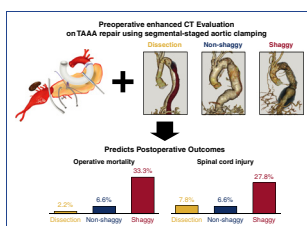


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### Adult Articles in AATS Journals

883 Adult

#### Adult: Aorta



#### 889 Impact of shaggy aorta on outcomes of open thoracoabdominal aortic aneurysm repair



*Koki Yokawa, MD, Yuki Ikeno, MD, PhD, Soichiro Henmi, MD, Katsuhiro Yamanaka, MD, PhD, Kenji Okada, MD, PhD, and Yutaka Okita, MD, PhD, Kobe, Japan*

Shaggy aorta was a significant risk factor for spinal cord injury and early mortality after open thoracoabdominal aortic aneurysm repair.

#### 898 **Commentary:** Shaggy aorta in thoracoabdominal aortic aneurysm repair, an insidiously growing threat

*Tohru Asai, MD, PhD, Tokyo, Japan*

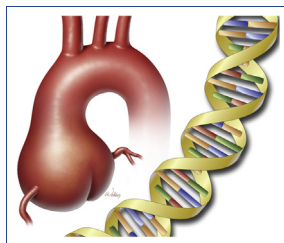
Shaggy aorta carries high risks for organ embolization and spinal cord injury in thoracoabdominal aortic aneurysm repair.

#### 899 **Commentary:** Beware the shaggy aorta during thoracoabdominal aortic aneurysm repair!

*Nicholas T. Kouchoukos, MD, St Louis, Mo*

The presence of shaggy aorta is a major risk factor for death and major complications after repair of thoracoabdominal aortic aneurysms.

#### Adult: Aorta: Invited Expert Opinion



#### 901 **Building on a genetic framework: Can we personalize the timing of surgical repair for patients with heritable thoracic aortic disease?**

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

The expansion of genetic research combined with the rigorous requirements for identifying clinically valid genes has important implications for the surgical management of heritable aortic disease.

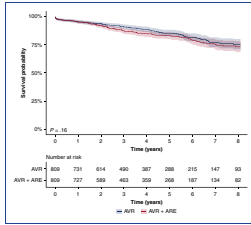
#### 906 **Commentary:** Curating the culprits: Moving closer to personalized aortic surgery

*Malak Elbatarny, MD, Jennifer C. Y. Chung, MD, MSc, and Maral Ouzounian, MD, PhD, Toronto, Ontario, Canada*

Hereditary thoracic aortic aneurysm is heterogeneous, with many implicated genes. Personalized treatment requires evidence-based molecular diagnoses.

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## Adult: Aortic Valve



### 908 Early and late outcomes following aortic root enlargement: A multicenter propensity score–matched cohort analysis

*Derrick Y. Tam, MD, Christoffer Dharma, MSc, Rodolfo V. Rocha, MD, Maral Ouzounian, MD, PhD, Harindra C. Wijeyesundera, MD, PhD, Peter C. Austin, PhD, and Stephen E. Fremes, MD, MSc, Toronto, Ontario, Canada*

The addition of ARE to isolated AVR can be safely performed to increase implanted prosthesis size without compromising early or late mortality. Additional studies with longer follow-up are necessary.

**This article has an associated discussion.**

**920 Commentary:** Lesson one of medical school: Observe the patient before deciding the treatment  
*N. Bryce Robinson, MD, Irbaz Hameed, MD, Ajita Naik, MD, and Mario Gaudino, MD, New York, NY*

Hidden confounders and treatment allocation bias are intrinsic in observational studies.

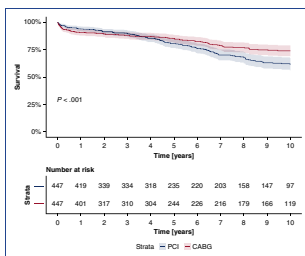
**922 Commentary:** The bigger the better, in everything  
*Michele Di Mauro, MD, PhD, MSc, Antonio Calafiore, MD, Luigi Leonzio, MD, and Alessandro Parolari, MD, Chieti, Campobasso, and San Donato Milanese, Italy*

Making bigger the aortic annulus during aortic valve replacement can be safely performed to increase implanted prosthesis size without compromising early mortality.

**924 Commentary:** Aortic root enlargement, a useful and reproducible way to a larger prosthesis  
*Manuel J. Antunes, MD, PhD, DSc, Coimbra, Portugal*

The safety and reproducibility of aortic root enlargement have been clearly demonstrated, and this procedure may have a significant effect on the future of the patient.

## Adult: Coronary



### 926 Outcomes of different revascularization strategies among patients presenting with acute coronary syndromes without ST elevation

*Eilon Ram, MD, Leonid Sternik, MD, Robert Klempfner, MD, Zaza Iakobishvili, MD, Yael Peled, MD, Nir Shlomo, MSc, and Ehud Raanani, MD, Tel Aviv, Israel*

In a real-life setting, revascularization by CABG provides excellent long-term outcomes in patients with NSTEMI or UA.

**936 Commentary:** CABG vs PCI in NSTEMI/UA: Abbreviated alternatives  
*Zaid M. Abdelsattar, MD, MS, and Juan A. Crestanello, MD, Rochester, Minn*

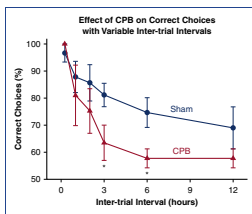
CABG and PCI are alternatives for the management of NSTEMI/UA. Optimal patient management should include a discussion within a heart team.

