Conference Program

STS/EACTS Latin America Cardiovascular Surgery Conference

September 21-22, 2017 | Cartagena, Colombia

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www.CardiovascularSurgeryConference.org

The Society of Thoracic Surgeons

EACTS
European Association For Cardio-Thoracic Surgery

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COURSE DESCRIPTION

This new conference, led by Program Directors Juan P. Umana, MD (El Rosario University/Fundacion Cardioinfantil in Bogota, Colombia), Vinod H. Thourani, MD (MedStar Heart & Vascular Institute in Washington, DC, USA), Jose Luis Pomar, MD, PhD (University of Barcelona, Spain), and Joseph E. Bavaria, MD (University of Pennsylvania in Philadelphia, PA, USA), is a 2-day educational activity that will provide a unique and innovative format for the attendees, highlighting the management of cardiovascular surgical diseases. Sessions will incorporate not only invited lectures from a world-class international faculty on traditional and new technology procedures, but also original scientific abstracts presented in oral and poster sessions. They will concentrate on the multidisciplinary approach to coronary artery disease, valvular heart disease, thoracic aorta disease, atrial fibrillation, and the surgical management of heart failure. An integral component will be invited technical videos in regard to procedural expertise in these disease processes, followed by a robust panel discussion. This new and extremely innovative conference will provide attendees access to the highest level of education with the goal of improved patient management.

TARGET AUDIENCE

The conference is designed for all members of the cardiac surgical team, including cardiothoracic surgeons, cardiovascular surgeons, cardiologists, anesthesiologists, perfusionists, physician assistants, nurses, and other health care professionals interested in the topic.

LEARNING OBJECTIVES

Upon completion of this activity, participants should be able to:

- Evaluate the impact of new knowledge and the application of new technology on the treatment of cardiovascular diseases
- Discuss surgical techniques in order to improve the standard of care for cardiovascular patients
- Review the results of clinical and laboratory investigations designed to reveal new knowledge of cardiovascular disease
- Describe the multidisciplinary approach to coronary artery disease, valvular heart disease, atrial fibrillation, and the surgical management of heart failure.

CERTIFICATES OF PARTICIPATION

No continuing medical education credit is being offered for this meeting. To obtain a certificate of participation, you'll need to complete an online evaluation. The link be available at the Registration Desk. You also may contact the STS Education and Member Services Department at (312) 202-5800 or education@sts.org with any questions.

The Society of Thoracic Surgeons Education Disclosure Policy

As a sponsor of continuing medical education accredited by the Accreditation Council for Continuing Medical Education (ACCME), The Society of Thoracic Surgeons requires that any individual who is in a position to control the content of an educational activity must disclose all relationships with commercial interests (including known relationships of his or her immediate family, department, and partners). The ACCME defines a commercial interest as "any entity producing, marketing, reselling, or distributing health care goods or services consumed by, or used on, patients. The ACCME does not consider providers of clinical service directly to patients to be commercial interests." The question of whether a disclosed conflict situation could represent undue influence on the educational activity by a commercial interest or whether the disclosed information is sufficient to consider an abstract, presentation, or other educational enduring material to represent potentially biased information must be resolved prior to an individual's involvement in STS educational programming.

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Additionally, the fact that the presentation, paper, or other educational product describes (a) the use of a device, product, or drug that is not FDA approved or (b) an off-label use of an approved device, product, or drug must also be disclosed. This requirement has been adopted in response to FDA policy and case law involving medical societies, and is not intended to prohibit or inhibit independent presentation or discussion regarding the uses of devices, products, and drugs as described in (a) or (b) above.

For live presentations, all disclosures must be stated orally and on a slide at the beginning of the presentation and will be noted in published material related to the activity. Slides, handouts, and other materials utilized as part of an educational activity cannot contain any advertising, trade names or a product group message. Speakers are required to disclose that they have nothing to disclose if this is the case.

Amended by the STS Executive Committee: April 11, 2012

Program Director, Faculty, and STS Staff Disclosure Information

Unless otherwise noted the individuals listed below have nothing to disclose.

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Exhibitors

Please make sure to visit the exhibits during scheduled breaks in the educational program:

Thursday	Friday
9:45 a.m. – 10:15 a.m.	9:45 a.m. – 10:15 a.m.
12:30 p.m. – 1:30 p.m.	12:30 p.m. – 1:30 p.m.
3:00 p.m. – 3:30 p.m.	3:00 p.m. – 3:30 p.m.

STS/EACTS Booth

Learn about the many offerings each organization has to offer and apply for membership.

Industry Booths

Abbott/St. Jude Medical
CryoLife
Edwards Lifesciences
Johnson & Johnson
LivaNova
Medtronic
Nefromedicas
Service & Medical Colombia
Terumo
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Satellite Activities

Satellite activities are programs offered by industry and held in conjunction with the STS/EACTS Cardiovascular Surgery Conference. They are not developed or sponsored by STS.

Thursday

5:15 p.m. – 7:00 p.m.
Mitral & Tricuspid Repair Techniques – Hands On
Medtronic

Friday

5:30 p.m. – 7:00 p.m.
New Trends in the Prevention of Infections in Cardiac Surgery
Tricuspid Valve Repair – Hands On
Johnson & Johnson

Conference Agenda

Day 1: Thursday, September 21, 2017

8:00 a.m. – 8:05 a.m. Opening Remarks

General Session: Mitral Valve I

Moderators: *Vinod H. Thourani, MD and Juan P. Umana, MD*

8:05 a.m. – 8:17 a.m. Optimal Timing for Referral and Best Imaging Modality for Degenerative Mitral Valve Disease
David S. Bach, MD

8:17 a.m. – 8:29 a.m. Degenerative Mitral Valve Regurgitation: Resect or Respect?
Juan P. Umana, MD

8:29 a.m. – 8:49 a.m. Rheumatic Mitral Valve Disease: Should the Valve Be Repaired? Pro/Con
Fernando R. Moraes, MD – Con | *Gebrine El-Khoury, MD – Pro*

8:49 a.m. – 9:01 a.m. Ischemic Mitral Valve: Repair or Replace?
Vinod H. Thourani, MD

9:01 a.m. – 9:13 a.m. Concomitant Tricuspid Valve Repair: When, Why and How
Steven F. Bolling, MD

9:13 a.m. – 9:21 a.m. **Abstract I:** (#165) Clinical Outcomes of Young Patients Undergoing Endovascular or Open Repair for Abdominal Aortic Aneurysms: A Systematic Review and Meta-analysis
Juan Santiago Jaramillo, MD

9:21 a.m. – 9:29 a.m. **Abstract II:** (#138) Atrial Reduction Surgery in Giant Left Atrium with Modified “Spiral Technique”
Josias Rios, MD

9:30 a.m. – 9:45 a.m. Panel Discussion

9:45 a.m. – 10:15 a.m. BREAK

10:15 a.m. – 11:00 a.m STS Going Global
Joseph E. Bavaria, MD

Agenda and speakers are subject to change.

General Session: Mitral Valve II

Moderators: *Steven F. Bolling, MD and Vadim Kotowicz, MD*

11:00 a.m. – 11:12 a.m.	Worldwide Results and Review of MitraClip: What Is the Future? *Dario Eccheverri, MD*
11:12 a.m. – 11:24 a.m.	Introduction to Transcatheter Mitral Valve Repair and Replacement *Vinod H. Thourani, MD*
11:24 a.m. – 11:36 a.m.	Minimally Invasive Mitral Valve Repair: The New Gold Standard? *Juan P. Umana, MD*
11:36 a.m. – 11:48 a.m.	How I Do It: Mitral Valve Repair with Neochordae *Vadim Kotowicz, MD*
11:48 a.m. – 12:00 p.m.	How I Do It: Management of Mitral Annular Calcification *Vinay Badhwar, MD*
12:00 p.m. – 12:08 p.m.	**Abstract I:** (#170) Periareolar Access for Minimally Invasive Mitral Valve Surgery: The Brazilian Technique *Robinson Poffo, MD*
12:08 p.m. – 12:16 p.m.	**Abstract II:** (#169) Worst Nightmare – Transcatheter Mitral Valve in Valve *Dimitar Petkov, PhD*
12:16 p.m. – 12:30 p.m.	Panel Discussion
12:30 p.m. – 1:30 p.m.	LUNCH
1:30 p.m. – 3:00 p.m.	Parallel Sessions

	Track I: Adult Congenital **Moderators:** *Christian Pizarro, MD and Nestor F. Sandoval, MD*	Track II: Heart Failure **Moderators:** *Christian A. Bermudez, MD and Francis D. Pagani, MD, PhD*
1:30 p.m. – 1:42 p.m.	Surgery for Ebstein Anomaly *Christian Pizarro, MD*	Heart Transplantation in Latin America: Opportunities and Limitations *Fabio B. Jatene, MD, PhD*
1:42 p.m. – 1:54 p.m.	Pulmonary Valve Replacement *Christian Kreutzer, MD*	Increasing Organ Availability: From Machine Perfusion to Donors After Cardiac Death *Ayyaz Ali, MD*
1:54 p.m. – 2:06 p.m.	How to Deal With the Small LVOT *Victor Caicedo, MD*	Outcomes of MCS as a Bridge to Heart Transplantation: Are We Compromising Short- and Long-Term Outcomes? *Francis D. Pagani, MD, PhD*
2:06 p.m. – 2:18 p.m.	Management of Dilated Aortic Root After Repair of CHD *Christian Pizarro, MD*	ECMO and Other Short-Term MCS: What Every Surgeon Needs to Know *Christian A. Bermudez, MD*

Conference Agenda

	Track I: Adult Congenital (Continued)	Track II: Heart Failure (Continued)
2:18 p.m. – 2:30 p.m.	Tips and Tricks for Reop in Adult CHD *Nestor F. Sandoval, MD*	LVAD vs. ECMO in Latin American Countries: Rapid Fire *Juan C. Mejia, MD and Leonardo Salazar, MD*
2:30 p.m. – 2:38 p.m.	**Abstract I:** (#105) Adult Outcomes After Double Patch Closure of Ventricular Septal Defects for Children with Pulmonary Hypertension and Elevated Pulmonary Vascular Resistance *William M. Novick, MD*	**Abstract I:** (#152) von Willebrand Factor Degradation Fragments Are a Mechanistic Link Between Continuous-Flow LVAD Support and Gastrointestinal Angiodysplasia and Bleeding *Carlo Bartoli, MD*
2:38 p.m. – 2:46 p.m.	**Abstract II:** (#107) Cone Operation and Other Procedures for Ebstein's Anomaly *Nestor F. Sandoval, MD*	**Abstract II:** (#151) HeartWare HVAD Pump Exchange though Left Minithoracotomy Approach *Nicolas Brozzi, MD*
2:46 p.m. – 3:00 p.m.	Panel Discussion	Panel Discussion
3:00 p.m. – 3:30 p.m.	BREAK	
3:30 p.m. – 5:00 p.m.	Parallel Sessions	

	Track III: Atrial Fibrillation **Moderators:** *Vinay Badhwar, MD and Steven F. Bolling, MD*	Track IV: Tricuspid Valve **Moderators:** *Jose L. Pomar, MD, PhD and Guillermo Vaccarino, MD*
3:30 p.m. – 3:42 p.m.	What's New in the Guidelines for Surgical Ablation? *Vinay Badhwar, MD*	The Tricuspid Valve: The "Not So Forgotten" Valve *Manuel Antunes, MD*
3:42 p.m. – 3:54 p.m.	Hybrid Surgical Ablation in South America: Lesson Learned *Joao R. Breda, MD*	When to Address the TV in Heart Transplant and LVADS *Francis D. Pagani, MD, PhD*
3:54 p.m. – 4:06 p.m.	Lesion Sets and Energy Sources: What Are the Data? *Steven F. Bolling, MD*	Timing and Indications for Isolated Tricuspid Valve Surgery *Jose L. Pomar, MD, PhD*
4:06 p.m. – 4:18 p.m.	Clinical Factors Impacting Outcomes Following Surgical Ablation *Ovidio A. Garcia-Villarreal, MD*	How I Do It: Tricuspid Valve Repair in Endocarditis *Gebrine El-Khoury, MD*
4:18 p.m. – 4 :30 p.m.	Stand-alone and Concomitant Ablation: Challenges and Progress *Javier D. Maldonado, MD*	Introduction to Transcatheter Tricuspid Valve Repair *Vinod H. Thourani, MD*

Agenda and speakers are subject to change.

4:30 p.m. – 4:38 p.m.	**Abstract I:** (#136) Incidence of Postoperative Atrial Fibrillation After Minimally Invasive Mitral Valve Surgery *Juan Santiago Jaramillo, MD*	**Abstract I:** (#157) Single Center Experience in Latin America with the HeartMate II and III Left Ventricular Assist Devices *Antonio Figueredo, MD*
4:38 p.m. – 4:46 p.m.	**Abstract II:** (#139) Hybrid Ablation for Long-standing Persistent Atrial Fibrillation: A Two Stage Nonconcomitant Approach Using the Cobra Fusion Device and Catheter Ablation (Single-Centre Experience) *Jaime Alberto Villaquiran, MD*	**Abstract II:** (#186) Surgical Repair for Tricuspid Insufficiency: Long-Term Survival at 8 Years in 114 Patients *Juan Carlos Bahamondes, MD*
4:46 p.m. – 5:00 p.m.	Panel Discussion	Panel Discussion
5:30 p.m. – 7:00 p.m.	Reception	

Day 2: Friday September 22, 2017

7:00 a.m. – 8:00 a.m.	**Stump the Professor: Aortic Valve/Mitral Valve** **Moderators:** *Vinod H. Thourani, MD and Juan P. Umana, MD* **Panelists:** *Joseph E. Bavaria, MD, Gebrine El-Khoury, MD, and Steven F. Bolling, MD*	**Stump the Professor: CAD/Heart Failure** **Moderators:** *Christian A. Bermudez, MD and Francis D. Pagani, MD, PhD* **Panelists:** *Joseph C. Cleveland Jr., MD, Daniel O. Navia, MD, and Ayyaz Ali, MD*
8:00 a.m. – 8:15 a.m.	Opening Remarks	
	General Session: Aortic Valve **Moderators:** *Joseph C. Cleveland Jr., MD, Sergio Franco, MD, and Vinod H. Thourani, MD*	
8:15 a.m. – 8:27 a.m.	The Heart Team and Management of AS *David S. Bach, MD*	
8:27 a.m. – 8:39 a.m.	DEBATE: SAVR for Low-Risk Patients in 2017: Obsolete? *Joseph E. Bavaria, MD*	
8:39 a.m. – 8:51 a.m.	DEBATE: TAVR for Low-Risk Patients in 2017: Not So Fast *Enrico R. Ferrari, MD*	
8:51 a.m. – 9:03 a.m.	Minimally Invasive AVR: Thoracotomy vs. Hemisternotomy *Juan Santiago Jaramillo, MD*	
9:03 a.m. – 9:15 a.m.	Use of Bioprosthetic Valves in Younger Patients: Where's the Evidence? *Pedro Becker, MD*	

