Department of Surgery, Division of Cardiovascular Surgery at the University of Pennsylvania presents

4TH NORTH AMERICAN Aortic Valve Repair Symposium
A C M E - A C C R E D I T E D S Y M P O S I U M

Friday-Saturday, September 13-14, 2019

Sofitel Philadelphia
120 South 17th Street
Philadelphia, PA 19103

In Conjunction With

Endorsed by:
The Society of Thoracic Surgeons

Course Director:
Joseph E. Bavaria, MD

Co-Directors:
Prashanth Vallabhajosyula, MD, MS
Munir Boodhwani, MD, MMSc
John Augoustides, MD

www.avrepairsymposium.org
The purpose of this educational activity is to provide in-depth analysis and procedural understanding of both bicuspid and 3-cusp aortic valve repair and valve-sparing aortic root surgery. Additionally, this symposium will provide technical and conceptual pearls related to aortic valve repair. Faculty presentations will constitute deep-dive sessions addressing valvular and aortic root pathology in the context of aortic valve preservation, with discussion panels focusing on the technical nuances and detailed differences in aortic valve repair and valve-sparing aortic root techniques. Live on-tape sessions will be complemented with comprehensive didactic coverage of the clinical, technical, and imaging tools required to develop a successful aortic valve repair program.

**Learning Objectives**

Upon completion of the activity, the participant should be able to:

- Evaluate the aortic root complex to plan for aortic valve repair
- Review techniques of bicuspid and tricuspid aortic valve repair
- Use echocardiography to plan for aortic valve repair
- Perform Echocardiographic and physiologic evaluation of aortic insufficiency after valve repair
- Identify techniques for performing valve-sparing root reimplantation
- Describe clinical and echocardiographic surveillance after aortic valve repair

**Hosting Department**

The 4th North American Aortic Valve Repair Symposium is hosted by the Department of Surgery, Division of Cardiovascular Surgery at the University of Pennsylvania.
Accreditation

In support of improving patient care, Penn Medicine is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

Designation of Credit

Penn Medicine designates this live activity for a maximum of 15.0 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Amount of Credit Available By Day:
Friday .......... 8.75 AMA PRA Category 1 Credits™
Saturday ...... 4.5 AMA PRA Category 1 Credits™

Certificates and Transcripts: After the conference has concluded, all participants will receive a follow-up email with instructions and a link with instructions on how to claim their credit. Once participants submit the request for credit, the earned credits will be available for viewing on your transcript or available for printing at https://upenn.cloud-cme.com. Please note that the individual certificate will not be mailed.

Disclosures

Penn Medicine, Office of Continuing Medical and Interprofessional Education, adheres to the ACCME Standards for Commercial Support. Faculty disclosure information will be made available in the conference materials and syllabus. Faculty members are also expected to disclose to participants any discussions of off-label and/or investigational uses of pharmaceutical products within their presentations.
Registration Fees
The registration fees for the 4th North American Aortic Valve Repair Symposium are the following: $850 for Physicians and Industry; $700 for Physicians who are members of the Society of Thoracic Surgeons (STS); $300 for Healthcare Professionals, Residents and Fellows.

The registration fee includes attendance to the symposium, a course booklet, access to view the presentation slides online, continental breakfast, mid-morning and afternoon breaks and a working lunch on both days. All attendees will also receive a complimentary flash drive.

If you are registering with a credit card, please register online at https://upenn.cloud-cme.com/avrs2019. You must log-in with your Penn ID or your email and password or if you do not already have a profile, you must create one before you can register for an event. We cannot accept faxed or mailed registration forms with credit card information. To pay by check, complete the registration form and mail it in with your check. Please see the registration form for mailing information. Please note: mailed registrations can take up to 5-10 business days before they are received. All registrations will be confirmed by email as long as your registration is received no later than August 30, 2019.