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## Adult: Coronary: Letters to the Editor

- e179** **Left main coronary artery stenosis: Evidence and pathophysiology**  
*Walter J. Gomes, MD, PhD, São Paulo, Brazil*
- e180** **Reply:** Going from stable to unstable  
*Derrick Y. Tam, MD, PhD, and Stephen E. Fremes, MD, MSc, Toronto, Ontario, Canada*
- e181** **Reply:** Behind enemy lines: Preserving the myocardium supplied by the left main  
*Michele Gallo, MD, Alvise Guariento, MD, Pietro L. Laforgia, MD, David Blitzer, MD, Ilias P. Doulamis, MD, PhD, and Alessandro Putzu, MD, Lugano and Geneva, Switzerland; Toronto, Ontario, Canada; San Donato Milanese, Milan, Italy; and New York, NY; and Boston, Mass*
- e183** **Reply from the author:** Treatment of left main coronary artery disease: Old habits die hard  
*Mario Gaudino, MD, New York, NY*

## Adult: Coronary: Basic Science: Brief Research Report

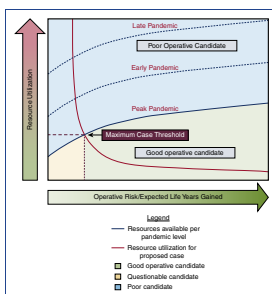


- e185** **Persistent cognitive deficits and neuroinflammation in a rat model of cardiopulmonary bypass**  
*Yi Wang, MD, PhD, Carlos Tache-Leon, MD, Maro G. Machizawa, PhD, Turner Lisle, MD, Cedric Williams, PhD, Ryon H. Clarke, PhD, Matthew J. Anzivino, BS, Irving Kron, MD, and Kevin S. Lee, PhD, Charlottesville, Va*

- e189** **Commentary:** Fortunately enough, most human beings are not rats  
*Jean Bachet, MD, FEBCTS, Suresnes, France*  
  
Cardiopulmonary bypass might be somewhat harmful. In daily practice and in the great majority of cases, however, its consequences on cognitive function are negligible.
- e190** **Commentary:** Neurocognitive dysfunction after cardiopulmonary bypass: Multiple modalities to rescue the microglia  
*John G. Augoustides, MD, FASE, FAHA, Philadelphia, Pa*

The microglia offer multiple therapeutic targets for neurocognitive rescue after cardiac surgery. Future trials should explore multimodal interventions, including modulation of inflammation.

## Adult: Perioperative Management



- 937** **The rapid transformation of cardiac surgery practice in the coronavirus disease 2019 (COVID-19) pandemic: Insights and clinical strategies from a center at the epicenter**  
*Isaac George, MD, Michael Salna, MD, Serge Kobsa, MD, PhD, Scott Deroo, MD, Jacob Kriegel, MD, David Blitzer, MD, Nicholas J. Shea, MD, MS, Alex D'Angelo, MD, Tasnim Raza, MD, Paul Kurlansky, MD, Koji Takeda, MD, PhD, Hiroo Takayama, MD, PhD, Vinayak Bapat, MD, Yoshifumi Naka, MD, PhD, Craig R. Smith, MD, Emile Bacha, MD, and Michael Argenziano, MD, New York, NY*

The COVID-19 pandemic has forced significant changes in cardiac surgery, such as reorganizing staff, repurposing hospital space, redefining surgical priority, and changing clinical practice.

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- 948** **Commentary:** Preparation for pandemics prevents pandemonium  
*Gal Levy, MD, Galveston, Tex*

Uncertainty in emergency and the quickly evolving healthcare crisis can lead to chaos. Preparation strategies for the Coronavirus Disease 2019 pandemic provide purpose and direction for optimal outcomes.

- 949** **Commentary:** Vulnerability and resilience demonstrated: Cardiac surgeons during coronavirus disease 2019 (COVID-19)  
*Scott C. Silvestry, MD, Orlando, Fla*

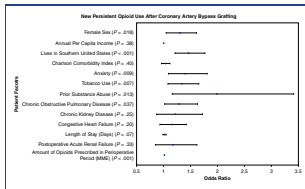
The COVID-19 pandemic impacted our practices, our patients, and ourselves. We acknowledge the changes we implemented and the impact on our professional and personal lives.

- 951** **Commentary:** Implications of coronavirus disease 2019 (COVID-19) for cardiac surgery: Priorities and decisions  
*Keshava Rajagopal, MD, PhD, Houston, Tex*

The COVID-19 pandemic has caused cardiac surgeons to reassess their duties and priorities.

- 952** **Commentary:** Pandemic deployment and surgical soldiership  
*Daniel J. Goldstein, MD, Bronx, NY*

A necessary quality for aspiring and practicing surgeons is preparedness. Precious lessons in how to manage resources, deploy personnel, and prioritize cardiac surgery patients in the midst of a pandemic are presented.



