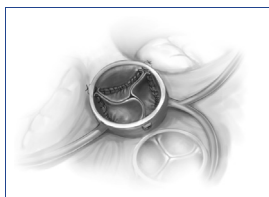


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Congenital Articles in AATS Journals

e329 Congenital

Congenital: Aortic Valve



1567 **Congenital aortic and truncal valve reconstruction using the Ozaki technique: Short-term clinical results**

(GA)

Christopher W. Baird, MD, Brenda Cooney, PA-C, Mariana Chávez, MD, Lynn A. Sleeper, ScD, Gerald R. Marx, MD, and Pedro J. del Nido, MD, Boston, Mass

The AVRec or “Ozaki” procedure has excellent short-term results and should be considered for valve reconstruction in patients with congenital aortic and truncal valve disease.

1578 **Commentary: Aortic valve reconstruction with neocuspidization—A word of caution?**

Emile Bacha, MD, FACS, New York, NY

With good short-term results, the technique of aortic valve neocuspidization holds promise in pediatric aortic valve disease. Until midterm results are available, however, one cannot advocate for generalization.

1579 **Commentary: Ozaki valve reconstruction in children: Is it still a valve replacement?**

Igor E. Konstantinov, MD, PhD, FRACS, Phillip S. Naimo, MD, and Edward Buratto, MBBS, PhD, Melbourne, Australia

It is unknown whether the Ozaki technique for aortic valve reconstruction in children and young adults will provide outcomes similar to those of aortic valve repair or the Ross operation.

1582 **Commentary: A pediatric perspective on the Ozaki procedure**

Tara Karamlou, MD, MSc, Gosta Pettersson, MD, PhD, and John J. Nigro, MD, Cleveland, Ohio, and San Diego, Calif

The Ozaki technique offers another treatment strategy for children and young adults who require aortic valve intervention, but long-term follow-up and context are needed to optimize the benefits.

Congenital: Anomalous Aortic Origin of a Coronary Artery: Expert Opinion



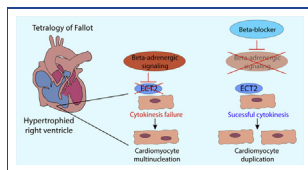
1584 **Risk stratification and surgery for anomalous aortic origin of a coronary artery: Onward through the fog**

Charles D. Fraser, Jr, MD, and Luis E. Martínez-Bravo, MD, Austin, Tex, and Monterrey, Mexico

Anomalous aortic origin of a coronary artery has received considerable attention in recent years, but we have much more to learn about the management of these patients in terms of risk assessment, refinement of surgical technique, and longitudinal outcomes.

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Congenital: Tetralogy of Fallot: Basic Science: Invited Expert Opinion



1587 **Cardiomyocytes in congenital heart disease: Overcoming cytokinesis failure in tetralogy of Fallot**

Olaf Bergmann, MD, PhD, Dresden, Germany, and Stockholm, Sweden

Blockage of beta-adrenergic signaling counteracts cytokinesis failure and promotes cardiomyocyte proliferation through ECT2 upregulation in infants with ToF/PS.

1591 **Commentary:** Targeting cytokinesis failure in tetralogy of Fallot: Late to the dance?

Nicholas D. Andersen, MD, and Joseph W. Turek, MD, PhD, Durham, NC

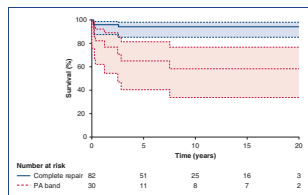
Cardiomyocyte proliferation in tetralogy of Fallot is possibly regulated by β -adrenergic receptor-mediated cytokinesis failure, suggesting early beta blockade may be critical in treating these patients.

1592 **Commentary:** Major lessons from minor people: Beta blockers and cytokinesis in tetralogy of Fallot

Michael J. Bonios, MD, PhD, Eleni Tseliou, MD, PhD, and Stavros G. Drakos, MD, PhD, FACC, Salt Lake City, Utah, and Athens, Greece

Tetralogy of Fallot recipients: A patient population that can teach us a lot in regard to cytokinesis, regeneration, and mechanisms of right ventricular resilience and failure.

Congenital: Atrioventricular Septal Defect



1594 **Early repair of complete atrioventricular septal defect has better survival than staged repair after pulmonary artery banding: A propensity score-matched study**

GA

Edward Buratto, MBBS, PhD, Thomas Hu, MD, Adrienne Lui, MD, Damien M. Wu, BBiomed, Yves d'Udekem, MD, PhD, FRACS, Christian P. Brizard, MD, and Igor E. Konstantinov, MD, PhD, FRACS, Melbourne, Australia

When children with complete atrioventricular septal defect require surgery under 3 months of age, primary repair has better outcomes than pulmonary artery banding.

1602 **Commentary:** Early repair of complete atrioventricular septal defect is the forward move

Joseph B. Clark, MD, Hershey, Pa

For infants younger than 3 months with complete atrioventricular septal defect who require early surgery due to heart failure, primary repair represents the preferred strategy, even in neonates.

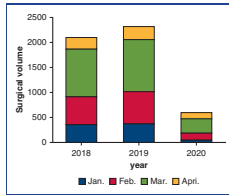
1603 **Commentary:** To band or not to band—is that really the question?

S. Adil Husain, MD, Salt Lake City, Utah

Comparing outcomes in staged versus early complete repair for complete atrioventricular septal defects is most impacted by the interstage course for patients receiving a pulmonary artery band.

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Congenital: Perioperative Management

**1605 Impact of early Coronavirus Disease 2019 pandemic on pediatric cardiac surgery in China**

Guocheng Shi, MD, Jihong Huang, MD, Mingan Pi, MD, Xinxin Chen, MD, PhD, Xiaofeng Li, MD, Yiqun Ding, MD, Hao Zhang, MD, PhD, on behalf of the National Association of Pediatric Cardiology and Cardiac Surgery Working Group, Shanghai, Wuhan, Guangzhou, Shenzhen, and Beijing, China

The COVID-19 pandemic has resulted in significant changes in congenital heart services, such as decrease in total surgical volumes, redistribution of the case mix, and change in follow-up strategies.

