissection
T. Reece, C. G. Tribble, R. L. Smith, R. Singh, B. M. Stiles,
B. B. Peeler, J. A. Kern, I. L. Kron
University of Virginia, Charlottesville, VA
DISCUSSANT: ROBERT C. ROBBINS*

9:50 am  Coffee Break—Visit Exhibits, Exhibit Hall, Continental Room

* Samson Resident Prize Essay
* WTSA Member
20. Radiofrequency Ablation for the Treatment of Stage I Non-Small Cell Lung Cancer in High-Risk Patients
A. Pennathur1, J. D. Luketich1, G. Abbas1, M. Chen1, H. C. Fernando2, W. E. Gooding1, M. J. Schuchert1, S. Gilbert1, N. A. Christie1, R. J. Landreneau1

U1 University of Pittsburgh Medical Center, Pittsburgh, PA, U2 Boston Medical Center, Boston, MA

DISCUSSANT: DONALD E. LOW*

21. Residual Left Ventricular Hypertrophy After Aortic Valve Replacement in the Elderly—A Long Term Follow-Up

Division of Cardiac Surgery—Ospedale S. Andrea—University of Rome

DISCUSSANT: LUIS J. CASTRO*

22. Surgical Treatment of Infective Endocarditis: A Continued Challenge
G. Gavra, T. E. David, C. M. Feindel, S. Armstrong, M. Maganti, T. Regesta

Toronto General Hospital, Toronto, ON, Canada

DISCUSSANT: STEVEN W. GUYTON*
Sun Valley Resort, Sun Valley, Idaho

32ND ANNUAL MEETING

12:00 am  **ANNUAL BUSINESS MEETING** (Members Only)
Limelight A & B

12:30 PM  **FAMILY LUNCHEON**
Lodge Terrace

7:00 pm  **PRESIDENT’S RECEPTION AND BANQUET**
River Run Lodge
Transportation to & from the President’s Reception and Banquet will be provided. Buses will depart from the Baldy Bus Loop beginning at 6:45 pm.
WESTERN THORACIC SURGICAL ASSOCIATION

PROGRAM

THURSDAY, JUNE 22, 2006

6:00 am  Samson Fun Run, Baldy Bus Loop
7:00 am  Registration, Limelight Foyer A
         Speaker Ready, Limelight Foyer B
         Continental Breakfast, Exhibit Hall, Continental Room
         Hospitality Suite, Lodge Dining Room
8:00 am  Introduction of New Members and Resident Essay Finalists,
         Limelight A & B

8:10 am  SCIENTIFIC SESSION

Limelight A & B
Moderators: R. Scott Mitchell*
           David A. Fullerton*

*1. Women with Pathologic Stage I, II, and III Non-Small Cell Lung Cancer have Better Survival than Men
   A. S. Bryant, R. J. Cerfolio
   University of Alabama at Birmingham, Birmingham, AL
   DISCUSSANT: RICHARD I. WHYTE*

BACKGROUND: Bronchogenic malignancy is the number one cause of cancer deaths in men and women worldwide. National registry studies have shown gender disparity in clinicopathologic characteristics and in survival. This study evaluates risk factors and trends of lung cancer between genders.

METHODS: A prospective cohort of consecutive patients with non-small cell lung cancer (NSCLC) who were clinically (all received dedicated positron emission tomography) then pathologically staged with I, II or III disease, underwent homogenous treatment algorithms and were followed over seven years. Primary outcomes were 5-year survival and response to neoadjuvant therapy.

RESULTS: There were 1,085 patients (671 men, 414 women). Groups were similar for race, pulmonary function, smoking history, comorbidities, neoadjuvant therapy, histology and resection rates. Women were younger (p = 0.014), had a higher incidence of adenocarcinoma (p = 0.01) and presented at an earlier pathologic stage (p = 0.01) than men. Overall age and stage adjusted 5-year survival favored women (60% compared to

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* WTSA Member
50%, p < 0.001). Women had better stage-specific 5-year survival: 69% versus 64%, for stage I (p = 0.034), 60% versus 50% for stage II (p = 0.042) and 46% versus 37% for stage III (p = 0.024). Women who received neoadjuvant chemotherapy alone (N = 76) were more likely to be a complete or partial responder than men (N = 142, p = 0.025).

CONCLUSIONS: Despite uniform staging and treatment, the 5-year survival of women with stage I-III non-small cell lung cancer is better than men, overall and at each stage. Women are more likely to have adenocarcinoma, to present with earlier stage disease and be younger. Interestingly, women respond better to neoadjuvant chemotherapy.

NOTES
BACKGROUND: Transannular patching of right ventricular outflow tract (RVOT) results in pulmonary insufficiency (PI). Biologic monocusp valves (MO) can prevent acute PI but are prone to early dysfunction and progressive regurgitation. Polytetrafluoroethylene (PTFE) MO leaflets demonstrated favorable characteristics in animal studies and have been applied to a variety of RVOT anomalies at our Center.

METHODS: From 1994 through August 2005, 190 patients underwent PTFE MO RVOT reconstruction (n = 190 patients; 199 implants) at our institution. Intraoperative, postoperative, and follow-up echocardiographic data at a mean interval of 4.4 years (range: 1 month to 10 years) was used in a retrospective fashion to compare clinical outcomes among preoperative diagnostic groups. In addition, PTFE monocusp valves beyond 6 months post-implant underwent echocardiographic analysis of MO function.

RESULTS: There were 8 early (4%) and no late deaths. The mean length of stay was 9.1 days, and in ICU stay was 5.8 days. The difference between the preoperative and postoperative peak RVOT gradient was significant (71.0 vs 25.2; p = 0.0001). 23 patients (15%) had mild to moderate supravalvular stenosis (mean gradient, 44.2 ± 17.2 mmHg) at the distal anastomosis. MO regurgitation was considered as mild in 49% of patients, moderate in 49% of patients, and severe in 2%. 23 patients underwent reoperation (n = 24) with the mean time interval 3.7 ± 2.6 years (range: 3 months to 9 years). Kaplan-Meier freedom from reoperations was 97% at 1 year, 92% at 5 years, and 87% at 10 years.

CONCLUSIONS: Utilization of a PTFE MO valve prevents short-term and significantly reduces mid-term PI. It is inexpensive, easy to construct, and demonstrates no evidence of late stenosis, calcification, or embolization.

* Samson Resident Prize Essay
* WTSA Member
Sun Valley Resort, Sun Valley, Idaho  

32ND ANNUAL MEETING

NOTES
BACKGROUND: Mediastinal radiation for thoracic malignancies utilizes multiple treatment fields and doses. We investigated whether extensive exposure is associated with hospital complications and worse outcomes after cardiac surgery.

METHODS: Between January 2000 and December 2004, 230 patients underwent cardiac surgery after mediastinal radiation. Three levels of exposure were defined: Group 1: extensive and direct (Hodgkin, thymoma and testicular) n = 70; Group 2: variable (lung, lymphoma, esophageal) n = 33; Group 3: tangential (breast) n = 125. Social Security Death Index, cardiovascular database and follow-up survey were utilized. Mean follow up was 2.2 ± 1.4 years.

RESULTS: Group 1 patients were the youngest (51 vs 64 vs 72 years), with balanced genders (% female: 47 vs 33 vs 100), more aortic regurgitation > mild (79% vs 54 vs 50), more left main stenosis >70% (21% vs 10 vs 8) and worse pulmonary function (% predicted FEV1 57 vs 54 vs 67; % predicted FVC 56 vs 63 vs 66). Group 1 had more aortic valve repairs (7 % vs 0 vs 1); other procedures were similar. Complications are presented in the table and survival figure.

CONCLUSIONS: Despite their younger age, extensive direct radiation therapy patients had worse cardiac and pulmonary injury, more complications and diminished survival.

<table>
<thead>
<tr>
<th>Complication</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reop for bleeding</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>0.8</td>
</tr>
<tr>
<td>CVA</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0.06</td>
</tr>
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<td>MI</td>
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<td>3</td>
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<td>Renal Failure</td>
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<td>15</td>
<td>3</td>
<td>0.03</td>
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<td>Sepsis</td>
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<tr>
<td>Hospital Death</td>
<td>13</td>
<td>9</td>
<td>2</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Complication (%)
9:10 am  **PRESIDENTIAL ADDRESS**

*Limelight A & B*
*Introduced by: Elliot T. Gelfand*
*R. Scott Mitchell*

“In Critical Condition”

10:00 am  Coffee Break—Visit Exhibits, *Exhibit Hall, Continental Room*

**NOTES**
BACKGROUND: Although endovascular repair of the descending thoracic aorta (DTA) has emerged as a viable treatment option, little is known about its potential to treat patients diagnosed with aortobronchial fistulas (ABF). We reviewed our comprehensive thoracic endografting experience with regards to the endovascular management and subsequent outcome of patients with ABFs in order to assess whether endovascular stent graft repair is a realistic option.

METHODS: Between February 2000 and November 2005, 255 patients were successfully treated with an ELG to the DTA. Indications for intervention included: atherosclerotic aneurysms (109/255, 42.7%), acute and chronic dissections (75/255, 29.4%), miscellaneous (36/255, 16.7%), penetrating aortic ulcers (30/255, 11.8%) and ABFs (7/255, 2.7%).

RESULTS: Average patient age was 73.4 ± 10.1 years, with 3 male patients (3/7, 42.9%) and 4 female patients (4/7, 57.1%). All patients presented with hemoptysis, with one patient (1/7, 14.3%) requiring pre-operative blood transfusion. Five patients (5/7, 71.4%) were diagnosed with atherosclerotic aneurysms and 2 patients (2/7, 28.6%) had pseudo-aneurysms associated with prior open surgical repair. Patients were treated for one week with empiric antibiotics following ELG deployment. There were no endoleaks (0/7, 0%), no incidences of paraplegia (0/7, 0%) and no ELG infections (0/7, 0%). Survival was 100% (7/7) at both 30-days and 1-year. Follow-up computed tomography was available for all 7 patients (7/7, 100%), with an average of 11.2 ± 3.6 months follow-up.

CONCLUSIONS: Endovascular management of ABFs appears to be safe and well-tolerated, even high surgical risk patients, with minimal risk of prosthesis infection. Long-term surveillance and continued investigation are warranted.
OBJECTIVE: Patients with severe left ventricular (LV) dysfunction have a poor long term survival despite complete surgical revascularization. Recent data suggests that the use of Implantable Cardioverter-Defibrillator (ICD) improves survival in patients with severe LV dysfunction. We compared the survival impact of ICD implantation post-operatively in patients with severe LV dysfunction who underwent CABG.

METHODS: Between January 1996 and August 2004, 305 patients with LV ejection fraction (LVEF) 25% had CABG at our institution. Demographics of patients who had received an ICD (+ICD) in the post-operative period were compared to those without ICD (–ICD). Survival was evaluated by the Kaplan-Meier method.

RESULTS: Of the entire group, 35 (11%) patients received an ICD with a median of 2 (±2) years after CABG for clinical evidence of non sustained ventricular tachycardia (NSVT). There were no differences between the 2 groups with respect to more than 70 variables analyzed. Survival at 1, 3 and 5 years was 88%, 79%, and 67% for the –ICD group compared to 94%, 89% and 83% for the +ICD group, respectively (figure, p < 0.05).
CONCLUSION: Implantation of ICD after CABG confers improved short and long term survival benefit to patients with severe LV dysfunction and symptomatic NSVT. The role of early or concomitant ICD implantation in the setting of severe LV dysfunction and CABG surgery should be revisited.
6. Long-Term Results of Repair for Aortic, Neo-Aortic and Truncal Valve Insufficiency in Children

Primary Children's Medical Center, Salt Lake City, UT

DISCUSSANT: JOHN J. LAMBERTI*

BACKGROUND: Reliable repair of aortic valve (AV) insufficiency is difficult and long-term durability is unknown in children. This study evaluates long-term results of repair of the systemic semilunar valve, including the AV, neo-AV and truncal valve.

METHODS: Fifty-five children (age 2 days – 18 yrs) underwent repair of the functional AV for severe valve insufficiency from 1991 to 2005. Anatomy included trileaflet AV (31), bicuspid AV (9), tricuspid neo-AV (anatomic pulmonary valve, 8) and truncal valve (7). Surgical techniques were multiple in most of the 55 patients and included leaflet plication (17), leaflet repair (15), commissuroplasty (39), leaflet augmentation (7), circumferential annuloplasty (6) and sinus of valsalva plasty (3).

RESULTS: There was one early death and no late deaths. Actuarial freedom from reoperation was 98% at 1 yr, 68% at 5 yrs, and 59% at 10 yrs. Actuarial freedom from valve replacement was 100% at 1 yr, 82% at 5 yrs, and 68% at 10 yrs. The reoperation rate was not significantly different between AVs, neo-AVs or truncal valves. Echocardiography a mean of 55 mos. post repair in 36 of the 41 pts not undergoing reoperation, revealed trace or less AI in 19% (7/36), mild in 64% (23/36), moderate in 14% (5/36) and severe in 3% (1/36).