Cancellation and Refund Policy
In order to process refunds for course withdrawals, cancellations must be received in writing by August 30, 2019 (subject to a service charge of 10% of the registration fee but not less than $15.00). No refunds will be issued after August 30, 2019. The University reserves the right to cancel or postpone any course due to unforeseen circumstances. In the event of cancellation or postponement, the University will refund registration fees but is not responsible for related costs or expenses to participants, including cancellation fees assessed by hotels, airlines, and travel agencies.
Meeting Location

The 4th North American Aortic Valve Repair Symposium will be held Friday-Saturday, September 13-14, 2019 at the Sofitel Philadelphia, 120 South 17th Street, Philadelphia, PA 19103. For more information on Sofitel Philadelphia, please visit their website at: http://www.sofitel-philadelphia.com/en or to reach them directly, please call 215-569-8300.

The Sofitel Philadelphia is offering a special group rate (single or double-occupancy) of $269.00 per night. These rates do not include the 15.5% sales and occupancy tax. The special room rate is only available until Thursday, August 15, 2019 or until the block has filled (whichever comes first). Rates are subject to availability once the room block has filled. Please call the Sofitel Philadelphia directly at 215-569-8300 and identify yourself as a participant of the “Penn Medicine 4th AVRS 2019” in order to receive the discounted overnight room rate. Please visit http://tinyurl.com/h38q3gc in order to make your reservations online.

Parking: The Sofitel Philadelphia offers valet-only parking. The daily parking rate is $36. For guests staying overnight Monday-Thursday, the rate is $50.24 and guests staying overnight Friday-Saturday, the rate is $45.33. The symposium will not validate or discount any parking expenses.
COURSE DIRECTOR
Joseph E. Bavaria, MD
Vice Chief
Division of Cardiovascular Surgery
Brooke Roberts-William M. Measey
Professor of Surgery
Director, Thoracic Aortic
Surgery Program
Penn Medicine
Philadelphia, PA
Past President, Society of Thoracic
Surgeons (STS)

CO-DIRECTORS
Prashanth Vallabhajosyula, MD, MS
Associate Professor of Surgery
Division of Cardiovascular Surgery
Penn Medicine
Philadelphia, PA

Munir Boodhwani, MD, MMSc,
FRCS
Surgical Director of Aortic Clinic
Cardiac Surgeon
University of Ottawa Heart Institute
Ottawa, Ontario, Canada

John G. Augoustides, MD,
FASE, FAHA
Professor of Anesthesiology
and Critical Care
Department of Anesthesiology
and Critical Care
Penn Medicine
Philadelphia, PA

KEYNOTE SPEAKER
Hans-Joachim Schäfers, MD
Director, Professor of Surgery
Dept. of Thoracic and
Cardiovascular Surgery
Saarland University Medical Center
Homburg, Saarland, Germany

HONORARY SPEAKER
Gebrine El Khoury, MD
Professor of Surgery
Division of Cardiothoracic Surgery
Cliniques Universitaires
Saint-Luc (UCL)
Bruxelles, Belgium

GUEST SPEAKERS
Talal Al-Atassi, MD, CM,
MPH, FRCS
Assistant Professor
University of Ottawa Heart Institute
Ottawa, Ontario, Canada

George J. Arnaoutakis, MD
Assistant Professor of Thoracic and
Cardiovascular Surgery
University of Florida
College of Medicine
Miami, FL

Roland Assi, MD
Fellow in Cardiothoracic Surgery
Penn Medicine
Philadelphia, PA

Mohammad Bashir, MBBS
Clinical Associate Professor
Surgical Director,
Structural Heart Disease Program
University of Iowa Hospitals
& Clinics
Iowa City, IA

Robert O. Bonow, MD
Max and Lilly Goldberg
Distinguished Professor
of Cardiology
Professor in Medicine-Cardiology
Northwestern University Feinberg
School of Medicine
Chicago, IL
Derek Ralph Brinster, MD  
Professor, Donald & Barbara Zucker School of Medicine  
Director, Aortic Disease  
Northwell Health at Lenox Hill Hospital  
New York, NY

Nimesh D. Desai, MD, PhD  
Associate Professor of Surgery  
Director, Thoracic Aortic Surgery Research Program  
Penn Medicine  
University of Pennsylvania  
Philadelphia, PA

Laurent De Kerchove, MD  
Cardiovascular Surgeon  
Cliniques Universitaires Saint-Luc Chirurgie Cardiothoracique  
Et Vasculaire  
Brussels, Belgium

Ismail El-Hamamsy, MD, PhD, FRCSC  
Cardiac Surgeon  
Montreal Heart Institute  
Division of Cardiac Surgery  
Montreal, Quebec, Canada