Conference Agenda

9:15 a.m. – 9:23 a.m.	**Abstract I:** (#110) The Clinical Implications and Long-Term Outcomes Associated with Biological and Mechanical Valve Replacements in Hemodialysis Medicare Patients *Nimesh Desai, MD, PhD*
9:23 a.m. – 9:31 a.m.	**Abstract II:** (#132) Aortic Valve Replacement With the Edwards Intuity® Valve: Short and Mid-Term Clinical and Echocardiographic Results *Lorena Montes, MD*
9:31 a.m. – 9:45 a.m.	Panel Discussion
9:45 a.m. – 10:15 a.m.	BREAK
10:15 a.m. – 11:00 a.m.	Legend from South America : The History of Cardiac Surgery in Latin America *Fabio B. Jatene, MD, PhD*
	General Session: STS and Latin America Quality and Outcomes Initiatives **Moderators:** *Jeffrey P. Jacobs, MD and Fabio B. Jatene, MD, PhD*
11:00 a.m. – 11:12 a.m.	The History of the STS National Database: Its Role in Quality Improvement, Research, and Health Policy *Jeffrey P. Jacobs, MD*
11:12 a.m. – 11:24 a.m.	Challenges for Implementation of Multicentric Registries in Latin America *Nestor F. Sandoval, MD*
11:24 a.m. – 11:36 a.m.	Continuous Quality Improvement Program in Cardiovascular Surgery: The Latin American Perspective *Walter J. Gomes, MD*
11:36 a.m. – 11:48 a.m.	How I Maintain the Highest Quality of Cardiovascular Care in My Surgical Program *Eric E. Roselli, MD*
11:48 a.m. – 12:00 p.m.	The Argentinian Transplantation Registry: A Latin American “Bright Spot” *Alejandro M. Bertolotti, MD*
12:00 p.m. – 12:08 p.m.	**Abstract I:** (#183) Comparison of The Society of Thoracic Surgeons Predicted Risk of Mortality, Logistic EuroSCORE I and EuroSCORE II in Israeli Patients Undergoing Cardiac Surgery *Oz M. Shapira, MD*
12:08 p.m. – 12:16 p.m.	**Abstract II:** Conservative Pro-Erythrogenic Therapy in Ultra-Restrictive Patient Blood Management in Cardiac Surgery *Pierre Tibi, MD*
12:16 p.m. – 12:30 p.m.	Panel Discussion
12:30 p.m. – 1:30 p.m.	LUNCH

Agenda and speakers are subject to change.

1:30 p.m. – 3:00 p.m.	Parallel Sessions	
	Track I: Coronary **Moderators:** *Jorge M. Balaguer, MD and Jacob DeLaRosa, MD*	**Track II: Aorta & Aortic Arch** **Moderators:** *Joseph E. Bavaria, MD and Eduardo Turner, MD*
1:30 p.m. – 1:42 p.m.	Evidence-Based Management of CAD: Last Decade Trials and Updated Guidelines *Enrico R. Ferrari, MD*	Worldwide Results in Type A Aortic Dissection Repair and Future Treatment Options *Joseph E. Bavaria, MD*
1:42 p.m. – 1:54 p.m.	Management of CAD in Low-EF Patients *Jacob DeLaRosa, MD*	Circulatory Management During Arch Reconstruction: Cold vs. Warm and ACP vs. RCP *Eduardo Turner, MD*
1:54 p.m. – 2:06 p.m.	On- vs. Off-Pump CABG for Mixed-Risk and High-Risk Groups: Where Is the Evidence? *Joseph C. Cleveland Jr., MD*	Options in Aortic Arch Reconstruction: Conventional vs. Frozen Elephant Trunk *Ricardo Ribeiro Dias, MD*
2:06 p.m. – 2:18 p.m.	Bilateral IMA and All-Arterial Revascularization: How To Do It and Current Evidence *Daniel O. Navia, MD*	Distal Arch and Descending Aorta: What Is the Optimal Therapy in 2017? *Eric E. Roselli, MD*
2:18 p.m. – 2:30 p.m.	Hybrid Coronary Revascularization: Who Would Benefit? *Alejandro Rey, MD*	Chronic Type B Aortic Dissection: Open vs. TEVAR *Jaime Camacho, MD*
2:30 p.m. – 2:38 p.m.	**Abstract I:** (#148) Myocardial Hybrid Revascularization vs. Coronary Artery Bypass Grafting for Complex Triple-Vessel Disease—Preliminary Results of the Merging Randomized Clinical Trial: Pilot Phase *Marco Antonio Praca Oliveira, MD*	**Abstract I:** (#112) Does Simultaneous Lower Body Perfusion During Aortic Arch Repair With Circulatory Arrest Improve Patient Outcomes? *Jill Gelinas, MD*
2:38 p.m. – 2:46 p.m.	**Abstract II:** (#140) Safe Preservation of Myocardial Function with del Nido Cardioplegia in CABG Patients *Brigida Aguerrevere, CCP*	**Abstract II:** (#119) Outcomes of Aortic Surgery after Previous Sternotomy *Mary Siki, BS*
2:46 p.m. – 3:00 p.m.	Panel Discussion	Panel Discussion
3:00 p.m. – 3:30 p.m.	BREAK	

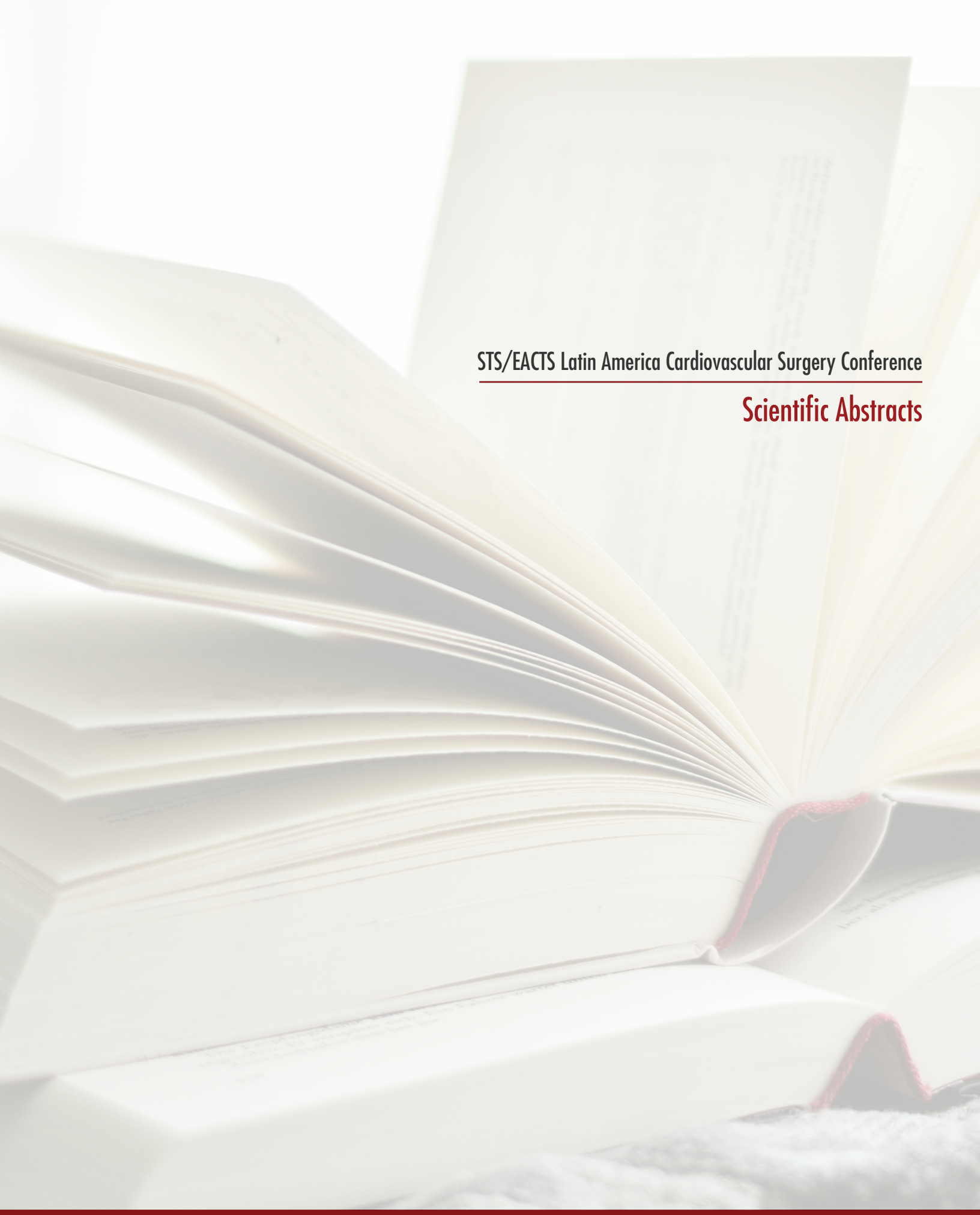
Conference Agenda

General Session: Aortic Root

Moderators: *Joseph E. Bavaria, MD and Juan P. Umana, MD*

3:30 p.m. – 3:42 p.m.	Bicuspid Aortic Valve Repair *Joseph E. Bavaria, MD*
3:42 p.m. – 3:54 p.m.	Valve Sparing Aortic Root Replacement *Gebrine El-Khoury, MD*
3:54 p.m. – 4:06 p.m.	Optimal Strategy for Aortic Root Replacement: Ross *Roberto R. Favaloro, MD*
4:06 p.m. – 4:18 p.m.	Optimal Strategy for Aortic Root Replacement: Bentall with Decellularized Graft *Francisco DaCosta, MD*
4:18 p.m. – 4:30 p.m.	Endo-Bentall: Fact or Fiction? *Eric E. Roselli, MD*
4:30 p.m. – 4:38 p.m.	**Abstract I:** (#117) Treatment of Poststenotic Aneurysms of the Ascending Aorta by Wrapping Tape Operation *Kostiantin Vakulenko, PhD*
4:38 p.m. – 4:46 p.m.	**Abstract II:** (#113) An 18-year Experience of Valve-sparing Aortic Root Replacement with the Reimplantation Technique *Mónica Gilbert, MD*
4:46 p.m. – 5:15 p.m.	Panel Discussion
7:00 p.m. – 10:00 p.m.	Gala Dinner

Agenda and speakers are subject to change.



STS/EACTS Latin America Cardiovascular Surgery Conference

Scientific Abstracts

Scientific Abstracts

*Oral abstracts are notated with an asterisk (*). Presenting authors are listed in **bold**. Unless otherwise noted in this program or by the speakers, speakers have no commercial relationships to disclose and will be presenting information only on devices, products, or drugs that are US Food and Drug Administration approved for the purposes they are discussing.*

Abstract content appears as it was submitted; only titles have been edited for clarity and consistency. Abstracts are grouped by topic (Adult Congenital, Aorta and Aortic Arch, Aortic Root, Aortic Valve, Atrial Fibrillation, Coronary, Heart Failure, Mitral Valve, Quality and Outcomes, Tricuspid Valve).

ADULT CONGENITAL

101

Ebstein's Anomaly: Case Reviews

*G. LaForgia, **J. Garcia Noriega**, D. Garcia Leal*
Institution where study was performed: Hospital Miguel Perez, Venezuela

Purpose: Ebstein's anomaly is a congenital pathology consisting of atrialization of the right ventricle with structural alteration of the tricuspid valve that makes it insufficient. So the cardiovascular surgeon must know the different presentations of the same and the therapeutic options for resolution.

Methods: We describe five cases that entered the cardiology department between January and December 2013, young adults, whose diagnosis was made by echocardiography. A diagnosis of atrial septal defect was associated in 3 cases.

Results: The patients were taken to elective surgery for tricuspid plasticity. Only 2 patients underwent plasty with resuspension of anterior and posterior valves with prolene suture and 3 replacement of tricuspid valve with mechanical mitral valvular prosthesis. Interauricular communication was closed in two of the cases. The patients were followed up for 4 years until the present, they are without signs of insufficiency, nor thrombosis protest.

Conclusions: Ebstein's anomaly is an uncommon condition in adulthood and surgical resolution for the cardiovascular surgeon is challenging. Therefore it is necessary to know the different modalities in the operative treatment to perform the most appropriate surgical technique in selected cases.

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Expandable Polyurethane Stent Valve as a Reliable Option for Transcatheter Implantation in Children with Heart Valve Disease: Results of Physical, Hydrodynamic, and Experimental Tests

M. Maluf

Institution where study was performed: São Paulo Federal University, Brazil

REGULATORY DISCLOSURE: This study describes the use of expandable polyurethane stent valve in pediatric patients to curb calcification and reduce the number of replacements needed during patient growth, which is an off-label use of expandable polyurethane stent valves.

Purpose: Transcatheter valves fabricated using biological tissue, as the essential structural component, can be induced to: mechanical degradation after crimping and early calcification when implanted in pediatric patients. One sequential expandable stent with synthetic leaflets, free of calcification after experimental test, may reduce the multiple valve replacement during the growth phase of the patient, with heart valve disease.

Objectives: Conduct: In vitro and in vivo testing of an Expandable Polyurethane Stent Valve

Methods:

1) In vitro testing:

I. Physical testing. Prostheses were submitted to universal testing in machine EMIC®. The machine has a direct interface to a computer with Tesc® software, able to generate graphs of force versus deformation (stretching), for each test.

II. Hydrodynamic testing. Were performed in duplicate pulses. Prostheses with diameters of 12, 15, 18 and 22 mm, were submitted to pulsatile physiological flow and stress conditions, during 2 months. The machine has a direct interface to a computer, able to generate pressor curve and transvalve gradients. All testing was certified by a Professional Engineer, using design required by ISO 9000.

2) In vivo testing:

III. Experimental implants in sheep. Sixteen sheep was submitted to prosthesis implant, by transcatheter technique in pulmonary position. In Group A: Eight sheep w/ <20 kg, the stent was expanded up to 18mm and in Group B: eight sheep w/ > 20 kg, expanded up to 22mm. Eight sheep of Group A, were undergo balloon expansion, up to 22 mm, in the 12th week. In the 20th week of follow-up, all sheep were sacrificated and prostheses were explanted. Study of valves included: histologic, radiologic and electron microscopic examination.

Results: Physical and Hydrodynamic testing of Polyurethane strip removal of stent valve, before and after undergoing to maximum crimping, by period of 10 minutes, showed preservation of properties of resistance and elasticity elongation. In vitro durability was proven for >15 years.

After implantation, 2-dimensional-echocardiography showed: there was no significant transvalvular gradients and regurgitation, independent of the prosthesis diameter. Clinical course of the animals with PU valves has reliable hemodynamic performance and insignificant calcification of the leaflets. Group A had an effective expansion of the prosthesis, confirmed after measured their diameters during explantation.

Conclusions: Expandable polyurethane stent valve, with special design for growing pediatric patients, has satisfactory hemodynamic performance and durability in vitro and in vivo tests. Calcification and structural changes are mild compared with bioprostheses. Controlled clinical studies are planned.

