## Table of Contents

### Presidential Perspectives
1


*Cameron D. Wright, MD, Boston, Mass*

### Clinical Guideline
4


*L. David Hillis, MD, FACC, Peter K. Smith, MD, FACC, Jeffrey L. Anderson, MD, FACC, FAHA, John A. Bittl, MD, FACC, Charles R. Bridges, MD, ScD, FACC, FAHA, John G. Byrne, MD, FACC, Joaquin E. Cigarroa, MD, FACC, Verdi J. DiSesa, MD, FACC, Loren F. Hiratzka, MD, FACC, FAHA, Adolph M. Hutter, Jr, MD, MACC, FAHA, Michael E. Jessen, MD, FACC, Ellen C. Keeley, MD, MS, Stephen J. Lahey, MD, Richard A. Lange, MD, FACC, FAHA, Martin J. London, MD, Michael J. Mack, MD, FACC, Manesh R. Patel, MD, FACC, John D. Puskas, MD, FACC, Joseph F. Sabik, MD, FACC, Ola Selnes, PhD, David M. Shahian, MD, FACC, FAHA, Jeffrey C. Trost, MD, FACC, and Michael D. Winniford, MD, FACC*

### Commentary
35

**The American Heart Association/American College of Cardiology Foundation guideline for coronary artery bypass grafting: 2011 updates**

*John G. Byrne, MD, and Marzia Leacche, MD, Nashville, Tenn*

### Editorial
37

**Demise of a vital resource**

*Eugene H. Blackstone, MD, Cleveland, Ohio*

### Cardiothoracic Surgical Education and Training (EDU)
39


*Richard J. Shemin, MD, and John S. Ikonomidis, MD, PhD, Los Angeles, Calif, and Charleston, SC*

### General Thoracic Surgery (GTS)
47

**Randomized comparison of awake nonresectional versus nonawake resectional lung volume reduction surgery**

*Eugenio Pompeo, MD, Paola Rogliani, MD, Federico Tacconi, MD, Mario Dauri, MD, Cesare Saltini, MD, Giuseppe Novelli, PhD, and Tommaso C. Mineo, MD, for the Awake Thoracic Surgery Research Group, Rome, Italy*

In this randomized comparison of awake nonresectional versus nonawake resectional LVRS, early discharge was more frequent in the awake group. Forced expiratory volume in 1 second improved at 6 months and for up to 24 months in both groups. Freedom from contralateral treatment and survival at 36 months were comparable.

*(continued on page 12A)*
An analysis, systematic review, and meta-analysis of the perioperative mortality after neoadjuvant therapy and pneumonectomy for non–small cell lung cancer

Anthony W. Kim, MD, Daniel J. Boffa, MD, Zaoheng Wang, PhD, and Frank C. Detterbeck, MD, New Haven, Conn

Right pneumonectomy is associated with significantly higher 30-day and 90-day mortalities after neoadjuvant therapy than is left pneumonectomy. In addition, the 90-day mortality for all pneumonectomies appears to be greater than expected, suggesting that the 30-day figure may inadequately reflect perioperative mortality.

Transcatheter aortic valve implantation versus surgical aortic valve replacement: A propensity score analysis in patients at high surgical risk

Lenard Conradi, MD, Moritz Seiffert, MD, Hendrik Treede, MD, Miriam Silaschi, Stephan Baldus, MD, Johannes Schirmer, MD, Jan-Felix Kersten, Thomas Meinertz, MD, and Hermann Reichenspurner, MD, PhD, Hamburg, Germany

Transcatheter aortic valve implantation (TAVI) procedures were compared with a control group after surgical aortic valve replacement. Mortality rates were similar, and ventilation times and duration of intensive care unit stay were lower in TAVI patients. The optimal procedure must be chosen by an interdisciplinary team depending on individual patient characteristics.

Midterm results of vascular ring connector in open surgery for aortic dissection

Jeng Wei, MD, MSD, Chung-Yi Chang, MD, Yi-Cheng Chuang, MD, Sung-How Sue, MD, Kuo-Chen Lee, MD, Ching-Wen Wu, MD, and Cheng-Hsi Chang, MD, Taipei and Taichung, Taiwan

Vascular ring connectors have been used in the open repair of type A and B aortic dissection in 113 cases. The early and midterm results have been excellent.