1615 Commentary: Are these times still unprecedented?

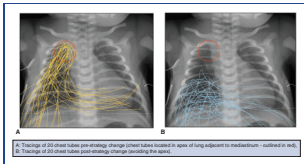
Jonathan M. Chen, MD, Philadelphia, Pa

As we face the possibility of subsequent waves of pandemic, it is of paramount importance to learn from the past.

1616 Commentary: Lights and shadows of pediatric cardiac surgery in China during the coronavirus disease 2019 pandemic

Giovanni Battista Luciani, MD, Verona, Italy

Pediatric cardiac surgery during the COVID-19 pandemic witnessed increased case complexity without affecting outcomes. Routine patient and family testing is mandatory to establish sustainability of cardiac programs.

**1618 Association of chest tube position with phrenic nerve palsy after neonatal and infant cardiac surgery**

Muhammad Owais Abdul Ghani, MBBS, Jarrett Foster, BS, Chevis N. Shannon, MBA, MPH, DrPh, and David P. Bichell, MD, Nashville, Tenn

Chest tube positioning in the apex of the pleural space adjacent to the mediastinum is associated with diaphragm paralysis (DP). A change in chest tube placement strategy led to a significant reduction in DP.

1623 Commentary: Exiting the highway to the danger zone

Tracy R. Geoffrion, MD, MPH, Philadelphia, Pa

A surgeon's willingness to critically evaluate their own techniques and outcomes is imperative for continued improvement in the field of pediatric cardiothoracic surgery.

1625 Commentary: Avoiding the danger zone

Carl L. Backer, MD, Lexington, Ky, and Cincinnati, Ohio

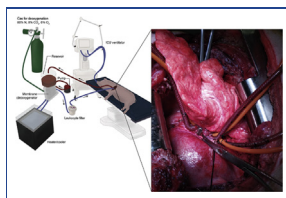
Careful placement of chest tubes avoiding the apex of the right pleural space will decrease the incidence of postoperative diaphragm paralysis after congenital heart surgery.

Thoracic Articles in AATS Journals

e331 Thoracic

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Thoracic: Lung Cancer



1626 A model to assess acute and delayed lung toxicity of oxaliplatin during in vivo lung perfusion



Khaled Ramadan, MD, Bruno Gomes, MD, Mauricio Pipkin, MD, Mariola Olkowicz, PhD, Barbara Bojko, PhD, Arnaud Romeo Mbadjeu Hondjeu, MD, Shaf Keshavjee, MD, MSc, Thomas Waddell, MD, PhD, Janusz Pawliszyn, PhD, and Marcelo Cypel, MD, MSc, Toronto and Waterloo, Ontario, Canada

A 72-hour porcine isolated in vivo lung perfusion model to deliver oxaliplatin was developed for determination of subacute dose-limiting toxicity and may be used for safety assessment of other agents.

This article has an associated webcast.

1636 Commentary: New strategies for old techniques

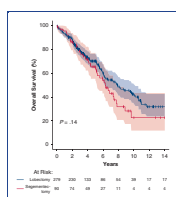
Philip W. Carrott, MD, and R. Taylor Ripley, MD, Houston, Tex

Ramadan and colleagues report a porcine model to develop improved strategies to treat pulmonary metastases with oxaliplatin delivered by isolated in vivo lung perfusion.

1637 Commentary: Perceived versus real threat...and the nuclear option

Jacob A. Klapper, MD, Durham, NC

Isolated lung perfusion. It can be done. Should it be done?



1639 Outcomes with segmentectomy versus lobectomy in patients with clinical T1cNoMo non-small cell lung cancer



Ernest G. Chan, MD, MPH, Patrick G. Chan, MD, MPH, Summer N. Mazur, BS, Daniel P. Normolle, PhD, James D. Luketich, MD, Rodney J. Landreneau, MD, and Matthew J. Schuchert, MD, Pittsburgh, Pa

Segmentectomy is associated with similar recurrence-free and overall survival when compared with lobectomy in the setting of patients with AJCC 8th edition clinical T1cNoMo NSCLC (>2-3 cm).

1649 Commentary: Let us raise the bar higher for better patient outcomes

Robert J. Cerfolio, MD, MBA, FACS, FCCP, New York, NY

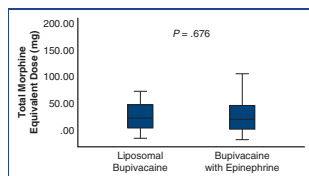
Optimal published outcomes inspire us to provide patients better care.

1650 Commentary: When less is more for lung cancers

Sean C. Wightman, MD, and Anthony W. Kim, MD, Los Angeles, Calif

For patients with clinical stage I lung cancers >2 cm and ≤3 cm, segmentectomy shows promise as an oncologically sound option versus lobectomy and supports the idea that less is more.

Thoracic: Lung Cancer: Clinical Trial



1652 Randomized trial of bupivacaine with epinephrine versus bupivacaine liposome suspension in patients undergoing minimally invasive lung resection



Benny Weksler, MD, MBA, Jennifer L. Sullivan, MD, and Lana Y. Schumacher, MD, Pittsburgh, Pa, and Baltimore, Md

In a small, randomized study, we were unable to demonstrate that liposomal bupivacaine is better than standard bupivacaine with epinephrine at relieving pain after minimally invasive thoracic surgery.

This article has an associated discussion and webcast.

- 1662** **Commentary:** Liposomal bupivacaine intercostal nerve block. All that is gold does not glitter
Abbas E. Abbas, MD, MS, FACS, Philadelphia, Pa

Enhanced recovery protocols should include preemptive intercostal nerve blockade as part of the overall management of postoperative thoracic pain. Using generic bupivacaine may be equally effective as extended-release liposomal bupivacaine.