CONCLUSIONS: Repair of the systemic semilunar valve requires an individualized approach tailored to the anatomic cause of the insufficiency. Repair of the insufficient aortic valve, neo-AV or truncal valve offers acceptable 10-year freedom from reoperation and functional results in children.
BACKGROUND: The role of lymph node dissection in lung metastasectomy from extrapulmonary malignancies is still uncertain. The aim of this study is to define the prognostic impact of nodal status in lung metastasectomy and the incidence of unexpected lymph node involvement after mediastinal nodal dissection.

METHODS: From May 1998 to October 2005 we performed 430 lung metastasectomies with curative intent. The records of all patients who underwent radical lymph node dissection or sampling were retrospectively reviewed. Survival was calculated by Kaplan-Meier method and comparison of curves by log-rank test.

RESULTS: 139 pulmonary metastasectomies with lymph node dissection were performed in 124 patients (61 men, mean age 59). There were 56 wedge resections, 30 segmentectomies, 49 lobectomies and 4 pneumonectomies. Mean number of resected lymph nodes was 9.3. Mean number of resected metastasis was 2. Median disease free survival since first pulmonary resection was 49 months. Lymph node involvement was documented in 20% of patients (25); 8% (10 cases) at hilar stations and 12% (15 cases) at mediastinal stations. Rate of patients with unexpected lymph node metastasis was 12% (15 cases). Overall, estimated 5-year survival was 46%; it was 57% for subjects with no lymph node metastasis, 20% and 0% in N1 and N2 disease, respectively (p = 0.026).

CONCLUSIONS: Rate of occult lymph node metastasis is remarkable in patients submitted to lung metastasectomy (1 out of 8 cases). Lymph node involvement heavily affects prognosis.
11:50 am  **CONTROVERSIES IN THORACIC SURGERY**

*Limelight A & B*

**VATS Versus Open Lobectomy for Lung Cancer**
Moderator:  Douglas E. Wood*
VATS:  John D. Mitchell*
Open:  Douglas J. Mathisen

12:30 pm  ADJOURN

7:00 pm  *Trail Creek Theme Dinner, Trail Creek Grounds*
Depart from Baldy Bus Loop, starting at 6:30 pm

NOTES
WESTERN THORACIC SURGICAL ASSOCIATION

FRIDAY, JUNE 23, 2006

6:30 am  SIMULTANEOUS BREAKFAST SESSIONS

A) Adult Cardiac Session, Limelight C
   Current Techniques and Long-Term Results of Valve Sparing Aortic Root Surgery
   D. Craig Miller*

B) General Thoracic Session, Camas Room
   Evolving Role of PET Scanning and Lung Cancer Staging
   Robert J. Cerfolio

C) Congenital Heart Disease Session, Lupine Room
   Current Status of Pediatric Mechanical Support Devices
   Marc P. Pelletier

6:30 am  Speaker Ready Room, Limelight Foyer B
7:00 am  Registration, Limelight Foyer A
Continental Breakfast—Exhibit Hall, Exhibit Hall, Continental Room
Hospitality Suite, Lodge Dining Room

8:00 am  POSTGRADUATE COURSE

Limelight A & B
Sponsored by: White Memorial Medical Center and Foundation—Lyman A. Brewer, Ill Fund
Introduced by: R. Scott Mitchell*
Irving L. Weissman, Stanford, CA

* Samson Resident Prize Essay
* WTSA Member
Sun Valley Resort, Sun Valley, Idaho

32ND ANNUAL MEETING

NOTES
BACKGROUND: The Extreme Drug Resistance (EDR) assay was shown to predict clinical resistance to chemotherapy in non-small cell lung cancer (NSCLC). This study examined whether the EDR assay correlates with biomarker expression, resulting in increased prognostic power to predict chemotherapy failure in NSCLC.

METHODS: 578 NSCLC adenocarcinomas were analyzed by flow cytometry for DNA ploidy and immunohistochemistry for p53 expression. In the EDR assay, tumor cells were exposed in vitro to suprapharmacological concentrations of cisplatin, carboplatin, etoposide, doxorubicin, and taxol.

EDR Patterns of Drug Resistance in Non-Diploid and p53-Positive NSCLC

<table>
<thead>
<tr>
<th>Drugs Tested</th>
<th>Diploid vs Non-Diploid</th>
<th>p53-Negative vs p53-Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Resistance</td>
<td>p Value</td>
</tr>
<tr>
<td></td>
<td>LDR</td>
<td>IDR</td>
</tr>
<tr>
<td>Cisplatin</td>
<td>55</td>
<td>99</td>
</tr>
<tr>
<td>Carboplatin</td>
<td>82</td>
<td>110</td>
</tr>
<tr>
<td>Etoposide</td>
<td>57</td>
<td>112</td>
</tr>
<tr>
<td>Doxorubicin</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Taxol</td>
<td>54</td>
<td>92</td>
</tr>
</tbody>
</table>
etoposide, doxorubicin, and taxol. The data were defined as EDR (one standard deviation more resistant than the median), intermediate drug resistance (IDR—between the median and EDR), and low drug resistance (LDR—lower than the median).

RESULTS: Compared to diploid, non-diploid tumors exhibited significantly higher levels of resistance to etoposide (336 cases, \( p = 0.0001 \) by chi-square statistics), doxorubicin (71 cases, \( p < 0.0001 \)), and taxol (346 cases, \( p = 0.0175 \)), with a statistical trend (339 cases, \( p = 0.0716 \)) for carboplatin. In the p53+ group (vs p53–), significantly higher resistance was observed for carboplatin (315 cases, \( p = 0.0185 \)), etoposide (370 cases, \( p = 0.0050 \)), and doxorubicin (145 cases, \( p < 0.0001 \)), with a strong statistical trend (348 cases, \( p = 0.0529 \)) for cisplatin.

CONCLUSIONS: Drug resistance was significantly higher in non-diploid and p53+ NSCLC subgroups (4 out of 5 drugs tested). These results provide the first indication that combined EDR and biomarker testing may be beneficial for assay-guided chemotherapy.

NOTES
BACKGROUND: Patients with Ebstein's anomaly and a poor right ventricle (RV) pose a surgical challenge and may require transplantation. Our institutional experience with bidirectional cavopulmonary shunts (BDCPS) in this patient population was reviewed. Published experience is limited.

METHODS: Between 1972 and December 2005, 623 patients with Ebstein's anomaly had surgery at our institution; 11 of these patients had each a BDCPS and a poor RV. All the procedures were performed after July 1999 at a median patient age of 8.3 years [17 months–57 years]. By echocardiography, all the patients had severe Ebstein's anomaly, severely dilated right-sided chambers, and RV dysfunction; the mean left ventricular ejection fraction (LVEF) was 49% [range 35–72%].

RESULTS: Procedures included BDCPS (11), bioprosthetic tricuspid valve replacement (10), RV resection (2), atrial septal defect closure (1), delayed chest closure (4), and intra-aortic balloon pump (IABP) placement (2). A BDCPS was planned preoperatively in 7 patients; intraoperative indications for the construction of a BDCPS included an inability to wean off cardiopulmonary bypass (2) and hemodynamic instability after chest closure (2). One patient died postoperatively of fungal sepsis; 9 patients were alive at a median of 7 months [1–78 months]. The patient with a preoperative LVEF of 35% had an LVEF of 55% at dismissal.

CONCLUSIONS: The 1.5 ventricle repair can be applied to patients with advanced Ebstein's anomaly and a poor RV. We believe the BDCPS should be considered in selected patients as an alternative to transplantation or as a salvage procedure for hemodynamic instability after standard repair.
**10. Advances in Positron Emission Tomography (PET) Technology Have Increased the Need for Surgical Staging in Non-Small Cell Lung Cancer (NSCLC)**

B. E. Lee, D. Von Haag, T. Lown, D. Lau, R. Calhoun, D. Follette*

*UC Davis Medical Center, Sacramento, CA*

**DISCUSSANT: JOHN D. MITCHELL***

**BACKGROUND:** Pre-treatment staging of patients with NSCLC is critically important in determining an appropriate treatment plan. As PET and computed tomography (CT) are proven complementary modalities in clinical staging, recent advances in PET technology have brought forth fusion PET/CT as the new standard. We tested the hypothesis that improvements in PET technology have not increased the sensitivity or specificity of PET in NSCLC staging to an extent that surgical staging is no longer required.

**METHODS:** This is a retrospective, single institution review of 336 patients from 1995–2005 with biopsy proven NSCLC who underwent FDG-PET prior to mediastinal lymph node sampling by cervical mediastinoscopy or thoracotomy. Clinical records, histopathologic reports, and PET findings were reviewed. Data was analyzed using the Pearson chi-squared test.

**RESULTS:** Within the study population, 210 patients had routine PET and 126 had fusion PET/CT. For detecting mediastinal metastases the sensitivities of PET vs. fusion PET/CT were 61.1% vs. 85.7% (p < 0.05); specificities were 94.3% vs. 80.6% (p < 0.001); positive predictive values were 68.8% vs. 53.8%; negative predictive values were 92.1% vs. 95.2%; overall accuracy was 88.6% vs. 81.7%.

**CONCLUSIONS:** This study shows that improvements in PET technology have increased fusion PET/CT sensitivity at the cost of significantly decreased specificity. Thus, while it may appear that fusion PET/CT incurs fewer false negatives, the dramatic increase in false positives reinforces the notion that fusion PET/CT should only be used as an adjunct to clinical staging and that surgical staging remains the standard of care in NSCLC.
NOTES

Sun Valley Resort, Sun Valley, Idaho  32ND ANNUAL MEETING
11. A Novel Biomarker for the Detection of Esophageal Adenocarcinoma
Z. Hammoud, S. Badve, R. Saxena, K. Kesler, K. Rieger, L. Malkas, R. Hickey
Indiana University School of Medicine, Indianapolis, IN
DISCUSSANT: MICHAEL WEYANT

OBJECTIVE: Proliferating cell nuclear antigen (PCNA) is a component of the DNA synthesome and functions in DNA replication and repair. Our group has recently identified an acidic isoform of PCNA, termed cancer specific PCNA (csPCNA), that appears to be present only in malignant tissue. We sought to determine the presence of csPCNA in esophageal dysplasias and invasive adenocarcinomas in order to assess the potential utility of csPCNA to identify malignancy.

METHODS: Using a polyclonal antibody to csPCNA, immunohistochemistry (IHC) was performed on a total of 30 cases of Barrett’s esophagus (BE) with varying degrees of dysplasia and 18 cases of invasive adenocarcinoma. As control, IHC for csPCNA was performed on normal esophageal tissue and, using a commercially available antibody, IHC for PCNA was performed on all specimens.

RESULTS: Of the BE cases, 14 showed no dysplasia, 8 showed low grade dysplasia, and 8 showed high grade dysplasia. None of these cases was positive for csPCNA. Of the 18 adenocarcinoma cases, all were positive for csPCNA. There was no significant csPCNA expression in normal esophageal tissue and PCNA expression was noted to a high degree in all tissues.

CONCLUSIONS: csPCNA demonstrates high specificity for esophageal adenocarcinoma. This novel biomarker may prove useful in differentiating invasive cancer from high grade dysplasia. csPCNA also holds future promise as a serum biomarker for esophageal adenocarcinoma.

* Samson Resident Prize Essay
* WTSA Member

WTSA Member
*12. Medium Term Results of Cut-and-Sew MAZE III Versus Ablation Devices for the Treatment of Chronic and Paroxysmal Atrial Fibrillation
M. J. Davidson, N. Narayanasamy, S. McGurk, G. S. Couper, L. H. Cohn
Brigham and Women’s Hospital, Boston, MA
DISCUSSANT: ROBBIN G. COHEN*

BACKGROUND: New ablation devices have simplified the treatment of atrial fibrillation (AF), but the long-term success of these therapies is unclear. We examined the effectiveness of various MAZE treatments in patients with AF undergoing other cardiac surgical procedures.

METHODS: The records of all patients undergoing AF ablation concomitant with other cardiac surgical interventions at a single institution from November 2000 to April 2005 were evaluated (n = 201). Patients received either (1) a Cox MAZE III (MAZE III), (2) a modified MAZE (M-MAZE: pulmonary vein (PV) isolation, connecting lesions between PV to mitral valve, and left atrial appendage), or (3) PV isolation (PVI) alone. M-Maze and PVI utilized either bipolar radiofrequency (n = 160), cryoablation (n = 24), or monopolar radiofrequency (n = 9). Patients were followed up for presence of normal sinus rhythm (NSR), complications, and adjuvant therapies.

RESULTS: Preoperatively, 138 patients had chronic AF (CAF, 68.7%) and 63 patients had paroxysmal AF (PAF, 31.3%). Operative mortality was 2.0% (n = 4) and late mortality was 9.6% (n = 20). Follow-up rhythm assessment was available at greater than 60 day interval for 163 patients (81.1%).