- 954** **Predictors of new persistent opioid use after coronary artery bypass grafting**  
*Kathleen C. Clement, MD, Joseph K. Canner, MHS, Jennifer S. Lawton, MD, FACS, Glenn J. R. Whitman, MD, Michael C. Grant, MD, and Marc S. Sussman, MD, Baltimore, Md*



New persistent opioid use occurs in 8.1% of opioid-naïve patients after CABG. Prospective studies are needed to determine the opioid requirements of patients after CABG to prevent opioid dependence.

**This article has an associated discussion and webcast.**

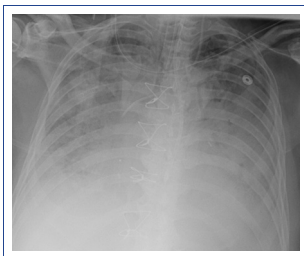
- 964** **Commentary:** The power of the pen—cardiac surgical opioid use in the United States  
*Kevin P. Landolfo, MD, MSc, and Archer Kilbourne Martin, MD, Jacksonville, Fla*

The risk of developing chronic opioid use in the previously opioid-naïve cardiac surgical patient is significant. Increased awareness and multidisciplinary approaches must be developed.

- 966** **Commentary:** Time to make moves on opioid prescribing following cardiac surgery  
*Kimberly A. Holst, MD, and Elizabeth B. Habermann, PhD, Rochester, Minn*

Cardiothoracic surgeons should improve opioid stewardship for our patients as we continue to develop our understanding of postoperative opioid dependence.

## Adult: Perioperative Management: Case Report



- e193** **A case of coronavirus disease 2019 (COVID-19) presenting after coronary artery bypass grafting**



*Michael Salna, MD, Antonio Polanco, MD, Vinayak Bapat, MD, Isaac George, MD, Michael Argenziano, MD, and Koji Takeda, MD, PhD, New York, NY*

COVID-19 has a variety of cardiovascular manifestations and may mimic postcardiotomy complications. For the near future, all patients undergoing urgent cardiac surgery should be tested for COVID-19.

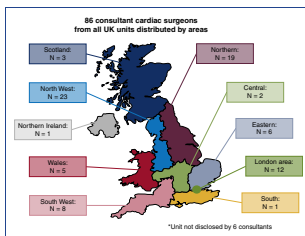
- e197** **Commentary:** Coronary artery bypass grafting in patients with coronavirus disease 2019 (COVID-19): Darkness cannot drive out darkness  
*Dominique Vervoort, MD, and Tom C. Nguyen, MD, Baltimore, Md, and Houston, Tex*

COVID-19 complicates cardiac surgical procedures and cardiovascular diseases. It is here to stay, requiring cardiac surgeons to adapt and prevail for the betterment of our patients' health.

- e198** **Commentary:** The era of great uncertainty  
*Takashi Murashita, MD, Columbia, Mo*

During the COVID-19 pandemic, cardiac surgeons need to be aware that undiagnosed infection can cause unexpected catastrophic complications after urgent or emergent operations.

## Adult: Education: Health Policy



- 968** **A nationwide survey of UK cardiac surgeons' view on clinical decision making during the coronavirus disease 2019 (COVID-19) pandemic**

*Umberto Benedetto, MD, PhD, Andrew Goodwin, MD, PhD, Simon Kendall, MD, Rakesh Uppal, MD, and Enoch Akowuah, MD, Bristol, London, and Middlesbrough, United Kingdom*

In the current scenario, systematic appraisal of national expert consensus can represent a rapid and efficient instrument to support health policy makers in generating interim recommendations.

- 974** **Commentary:** A survey of UK cardiac surgeons' opinions during the coronavirus disease 2019 pandemic: A point and place in time  
*Nicholas D. Andersen, MD, Durham, NC*

A survey of UK cardiac surgeons' opinions at an early phase of the COVID-19 pandemic is reported, but opinions and policies are likely to shift as the pandemic evolves.

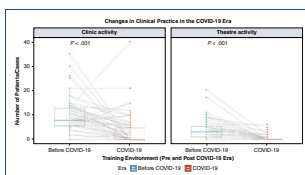
- 976** **Commentary:** Cardiac surgery during the coronavirus disease 2019 (COVID-19) pandemic: Feeling our way in the dark  
*Clifford W. Barlow, FRCS (CTh), DPhil, Southampton, United Kingdom*

The views of senior surgeons can provide recommendations for clinical decision-making for cardiac surgery during the COVID-19 pandemic while clinical data are awaited.

- 977** **Commentary:** Performing cardiac surgery in the coronavirus disease 2019 (COVID-19) era: What is the new normal?  
*Siamak Mohammadi, MD, FRCSC, and Dimitri Kalavrouziotis, MD, FRCSC, Quebec City, Canada*

The optimal preoperative assessment and intraoperative approach to the cardiac surgical patient in the COVID-19 era remain unknown, although information from surveys may be useful.

## Adult: Education



- 980** **Impact of coronavirus 2019 (COVID-19) on training and well-being in subspecialty surgery: A national survey of cardiothoracic trainees in the United Kingdom**

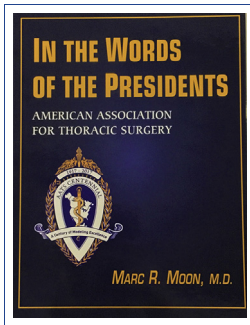
*Edward J. Caruana, MD, MRCS(Eng), MFSTEd, Akshay Patel, MA, MRCS(Eng), Simon Kendall, MS, FRCS(CTh), and Sridhar Rathinam, MBBS, FRCS(CTh), Leicester, Nottingham, Birmingham, and Middlesbrough, United Kingdom*


The COVID-19 pandemic poses significant personal and professional challenges to surgical trainees. This national survey of cardiothoracic trainees in the United Kingdom evaluates the early impact on well-being, clinical practice, and progression.