A heart team’s perspective on interventional mitral valve repair: Percutaneous clip implantation as an important adjunct to a surgical mitral valve program for treatment of high-risk patients

Hendrik Treede, MD, Johannes Schirmer, MD, Volker Rudolph, MD, Olaf Franzen, MD, Malgorzata Knap, MD, Michael Schluter, PhD, Lenard Conradi, MD, Moritz Seiffert, MD, Dietmar Koschyk, MD, Thomas Meinertz, MD, Stephan Baldus, MD, and Hermann Reichenspurner, MD, PhD, Hamburg, Germany

In 202 consecutive patients at high surgical risk, clip-based percutaneous mitral valve repair was a reliable and low-risk alternative to surgery. Patients had a significant reduction in mitral regurgitation and better NYHA functional class. Prior clip implantation did not preclude but complicated later surgical mitral valve repair.

Off-pump coronary artery bypass grafting does not preserve renal function better than on-pump coronary artery bypass grafting: Results of a case-matched study

Elsayed Elmistekawy, MD, Vincent Chan, MD, MPH, Michael E. Bourke, MD, Jean-Yves Dupuis, MD, Fraser D. Rubens, MSc, MD, Thierry G. Mesana, MD, PhD, and Marc Ruel, MD, MPH, Ottawa, Ontario, Canada

Studies thus far have shown conflicting results regarding comparative changes in renal function after off-pump versus on-pump coronary artery bypass grafting. In this series of 5589 consecutive patients, compared by using 3 levels of statistical modeling, we found that off-pump coronary bypass does not preserve renal function to a greater extent than on-pump coronary bypass. In fact, a trend to the reverse exists with no clinically harmful effects.

(continued on page 14A)
Predictors and impact of postoperative atrial fibrillation on patients’ outcomes: A report from the Randomized On Versus Off Bypass trial

G. Hossein Almassi, MD, Sharon A. Pecsi, RN, MSN, Joseph F. Collins, ScD, A. Laurie Shroyer, PhD, Marco A. Zenati, MD, and Frederick L. Grover, MD, Milwaukee, Wis, Perry Point, Md, Northport, NY, Denver, Colo, and Boston, Mass

In the ROOBY trial, the strategy of coronary revascularization had no impact on the incidence of postoperative atrial fibrillation. Short-term morbidity and 1-year mortality rates were higher with postoperative atrial fibrillation. Age, white race, and hypertension were predictors of postoperative atrial fibrillation.

Ostial left main coronary artery stenosis as an additional risk factor in off-pump coronary artery bypass grafting

Hui-Li Gan, MD, PhD, Jian-Qun Zhang, MD, Wei Xiao, MD, Shuang Zhao, MD, Fang-jong Huang, MD, Cheng-xiong Gu, MD, Chun-shuang Lu, MD, and Pi-Shan Wang, MD, Beijing, China

Four thousand three hundred sixty-six patients undergoing primary isolated OPCAB were retrospectively reviewed. Ostial left main coronary artery lesions posed additional early risks of mortality and major adverse cardiac and cerebrovascular events. OPCAB for left main coronary artery lesions requires better intraoperative surveillance and lower threshold for on-pump conversion.

Design, rationale, and initiation of the Surgical Interventions for Moderate Ischemic Mitral Regurgitation Trial: A report from the Cardiothoracic Surgical Trials Network

Peter K. Smith, MD, Robert E. Michler, MD, Y. Joseph Woo, MD, John H. Alexander, MD, MHS, John D. Puskas, MD, Michael K. Parides, PhD, Rebecca T. Hahn, MD, Judson B. Williams, MD, John M. Dent, MD, T. Bruce Ferguson, Jr, MD, Ellen Moquete, RN, BSN, Eric A. Rose, MD, Pierre Pagé, MD, Neal O. Jeffries, PhD, Patrick T. O’Gara, MD, and Deborah D. Ascheim, MD, Durham and Greenville, NC; New York, NY; Philadelphia, Pa; Atlanta, Ga; Charlottesville, Va; Montréal, Québec, Canada; Bethesda, Md; and Boston, Mass

This article addresses the design of a prospective, multicenter, randomized clinical trial designed to test the safety and efficacy of mitral repair in addition to coronary artery bypass grafting in the treatment of moderate ischemic mitral regurgitation.