Thoracic: Esophagus



- 1664** **Retrieval covered metallic segmented Y airway stent for gastrorespiratory fistula of carina or main bronchi**



Wei Huang, MD, Qungang Shan, MD, Zhiyuan Wu, MD, Hecheng Li, MD, Min Zhou, MD, Xiaoyi Ding, MD, and Zhongmin Wang, MD, Shanghai, China

The retrievable segmented stents individually customized with the aid of 3D printing appear to be feasible and show promising results for gastrorespiratory fistula of carina or main bronchi.

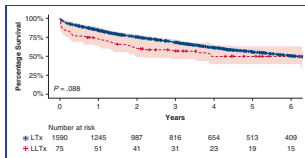
- 1672** **Commentary:** Three-dimensional printing: More than a roadmap
Alexander J. Sbrocchi, MD, and Barry C. Gibney, DO, Charleston, SC

3D printing has applications beyond modeling and surgical planning.

- 1673** **Commentary:** Custom-printed Y stent in the management of tracheoesophageal fistula following esophagectomy: A new weapon in a difficult fight?
Christopher R. Morse, MD, Boston, Mass

Tracheoesophageal fistula following esophagectomy can be a devastating complication. Using 3D printing technology, there is an additional intervention that may help a select group of patients.

Thoracic: Lung Transplant



- 1674** **Deceased-donor lobar lung transplant: A successful strategy for small-sized recipients**



Jose Luis Campo-Canaveral De La Cruz, MD, PhD, Ben Dunne, MD, Philippe Lemaitre, MD, PhD, Mindaugas Rackauskas, MD, PhD, Jiri Pozniak, MD, Yui Watanabe, MD, PhD, Andrea Mariscal, MD, Jonathan Yeung, MD, PhD, Kazuhiro Yasufuku, MD, PhD, Andrew Pierre, MD, MSc, Marc de Perrot, MD, MSc, Thomas K. Waddell, MD, PhD, Marcelo Cypel, MD, MSc, Shaf Keshavjee, MD, MSc, and Laura Donahoe, MD, MSc, FRCSC, Toronto, Ontario, Canada

Lobar lung transplantation is higher risk than standard lung transplantation, yet mid- and long-term survival are comparable in modern times, and it is a valuable surgical option for small-sized recipients.

This article has an associated discussion and webcast.

- 1686** **Commentary:** Small can be beautiful, in the right hands
Lucius K. F. Lee, MB, ChB(CUHK), and Michael K. Y. Hsin, FRCS, CTh, Hong Kong

Cadaveric lobar lung transplant is often performed for very sick patients, which is reflected in the early outcomes. Mid- and long-term results, however, are comparable with standard lung transplant.

- 1687** **Commentary:** Lobar lung transplantation: Trick or treat-(ment)
György Lang, MD, PhD, and Walter Klepetko, MD, Vienna, Austria

Deceased LLTx is a valuable tool to expand the possibilities of transplantation and to overcome the scarcity of small donor lungs.

Adult: Aorta



1713


Surgery for type A aortic dissection in patients with cerebral malperfusion: Results from the International Registry of Acute Aortic Dissection

Ibrahim Sultan, MD, Valentino Bianco, DO, MPH, Himanshu J. Patel, MD, George J. Arnaoutakis, MD, Marco Di Eusanio, MD, PhD, Edward P. Chen, MD, Bradley Leshnowar, MD, Thoralf M. Sundt, MD, Udo Sechtem, MD, Daniel G. Montgomery, BS, Santi Trimarchi, MD, PhD, Kim A. Eagle, MD, and Thomas G. Gleason, MD, MS, Pittsburgh, Pa; Ann Arbor, Mich; Gainesville, Fla; Bologna and Milan, Italy; Atlanta, Ga; Boston, Mass; and Stuttgart, Germany

It is reasonable to perform surgery on patients with cerebral malperfusion and acute type A aortic dissection, as in-hospital outcomes are acceptable in this critically ill patient population.

1721

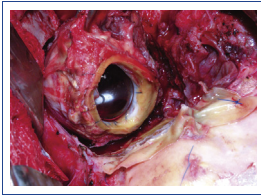
Commentary: The conundrum of cerebral malperfusion in aortic dissection
Marco A. Zenati, MD, Boston, Mass

With experienced clinical judgment, selected patients with TAAD and CM may undergo surgery with hospital survival as high as 75%.

1722

Commentary: How to diagnose cerebral malperfusion? And how to manage?
Yuichi Ueda, MD, PhD, Nara, Japan

A rapid strategy for initiating brain circulation is crucial to reduce ischemic brain insult for patients with cerebral malperfusion secondary to acute aortic dissection.



1724


Percutaneous cardioplegic arrest before repeat sternotomy in patients with retrosternal aortic aneurysm

Anand R. Mehta, MD, Bradley Hammond, MD, Shinya Unai, MD, Jose L. Navia, MD, Marc Gillinov, MD, and Gosta B. Pettersson, MD, PhD, Cleveland, Ohio, and Philadelphia, Pa

Percutaneous cardioplegic arrest allows safe repeat sternotomy in patients with arterial cardiac structures adherent to the sternum.

1731

Commentary: Innovation favors the prepared mind

Louis H. Stein, MD, PhD, and Sanjay Samy, MD, Albany, NY

Innovations designed for minimally invasive surgery can make for safer reoperative aortic surgery.

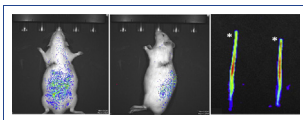
1732

Commentary: When the heart team may save the patient's heart!

Francesco Formica, MD, Stefano D'Alessandro, MD, FECS, and Leonello Avalli, MD, Monza, Italy

Percutaneous cardioplegic arrest and pulmonary venting is a strategy that can allow safe surgery in complex reoperations. The synergy within the heart team may increase the likelihood of survival.

Adult: Aorta: Basic Science



e337


Transplantation of viable mitochondria attenuates neurologic injury after spinal cord ischemia

Shih-Yuan Fang, MD, Jun-Neng Roan, MD, PhD, Jung-Shun Lee, MD, PhD, Meng-Hsuan Chiu, MS, Ming-Wei Lin, PhD, Chien-Cheng Liu, MD, PhD, and Chen-Fuh Lam, MD, PhD, Tainan and Kaohsiung, Taiwan

Transplantation of mitochondria at the early stage of spinal cord ischemia-reperfusion injury attenuates neuronal apoptosis and improves motor function recovery.