<table>
<thead>
<tr>
<th></th>
<th>N =</th>
<th>NSR at Follow-Up</th>
<th>Interval (Days)</th>
<th>Late Cardioversion</th>
<th>Late Catheter Ablation</th>
<th>Post-Operative Pacemaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAZE III</td>
<td>13</td>
<td>61.5%</td>
<td>952 ± 419</td>
<td>0.0%</td>
<td>0.0%</td>
<td>15.4%</td>
</tr>
<tr>
<td>CAF M-MAZE</td>
<td>50</td>
<td>46.0%</td>
<td>337 ± 232</td>
<td>34.0%†</td>
<td>12.0%</td>
<td>16.0%</td>
</tr>
<tr>
<td>PVI</td>
<td>48</td>
<td>29.2%</td>
<td>464 ± 261</td>
<td>16.7%*</td>
<td>6.3%</td>
<td>18.8%</td>
</tr>
<tr>
<td>PAF PVI</td>
<td>52</td>
<td>73.1%*</td>
<td>306 ± 171</td>
<td>23.1%</td>
<td>9.6%</td>
<td>15.4%</td>
</tr>
</tbody>
</table>

Data = Mean ± SD; *p < 0.02 vs Full MAZE and vs M-MAZE; **p < 0.001 vs PVI in CAF; †p < 0.02 vs Full MAZE

CONCLUSIONS: Modified MAZE can be performed as a concomitant procedure with low operative mortality but variable clinical success, based on the lesion set used and AF chronicity. Cut-and-sew MAZE III resulted in greater restoration of NSR and less need for adjuvant procedures. Among patients in CAF, PVI alone resulted in limited success.

* Samson Resident Prize Essay
* WTSA Member
Sun Valley Resort, Sun Valley, Idaho

32\textsuperscript{ND} ANNUAL MEETING

10:30 am     Coffee Break—Visit Exhibits, Exhibit Hall, Continental Room

NOTES
BACKGROUND: Despite diminished left ventricular mass regression and poor long-term outcome in the presence of patient-prosthesis mismatch, there remains reluctance to perform aortic root enlargement (ARE). We therefore examined the operative risks of aortic valve replacement (AVR) with and without ARE.

METHODS: We reviewed the operative mortality of patients undergoing AVR between January 1993 and December 2001. Risk factors for operative death were evaluated by multivariable analysis.

RESULTS: Of 2381 patients undergoing AVR with (1161) or without (1220) concomitant procedures, 264 (11%) underwent ARE excluding Konno procedures. Patients undergoing ARE were slightly younger, were twice as often female, and more often reoperative, but were similar with respect to functional class. The mean valve implant size was less in the ARE group (21.5 ± 1.7 vs. 23.2 ± 2.3 mm, p < 0.0001). As expected mean cross clamp time and bypass time were somewhat prolonged for ARE. Operative mortality was higher for ARE (5.68% vs. 2.88%, p = 0.02), however risk factors by multivariable analysis were poor NYHA functional class (p = 0.0011, odds ratio 1.93) and smaller valve implant size (p = 0.018, odds ratio 1.13). ARE was not an independent risk factor for operative death.

CONCLUSIONS: ARE itself does not increase operative risk, although it is most often required among high-risk patients. Surgeons should not be reluctant to enlarge the aortic root to permit implantation of an adequate size valve prosthesis.
### Table

<table>
<thead>
<tr>
<th></th>
<th>AVR N = 2117</th>
<th>ARE N = 264</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>70.1 ± 12.2</td>
<td>63.8 ± 19.7</td>
<td>0.001</td>
</tr>
<tr>
<td>Female (%)</td>
<td>33.49</td>
<td>70.83</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>NYHA 3 or 4 (%)</td>
<td>73.35</td>
<td>81.3</td>
<td>0.14</td>
</tr>
<tr>
<td>Reoperation (%)</td>
<td>5.57</td>
<td>31.44</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Cross clamp time (min)</td>
<td>64 ± 26.1</td>
<td>77.6 ± 31.7</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Bypass time (min)</td>
<td>93.6 ± 40.5</td>
<td>119.2 ± 54.7</td>
<td>p &lt; 0.0001</td>
</tr>
<tr>
<td>Operative mortality (%)</td>
<td>2.88</td>
<td>5.68</td>
<td>0.02</td>
</tr>
</tbody>
</table>

### NOTES
**14. “Extended Pneumonectomy” for Broncogenic Carcinoma: Surgical and Survival Outcomes**

**A. Borri, D. Galetta, F. Leo, F. Petrella, R. Gasparri, P. Scanagatta, D. Radice, G. Veronesi, L. Spaggiari**

*Division of Thoracic Surgery, European Institute of Oncology, Milan, Italy*

**DISCUSSANT: DOUGLAS E. WOOD***

**BACKGROUND:** Postoperative morbidity and mortality after standard pneumonectomy range from 2.8 to 43%, and 2.9 to 12%, respectively. However, the impact of “extended pneumonectomy” (EP) on postoperative period and the oncological advantage of such resection is unclear. We review our experience in the use of EP in locally advanced lung cancer with particular regard to postoperative outcome and long term results.

**METHODS:** We consider “extended pneumonectomy” the full resection of the lung associated to the resection of mediastinal organs (carina, superior vena cava, left atrium, aorta, esophagus) or chest wall/diaphragm structures. Kaplan-Meier and log-rank test were used to analyse survival data.

**RESULTS:** From January 1998 to March 2005, 47 patients underwent EP for NSCLC. Pneumonectomy was extended to chest wall/diaphragm, left atrium, SVC, carina, SVC and carina, aorta and oesophagus in 6, 15, 4,4,9,7,1 patients respectively. Thirty-eight patients (80.8%) underwent induction chemotherapy. Overall postoperative morbidity was 57.4% with a major complication rate of 17%. Thirty-day and 60-day mortality rate were 4.2%, and 8.5%, respectively. Complete resection was achieved in 87% of cases (n = 41). Overall 5-year probability of survival was 22.8% with a median survival of 16 months. Neither postoperative outcome nor survival were significantly influenced by the type of extended pneumonectomy.

**CONCLUSIONS:** EP is a feasible procedure in selected patients, with acceptable postoperative morbidity and mortality. Complete resection is achieved in an high number of patients, and using severe selection criteria some patients could reach permanent cure.
BACKGROUND: Cardiovascular disease is a common cause of morbidity and mortality in organ transplant recipients. With an increasing number of abdominal organ transplant recipients, cardiac surgery has become more common in this population.

METHODS: We retrospectively evaluated 75 transplant recipients (58 kidney, 7 kidney-pancreas, 7 pancreas and 2 liver) who underwent cardiac surgery (93% CABG, 5.4% CABG + valve and 1.4% valve) between 1995 and 2005.

RESULTS: Patients with prior abdominal transplants were younger (mean age 50 ± 10 yrs vs. 61 ± 13 yrs, p < 0.001), with increased incidence of diabetes (91.9% v. 39.1%, p < 0.001), peripheral vascular disease (PVD) (39.2% v. 19.1%, p < 0.001), chronic renal insufficiency (73.0% v. 13.4%, p < 0.001) and unstable angina (44.8% v. 25.7%, p = 0.005) as compared to non-transplant patients. There was no difference in the overall complication rate at 30-days after surgery between the two groups, except that transplant patients were more likely to have renal dysfunction (25.7% v. 6.1%, P < 0.001) and require hemodialysis (11.7% v. 1.1%, P < 0.0001). 30-day mortality was similar between groups (1.4% vs. 2.9%, p = NS). By multivariable analysis, heart failure, non-elective surgery, prolonged cardiopulmonary bypass, PVD, and lower creatinine clearance were significant risk factors for mortality; however, prior abdominal organ transplant was not an independent risk factor for postoperative mortality.

CONCLUSIONS: Despite an increased incidence of comorbid conditions, the postoperative outcomes of cardiac surgery in abdominal solid organ transplant recipients are similar to that in the non-transplant population. Factors contributing to this may include perioperative strict glycemic control, modification of immunosuppression and meticulous antibiotic prophylaxis.
Sun Valley Resort, Sun Valley, Idaho

32\textsuperscript{ND} \text{ANNUAL MEETING}

12:00 pm  ADJOURN
12:30 pm  Golf Tournament, \textit{Sun Valley Golf Course}
2:00 pm  Tennis Tournament, \textit{Sun Valley Tennis Club}

EVENING—FREE

NOTES
**OBJECTIVE:** To assess whether diazoxide added to cardioplegia improves myocardial protection in clinical settings.

**METHODS:** 40 patients undergoing CABG were randomized to receive intermittent warm-blood antegrade cardioplegia supplemented with diazoxide (100 µM) or placebo. Mitochondria size was compared in LV biopsies taken before AXC and before chest closure. Myocardial metabolism was studied sampling coronary sinus blood. The hemodynamic data were collected. The troponin I, CKMB and proNT-BNP was measured. All outcomes were analyzed using two-way repeated measure covariance (ANCOVA) analysis.

**RESULTS:** No deaths, strokes, or MIs were observed. Patients received on average 36.2 ± 1.2mg of diazoxide and 37.3 ± 1.9mg of placebo (p = 0.6). Mitochondria size increased from 8474 ± 163 pixels to 11357 ± 759 pixels (p = 0.004) in placebo group and did not change in diazoxide group: 8899 ± 474 vs 9273 ± 688 pixels (p = 0.6). Diazoxide decreased myocardial oxygen extraction ratio 45 ± 1 vs 50 ± 2% (p = 0.04), glucose extraction ratio 7 ± 0.9 vs 10 ± 1.0% (p = 0.03), and lactate production –24 ± 6 vs –55 ± 14% (p = 0.04) in reperfusion. The following hemodynamic parameters differed

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* WTSA Member
in post-op period: CI 3.0 ± 0.09 vs. 2.7 ± 0.09 l/min/m² (p = 0.02), LCW 5.5 ± 0.2 vs 4.4 ± 0.2 kgm (p = 0.001), LVSW 55.3 ± 1.6 vs 50.2 ± 1.6 gm/beat (p = 0.04), DO2l 424 ± 15 vs 375 ± 14 ml/min/m² (p = 0.03), O2ER 28 ± 0.9 vs 31 ± 0.9 % (p = 0.02). Postoperative enzymes did not differ. ProNT-BNP was lower in diazoxide group 124 ± 20 vs 182 ± 21 pg/ml (p = 0.05).

CONCLUSIONS: Diazoxide improves myocardial metabolism in reperfusion, protects mitochondria from ischemia reperfusion injury and improves cardiac performance in postoperative period.

NOTES
P2. Eight-Year Experience of Total Arterial Off-Pump CABG With Early And Postoperative One-Year Angiography
K. Kim, K. R. Cho, D. S. Jeong
Seoul National University Hospital, Seoul, Republic of Korea

BACKGROUND: We assessed the early postoperative and one-year results after total arterial off-pump coronary artery bypass (OPCAB).

METHODS: Of Eight hundred and thirty four OPCABs performed between 1998 and 2004, we compared the results of patients using total arterial grafts (group A; n = 699) with those using one or more saphenous vein grafts (group B; n = 135). Coronary angiographies were performed early (n = 804; postoperative day 1.6 ± 1.5) and one year (n = 671; 12.1 ± 4.2 mo) after surgery.

RESULTS: There were no significant differences in patient characteristics, operative mortalities and postoperative morbidities between the two groups (p = ns). Early postoperative angiographies showed higher overall patency of group A than group B (99.1% vs 90.9%), which might be affected by a low saphenous vein patency in group B. There was no difference in the internal thoracic artery (ITA) pateny between the two groups (99.1% vs 97.1%). Postoperative one-year angiographies showed higher overall patency of group A than group B (95.0% vs 78.8%), which might also be affected by a low saphenous vein patency. There was no difference in the one-year ITA pateny between the two groups (95.6% vs 94.2%). Target vessel revascularization rate in the postoperative one year was significantly lower in group A than in group B (2.0% vs 7.4%, p = 0.002).

CONCLUSIONS: Total arterial OPCAB demonstrated a high patency rate at both early and one year after surgery, resulting in a low target vessel revascularization rate.

### Comparison of Graft Patency

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Early</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>99.1% (1900/1918)</td>
<td>90.9% (390/429)</td>
<td>0.02</td>
</tr>
<tr>
<td>ITA</td>
<td>99.1% (1425/1438)</td>
<td>97.1% (170/175)</td>
<td>ns</td>
</tr>
<tr>
<td>SVG</td>
<td>–</td>
<td>86.4% (210/243)</td>
<td>–</td>
</tr>
<tr>
<td><strong>One-yr</strong></td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total</td>
<td>95.0% (1514/1594)</td>
<td>78.8% (305/387)</td>
<td></td>
</tr>
<tr>
<td>ITA</td>
<td>95.6% (1174/1226)</td>
<td>94.2% (146/155)</td>
<td>ns</td>
</tr>
<tr>
<td>SVG</td>
<td>–</td>
<td>67.9%, 148/218</td>
<td>–</td>
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* Samson Resident Prize Essay
* WTSA Member
BACKGROUND: Past trial evidence suggests a mortality benefit with surgical revascularization in patients with left ventricular (LV) dysfunction. We provide new, long-term outcome data for CABG patients with LV dysfunction.

