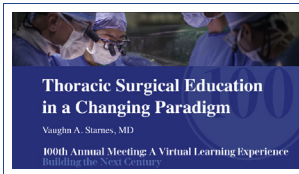


Table of Contents

AATS Presidential Address

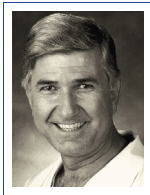


713 Thoracic surgical education in a changing paradigm

Vaughn A. Starnes, MD, Los Angeles, Calif

The AATS exists as an organization to promote scholarship, education, and research for the benefit of our patients.

AATS Lifetime Achievement Award



723 Tirone E. David, recipient of the American Association for Thoracic Surgery Lifetime Achievement Award

Craig R. Smith, MD, New York, NY

Tirone E. David is the recipient of the AATS Lifetime Achievement Award.

AATS Scientific Achievement Award



725 Walter Randolph Chitwood, Jr, MD: 2020 Recipient of the American Association for Thoracic Surgery Scientific Achievement Award

James L. Cox, MD, Chicago, Ill

Good guys can finish first after all!

AATS Honorary Fellowship



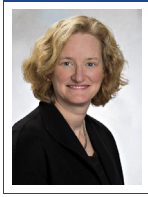
728 Professor Ajit P. Yoganathan, PhD: "From bench to bedside": Celebrating his contributions to cardiac surgery with an honorary fellowship from the American Association for Thoracic Surgery

Pedro J. del Nido, MD, and David H. Adams, MD, Boston, Mass, and New York, NY

Ajit P. Yoganathan, PhD—Honorary Fellowship from the AATS.

Table of Contents

Education

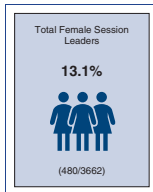


730 **A historic event: The first female officer of the American Association for Thoracic Surgery**



Jennifer S. Lawton, MD, Baltimore, Md

Cardiothoracic surgeons around the world rejoiced today when Dr Yolonda Colson was nominated as the Vice President of the AATS. No woman has ever served as an officer of the AATS.



733 **Gender representation among leadership at national and regional cardiothoracic surgery organizational annual meetings**



Kimberly A. Shemanski, MD, Li Ding, MD, MPH, Anthony W. Kim, MD, Shanda H. Blackmon, MD, MPH, Sean C. Wightman, MD, Scott M. Atay, MD, Vaughn A. Starnes, MD, and Elizabeth A. David, MD, MAS, Los Angeles, Calif, and Rochester, Minn

Women are underrepresented in leadership roles at academic cardiothoracic surgery meetings, which impacts the recruitment of new female surgeons and the career trajectories of current female surgeons.

This article has an associated discussion and webcast.

745 **Commentary: Gender and opportunity in cardiothoracic surgery**

Leora B. Balsam, MD, Worcester, Mass

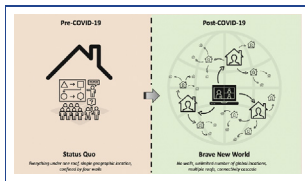
Relative to the population, women are underrepresented in cardiothoracic surgery. Promoting a culture of diversity and inclusion will require individual and organizational change in our field.

746 **Commentary: Winds of change? Not really...not yet!**

Madhuri V. Rao, MD, and Rosemary F. Kelly, MD, Minneapolis, Minn

Cardiothoracic surgery has seen limited measurable change over decades in the equity and diversity of its leadership. Meaningful change requires focused efforts on implementation and accountability.

Education: Expert Opinion



748 **Brave New World: Virtual conferencing and surgical education in the Coronavirus Disease 2019 era**



Dominique Vervoort, MD, Joseph A. Dearani, MD, Vaughn A. Starnes, MD, Vinod H. Thourani, MD, and Tom C. Nguyen, MD, Baltimore, Md; Rochester, Minn; Los Angeles, Calif; Atlanta, Ga; and Houston, Tex

The online move of conferences and education leads to an improved ability of trainees, international colleagues, and underrepresented members of the surgical team to access educational opportunities.

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753 **Commentary:** Virtual education in cardiothoracic surgery: Born out of necessity, enduring influence
Marc R. Moon, MD, St Louis, Mo

AATS virtual conferencing was born out of necessity due to travel mandates to combat COVID-19. The success of the Virtual 100th AATS Annual Meeting suggests such an approach may have enduring influence.

756 **Commentary:** Zoom now, tweet later...chat in a real room—always. Life in the “brave new world”
Hamza Aziz, MD, and Jennifer S. Lawton, MD, Baltimore, Md

COVID-19 poses challenges for traditional societal meetings. Incorporating virtual conferencing with traditional in-person networking may provide a practical hybrid approach for the future.

758 **Commentary:** Remote learning creates more room at the table
Hope A. Feldman, MD, and Mara B. Antonoff, MD, FACS, Houston, Tex

The COVID-19 pandemic has necessitated changes in surgical education. The online platforms that replaced in-person gatherings have allowed for increased participation from a diverse audience.

Education: Letter to the Editor

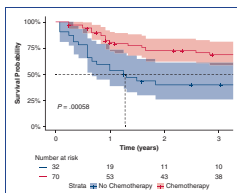
e241 **Live-tweet to get the most out of the American Association for Thoracic Surgery Virtual Annual Meeting**

Jessica G. Y. Luc, MD, and Mara B. Antonoff, MD, Vancouver, British Columbia, Canada, and Houston, Tex

Thoracic Articles in AATS Journals

e243 **Thoracic**

Thoracic: Lung Cancer



760 **Predictors of survival following surgical resection of limited-stage small cell lung cancer**



Nicolas Zhou, DO, Matthew Bott, MD, Bernard J. Park, MD, Eric Vallières, MD, Candice L. Wilshire, MD, Kazuhiro Yasufuku, MD, PhD, Jonathan D. Spicer, MD, PhD, David R. Jones, MD, and Boris Sepesi, MD, the Small Cell Lung Cancer Working Group, Houston, Tex; New York, NY; and Seattle, Wash; and Toronto, Ontario, and Montreal, Québec, Canada

For patients with surgically resected limited-stage small cell lung cancer, adjuvant chemotherapy improves survival regardless of mediastinal nodal involvement.

This article has an associated discussion and webcast.