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Surgical Treatment of Anomalous Aortic Origin of the Left Main Coronary Artery Arising from the Right Sinus of Valsalva with Intraconal Course: A Case Report

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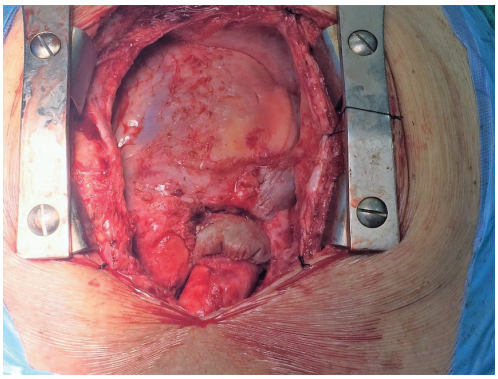
Institution where study was performed: Clínica Cardio VID, Medellín, Colombia

Purpose: Anomalous aortic origin of a coronary (AAOCA) is a rare congenital heart defect associated with myocardial ischemia and sudden death. We describe the diagnosis, surgical technique and outcomes of two patients presenting anomalous origin of the left main coronary artery arising from the right coronary sinus (ALMCA), with intra-conal course.

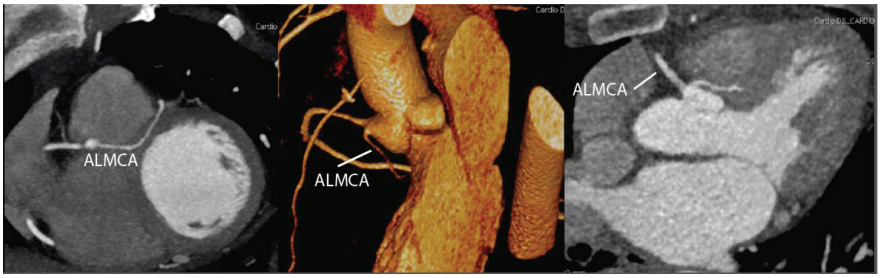
Methods: Description of two adult patients with significant symptoms of myocardial ischemia due to primary anomaly of the left main coronary artery arising from the right sinus of Valsalva. A 46-year-old man with history of severe thoracic pain; Coronary angiography showed the left main coronary artery arising from the right sinus of valsalva. The second case is a 52-year-old woman presenting with non-typical angina. Exercise echocardiography was positive. Coronary angiography showed the left main coronary artery arising from the right sinus of valsalva with sub pulmonary, intraseptal course. Angiography computed tomography confirmed the diagnosis in both cases.



Right pulmonary artery enlargement with bovine patch

Results: Many surgical strategies have been suggested to treat AAOCA, however for the ALMCA type with intraconal and non- intramural course we prefer the anterior pulmonary artery translocation procedure (modified LeCompte maneuver). Surgery was performed under normothermic bypass. We divided the main pulmonary artery (MPA) at its bifurcation and translocated the right pulmonary artery (RPA) anterior to the aorta. Thereafter RPA was re-anastomosed to the MPA and enlarged with a bovine pericardial patch. This anterior translocation achieves an additional space at the base of the “V” created between the two great arteries, thus avoiding extrinsic compression of the left main coronary artery. Postoperative evolution was uneventful and intensive care unit length of stay was 24 hours for both patients. Hospital discharge occurred after 2 days in one patient and after 6 days in the other. Up to date, both patients are still free of cardiac symptoms and doing well.

Conclusions:
AAOCA correction may be performed safely. We consider the anterior pulmonary artery translocation procedure the best technique for the ALMCA type with a left main coronary artery arising from right coronary sinus and an intraconal course. We recommend surgical repair of this entity to modify the untreated natural history.



Left main coronary artery arising from the right coronary sinus

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Pulmonary Valve Replacement

***G. Nachev**, D. Petkov*
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Purpose: The objective of this presentation is to share our experience with pulmonary valve replacement (PVR) in adult patients.

Methods: From 2000 to august 2017 a total number of 24 patients average age 43, seven years (from 27 to 77 years) underwent PVR. All of patient cohort are females. 14 patients survived previous surgery pro Tetralogy of Fallot. The other 10 are with congenital pulmonary stenosis. Majority of patients (66,6%) were NYHA Class III and 33,4 Class IV. Peak gradients before operation were between 30 - 165 mmHg (average 71 mmHg). RV dimension were between 18mm and 51mm (average 33mm). RA dimension were average 63,1/48,6 mm.

Results: All 24 pulmonary valve replacements were done with biological prosthesis. After surgery 7pts (30,4) % are NYHA Class I and 16pts (69.6%) are Class II. In early postoperative period we found peak gradients between 15 and 40 mmHg (average 24,6 mmHg). RV dimension decrease to 15-33 (average 23). RA dimension 57/47,2. ICU stay 1-4 days, hospital stay 7-12 days.

In follow up one patient died 3 months after surgery because of stroke. In one patient we developed endocarditis of the prosthesis, successfully treated with antibiotics

Conclusions: Our experience shows that PVR is a reasonable approach for management of congenital pulmonary valve disease with acceptable morbidity and mortality. PVR decrease gradients, RA and RV dimensions and optimize NYHA Class.

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Adult Outcomes After Double Patch Closure of Ventricular Septal Defects for Children with Pulmonary Hypertension and Elevated Pulmonary Vascular Resistance

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Institution where study was performed: University of Tennessee Health Science Center

Purpose: Children with pulmonary hypertension (PHT) with elevated pulmonary vascular resistance (PVR) have been shown historically to develop progressive PHT with routine closure of VSD's, leading to a shortened life-span. We present our results from 3 institutions where children, who are now > 18 years old, underwent closure of VSD's using the double patch method. Our study focuses on the late development of PHT in this population.

Methods: Records from the 3 institutions involved were reviewed for any child undergoing closure of VSD as a primary procedure (with or without PDA or ASD closure) or as part of the repair of sub-aortic VSD in double outlet right ventricle. Pre-operative catheterization data, post-operative echocardiogram data and clinical status were extracted for analysis. Follow-up on all patients was performed between 12/2015 and 12/2016. Analysis of risk factors for the development of late PHT was performed and a p-value of less than
0.5 was considered significant. Any patient less than 18 years of age at time of follow-up was excluded from the study. Values are median and inter-quartile range.

Results: A total of 35 children who were discharged from the hospitals and would be 18 or > years of age as of 12/2015 were identified. During the follow-up period 3/35 patients died from severe PHT (8.6%). An additional 1 patient was lost to follow-up at 5.5 years. The median age at operation was 7.28 (3.83;12;91). Pre-op catheterization baseline pulmonary vascular resistance was 9.55 (7.63;12.63) and the systolic pulmonary artery to systolic systemic pressure (sPAp/sSAp) ratio was 1.00 (0.89;1.00). The median follow-up was 17.4 (11.9; 19.3) years and median age at follow-up 23.7 (20.5; 25.9) years. The sPAp/sSAp at follow-up was significantly lower ($p < 0.001$) than baseline at 0.41 (0.33;0.65). The number of patients with severe PHT at late follow-up was 8/34 (23.5%) and patients with no PHT was 13/34 (38.2%). Univariant analysis revealed pre-op PVR/SVR>0.67 (OR=16.5; 95%CI 2.4 - 112.8; p=0.004) as significant predictor of severe PAH at late follow-up.
In follow up one patient died 3 months after surgery because of stroke. In one patient we developed endocarditis of the prosthesis, successfully treated with antibiotics

Conclusions: Survival into adulthood with little or no PHT can be achieved in children with undergoing late closure of VSD's with elevated PAp and PVR. Patients should not be denied operation based on elevated PAp or PVR. Decisions on operability should be individualized.

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Pulmonary Valve Implantation After Repair of Tetralogy of Fallot: Oversizing the Implanted Pulmonary Valve Does Not Affect the Outcomes

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Institution where study was performed: Fundación Cardioifantil, Instituto de Cardiologia, Bogota Colombia

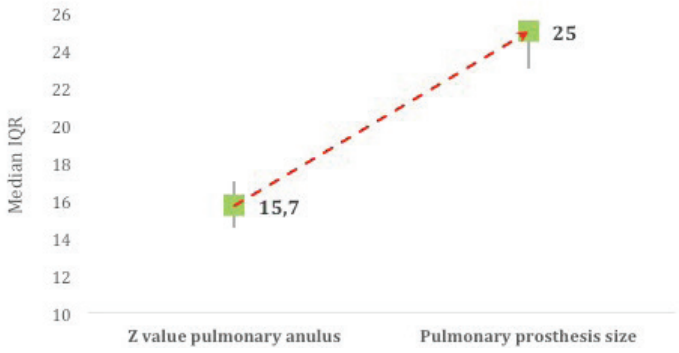
Purpose: Pulmonary valve replacement after tetralogy of Fallot repair is a frequent procedure in adolescents, and adults with congenital heart disease. We aim of the study is to describe patient characteristics, results and outcomes using a much larger prosthetics according the body surface area.

Methods: Retrospective review of patients with previous tetralogy of Fallot repair who underwent pulmonary valve replacement between January 2004 to May 2017 in a single institution. A descriptive analysis of the data was done, continuous variables are expressed as mean ± standard deviation or median with interquartile range according of the result the type of distribution, categorical variables are presented as absolute frequencies and proportions. Normalized pulmonary annulus size value was compared with the pulmonary annulus evaluation on Cardiac Magnetic Resonance (CMR) and the prosthetic valve size implanted.

Results: 47 patients were identify. From 3.4 to 49.8 year of age. (34 % older than 16 year old) Median age was 12.7 years (IQR 10.5-17.6), preoperative Left Ventricle Ejection Fraction 70% (IQR 64-74) RVEF 46,2±7. Indexed Right Ventricle End Diastolic Volume (203.3 ml/m2)(174-260), Indexed Right Ventricle End Systolic Volume 147ml/m2 (120-215). Pulmonary Regurgitation Fraction 54.6±17.3%.

Median ICU stay 3 (IQR 2-4) days, in hospital stay was 7 days (IQR 6-12). Bypass time median 87 minutes, median cross clamp time 69 minutes. Z value for pulmonary annulus median 15.7(14-23), Pulmonary annulus at the RMI was 23mm, IQR (21-26) pulmonary valve prosthesis implanted size was 25(19-29) 5.4 SD above the z score. Reoperation for bleeding was 2.1% (1/47). Low cardiac output and arrhythmias were observed in 48.9 % (23/47). In hospital mortality was 2.1% (1/47). Kaplan Mayer survival estimate was 100% at 80 months and 98% free of reintervention 90%(IC 95% 47-98).

Conclusions: Pulmonary valve replacement is a low mortality procedure. Close follow up evaluation of right ventricular dysfunction is essential after the initial operation, to avoid severe right ventricular dysfunction. Oversize pulmonary prosthesis has no impact on the outcomes and leaves a very suitable landing zone for future percutaneous reintervention.



Oversize pulmonary prosthesis over the Z-Score pulmonic valve

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Cone Operation and Other Procedures for Ebstein's Anomaly

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Purpose: Surgical treatment for Ebstein anomaly has evolved to many options and additional procedures during years. The Cone operation for tricuspid repair has become the most feasible technique for almost all type of Ebstein disease. The aim of the study is to compare outcomes using Cone operation and others techniques.

Methods: Historical cohort of patients From January 2003 to May 2017 with Ebstein anomaly who underwent surgery. Two different strategies of repair were analyzed. First group "Cone" operation, and second "Other procedures group" that includes any type no Cone plasty and tricuspid valve replacement.

A descriptive analysis of the data was done, continuous variables are expressed as mean ± standard deviation or median with interquartile range according of the result the type of distribution, categorical variables are presented as absolute frequencies and proportions.

Results: 54 patients from one year to 61year old were identified, (13 Cone procedure, 41 other surgical procedures). Median age was 12.5 (7.5-17.2) years for Cone, 14.1(10-16.9) for other group.

Pre-operative variables such Arrhythmia, NYHA functional class IV, Syncope, desaturation and other signs and symptoms are showed in Table 1.

Carpentier´s classification in Cone and other group was 15.4% B, 46% C, 7.7% D vs. 19.5% B, 43.9% C, 9.8%D respectively. Additional procedures in both groups included Bidirectional Glenn, ventricular and atrial septal defect closure, arrhythmia ablation.

Post-operative variables such reoperation, renal failure, arrhythmia, Cardiogenic shock, ICU and hospital stay, were similar. Only the presence of cardiogenic shock was more common on the Cone group. Global Mortality was 6(11.1%), and in Cone and other group was 1(7.9%) and 5 (12.2%) respectively (Table 2)

Kaplan Mayer Survival favors the Cone operation. Two Cone patients required reintervention to fix the plasty.

Conclusions: Cone operation is a surgical techniques that can be applied even in more advanced Ebstein disease patients but no differences were found between these two groups. We recommend be Cautions with the use of Cone operation in severe disease since this can ended in early reintervention.

Table 1. Preoperative Variables

Variable No. (%)	Cone	Other procedures	Total	
	N= 13	N= 41	N= 54	valor p
Pre O Arrhythmia	2 (15.4)	7 (17.1)	9(16.7)	0.69
NYHA F Class IV	1 (7.6)	11 (26.8)	12 (24,4)	0.43
Syncope	1 (7.6)	3 (7.31)	4 (7.4)	0.57
Saturation % Median (IQR)	87 (78-95)	90 (78-95)	88 (78-95)	0.91
Other signs and symptoms	2 (15.4)	17 (41.4)	19 (35.2)	0.43

Table 2. Post-operative Events

Variable	Cone	Other procedures	Total	
	N= 13	N= 41	N= 54	Valor P
Reoperations No. (%)	0	5 (12.2)	5 (5.5)	0.24
Renal Failure No. (%)	1 (7.9)	2 (4.8)	3 (5.5)	0.43
Arrhythmia No. (%)	4 (30.8)	8 (19.51)	12 (22.2)	0.32
Cardiogenic shock No. (%)	3 (23.1)	4 (9.7)	7 (13)	0.03
ICU stay in days Median (IQR)	4 (2-8)	4 (2-6)	4 (2-6)	0.76
Hospital stay Median (RIC)	4 (2-5)	2 (1-4)	3 (2-5)	0.28
Mortality No. %	1 (7.9)	5 (12.2)	6 (11.1)	0.551

AORTA and AORTIC ARCH

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Long-Term Results After TEVAR: The Efficacy of Postoperative Follow-up in a Developing Country

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Institution where study was performed: Fundación Cardioifantil, Instituto de Cardiologia, Bogota Colombia
†Disclosures not available

Purpose: Endovascular treatment for descending aortic pathology is the first option for most patients with suitable anatomy. Current results are acceptable, however late failures due to endoleaks still a major concern. The aim of this study is to establish the efficacy of late follow-up in a Developing Country.

Methods: Historical cohort of patients undergoing endovascular treatment for thoracic aortic disease from April 2002 to December 2015, all data on demographics and other characteristic was recollected from an institutional database and clinical records. Follow-up was done by telephone and government web bases. A descriptive analysis of the data were done, continuous variables are expressed as mean ± standard deviation or median with interquartile range according of the result the type of distribution, categorical variables are presented as absolute frequencies and proportions.