METHODS: This was a retrospective, population based cohort study (n = 64,550) using clinical and administrative data for patients discharged alive following isolated CABG in the province (fiscal years 1991–2002). The primary outcomes included cardiac readmission (UA, CHF, MI), and death. A multivariable Cox regression model compared the relative outcome by LV grade (Grade 1 ≥ 50% n = 27,465, Grade 2 35–49% n = 23,718, Grade 3 20–34% n = 10,940, Grade 4 <20% n = 2,427). Risk-adjusted survival curves by LV grade are provided (Figure 1).

RESULTS: The higher the LV grade the higher the proportions of males, higher comorbidity, unstable angina at presentation, CHF, and previous bypass surgery. Table 1 provides the Cox HR by LV grade. Figure 1 shows the risk-adjusted survival curves by LV grade. Patients with a Grade 4 LV have a 20% higher 10 year mortality rate than those with a Grade 1 LV.
CONCLUSIONS: Patients with severe LV dysfunction (Grade 3 or 4 LV) have poor survival at 10 years following CABG. Adjunctive therapies such as stem cell transplantation may improve outcomes.

NOTES
P4. Toll-Like Receptor 4 Mediates Myocardial Ischemic Preconditioning

M. L. Agnew¹, D. J. Spring¹, C. L. Rothnie¹, A. J. Fleisig¹, A. Shimamoto², S. Shomura¹, E. D. Verrier*¹

¹University of Washington School of Medicine, Seattle, WA
²Mie University Graduate School of Medicine, Tsu, Japan

BACKGROUND: Previous work has demonstrated that the innate immune system, via toll-like receptor 4 (TLR4), contributes to myocardial ischemia-reperfusion (I/R) injury following prolonged ischemia. Our objective is to determine whether TLR4 also mediates the protective myocardial response to brief episodes of ischemia, known as ischemic preconditioning (IPC).

METHODS: Wild-type C57/BL6 mice (WT) were compared to TLR4- and MyD88-knockout mice (TLR4-/-, MyD88-/-) in three experimental groups. Group 1 underwent 30 minutes of regional myocardial ischemia followed by two hours of reperfusion (I/R alone). Group 2 underwent an IPC protocol prior to I/R. In Groups 1 and 2, infarct size was determined at the end of reperfusion. Group 3 underwent IPC only, after which hearts were harvested for molecular analysis via Western blot, electrophoretic mobility shift assay, and ribonuclease protection assay.

RESULTS: Compared to I/R alone, IPC decreased infarct size in WT (38.1% to 18.0%, p < .00001) but increased infarct size in TLR4-/- (22.6% to 36.9%, p < 0.002); MyD88-/- was unchanged (25.1% to 22.7%). Compared to sham controls, IPC in WT led to significant phosphorylation of JNK and Akt, and increased nuclear translocation of NF-κB. Similar increases were not observed in TLR4-/-.

CONCLUSIONS: We provide evidence for a protective role of the innate immune system in myocardial preconditioning. These data indicate that IPC is mediated via TLR4 in a MyD88-independent fashion, leading to activation of the inflammatory kinase JNK and the survival kinase PI3K/Akt, nuclear translocation of NF-κB, and protection against infarct. This is the first experimental demonstration that TLR4 is involved in IPC.
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Notes
BACKGROUND: Mitral annuloplasty (MAP) is a recommended treatment for CHF with mitral regurgitation. However, idiopathic DCM with severely enlarged left ventricle is often not effectively treated by only MAP. We examined our long-term outcome of left ventricular restoration surgery (LVR) in conjunction with MAP.

METHODS: Eighty three pts with idiopathic DCM underwent MAP with or without LVR. We performed LVR according to the echocardiographic findings to exclude the most damaged part of LV by partial left ventriculectomy or septal anterior ventricular exclusion operation.

RESULTS: Preoperative NYHA class was III in 47 pts and IV in 36 pts. In elective basis, 33 pts underwent MAP without LVR (LVR-) and 40 pts with LVR (LVR+), PLV in 19 pts and SAVE in 21 pts. Hospital mortality in elective operations was 3% (1/33) in LVR- and 7.5% (3/40) in LVR+. LV parameters showed in table. There was a difference in the survival rate between two groups with enlarged LV (p = 0.0459, figure).

Survival curve of elective cases with LV ESVI > 120 ml/m²

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CONCLUSIONS: MAP is an effective treatment for DCM with CHF. Once LV is everely enlarged, LVR is a preferable combination with MAP. Proper selection of the surgical mode, MAP, PLV, SAVE, or a combination, may improve a long-term outcome of non-transplant surgery for DCM.

### Perioperative LV parameters of ESVI > 120 ml/m²

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre</th>
<th>Post</th>
<th>Pre</th>
<th>Post</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVR – Group</td>
<td>25.5 ± 6.8</td>
<td>24.3 ± 7.9</td>
<td>70.4 ± 7.1</td>
<td>67.3 ± 11.4</td>
</tr>
<tr>
<td>LV Dd mm</td>
<td>152 ± 52</td>
<td>144 ± 71</td>
<td>70 ± 52</td>
<td>70 ± 52</td>
</tr>
<tr>
<td>LV ESVI ml/m²</td>
<td>175 ± 46</td>
<td>158 ± 51</td>
<td>175 ± 46</td>
<td>158 ± 51</td>
</tr>
<tr>
<td>* Indicates p &lt; 0.01 versus pre in each group.</td>
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</tbody>
</table>

### NOTES
P6. Aortic Root Reconstruction with Bioprosthetic Valved Conduits: Reviewing a Consecutive Series of 275 Procedures
C. D. Etz, T. M. Homann, N. Rane, C. A. Bodian, F. Kilburn-Toppin, G. Diluozzo, K. Plestis, R. B. Griepp*
Mount Sinai School of Medicine, New York, NY

BACKGROUND: To assess the results of aortic root reconstruction using composite conduits with stented bioprosthetic valves.

METHODS: 275 patients (202 male, mean age 69 ± 11, range 17–88) who had aortic root replacement using conduits constructed intraoperatively from pericardial valves and impregnated Dacron grafts from 9/93 to 2/05 underwent review. There were 141 patients with degenerative and 63 with atherosclerotic aneurysms; 43 had dissections (14 acute type A), 14 had endocarditis, and 10 had other pathologies. Only the ascending aorta was replaced in 154 patients; a hemiarch reconstruction was performed in 105, and extensive arch reconstruction in 16. Hypothermic circulatory arrest was used in 240 patients.

RESULTS: Hospital mortality was 17/275 patients (6.2%). Four additional patients (1.5%) sustained permanent strokes. Table 1 outlines factors contributing to these adverse outcomes.

### Risk Factors for Adverse Short-term Outcome

<table>
<thead>
<tr>
<th>Factors</th>
<th>Prevalence of Risk Factors</th>
<th>Predictors for Acute Adverse Event*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt; 60 years</td>
<td>226  82.2%</td>
<td>Univariate</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>96  34.9%</td>
<td>Multivariate</td>
</tr>
<tr>
<td>History of neurologic dysfunction</td>
<td>24  8.7%</td>
<td>p = 0.02</td>
</tr>
<tr>
<td>Urgent/emergent procedure</td>
<td>30  10.8%</td>
<td></td>
</tr>
<tr>
<td>Clot or atheroma</td>
<td>24  8.7%</td>
<td>p &lt; .0001</td>
</tr>
<tr>
<td>Concomitant procedure</td>
<td>114 41.2%</td>
<td>p = 0.04</td>
</tr>
</tbody>
</table>

* stroke or death

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* WTSA Member
acute adverse outcomes*. A Kaplan-Meier curve of long-term survival is shown in Figure 1. Among surviving patients, the rate of stroke was estimated as 1.5, and of significant hemorrhage as 0.65 per 100 patient-years. Reoperation for valve failure did not occur in the first postoperative decade.

CONCLUSIONS: Patients who recover satisfactorily after reconstruction of the aortic root with a stented bioprosthetic valved conduit (6 month survivors) enjoy long-term outcomes equivalent to a normal matched population.

NOTES
OBJECTIVE: Ventricular restraint is a promising therapeutic option for congestive heart failure. Its precise mechanism of action, however, is unclear. In this study, we evaluate the effect of quantitative ventricular restraint on transmural myocardial pressure (P_{tm}) in an ovine model of heart failure.

METHODS: A novel fluid-filled balloon was developed to quantitatively measure and apply ventricular restraint to the entire epicardial surface. To produce heart failure, five ovine underwent D1/D2 coronary ligation. Six weeks post-infarction, all ovine developed dilated heart failure, characterized by a LV EF < 35% and an 80% increase in LV EDV. Ventricular restraint levels were defined by the maximum pressure applied by the balloon to the epicardium (at end-diastole). We measured aortic, LV, and epicardial (balloon) pressure throughout the cardiac cycle at 4 different restraint levels: 0, 1/3 P_{max}, 2/3 P_{max}, and P_{max}, where P_{max} was defined as the restraint pressure that caused a 10 mmHg drop in mean aortic pressure. P_{tm} was defined as LV pressure minus epicardial pressure.

<table>
<thead>
<tr>
<th>Restraint Level</th>
<th>Mean Arterial Pressure (mmHg)</th>
<th>Mean P_{tm} (mmHg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>53.1 (±7.2)</td>
<td>33.6 (±4.9)</td>
</tr>
<tr>
<td>1/3 P_{max} (3mmHg)</td>
<td>52.6 (±8.1)</td>
<td>30.1 (±5.4)</td>
</tr>
<tr>
<td>2/3 P_{max} (5mmHg)</td>
<td>46.6 (±4.4)</td>
<td>26.9 (±5.5)</td>
</tr>
<tr>
<td>P_{max} (8mmHg)</td>
<td>43.1 (±6.9)</td>
<td>22.6 (±4.7)</td>
</tr>
</tbody>
</table>

RESULTS: Mean P_{tm} decreased significantly with increasing ventricular restraint levels.
CONCLUSIONS: Ventricular restraint decreases transmural myocardial pressure in
an ovine model of heart failure, suggesting that decreased wall stress is one potential
mechanism of this therapy. Quantitative ventricular restraint may allow for the optimi-
zeation of therapy, whereby the reduction of wall stress is maximized and the effect on
systemic hemodynamics is minimized.

NOTES
P8. Clinical Risk Factors and Predictors of Cerebrovascular Accidents in Patients with a Ventricular Assist Device

H. Tsukui, A. Abla, J. J. Teuteberg, S. Winowich, E. Stanford, S. A. Weaver, M. Mathier, D. M. McNamara, L. M. Cadaret, M. A. Simon, R. L. Kormos
University of Pittsburgh Medical Center, Pittsburgh, PA

BACKGROUND: A cerebrovascular accident (CVA) is a devastating adverse event in a patient (pt) on a ventricular assist device (VAD). The goal was to clarify risk factors of CVA.

METHODS: Prospectively collected VAD implantation data including medical history, VAD type, leukocyte count, thrombelastograph (TEG) and infection was reviewed retrospectively in 124 pts (64 left VAD [LVAD], 60 biventricular VAD [BiVAD]).

RESULTS: Thirty-one pts (24%) had 48 CVAs. Mean VAD support periods were 228 and 89 days in pts with and without CVA, respectively (p < 0.0001). Actuarial freedom from CVA at 6 months was 75%, 64%, 63%, and 33% on HeartMate, Thoratec BiVAD, Thoratec LVAD, and Novacor, respectively (Figure). Twenty CVAs (42%) occurred on pts with infections. Mean leukocyte count at CVA exceeded normal range in pts with infection (12,900 /mm³) and without infection (9,500 /mm³). Mean maximum amplitude of TEG in periods with infection (63.6 mm) was higher than that without infection (60.7 mm) (p = 0.0309).
CONCLUSIONS: The risk of CVA increases with longer VAD support periods. The greatest period of risk appears to be in the first 4 months of support. Infection may activate platelet function and predispose to CVA. An elevation of the leukocyte count could also exacerbate the risk of CVA even in pts without infections. Prevention of infection and meticulous control of anticoagulation on pts with infection and/or leukocyte count elevation would be keys to prevent CVA.

NOTES
P9. Annulus Size, Valve Labels, And Geometric Orifice Area: A Therapeutic Conundrum

B. A. Youdelman, H. Jain, H. Hirose, J.W. Entwistle, A.S. Wechsler*
Drexel University College of Medicine, Philadelphia, PA

BACKGROUND: Is there a predictable relationship between the geometric orifice area (GOA) of valves sized to fit into a specific annulus? This is a concern in patients at risk for patient prosthesis mismatch. Valve sizers from multiple manufacturers cannot be safely compared in a clinical setting because of time and potential injury to cardiovascular structures. We studied 50 cadavers to determine the relationship between the true measured annular diameter and the GOA of the aortic valve chosen based on its sizer.

METHODS: Aortic annular diameters were determined in 50 fresh cadaver hearts. Valve sizers for 3 bioprosthetic and 5 mechanical valves determined the largest valve that could be fit into each annulus.