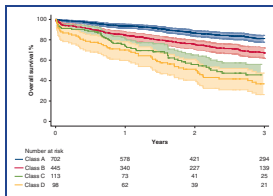
772 **Commentary:** Surgery for small cell lung cancer: This is the way
Thomas A. D'Amico, MD, Durham, NC

Surgical resection, within the context of multidisciplinary care, adhering to established guidelines, may improve the outcomes of patients with early stage small cell lung cancer.

773 **Commentary:** Survival after small cell lung cancer resection: Small opportunity?
Mark Onaitis, MD, La Jolla, Calif

A strategy of resection of limited-stage small cell carcinoma with anatomic resection followed by adjuvant chemotherapy may improve survival over resection followed by no chemotherapy.

Table of Contents



- 774** **Commentary:** Find, resect, and treat: The evolving early-stage small cell lung cancer story
Scott J. Swanson, MD, Boston, Mass

Patients with early-stage small cell lung cancer should be offered surgical resection followed by systemic chemotherapy.

- 776** **Eurolung risk score is associated with long-term survival after curative resection for lung cancer**



Alessandro Brunelli, MD, Nilanjan Chaudhuri, MD, Manos Kefaloyannis, MD, Richard Milton, MD, Cecilia Pompili, MD, PhD, Peter Tcherveniakov, MD, and Kostas Papagiannopoulos, MD, Leeds, United Kingdom

Eurolung can assist the shared decision-making process and the multidisciplinary team discussion to select the most appropriate curative treatment in high-risk patients.

This article has an associated discussion and webcast.

- 787** **Commentary:** Patient frailty also drives long-term outcomes after Ro resection for lung cancer

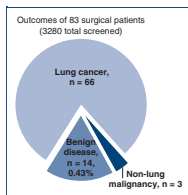
Benjamin R. Zambetti, MD, and Thomas Ng, MD, FRCSC, FACS, Memphis, Tenn

The Eurolung risk model is a useful adjunct for counseling patients on long-term survival after lung cancer surgery, although it may represent the effects of poor health and frailty on outcomes.

- 788** **Commentary:** Eurolung score as a predictor of long-term survival: It is not all about the tumor

Taryne Imai, MD, and Benny Weksler, MD, Los Angeles, Calif, and Pittsburgh, Pa

The Eurolung score may correlate with overall and disease-specific survival after curative resection of lung cancer. This may assist surgeons during shared decision making with patients.



- 790** **Surgery and invasive diagnostic procedures for benign disease are rare in a large low-dose computed tomography lung cancer screening program**



Helen Ho, MD, Christina Williamson, MD, Shawn M. Regis, PhD, Cameron T. Stock, MD, Syed M. Quadri, MD, Brady J. McKee, MD, Andrea B. McKee, MD, and Elliot L. Servais, MD, Burlington and Boston, Mass

Invasive diagnostic and therapeutic interventions are rarely performed for nonmalignant disease in a low-dose CT LCS program.

This article has an associated discussion and webcast.

- 803** **Commentary:** Safety first!
Betty C. Tong, MD, MHS, Durham, NC

In a multidisciplinary and high-quality program, low-dose CT lung cancer screening is safe and effective, with minimal patient harm.

- 804** **Commentary:** We need more surgeons!
Daniel P. Raymond, MD, Cleveland, Ohio

The risk of unnecessary invasive procedures for benign disease due to lung cancer screening is <1%.

- 805** **Commentary:** Overcoming the dangerous narrative of computed tomography screening for lung cancer
Brendon M. Stiles, MD, New York, NY

Too many people overestimate the perceived harms of computed tomography screening for lung cancer. Detected nodules can be safely managed with exceedingly low rates of major complications.



807 Understanding thoracic surgeons’ perceptions of administrative database analyses and guidelines in clinical decision-making



Kimberly A. Shemanski, MD, Albert Farias, PhD, Dustin Lieu, BS, Anthony W. Kim, MD, Sean Wightman, MD, Scott M. Atay, MD, Robert J. Canter, MD, MAS, and Elizabeth A. David, MD, MAS, Los Angeles and Sacramento, Calif

Thoracic surgeons have mixed perceptions about HSR and guidelines, and certain attributes affect how likely providers are to use HSR and guidelines in clinical practice.

This article has an associated discussion and webcast.

817 Commentary: Database research—an exercise in futility?

Melanie P. Subramanian, MD, MPH, and Varun Puri, MD, MSCI, St Louis, Mo

Database research can be of value to thoracic surgeons when rigorous statistical methods are used and careful selection of data sources is performed.

818 Commentary: What do you think of health services research and practice guidelines?

Farhood Farjah, MD, MPH, FACS, Seattle, Wash

A mixed-methods examination of surgeon perceptions of health services research and guidelines will allow us to better leverage our scientific knowledge and clinical acumen to improve patient outcomes.

819 Commentary: Defining HSR: Health services research or healthy skepticism remains

Alexis P. Chidi, MD, PhD, MSPH, and Stephen R. Broderick, MD, MPH, Baltimore, Md

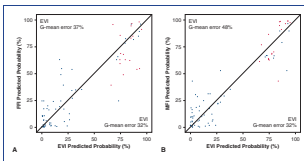
Concern exists among thoracic surgeons about the relevance of database research and clinical practice guidelines. More robust methodology would support its incorporation into clinical practice.

820 Commentary: Rush to judgment: Surgeons’ thinking, fast and slow

Andrea S. Wolf, MD, MPH, New York, NY

The psychology of decision making can help surgeons balance evidence-based practice with practical evidence in their skepticism of database analyses and idealism of randomized controlled trials.

Thoracic: Esophageal Cancer



822 Looking beyond the eyeball test: A novel vitality index to predict recovery after esophagectomy



Andrew Tang, MD, Usman Ahmad, MD, Siva Raja, MD, PhD, Jesse Rappaport, MD, Daniel P. Raymond, MD, Monisha Sudarshan, MD, MPH, Alejandro C. Bribriescio, MD, Eugene H. Blackstone, MD, and Sudish C. Murthy, MD, PhD, Cleveland, Ohio

Quantitative physiologic metrics of physical fitness predict complications after esophagectomy more accurately than standard qualitative frailty indexes.

This article has an associated discussion and webcast.

833 Commentary: Quantifying “fit for esophagectomy”—Grasping for more metrics

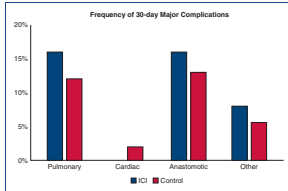
Tyler R. Grenda, MD, MS, and Andrew C. Chang, MD, Philadelphia, Pa, and Ann Arbor, Mich

Physiologic metrics in the form of a novel composite measure add to quantitative and subjective assessments of frailty in patients being considered for esophagectomy.