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- e349** **Commentary:** Early success of mitochondrial-based biologic therapy for experimental aortic surgery-related spinal cord injury

Hilary P. Grocott, MD, FRCPC, FASE, Winnipeg, Manitoba, Canada

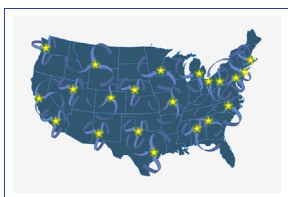
An experimental model of spinal cord ischemia was used to study the potential beneficial effect of exogenous mitochondrial transplantation.

- e350** **Commentary:** Mitochondria to the rescue?

Nirvik Pal, MBBS, MD, and John Butterworth, MD, Richmond, Va

Another success story for mitochondrial transplant, but the basic biophysiologic mechanism remains unknown.

Adult: Aorta: Invited Expert Opinion



- 1734** **Has the time come for regionalization of surgery for acute type A dissection?**

Ivancarmine Gambardella, MD, Christopher Lau, MD, and Leonard N. Girardi, MD, New York, NY

The benefits of regionalizing surgery for type A dissection depend on patient stability; the geographical density of high-volume centers; and the presence of high-volume, experienced aortic surgeons.

- 1738** **Commentary:** Regionalization of surgery for type A aortic dissection: What does this really mean?

Alan M. Speir, MD, Falls Church, Va

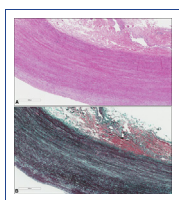
Regionalization for surgery for complex aortic dissection is more complicated than transferring patients to a high-volume aortic center.

- 1739** **Commentary:** A situation where time is of the essence except when it is not

Joseph S. Coselli, MD, and Vicente Orozco-Sevilla, MD, Houston, Tex

In the treatment of ATAAD, the risk of delay is balanced by experienced hands.

Adult: Aorta: Case Report



- e353** **Valve-sparing root replacement in a patient with a filamin A variant**

Naoto Fukunaga, MD, Michael A. Seidman, MD, PhD, and Tirone E. David, MD, Toronto, Ontario, Canada

FLNA gene mutations are associated with more severe form of degenerative changes, and additional surgical care is needed to manage patients.

- e357** **Commentary:** Fools rush in where angels fear to tread

Joseph S. Coselli, MD, Houston, Tex

Aortic valve-sparing techniques in patients with the severest of tissue fragility require special consideration.

- e358** **Commentary:** Genetics and surgical planning in heritable aortic disease—moving from “when to operate” to “how to operate”

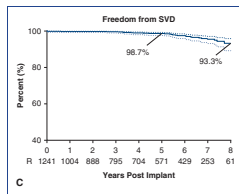
Ashley Dawson, MD, and Scott A. LeMaire, MD, Houston, Tex

Consistent reporting of tissue quality and repair techniques used in patients with heritable aortic disease will help surgeons develop an operative plan tailored to a patient's genetic mutation.

Adult: Aorta: Letters to the Editor

- e361 The life in their years versus the years in their life**
Amer Harky, MRCS, MSc, Georgia Bailey, MBChB, Ahmed Othman, MSc, FRCS CTh, Matthew Shaw, PhD, and Mark Field, DPhil (Oxon), FRCS CTh, Liverpool, United Kingdom
- e362 Reply: “We will find a way. We always have”**
Chee-hoon Lee, MD, and Joon Bum Kim, MD, PhD, Busan and Seoul, South Korea
- e363 Reply: Just because we can, should we? Quantity versus quality of life**
Joseph S. Coselli, MD, Houston, Tex
- e365 Reply from authors: We still have more to do in our life**
Yutaka Okita, MD, PhD, Yuki Ikeno, MD, and Kenji Okada, MD, PhD, Osaka and Kobe, Japan
- e366 Primary entry closure is still first-line treatment for patients with dynamic malperfusion**
Chikara Ueki, MD, Shizuoka, Japan
- e367 Reply: Stenting/fenestration or thoracic endovascular aortic repair in complicated acute type B aortic dissection: To each is own!**
Stefano D’Alessandro, MD, FECS, and Francesco Formica, MD, Monza and Parma, Italy
- e368 Reply from authors: Thoracic endovascular aortic repair versus fenestration/stenting: Both effective weapons for the same disease**
Bo Yang, MD, PhD, and David Williams, MD, Ann Arbor, Mich

Adult: Aortic Valve



- 1742 Durability and clinical experience using a bovine pericardial prosthetic aortic valve**
 (GA) *Sven Lehmann, MD, PhD, Khalil Jawad, MD, Maja T. Dieterlen, PhD, Alexandro Hoyer, MD, Jens Garbade, MD, PhD, Piroze Davierwala, MD, and Michael A. Borger, MD, PhD, Leipzig, Germany, and Toronto, Ontario, Canada*

In a large high-risk cohort (median follow-up, 4.7 years; 5469 patient-years), the Trifecta aortic bioprosthesis achieved a low incidence of valve explant for structural valve deterioration and low valve-related mortality.

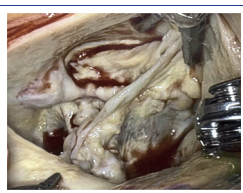
- 1750 Commentary: Finding a niche in our TAVR-centric world**
Fraser D. Rubens, MD, MSc, FACS, FRCSC, Ottawa, Ontario, Canada

This series presents results that inspire confidence with medium-term outcomes and the feasibility of valve-in-valve intervention, cautiously shaping our surgical indications for this valve.

- 1751 Commentary: The valve lasts, until it doesn't; then what?**
Nels D. Carroll, MD, and Dawn S. Hui, MD, San Antonio, Tex

Transcatheter interventions increase the range of therapeutic possibilities for structural valve degeneration. Contemporary bioprosthetic durability studies should be interpreted with this in mind.