The Survival and freedom of reintervention Time were determined after surgery, based on Kaplan-Meier method.

Results: In 12 years of experience 87 patient were included in the analysis, median age was 69 years IQR 60-90, 72.4% were female. Follow up was complete in 81.6% (71/87) those patients were included in the freedom of reoperation analysis, 9 (11,4%) reoperation events were identified. At 1, 5 and 14 years freedom reoperation was 95.7 %, 88,1%, 78% respectively. In hospital follow up more than a month after procedure was identified in 70 patients, median 3,8 months IQR 1-9.

For survival analysis, the follow up was complete in 83 patients 95.4% by web bases, global mortality was 39,7% (33/83). Survival at 1 year was 88,9% (CI 95% 79,7 to 94), at 3, 5 and 9 years was 81,3%, 69,8% and 53% respectively. We could identify the relation between aortic disease and the cause of death in only 9.4% (3/32) of all mortality cases.

Conclusions: In hospital and short term results are acceptable after TEVAR. We observe that real and high quality clinical follow-up is deficient in our population. It is necessary to improve strategies that guarantee continuity of care after the procedure in order to evaluate the efficacy of this therapy.

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Incidence and Surgical Outcomes in Stanford Type A Acute Aortic Dissection in Memphis, Tennessee

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Institution where study was performed: Methodist University Hospital

Purpose: Review surgical outcomes in a hospital system in a city known for it's socio-economic disparities/ wide-spread poverty. The main hospital is the entry point for patients with emergent conditions; untreated risk factors, co-morbid conditions, limited access to primary care. We investigated whether this impacted patient mortality by comparing findings to the International Registry of Aortic Dissections.

Methods: With IRB approval, retrospective data was reviewed for all system-wide surgical repairs of Stanford type A Aortic Dissections. Demographic data such as race, zip code, age and gender were also collected while following HIPPA guidelines. In the automated system, patient's current health status, is available, assisting researchers to determine patient's long-term survival. When possible, this was correlated with other sources such as subsequent ER visits, clinic notes to confirm whether patients were still living at the time of this study. Data was compared with IRAD as well as among the other hospitals within the healthcare system.

Results: 40 cases from Jan 2015- May 2017 were reviewed, to compare data on intra-operative deaths, 30-day mortality, length of stay, indicators of access to primary care such as insurance status, established primary care physician, and the presence of modifiable risk factors with published data from IRAD. Preliminary results only; More specific statistics are being compiled at the time of abstract submission.

Conclusions: 30-day mortality data was similar to IRAD. African-American patients were younger, more likely to have a history of cigarette/ marijuana smoking and substance abuse. Hypertension was universal among patients of all ages. Lack of primary care or health insurance was significant. Inconsistent documentation among surgeons limited data collection.

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Does Simultaneous Lower Body Perfusion During Aortic Arch Repair with Circulatory Arrest Improve Patient Outcomes?

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Institution where study was performed: Division of Cardiac Surgery, Western University, London, Ontario, Canada

COMMERCIAL RELATIONSHIPS: M. Chu: Speaker Bureau/Honoraria, LivaNova, Medtronic Canada, Symetis; B. Kiaii: Speaker Bureau/Honoraria, Medtronic, Symetis; Consultant/Advisory Board, Johnson & Johnson

†Disclosure not available

Purpose: Although antegrade cerebral perfusion enables arch repair with circulatory arrest at moderate temperatures, we still reply on hypothermia alone for visceral and lower body protection. We investigate whether simultaneous lower body perfusion and ACP (whole body perfusion - WBP) may ameliorate the metabolic derangements of moderate hypothermic circulatory arrest (MHCA).

Methods: Between 2008 and 2016, 149 consecutive patients underwent elective or emergent aortic arch surgery with MHCA utilizing either ACP only (48 patients, 64.8±14 years, 29% female) or WBP (101 patients, 63.9±14 years, 34% female). Primary outcomes included 30-day/in-hospital mortality, intensive care unit and hospital lengths of stay and specific parameters of metabolic recovery.

Results: There were no significant differences between groups in 30-day/in-hospital mortality (ACP: 3 (6%), WBP: 3 (3%); p=0.39), stroke (ACP: 1 (2.1%), WBP: 4 (4%); p = 1.0), or renal failure (ACP: 2 (4.2%), WBP: 1 (1%); p=0.25). In the WBP group, we identified a significant reduction in lactate level at ICU admission (ACP 5.5 vs. WBP 3.5 mmol/L; p=0.002), time to lactate normalization (p=0.014), and median ICU length-of-stay (ACP 2.5 vs. WBP 1 days; p=0.006).
There was no difference in postoperative creatinine (ACP: 104, WBP: 107 mol/L; p=0.66). After multivariable regression adjustment, perfusion strategy no longer remained an independent predictor of ICU discharge time (p=0.061), however cardiopulmonary bypass time (p=0.01), age (p=0.02), COPD (p=0.03), and emergent surgery (p=0.005) were.

Conclusions: A WBP strategy during aortic arch reconstruction with MHCA may be associated with more rapid normalization of metabolic parameters and reduced ICU length of stay compared to using ACP alone. Further evaluation with a randomized trial is warranted.

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Influence of Medical Treatment on Late Morbidity and Mortality in Patients Undergoing Repair of Ascending Aortic Aneurysms Secondary to Aortitis

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Institution where study was performed: Mayo Clinic

Purpose: Patients with active aortitis who undergo repair of ascending aortic aneurysms have an increased risk of late aortic reoperation and decreased late survival compared to patients without aortitis. We aimed to determine the reasons for poor late outcome in these patients and understand the influence of medical management.

Methods: We reviewed the medical records of 186 patients (median age 73.9 years, female n=120 [65%]) with histologically proven aortitis following repair of ascending aortic aneurysm between January 1, 1955-December 31, 2012. We collected data focusing on long-term outcomes including occurrence of other aortic aneurysms, peripheral vascular disease (PVD), anti-inflammatory drugs, vascular operations, thoracic aortic reoperations, and mortality. Landmark analysis was used to compare outcomes in patients with isolated aortitis versus those with systemic sequelae of aortitis (occurrence of PVD in conjunction with other aortic aneurysm, or persistently elevated inflammatory markers). We evaluated steroid use and its effect on outcomes.

Results: Overall mortality at 15 years was 88.3%, and overall reoperation rate at 10 years was 28.2%. Mortality was increased by older age at surgery (HR 1.62, CI 1.25-2.11; p<0.001), coronary artery disease (CAD) (HR 1.94 CI 1.25-3.01; p=0.003), PVD (HR 1.79 CI 1.09-2.94;
p=0.022) and preoperative suspicion of aortitis (HR 4.90 CI
1.96-12.26; p<0.001). In univariate analysis, factors associated with increased rate of reoperation were CAD (HR 2.69, CI 1.17- 6.17; p=0.019) and PVD (HR 3.92, CI 1.71- 8.94; p=0.001). Systemic illness secondary to aortitis developed in 18.7% (28/150) of patients and was associated with an unadjusted HR of reoperation of 3.59 (CI 1.40- 9.18; p=0.008); this association remained significant (HR 3.48, CI 1.14-10.62; p=0.028) even after adjustment for CAD and PVD. Among patients who completed 3 month follow-up, 37.3% (57/153) had been treated with corticosteroids postoperatively, but steroid use was not associated with subsequent mortality or need for reoperation.

Conclusions: The development of systemic illness secondary to aortitis was associated with increased risk of late aortic reoperations. However, corticosteroid treatment of noninfectious aortitis in patients who underwent repair of ascending aortic aneurysms did not clearly influence survival or need for aortic reoperations.

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Transfusion of Warm Fresh Whole Blood for Aortic Surgery

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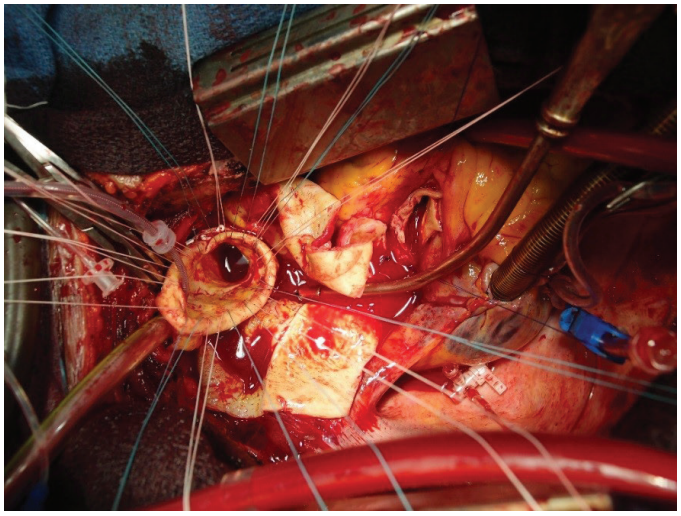
Institution where study was performed: University Hospital N. Hammodi

Purpose: Warm fresh whole blood (wfWB), which addresses simultaneously all the elements of blood failure, has recently gained a revival of interest for remote damage control resuscitation of war casualties or for hemorrhagic shock post trauma. We aimed at assessing the safety and efficacy of wfWB in the surgery of aorta.

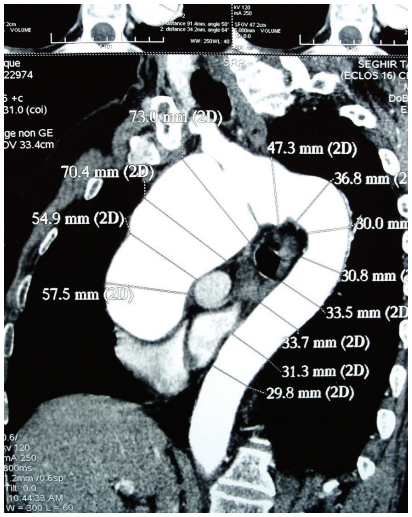
Methods: We included in this observational study all patients operated on by us for aortic surgery and who received wfWB transfusion. During pre-anesthesia consultation the patient designed two or three relative ABO compatible donors for whom a negative serology for blood transmissible infectious diseases was double checked. During surgery one bag of whole blood was collected from those donors and was transfused within 6 hours to the patient at the end of CPB after heparin reversal. Additive hemostatic medications included tranexamic acid but no surgical glue. Study end points were 24 hours blood loss and combined operative mortality/severe complications.

Results: Eighteen patients were operated on between January 2012 and January 2016 and were included in the present series. Surgery of the aorta was conducted under normothermia: simple aneurysm of the ascending aorta (5), aortic root replacement with mechanical composite grafts (7) or under moderate hypothermia: type A acute aortic dissection (4) and arch aneurysm (2). Patients received an average of 1.3 bags of wfWB (1-4). Mean blood loss measured at 24 hours postoperatively was 183 cc (120-550). Mean platelets account at 24 hours postoperatively was 220 000/mm3. No patients had to be reoperated on for bleeding or secondary tamponnade. Neither postoperative mortality nor adverse events were reported to donors or recipients who were discharged from intensive care to the ward after a mean stay of 30 postoperative hours and from the ward directly to home after a mean hospitalisation stay of 8 postoperative days.

Conclusions: We report the first application of wfWB in aortic surgery. Found effective in military medicine and post-trauma hemorrhage resuscitation, wfWB also has the potential to treat surgery induced blood dyscrasia and might expand the feasibility of aortic surgery in countries where the chain of blood supply is under stress.



Distal anastomosis construction



Preoperative imaging

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Ascending Aorta Replacement vs. Total Aortic Arch Replacement for Acute Type A Dissection: A Systematic Review and Meta-analysis of Clinical Outcomes

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Institution where study was performed: First Faculty of Medicine, Charles University in Prague, Czech Republic

†Disclosure not available

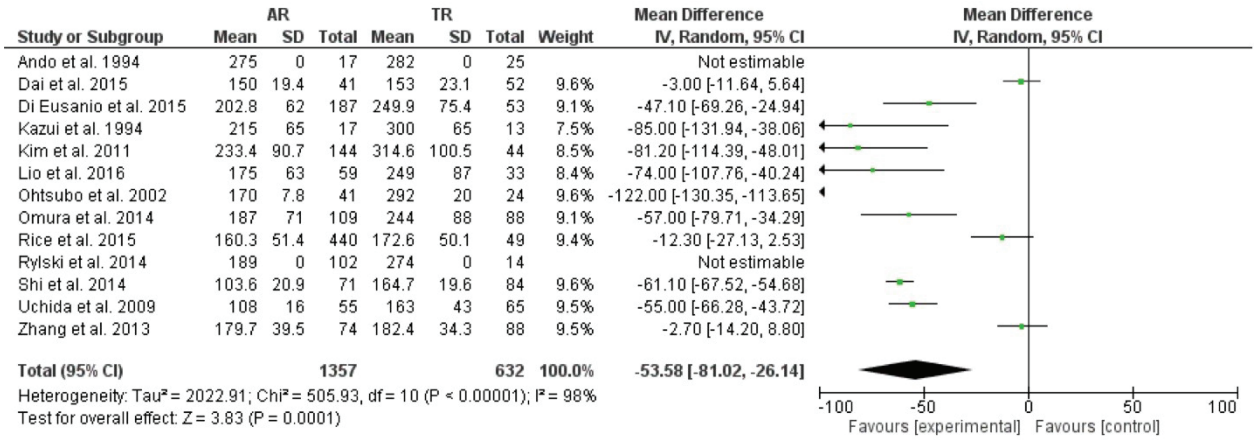
Purpose: Acute type A aortic dissection (ATAAD) is uncommon but life threatening. Although diagnostic and surgical techniques and postoperative care have improved, hospital mortality remains between 15% and 35%. Analyzing and establishing differences in prognostic factors between ascending aorta replacement (AR) and total aortic arch replacement (TR) for ATAAD are important.

Methods: PRISMA guidelines were followed. The PubMed, Embase, ScienceDirect, Web of Science, SciELO, BIOSIS, and CNKI databases were searched for relevant articles comparing the effects of AR and TR on in-hospital mortality, operative times, postoperative complications, re-operation rate, and long-term mortality using predefined search criteria. Risk Ratios (RRs) were estimated for dichotomous variables based on the relative frequencies from the selected studies. Forest plots were used to visually assess RRs. For continuous data, the mean differences were used as effect measures. Heterogeneity was evaluated by the Cochrane Q statistic and the I2 statistic. Analyses were performed using RevMan v5.3.

Results: Seventeen articles involving 3,071 cases of type A acute aortic dissection (AR = 2,230, TR = 841) were available for meta-analysis. Data on long-term mortality was extracted for a total of 1,367 patients (1,001 undergoing medical treatment, 366 surgical intervention; n=8 studies). There was trend to worse long-term mortality in medically treated patients than surgically treated patients (OR=0.85, 95% CI: 0.73-0.98; p=0.20). Heterogeneity was low in the included studies (I2=29%). The duration of cardiopulmonary bypass (mean difference -53.58; 95% CI -81.02, -26.14; p<0.00001) was significantly shorter in the AR patient cohort than the TR patient cohort (Figure 1)

Conclusions: AR was associated with lower in-hospital mortality and shorter CPB, circulatory arrest time, and antegrade cerebral perfusion time than TR. Clinical decision-making should weigh the risk of revision surgery and long-term mortality to decide on the most suitable surgical procedure for individual patients.