Table of Contents

- 834** **Commentary:** Surgical risk assessment in 2020: Is a handshake and a walking test really the best we've got?
Ernest G. Chan, MD, MPH, Chigozirim N. Ekeke, MD, and James D. Luketich, MD, Pittsburgh, Pa

There is a need for better preoperative assessment in patients undergoing esophagectomy. The Esophagectomy Vitality Index is a novel system that assesses physical status and fitness in these patients.



- 836** **Safety and feasibility of esophagectomy following combined immunotherapy and chemoradiotherapy for esophageal cancer**

Smita Sihag, MD, MPH, Geoffrey Y. Ku, MD, Kay See Tan, PhD, Samuel Nussenzweig, BA, Abraham Wu, MD, Yelena Y. Janjigian, MD, David R. Jones, MD, and Daniela Molena, MD, New York, NY



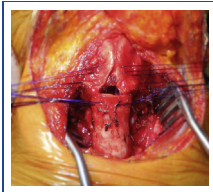
On the basis of preliminary experience, esophagectomy appears to be safe and feasible following combined neoadjuvant immunotherapy plus standard chemoradiotherapy for locally advanced esophageal cancer.

This article has an associated discussion and webcast.

- 844** **Commentary:** Induction immunotherapy for esophageal cancer: A safe start
Mark Onaitis, MD, San Diego, Calif

Induction immunotherapy in conjunction with chemoradiation does not seem to increase perioperative risk.

Thoracic: Trachea



- 845** **Surgery for laryngotracheal stenosis: Improved results**

Giulio Maurizi, MD, PhD, Camilla Vanni, MD, Erino Angelo Rendina, MD, Anna Maria Ciccone, MD, Mohsen Ibrahim, MD, Claudio Andreetti, MD, Federico Venuta, MD, and Antonio D'Andrilli, MD, Rome, Italy



Laryngotracheal resection for benign subglottic stenosis is safe and effective, and provides a very high rate of success. Careful management is crucial for a successful outcome.

This article has an associated discussion and webcast.

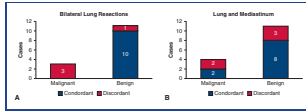
- 853** **Commentary:** Rome was not built in a day...
Thomas Schweiger, MD, PhD, and Konrad Hoetzenecker, MD, PhD, Vienna, Austria

A close collaboration of airway centers and multi-institutional outcome reporting is warranted to further improve functional results after laryngotracheal surgery.

- 854** **Commentary:** Inching north up the airway: Thoracic surgeons as complete airway surgeons
Cameron D. Wright, MD, Boston, Mass

Laryngotracheal resection for subglottic stenosis in high-volume centers offers patients a single intervention with excellent long-term results.

Thoracic: Mediastinum



856 Pathologic concordance of resected metastatic nonseminomatous germ cell tumors in the chest



Laura L. Donahoe, MD, MSc, Gregory J. Nason, MD, MSc, Philippe L. Bedard, MD, Aaron R. Hansen, MBBS, Michael A. S. Jewett, MD, Robert J. Hamilton, MD, MPH, and Marc de Perrot, MD, MSc, Toronto, Ontario, Canada

Pathology is often discordant between intrathoracic nonseminomatous germ cell tumor metastases. Aggressive surgical management of intrathoracic disease should be considered due to the potential for excellent long-term survival.

This article has an associated discussion and webcast.

869 Commentary: Snakes under every rock

Yogesh Patel, MD, and Chadrick E. Denlinger, MD, Indianapolis, Ind

The histology of malignant germ cell metastases is not reliably predicted by an individual's history or serum tumor markers. Aggressive resection is appropriate for the majority of these nodules.

870 Commentary: Good news travels fast

Kenneth A. Kesler, MD, Indianapolis, Ind

Metastatic germ cell tumors have high cure rates with cisplatin chemotherapy followed by surgery. Although teratoma is the most common pathology, other benign and malignant elements can be present.

871 Commentary: Predicting intrathoracic pathologic concordance in patients with metastatic nonseminomatous germ cell tumor is clearly unclear

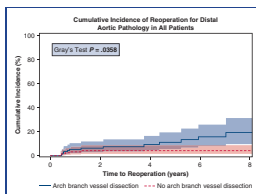
Josh Boys, MD, and Mark Onaitis, MD, San Diego, Calif

Pathologic concordance of nonseminomatous germ cell tumors in the chest is poor; thus, aggressive surgical management of multiple sites is still recommended after multidisciplinary evaluation.

Adult Articles in AATS Journals

e245 Adult

Adult: Aorta



873 Is hemiarch replacement adequate in acute type A aortic dissection repair in patients with arch branch vessel dissection without cerebral malperfusion?



Elizabeth L. Norton, MS, Xiaoting Wu, PhD, Karen M. Kim, MD, Shinichi Fukuhara, MD, Himanshu J. Patel, MD, G. Michael Deeb, MD, and Bo Yang, MD, PhD, Omaha, Neb, and Ann Arbor, Mich

Hemiarch replacement produced adequate short-term outcomes for patients with ATAAD with ABVD without cerebral MPS, but could result in a higher risk of late reoperation.

This article has an associated discussion and webcast.

885 Commentary: Don't forget the branches

Anthony L. Estrera, MD, Houston, Tex

The authors should be credited for raising awareness of the importance of dissection into arch branch vessels. As surgeons, it is easy to focus on the trunk and root, but we should not forget the branches.

Table of Contents

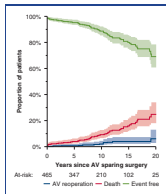
- 886** **Commentary:** Total arch or semiarch: That is the question
Jean Bachet, MD, FEBCTS, Suresnes, France

With the present surgical techniques and prostheses, it might be more appropriate to systematically perform a total arch replacement in the case of any kind of involvement of the supra-aortic vessels.

- 888** **Commentary:** Hemiarch replacement for acute type A dissection: Are we doing enough?
Andréanne Cartier, MD, and François Dagenais, MD, FRCSC, Québec, Québec, Canada

Perioperative outcomes of hemiarch replacement for type A dissection without cerebral malperfusion are comparable for patients either with or without arch branch vessel dissection.