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- 988** **Commentary:** Adaptations to COVID-19 or permanent reforms in the “new normal”?  
*Castigliano M. Bhamidipati, DO, PhD, MSc, and Howard K. Song, MD, PhD, Portland, Ore*
- Cardiothoracic surgery education is adapting to the COVID-19 pandemic, and some of these changes could turn out to be useful permanent reforms.
- 989** **Commentary:** COVID-19: “There is no education like adversity”  
*Elizabeth H. Stephens, MD, PhD, Rochester, Minn*
- The trainee experience has been drastically impacted by COVID. Learning from these experiences as institutions enter reactivation and beyond will be critical for the improvement of surgical training.

## Adult: Education: Young Surgeon’s Note



- 991**  **Timeless lessons from the past and present leaders of cardiothoracic surgery part 2: Character development**  
*Jason J. Han, MD, John J. Kelly, MD, William L. Patrick, MD, Amit Iyengar, MD, MSE, Marvin Atkins, MD, and Colleen Pietras, MD, Philadelphia, Pa; Temple, Tex; and New Haven, Conn*
- Professional excellence is a core component of a successful career in cardiothoracic surgery. The collective wisdom from leaders in the field is encapsulated here for aspiring surgeons.
- 998** **Commentary:** Standing upon the shoulders of giants  
*Laura Seese, MD, and Danny Chu, MD, Pittsburgh, Pa*
- In addition to technical skills, young surgeons must simultaneously cultivate leadership and humanistic qualities. Advice from leaders in the field helps inspire and refine these essential traits.
- 999** **Commentary:** Back to the future: Lessons from our residents  
*Virginia R. Litle, MD, Boston, Mass*
- The evolution of humanism, balance, and well-being in the words of past, present, and future leaders of cardiothoracic surgery.
- 1000** **Commentary:** Reflections on the past and how they impact reflections of ourselves  
*S. Adil Husain, MD, Salt Lake City, Utah*
- Messages shared by past presidents of the AATS have similar themes regarding character development. Understanding these themes allows the reader to acquire presidential wisdom and concurrently engage in self-reflection.

## Adult: Thoracic Surgery Residents Association Presidential Address

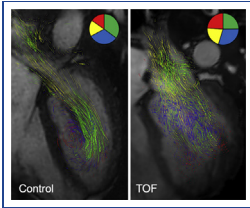


- 1002** **Thoracic Surgery Residents Association Inaugural Presidential Address: Preserving the passion in cardiothoracic surgery training**  
*Xiaoying Lou, MD, Atlanta, Ga*
- Preserving the passion in training is essential on this lifelong journey to becoming a cardiothoracic surgeon.

Congenital Articles in AATS Journals

1004 Congenital

Congenital: Tetralogy of Fallot



**1008** **Abnormal left ventricular flow organization following repair of tetralogy of Fallot**  
 Michal Schäfer, PhD, Lorna P. Browne, MD, James Jagers, MD, Alex J. Barker, PhD, Gareth J. Morgan, MD, D. Dunbar Ivy, MD, and Max B. Mitchell, MD, Aurora, Colo



Patients with repaired tetralogy of Fallot with mild-to-moderate right ventricular (RV) dilation and significant pulmonary regurgitation have abnormal left ventricular (LV) inflow filling correlated with the degree of RV dilation and impaired LV function.

**1016** **Commentary:** Ventriculo-ventricular interaction: A bad neighbor brings down the neighborhood  
 David P. Bichell, MD, Nashville, Tenn

After tetralogy of Fallot repair, compromise of the left ventricle occurs even with only modest right ventricular enlargement. Implications for pulmonary valve intervention deserve attention.

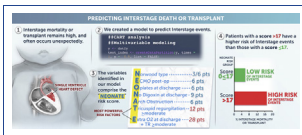
**1017** **Commentary:** Does right ventricular dysfunction cause left ventricular dysfunction in tetralogy of Fallot? The quest continues  
 William M. DeCampli, MD, PhD, Orlando, Fla

Left ventricular dysfunction is common after tetralogy of Fallot repair. The challenge is to definitively determine the role of the right ventricle in causing the dysfunction.

**1019** **Reply to Commentary:** Can't flow down: More 4-dimensional flow magnetic resonance imaging studies are needed in congenital heart disease  
 Michal Schäfer, PhD, D. Dunbar Ivy, MD, Alex J. Barker, PhD, and Max B. Mitchell, MD, Aurora, Colo

Four-dimensional flow MRI studies in congenital heart disease are scarce, yet they might provide more information than current standard imaging techniques.