Table 2. Post-operative Events



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Simultaneous Cerebral and Mesenteric Perfusion in Aortic Arch Surgery: Description of a Technique and Its Results

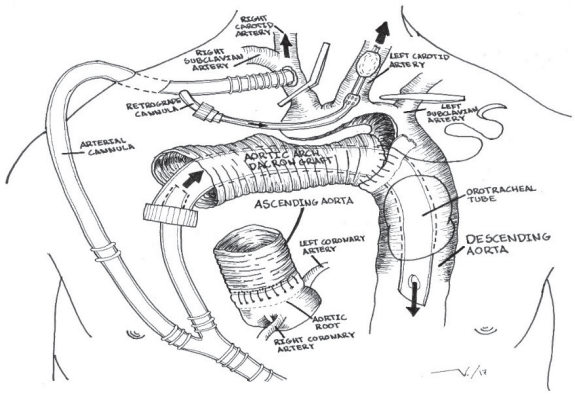
***J.S. Jaramillo**, M. Marin Cuartas, D. Otalvaro, I. Giraldo, Z. Ortega, L. Saldaña, A. Quintero, J.J. Escobar, J.C. Rendon*
Institution where study was performed: Clínica Cardio VID, Medellín, Colombia

Purpose: In this study, we compare two different perfusion strategies: selective cerebral perfusion (control group) versus simultaneous cerebral plus mesenteric perfusion (intervention group). Primary outcome is the 30-day postoperative mortality. Exploratory outcomes are incidence of acute kidney injury, orotracheal intubation time, metabolic behavior, intensive care unit and hospital length of stay.

Methods: A total of 38 patients undergoing aortic arch surgery between January 2013 and March 2017 at our hospital were included in the study (Intervention group n= 26 patients and control group n=12 patients). Primary and exploratory outcomes were compared between both groups. Additionally, an intra-group analysis within the intervention group was performed according to the duration of the mesenteric perfusion. Group assignment was decided in a case-based not standardized fashion.

Results: The 30-day postoperative mortality was similar for both groups. The pH values in the intervention group are more physiologic (7.4 ± 0.1 vs 7.3 ± 0.1, 95% CI -0.17 to -0.03 and P= 0.01). Exploratory comparisons within the intervention group showed less incidence of acute kidney injury (P= 0.05) and shorter orotracheal intubation times (P= 0.025) in patients undergoing complex surgery with mesenteric perfusion times longer than 30 minutes.

Conclusions: Simultaneous cerebral and mesenteric perfusion is a simple and inexpensive perfusion technique, which could be used in a safe manner in order to improve outcomes in patients undergoing very complex aortic arch surgery with long perfusion and surgery times.



Surgical and cannulation scheme

Groupal comparative results				
	Intervention group	Control group	95% CI (OR)	P value
After CPB	7.4 ± 0.1	7.3 ± 0.1	-0.17 to -0.03	0.01
ICU admission	7.4 ± 0.1	7.3 ± 0.1	-0.17 to -0.03	0.01
Simultaneous cerebral and mesenteric perfusion intra-group comparison				
Mesenteric perfusion time	<30 min (n=20)	31 - 59 min (n=4)	>60min(n=2)	P value
AKI – n (%)	0/20 (0)	1/4 (25)	0/2 (0)	0.05
Mean intubation time – hours	30.11 ± 50.84	161 ± 187.39	26 ± 11.31	0.025
SCP Selective cerebral perfusion; AKI Acute kidney injury; CPB Cardiopulmonary bypass; ICU Intensive care unit *n=25 due to one intraoperative death Plus–minus values are means ±SD (Standard deviation)				

Table: Groupal comparative results and simultaneous cerebral and mesenteric perfusion intra-group comparison

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Outcomes of Aortic Surgery after Previous Sternotomy

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Institution where study was performed: University of Pennsylvania, Philadelphia

†Disclosure not available

Purpose: Reoperative cardiac surgery carries increased risk due to advanced patient age, comorbidities, and the nature of the previous procedure. Limited data currently exists on the outcomes of aortic repair after previous cardiac surgery. This study aims to assess the outcomes of reoperative aortic surgery after previous sternotomy.

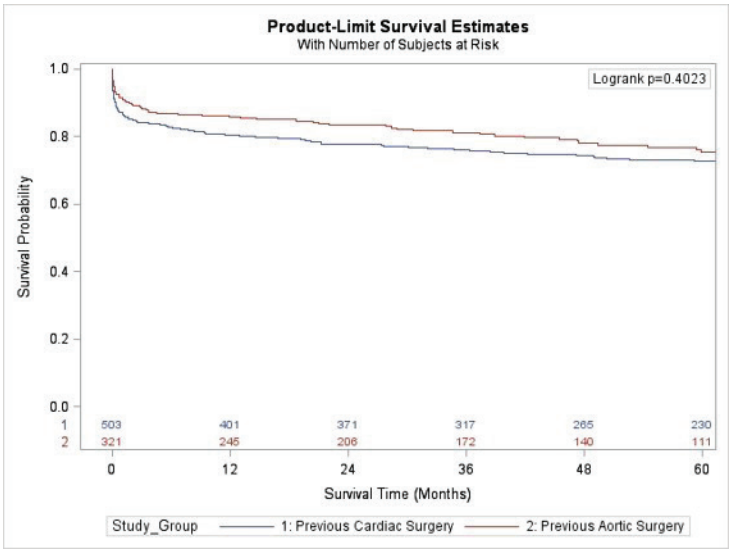
Methods: Patients with a previous sternotomy who underwent an aortic procedure at a single center from January 1, 2002-June 30, 2016. Study groups were divided based on previous surgery type (previous aortic surgery with graft vs. previous cardiac surgery). All procedures with a redo sternotomy code (ICD9) collected via query of institutional STS database (n=7038). Patients who underwent aortic surgery (graft replacement of the aortic root, ascending, arch, or descending aorta) identified by ICD9 coding (n=837). Univariate Chi square analyses were used to compare pre-operative comorbidities and post-operative outcomes. Univariate Kaplan-Meier survival estimates were used for overall survival analysis.

Results: The mean age in years of patients who underwent Previous Cardiac Surgery (PCS, n=504) vs. Previous Aortic Surgery (PAS, n=333) was 60.0 ± 14.5 vs. 56.3 ± 15.0, respectively (p<0.001). At baseline, PAS patients were more likely to be male (p=0.03) and have chronic lung disease (p=0.03), peripheral artery disease (p<0.001), hypertension (p=0.002), and cerebrovascular disease (p=0.03), whereas PCS patients were more likely to have diabetes (p<0.001) and endocarditis (p=0.04). Post-operatively, PAS patients had significantly longer ICU stay (p=0.001) and total length of stay (p=0.01) compared to PCS patients (Table 1). PAS patients were also more likely to have a CVA (p=0.03) or prolonged ventilator time (p=0.02), however PCS patients had a higher discharge mortality than PAS patients (p=0.02) (Table 1). Long term survival at 5 years was similar between the two groups and was not significant (Figure 1).

Table 1: Outcomes, Previous Cardiac Surgery vs. Previous Aortic Surgery

	Previous Cardiac Surgery (n=504)	Previous Aortic Surgery (n=333)	p value
Prolonged Ventilator time	30.56% (154)	35.4% (118)	**0.02**
Total ICU time (hours)	126.3 ± 198.0	191.7 ± 309.8	**0.001**
CVA	4.1% (14)	7.7% (17)	**0.03**
Renal Failure	19.0% (64)	18.5% (42)	0.09
Length of Stay (days)	12.6 ± 11.5	15 ± 13.7	**0.009**
Mortality at discharge	13.9% (70)	10.2% (34)	**0.02**

Figure 1: KM 5-year Mortality, Previous Cardiac Surgery vs. Previous Aortic Surgery



Conclusions: Aortic surgery after previous sternotomy carries acceptable post-operative outcomes. PAS patients had a longer ICU and hospital stay and were more likely to have a CVA or prolonged ventilation time than PCS patients. PCS patients had higher discharge mortality than PAS patients, however no significant difference existed in 5-year mortality.

AORTIC ROOT

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An 18-year Experience of the Valve-sparing Aortic Root Replacement with the Reimplantation Technique

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Institution where study was performed: Hospital Universitario Fundación Favaloro, Buenos Aires, Argentina

Purpose: To review the intermediate results of aortic valve-sparing operation with aortic valve reimplantation technique in patients with aortic root aneurysm with or without aortic regurgitation (AR). This technique addresses the solution of aortic root and valve disease combining a valve-sparing procedure and a straight polyethylene terephthalate vascular graft.

Methods: Between July 1998 and February 2017, 90 consecutive patients underwent aortic valve reimplantation procedure: mean age 42.2±15.4 (range 14-71) years, 75.6% men, and 50 patients had isolated procedures. Patients were followed prospectively with periodic clinical evaluations and echocardiograms. Follow-up was done by phone, email or medical visits. Median follow-up time was 6.8±4.6 years, and 90% complete. Major end points were all-cause mortality, development of more than mild (+1/4) AR, and reoperation. Statistical analysis was performed using the Kaplan-Meier method. Univariate and multivariate logistic regression analysis were used to identify associations between risk factors and major events.

Results: Baseline characteristics of the population are described in table 1. Forty patients (44.4%) had a combined procedure, which included 25 aortic arch replacements, 11 coronary artery bypass and 8 mitral valve surgeries, among others. The mean aortic cross-clamp time was 167.9±32.6 minutes and the mean extracorporeal circulation time was 201.9±44.9 minutes. Twenty-eight patients required deep hypothermic circulatory arrest (25.9±8.5 minutes). In-hospital mortality was 2.2% (n=2) and late mortality was 5.6% (n=5). Survival at 10 years was 88.0%±4.5% (75.6%-94.3%). Only age ?60 years was an independent predictor of in-hospital mortality in the multivariate logistic regression. At 10 years, freedom from reoperation on the aortic valve was 88.0%±4.5% (75.7%-94.3%), and freedom from AR >+1/4 was 77.2%±6.6% (61.0%-87.3%). Age ?60 years, history of Marfan syndrome, type A dissection, AR grade before surgery, and cusp plication were not associated with increased risk of developing AR >+1/4 neither reoperation.

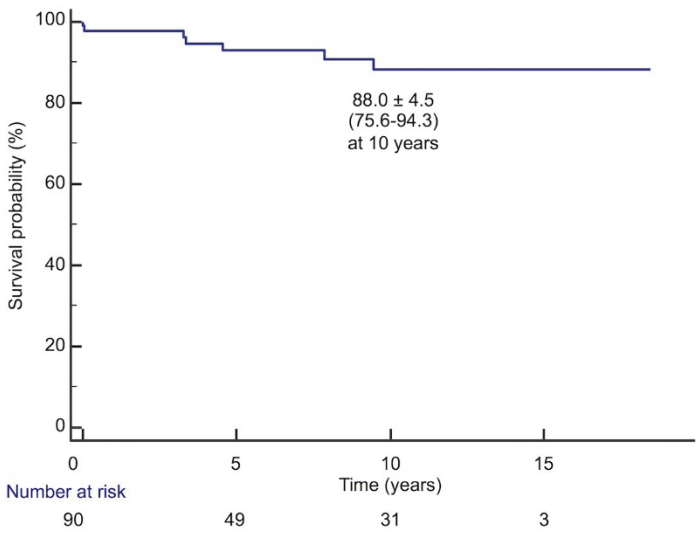
Conclusions: Aortic valve-sparing operation with the aortic valve reimplantation technique was associated with excellent medium-term clinical outcome and low valve-related event rate. Therefore, this procedure constitutes a valid surgical option for selected patients with aortic root disease. However, longer follow-up into the second decade of this technique is needed.

Table 1. Patient characteristics

	n [%]
n	90
Age [mean ± SD, years, range]	42.2 ± 15.4 [14-71]
Male	68 [75.6]
Associated conditions	
Hypertension	32 [35.6]
Diabetes mellitus	2 [2.2]
Hyperlipidemia	15 [16.7]
Marfan Syndrome	33 [36.7]
Bicuspid aortic valve	10 [11.1]
Type A aortic dissection	
Acute	6 [6.7]
Chronic	6 [6.7]
Associated heart disease	
CAD	7 [7.8]
MR	8 [8.9]
ASD	5 [5.6]
Previous cardiac operation	7 [7.8]
Timing of surgery	
Urgent/emergent	2 [2.2] / 4 [4.4]
LVEF	
≥50	83 [92.2]
40-49%	2 [2.2]
30-39%	4 [4.4]
<30%	1 [1.1]
NYHA	
Class I	68 [75.6]
Class II	15 [16.7]
Class III	4 [4.4]
Class IV	3 [3.3]
Size of aortic root [mean ± SD, mm]	51.5 ± 9.4
Aortic regurgitation	
None	14 [15.6]
Mild [+1/4]	31 [34.4]
Moderate [+2/4]	14 [15.6]
Moderate to severe [+3/4]	9 [10.0]
Severe [+4/4]	22 [24.4]
Indication for surgery	
Diameters	71 [78.9]
Dissection	6 [6.7]
Symptoms	8 [8.9]
LV dysfunction	5 [5.6]

ASD: atrial septal defect, CAD: coronary artery disease, LV: left ventricle, LVEF: left ventricular ejection fraction, MR: mitral regurgitation, NYHA: New York Heart Association, SD: standard deviation.

Figure 1. Survival



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Treatment of Poststenotic Aneursyms of the Ascending Aorta by Wrapping Tape Operation

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Institution where study was performed: National Amosov's Institute of Cardiovascular Surgery, Kyiv, Ukraine

†Disclosure not available

Purpose: To research possibilities of surgical treatment of poststenotic aneurysms of ascending aorta (PAAA) by different methods.

Methods: During 2000-2016 yy 581 patients (pts) with aortic stenoses (AS) and PAAA were consecutively operated in Institute. The average age of pts was 61,5±7,4 (18 -71) yy. At all group 25 (4,3 %) pts were in II NYHA class, 274 (47,2%) pts were in III NYHA class and 282 (48,5%) pts in IV. Marfan`s syndrome and cystomedionecrosis were exclusions for performing in all groups. The following operations were performed: aortic valve replacement (AVR) + wrapping tape operation (WTO) of AA - 226 (38,9%) pts (group A), AVR + Robischek`s operation - 237 (40,8%) pts (group B), Benthal's (n= 94) and Wheat's (n= 9) operations - 118 (20,3%) pts (group C). In all cases in group A after AVR nylon tape (diameter 1 cm) was wrapped on AA from the basement of noncoronary cusp by 7-9 tours and fixated between them in proximal and distal part of AA. Additional procedures were also performed in group A: resection of AA in incision`s area (n=117). All operations were performed with CPB, moderate hypothermia (28 - 32 C), combined retro-antegrade crystalloid cardioplegia (mainly Custadiol). There weren`t any specific complications in all groups.