Adult: Aortic Valve: Invited Expert Opinion



- 1753 Robotic aortic valve replacement**
 (Play) *Vinay Badhwar, MD, Lawrence M. Wei, MD, Chris C. Cook, MD, J. W. Awori Hayanga, MD, MPH, Ramesh Daggubati, MD, Partho P. Sengupta, MD, and J. Scott Rankin, MD, Morgantown, WV*

This first report of fully robotic aortic valve replacement via a lateral mini-thoracotomy reviews the technique, outcomes, and potential role in valvular disease management.

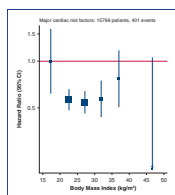
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- 1760 Commentary:** The laws of robotics
Moritz C. Wyler von Ballmoos, MD, and Michael J. Reardon, MD, Houston, Tex
- A successful robotic AVR team requires preprocedure training, a dedicated and consistent team, and transparent reporting of results.
- 1762 Commentary:** Robotic surgical aortic valve replacement: An evolving option
Caroline M. Komlo, BS, and T. Sloane Guy, MD, MBA, Philadelphia, Pa
- Robotic aortic valve replacement (rAVR) through the lateral approach is a promising new minimally invasive technique in our surgical armamentarium for aortic valve replacement.
- 1763 Commentary:** Robotic aortic valve replacement—fad or future?
J. James Edelman, MD, PhD, and Vinod H. Thourani, MD, Perth, Australia, and Atlanta, Ga
- TAVR is now a viable alternative to surgery as the standard treatment of aortic stenosis. Minimally invasive approaches to SAVR are essential for innovation to surgery.

Adult: Aortic Valve: Letters to the Editor

- e371 A bigger picture for valve charts**
Michiel D. Vriesendorp, MD, Robert A. F. de Lind van Wijngaarden, MD, PhD, and Robert J. M. Klautz, MD, PhD, Leiden, The Netherlands
- e372 Reply:** Establishing clarity on valve labeling
Pavan Atluri, MD, Philadelphia, Pa
- e373 Reply from authors:** The PPM chart: A new tool to assess prosthesis-patient mismatch probability before aortic valve replacement
Andras P. Durko, MD, Philippe Pibarot, DVM, PhD, and Ruggero De Paulis, MD, on behalf of the EACTS-STAS-AATS Valve Labeling Task Force, Rotterdam, The Netherlands; Québec City, Québec, Canada; and Rome, Italy

Adult: Mitral Valve



1765 Body mass index and early outcomes following mitral valve surgery for degenerative disease

Daniel J. P. Burns, MD, MPhil, Filippo Rapetto, MD, Gianni D. Angelini, MD, Umberto Benedetto, MD, PhD, Massimo Caputo, MD, Franco Ciulli, MD, and Hunaid A. Vohra, MD, PhD, Cleveland, Ohio, and Bristol, United Kingdom

With a demonstrated U-shaped relationship, body mass index values outside the extreme margins may confer a mortality benefit when undergoing mitral valve surgery for degenerative etiologies.

- 1774 Commentary:** In medio stat virtus
Michele Di Mauro, MD, PhD, MSc, Massimiliano Foschi, MD, Gerardo Liberti, MD, and Antonio M. Calafiore, MD, Chieti and Campobasso, Italy

Obesity and cachexia can be 2 sides of the same coin in patients with mitral valve disease and heart failure, impairing outcomes after surgery.

Adult: Mitral Valve: Evolving Technology



1776 A novel cross-species model of Barlow's disease to biomechanically analyze repair techniques in an ex vivo left heart simulator

Annabel M. Imbrie-Moore, MS, Michael J. Paulsen, MD, Yuanjia Zhu, MD, Hanjay Wang, MD, Haley J. Lucian, BA, Justin M. Farry, BSE, John W. MacArthur, MD, Michael Ma, MD, and Y. Joseph Woo, MD, Stanford, Calif



A cross-species ex vivo model simulates Barlow's disease and provides insight into the biomechanics of the disease and surgical repair.

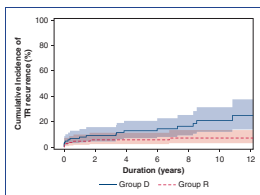
- 1784** **Commentary:** A novel cross-species model of Barlow's disease to biomechanically analyze repair techniques in an ex vivo left heart simulator
Norman Briffa, MB, MD, FRCS(CTh), FFPC(Ed), Sheffield, United Kingdom

Although this model may not be an accurate reproduction of what happens in Barlow's disease of the mitral valve, it is an ingenious way of studying mechanisms of both degenerative mitral regurgitation and the methods and effects of mitral valve repair.

- 1786** **Commentary:** If you have to simulate, do it well!
Carlos A. Mestres, MD, PhD, FETCS, Francesco Maisano, MD, FECS, and Francis E. Smit, MD, PhD, FACC, Zürich, Switzerland, and Bloemfontein, South Africa

This article highlights the development of a cross-species, ex vivo, high-fidelity model that allows for successful simulation and analysis of Barlow's valve repair techniques in a risk-free environment.

Adult: Tricuspid Valve



- 1788** **Long-term outcomes of rigid ring versus De Vega annuloplasty for functional tricuspid regurgitation: A propensity score-matching analysis**

Suk Ho Sohn, MD, Kyung Hwan Kim, MD, PhD, Yeiwon Lee, MD, Jae Woong Choi, MD, and Ho Young Hwang, MD, PhD, Seoul, Republic of Korea

Rigid ring annuloplasty is associated with less tricuspid regurgitation recurrence than De Vega annuloplasty in functional tricuspid regurgitation.

This article has an associated discussion and webcast.

- 1799** **Commentary:** Treating “functional” tricuspid valve regurgitation—why, when, and how?
Faisal H. Cheema, MD, Pranav Loyalka, MD, and Keshava Rajagopal, MD, PhD, Houston, Tex, and Nashville, Tenn

The indications, outcomes, and optimal techniques for the treatment of functional tricuspid valve regurgitation remain unclear.