Victor A. Ferrari, MD  
Professor of Medicine  
Penn Medicine  
University of Pennsylvania  
Philadelphia, PA

Michael Fischbein, MD  
Associate Professor of Cardiothoracic Surgery  
The Stanford University Medical Center  
Stanford, CA

Shinichi Fukuhara, MD  
Assistant Professor of Cardiac Surgery  
Michigan Medicine at the University of Michigan  
Ann Arbor, MI

Arnar Geirsson, MD, FACS, FAHA  
Associate Professor of Surgery (Cardiac Surgery)  
Section Chief, Cardiac Surgery  
Yale School of Medicine  
New Haven, CT

Joshua Grimm, MD  
Fellow in Cardiothoracic Surgery  
Penn Medicine  
Philadelphia, PA

G. Chad Hughes IV, MD  
Associate Professor of Surgery  
Duke University  
Durham, NC

Arminder S. Jassar, MBBS  
Cardiac Surgeon  
Massachusetts General Hospital  
Boston, MA

A. Stephane Lambert, MD, MBA, FRCP  
Professor and Division Head  
Cardiac Anesthesiology and Critical Care at University of Ottawa Heart Institute  
Ottawa, Ontario, Canada

Bonnie L. Milas, MD  
Professor of Clinical Anesthesiology and Critical Care  
Penn Medicine  
University of Pennsylvania  
Philadelphia, PA

---

Services for the Disabled: If special arrangements are required for an individual with a disability to attend this meeting, please contact the Office of Continuing Medical and Interprofessional Education no later than August 30, 2019 at 215-898-8005.
Maral Ouzounian, MD, PhD
Associate Professor
University of Toronto
Toronto, Ontario, Canada

Himanshu J. Patel, MD
Associate Professor of Cardiac Surgery
Joe D. Morris Collegiate Professor
University of Michigan Health System
Ann Arbor, MI

Alberto Pochettino, MD
Cardiovascular Surgeon
Mayo Clinic
Rochester, MN

Benjamin Sohmer, MD, MEd, FRCPC
Associate Professor
Department of Anesthesiology
Director of Faculty Development
Department of Anesthesiology
University of Ottawa Heart Institute
Ottawa, Ontario, Canada

Nondiscrimination Statement The University of Pennsylvania values diversity and seeks talented students, faculty, and staff from diverse backgrounds. The University of Pennsylvania does not discriminate on the basis of race, sex, sexual orientation, gender identity, religion, color, national or ethnic origin, age, disability, or status as a Vietnam Era Veteran or disabled veteran in the administration of educational policies, programs or activities; admissions policies; scholarship and loan awards; athletic, or other University administered programs or employment. Questions or complaints regarding this policy should be directed to Executive Director, Office of Affirmative Action and Equal Opportunity Programs, 3600 Chestnut Street, Sansom Place East Suite 228, Philadelphia PA 19104-6106 or 215-898-6993 (Voice) or 215-898-7803 (TDD). www.upenn.edu/affirm-action
AGENDA

DAY 1 – Friday, September 13, 2019

6:45 AM – 7:40 AM  Registration & Continental Breakfast

7:50 AM – 8:00 AM  Opening remarks: Overview of the Symposium  
Joseph E. Bavaria, MD & 
Munir Boodhwani, MD

7:40 AM – 7:50 AM  Opening the Session:  
Critical Challenges Regarding AI Worldwide  
Joseph Bavaria, MD

MORNING SESSION 1

AORTIC ROOT COMPLEX – ANATOMIC AND PHYSIOLOGIC PRINCIPLES GUIDING VALVE REPAIR
Moderators: Joseph Bavaria, MD, Bonnie Milas, MD

8:00 AM – 8:10 AM  Aortic Valve Anatomy and Function  
Shinichi Fukuhara, MD

8:10 AM – 8:25 AM  Threshold for Surgical Intervention in Ascending Aortic Aneurysms: Comparison of American, Canadian, and European Guidelines  
Arminder Jassar, MD

8:25 AM – 8:45 AM  MRI Versus Echo in Aortic Insufficiency:  
What is the Gold Standard in Quantification?  
MRI: Victor Ferrari, MD  
Echocardiography: Jared Feinman, MD