Results: Hospital mortality were 0,8% in group A, 1,6% in group B and 3,1% in group C ($p < 0.05$). Cross-clamping time (min) were: (group A) - 79,1±10,9, (group B) - 101,5±13,6 and (group C) - 145,8±19,5 ($p < 0.05$). Absence of using donor product during all hospital period was 38,2% (group A), 7,2% (group B) and 1,7% (group C) ($p<0.05$). Staying in ICU was 49,3 ± 6,2 hours (group A), 54,2 ± 7,5 hours (group B) and 77,4 ± 9,2 hours (group C) ($p < 0.05$).
During remote period (average 9,5±1,2 yy) we followed-up 531 pts. Actuarial survival at 9 years after operation was occured in group A - 91,2% (n=224), in group B - 88,3% (n=206), and group C - 79,7% (n= 101) ($p<0.05$). Echo examination of diameter of AA for group A (cm): preoperative (PRE) 4,7±0,5, postoperative (POST) (6-7 days) 3,8±0,3, remote period (RP) 4,0±0,4; for group B: preoperative 5,0±0,5, postoperative - 4,0±0,4, remote period 4,1±0,3 and for group C: preoperative 5,9±0,7, postoperative - 3,4±0,3, remote period 3,5±0,3. Reoperations at AA (AA`s graft replacement) were absents in all groups.

Conclusions: On the basis of our experience we proposed the expedient method of wrapping tape operation for moderate forms of AAA (diameter of AA till 5,5 cm) during AVR. Reconstruction of AA for PAAA by WTO is safe, chiper and prevent aneuvrym formation at AA at the remote period.

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A Systematic Review and Meta-analysis of Clinical Outcomes with Surgical and Medical Management of Type B Acute Aortic Dissection

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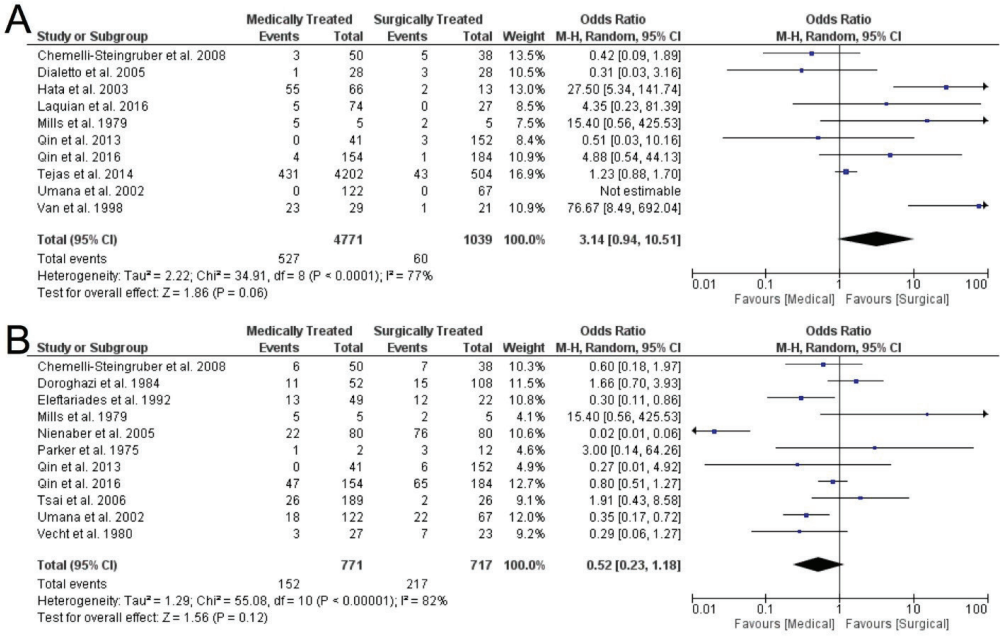
Institution where study was performed: First Faculty of Medicine, Charles University in Prague, Czech Republic

Purpose: Type B aortic dissections (TBAD) occur when there is an intimal tear beyond the left subclavian artery. Medical management is usually sufficient, but thoracic endovascular aortic repair (TEVAR) seems to benefit patients with complications and improve long-term survival. We performed a meta-analysis of surgical vs. medical outcomes in TBAD patients.

Methods: PRISMA guidelines were followed. The PubMed, Embase, ScienceDirect, Web of Science, SciELO, BIOSIS, and CNKI databases were searched for relevant articles comparing the medical and surgical management of TBAD using predefined search criteria. Two independent reviewers extracted data from eligible studies in a pre-defined data extraction grid and disagreements were resolved by discussion. Demographics were analyzed by descriptive statistics. The Cochran Q and I2 statistics were deployed to assess heterogeneity. Homogeneous data were meta-analyzed via a weighted DerSimonian-Laird random-effects model (RevMan v5 software). Forest plots were generated to assess clinical outcomes and funnel plots to assess publication bias

Results: Seventeen articles involving 6,995 cases of TBAD (medical = 5,556, surgical = 1,435) were available for meta-analysis. Information on length of stay (LOS) was available for 5,338 patients (medical = 4,471, surgical = 867). The 30-day mortality in medical patients was significantly higher than that for surgical patients (OR=3.14, 95% CI: 0.94-10.51; p<0.0001; Figure 1A). Heterogeneity was significant (I2=77%). Furthermore, medical patients had a higher one-year mortality than surgical patients (OR=0.52, 95% CI: 0.23-1.18; p<0.00001; Figure 1B). There was considerable heterogeneity (I2=82%).

Conclusions: Short- and longer-term outcomes are favorable for surgically treated TBAD patients compared to those undergoing medical treatment. However, long-term survival was similar (5-, 10-, 15-year mortality).



Figures A and B

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Nicks Procedure in a Reoperated Patient

***D.B. Ortega Zhindón**, I. Salazar Hernández, D. Yépez, O. Flores Calderón, W.L. Dajer-Fadel, S.R. Castañeda*

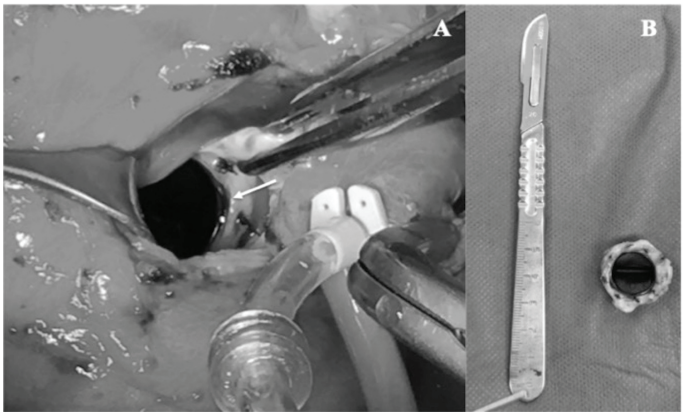
Institution where study was performed: Hospital General de México "Dr. Eduardo Liceaga", Mexico City, Mexico

Purpose: Aortic valve replacement surgery with ring extension for the implantation of a major prosthesis is an alternative for patients with small native aortic annulus. The implanted valve will define a post-operative transvalvular gradient, the persistence, progression or regression of ventricular dysfunction and possibly mortality.

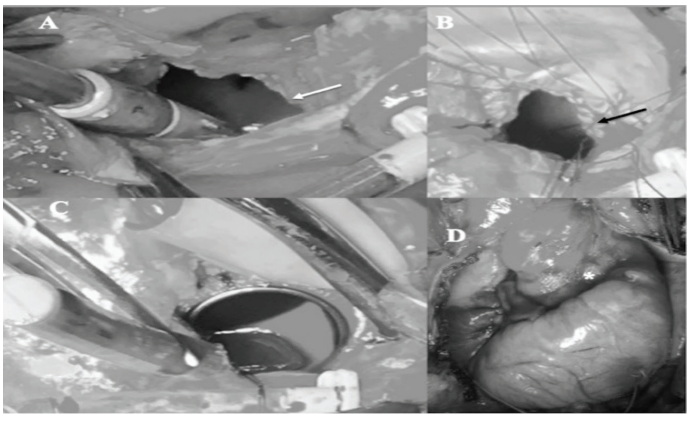
Methods: A 20-year-old patient, history of mechanical aortic valve replacement 19 mm, 8 years ago; has presented asthenia, adynamia, palpitation, dyspnea and subjective vertigo; in the physical examination mesosystolic murmur of intensity of 3/6 with irradiation to suprasternal void, high timbre and regurgitant tone for which it is protocols by the Department of Cardiology. Echocardiogram in the mechanical prosthesis in the aortic position, with limited obstruction excursion, small aortic annulus of 16 mm; maximum gradient: 86 mmHg, mean: 52 mmHg, functional area 0.6 cm2, LVEF: 67%. PSAP: 52 mmHg.

Results: We approached by conventional mean sternotomy, performed aortic and bicaval cannulation with cardiopulmonary bypass and aortic clamping. After anterograde cardioplegia, the aortotomy was performed, the anterior valvular prosthesis was removed and anterior enlargement of the aortic annulus with the porcine pericardial patch was performed and a new mechanical valve of 21 mm was placed, in addition to a septal myectomy of approximately 1 cm x 1 cm x 2 cm, closure of the transpulmonary ductus arteriosus and plastic of the tricuspid valve. The patient was intubated to the coronary intensive care unit where he remained with medical treatment.

Conclusions: The technique of enlarging the aortic annulus for implantation of a larger prosthesis, ensures a significant change in the gradients, area and ventricular mass when mechanical valves are implanted, with an improvement in survival in those patients in whom aortic prostheses of greater size comparison to smaller aortic prostheses



Transoperative image (A) with a 30 cm approach, where dysfunctional valvular prosthesis is seen (arrow), (B) dysfunctional valvular prosthesis.



Transoperative image (A) Enlargement of aortic root (White arrow), (B) Placement of bovine pericardium patch (Black arrow), (C) Implantation of valvular prosthesis and (D) aortic root closure (Asterisk).

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Aortic Dilatation in Patients with Conotruncal Anomalies: Options of Treatment — Case Reports

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Institution where study was performed: Fundación Cardioifantil, Instituto de Cardiologia, Bogota Colombia

Purpose: Conotruncal anomalies can be associated with progressive aortic dilatation before and after surgical repair. Mechanisms as hemodynamic and wall abnormalities theories have been suggested. The purpose is to describe a series of cases that required different types of aortic surgery besides the procedure related with the basic pathology

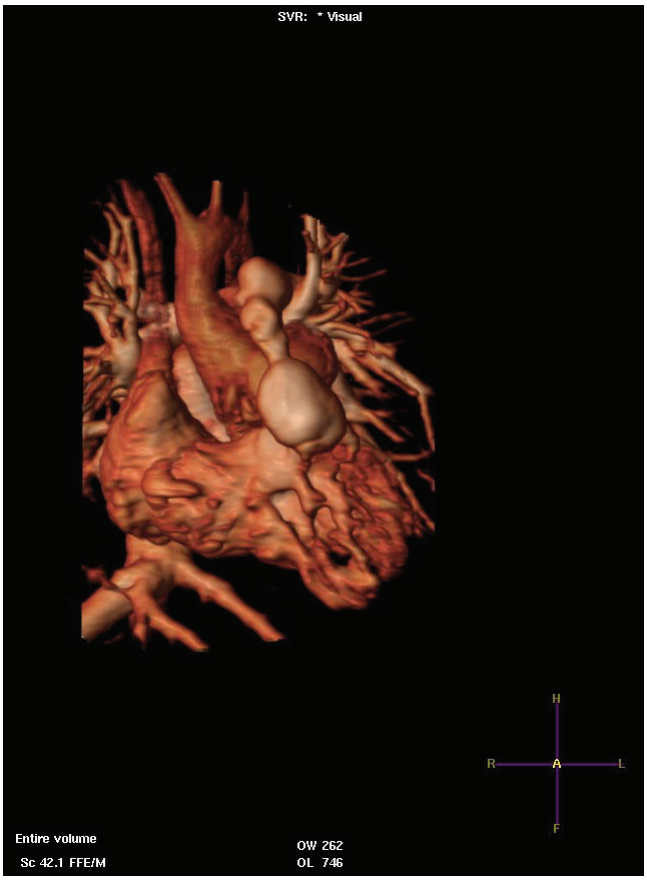
Methods: From January to April 2017 three patients were surgically intervened with Conotruncal anomalies that developed progressive aortic dilatation and aortic valve dysfunction. We describe the diagnostic method, different type of surgical procedure on the aorta and aortic valve and additional procedure related to their main pathology and complications after repair that were related with de ascending aorta dilatation.

Results: Patient 1: 4 year old boy with previous arterial switch operation for TGA developed severe aortic dilatation, left pulmonary artery compression and sub aortic membrane obstruction. Wedge resection of non-coronary sinus, sub aortic membrane resection and left pulmonary artery reconstruction was performed.

Patient 2: 13-year-old boy with Truncus arteriosous type I, desconexion of left pulmonary artery, pulmonary hypertension, severe aortic dilatation, and severe aortic valve insufficiency. Truncus repair was fixed with external conduit and aortic root wedge resection and resuspension of aortic valve leaflets was successfully performed.

Patient 3: 17 year old boy with previous Truncus arteriosus type II repair and late conduit replacement was admitted with severe conduit restenosis, severe asymmetric aortic root dilatation and severe aortic stenosis and insufficiency. Composite Dacron graft and mechanical valve was used for the pulmonary position and Composite Dacron graft, single coronary ostium reimplantation and mechanical valve was performed.

Conclusions: Conotruncal anomalies are associated with aortic dilatation and should be evaluated during the follow up. Many patients requires reoperation during life and aortic dilatation should simultaneously treated during the reintervention. Sparing techniques described are effective but long-term follow up is required to know the effectiveness of this procedures.



CT of patient with previous repair of Truncus arteriosus

AORTIC VALVE

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The Clinical Implications and Long-Term Outcomes Associated with Biological and Mechanical Valve Replacements in Hemodialysis Medicare Patients

***N. Desai**, D. Savino†, F. McCarthy, T. Dibble, M. Siki†, D. Grave†, C. Brown†, D. Spragan, P. Groeneveld, J. Bavaria†*

Institution where study was performed: University of Pennsylvania

†Disclosures not available

Purpose: Hemodialysis patients have increased risk for valve replacement and decreased long-term survival. Debate is ongoing regarding biologic versus mechanical valve replacements in hemodialysis patients. We sought to investigate the differential impact of biological and mechanical valves on aortic valve replacement (AVR) and mitral valve replacement (MVR) Medicare patients on hemodialysis.

Methods: Medicare Provider Analysis and Review (MEDPAR) Files were used to identify all hemodialysis patients undergoing aortic valve replacement (AVR) and mitral valve replacement (MVR) between January 2008 and December 2013. Patients were separated based on the use of either bioprosthetic or mechanical valves.

Comorbidities present on implantation were assigned using ICD-9 codes and a modified Elixhauser comorbidity index. Propensity matching was used to analyze bioprosthetic and mechanical valves in AVR and MVR patients. Univariate and multivariate models were used to examine survival; all other analyses were conducted using pearson's chi-square or independent-sample t tests.