Predictive value of near-infrared spectroscopy on neurodevelopmental outcome after surgery for congenital heart disease in infancy

Julie Simons, PhD, Erica D. Sood, PhD, Christopher D. Derby, MD, and Christian Pizarro, MD, Wilmington, Del

Analyses of the effect of intraoperative regional cerebral oxygenation measured by NIRS on neurodevelopmental outcome after pediatric cardiac surgery revealed that neurodevelopment was largely influenced by patient-related characteristics. Receptive communication appears to be influenced by rSO2 nadir; however, the predictive value of NIRS remains unclear.

(continued on page 16A)
Among 1618 neonates admitted with congenital heart lesions, low birth weight (especially < 2.0 kg) predominated over prematurity as an independent determinant of death. Among the 80 infants with birth weight less than 2.0 kg, imposed delays in intervention (n = 46) neither compromised nor improved survival.

Clinical outcomes of prophylactic Damus-Kaye-Stansel anastomosis concomitant with bidirectional Glenn procedure

Twenty-five consecutive patients who underwent a Damus-Kaye-Stansel anastomosis concomitant with a bidirectional Glenn procedure to prevent late systemic ventricular outflow tract obstruction were studied. Catheter examinations at 4.3 years after a Fontan operation revealed nonobstructive systemic ventricular outflow despite significant reduction of ventricular volume. Semilunar valve regurgitation was detected in only 1 patient.

Pulmonary artery sling: Current results with cardiopulmonary bypass

Between 1985 and 2010, 34 patients underwent pulmonary artery sling repair using a median sternotomy and cardiopulmonary bypass. Left pulmonary artery reimplantation into the main pulmonary artery resulted in a uniformly patent left pulmonary artery. Twenty-seven patients (79%) had tracheal stenosis. Our current preferred approach to the tracheal stenosis is repair with slide tracheoplasty.

Prophylactic amiodarone reduces junctional ectopic tachycardia after tetralogy of Fallot repair

We introduced prophylactic amiodarone for tetralogy repair to decrease junctional ectopic tachycardia. Prophylactic amiodarone was significantly negatively associated with junctional ectopic tachycardia by both univariate ($P = .039$) and multivariate ($P = .027$) analyses. Prophylactic amiodarone is well tolerated and significantly associated with a decreased incidence of junctional ectopic tachycardia after tetralogy repair.

Institutional volume and the effect of recipient risk on short-term mortality after orthotopic heart transplant

This study examined institutional volume and recipient risk score in cardiac transplant outcomes. For 1-year survival, there was positive interaction between these variables; the effect of risk on mortality was greater at low-volume centers than expected from either variable analyzed individually. These data support performing high-risk transplants at higher-volume centers.
168 Influence of size disparity of transplanted hearts on cardiac growth in infants and children

Eva Maria Delmo Walter, MS, MD, PhD, Michael Huebler, MD, Stephan Schubert, MD, Hans Lehmkuhl, MD, PhD, Yaguo Weng, MD, PhD, Felix Berger, MD, PhD, and Roland Hetzer, MD, PhD, Berlin, Germany

This study shows that in 147 children, donor–recipient mismatch did not influence the continuous increase in the measured parameters, in accordance with the recipients’ BSA over time. Despite size disparity of the transplanted heart, it undergoes normal growth proportional to body growth after cardiac transplantation in infants and children.