8:45 AM – 9:00 AM  Natural History of Aortic Insufficiency and Guidelines for Medical and Surgical Management  
Robert Bonow, MD

9:00 AM – 9:20 AM  Panel Discussion

9:20 AM – 9:40 AM  Repair Focused Echocardiographic Assessment of the Aortic Valve and Root  
Benjamin Sohmer, MD

9:40 AM – 10:00 AM  Mechanisms of Aortic Insufficiency:  
Implications for Valve Repair  
Munir Boodhwani, MD

10:00 AM – 10:20 AM  Debate: 45 Year Old Active Male With Severe Asymptomatic AI: Surgery or Watchful Waiting?  
Moderator: Munir Boodhwani, MD  
Pro Surgery: Joseph Bavaria, MD  
Watchful Waiting: Robert Bonow, MD

10:20 AM – 10:40 AM  Break
MORNING SESSION 2
SURGICAL APPROACHES TO AORTIC ROOT/VALVE DISEASE
Moderators: Munir Boodhwani, MD, Prashanth Vallabhajosyula, MD, MS

10:40 AM – 10:50 AM
Introduction to Aortic Valve Repair –
What’s in the Surgeon’s Armamentarium?
Prashanth Vallabhajosyula, MD, MS

10:50 AM – 11:10 AM
Valve Sparing Root Reimplantation Technique –
Step-by-step Approach
Gebrine El Khoury, MD

11:10 AM – 11:30 AM
Valve Sparing Root Remodeling Technique –
Hans-Joachim Schafers, MD

11:30 AM – 11:50 AM
Valve Repair: Asymmetric BAV Versus Symmetric BAV
Respect valve asymmetry: Joseph Bavaria, MD
Conversion to symmetric or 3-cusp valve:
Laurent De Kerchove, MD

11:50 AM – 12:05 PM
BAV Repair With Internal Subannular Aortic Root –
Chad Hughes, MD

12:05 PM – 12:35 PM
Focused Session: Learn from the Experts:
Case Presentations
Moderator: Joseph Bavaria, MD
Panel members: Gebrine El Khoury, MD,
Hans-Joachim Schafers, MD, Chad Hughes, MD,
Alberto Pochettino, MD, Michael Fischbein, MD,
Munir Boodhwani, MD
- Case 1: Severe AI, VAJ dilated, aortic root 4.1 cm
- Case 2: Marfan patient, severe root dilation, no AI
- Case 3: Cusp prolapse with fenestrations
- Case 4: Type 1A Ascending aortic aneurysm and
  moderate AI, non-dilated VAJ
  1) Root reimplantation or repair with external ring
  2) Remodeling versus reimplantation
  3) Valsalva versus straight tube graft

12:35 PM – 12:45 PM
Panel Discussion

AFTERNOON SESSION 1

1:00 PM – 2:15 PM
Working Lunch With Debate/Discussion
Moderators: Munir Boodhwani, MD &
Prashanth Vallabhajosyula, MD, MS
Panel: Joseph Bavaria, MD, Chad Hughes, MD,
Robert Bonou, MD, Hans-Joachim Schafers, MD,
Gebrine El Khoury, MD, Laurent De Kerchove, MD,
Michael Fischbein, MD, Himanshu Patel, MD,
Ismail El-Hamamsy, MD, PhD

Debate: Annular ectasia in BAV repair, how best to
manage? Remodel with annular ring, external and
STJ ring, VSRR, internal annular ring?

Debate: Debate on factors influencing repair versus
replacement – consider thresholds of age, low EF,
enlarged left ventricle

Debate: Complex BAV repair with remodeling/
reimplantation versus Ross procedure in young patients
2:15 PM – 2:30 PM  Break
2:30 PM – 2:35 PM  Introduction to Keynote Speaker
2:35 PM – 3:05 PM  **KEYNOTE**
25-year Experience With Aortic Valve Repair – Evolution of Cusp Repair and Root Remodeling Techniques
*Hans-Joachim Schäfers, MD*