Results: A total of 11,850 patients were initially included in the study (8775 AVR and 4298 MVR). In propensity matched samples, Kaplan Meier survival analysis indicates that survival was significantly higher in mechanical AVR patients compared to prosthetic AVR patients, although similar between mechanical and prosthetic MVR patients (Figure 1). Overall AVR mortality was significantly lower than MVR mortality (58% (n=5117) vs. 66% (n=2847), $p<0.01$). In propensity matched samples, bioprosthetic AVR patients were more likely to require redo operations compared to mechanical AVR (2% (n=68) vs. 1% (n=35), $p<0.01$). Multivariable logistic regression models indicate that mechanical valves do not provide a protective effect for 30 day mortality in either AVR or MVR patients. Cox proportional models indicate that mechanical valves may provide some protective effect in long-term mortality for AVR patients (HR 0.95 CI 0.89 - 1.00, $p=0.05$, Table 1).

Conclusions: No significant difference was seen in survival or redo operation between bioprosthetic and mechanical valves in MVR patients. However, bioprosthetic AVR patients maintain a higher risk of death and redo operations. It is possible mechanical AVR offers a long-term survival benefit to older patients on hemodialysis undergoing valve replacement surgery.

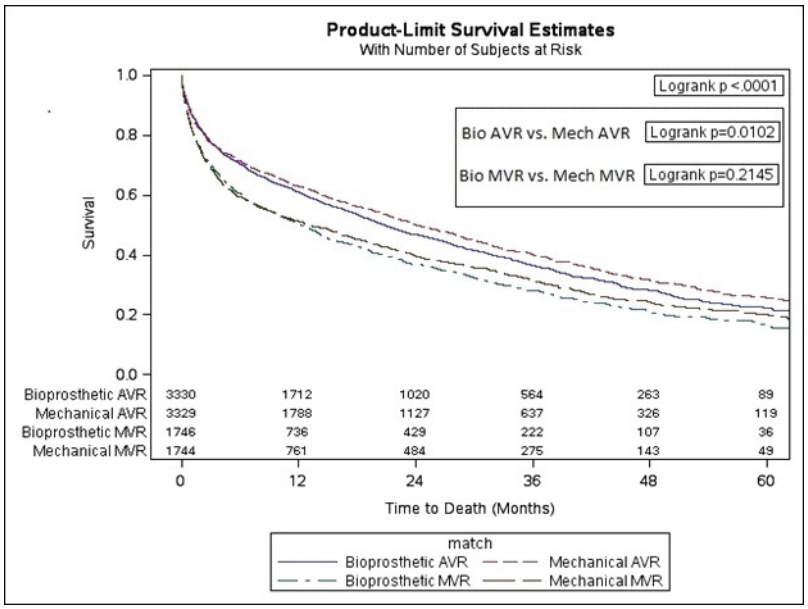

Figure 1. Kaplan Meier Survival Analysis of propensity matched bioprosthetic and mechanical valves in AVR and MVR hemodialysis patients

Table 1. Cox Model of Long term Survival in AVR Patients	Hazard Ratio	pval
Male	0.90 (0.85, 0.95)	0.01
White	1.10 (1.03, 1.17)	<0.01
Age	1.02(1.02, 1.03)	<0.01
Mechanical AVR	0.95 (0.89, 1.00)	0.05
CHF	1.21(1.14, 1.28)	<0.01
Pulmonary Hypertension	1.17 (1.09, 1.25)	<0.01
PVD	1.14 (1.06, 1.22)	<0.01
COPD	1.15 (1.08, 1.23)	<0.01
CABG	1.13(1.06, 1.20)	<0.01
CAD	0.94 (0.88, 1.00)	0.05
Endocarditis	1.24(1.15, 1.34)	<0.01

Table 1. Cox Proportional Hazard Model of long-term mortality in AVR patients

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First North American Experience with the Symetis Transcatheter Aortic Bioprostheses for the Treatment of Severe Aortic Stenosis with 1-year Follow-Up

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Institution where study was performed: London Health Sciences Centre, Ontario Canada

COMMERCIAL RELATIONSHIPS: M. Chu: Speaker Bureau/Honoraria, LivaNova, Medtronic Canada, Symetis; B. Kiaii: Speaker Bureau/Honoraria, Medtronic, Symetis; Consultant/Advisory Board, Johnson & Johnson
†Disclosures not available

Purpose: Transcatheter aortic valve implantation (TAVI) has become a valuable alternative for the treatment of patients with severe symptomatic aortic stenosis (AS) and deemed not surgical candidates. We present the initial North American experience with the Symetis ACURATE TAVI technology with 1-year follow-up.

Methods: A total of 112 patients with symptomatic severe AS underwent TAVI using the transapical ACURATE-TA and the transfemoral ACURATE-Neo (Symetis S.A., Ecublens, Switzerland) devises. In-hospital and 30-day outcomes were evaluated and reported according to the Valve Academic Research Consortium-2 definitions. Clinical and echocardiographic follow-up was performed up to 1-year.

Results: The mean age was 82.2±7.98.1 years with a mean logistic-EuroSCORE of 17.92±11.26%. The transapical ACURATE-TA was implanted in 77 patients (68.75), and the transfemoral ACURATE-Neo in 35 patients (31.25%). The procedure was successfully performed in 85 patients. Two patients (1.7%) required an emergency conversion to conventional cardiopulmonary bypass due to valve embolization. There were no coronary obstructions. Residual paravalvular-leak (PVL) was identified in 37 (33%) patients, and evaluated as mild in 36 (32.1%) and moderate in 7(6.25%) patients. The mean peak and mean gradients were 16±8.5 and 8±4.6 mmHg, respectively. 10 (8.9%) patients required a pacemaker implantation. The mean intensive-care unit and length-of-stay were 1±0.9 and 7±5.5 days, respectively. In-hospital mortality was 2.7% (n=3), 30-day mortality was 2.7% (n=3). At a mean follow-up time of 11.5±7.6 months, 10 more patients (8.9%) died with an overall mortality of 14.2% (n=16) at 1 year. Most of the patients were in NYHA class I-II (86.6%). In 41.4% of the patients there was persistent mild PVL and 2.1% a moderate PVL. The rate of readmission to hospital for congestive heart failure was 16.4%.

Conclusions: This initial experience with the Symetis ACURATE bioprostheses has demonstrated that this transcatheter valve performs well in a selected subset of patients with comparable or superior short-term results compared to other TAVI devices.

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Valve-in-Valve: A Safe Intervention for Patients Who Are Non-Candidates for Reoperative Valve Surgery

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Purpose: Examine survival in a cohort of patients non-eligible for reoperative heart valve surgery after transcatheter Valve-in-Valve or Valve-in-Ring implantation.

Methods: Symptomatic patients with degenerated surgical prosthetic heart valves or rings, non-eligible for reoperative surgery from a single center that were carried out to valve-in-valve or valve-in-ring procedure, were retrospective analyzed.

Results: Valve-in-Valve and Valve-in-Ring procedure were performed in 20 patients. Fifty percent of procedures were performed in aortic valve, 30% in mitral-valve and 20% in tricuspid valve. Mean age was 70.1 +/- 9.1 years, and 63.6% were men. Mean of the EuroScore and Society of Thoracic Surgeons score was 12 +/- 5.7 and 6.6 +/-2.7 respectively. Mean of preprocedure Ejection Fraction was 45.7 +/- 13.7%. Transfemoral access was used in 78.6% vs 21.4% Transapical access. At 30 days, survival was 93,3% (CI 95%: 61.26 - 99.03).

Conclusions: Our results suggest that transcatheter Valve-in-Valve or Valve in Ring implantation have high survival rate in patient's non-candidates for reoperative heart valve surgery, independently of pre-surgery risk scores of mortality.

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Application of Biocor Bovine Patch for Posterior Aortoplasty for Narrow Ostium of Aorta During Aortic Valve Replacement

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Institution where study was performed: National Amosov's Institute of Cardiovascular Surgery, Kyiv, Ukraine

Purpose: PURPOSE of this investigation is to research possibilities of application of biocor bovine patch by original method of posterior aortoplasty (PA) during AVR in patents (pts) with narrow ostium of aorta (NOA).

Methods: In analyzed group were included 105 pts with aortic (n = 84) and combined mitral-aortic diseases (n =21) with NOA which were consecutive operated in Institute from 01.05. 2009 till 01.01.2017.

There were 63 (60,0%) males and 42 (40,0%) females and average age 63,7+5,9 yy. 33 (31,5%) pts belonged to III NYHA class, 72 (68,5%) - to IV. Body surface area (BSA) was 1,95+0,08 m² and index of square of aortic annulus was 1,69 cm²/m² (average diameter of annulus was 2,05+0,04 cm). AVR with PA was performed in all cases by original method (Popov V.) in which aorta's incision was made in the middle of non-coronary leaflet, and then into central fibrous body of right trigone on depth 7-8 mm. Aorta's segment in non-coronary leaflet was dissected in width of 1 cm. Patch (sizes 3 x 4 cm) was replaced at the area of the basement of noncoronary sinus, fibrous annulus, ascending aorta. The following patches were used: Vascutek`s (n=57) (group A), autopericardial (n =15) (group B), bovine biocor SJM (n = 33) (group C). Bileaflet prosthesis (Saint Jude Medical, On-X, Carbomedics,) were used in sizes: 21 (n=9 pts), 23 (n=84 pts), 25 (n=10 pts), 27 (n=2 pts). Operations were performed in conditions of CPB, moderate hypothermia (32-34° C) and retrograde crystalloid cardioplegia (Custadiol).

Results: Hospital mortality were 0,8% in group A, 1,6% in group B and 3,1% in group C ($p < 0.05$). Cross-clamping time (min) were: (group A) - 79,1±10,9, (group B) - 101,5±13,6 and (group C) - 145,8±19,5 ($p < 0.05$). Absence of using donor product during all hospital period was 38,2% (group A), 7,2% (group B) and 1,7% (group C) ($p<0.05$). Staying in ICU was 49,3 ± 6,2 hours (group A), 54,2 ± 7,5 hours (group B) and 77,4 ± 9,2 hours (group C) ($p < 0.05$).

During remote period (average 9,5±1,2 yy) we followed-up 531 pts. Actuarial survival at 9 years after operation was occured in group A - 91,2% (n=224), in group B - 88,3% (n=206), and group C - 79,7% (n= 101) ($p<0.05$). Echo examination of diameter of AA for group A (cm): preoperative (PRE) 4,7±0,5, postoperative (POST) (6-7 days) 3,8±0,3, remote period (RP) 4,0±0,4; for group B: preoperative 5,0±0,5, postoperative - 4,0±0,4, remote period 4,1±0,3 and for group C: preoperative 5,9±0,7, postoperative - 3,4±0,3, remote period 3,5±0,3. Reoperations at AA(AA`s graft replacement) were absents in all groups.

Conclusions: On the basis of our experience we proposed the expedient method of wrapping tape operation for moderate forms of AAA (diameter of AA till 5,5 cm) during AVR. Reconstruction of AA for PAAA by WTO is safe, chiper and prevent aneuvrym formation at AA at the remote period.

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The Remote Results After Isolated Aortic Valve Replacement

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Purpose: The purpose of the research is to analyzed the characteristics of a remote period after isolated aortic valve replacement (AVR)

Methods: In the analyzed group included 1354 patients discharged after isolated AVR at the Institute for the period 2006-2008. This represented 94.7% of discharged on hospital stage. There were 783 (57.8%) men, women 571(42.8%). The age of patients ranged from 20 to 72 years (mean 52,7 ±9.4 years). By NYHA classification there were followed-up: II class 98 (7.3%) patients, III class 544 (40.2%) patients and IV class 711 (52.5%) patients. Atrial fibrillation was observed in 21 (1.5%) patients. Only mechanical prostheses were implanted: (Saint Jude, On-X, Carbomedics, ATS). Concomitant CABG was observed in 93 (5.0%) patients.

Results: Average followed-up at remote period 9.4 ± 0.7 yy. At 10 years we had observed: survival rate was 81.3%, stability of good results was occurred 57.3%, freedom from thrombembolic complications were observed in 95.3%, freedom from reoperations was observed in 97.1%. Reoperations were occurred: thomboses (panus) of aortic prostheses (n=2), prosthetic endocardytis (n=3). Atrial fibrillation was marked in 50 (3.7%) patients. A-V blocade was occurred in 48 (3.5%) patients. The main risk factors for remote period: IV functional class, atrial fibrillation, left atriomegaly (diameter of atrium 6.0 cm or more), ejection fraction less than 0.4, high pulmonary hypertension (PSP > 70 mm.Hg), left ventriculomegaly (ESVI > 95 ml/m.q), progressive ischemic heart disease.

Conclusions: At the remote period good results of the operation by mechanical aortic prostheses was observed in the most cases. Operation should be better perform in II-III functional class, with sinus rhythm and good myocardial contractility.

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Narrow Ostium of Aorta: Is Posterior Aortoplasty Necessary During Aortic Valve Replacement?

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Purpose: of this investigation is to research possibilities of original method of posterior aortoplasty (PA) during aortic valve replacement (AVR) in patents (pts) with narrow ostium of aorta (NOA). To determine significance of patient-prosthesis mismatch (PPM).

Methods: In analyzed group were included 825 pts with isolated aortic stenoses with NOA which were consecutive operated in Institute from 01.01. 2010 till 01.01.2017. There were 464 (56,2%) males and 361 (43,8%) females in average age 57,5+8,4 yy. 315 (38,2%) pts belonged to III NYHA class and 510 (61,8%) - to IV. Body surface area (BSA) was 1,95+0,08 m². Average diameter of fibrotic annulus was 2,04+0,03 cm. Peak gradient on aortic valve was:103,7 + 15,3 (87-145) mm Hg. Operations were performed by following methods: group A - AVR+ original method of reconstruction by PA (Popov V.) (n=89); group B - AVR with model 21 mm (n=379); group C- AVR with model 19 mm (n=357). The following patches were used: Vascutek`s (n=57), autopericardial (n = 11), bovine biocor SJM (n = 21). Only bileaflet prosthesis were used. Operations were performed in conditions of moderate hypothermia (27-32° C) and ante-retrograde crystalloid cardioplegia (mainly Custadiol).

Results: The hospital mortality were: group A - 4,5%; group B - 2,7; group C - 4,9% (p< 0,05). At discharge indexed effective orifice area (cm²/m²) and peak gradient on aortic prosthesis (mm Hg)(PGAP) were marked for: group A - 0,95+ 0,03 (PGAP = 22,3+ 2,7 mm Hg); group B = 0,88+
0,03 (PGAP - 26,3+ 3,8); group C - 0,82+ 0,03 (PGAP = 35,3+ 5,2) (p< 0,05).

At the remote period (average was 7,3± 0,9 yy) 753 (92,6%) pts were followed-up. In group A (n = 83) survival rate 83.4% and stability of good results 63.5% were observed at 7 years after operation. In group B (n = 343) survival rate 78.3% and stability of good results 23.3% were marked at 7 years after operation. In group C (n = 327) survival rate 49.3% and stability of good results 23.3% were occurred at 7 years after operation.