Congenital: Single Ventricle



**1021** **Development of a validated risk score for interstage death or transplant after stage I palliation for single-ventricle heart disease**



Humera Ahmed, MD, Jeffrey B. Anderson, MD, Katherine E. Bates, MD, Craig E. Fleishman, MD, Shobha Natarajan, MD, Nancy S. Ghanayem, MD, Lynn A. Sleeper, ScD, Carole M. Lannon, MD, MPH, and David W. Brown, MD, for the National Pediatric Cardiology Quality Improvement Collaborative, Boston, Mass; Cincinnati, Ohio; Ann Arbor, Mich; Orlando, Fla; Philadelphia, Pa; and Houston, Tex

We introduce a novel, validated risk score to be used before discharge following StP to assess the risk of interstage death/transplant—greatest for patients with TR and a supplemental O<sub>2</sub> requirement.

**1031** **Commentary:** Risk score for death or transplantation after stage I palliation—Now what?  
 Bahaaldin Alsoufi, MD, Louisville, Ky

Multiple factors contribute to interstage mortality risk; however, many of those might not be easily modifiable.

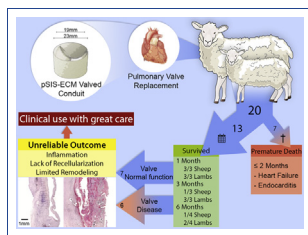
**1033** **Commentary:** The over/under is set at 17? Let's not gamble with discharge after the Norwood operation

James M. Meza, MD, MSc, Nicholas D. Andersen, MD, and Joseph W. Turek, MD, PhD, Durham, NC

The NEONATE score is a first step toward data-driven decision making regarding discharge after the Norwood operation. Infants with a score of 17 or greater should remain hospitalized, and modifiable risk factors should be optimized.

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## Congenital: Pulmonary Valve: Basic Science



### e201 Failure of decellularized porcine small intestinal submucosa as a heart valved conduit



*Jan Willem van Rijswijk, MSc, Hanna Talacua, MD, PhD, Khadija Mulder, MSc, Gerardus P. J. van Hout, MD, PhD, Carlijn V. C. Bouten, PhD, Paul F. Gründeman, MD, PhD, and Jolanda Kluin, MD, PhD, Amsterdam, Utrecht, and Eindhoven, The Netherlands*

The use of CorMatrix pSIS-ECM in heart valve surgery should be considered with great care because of unreliable outcomes due to inflammatory reaction and lack of constructive remodeling.

### e217 Commentary: Pouring life into dead tissues: A brief history of the porcine small intestine submucosa (SIS) in cardiovascular surgery—success, failures, hype, and hope

*Kanika Kalra, MD, and Muralidhar Padala, PhD, Atlanta, Ga*

Preclinical outcomes with porcine small intestinal submucosa as cardiovascular substitutes are limited and should be translated to clinical use with caution.

### e221 Commentary: Overpromised, understudied: The slippery slope of pediatric cardiac device development

*Charles D. Fraser, Jr, MD, Austin, Tex*

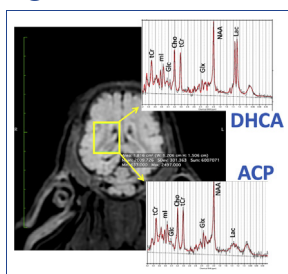
Pediatric device development is critical for children with cardiac disease. Unfortunately, the pressure to introduce innovation may, at important levels, result in inadequate scientific evaluation.

### e222 Commentary: “CorMatrix: If it is too good to be true, ...”

*Francesco Formica, MD, and Tain-Yen Hsia, MD, Monza, Italy, and New Haven, Conn*

In animal studies, pulmonary valve conduit made with CorMatrix showed a high incidence of early valve failure and infection, with corresponding histologic features of inflammation and poor remodeling.

## Congenital: Cerebral Protection: Basic Science: Brief Research Report



### e225 Comparison of dynamic brain metabolism during antegrade cerebral perfusion versus deep hypothermic circulatory arrest using proton magnetic resonance spectroscopy



*Frank L. Hanley, MD, Hiroki Ito, MD, Meng Gu, PhD, Ralph Hurd, PhD, R. Kirk Riemer, PhD, and Daniel Spielman, PhD, Stanford, Calif*

Brain metabolism during deep hypothermic arrest is active and abnormal, resulting in a buildup of lactate and loss of energy substrates. Antegrade cerebral perfusion prevents these abnormalities.

### e229 Commentary: Elegantly confirming what we might predict

*Erle H. Austin III, MD, Louisville, Ky*

Proton MR spectroscopy provides an elegant depiction of time-related changes in levels of lactate and glucose in the brain of a neonatal piglet. See how deep hypothermic circulatory arrest compares with antegrade cerebral perfusion.

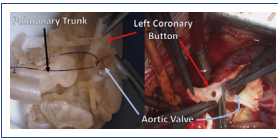
### e231 Commentary: Please don't freeze my brain, perfuse it

*Jean Bachet, MD, FEBCTS, Suresnes, France*

Either in piglets or in adult human beings, antegrade selective cerebral perfusion better protects the brain than deep hypothermic circulatory arrest.



Congenital: Education



- 1035** **Quantitative assessment of technical performance during hands-on surgical training of the arterial switch operation using 3-dimensional printed heart models**  
*Nabil Hussein, MBChB (Hons), Osami Honjo, MD, Christoph Haller, MD, John G. Coles, MD, Zhongdong Hua, MD, Glen Van Arsdell, MD, and Shi-Joon Yoo, MD, Toronto, Ontario, Canada; Beijing, China; and Los Angeles, Calif*



HOST improves surgeons' performances during simulation of the arterial switch operation. These methods are needed to prepare the next generation of congenital heart surgeons.