Adult: Aortic Valve



- 890** **A progress report on reimplantation of the aortic valve**

Tirone E. David, MD, Carolyn M. David, BN, Maral Ouzounian, MD, PhD, Christopher M. Feindel, MD, and Myriam Lafreniere-Roula, PhD, Toronto, Ontario, Canada



Reimplantation of the aortic valve to treat patients with aortic root aneurysm provides excellent long-term results with slow but progressive aortic valve dysfunction.

This article has an associated discussion and webcast.

- 900** **Commentary:** Nothing lasts forever, including valve-sparing root replacement with reimplantation of the aortic valve
Christopher Lau, MD, and Leonard N. Girardi, MD, New York, NY

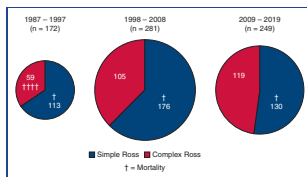
Valve-sparing root replacement with reimplantation of the aortic valve has excellent long-term durability but patient selection is key.

- 901** **Commentary:** “Details make perfection, and perfection is not a detail” (Leonardo da Vinci)
Stefano Mastrobuoni, MD, MPH, Laurent de Kerchove, MD, PhD, and Gebrine El Khoury, MD, Brussels, Belgium

Aortic valve reimplantation provides a comprehensive treatment of aortic root dilatation and aortic regurgitation and has shown excellent long-term results.

- 903** **Commentary:** Thirty years of valve preserving surgery—are all questions answered?
Hans-Joachim Schäfers, MD, Homburg/Saar, Germany

Reimplantation of the aortic valve is associated with an increasing incidence of regurgitation over time. Better definition of its mechanisms is necessary to hopefully improve long-term results.



- 905** **Operative risks of the Ross procedure**

Paul Stelzer, MD, Javier Mejia, MD, and Robin Varghese, MD, New York, NY



After an initial learning curve, the Ross procedure is safe and can be used in patients with both simple and complex aortic valve disease.

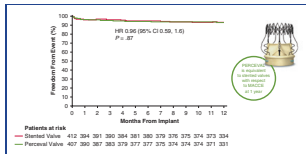
This article has an associated discussion and webcast.

- 916** **Commentary:** Not just for kids anymore: The Ross procedure grows up
Joseph S. Coselli, MD, Houston, Tex

Should we be expanding the use of Ross procedure in adults? Outstanding early results can be achieved by expert hands in select patients.

- 918** **Commentary:** The Ross procedure: One surgeon's journey toward mastery
Vincent Chauvette, MD, Maral Ouzounian, MD, PhD, Mark D. Peterson, MD, PhD, Ismail El-Hamamsy, MD, PhD, and Michael W. A. Chu, MD, MEd, on behalf of the Canadian Thoracic Aortic Collaborative, London and Toronto, Ontario, and Montreal, Québec, Canada, and New York, NY

The Ross procedure can be performed with surgical risk similar to standard AVR. However, mastery takes a dedicated career of reassessment focused on quality improvement to achieve optimal results.



- 920** **Sutureless versus conventional bioprostheses for aortic valve replacement in severe symptomatic aortic valve stenosis**



Theodor Fischlein, MD, PhD, Thierry Folliguet, MD, PhD, Bart Meuris, MD, PhD, Malakh L. Shrestha, MD, PhD, Eric E. Roselli, MD, Anna McGlothlin, PhD, Utz Kappert, MD, PhD, Steffen Pfeiffer, MD, Pierre Corbi, MD, and Roberto Lorusso, MD, PhD, the Perceval Sutureless Implant Versus Standard-Aortic Valve Replacement Investigators, Nuremberg, Hannover, Dresden, and Vogtareuth, Germany; Paris and Poitiers, France; Leuven, Belgium; Cleveland, Ohio; Austin, Tex; and Maastricht, The Netherlands

In patients with severe stenosis undergoing isolated AVR or AVR plus CABG, the sutureless valve reduced operative time and was noninferior to conventional bioprostheses for 1-year major complications.

This article has an associated discussion and webcast.

- 933** **Commentary:** Sutureless bioprosthesis: Simpler than conventional bioprostheses
W. R. Eric Jamieson, MD, FRCS(C), FACS, Vancouver, British Columbia, Canada

Identifying the potential advantages of the Perceval sutureless bioprosthesis will require long-term evaluation. The prospective, randomized PERSIST-AVR trial revealed noninferior characteristics to conventional bioprostheses at 1 year.

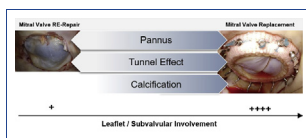
- 934** **Commentary:** Perceval sutureless valve—one more seat at the round table of short-term follow-up
Stephen H. McKellar, MD, MSc, Murray, Utah

Rapid-deployment surgical aortic valve bioprostheses, like the Perceval valve, add to clinicians' options for treating patients with aortic valve disease. Long-term outcomes will define the durability of these prostheses.

- 935** **Commentary:** The confirmation
Antonio Miceli, MD, PhD, Milano, Italy

PERSIST-AVR has definitively confirmed that sutureless valves are safe and associated with good outcomes when compared with stented valves.

Adult: Mitral Valve



- 937** **Lessons from reoperations for mitral stenosis after mitral valve repair**

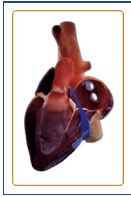


Ahmed El-Eshmawi, MD, Erick Sun, MD, Percy Boateng, MD, Dimosthenis Pandis, MD, MSc, Chartaroon Rimsukcharoenchai, MD, Anelechi Anyanwu, MD, and David H. Adams, MD, New York, NY

Postrepair mitral stenosis is commonly related to small annuloplasty size. Pannus ingrowth, leaflet fibrosis, and/or leaflet calcification are also common findings.

This article has an associated discussion and webcast.

Table of Contents



- 947** **Commentary:** Reoperations for mitral stenosis after mitral valve repair: We are still learning
Manuel J. Antunes, MD, PhD, DSc, Coimbra, Portugal

The author stresses the importance of referral of patients with very complex pathology to experienced surgeons and centers.