RESULTS: Labeled valve size did not correlate statistically to measured annular diameter. When appropriately sized, tissue valves had a statistically larger GOA than mechanical valves. Relationship between GOA and annular size was investigated through regression analysis and important inter-valve differences were observed between y-intercepts and slopes (Fig 1).

CONCLUSIONS: Surgeons believe that valve sizers correlate closely with GOA and annular size. Our study showed important statistical differences in GOA amongst aortic valves appropriately sized for any true measured annular diameter. Using GOA allowed comparison between valves with a reproducible measure. Labeled valve size is misleading and cannot be used alone to optimize valve selection. This further reinforces the need for standardization.

Fig 1. Relationship between the geometric orifice area of 5 mechanical valves sized for the aortic position and measured annular diameter. Lines depict regression analysis, error bars are standard deviations. (p<0.025)

CONCLUSIONS: Surgeons believe that valve sizers correlate closely with GOA and annular size. Our study showed important statistical differences in GOA amongst aortic valves appropriately sized for any true measured annular diameter. Using GOA allowed comparison between valves with a reproducible measure. Labeled valve size is misleading and cannot be used alone to optimize valve selection. This further reinforces the need for standardization.

* Samson Resident Prize Essay
* WTSA Member
National Cardiovascular Center, Osaka, Japan

BACKGROUND: Surgical replacement is our standard strategy for descending aortic aneurysm, despite the advent of thoracic endoprosthesis. We retrospectively analyzed the outcome of the descending aortic repair under partial cardiopulmonary bypass (PCPB).

METHODS: Since 1994, 113 patients underwent graft replacement of descending aorta (mean age 68 ± 12, 75 male) for non-dissecting aneurysm. There were 16 emergencies (14.2%). All operations were performed through left thoracotomy under PCPB with segmental clamping. Since 1998, preoperative MR angiography has been performed to detect Adamkiewicz artery for an elective case. Motor evoked potential has been measured recently.

RESULTS: The early mortality rate was 5.3% (6 of 113) in total, 1.0% (1 of 97) in elective cases, and 31.3% (5 of 16) in emergencies. The rate of spinal cord dysfunction was 2.7% (3 of 113) in total, 1.0% (1 of 97) in elective cases, and 12.5% (2 of 16) in emergencies. The stroke rate were 7.1% (8 of 113) in total, 4.1% (4 of 97) in elective cases, and 25.0% (4 of 16) in emergencies. The rate of respiratory failure was 9.7% (11 of 113) in total, 9.2% (9 of 97) in elective cases, and 12.5% (2 of 16) in emergencies.

CONCLUSIONS: Although the open surgical procedure is more invasive than stent-graft repair, the replacement of descending aorta under PCPB was performed with a comparable risk with the thoracic endoprosthesis.
P11. Sleeve Lobectomy and Pneumonectomy: A Functional Comparison
Zuin\textsuperscript{1}, G. Marulli\textsuperscript{1}, R. Bulf\textsuperscript{1}, C. Breda\textsuperscript{1}, C. Schiraldi\textsuperscript{2}, G. Rizzardi\textsuperscript{1}, F. Sartori\textsuperscript{1}, F. Rea\textsuperscript{1}
\textsuperscript{1}Thoracic Surgery—University of Padua, Padua, Italy,
\textsuperscript{2}Division of Respiratory Medicine—University of Padua, Padua, Italy

BACKGROUND: To assess and compare the effects of sleeve lobectomy and pneumonectomy for lung cancer on postoperative respiratory function and exercise capacity.

METHODS: From January 1980 to December 2004, 610 patients underwent pneumonectomy and 220 sleeve lobectomy for lung cancer in our Division.

From these, two groups of 50 patients each with homogeneous preoperative pulmonary function were selected and postoperatively studied by standard spirometry after a mean of 31 and 38 months from pneumonectomy and sleeve lobectomy, respectively.

Moreover, 20 patients for each groups performed maximal exercise test, in order to quantify the exercise capacity at a mean of 43 and 42 months after operation.

Differences between pre and post-operative spirometric values, including static volumes and dynamic flows (VC, RV, FEV\textsubscript{1} and FEF\textsubscript{25/75}) and exercise test parameters (VO\textsubscript{2} max, VECO\textsubscript{2}, VEo\textsubscript{2} and maximal work load Wmax) were analysed with Student’s t-test.

RESULTS: Stage by stage 5-year survival rate after sleeve lobectomy and pneumonectomy was comparable, respectively 71% and 57% for N0, 34,5% and 25,2% for N1, 19,1% and 11,8% for N2.

Sleeve lobectomy group showed a significantly lower decrease of spirometric parameters VC, RV and FEV\textsubscript{1} (p < 0,001) and an higher postoperative maximal work load capacity (p < 0.05). FEF\textsubscript{25/75}, VO\textsubscript{2} max, VECO\textsubscript{2} and VEo\textsubscript{2} showed no significant differences.

CONCLUSIONS: Sleeve lobectomy for lung cancer brings comparable results with pneumonectomy in long term survival, preserving better respiratory function.
Therefore, sleeve resections, whenever feasible, should be considered an effective alternative to pneumonectomy, not restricted to patients with compromised pulmonary function.

NOTES
P12. Tumor FDG-Avidity on PET Scan Predicts Long-Term Survival in Patients with Stage I Bronchioloalveolar Carcinoma
D. J. Raz, A. Y. Odisho, D. M. Jablons*
University of California San Francisco, San Francisco, CA

BACKGROUND: Bronchioloalveolar carcinoma (BAC) is a clinically heterogeneous subtype of non-small cell lung carcinoma that frequently has low 2-[18F]fluoro-D-glucose (FDG) uptake on positron emission tomography (PET) scanning. We investigated whether FDG-avid tumors were associated with worse survival in patients who had completely resected BAC.

METHODS: We performed a cohort study of thirty-three patients who had completely resected BAC between 1998 and 2004, who had no hilar or mediastinal lymph node metastases, and who had undergone a preoperative PET scan. Tumor FDG-avidity was defined as a standardized uptake value (SUV) of 2.5 or greater. Survival analysis was performed using a Cox proportional hazard model. We recorded and adjusted for tumor size, whether the patient had multi-focal BAC, and whether the tumor was histologically pure BAC or was mixed with invasive adenocarcinoma.

RESULTS: Of thirty-three patients studied, twenty-three patients (70%) were alive and ten patients (30%) were dead after a mean follow-up of 34.7 ± 17.6 months (range: 11–87 months). The median tumor SUV was 2.2 (range:0–9). Fifteen patients (45%) had FDG-avid tumors, and 18 patients (55%) had non-avid tumors. Three-year survival was 49% in the FDG-avid group and 94% in the non-avid group. Using a proportional hazard model, FDG avidity had a hazard ratio (HR) of death of 9.2 (95%CI 1.1–75.0, p = 0.039) after adjusting for tumor size, the presence of multi-focal BAC, and the presence of histologically mixed BAC.

CONCLUSIONS: Preoperative tumor FDG-PET SUV of 2.5 or greater predicts a higher risk of mortality in patients with node negative BAC undergoing lung resection.

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* WTSA Member
P13. Randomized Controlled Phase III Trial of Paravertebral Catheter Versus Epidural Catheter for Post Thoracotomy Pain Control

M. J. Liptay¹, Z. T. Hammoud², E. Merwitz¹, J. McGee¹, F. Clark¹, K. Culiner¹

¹Evanston Northwestern Healthcare, Evanston, IL, ²Indiana University, Indianapolis, IN

BACKGROUND: Preoperative epidural catheter insertion was compared to a potentially simpler intraoperatively inserted paravertebral catheter for post-thoracotomy pain control.

METHODS: 37 consecutive patients undergoing planned thoracotomy for lung resection were randomized to receive either On Q (Ilflo corp) catheter vs preoperative thoracic epidural catheter insertion. Visual Analog Pain Scales and PCA devices were used to

<table>
<thead>
<tr>
<th>Variable</th>
<th>Epidural (n = 19)</th>
<th>On Q Paravertebral (n = 18)</th>
<th>Difference A–B</th>
<th>Difference A vs. B 95% C.I.</th>
<th>p-value (Group A vs. B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-Op Pain Comparisons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BPI Pain score at 24 hours, 0 = no pain, 10 = worst pain</td>
<td>3.9 (2.7)</td>
<td>2.5 (2.0)</td>
<td>1.4 (2.4)</td>
<td>(–0.1, 3.1)</td>
<td>0.072</td>
</tr>
<tr>
<td>BPI Pain score at 48 hours, 0 = no pain, 10 = worst pain</td>
<td>3.5 (1.7)</td>
<td>2.3 (1.4)</td>
<td>1.2 (2.2)</td>
<td>(–0.3, 2.7)</td>
<td>0.104</td>
</tr>
<tr>
<td>Worst pain at 24 hours, 0 = no pain, 10 = worst pain</td>
<td>6.3 (3.1)</td>
<td>4.4 (2.8)</td>
<td>1.9 (2.9)</td>
<td>(–0.1, 3.8)</td>
<td>0.062</td>
</tr>
<tr>
<td>Worst pain at 48 hours, 0 = no pain, 10 = worst pain</td>
<td>6.4 (2.9)</td>
<td>4.2 (3.1)</td>
<td>2.2 (3.0)</td>
<td>(0.1, 4.1)</td>
<td>0.037</td>
</tr>
<tr>
<td>PCA dose administered (n, % yes)</td>
<td>15 (79%)</td>
<td>18, (100%)</td>
<td>18 (100%)</td>
<td>0.105</td>
<td></td>
</tr>
<tr>
<td>Number of PCA demands, if PCA administered</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (Std)</td>
<td>20.3 (35.3)</td>
<td>19.9 (17.7)</td>
<td>0.962</td>
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</table>

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* WTSA Member
assure adequate pain control and the amounts of IV narcotic used were recorded. We compared means of continuous variables between the Epidural group and On-Q group with Student's t-tests. A p-value <0.05 was considered statistically significant.

RESULTS: No significant differences between the two groups existed, thoracotomies were performed in all. The Table illustrates the comparison between the Epidural group and On-Q for pain and treatment satisfaction. There were no statistical differences (p-values ranged from 0.060 to 0.960). In general, the epidural group experienced more pain, with mean BPI pain scores 1.4 and 1.2 points higher at 24 and 48 hours, respectively. In addition, the epidural group had more pain on the worst pain measure, with mean score 1.9 and 2.2 points higher at 24 and 48 hours, respectively. No significant complications were noted associated with either catheter use. No difference in length of stays were seen.

CONCLUSIONS: Intraoperative On-Q paravertebral catheter insertion provides comparable pain relief to the thoracic epidural catheter. Ease of insertion makes it an alternative to routine epidural insertion.

NOTES
P14. Temporal Trends and Outcomes in the Management of Pleural Space Infections
F. Farjah, R. G. Symons, B. Krishnadasan, D. E. Wood*, D. R. Flum
University of Washington, Seattle, WA

BACKGROUND: The management of pleural space infections has changed over the last two decades. This study evaluated trends in operative management, and outcomes associated with operative therapy.

METHODS: A statewide administrative database cohort investigation was performed for pleural space infections occurring between 1987 and 2004. Temporal trends were described in six year time intervals.

RESULTS: 3,511 patients (age 57.8 ± 18.7 years, 66% male, co-morbidity index of 1.2 ± 1.9) were hospitalized with a pleural space infection. The incidence of pleural space infections rose 3.2% per year (95% CI 2.5%–3.8%, p < 0.001). Operative therapy increased over time (25.8%, 38.8%, 44.3%, p < 0.001). 30-day mortality (12.4%, 12.5%, 10.4%, p = 0.04) and length of stay (12 days, 11 days, 10 days, p = 0.001) decreased, costs increased ($13,965, $15,376, $20,570, p < 0.001), and re-admission rates did not change (11.4%, 10.3%, 11.0%, p = 0.74). 30-day mortality was less for operated patients (3.2% vs 16.7%, p < 0.001); however, operated patients were younger (51.7 ± 17.1 years vs 61.6 ± 18.6 years, p < 0.001) and had a lower co-morbidity index (0.74 ± 1.48 vs 1.42 ± 2.14, p < 0.001). After adjusting for age, gender, co-morbidity index, hospital, and year, operative therapy was associated with a 74% reduction in the risk of death (OR 0.26, 95% CI 0.18–0.37, p < 0.001).

CONCLUSION: Operative management of pleural space infections has increased over time, and is associated with less mortality compared to nonoperative management. Consideration of early, aggressive surgical therapy for pleural space infection may result in better outcomes.

* Samson Resident Prize Essay
P15. Routine Mediastinoscopy and Esophageal Ultrasound Fine Needle Aspiration in Patients with Non-Small Cell Lung Cancer Who are Clinically N2 Negative: A Prospective Study
R. J. Cerfolio, A. S. Bryant
University of Alabama at Birmingham, Birmingham, AL

BACKGROUND: Despite normal mediastinal (N2) nodes on positron emission tomography (PET) and computed tomography (CT), some routinely perform mediastinoscopy and/or endoscopic-ultrasound (EUS-FNA) in patients with non-small cell lung cancer (NSCLC).