178 Preoperative predicted risk does not fully explain the association between red blood cell transfusion and mortality in coronary artery bypass grafting

Gaetano Paone, MD, MHSA, Robert Brewer, MD, MHSA, Patricia F. Theurer, BSN, Gail F. Bell, MSN, Chad M. Cogan, MS, and Richard L. Prager, MD, for the Michigan Society of Thoracic and Cardiovascular Surgeons, Detroit, East Lansing, and Ann Arbor, Mich

This study confirms a significant association between blood transfusion and mortality in coronary artery bypass grafting after accounting for differences in risk profiles. Although the differences in outcomes cannot be ascribed to transfusion alone, the results provide a rationale for aggressive institution of blood conservation measures to limit transfusion.

186 A propensity score–matched comparison of deep versus mild hypothermia during thoracoabdominal aortic surgery

Aaron J. Weiss, MD, Hung-Mo Lin, PhD, Moritz S. Bischoff, MD, Johannes Scheumann, MS, Ricardo Lazala, MD, Randall B. Griepp, MD, and Gabriele Di Luozzo, MD, New York, NY

By using DHCA and non-DHCA approaches, we examined the impact of distal ischemia time and temperature on intra-abdominal reversible and permanent adverse outcomes during descending and thoracoabdominal aortic aneurysm operations. We found that DHCA offers greater protection in preventing intra-abdominal reversible adverse outcomes than non-DHCA techniques.

194 Gentamicin-collagen sponge reduces sternal wound complications after heart surgery: A controlled, prospectively randomized, double-blind study

Christoph Schimmer, MD, Mehmet Özkur, MD, Bhanu Sinha, PhD, Johannes Hain, Armin Gorski, MD, Benjamin Hager, and Rainer Leyh, MD, PhD, Würzburg, Germany

The present study is the first controlled, prospective, randomized, double-blind, single-center study to investigate the efficacy of a retrosternal gentamicin-collagen sponge in reducing sternal wound complications after heart surgery in 720 patients. Routine prophylactic retrosternal use of a gentamicin-collagen sponge in patients undergoing cardiac surgery significantly reduces deep sternal wound infections.

201 Bioengineered self-seeding heart valves

James E. Jordan, PhD, J. Koudy Williams, DVM, Sang-Jin Lee, PhD, Devanathan Raghavan, PhD, Anthony Atala, MD, and James J. Yoo, MD, PhD, Winston-Salem, NC

Bioengineered self-seeding heart valves were superior to decellularized and pre-cell-seeded scaffolds with regard to both preparation time and ability to mature quickly in vivo.

(continued on page 19A)
Levosimendan is superior to epinephrine in improving myocardial function after cardiopulmonary bypass with deep hypothermic circulatory arrest in rats
Alessio Rungatscher, MD, PhD, Daniele Linardi, MD, Maddalena Tessari, MSc, Tiziano Mon, MSc, Giovanni Battista Luciani, MD, Alessandro Mazzucco, MD, and Giuseppe Faggian, MD, Verona, Italy

DHCA is associated with postoperative myocardial dysfunction, which is often severe and clinically relevant. In the same way, rewarming from accidental hypothermia often requires prolonged mechanical and inotropic support for transitory heart failure. Epinephrine is currently used in this setting; however, a reduced beta-adrenergic responsiveness with a diminished sensitivity to calcium is known. A calcium sensitizer agent, levosimendan, was superior in improving myocardial function and was associated with lower lactate levels compared with epinephrine in a rat model.

Progressive induction of left ventricular pressure overload in a large animal model elicits myocardial remodeling and a unique matrix signature
William M. Yarbrough, MD, Rupak Mukherjee, PhD, Robert E. Stroud, MS, William T. Rivers, BS, J. Marshall Oelsen, BS, Jennifer A. Dixon, MD, Shaina R. Eckhouse, MD, John S. Ikonomidis, MD, PhD, Michael R. Zile, MD, and Francis G. Spinale, MD, PhD, Columbia and Charleston, SC

In a large animal model of progressive model of LV pressure overload, increased matrix accumulation and subsequently increased myocardial stiffness occurred, which was not due to increased fibrillar collagen expression but rather to determinants of post-translational control, which included increased collagen stability (thereby resistant to degradation) and increased endogenous proteolytic inhibition. Targeting these matrix post-translational events with pressure overload, such as with aortic stenosis, may hold both diagnostic and therapeutic relevance.