- 949** **First in human experience with an epicardial beating heart device for secondary mitral regurgitation**



Vinod H. Thourani, MD, Isaac George, MD, Kestutis Rucinskas, MD, PhD, Gintaras Kalinauskas, MD, Vilius Janusauskas, MD, PhD, Diana Zakarkaite, MD, Gorav Ailawadi, MD, Robert Smith, MD, and Michael J. Mack, MD, Atlanta, Ga; New York, NY; Vilnius, Lithuania; Charlottesville, Va; and Plano, Tex

We describe a novel, off-pump, epicardial implant that is intended to reshape the MV and remodel the LV. We have shown a new technique that reduces SMR and has positive cardiac remodeling.

This article has an associated discussion and webcast.

- 959** **Commentary:** A device for the whole mitral valve apparatus
Antonio Miceli, MD, PhD, Milano, Italy

Mitral Touch is the device that deals with the whole mitral valve apparatus.

- 961** **Hemodynamic and transcriptomic studies suggest early left ventricular dysfunction in a preclinical model of severe mitral regurgitation**



Daniella Corporan, BS, Daisuke Onohara, MD, PhD, Alan Amedi, BS, Maher Saadeh, BS, Robert A. Guyton, MD, Sandeep Kumar, PhD, and Muralidhar Padala, PhD, Atlanta, Ga

Left ventricular dysfunction occurs before fall in ejection fraction in severe mitral regurgitation in an experimental rodent model.

This article has an associated discussion and webcast.

- 977** **Commentary:** A step towards better understanding severe mitral regurgitation
D. Alan Herbst, MD, and Pavan Atluri, MD, Philadelphia, Pa

One of the first reports on longitudinal remodeling of the left ventricle from severe mitral regurgitation in a small animal model shows increase in ventricular volume before fall in ejection fraction.

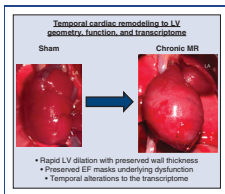
- 978** **Commentary:** Can indications for asymptomatic mitral regurgitation derive from ratatouille or should we stew on it?

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

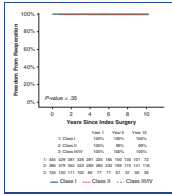
In rat models of mitral regurgitation, myocardial remodeling may precede a fall in ejection fraction.

- 979** **Commentary:** The mitral matrix
Tomasz A. Timek, MD, PhD, Grand Rapids, Mich

Left ventricular transcriptomic and geometric changes may preclude fall in ejection fraction in chronic severe primary mitral regurgitation.



Adult: Arrhythmias



981 **Asymptomatic degenerative mitral regurgitation repair: Validating guidelines for early intervention**



Anand Desai, MD, James D. Thomas, MD, Robert O. Bonow, MD, Jane Kruse, BSN, Adin-Cristian Andrei, PhD, James L. Cox, MD, and Patrick M. McCarthy, MD, Chicago, Ill

Repair of degenerative mitral regurgitation in 470 asymptomatic patients was low risk (30-day survival 100%) and durable, with 10-year 100% freedom from reoperation and low rates of recurrent MR.

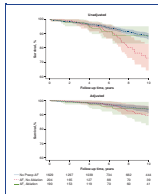
This article has an associated discussion and webcast.

995 **Commentary: Excellent outcome for mitral valve repair in asymptomatic patients—Does the surgery benefit the patient?**

Caroline Komlo, BS, Makoto Mori, MD, and Arnar Geirsson, MD, Philadelphia, Pa, and New Haven, Conn

Proper phenotyping of asymptomatic DMR may help refine thresholds for surgical intervention and define the subgroup for whom early intervention is favored.

Adult: Hypertrophic Cardiomyopathy



997 **Does ablation of atrial fibrillation at the time of septal myectomy improve survival of patients with obstructive hypertrophic cardiomyopathy?**



Hao Cui, MD, PhD, Hartzell V. Schaff, MD, Joseph A. Dearani, MD, Brian D. Lahr, MS, Jason K. Viehman, BS, Jeffrey B. Geske, MD, Rick A. Nishimura, MD, and Steve R. Ommen, MD, Rochester, Minn

Preoperative AF showed modestly reduced survival among patients with obstructive HCM undergoing septal myectomy. Concomitant surgical ablation of AF appears to be associated with improved survival.

This article has an associated discussion and webcast.

1007 **Commentary: Cox maze with septal myectomy**

Harold G. Roberts, Jr, MD, Lawrence M. Wei, MD, and Vinay Badhwar, MD, Morgantown, WV

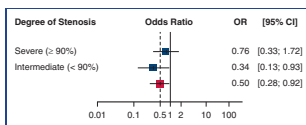
Surgical ablation with septal myectomy improves survival of patients with hypertrophic cardiomyopathy and atrial fibrillation. The Cox maze (CM)-IV procedure provides comparable results to CM-III.

1008 **Commentary: Navigating the maze of ablation**

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

A study of concomitant ablation for atrial fibrillation in septal myectomy demonstrates the safety of the operation, but association with a survival benefit remains an open question.

Adult: Coronary



1010 **Relation between functional coronary artery stenosis and graft occlusion after coronary artery bypass grafting**



Ho Young Hwang, MD, PhD, Jin Chul Paeng, MD, PhD, Jeehoon Kang, MD, Myoung-jin Jang, PhD, and Ki-Bong Kim, MD, PhD, Seoul, Republic of Korea

Graft occlusion during the 5 years after coronary artery bypass grafting is associated with the functional significance of coronary artery stenosis, particularly when the stenosis degree is not severe.

This article has an associated discussion and webcast.

Table of Contents

- 1019** **Commentary:** Functional coronary artery stenosis—How can we functionally apply this to the operating room?

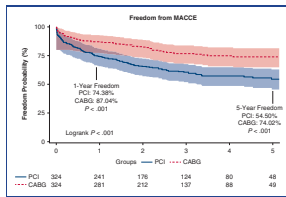
Alison F. Ward, MD, and Richard Lee, MD, JD, MBA, Augusta, Ga

Graft patency is better at 5 years in functionally significant and severe stenosis but how should this guide our operative decision-making and how does it affect long-term survival for these patients?

- 1020** **Commentary:** Y bother?

Aaron Bettenhausen, MD, and Edward Y. Sako, MD, PhD, San Antonio, Tex

Understanding the severity and significance of coronary artery stenosis may eventually help guide surgical revascularization strategies.