METHODS: A prospective trial on patients with NSCLC clinically staged N2 negative by both integrated PET/CT and CT scans. All underwent mediastinoscopy and EUS-FNA. If N2 negative underwent thoracotomy with thoracic lymphadenectomy.

RESULTS: There were 153 patients (107 men) and 136 were clinically staged N0. Five (3.7%) had a positive EUS-FNA (three in the subcarinal node), four (2.9%) had a positive mediastinoscopy (all in the #4R node, one was N3). Six of the remaining 127 (4.7%) had N2 disease after resection. Seventeen patients were clinically staged as N1 by integrated PET/CT. Four patients (23.5%) had a positive EUS-FNA (2 in the subcarinal node), three (17.6%) had a positive mediastinoscopy (#4R node, two were N2 one was N3), and none of the remaining 10 patients had N2 disease after resection. Patients with unsuspected N2 disease were twice as likely (RR = 2.1, p < 0.05) to have a maxSUV > 10 and poorly differentiated cancer. There was no statistically significant difference in the incidence of adenocarcinoma or lobar location of tumor.

CONCLUSIONS: We do not recommend routine mediastinoscopy or EUS-FNA in patients who are clinically staged as N0 after both integrated PET/CT and CT. However, these procedures should both be considered in patients clinically staged as N1 after PET/CT, and/or in those with adenocarcinoma, upper lobe tumors or tumors with a maxSUV of 10 or greater.

Y. C. Lee, C. T. Wu, S. W. Kuo, Y. T. Tseng, Y. L. Chang
National Taiwan University Hospital, Taipei, Taiwan Republic of China

BACKGROUND: Regional lymph node involvement affects the prognosis of patients with surgically resected non-small cell lung cancer (NSCLC). The significance of extranodal extension in these patients was studied to determine its clinicopathological relations and its influence on patient's survival.

METHODS: A total of one hundred and ninety nine NSCLC patients who were proved to have regional lymph node involvement after resection. Histological examinations including tumor cell type, grade of differentiation, vascular invasion, regional lymph node metastasis emphasizing on number and station of lymph node involvement, presence or absence of extranodal extension and immunohistochemistry of p53 expression were obtained. The relations of extranodal extension with histological type, grade of differentiation, vascular invasion, tumor size, pathological stage, p53 expression and patient's survival were analysed.

RESULTS: The positive rate of extranodal extension was significantly higher in female, adenocarcinoma, advanced stage, tumor with vascular invasion or p53 overexpression. The total number and positive rate of resected lymph node with extranodal extension were significantly correlated with advanced stage, tumor with vascular invasion or p53 overexpression. By multivariate analysis of patient's survival, the presence, total number of lymph node with extranodal extension, tumor stage and p53 expression were significant prognostic factors. The 5 year survival rate of stage IIIA patients without extranodal extension (30.4%) was significantly better than stage II patients with extranodal extension (16.8%). No survival difference between extranodal positive stage II and IIIA patients was noted.

CONCLUSIONS: Extranodal extension of regional lymph nodes is an important prognostic factor in surgically resected NSCLC.
Sun Valley Resort, Sun Valley, Idaho

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NOTES
P17. The Effect of Interleukin 6 on Mitogen Activated Protein Kinase and Suppressors of Cytokine Signalling 3 Expression in Lung Ischemia Reperfusion

H. E. Merry, A. S. McCourtie, A. S. Farivar, M. F. Delgado, M. S. Mulligan*
University of Washington, Seattle, WA

OBJECTIVES: The mechanism for interleukin 6 modulating ischemia-reperfusion injury remains poorly characterized. In vivo exogenous IL-6 reduces endothelial disruption and neutrophil sequestration in lung ischemia-reperfusion injury. This study attempts to characterize the mechanisms by which exogenous IL-6 confers protection in lung ischemia-reperfusion injury.

METHODS: For in vivo data, rats were pretreated with 150ng of IL-6 intratracheally and underwent 90 minutes of left lung ischemia and 15 minutes of reperfusion. Total protein was then harvested from whole lung homogenates and western blots were then performed. For in vitro studies cultured rat type 2 pneumocytes and pulmonary artery endothelial cells were pretreated with 1ng/ml of IL-6. Cells were then subjected to 120 minutes of hypoxia and 15 minutes of reoxygentation. The effects of exogenous IL-6 on early markers of lung ischemia reperfusion injury, including mitogen activated protein kinase activation and nuclear translocation of transcription factors were then analyzed.

RESULTS: In vivo IL-6 was associated with reduced activation of ERK 1/2, p38 and JNK. SOCS 3 was increased with ischemia-reperfusion. In vitro pulmonary artery endothelial cells and type 2 pneumocytes showed a reduction in ERK 1/2 phosphorylation. In addition, in pulmonary artery endothelial cells there was reduction in NFkB and EGR-1 nuclear translocation and upregulation of SOCS-3.

CONCLUSIONS: Exogenous IL-6 has a role in potentiating lung ischemia reperfusion injury. Mechanistically this effect appears to be modulated through decreased MAPK activation and feedback through upregulation of the Suppressors of Cytokine Signaling 3 (SOCS3) pathway. The physiologic effects of exogenous IL-6 are currently being investigated.
P18. Effect of Sympathectomy Level on the Incidence of Compensatory Hyperhidrosis After Sympathectomy for Palmar Hyperhidrosis

D. L. Miller, A. S. Bryant, S. D. Force, J. I. Miller
Emory University School of Medicine, Atlanta, GA

BACKGROUND: Palmar hyperhidrosis can be psychosocially unacceptable. A significant number of individuals do not undergo sympathectomy because of the fear of compensatory hyperhidrosis (CH). Controversy exists as to the level and the number of levels treated that affect the incidence of CH in patients who undergo sympathectomy for palmar hyperhidrosis.

METHODS: Retrospective review of a VATS database consisting of all patients who had VATS sympathectomy for palmer hyperhidrosis at a single institution.

RESULTS: VATS sympathectomy was performed in 282 patients for palmer hyperhidrosis from May 2002 through July 2005; 179 patients (64%) underwent division at the T2 level only and 103 patients at T2, T3, and T4 levels. The two groups were similar for median age and gender. The rate for CH was significantly less in the T2 group (23 patients—13%) than in T2-4 group (24 patients—24%), respectively (p = 0.026). The most common site of compensatory hyperhidrosis was the lower back for both groups. Patients with CH were older (median age 31 years versus 23 years (p = 0.037), had a BMI greater than 27 (p = 0.048), and had sympathectomy at multiple levels (p = 0.004).

CONCLUSIONS: Compensatory hyperhidrosis continues to occur after sympathectomy for palmar hyperhidrosis. However, a significant reduction in compensatory hyperhidrosis can be achieved by dividing the sympathetic chain at a single level (T2). Patients who are older and have increased BMIs should possibly undergo a temporary sympathectic block to determine if CH would be a significant side effect before a permanent sympathectomy.
P19. Design, Development and Hemodynamic Analysis of a Low-Pressure Cavopulmonary Assist Device within the Total Cavopulmonary Connection

R. Wang¹, J. Hertzberg¹, F. Lacour-Gayet², R. Shandas³

¹University of Colorado at Boulder, Boulder, CO, ²Children's Hospital Heart Institute, University of Colorado Health Sciences Center, Denver, CO, ³University of Colorado at Boulder, University of Colorado Health Sciences Center, Boulder/Denver, CO

BACKGROUND: Serious late attrition, more notable with aging, commonly exists among patients following Fontan palliation. We hypothesize that a RV assist could reverse the deleterious effect of the Fontan paradox.

METHODS: The physiology of patients with total cavopulmonary connection (TCPC) was mimicked by a cylindrical geometry, with diameter of 10 mm, right angle intersections, and an offset between the IVC and superior vena cava (SVC) of 10 mm. Inside the IVC we numerically simulated a low-pressure microaxial pump which measured 25 mm axially and 9.5 mm radially, specially tailored for pediatric patients.

RESULTS: The pressure rise achieved across the device varied between –2.5 and 14.9 mm Hg, and nonlinearly decreased with higher cardiac output and lower rotor speed. The pressure in the upstream IVC fell below the baseline values, followed by a step rise in pressure across pump. The SVC pressure for all conditions remained within 20% of the value for the design point. The venous returns were almost equally split into the two pulmonary arteries. Most blood particles passed through the pump vicinity within 20 ms, with a maximum shear stress of 2355 – 6753 dyne/cm². An average hemolysis index of 0.92% was estimated, indicating minimal hemolysis.

CONCLUSIONS: With a decreased caval pressure and minimum cell damage, this innovative cavopulmonary support exhibits promise for alleviating the downward hemodynamic spiral in TCPC patients.
Figure a) Computer Designed Model for Pump-Supported TCPC

Figure b) Dimensions of Pump Prototypes
- Syringe (top, 3ml)
- Prototype 1 (nodes, D=2.0mm)
- Prototype 2 (bottom, D=0.31 mm)

NOTES
P20. Neonatal Repair of Hemitruncus—Excellent Short and Long Term Outcomes

M. Nathan, D. Rimmer, G. Piercey, P. del Nido, J. E. Mayer, E. Bacha, F. Pigula

Children's Hospital, Boston, MA

BACKGROUND: Anomalous origin of one of the branch pulmonary arteries from the aorta with two normal semilunar valves (hemitruncus) is a rare entity. There have been several small case series reported. We report here our experience with hemitruncus from 1982–2005.

METHODS: Retrospective case review of all cases of conotruncal anomalies at Children's Hospital Boston, revealed 13 patients with hemitruncus. Diagnosis was established in most cases by echocardiogram, there was one missed diagnosis with diagnosis established intraoperatively. 8 patients were operated in the neonatal period, 1 at 6 weeks, 2 at 2 months, 1 at 5 months and 1 at 2 years. 12 of the 13 had anomalous right pulmonary artery from aorta and 1 had left pulmonary artery from aorta. Associated anomalies included muscular VSD in one, left pulmonary vein membrane in one, coarctation and arch hypoplasia in one.

RESULTS: There was one operative death in this series in an infant who died post repair of associated TEF from infected right atrial thrombus from a central venous lines. One patient required reoperation for supravalvar aortic stenosis and RPA stenosis 1 year postop. Freedom from death was 0.92 at 10 years and freedom from reoperation 0.83 at 10 years.

* Samson Resident Prize Essay
* WTSA Member
CONCLUSIONS: Hemitruncus anamolies are a rare form of conotruncal abnormality that can and should ideally operated in the neonatal period with excellent longterm results.
P21. Endotoxin Preconditioning Induces Robust Protection Against Brain Injury Resulting from Deep Hypothermic Circulatory Arrest

E. J. Hickey, J. You, V. Kaimakchiev, M. Stenzel-Poore, R. M. Ungerleider*
Oregon Health Sciences University, Portland, OR

BACKGROUND: Delayed preconditioning genetically reprograms the response to ischemic injury. Subclinical bacterial endotoxin (ET) acts through preconditioning, powerfully protecting against experimental stroke. We investigated the potential for ET to protect against cardiopulmonary bypass (CPB) related brain injury.

METHODS: Neonatal piglets were blindly and randomly preconditioned with ET (n = 6) or saline (n = 6). Three days later, they experienced 2hrs hypothermic circulatory arrest (HCA) before being weaned and supported anesthetized for 20hrs in an intensive care setting. Controls included CPB without HCA (n = 3) and no CPB (n = 3). Brain injury was quantified using light and fluorescent microscopy (Fluoro-Jade).

RESULTS: All animals were clinically indistinguishable before surgery. Peri- and post-operative parameters between experimental groups were similar. No control animal scored falsely positive. Histological scores were 0.33 ± 0.21, 0.66 ± 0.42 and 0.5 ± 0.24 in the cortex (COR), basal ganglia (BG) and hippocampus (HC) respectively, in the ET animals but significantly worse in all saline animals (1.33 ± 0.21 (p < 0.01); 1.66 ± 0.33, (p = 0.09); and 6.0 ± 1.5, (p < 0.01)). Two ET brains were histologically indistinguishable from controls.

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* WTSA Member

SALINE
ET

FluoroJade stain for Ischemia
CONCLUSIONS: This is the first report of successful delayed preconditioning against CPB brain injury. Because ET preconditioning is a systemic phenomenon offering proven protection against myocardial, hepatic and pulmonary injury, this technique offers enormous potential for protecting against systemic neonatal CPB-injury.

NOTES
P22. Infants with Congenital Heart Disease Have Elevated Biochemical Markers of Brain Injury Prior to Cardiac Surgery

J. M. Simsic¹, S. Dambinova², G. Izykenova², W. Mahle¹, P. M. Kirshbom³, P. Bokesch³
¹Children’s Healthcare of Atlanta, Atlanta, GA, ²Cis-Biotech, Atlanta, GA, ³Emory University, Atlanta, GA

BACKGROUND: During ischemia, N-Methyl-D-Aspartate (NMDA) receptor fragments appear in the bloodstream. Patients with CNS disorders develop autoantibodies to the receptor fragments. Purpose of this study was to observe the expression of the NMDA receptor fragment (NR2 peptide) and antibody (NR2 antibody) biomarker of brain ischemia in infants with congenital heart disease.