Effects of glutaraldehyde concentration, pretreatment time, and type of tissue (porcine versus bovine) on postimplantation calcification
Pranava Sinha, MD, David Zurakowski, MD, T. K. Susheel Kumar, MD, Dingchao He, MD, Christopher Rossi, MD, and Richard A. Jonas, MD, Washington, DC, and Boston, Mass

This study uses a subcutaneous rat implant model to determine optimal conditions (exposure time and concentrations) for glutaraldehyde pretreatment of pericardium. Calcification is mitigated by longer exposure times and increased with higher concentrations of glutaraldehyde. A species specific susceptibility to calcification is also identified.

Endoscopic fundoplication for the treatment of gastroesophageal reflux disease: Initial experience
Chaitan K. Narsule, MD, Miguel A. Burch, MD, Michael I. Ebright, MD, Donald T. Hess, MD, Roberto Rivas, Jr, BS, Benedict D. T. Daly, MD, and Hiran C. Fernando, MD, FRCS, Boston, Mass, and Los Angeles, Calif

Endoscopic fundoplication is a minimally invasive treatment option for the management of gastroesophageal reflux disease. Our initial experience with this approach in 46 patients is discussed.

Tricuspid regurgitation as a result of Chiari network attachment
Jen-Ping Chang, MD, Taiwan, Republic of China

(continued on page 20A)
### Table of Contents (continued)

#### Brief Technique Reports

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>236</td>
<td>Thoracoabdominal aortic aneurysm repair with patent gastroepiploic artery graft</td>
<td>Toshihiro Fukui, MD, Muneaki Yamada, MD, Minoru Tabata, MD, MPH, and Shuichiro Takanashi, MD, Tokyo, Japan</td>
<td>Tokyo, Japan</td>
</tr>
<tr>
<td>237</td>
<td>A new type of aortic arch interruption without significant patent ductus arteriosus and with no ventricular septal defect</td>
<td>Alexandre Cazavet, MD, Pierre-Emmanuel Seguela, MD, Philippe Acar, MD, PhD, and Bertrand Leobon, MD, PhD, Toulouse, France</td>
<td>Toulouse, France</td>
</tr>
<tr>
<td>240</td>
<td>Prevention of middle lobe torsion after right upper lobectomy with a polymeric sealant</td>
<td>Federico Venuta, MD, Marco Anile, MD, Tiziano de Giacomo, MD, and Giorgio F. Coloni, MD, Rome, Italy</td>
<td>Rome, Italy</td>
</tr>
<tr>
<td>241</td>
<td>Intrauterine rupture of anterior tricuspid valve papillary muscle: Tricuspid valve chordae replacement on the first day of life</td>
<td>Renate Kaulitz, MD, Susanne Haen, MD, Lutz Sieverding, MD, and Gerhard Ziemer, MD, PhD, Tuebingen, Germany</td>
<td>Tuebingen, Germany</td>
</tr>
<tr>
<td>244</td>
<td>Diaphragmatic fenestration for resistant pleural effusions after the Fontan operation</td>
<td>Sachin Talwar, MCh, Shiv Kumar Choudhary, MCh, Shivaprasad Babu Mukkannavar, MCh, and Balram Airan, MCh, New Delhi, India</td>
<td>New Delhi, India</td>
</tr>
</tbody>
</table>