- 1022** **Percutaneous coronary intervention versus coronary artery bypass grafting in patients with reduced ejection fraction**



Valentino Bianco, DO, MPH, Arman Kilic, MD, Suresh Mulukutla, MD, Thomas G. Gleason, MD, Dustin Kliner, MD, Christopher C. Allen, MD, Andreas Haberteuer, MD, PhD, Edgar Aranda-Michel, BS, Rishab Humar, BS, Forozan Navid, MD, Yisi Wang, MPH, and Ibrahim Sultan, MD, Pittsburgh, Pa

Patients with coronary artery disease and reduced ejection fraction who undergo CABG have improved long-term outcomes compared with patients who undergo PCI.

This article has an associated discussion and webcast.

- 1032** **Commentary:** Delayed gratification and optimism bias: Navigating quality and quantity of life with revascularization in patients with ischemic cardiomyopathy

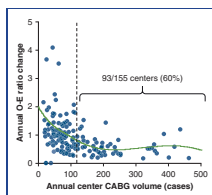
Moritz C. Wyler von Ballmoos, MD, PhD, MPH, and G. Hossein Almassi, MD, Houston, Tex; New York, NY; and Milwaukee, Wis

This study corroborates findings of large RCTs, providing further evidence that CABG is superior to a PCI first strategy in a rapidly growing population of patients with ischemic cardiomyopathy.

- 1033** **Commentary:** Coronary revascularization in patients with left ventricular systolic dysfunction

Stephen J. Huddleston, MD, PhD, and Rosemary F. Kelly, MD, Minneapolis, Minn

Use a multidisciplinary approach to choose between coronary artery bypass grafting and percutaneous coronary intervention for coronary artery disease with reduced left ventricular ejection fraction.



- 1035** **Association between coronary artery bypass graft center volume and year-to-year outcome variability: New York and California statewide analysis**



Makoto Mori, MD, Gabe A. Weininger, BS, Michael Shang, BS, Cornell Brooks II, BA, Clancy W. Mullan, MD, Michael Najem, BS, Magdalena Malczewska, MD, Prashanth Vallabhajosyula, MD, and Arnar Geirsson, MD, New Haven, Conn

Risk-adjusted CABG mortality varies significantly from one year to the next in low-volume centers. Reporting based on volume may improve inference.

This article has an associated discussion and webcast.

- 1042** **Commentary:** So many and yet so few—How many is not enough?

Gaetano Paone, MD, MHSA, Atlanta, Ga

Small-volume programs exhibit greater year-to-year variability in outcomes, which may limit the capacity to evaluate comparative performance and confidently assess the quality of care for coronary artery bypass grafting surgery.

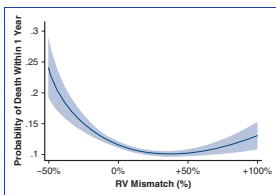
- 1043** **Commentary:** Safety in numbers
David M. Shahian, MD, Boston, Mass

Quality measures based on small sample sizes have low statistical power and reliability. Mitigation may include multiyear samples, standardized denominator sample sizes, composite metrics, shrinkage estimators, or graphical plots.

- 1046** **Commentary:** Outcome reporting after coronary artery bypass grafting: Is it a numbers game too?
Simon M. Duggan, MD, FRCS (CTh), and Clifford W. Barlow, FRCS (CTh), DPhil, Southampton, United Kingdom

Reporting CABG outcomes by rolling case volume, as complementary to time-based measures, may improve quality inference in low-volume centers.

Adult: Transplant



- 1048** **Right ventricular undersizing is associated with increased 1-year mortality**
Masashi Kawabori, MD, Andre C. Critsinelis, MD, Camille E. Hironaka, BS, Frederick Y. Chen, MD, PhD, Yong Zhan, MD, Katherine L. Thayer, MPH, and Gregory S. Couper, MD, Boston, Mass, and Miami Beach, Fla



Right ventricular mass undersizing was a predictor of worse 1-year survival after heart transplantation. Older or female donors have lower right ventricular mass, which may predispose to undersizing.

This article has an associated discussion and webcast.

- 1060** **Commentary:** Proceed with caution: Right ventricular undersizing in heart transplant
Lucas Witer, MD, and Arman Kilic, MD, Charleston, SC, and Pittsburgh, Pa

Right ventricular mass undersizing in heart transplantation, found more commonly in older and female donors, is associated with worse recipient outcomes and should be used cautiously.

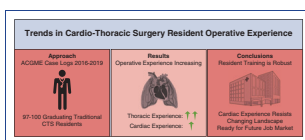
- 1061** **Commentary:** Selecting the right cardiac donor
Joseph C. Cleveland, Jr, MD, Aurora, Colo

Undersizing a donor cardiac allograft based on right ventricular mass confers negative survival outcomes in cardiac transplantation.

- 1062** **Commentary:** Seriously, it's just math
Ashish S. Shah, MD, Nashville, Tenn

Donor and recipient matching in heart transplantation enters a new era, with a focus on myocardial mass and math.

Adult: Education



- 1064** **Trends in the traditional cardiothoracic surgery resident operative experience for cardiac cases: An analysis of Accreditation Council for Graduate Medical Education case logs**



Aakash M. Shah, BS, Emaad Siddiqui, MD, Sari D. Holmes, PhD, Alexis Okoh, MD, Mohamed Abdullah, MD, PhD, Kristopher Deatrck, MD, Sunjay Kaushal, MD, PhD, and Justin Sambol, MD, Newark, NJ, and Baltimore, Md

The cardiac experience for traditional cardiothoracic surgery (CTS) residents is robust. Nonetheless, novel methods to increase the CTS resident operative experience should be pursued.

This article has an associated discussion and webcast.

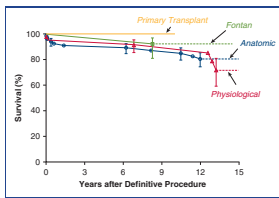
Table of Contents

- 1076 Commentary:** Cardiothoracic surgery training is more than calculus class
Elizabeth H. Stephens, MD, PhD, and Joseph A. Dearani, MD, Rochester, Minn
- Although the increase in trainee-performed cases is encouraging, continued efforts are needed to ensure trainee proficiency and identify factors during training that contribute to proficiency.
- 1077 Commentary:** Are cardiothoracic trainees operating enough?
Keyan Mobli, MD, and Ikenna Okereke, MD, Galveston, Tex
- Training the proficient resident remains the primary goal of cardiothoracic training programs. Understanding changes in case volumes is vital to prepare each trainee adequately.
- 1078 Commentary:** The kids are alright
Gurion S. Lantz, MD, and Frederick A. Tibayan, MD, Portland, Ore
- Despite the changing clinical landscape and decreasing numbers of cardiac surgery cases nationwide, the average resident cardiac surgical volume increased from 2016 to 2019.