- 1043** **Commentary:** Print another heart, practice makes perfect  
*Alison F. Ward, MD, and Richard Lee, MD, MBA, Augusta, Ga*

Hands-on surgical training quantitatively improves surgeons' techniques; continued demonstration of improved performance will be needed for widespread adoption in congenital heart surgery training.

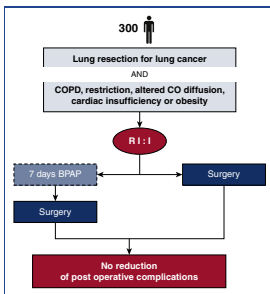
- 1044** **Commentary:** Operate on my printed model—absolutely; my newborn grandchild?  
*Ronald K. Woods, MD, PhD, Milwaukee, Wis*

Procedural training on 3D-printed models may enhance knowledge and technical performance of selected congenital cardiac surgical procedures.

Thoracic Articles in AATS Journals

1046 Thoracic

Thoracic: Lung Cancer



- 1050** **Assessment of preoperative noninvasive ventilation before lung cancer surgery: The preOVNI randomized controlled study**  
*Nicolas Paleiron, MD, Frédéric Grassin, MD, Christophe Lancelin, MD, Cécile Tromeur, MD, Jacques Margery, MD, PhD, Claudia Natale, MD, and Francis Couturaud, MD, PhD, the GFPC Group, Toulont, Brest, and Clamart, France*



In this randomized controlled study, preoperative NIV before lung cancer surgery did not reduce postoperative complications.

- 1060** **Commentary:** Work in progress—Defining optimal surgical prehabilitation before lung resection  
*Erin M. Corsini, MD, and Mara B. Antonoff, MD, Houston, Tex*

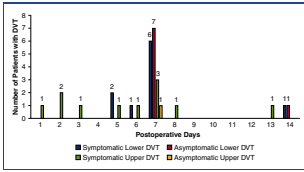
Surgical prehabilitation may improve outcomes in patients undergoing lung resection. Additional novel investigations are necessary.

- 1062** **Commentary:** Positive pressure toward a negative trial?  
*Todd L. Demmy, MD, Buffalo, NY*

Rigorous study design constraints may have made it difficult to detect therapeutic benefits of preoperative external ventilatory support therapy in high-risk pulmonary patients.

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## Thoracic: Mesothelioma



### 1064 Routine surveillance for diagnosis of venous thromboembolism after pleurectomy for malignant pleural mesothelioma



*Luis E. De León, MD, Carlos E. Bravo-Iñiguez, MD, Sam Fox, BS, Jeffrey Tarascio, BA, Samuel Freyaldenhoven, MD, Moshe Lapidot, MD, Michael T. Jaklitsch, MD, and Raphael Bueno, MD, Boston, Mass*

Routine surveillance with upper- and lower-extremity noninvasive studies is effective and may help to diagnose and treat asymptomatic DVT before it progresses to symptomatic or fatal PE.

#### This article has an associated discussion.

### 1074 Commentary: Mesothelioma: The Guinness world record holder in thromboembolism

*Robert B. Cameron, MD, Los Angeles, Calif*

The risk of thromboembolic events in patients with mesothelioma undergoing surgery is staggering; more attention needs to be paid to early detection and treatment but most importantly to prevention.

### 1075 Commentary: Focused attention on proactive identification of deep venous thrombosis after pleurectomy/decortication for malignant pleural mesothelioma

*Shawn S. Groth, MD, MS, FACS, R. Taylor Ripley, MD, Philip W. Carrott, MD, and Bryan M. Burt, MD, Houston, Tex*

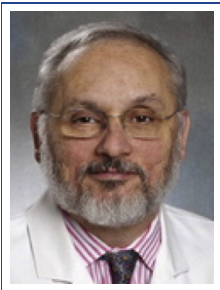
The patient's outcome correlates directly with the surgeon's attention to a myriad of minor details.—Hiram C. Polk, MD

### 1076 Commentary: To scan or not to scan: No longer the question for mesothelioma patients after pleurectomy

*Elizabeth A. David, MD, MAS, and Scott M. Atay, MD, Los Angeles, Calif*

Routine noninvasive screening for deep venous thrombosis should be performed in patients undergoing pleurectomy/decortication for mesothelioma.

## Thoracic: Mesothelioma: Invited Expert Opinion



### 1078 Mesothelioma in the age of “Omics”: Before and after The Cancer Genome Atlas

*David T. Severson, DPhil, Assunta De Rienzo, PhD, and Raphael Bueno, MD, Boston, Mass*



NGS studies, including the 2018 TCGA publication on MPM, have improved our molecular and genetic understanding of the disease.

### 1084 Commentary: Tasting individual ingredients of meso soup: Can ‘omics bring out the flavor?

*Harvey I. Pass, MD, New York, NY*

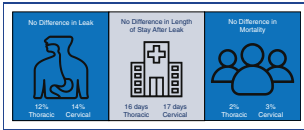
An evolution of molecular biology techniques is broadening our understanding of mesothelioma. Molecular phenotyping will guide diagnosis, prognosis, as well as prediction of therapeutic response.

### 1086 Commentary: Filling up my truck from an oil tanker: Can big ‘omic’ data influence our clinical decisions?

*R. Taylor Ripley, MD, Houston, Tex*

Severson and colleagues write an outstanding review with historical context for the complex molecular techniques for an integrated analysis of mesothelioma tumors by Hmeljak and colleagues.