METHODS: NR2 peptide and NR2 antibody was obtained in 13 infants undergoing cardiac surgery (study group) at 2 time points; (1) baseline; (2) 24 hours postop. Data obtained was compared to NR2 peptide and NR2 antibody in normal infants (n = 4, control group).

RESULTS: Average age 1.6 ± 2.3 months, study group vs 2.7 ± 2.1 months, control group. Operations included: TOF repair (3); ASO with VSD repair (1); ASO (1); CAVC repair (1); TOF/PA complete repair (1); TAPVR repair (1); hypoplastic arch repair (1); DCRV and VSD repair (1); coarctation repair and PAB (1); coarctation repair (1) Norwood (1). Baseline NR2 antibody levels were elevated in study group vs control group (p = 0.002). See Table.

<table>
<thead>
<tr>
<th></th>
<th>NR2 Peptide ng/ml</th>
<th>NR2 Antibody ng/ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Group, N = 4</td>
<td>0.23 ± 0.13</td>
<td>0.73 ± 0.15</td>
</tr>
<tr>
<td>Study Group Baseline, N = 13</td>
<td>1.33 ± 2.36</td>
<td>1.25 ± 0.44*</td>
</tr>
<tr>
<td>Study Group 24 hrs Postop, N = 13</td>
<td>0.96 ± 0.67*</td>
<td>1.24 ± 0.53*</td>
</tr>
</tbody>
</table>

*p < 0.05; control group vs baseline congenital heart disease
# p < 0.05; control group vs 24 hour postop
2-tailed T-test

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* WTSA Member
CONCLUSIONS: Infants with congenital heart disease have elevated NR2 antibody at baseline compared to normal infants. This supports speculation that infants with congenital heart disease have brain ischemia/injury prior to surgical intervention. Further study is warranted.
BACKGROUND: The training of congenital heart surgeons is extremely difficult, especially when outcomes depend heavily on performing such complex operations with perfection. We evaluate the experience of fellows training in pediatric heart surgery.

METHODS: Fellows who completed 12 months of training within the last five years were included in the study. Questionnaires were completed by e-mail, mail, or phone correspondence.

RESULTS: 28/42 (67%) of fellows responded. Training programs (11) performed an average of 700–800 total cases and 500–600 open cases. Each fellow assisted in an average of 250–299 operations, 200–249 of which were open, and performed an average of 75–99 operations, 50–74 of which were open. While the majority of fellows (24/28) were exposed to all types of congenital operations, they typically performed operations as the surgeon only in the risk adjusted congenital heart surgery score (RACHS) categories 1, 2 and 3. 7/28 fellows performed operations with a RACHS of 4, none with a RACHS of 5, and 1/24 with a RACHS of 6. On a scale of 1–10 (10 satisfied), 28/28 fellows were satisfied with the exposure to congenital heart surgery (9.5 ± 1.0), but only 10/28 with the operative experience (4.9 ± 2.8). 26/28 were satisfied with the training overall (mean 7.3 ± 1.8).

CONCLUSIONS: Challenges in the training of congenital heart surgeons remain. Regardless of the size of the training program, fellows receive excellent exposure to congenital heart surgery. Although there is dissatisfaction with the operative experience, the majority of fellows finish satisfied with their overall training experience.
Western Thoracic Surgical Association

P24. Effects of Single Ventricle Physiology with Aorto-Pulmonary Shunt on Regional Myocardial Blood Flow in a Piglet Model

M. Ricci, P. Lombardi, A. Galindo, S. Schultz, A. Vasquez, E. Rosenkranz
University of Miami Miller School of Medicine, Miami, FL

BACKGROUND: In single ventricle physiology (SVP) with aorto-pulmonary connection, diastolic hypotension could alter regional myocardial blood flow (MBF). Also, afterload augmentation could impair MBF, causing subendocardial malperfusion. We studied the effects of acute SVP on regional MBF distribution and the consequences of afterload augmentation on MBF.

METHODS: SVP was created in 8 newborn pigs, while 8 animals served as sham-controls. Aorto-pulmonary shunt, echo-guided atrial septostomy, tricuspid valve avulsion, and pulmonary artery occlusion allowed the left ventricle to support systemic and pulmonary circulations. Aortic balloon inflation was used to increase afterload. Microsphere determination of MBF was obtained at baseline and during SVP (30min, 120 min, afterload).

RESULTS: Arterial O₂ content, diastolic pressure, and CPP declined in SVP (p < 0.05). Acute SVP caused higher MBF (p < 0.05), unchanged subendocardial/subepicardial flow ratio and O₂ delivery, and lower coronary resistance (p < 0.01)(Figure). Afterload augmentation increased CPP, causing a trend for higher MBF and O₂ delivery (p = ns), without affecting subendocardial/subepicardial flow distribution. Oxygen supply/demand fell in SVP, remaining unchanged during afterload augmentation.

Changes in coronary resistance in single ventricle physiology and sham-operated controls

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* WTSA Member
CONCLUSIONS: Our study demonstrates that in acute SVP with aorto-pulmonary shunt, MBF is maintained by lower coronary resistance. SVP results in less favorable O₂ supply/demand, although normal transmural MBF distribution is maintained. Techniques that avoid diastolic run-off (SVP with RV-PA conduit) could improve coronary reserve. Moderate afterload augmentation did not induce subendocardial malperfusion, nor did it worsen O₂ supply/demand.

NOTES
**P25. Impact of Pulmonary Vascular Compliance on Pleural Effusion Duration after Extracardiac Fontan Procedure**

**T. J. Yun, Y. M. Im, S. H. Jung, J.J. Park, D. M. Seo, W. K. Jahng, Y. H. Kim, I. S. Park, J. K. Ko, M. S. Lee**

*Asan Medical Center, Seoul, Republic of Korea*

**BACKGROUND:** Preoperative risk analysis for Fontan candidates is still less than optimal in that patients with apparently low risks may have poor surgical outcome. We hypothesized that low pulmonary vascular compliance is a risk factor for prolonged pleural effusion drainage.

**METHODS:** A retrospective review of 96 consecutive patients who underwent Extracardiac conduit Fontan procedure was performed. Median age at operation was 3.9 years. Fontan risk score (FRS) was calculated from the 12 categorized preoperative anatomic and physiologic variables. Pulmonary vascular compliance (PVC, mm²/m²•mmHg) was defined as pulmonary artery index (mm²/m²) divided by pulmonary vascular resistance (WU•m²) and pulmonary blood flow (L/min/m²), based on the electrical circuit analogue of the pulmonary circulation. Chest tube indwelling time was log-transformed (Log indwelling time, LIT) to fit normal distribution, and the relationship between preoperative predictors and LIT was analyzed by multiple linear regression.

**RESULTS:** Preoperative PVC, chest tube indwelling time and LIT ranged from 6 to 94.8 mm²/mmHg/m² (median: 24.8), 3 to 268 days (median: 20 days), and 1.1 to 5.6 (mean: 2.9, standard deviation: 0.8), respectively. FRS, PVC, cardiopulmonary bypass time (CPB) and central venous pressure at postoperative 12 hours were correlated with LIT by univariable analyses. By multiple linear regression, PVC \( (p = 0.0018) \) and CPB \( (p = 0.0024) \) independently predicted LIT, explaining 21.7% of the variation. The regression equation of LIT was as follows: LIT = 2.74 – 0.0158 • PVC + 0.00658 • CPB.

**CONCLUSIONS:** Low pulmonary vascular compliance is an important risk factor for prolonged pleural effusion drainage after extracardiac Fontan procedure.
BACKGROUND: We evaluated the effect of operation by attending surgeons versus fellows (board-certified surgeons with limited operative experience) on the outcomes and resource utilization of CABG.

METHODS: Data gathered prospectively on 1171 patients in the practice of 3 attending surgeons over a 3 year period were evaluated by multivariable analyses. Patients were managed in the ICU by intensivists unaware of attending surgeon versus fellow operative responsibility.

RESULTS: 442 patients were operated on by fellows, and 729 by attending surgeons. Patients operated on by attending surgeons had a significantly greater risk profile and received more grafts per patient (p = 0.05). Aortic crossclamp, bypass and operative times were longer in operations performed by fellows (p < 0.05).

Mortality (1.1% vs. 0.9%), perioperative infarction, stroke, resternotomy and sternal infection were similar between groups, and multivariable regression revealed no effect of a fellow operating.

In contrast, by multivariable linear regression, operation by a fellow increased duration of ventilation by 9 ± 5 hrs (p = 0.06) and ICU length of stay by 12 ± 6 hrs (p = 0.048). Redo surgery (+3 ± 19 hrs), peripheral vascular disease (+12 ± 8 hrs) and a recent MI (+7 ± 8 hrs) had less effect on ICU stay (p = NS) than did operation by a fellow, while diabetes (+17 ± 6 hrs), COPD (+36 ± 13 hrs) and heart failure (+37 ± 11 hrs) had greater effects (p < 0.05).

CONCLUSIONS: Patients operated on by fellows have morbidity and mortality equivalent to those achieved by attending surgeons, but utilize significantly more resources. This effect should be recognized as an implicit component of our responsibility to train future cardiothoracic surgeons.
BACKGROUND: The natural history and management of patients with systolic anterior motion (SAM) after mitral valve (MV) repair is uncertain.

METHODS: Retrospective chart review and survey follow-up of all patients who developed SAM intraoperatively after MV repair.

RESULTS: From January 1993 to December 2002, MV repair was performed in 2,076 patients and in 168 cases (8.1%) SAM was identified on intraoperative echocardiography. These patients form the study group. Initially, patients were managed with a combination of β-blockade, vasoconstriction with phenylephrine, and/or intravascular volume expansion. Two patients had revision of repair due to persistent SAM and 3 additional patients due to mitral regurgitation from other causes. Median follow-up of the remaining 163 patients was 4.7 years (range: 0–12.3 years). There were 3 late re-operations, but none was caused by SAM or left ventricular outflow tract obstruction (LVOTO). Ninety percent of patients were in NYHA class I, 6% in class II, and 4% in class III or IV. Echocardiograms were available for review in 88 patients at a median interval of 4.7 years (range: 0.5–12.2 years); 12 patients had SAM and 4 had SAM with LVOTO.

CONCLUSIONS: In this experience, most cases of SAM resolved with conservative measures including β-blockade, vasoconstriction, and fluid administration. Persistent SAM with LVOTO was documented in 4.5% of patients who had early SAM, but did not lead to reoperation. Furthermore, the clinical outcomes of patients with SAM are comparable to current norms for MV repair.
18. Impact of Anastomotic Airway Complications Following Lung Transplantation

Cleveland Clinic, Cleveland, OH

DISCUSSANT: MICHAEL S. MULLIGAN*

BACKGROUND: To determine prevalence and risk factors for anastomotic airway complications (AAC) following lung transplantation and examine their impact on survival.

METHODS: From 1/1992 to 1/2004, 268 patients underwent pulmonary transplantation (163 single and 104 double lung). On follow-up, 50 patients (19%) developed 58 AAC (14%) from the 371 airway anastomoses. From review of medical records and the transplant database, data were abstracted and used to determine risks for AAC and clinical impact.

RESULTS: AAC were categorized as stenosis/obstruction (36/371), dehiscence (12/371), partial necrosis (8/371), and other (2/371). Only 31 of 58 AAC required intervention; the rest resolved with expectant management. Freedom from AAC was 84% at 1 year and 76% at 5 years. Risk factors included prolonged mechanical ventilation ($P = .002$) and telescoping technique with running suture ($P < .0001$), which was performed earlier in the series. Patients ultimately developing AAC had more complicated early postoperative courses with lengthy ICU (7 vs 4 days, $P = .007$) and hospital stays (22 vs 14 days, $P < .0001$). Surprisingly, overall survival was similar for patients with and without AAC (Figure).

![Survival Graph]

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* WTSA Member

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![Survival Graph]

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CONCLUSIONS: 1 in 8 airway anastomoses will be complicated by improper healing. Despite this, with appropriate management, important morbidity and mortality associated with AAC can be avoided, and patients with AAC can be restored to their expected survival curve.

NOTES
19. Central Aortic Cannulation Does Not Increase Adverse Events in Repair Of Acute Ascending Dissection

University of Virginia, Charlottesville, VA

DISCUSSANT: ROBERT C. ROBBINS*

BACKGROUND: Site of cannulation for the repair of the dissected aorta remains controversial. It is not clear whether cannulation of the dissected vessel is safe or even preferred. We hypothesized that cannulation of the dissected aorta or peripheral arteries could be done safely with acceptable complication and mortality rates in this high risk population.

METHODS: The charts of repairs of acute ascending aortic dissections (n = 70) from 1996 to 2004 were reviewed. Cannulation was accomplished in 24 patients via the dissected aorta (Aortic) and 46 patients through cannulation of the femoral or axillary artery (Peripheral). All were converted to sidearm cannulation of the graft for reperfusion. Groups were compared based on comorbidities in addition to mortality, complications, hospital stays and final disposition.