**AFTERNOON SESSION 2**
**TRILEAFLET AORTIC VALVE REPAIR – DEEP DIVE**
*Moderators: Chad Hughes, MD*

3:05 PM – 3:20 PM  Complex Trileaflet Aortic Valve Repair
*Munir Boodhwani, MD*

3:20 PM – 3:35 PM  Valve Sparing Surgery in Aortic Dissection – Indications, Technique, Outcomes, Where do you Draw the Line?
*Himanshu Patel, MD*

3:35 PM – 3:45 PM  Valve Sparing Surgery in Aortic Dissection II – Live-in-box Presentation
*Nimesh Desai, MD, PhD*

3:45 PM – 4:00PM  How to Manage Cusp Calcification and Restriction?
*Gebrine El Khoury, MD*

4:00 PM – 4:20 PM  Break

**AFTERNOON SESSION 3**
**OUTCOMES AND ALTERNATIVES TO AORTIC VALVE REPAIR**
*Moderators: Nimesh Desai, MD, PhD*

4:20 PM – 4:30 PM  Outcomes of Aortic Valve Repair: Focus on Mortality and Valve Related Events
*Maral Ouzounian, MD, PhD*

4:30 PM – 4:40 PM  When Repair is not Possible: Outcomes of Biologic Versus Mechanical Prostheses in Young Adults and Outcomes of Preserving Sinus Segment With Ascending Arch Resection
*Prashanth Vallabhajosyula, MD, MS*

4:40 PM – 4:50 PM  Outcomes of Aortic Valve Repair II: Long Term Results of BAV Repair and Risk Factors for Failure
*George Arnaoutakis, MD*

4:50 PM – 5:10 PM  Ross Procedure in Aortic Insufficiency – When to do it, how to do it
*Ismail El-Hamamsy, MD, PhD*

5:10 PM – 5:40 PM  STCVS Debate: Size Threshold for Intervention on the Aortic Root and Ascending Aorta in Patients With Concomitant Aortic Insufficiency
*Moderator: Mohamad Bashir, MD, PhD*
*Panel: Joseph Bavaria, MD, Robert Bonow, MD, Gebrine El Khoury, MD, Hans-Joachim Schäfers, MD, Chad Hughes, MD, Himanshu Patel, MD, Munir Boodhwani, MD*

5:40 PM – 5:45 PM  Closing Remarks
*Joseph Bavaria, MD*
DAY 2 – Saturday, September 14, 2019

7:00 AM – 7:45 AM  Registration/Breakfast

7:45 AM – 8:00 AM  Opening Remarks, Answer Questions on Previous Day’s Session With Panel of Experts

MORNING SESSION 1

BICUSPID AORTIC VALVE REPAIR – MASTERCLASS SESSION

Moderators: Joseph Bavaria, MD

8:00 AM – 8:20 AM  Anatomy and Repair Oriented Classification of Bicuspid Aortic Valve Insufficiency
Laurent De Kerchove, MD

8:20 AM – 8:40 AM  An Algorithmic Approach to BAV Decision Making (+/- Root Aneurysm)
Joseph E. Bavaria, MD

8:40 AM – 8:50 AM  BAV Repair Techniques for Type 0, I Valves
Case presentations: Prashanth Vallabhajosyula, MD & George Arnaoutakis, MD
1) Type 0
2) Type I

8:50 AM – 9:05 AM  BAV Root Reimplantation – Concepts and Case Presentation [Live-in-box]
Munir Boodhwani, MD

Hans-Joachim Schäfers, MD

Joseph Bavaria, MD

9:35 AM – 9:50 AM  Internal Subannular Aortic Ring for 3-cusp Aortic Valve Repair. Live-in-box Presentation with Comparative Analysis to Internal Ring for BAV Repair
Arnar Geirsson, MD

9:50 AM – 10:10 AM  Panel Discussion

10:10 AM – 10:25 AM  Break

10:25 AM – 10:30 AM  Introduction to Honorary Speaker

10:30 AM – 10:55 AM  HONORARY LECTURE
30-year Experience with Bicuspid Aortic Valve Repair and Root Reimplantation Techniques
Laurent De Kerchove, MD

10:55 AM – 11:10 AM  Symmetric Versus Asymmetric Reconstruction of the BAV; the Stanford Approach
Michael Fischbein, MD