## Thoracic: Esophageal Cancer

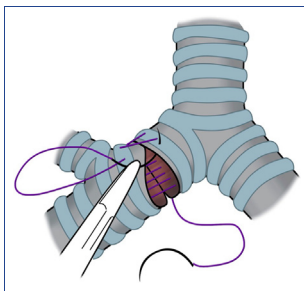


- 1088 Effect of thoracic versus cervical anastomosis on anastomotic leak among patients who undergo esophagectomy after neoadjuvant chemoradiation**  
*Alexis Pluscherie Chidi, MD, PhD, MSPH, Eric Wayne Etchill, MD, MPH, Jinny Suk Ha, MD, MHS, Errol Lovester Bush, MD, Stephen Clyde Yang, MD, Richard James Battafarano, MD, PhD, and Stephen Robert Broderick, MD, MPH, Baltimore, Md*

In patients with locally advanced esophageal cancer, anastomosis location does not affect leak rate after neoadjuvant chemoradiation. Patient factors and surgeon experience should determine approach.

- 1096 Commentary:** Where is the leak? From the anastomosis or the database?  
*Nasser Altorki, MD, and Brendon Stiles, MD, New York, NY*
- Anastomotic leaks after esophagectomy are associated with high mortality. Implementation of failure to rescue protocols is required to improve patients' outcomes.
- 1097 Commentary:** Does the location of the anastomosis affect leak rate after esophagectomy?  
*K. Robert Shen, MD, Rochester, Minn*
- The location of the anastomosis is not the major driver of leak rate after esophagectomy.

## Thoracic: Transplantation

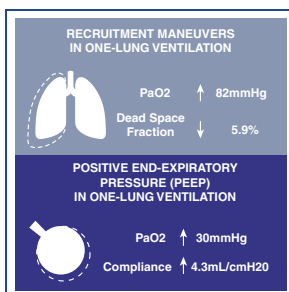


- 1099 Single running suture technique is associated with low rate of bronchial complications after lung transplantation**  
*Thomas Schweiger, MD, PhD, Ioannis Nenekidis, MD, PhD, Jakob Elias Stadler, Stefan Schwarz, MD, Alberto Benazzo, MD, Peter Jaksch, MD, Konrad Hoetzenecker, MD, PhD, and Walter Klepetko, MD, and the Vienna Lung Transplant Program, Vienna, Austria, and Athens, Greece*

The use of a single-running suture technique results in a low incidence of airway complications after lung transplantation.

- 1109 Commentary:** Bronchial anastomosis for lung transplantation—one suture fits all  
*Stephanie H. Chang, MD, and Zachary N. Kon, MD, New York, NY*
- Single running suture for bronchial anastomoses in lung transplant is a good technique, with a low incidence of bronchial complications at a high-volume center.
- 1110 Commentary:** Running bronchial anastomotic suture in lung transplantation: Should we run before we walk?  
*Jules Lin, MD, Ann Arbor, Mich*
- Although many surgeons hesitate to use a single running suture bronchial anastomotic technique, this large series reports a low rate of bronchial complications.

## Thoracic: Perioperative Management



- 1112 Positive end-expiratory pressure and recruitment maneuvers during one-lung ventilation: A systematic review and meta-analysis**  
*John K. Peel, MD, Duane J. Funk, MD, Peter Slinger, MD, Sadeesh Srinathan, MD, MSc, and Biniam Kidane, MD, MSc, Toronto, Ontario, and Winnipeg, Manitoba, Canada*
- Recruitment maneuvers and PEEP have physiologic advantages during one-lung ventilation with yet-unclear clinical outcomes.

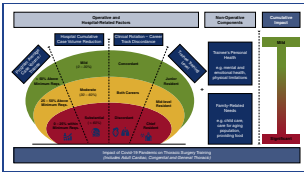
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- 1123** **Commentary:** Measure what matters in one lung ventilation  
*Mariya Geube, MD, FASE, and Eduardo Mireles-Cabodevila, MD, Cleveland, Ohio*
- The meta-analysis confirms the beneficial effect of recruitment maneuvers and positive end-expiratory pressure on physiological respiratory parameters and demonstrates the lack of knowledge about patient-centered clinical outcomes.
- 1124** **Commentary:** To PEEP, or not to PEEP, that is no longer a question  
*Elena Ashikhmina, MD, PhD, Rochester, Minn*
- The application of positive end-expiratory pressure and recruitment maneuvers during one-lung ventilation is associated with greater PaO<sub>2</sub>, pulmonary compliance, and reduced dead space.

## Thoracic: Perioperative Management: Commentary

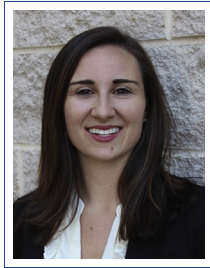
- e233** **Commentary:** Thoracic surgery during the COVID-19 pandemic: Recommendations from China  
*Chi-Fu Jeffrey Yang, MD, Stanford, Calif*
- The article by Chen and colleagues highlights lessons learned and recommendations from China regarding thoracic surgery during the COVID-19 pandemic.
- e237** **Commentary:** Collaboration is key to saving as many lives as possible  
*Mara B. Antonoff, MD, Houston, Tex*
- Sharing our successes, failures, and lessons learned with the thoracic surgical community is imperative to saving as many lives as possible during this pandemic.