Congenital Articles in AATS Journals

e249 Congenital

Congenital: Transposition of the Great Arteries



1080 Outcomes of treatment pathways in 240 patients with congenitally corrected transposition of great arteries



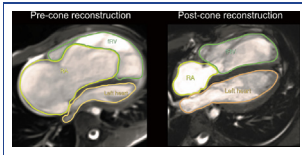
Paola A. Barrios, BS, Aisha Zia, MD, Gosta Pettersson, MD, PhD, Hani K. Najm, MD, MSc, Jeevanantham Rajeswaran, PhD, Salima Bhimani, MD, and Tara Karamlou, MD, MSc, for the Members of the ccTGA Working Group, Cleveland, Ohio

Early anatomic repair remains our preference because physiologic repairs for patient with ccTGA are associated with RV failure despite TV interventions.

This article has an associated discussion and webcast.

- 1094 Commentary:** Management of congenitally corrected transposition: Different strokes for different folks
Joseph B. Clark, MD, Hershey, Pa
- Although anatomic repair is a favored approach for the management of congenitally corrected transposition, conclusively demonstrating the superiority of this pathway remains difficult.
- 1095 Commentary:** Incomplete data and inertia: Neither silences the tolling bell of corrected transposition
Ronald K. Woods, MD, PhD, and Viktor Hraska, MD, PhD, Milwaukee, Wis
- The Cleveland Clinic's report on corrected transposition offers very interesting reading but lacks convincing data to provide new insight into optimal management strategies.

Congenital: Ebstein's Anomaly



1097 Cone reconstruction for Ebstein anomaly: Late biventricular function and possible remodeling



Ralph M. L. Neijenhuis, BSc, Victor T. Tsang, MD, Jan Marek, MD, PhD, Richard Issitt, PhD, Beatrice Bonello, MD, Katherine Von Klemperer, MD, and Marina L. Hughes, MD, DPhil, London, United Kingdom

Right ventricular function showed an improvement with nearly normal left ventricular function and filling amid the positive signs of biventricular remodeling late after cone reconstruction.

This article has an associated discussion and webcast.

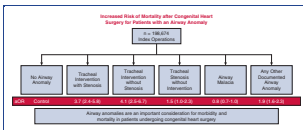
1109 Commentary: Gold or silver? Value of cardiac magnetic resonance imaging over echocardiography in Ebstein's anomaly
M. Yasir Qureshi, MBBS, and Joseph A. Dearani, MD, Rochester, Minn

Cardiac magnetic resonance imaging and echocardiography provide complementary information about Ebstein's anomaly in the preoperative evaluation and postoperative follow-up.

1110 Commentary: Cone reconstruction for Ebstein's anomaly is here to stay
Pedro J. del Nido, MD, Boston, Mass

Cone reconstruction of a regurgitant Ebstein's tricuspid valve is associated with improved valve function and global biventricular function and filling late after surgery.

Congenital: Trachea



1112 Tracheal surgery for airway anomalies associated with increased mortality in pediatric patients undergoing heart surgery: Society of Thoracic Surgeons Database analysis



Kyle W. Riggs, MD, Farhan Zafar, MD, Marshall L. Jacobs, MD, Jeffrey P. Jacobs, MD, Dylan Thibault, MS, Kristine J. Guleserian, MD, Karen Chiswell, PhD, Nick Andersen, MD, Kevin D. Hill, MD, MS, David L. S. Morales, MD, Roosevelt Bryant III, MD, and James S. Tweddell, MD, Cincinnati, Ohio; Manhasset, NY; Baltimore, Md; St Petersburg and Miami, Fla; Durham, NC; and Phoenix, Ariz

Cardiac surgery in pediatric patients and airway anomalies, with or without concomitant tracheal surgery, are associated with increased risk of morbidity and mortality

This article has an associated discussion and webcast.

1122 Commentary: Airway anomalies and congenital heart defects, a dangerous combination
Jacob R. Miller, MD, and Pirooz Eghtesady, MD, PhD, St. Louis, Mo

The risk of mortality associated with the surgical repair of congenital heart defects is increased in the presence of airway anomalies. This is true whether or not the airway anomaly is repaired.

1123 Commentary: God is in the details!
T. K. Susheel Kumar, MD, New York, NY

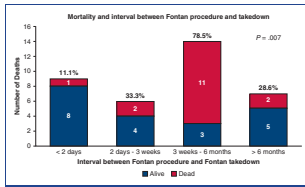
Modern cardiac surgery databases are powerful tools to seek answers to many clinical problems. However, the lack of granularity in information captured is a major weakness of these tools.

1124 Commentary: Congenital heart disease patients with airway anomalies do worse: We knew that, or so we thought
Reilly D. Hobbs, MD, MBS, and Richard G. Ohye, MD, Ann Arbor, Mich

This study using the Society of Thoracic Surgery Congenital Heart Surgery Database helps quantify the impact of airway anomalies and tracheal surgery on congenital heart surgery outcomes.

Table of Contents

Congenital: Fontan



1126



Long-term outcomes following Fontan takedown in Australia and New Zealand

Supreet P. Marathe, MS, MCh, Ajay J. Iyengar, PhD, FRACS, Kim S. Betts, PhD, MPH, Karin du Plessis, PhD, Gananjay G. Salve, MS, MCh, Robert N. Justo, FRACP, Prem Venugopal, FRACS, David S. Winlaw, PhD, FRACS, Yves d'Udekem, MD, PhD, FRACS, and Nelson Alphonso, FRACS, Brisbane, Melbourne, and Sydney, Australia, and Auckland, New Zealand

Early Fontan takedown has the lowest mortality. A second Fontan is possible in a small proportion of survivors.

This article has an associated discussion and webcast.

1136

Commentary: Fontan challenges: Critical early surgical decisions maybe key
John M. Karamichalis, MD, Memphis, Tenn

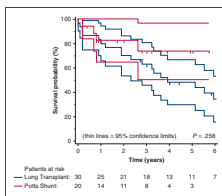
Recognizing early signs of failure is critical for taking down a Fontan and ensuring best outcomes. Fontan takedown within days of the procedure had the best results. Early surgical decisions are key.