Joseph Bavaria, MD
11:20 AM – 11:30 AM  Unicuspid Aortic Valve Repair: Should we do it?  Munir Boodhwani, MD

11:30 AM – 11:45 AM  Bentall Aortic Root Procedure – How I do it and Review of the Mayo Clinic Experience  Alberto Pochettino, MD

11:45 AM – 12:00 PM  Conduit Choice in BAV Root Reimplantation/Remodeling – 2 Schools of Thought: Straight Versus Valsalva grafts  Michael Fischbein, MD

12:00 PM – 12:15 PM  Panel Discussion

12:15 PM – 12:30 PM  Pick-up Lunch

12:30 PM – 1:30 PM  Working Lunch

SESSION ON REPAIR FAILURES
Controversial and Repair Failure Cases – Audience asks the experts questions about decision making and avoiding pitfalls
Moderators: Munir Boodhwani, MD, Joseph Bavaria, MD, Benjamin Sohmer, MD, Jared Feinman, MD, Gebrine El Khoury, MD, Chad Hughes, MD, Alberto Pochettino, MD

· TAV Repair Failure – Roland Assi, MD & John Augoustides, MD

· BAV Repair Failure – Joshua Grimm, MD & John Augoustides, MD

· Redo Valve Repair – Have we Gone too far? – Munir Boodhwani, MD & Benjamin Sohmer, MD

1:30 PM – 1:45 PM  Break
AFTERNOON SESSION
REGISTRIES, OUTCOMES WITH AORTIC VALVE REPAIR EXPERIENCE
Moderators: Michael Fischbein, MD, Prashanth Vallabhajosyula, MD, MS

1:45 PM – 2:00 PM  Outcomes in BAV Repair for Different Root Stabilization Techniques
Derek Brinster, MD

2:00 PM – 2:15 PM  Outcomes Based Arguments for Preservation Versus Resection for BAV Insufficiency – Is the Failing Bicuspid Valve a Pathologic Valve?
Chad Hughes, MD

2:15 PM – 2:30 PM  Outcomes With Root Remodeling Versus Reimplantation
Maral Ouzounian, MD, PhD

2:30 PM – 2:50 PM  Emerging Role of TAVR in Treating Aortic Insufficiency
Talal Al-Atassi, MD

2:50 PM – 3:10 PM  Panel Discussion

3:10 PM  Closing Remarks
Joseph Bavaria, MD
4TH NORTH AMERICAN
Aortic Valve Repair Symposium
Friday-Saturday, September 13-14, 2019

If you are registering using your credit card, please register online at:
https://upenn.cloud-cme.com/avrs2019

Questions? Contact us at:
Phone: 215-898-6400 or 215-898-8005 • penn.cme@pennmedicine.upenn.edu

Please note we are unable to accept faxed registration forms.

Please print or type

Name (First) ___________________________ (Last) ___________________________

Academic Degree ___________________________

Medical Specialty ___________________________

Affiliation (Hospital, Office, or Company) ___________________________

Address ( □ Affiliation or □ Home) ___________________________

City ___________________________ State ___________________________ Zip ___________________________

Phone ___________________________ Fax ___________________________

E-mail ___________________________

Registration Fee (pre-payment is required to be officially registered)

☐ $850.00 for Physicians and Industry

☐ $700.00 for Physicians who are members of the Society of Thoracic Surgeons (STS)

☐ $300.00 Healthcare Professionals, Residents and Fellows

Payment Method

• If you are paying by credit card, please register online at https://upenn.cloud-cme.com/avrs2019

• If you are paying by check, you may mail your completed registration form and check made payable to The Trustees of the University of Pennsylvania/CME to:
  Conference Coordinator, Perelman School of Medicine at the University of Pennsylvania, Office of Continuing Medical Education 150 Anatomy/Chemistry Building, 3620 Hamilton Walk Philadelphia, PA 19104-6061

• Do not include any credit card information on the registration form or email any credit card information

Please Note: Walk-in registrants must bring payment to the program. Seating may be limited for walk-in registrants.
4TH NORTH AMERICAN
Aortic Valve Repair Symposium
A CME-accredited Symposium
Friday-Saturday, September 13-14, 2019
Sofitel Philadelphia
120 South 17th Street
Philadelphia, PA 19103