## Thoracic: Education: Expert Opinion



- 1126** **Enhancing thoracic surgical trainee competence in the coronavirus disease 2019 (COVID-19) era: Challenges and opportunities for mentorship**  
*Marko T. Boskovski, MD, MHS, MPH, Sameer A. Hirji, MD, MPH, Alexander A. Brescia, MD, MSc, Andrew C. Chang, MD, and Tsuyoshi Kaneko, MD, Boston, Mass, and Ann Arbor, Mich*
- COVID-19 has created unique challenges to thoracic surgery education. By identifying affected trainees and enhancing existing mentorship models, we can mitigate the negative effects of the pandemic.
- 1130** **Commentary:** Caution: Falling case volumes  
*Frederick A. Tibayan, MD, Portland, Ore*
- Adequate training during the COVID-19 pandemic requires early identification of obstacles. To meet minimum requirements, residents will need innovative educational strategies and directed mentorship.
- 1131** **Commentary:** Mentoring trainees when the going gets tough  
*Mara B. Antonoff, MD, Houston, Tex*
- Mentorship is key to supporting trainees through the curricular challenges of a pandemic; more importantly, mentorship is crucial to navigating heightened external challenges during this time.

## Thoracic: Education: Young Surgeon's Note



**1133**  


**Cardiothoracic surgery educational research and training innovation: A review of 2018-2019**

*Megan F. Hunt, BS, Katherine Giuliano, MD, Eric Etchill, MD, MPH, and Stephen C. Yang, MD, Baltimore, Md*

As an update to the 2017-2018 education review of cardiothoracic surgery, this article highlights this year's advances in education research and provides commentary on what is in store for cardiothoracic surgery education.

**1138**

**Commentary:** A thousand eyes and one: Reviewing cardiothoracic surgery educational research 2018-2019

*Nkem Azikem, MD, and Frederick A. Tibayan, MD, Portland, Ore*

The ideas and concepts driving research in cardiothoracic surgery education continue to evolve and shape the specialty.

**1139**

**Commentary:** Pursuing the Pareto frontier in education

*David L. Joyce, MD, MBA, Milwaukee, Wis*

Evolving trends in cardiothoracic surgical education have created opportunities to expand the Pareto frontier.

## Statement of Concern

**1140**

**Bolourani S, Tayebi MA, Diao L, Wang P, Patel V, Manetta F, Lee PC, entitled, Using machine learning to predict early readmission following esophagectomy. *J Thorac Cardiovasc Surg.* (May 29, 2020 [Epub ahead of print]).**

## Announcements

### The American Association for Thoracic Surgery



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***AATS 100th Annual Meeting: A Virtual Learning Experience***

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***Update Your AATS Profile***

### The AATS Foundation



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***Invest in the Future***

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### The Western Thoracic Surgical Association



## 1142 *Save the Date*

## 1142 *WTSA Traveling Fellowship for Residents, Trainees, and Practicing Surgeons*

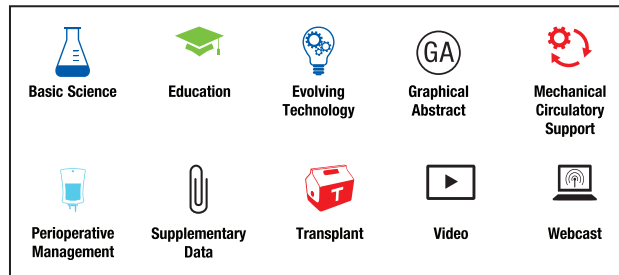
## 1142 *Applications for WTSA Membership*

### The American Board of Thoracic Surgery



## 1143 *ABTS Announcement*

## 1144 *ABTS Requirements for the 10-Year Milestone for Maintenance of Certification*



*The Journal of Thoracic and Cardiovascular Surgery* online is sponsored by St. Jude Medical.

### Cover Photographs

**Left (Adult):** From Building on a Genetic Framework: Can We Personalize the Timing of Surgical Repair for Patients With Heritable Thoracic Aortic Disease? Aortic aneurysms in heritable aortic disease typically involve the aortic root. The illustration shows the characteristic morphology of aortic root aneurysms in patients with Marfan syndrome. Used with permission of Baylor College of Medicine.

**Center (Congenital):** From Abnormal Left Ventricular Flow Organization Following Repair of Tetralogy of Fallot. Differences in left ventricular filling hemodynamics between a patient with tetralogy of Fallot and a control subject.

**Right (Thoracic):** From Single Running Suture Technique Is Associated With Low Rate of Bronchial Complications After Lung

Transplantation. Schematic drawing of the single running suture technique for the bronchial anastomosis using a double-armed PDS suture. A, The first stitch is placed in the right dorsolateral corner from the outside to the inside at the recipient bronchial stump. B, The dorsal portion of the anastomosis is completed. C, After reaching the lateral portion on the left side, the direction of the stitches can be maintained by performing one stitch from the inside to the outside and vice versa on the same side of the anastomosis. Afterwards, the left and left-anterior portion of the anastomosis completed with backhand stitches. D, The free end of the thread is used to complete the remaining circumference of the anastomosis. Both ends are tied at the anterior aspect of the bronchus.