#### Online Only: Brief Clinical Reports

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>e1</td>
<td>Delayed migration of a transfemorally implanted aortic bioprosthesis</td>
<td>Costin Radu, MD, Richard Raffoul, MD, Eric Brochet, MD, and Dominique Himbert, MD, Paris, France</td>
<td>Paris, France</td>
</tr>
<tr>
<td>e3</td>
<td>Pulmonary vein thrombosis after video-assisted thoracoscopic left upper lobectomy</td>
<td>Kazuto Ohtaka, MD, Yasuhiro Hida, MD, PhD, Kichizo Kaga, MD, PhD, Yasuaki Iimura, MD, PhD, Nobuyuki Shiina, MD, Jun Muto, MD, and Satoshi Hirano, MD, PhD, Sapporo, Japan</td>
<td>Sapporo, Japan</td>
</tr>
<tr>
<td>e5</td>
<td>Delayed bleeding after transapical aortic valve implantation</td>
<td>Antonio Maria Calafoire, MD, Adam Ibrahim, MD, Saeed al Ahmari, MD, Angela Lorena Iacò, MD, and Houssein Al Amri, MD, Riyadh, Saudi Arabia</td>
<td>Riyadh, Saudi Arabia</td>
</tr>
<tr>
<td>e7</td>
<td>Differentiating aortic fibrosarcoma from acute intramural hematoma</td>
<td>Yader Sandoval, MD, Joseph Van Camp, MD, Stuart Cameron, MD, Charles A. Herzog, MD, and Gautam R. Shroff, MBBS, Minneapolis, Minn</td>
<td>Minneapolis, Minn</td>
</tr>
</tbody>
</table>

#### Letters to the Editor

<table>
<thead>
<tr>
<th>Page</th>
<th>Title</th>
<th>Authors</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>246</td>
<td>Surgical and interventional hybrid procedures: Lessons from China and beyond</td>
<td>John G. Byrne, MD, Marzia Leacche, MD, and David X. Zhao, MD, Nashville, Tenn</td>
<td>Nashville, Tenn</td>
</tr>
<tr>
<td>247</td>
<td>Why cardiothoracic surgeons must tweet and blog</td>
<td>Norman Briffa, MB ChB, MD, FRCS(CTh), Sheffield, United Kingdom</td>
<td>Sheffield, United Kingdom</td>
</tr>
</tbody>
</table>
Conflicting meta-analytic results: Potential for confusion if left unexplained
Sukhjinder S. Nijjer, BSc, MB ChB, MRCP, Thanos Athanasiou, MD, PhD, FETCS, FRCS, and Iqbal S. Malik, MA, PhD, FRCP, London, England

Reply to the Editor
Fausto Biancari, MD, PhD, and Juhani Airaksinen, MD, PhD, Oulu and Turku, Finland

Efficacy of awake thoracic surgery
Tommaso Claudio Mineo, MD, and Vincenzo Ambrogi, MD, Rome, Italy

Reply to the Editor
Masafumi Noda, MD, Yoshinori Okada, MD, Sumiko Maeda, MD, and Takashi Kondo, MD, Sendai, Japan

Aortic off-pump coronary artery bypass grafting: The criterion standard for minimization of neurologic injury
J. James Edelman, BSc(Hons), MBBS(Hons), Tristan D. Yan, MBBS, PhD, and Michael P. Vallely, PhD, FRACS, Sydney, Australia

Reply to the Editor
Maximilian Y. Emmert, MD, Sacha P. Salzberg, MD, and Volkmar Falk, MD, Zurich, Switzerland

Is annuloplasty enough for functional tricuspid regurgitation?
Mert Kestelli, MD, Ismail Yurekli, MD, Banu Lafci, MD, and Tevfik Gunes, MD, Izmir, Turkey

Reply to the Editor
Antonio M. Calafiore, MD, and Michele Di Mauro, MD, Riyadh, Saudi Arabia, and L’Aquila, Italy

Notice of Correction

Announcements
The American Association for Thoracic Surgery
Aortic Symposium 2012
AATS 92nd Annual Meeting

The Western Thoracic Surgical Association
The Western Thoracic Surgical Association 2011 Annual Meeting in Review
Applications for Membership

(continued on page 24A)
Table of Contents  (continued)

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
</table>
| 258  | WTSA 38th Annual Meeting  
The American Board of Thoracic Surgery |
| 258  | Notices |
| 258  | Requirements for Maintenance of Certification |

Reader Services

<table>
<thead>
<tr>
<th>Page</th>
<th>Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>25A</td>
<td>JTCVS Disclosure Statement</td>
</tr>
<tr>
<td>26A</td>
<td>Information for Readers</td>
</tr>
<tr>
<td>27A</td>
<td>Statistical Release</td>
</tr>
</tbody>
</table>

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