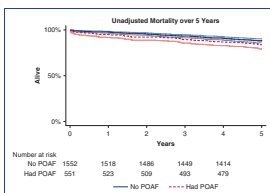
- 1800** **Commentary:** Opportunity knocks for every heart surgeon, but you have to give a tricuspid a ring
Michele Di Mauro, MD, PhD, MSc, Sabina Gallina, MD, Fabrizio Tancredi, MD, and Antonio M. Calafiore, MD, Chieti and Campobasso, Italy

The long-term results of the paper by Sohn and colleagues add a new, valid piece to the complex puzzle of evidence reported in the literature.

- 1801** **Commentary:** Ring versus string
Harold G. Roberts, Jr, MD, FACS, Morgantown, WV

Does equipoise still exist between rigid remodeling and suture annuloplasty for secondary functional tricuspid regurgitation?

Adult: Arrhythmias



- 1803** **New-onset postoperative atrial fibrillation impact on 5-year clinical outcomes and costs**

G. Hossein Almassi, MD, Robert B. Hawkins, MD, MSc, Muath Bishawi, MD, MPH, A. Laurie Shroyer, PhD, Brack Hattler, MD, Jacquelyn A. Quin, MD, MPH, Joseph F. Collins, ScD, Faisal G. Bakaeen, MD, Ramin Ebrahimi, MD, Frederick L. Grover, MD, and Todd H. Wagner, PhD, for the Veterans Affairs Randomized On/Off Bypass Follow-up Study (ROOBY-FS) Group, Milwaukee, Wis; Salem and Charlottesville, Va; Northport, NY; Durham, NC; Aurora, Colo; West Roxbury and Boston, Mass; Perry Point, Md; Pittsburgh, Pa; Cleveland, Ohio, and Los Angeles, Menlo Park, and Stanford, Calif

There was no significant difference in risk-adjusted 5-year clinical outcomes in patients with or without POAF. Greater first-year costs in patients with POAF did not persist in subsequent years.

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1811 **Commentary:** Postoperative atrial fibrillation, predictor of late risk?

Vincent R. Conti, MD, Galveston, Tex

This study highlights the short- and long-term risks and costs associated with new-onset atrial fibrillation and provides motivations to prevent episodes in the future.

1812 **Commentary:** Postoperative atrial fibrillation: “No magic bullet”

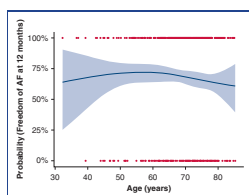
Scott M. Goldman, MD, Wynnewood, Pa

Only by considering the risk of postoperative atrial fibrillation in each patient and pursuing a holistic strategy are we likely to make a dent in the 30% incidence rate.

1814 **Commentary:** New methods for old problems?

Derrick Y. Tam, MD, Malak Elbatarny, MD, and Stephen E. Fremes, MD, MSc, FRCSC, Toronto, Ontario, Canada

Cost at 1 year was greater in patients with postoperative atrial fibrillation compared with those without in the ROOBY trial.



1816 **Should concomitant surgical ablation for atrial fibrillation be performed in elderly patients?**



Johannes Petersen, MD, Eik Vettorazzi, MSc, Samer Hakmi, MD, Yousuf Alassar, MD, Christian Meyer, MD, Stephan Willems, MD, Florian Mathias Wagner, MD, Evaldas Girdauskas, MD, Hermann Reichenspurner, MD, PhD, and Simon Pecha, MD, Hamburg, Germany

Surgical AF ablation is safe and effective independently of age. Double valve procedures, preoperative persistent AF, and CABG surgery in elderly patients are risk factors for recurrence of AF.

1824 **Commentary:** Concomitant surgical ablation of atrial fibrillation is safe in elderly patients

Leonid Sternik, MD, Ramat Gan, Israel

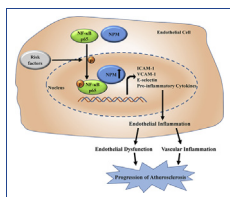
Concomitant atrial fibrillation ablation is as effective in elderly patients as it is in younger patients. Ablation does not add morbidity and mortality and may improve early and late results.

1825 **Commentary:** Concomitant atrial fibrillation ablation: The forgotten procedure

Vito Domenico Bruno, MD, PhD, and Mustafa Zakkar, PhD, FRCS, Bristol and Leicester, United Kingdom

Is concomitant atrial fibrillation ablation a procedure that should be considered in elderly patients?

Adult: Coronary: Basic Science



e377 **Nucleophosmin contributes to vascular inflammation and endothelial dysfunction in atherosclerosis progression**



Caijun Rao, PhD, Baoqing Liu, PhD, Dandan Huang, PhD, Ru Chen, MD, Kai Huang, PhD, Fei Li, MD, and Nianguo Dong, PhD, Wuhan, China

Nucleophosmin was enriched in human atherosclerotic plaque. Nucleophosmin aggravated atherosclerosis through promoting NF- κ B pathway-mediated vascular inflammation and endothelial dysfunction.

e395 **Commentary:** The flapping wings of a butterfly; discovering the onset of atherosclerosis

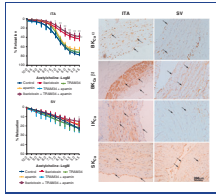
Ari A. Mennander, MD, PhD, Tampere, Finland

The butterfly effect—a small molecular change leads to immense consequences.

e396 **Commentary:** Unraveling the mysteries of atherogenesis: An elusive goal

Darrell Wu, MD, and Shuab Omer, MD, Houston, Tex

Nucleophosmin promotes vascular inflammation and endothelial dysfunction in an NF- κ B dependent pathway.



e399 Calcium-activated potassium channel family in coronary artery bypass grafts



Wen-Tao Sun, PhD, Hai-Tao Hou, MPhil, Huan-Xin Chen, MPhil, Hong-Mei Xue, PhD, Jun Wang, MPhil, Guo-Wei He, MD, PhD, DSc, and Qin Yang, MD, PhD, Tianjin and Wuhu, China, and Portland, Ore

All calcium-activated potassium channel subtypes are distributed in the endothelial and smooth muscle layers of internal thoracic artery and saphenous vein. Internal thoracic artery and saphenous vein differ in the abundance of calcium-activated potassium channel subtypes in the 2 layers. Large-conductance calcium-activated potassium channels play a critical role in the dilatation of internal thoracic artery.

e411 Commentary: Ionic heterogeneity in vessel grafts

Jun Feng, MD, PhD, and Frank W. Sellke, MD, Providence, RI

Vascular heterogeneity of K_{Ca} channels in internal mammary arteries and veins may affect vessel graft function and graft spasm in patients after coronary artery bypass grafting.

e412 Commentary: Ions from eons: A hidden therapeutic potential of the resting potential?