RESULTS: The groups were comparable based on age and preoperative comorbidities. Similarly there were no differences in bypass time, cross clamp time, or hypothermic circulatory arrest time between groups. Postoperative complications, including stroke were similar between groups, but the Peripheral group experienced more cardiac events (Peripheral 15% vs Aortic 0%, p < 0.05) and higher mortality compared to Aortic (Peripheral 19.5% vs Aortic 4.2%, p < 0.05). The two groups had similar rates of rehabilitation placement. Further separation demonstrated no differences among aortic, axillary and femoral cannulation stroke rates, but that mortality was higher in axillary than aortic cannulation.

CONCLUSIONS: Direct cannulation of the dissected aorta was not only safe, but also portended lower mortality and fewer postoperative cardiac events. Cannulation of the dissected aorta does not appear lead to increased adverse events in these high risk patients.
Sun Valley Resort, Sun Valley, Idaho  

32nd Annual Meeting

Saturday

9:50 am  Coffee Break—Visit Exhibits, Exhibit Hall, Continental Room

NOTES
BACKGROUND: Surgical resection is the standard of care for Stage I non-small cell lung cancer (NSCLC). For high-risk patients, radiofrequency ablation (RFA) is an alternative option. Our objective was to evaluate RFA for Stage I NSCLC in high-risk patients.

METHODS: Stage I NSCLC patients, who were medically inoperable, were offered RFA. Thoracic surgeons evaluated and performed RFA under CT guidance. Response was assessed by CT and PET scan. Time to progression (TTP) and survival were monitored every 3 months.

RESULTS: Nineteen patients underwent RFA over a three-year period. There were 8 men and 11 women with a median age of 78 years (range 68–88). RFA resulted in pneumothorax requiring a pigtail catheter in 15 (79%) patients. An initial complete response was observed in 2 patients (10.5%), partial response in 10 (53%), and stable disease in 5 (26%). Early progression occurred in 2 patients (10.5%). During follow-up, local progression occurred in 8 nodules (42%) and the median TTP was 27 months. The remaining eleven (58%) are locally progression-free at a median follow-up of 13.5 months (3.5–44). There were no procedure-related mortalities, 6 deaths occurred during follow-up. The median follow-up in the remaining patients was 20 months. The probability of survival at 1 year was estimated to be 95% (CI 68–91), median survival was not reached.

CONCLUSIONS: Our experience indicates RFA is safe in high-risk Stage I NSCLC patients with reasonable results. Surgery offers a better chance of cure for resectable patients. However, RFA offers an alternative option in high-risk patients.
BACKGROUND: Patient-prosthesis mismatch (PPM) has been inconsistently reported to be a predictor of residual left ventricular hypertrophy (LVH) after aortic valve replacement (AVR). The effect of PPM after AVR on LV regression should be analyzed using homogeneous criteria in terms of population.

METHODS: The study population is made up of eighty-eight patients over 65 years of age with pure aortic stenosis who underwent mechanical AVR. All patients underwent a long-term follow-up echocardiography. Residual LVH was defined as an indexed left ventricular mass (ILVM) more than 131 g/m2 in males and more than 100 g/m2 in females. In order to estimate the impact of pre-operative ILVM on the incidence of residual LVH, we considered the value of absolute LVH (a-LVH) defined as ILVM – 131 g/m2 in males and ILVM – 100 g/m2 in females.

RESULTS: Patients with residual LVH at follow-up had a higher preoperative ILVM (175 ± 25 vs 148 ± 22 g/m2; p = 0.01), a higher preoperative a-LVH (67.4 ± 29.9 vs 27.2 ± 20.1 g/m2; p = 0.0014). At multivariate analysis, a pre-operative ILVM higher than 160 g/m2 in males and 129 g/m2 in females separated patients with and without residual LVH after AVR.

CONCLUSIONS: We are unable to find any correlation between hemodynamic variables related to valve prostheses as well as the type of prostheses and the extent of left ventricular mass regression postoperatively. We have demonstrated that the most important independent predictor of incomplete regression of hypertrophy following aortic valve replacement, was the extent of the preoperative indexed left ventricular mass.
22. Surgical Treatment of Infective Endocarditis: A Continued Challenge
G. Gavra, T. E. David, C. M. Feindel, S. Armstrong, M. Maganti, T. Regesta
Toronto General Hospital, Toronto, ON, Canada
DISCUSSANT: STEVEN W. GUYTON*

BACKGROUND: To examine the outcomes of surgery for active infective endocarditis (AIE) in a large cohort of patients.

METHODS: 418 patients were operated on for AIE. Their mean age was 52 ± 16 years; 274 were men; 162 had isolated aortic valve (AV), 115 had isolated mitral valve (MV), 11 had isolated tricuspid valve, 2 had isolated pulmonary, and 128 had multiple valve AIE. The infected valve was prosthetic in 131 patients. Paravalvular abscess was present in 150. Aortic valve homograft was used in 18/280 patients who had aortic valve replacement, but the approach of radical resection of all infected tissues and reconstruction with patches were used in all patients. The mean follow-up was 6.1 ± 5.2 years and was 98% complete.

RESULTS: There were 48 operative and 95 late deaths. Preoperative shock (odds ratio, OR = 5.2), paravalvular abscess (OR = 3.2), prosthetic valve AIE (OR = 3.1), renal failure (OR = 2.9), and Staphylococcus aureus endocarditis (OR = 1.9) were independent predictors of operative death. Paravalvular abscess (OR = 2.5), prosthetic valve AIE (OR = 1.9), and age (OR = 1.7) were predictors of late death. The table below shows the longitudinal outcomes as estimated by the Kaplan-Meier method.

<table>
<thead>
<tr>
<th>Event</th>
<th>1-year</th>
<th>5-year</th>
<th>10-year</th>
<th>15-year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survival</td>
<td>85 ± 2%</td>
<td>74 ± 3%</td>
<td>63 ± 4%</td>
<td>45 ± 6%</td>
</tr>
<tr>
<td>Freedom from reoperation</td>
<td>99 ± 1%</td>
<td>97 ± 2%</td>
<td>91 ± 3%</td>
<td>71 ± 7%</td>
</tr>
<tr>
<td>Freedom from endocarditis</td>
<td>97 ± 1%</td>
<td>93 ± 2%</td>
<td>88 ± 3%</td>
<td>86 ± 4%</td>
</tr>
<tr>
<td>Freedom from paravalvular leak</td>
<td>99 ± 1%</td>
<td>98 ± 1%</td>
<td>96 ± 2%</td>
<td>92 ± 4%</td>
</tr>
</tbody>
</table>

CONCLUSIONS: Conventional valve surgery for patients with infection limited to the valve and radical resection of paravalvular abscess results in cure in most patients but it is associated with high operative mortality.

* Samson Resident Prize Essay
* WTSA Member
Sun Valley Resort, Sun Valley, Idaho  32nd ANNUAL MEETING

11:10 am  C. Walton Lillehei Point/CounterPoint Session, Limelight A & B
Optimal Treatment of Multi-Vessel Coronary Disease
Moderator:  David A. Fullerton*
Pro:  David P. Taggart
Con:  John D. Carroll

12:00 am  ANNUAL BUSINESS MEETING (Members Only)
Limelight A & B

12:30 PM  FAMILY LUNCHEON
Lodge Terrace

7:00 pm  PRESIDENT'S RECEPTION AND BANQUET
River Run Lodge
Transportation to & from the President’s Reception and Banquet will be provided. Buses will depart from the Baldy Bus Loop beginning at 6:45 pm.

NOTES
EXHIBITORS

EXHIBIT Hours and Dates

Thursday, June 22, 2006 – 7:00 a.m. until 12 Noon
Friday, June 23, 2006 – 7:00 a.m. until 12 Noon
Saturday, June 24, 2006 – 7:00 a.m. until 10:30 a.m.

Booth #

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32ND ANNUAL MEETING

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<td>Tobias M. Homann, MS</td>
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<td>Fleur Kilburn-Toppin</td>
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<td>Frederick Y. Chen, MD, PhD</td>
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<td>Aravind Rangaraj, MD</td>
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<td>Hiroyuki Tsukui, MD</td>
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<td>Stephen Winowich, BSChE</td>
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<td>Robert L. Kormos, MD</td>
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<td>Harsh Jain, MD</td>
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<td>John W.C. Entwistle, MD, PhD</td>
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<td>Kenji Minatoya, MD</td>
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<td>Andrea Zuin, MD</td>
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<td>Giuseppe Marulli, MD</td>
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<td>Renato Bull, MD</td>
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P11. Cristiano Breda, MD
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     Francesco Sartori, MD
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     Chen-Tu T. Wu, MD

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     Alexander S. Farivar, MD
     Mauricio F. Delgado, MD
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<th>Author</th>
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<td>P17. Michael S. Mulligan, MD</td>
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<td>Heather E. Merry, MD</td>
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<td>P20. Meena Nathan, MD</td>
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<td>Edward J. Hickey, MD</td>
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<td>P22. Janet M. Simsic, MD</td>
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<td>Svetlana Dambinova, PhD</td>
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<td>P23. Brian E. Kogon, MD</td>
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<td>Amelia Vasquez</td>
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<td>Elliot Rosenkranz</td>
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Sun Valley Resort, Sun Valley, Idaho  32nd ANNUAL MEETING

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    Tae Jin Yun, MD, PhD  
    Won Kyoung Jahng, MD  
    Moo Song Lee

**Disclosure Information**

Nothing to Disclose

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## SCHEDULE OF EVENTS

(All events to occur at the Sun Valley Inn unless otherwise noted)

### WEDNESDAY, JUNE 21, 2006
- **9:00 a.m. – 1:00 p.m.** Council Meeting — Camas Room
- **3:00 p.m. – 7:00 p.m.** Registration — Limelight Foyer A
- **7:00 p.m. – 9:00 p.m.** New Members Reception — Opera House Lawn
- **11:00 a.m. – 12:00 p.m.** Kids’ Reception — Sun Valley Bowling Center

### THURSDAY, JUNE 22, 2006
- **6:00 a.m.** Samson Fun Run — Baldy Bus Loop
- **7:00 a.m. – 12:00 noon** Registration — Limelight Foyer A
- **7:00 a.m. – 12:00 noon** Scientific Session — Limelight A & B
- **9:10 a.m.** Presidential Address — Limelight A & B
  - “In Critical Condition” — R. Scott Mitchell, MD
- **11:50 a.m. – 12:30 p.m.** Controversies in Thoracic Surgery — Limelight A & B
- **7:00 p.m. – 10:00 p.m.** Trail Creek Theme Dinner — Trail Creek Grounds

### FRIDAY, JUNE 23, 2006
- **6:00 a.m. – 12:00 noon** Speaker Ready Room — Limelight Foyer B
- **6:30 a.m. – 8:00 a.m.** Breakfast Sessions:*
  - A) Adult Cardiac Session — Limelight CB
  - B) General Thoracic Session — Camas Room
  - C) Congenital Heart Disease Session — Lupine Room
- **7:00 a.m. – 12:00 noon** Registration — Limelight Foyer A
- **7:00 a.m. – 8:00 a.m.** Continental Breakfast — Exhibit Hall, Continental Room
- **7:00 a.m. – 11:00 a.m.** Hospitality Suite — Lodge Dining Room
- **8:00 a.m. – 8:50 a.m.** Postgraduate Course — Limelight A & B
  - Sponsored by: White Memorial Medical Center and Foundation—Lynn A. Brause, M.D.
- **8:50 a.m. – 12:00 noon** Scientific Session — Limelight A & B
- **2:00 p.m. – 5:00 p.m.** Tennis Tournament* — Sun Valley Tennis Center

### SATURDAY, JUNE 24, 2006
- **7:00 a.m. – 11:00 a.m.** Speaker Ready Room — Limelight Foyer B
- **7:00 a.m. – 10:00 a.m.** Exhibit Hall, Continental Room
- **7:00 a.m. – 10:00 a.m.** Registration — Exhibit Hall, Continental Room
- **7:00 a.m. – 11:00 a.m.** Hospitality Suite — Lodge Dining Room
- **7:15 a.m. – 8:30 a.m.** Concurrent Poster Sessions
  - A) Adult Cardiac Session — Limelight A & B
  - B) General Thoracic Session — Camas Room
  - C) Congenital Heart Disease Session — Lupine Room
- **8:30 a.m. – 11:15 a.m.** Scientific Session — Limelight A & B
  - C. Walton Lillehei Point-Counterpoint — Sponsored by: St. Jude Medical, Inc.
- **12:00 noon – 12:30 p.m.** Business Meeting (Members Only) — Limelight A & B
- **12:30 p.m.** Family Luncheon — Lodge Terrace
- **2:00 p.m. – 5:00 p.m.** President’s Reception & Banquet++ — River Run Lodge
- **7:00 p.m. – 10:00 p.m.** Kids’ Banquet — Young Summer Building

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*Separate Subscription Required

++ Black Tie Optional

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**WESTERN THORACIC SURGICAL ASSOCIATION**
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