1137

Commentary: Fontan takedown: The journey off the beaten path
Matteo Trezzi, MD, Rome, Italy

When Fontan circulation acutely fails, prompt surgical takedown is warranted. Although mortality has proven to be substantial, long-term outcomes for survivors are satisfactory.

Congenital: Lung Transplant



1139



Midterm outcomes of the Potts shunt for pediatric pulmonary hypertension, with comparison to lung transplant

Timothy S. Lancaster, MD, Shabana Shahanavaz, MBBS, David T. Balzer, MD, Stuart C. Sweet, MD, R. Mark Grady, MD, and Pirooz Eghtesady, MD, PhD, St Louis, Mo

Potts shunt is shown to be an effective palliation for children with suprasystemic pulmonary hypertension that can be used to maximize longevity and functional status for these challenging patients.

This article has an associated discussion and webcast.

1149

Commentary: To transplant or not to transplant: Potts shunt as an alternative to pediatric lung transplantation
Karthik Thangappan, MD, and David L. S. Morales, MD, Cincinnati, Ohio

In the pursuit of less morbidity in the management of refractory pediatric pulmonary hypertension, Potts shunt has been found to be a feasible and increasingly popular alternative to lung transplant.

1150

Commentary: Will the reversed Potts shunt replace lung transplantation for children with end-stage pulmonary arterial hypertension?
Erika B. Rosenzweig, MD, and Emile Bacha, MD, New York, NY

The exact indications for and techniques of the reversed Potts shunt are currently being refined. This shunt is anticipated to play a major role in the management of children with advanced pulmonary hypertension.

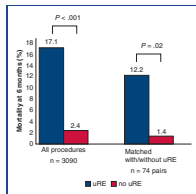
1152

Commentary: Potts palliation for pulmonary hypertension: What's next?
Emre Belli, MD, Le Plessis-Robinson, France

Potts palliation for PH in children has made itself a place in our therapeutic armamentarium. It seems to be more appropriate to concentrate children with PH in centers with specific expertise.

- 1153** **Commentary:** Repair or replace—Potts shunt versus lung transplantation for refractory pediatric pulmonary hypertension
Joseph R. Nellis, MD, MBA, John C. Haney, MD, MPH, and Joseph W. Turek, MD, PhD, Durham, NC
- Potts shunts equilibrate right and left ventricular pressures to improve the functional status in patients with refractory pulmonary hypertension, although long-term results remain largely unknown.

Congenital: Perioperative Management



- 1155** **Factors associated with unplanned reinterventions and their relation to early mortality after pediatric cardiac surgery**



Dan M. Dorobantu, MD, Deborah Ridout, MSc, Katherine L. Brown, MD, MPH, Warren Rodrigues, MRCP, Mansour T. A. Sharabiani, PhD, Christina Pagel, PhD, David Anderson, FRCS, Paul Wellman, BSc, Andrew McLean, FRCS, Jane Cassidy, MRCP, David J. Barron, MD, Victor T. Tsang, FRCS, and Serban C. Stoica, FRCS, Bristol, Exeter, London, Glasgow, and Birmingham, United Kingdom, and Toronto, Ontario, Canada

Unplanned reinterventions after pediatric cardiac surgery are associated with short-term mortality independent of preoperative factors.

This article has an associated discussion and webcast.

- 1167** **Commentary:** Complication monitoring comes of age
Camille L. Hancock Friesen, MD, Dallas, Tex
- Unplanned reinterventions (uREs) carry an independent ongoing subacute hazard for mortality in pediatric cardiac surgery patients. uREs can be used as part of a quality metric and as a target for improving outcomes.
- 1168** **Commentary:** Unplanned reinterventions in pediatric cardiac surgery: Second time's a charm?
T. Konrad Rajab, MD, and Minoo N. Kavarana, MD, FACS, Charleston, SC
- Unplanned reinterventions are associated with significantly increased early mortality. However, on occasion, they are a necessary evil to rescue patients from complications.

Announcements

The American Association for Thoracic Surgery



- 1170** *View Updated Content on AATS Online*

- 1170** *Update Your AATS Profile*

The AATS Foundation



- 1170** *Impact the Future*

Table of Contents

The Western Thoracic Surgical Association



1171 *Register & Reserve Housing for the WTSA 47th Annual Meeting*

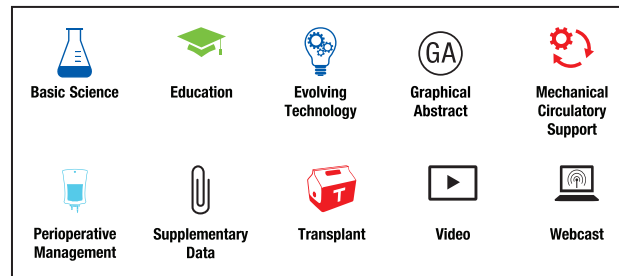
1171 *Applications for WTSA Membership*

The American Board of Thoracic Surgery



1172 *ABTS Announcement*

1172 *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: (Thoracic) From Surgery for Laryngotracheal Stenosis: Improved Results. Partial laryngofissure: This technique includes a longitudinal partial incision of the thyroid cartilage on the midline for an extent of 1 to 1.5 cm, the lateral retraction of its margins to increase the airway space and, finally, the direct anastomosis of the lower trachea to the retracted ends of the incised thyroid cartilage. A, Intraoperative picture showing the thyroid cartilage incised on the midline; the stiches are passed but still untied. B, The completed anastomosis between the lower trachea and the incised and enlarged thyroid cartilage.

Center: (Adult) From First in Human Experience With an Epicardial Beating Heart Device for Secondary Mitral Regurgitation. This first in man series of coronary artery bypass patients treated with concomitant epicardial mitral repair successfully reduced mitral

regurgitation (*MR*) volume and left ventricular end-systolic volume on a beating heart. The influence was observed at 30 days and sustained for 1 year. *LV*, Left ventricle.

Right: (Congenital) From Cone Reconstruction for Ebstein Anomaly: Late Biventricular Function and Possible Remodeling. Example of changes in planimetered areas. This image illustrates the method of measuring the chamber area for right atrium (*RA*), functional right ventricle (*fRV*) and left heart (left atrium and ventricle combined) from the cardiac magnetic resonance imaging 4-chamber cine view, in diastole. These 2 images are from the same patient, before cone reconstruction and then 2 years postoperatively. Late biventricular remodeling after cone reconstruction is evident with obvious decrease in *RA* area and increase in *fRV* and left heart area.