Phillip S. Naimo, MD, and Igor E. Konstantinov, MD, PhD, FRACS, Melbourne, Australia

Large calcium-activated potassium channels may play an important role in vasodilation of the internal thoracic artery.

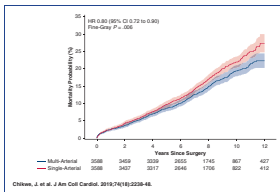
Adult: Coronary: Invited Expert Opinion



1827 This is not a taste test

Asvin M. Ganapathi, MD, and Nahush A. Mokadam, MD, Columbus, Ohio

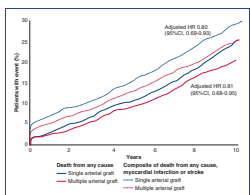
This choice for surgeons should not be a taste test.



1828 Multiarterial grafting: The answer to that question

Paul Kurlansky, MD, New York, NY

The true value of multiarterial grafting remains an open question. Future research needs to provide more precise information regarding optimal patient selection.



1832 Multiarterial grafting: Why is it so hard to convince the masses of the benefits?

Michael P. Vallety, MBBS, PhD, FRACS, Fabio Ramponi, MD, FEBVS, Michael Seco, BMedSc, MBBS, PhD, and Alistair Royse, MBBS, MD, FRACS, FCSANZ, Columbus, Ohio, and Sydney and Melbourne, Australia

Multiple arterial grafting strategies are supported by an increasing amount of robust evidence and are safely applicable to most patients after adequate subspecialized training.

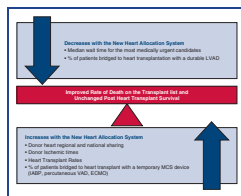
1837 Commentary: Time to make multiarterial revascularization a quality metric

Fardad Esmailian, MD, and Joanna Chikwe, MD, FRCS, Los Angeles, Calif

Establishing multiarterial bypass as a publicly reported quality metric may be the most effective driver of practice change within our immediate purview.

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Adult: Transplant: Invited Expert Opinion



1839 The new heart transplant allocation system: Early observations and mechanical circulatory support considerations



Jerry D. Estep, MD, Edward Soltesz, MD, MPH, and Rebecca Cogswell, MD, Cleveland, Ohio, and Minneapolis, Minn

The new adult heart allocation system has resulted in broader sharing, greater use of temporary MCS devices, reduced median wait time along with improved wait list, and unchanged post-transplant survival.

1847 Commentary: History is prologue: If we fail to learn from our past, we are doomed to repeat it

Amit Alam, MD, Dan M. Meyer, MD, and Shelley A. Hall, MD, Dallas and Bryan, Tex

Can any allocation system work if we cannot control our behaviors in response to new rules?

1848 Commentary: Flying too close to the sun

Anh-Thu Le, MD, and Nahush A. Mokadam, MD, Columbus, Ohio

We must continue to optimize organ allocation with ongoing evaluation and modification of existing systems. Undoubtedly, this will cause some unanticipated outcomes that require vigilance.

1849 Commentary: The ethics of donor allocation

Vivek Rao, MD, PhD, Toronto, Ontario, Canada

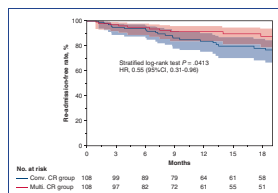
All aspects of cardiac transplantation involve important ethical considerations. Changes to any of these aspects demand careful consideration and constant evaluation of their impact.

1851 Commentary: The only constant is change: Understanding the changes in the new heart allocation system

Ryan C. Knoper, MD, and Ranjit John, MD, Minneapolis, Minn

A change in UNOS heart allocation appears to be a step in the right direction. Further long-term and subgroup analysis remains necessary to ensure equal and fair allocation of a finite resource.

Adult: Perioperative Management



1853 Effects of acute-phase multidisciplinary rehabilitation on unplanned readmissions after cardiac surgery



Masato Ogawa, PT, PhD, Seimi Satomi-Kobayashi, MD, PhD, Naofumi Yoshida, MD, PhD, Yasunori Tsuboi, PT, PhD, Kodai Komaki, PT, Kumiko Wakida, RD, MSc, Yasuko Gotake, MD, Kazuhiro P. Izawa, PT, PhD, Yoshitada Sakai, MD, PhD, and Kenji Okada, MD, PhD, Kobe, Japan

Comprehensive multidisciplinary cardiac rehabilitation during the acute inpatient phase after cardiac surgery is important for patient management and preventing unplanned readmission.

1861 Commentary: "Get moving early!" Inpatient cardiac rehabilitation reduces unplanned hospitalizations

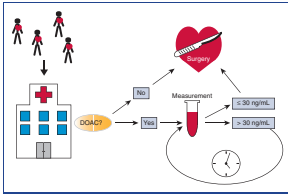
Ruth M. Masterson Creber, PhD, MSc, RN, and Mario F. L. Gaudino, MD, New York, NY

Inpatient multidisciplinary cardiac rehabilitation is associated with lower unplanned hospital readmissions compared with conventional cardiac rehabilitation among patients undergoing cardiac surgery.

1862 Commentary: Lessons learned from multidisciplinary inpatient rehabilitation following cardiac surgery and the gap to broad application

Kimberly A. Holst, MD, Rochester, Minn

Inpatient cardiac rehabilitation may not be available and/or desirable for most patients; surgical teams need to determine how to develop integrated care models to their specific clinical practice.



1864 Direct oral anticoagulants and cardiac surgery: A descriptive study of preoperative management and postoperative outcomes



Vanessa Fox, Ariane Kleikamp, MD, Marcus Dittrich, MD, PhD, Armin Zittermann, PhD, Tobias Flieder, Cornelius Knabbe, MD, Jan Gummert, MD, and Ingvild Birschmann, MD, PhD, Bad Oeynhausen and Würzburg, Germany

A standardized management of preoperative direct oral anticoagulation (DOAC) medication in cardiac surgery patients may help to prevent perioperative hemorrhagic complications.

1875 **Commentary:** One size fits most, but not all when discontinuing direct oral anticoagulants before cardiac surgery

Robert S. Kramer, MD, and Wesley Zemrak, PharmD, Portland, Me

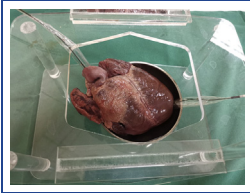
Most of the patients undergoing cardiac surgery should be safe with a DOAC hold time 4 days before the procedure, providing a thorough history is taken.

1876 **Commentary:** Should patients awaiting cardiac surgery who need anticoagulation be on direct oral anticoagulants or vitamin K antagonists?

Rizwan A. Manji, MD, PhD, MBA, and Rakesh C. Arora, MD, PhD, Winnipeg, Manitoba, Canada

Until there are readily available tests and standardized reference ranges for direct oral anticoagulants, perhaps coumadin should be used for anticoagulation for patients awaiting cardiac surgery.

Adult: Education



1878 Experience with porcine beating heart simulator for coronary artery bypass surgery residency training



Song Wu, MD, Yun-peng Ling, MD, and Hong Zhao, MD, Beijing, People's Republic of China

Our beating heart simulator could mimic the scene of OPCABG and the simulation results were satisfactory. It was very convenient for clinicians to be trained in their spare time and might shorten learning curves.

1886 **Commentary:** The beat goes on... Beating-heart simulators continue to evolve but have yet to arrive

David D. Yuh, MD, FACS, FACC, Stamford, Conn

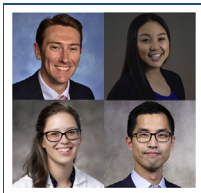
Fidelity to operating conditions, including cardiac motion, reproducibility, and cost, highlight this OP-CAB simulator, but its lack of portability may limit its effectiveness as a training platform.

1887 **Commentary:** Getting to Carnegie Hall

Dawn S. Hui, MD, and Richard Lee, MD, MBA, San Antonio, Tex, and Augusta, Ga

Research in technical skills training should account for the various aspects of cognitive load. Study designs may not be able to control or adjust for some confounding aspects.

Adult: Education: Young Surgeon's Note



1889 Integrated cardiothoracic surgery: Navigating interviews and the match



Benjamin Smood, MD, Stephanie N. Nguyen, MD, Abigail R. Benkert, MD, and Jason J. Han, MD, Philadelphia, Pa; New York, NY; and Durham, NC

Critically reflecting on one's values and desires throughout surgical training will permit applicants to ask important questions of themselves and programs when determining where they will best fit.

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- 1896** **Commentary:** Two roads diverged: Integrated training programs in cardiothoracic surgery
Elizabeth H. Stephens, MD, PhD, Rochester, Minn

Tips regarding applying to and a successful match in integrated programs can be helpful, but perhaps more important for applicants is perspective regarding the field and training paradigms.

- 1897** **Commentary:** Two roads diverged after medical school and some take the road less traveled
Jordan D. Miller, DO, and Shari L. Meyerson, MD, Lexington, Ky

Applicants to integrated thoracic programs need a realistic assessment of their priorities in both work and life when choosing a program because every program has its own culture and strategy for training.

- 1898** **Commentary:** Applying for integrated cardiothoracic surgery positions: Not for the faint-hearted graduate
Heidi B. Nafday, MD, and Eugene A. Grossi, MD, New York, NY

Recent matriculants are situated to advise applicants to 16 cardiothoracic surgery programs facing an arduous process that requires significant amounts of preparation, time, and financial resources.

Announcements

The American Association for Thoracic Surgery



- 1900** ***View Updated Content on AATS Online***

- 1900** ***Update Your AATS Profile***

The AATS Foundation



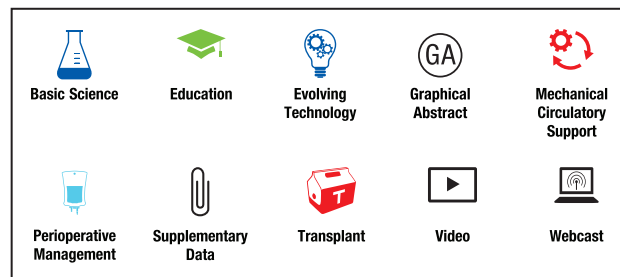
- 1900** ***Make an Impact Today***

The Western Thoracic Surgical Association



1901 *Register & Reserve Housing for the WTSA 47th Annual Meeting*

1901 *Applications for WTSA Membership*



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Cover Photographs

Left: (Congenital) From Congenital Aortic and Truncal Valve Reconstruction Using the Ozaki Technique: Short-Term Clinical Result. Aortic valve after 3-leaflet Ozaki repair.

Center: (Thoracic) From Retrievable Covered Metallic Segmented Y Airway Stent for Gastrorespiratory Fistula of Carina or Main Bronchi. Stents individually customized with the aid of 3D printing for gastrorespiratory fistula.

Right: (Adult) From A Novel Cross-Species Model of Barlow's Disease to Biomechanically Analyze Repair Techniques in an Ex Vivo Left Heart Simulator. Novel cross-species model simulates Barlow's disease for ex vivo biomechanical analysis.