At remote period indexed effective orifice area (cm²/m²) and PGAP (mm Hg) were marked for: group A - 0,92 + 0,03 (PGAP = 21,3+ 2,3); group B - 0,84 + 0,04 (PGAP = 29,3+ 3,9); group C - 0,78 + 0,04 (PGAP = 42,3+ 4,7) (p< 0,05).

Conclusions: Reconstruction of NOA during AVR by proposed original method of posterior aortoplasty is effective intervention especially at remote period in group A. PPM was marked significantly in group C.

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Correction of Narrow Ostium of Aorta During Aortic Valve Replacement: Choice of Surgical Method

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Purpose: AIM of this investigation is to research possibilities of different method of surgical correction during aortic valve replacement (AVR) in patents (pts) with narrow ostium of aorta (NOA).

Methods: In analyzed group were included 165 pts with aortic valve disease (n = 142) and combined mitral-aortic diseases (n =23) with NOA wich were consecutive operated in Institute from 01.01. 1996 till 01.01.2017. There were 94 (57,2%) males and 71 (42,8%) females in average age 55,5+8,4 yy. 58 (35,2%) pts belonged to III NYHA class and 107 (64,8%) - to IV. AVR with reconstruction of ostium of aorta was performed in all cases by following methods: Konno`s operation (n=29) - group A, Nick`s operation (n=33) - group B, original method of reconstruction by posterior aortoplasty (Popov V.) (n=103) - group C. The following patches were used: Vascutek`s (n=69), autopericardial (n =71), bovine biocor SJM (n = 25). Only bileaflet prosthesis were used. Operations were performed in conditions of moderate hypothermia (27-32° C) and mainly with ante-retrograde crystalloid cardioplegia (mainly Custadiol).

Results: Hospital mortality (HM) (30 days) were: group A - 10,3% (n=3/29), group B - 9,1% (n=3/33), C - 6,8% (n=7/103) (p <0,05). At the last 21 operations in group C HM - 0%. Reasons of deaths: group A - all heart failure, group B - brain damage (n=1), bleeding (n=1), MOF (n=1), group C - pneumonia (n=2), acute colitis (n=1), sepsis (n=1), MOF (n=2), brain damage (n=1). Average followed-up at remote period 7.2 ± 0.9 yy. Absences of reoperations at ascending aorta were marked in all groups.

In group A at 7 years we had observed: survival rate 49.3%, stability of good results occurred 23.3%. The reasons of deaths: progressive heart failure (9), myocardial infarction (n=1), arrhythmia (n=1). In group B at 7 years we had observed: survival rate 79.3%, stability of good results occurred 67.3%. The reasons of deaths: cancer (n=1), arrhythmia (n=2), ischemic disease (n=1). In group C at 7 years we had observed: survival rate 85.3%, stability of good results occurred 75.3%. The reasons of deaths: ischemic disease (n=2), arrhythmia (n=2), arterial hypertesion (n=1), sepsis (n=1), pneumonia (n=1).

Conclusions: Reconstruction of NOA during AVR by Nick`s operation and proposed original method of posterior aortoplasty are effective interventions. Konno operation cannot be performed in adult patients.

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Evaluation of the Learning Curve for Transcatheter Aortic Valve Implantation for Different Approaches by a Single Team

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†Disclosures not available

Purpose: Transcatheter aortic valve implantation (TAVI- CoreValve®). Previous studies report learning curves with respect to in-hospital mortality and clinical complications. The aim of this study was to evaluate the learning curve in performing by different approaches, according to the clinical events comprised in the VARC-2 safety endpoints and definitions of device success.

Methods: We performed a retrospective analysis of the first 98 consecutive patients who underwent transcatheter aortic valve implantation CoreValve by our Heart team between Abril 2012 and Dic 2016. We enrolled patients with severe symptomatic inoperable aortic stenosis, and We divided valve cases into two groups (early experience: Cases 1 to 49; late experience: Cases 50 to 98), The primary outcome of the trial was all-cause mortality at 30 day and 1 year in the treated population, and evaluate the learning curve measurements include stroke, vascular complication, paravalvular leak, needed pace maker and balloon post dilatation.

Results: The median age of the patients was 77 years (interquartile range: 37 to 93 years) and a median EURO score for firts group was 10,53% and to second group 6,5%. Balloon Pre and post procedural dilatation of the aortic valve (88,58% Vs 14,58%) and (10,42% Vs 12,50%) respectively. Stroke 4% for both groups. Vascular complication (8,16% Vs 2,04%). Paravalvular Leak > ++ was (8,51% Vs 8,33). Pace maker (10,2% Vs 18,37%) .The 30-day mortality for the both cohorts was 8,04%. Global mortality according approach was to TF 9,48% and to the alternative (Subclavian and Aortic direct) approach was 0%. One year follow up mortality 2,04%.

Conclusions: We conclude that the learning curve performed by different groups early experience and late experience related to vascular complication was better for the second group. Global mortality according approach was to TF 9,48% and to the alternative approach (Subclavian and Aortic direct) was 0%. We need more cases for evaluate statistical signification.

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Management Pathways of Asymptomatic Patients with Aortic Stenosis May Affect Survival

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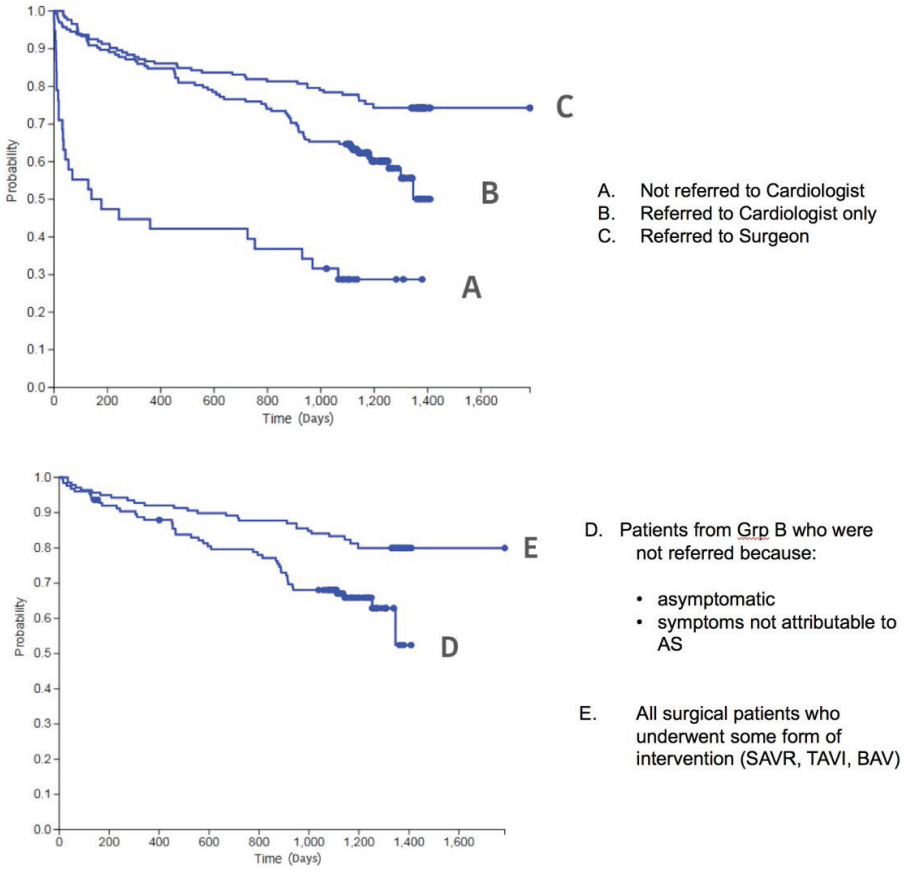
COMMERCIAL RELATIONSHIPS: C. Lloyd: Research Grant, Edwards Lifesciences; M. Dalrymple-Hay: Speaker bureau/Honoraria, Edwards Lifesciences

†Disclosures not available

Purpose: This prospective observational study aimed to identify outcomes of treatment plans in patients with severe aortic stenosis. We aimed to evaluate the reasons why patients were, or were not offered valve therapy, and any outcome differences between different patient pathways.

Methods: All patients undergoing echocardiography at two tertiary centres were screened for severe AS (mean aortic valve [AV] gradient >40 mmHg, peak gradient >60 mmHg or AV area <1.0 cm2).

Figure1. Kaplan Maier survival curves of survival probability for patients with severe AS.



A. Not referred to Cardiologist
B. Referred to Cardiologist only
C. Referred to Surgeon

D. Patients from Grp B who were not referred because:

- asymptomatic
- symptoms not attributable to AS

E. All surgical patients who underwent some form of intervention (SAVR, TAVI, BAV)

Demographic, echocardiographic, treatment selection and 2-year outcome data were collected. Clinicians were surveyed regarding three groups: Group A, managed by non-cardiology clinicians or general practitioners and not referred to cardiologists or surgeons; Group B, referred to cardiologists but not to surgeons; and Group C, referred to cardiologists and by cardiologists to surgeons.

Results: 377 (2.0%) patients with severe AS were identified out of 18,591 echocardiograms performed. Of these, 38 (10.1%) were Group A, 165 (43.8%) Group B and 174 (46.2%) Group C. Of the 174 surgical referrals, 88 (50.6%) underwent surgical AVR, 38 (21.8%) TAVI and 11 (6.3%) BAV; 29 (16.7%) had medical therapy only (8; 4.6% lost to follow-up). Survival was worst in Group A and best in Group C. Group C had significantly better survival than Group B. Asymptomatic patients in group B (Group D) had significantly worse survival than patients from group C who had surgery (Group E).

Conclusions: Fewer than half of patients with diagnosed AS were referred to surgeons. Intervention in asymptomatic patients with AS may confer survival advantage. Team-based, patient-centered approaches, involving guidelines-based consideration of all available treatment options, are needed.

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Ministernotomy vs. Conventional Sternotomy for Aortic Valve Replacement

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†Disclosures not available

Purpose: There has been a growing interest for minimally invasive cardiac surgery. The aim of this study is to compare the 30 days postoperative morbimortality in patients undergoing aortic valve replacement (AVR) through ministernotomy in contrast to conventional sternotomy.

Methods: Cohort study with retrospective search of information (medical records).
A total of 169 patients underwent isolated AVR; 96 through upper ministernotomy and 73 through conventional sternotomy. The primary outcome of interest was 30-day postoperative mortality. The secondary outcomes of concern were the postoperative complications (arrhythmias, neurologic complications, mediastinits, superficial wound infection, AV block, renal failure, hemo-neumothorax), postoperative drainage, intensive care unit and hospital length of stay, mechanical ventilation time, reintervention for bleeding and clamp time.

Results: There was homogeneity among groups. There was no difference in 30-day postoperative mortality in either group (conventional sternotomy 4,10% vs. 2,10% ministernotomy, p = 0.441). In secondary findings there were significant statistical differences in the incidence of arrhytmias, neurologic complications, AV block and 24 hours bleeding (p < 0,05) (Table 1). In the others outcomes, there were no difference.

Conclusions: There was no difference in early postoperative mortality in patient undergoing aortic valve replacement through ministernotomy or conventional sternotomy. However minimally invasive AVR through ministernotomy decreases the postoperative morbidity (decreases the incidence of arrhytmias, neurologic complications, AV block and 24 hours bleeding).

Table 1

Postoperative Group Comparison			
	Full sternotomy (n: 73)	**Ministonotomy (n:96)**	**P Value**
Mortality < 30 days	3 (4.10)	2 (2.10)	0.441
Arrhyhmias n (%)	18 (24,7)	13 (13,5)	0,05
Neurologic Complications n(%)	4 (5,5)	0 (0)	0,02
Atrioventricular block n (%)	18 (24,7)	13 (13,5)	0,05
Median 24 hours postoperative bleeding (ml)	660, 3	269	< 0,01

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Aortic Valve Replacement with the Edwards Intuity® Valve: Short- and Mid-Term Clinical and Echocardiographic Results

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COMMERCIAL RELATIONSHIPS: J. Maldonado: Speaker Bureau/Honoraria, AtriCure, Edwards Lifesciences

Purpose: Patients that benefit from aortic valve replacement (AVR), are older and sicker. The sutureless valves offer the advantage of rapid deployment reducing cross clamp and cardiopulmonary bypass times. We present our clinical and echocardiographic short and
mid-term outcomes of the Edwards Intuity® elite aortic valve system.

Methods: We conducted a retrospective analysis of consecutive patients that underwent AVR with the Edwards Intuity® Elite valve system in our institution from September 2015 to June 2017. All cases were discussed with the Heart team and considered for both TAVR & AVR. Patients were followed at 3, 6, 9, 12 and 24 months after implantation. We analyzed the short and mid-term survival as well as the echocardiographic and clinical findings.

Results: 27 patients underwent AVR with Intuity® Elite. 25 had aortic stenosis with mean gradient (MG)41,4,6 ± 9,17 and mean peak velocity (MPV)4,1 ±0,5. 8 (29,6%)had ?2 degree of aortic regurgitation. The mean age was 78 ±5,5 years and mean EuroSCORE 6,7 ±4,2. The median size was 21. 9 (33,3%) patients had other concomitant procedures in addition to AVR and 78,9% of the isolated AVR were performed by a miniesternotomy. Mean cross clamp time for isolated AVR was 54,4 ± 11,3 minutes. All the valves were successfully implanted. Early (<30 day) mortality occurred in 2 (7,4%) patients, non-valve related causes. 3 patients(12,5%) had grade I paravalvular leak. No patient needed permanent pacemaker. The cumulative survival was 90% at a mean follow-up of 8,8 ± 6,8 months. The MG and MPV were 8,9 ± 4,7mmHg and 2,2 ± 0,5 m/s postoperatively, 8,5 ±3,7 mmHg and 2 ±
0,4 m/s at 12 months respectively.

Conclusions: In our experience, the Intuity® Elite aortic valve had an easy and safe implantation, reduced the cross clamp times compared to the conventional valves and provides an excellent mid-term hemodynamic performance. It is now an excellent choice in our team for some risk profile patients that otherwise were considered for TAVR.

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STS and EuroSCORE II Surgical Risk Scales Are Good Predictors for Mortality in TAVR Population: A Single Center Experience

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†Disclosures not available

Purpose: Transcateter valve implantation is a minimal invasive procedure for AS surgical treatment. Fewer complications and less mortality should be expected. STS and EuroSCORE II overestimate mortality risk according previous publications. The aim of this study is to evaluate the accuracy of these scores vs. TAVR specific risk scales.

Methods: Historical cohort of patients undergoing TAVI from January 2009 to February 2017, all data on demographics and other characteristic was recollected from clinical records and an institutional database that follows the guidelines of the Society of Thoracic Surgeons (STS). Follow-ups were done at 30 days and yearly thereafter. A descriptive analysis of the data were done, continuous variables are expressed as mean ± standard deviation or median with interquartile range according of the result the type of distribution, categorical variables are presented as absolute frequencies and proportions. Comparison for the scores was done by confidence intervals for the punctual estimations.

Results: A total of 100 consecutive patients were included, 49% male, average age of 77 years old, transfemoral approach was performed in 93% of patients.

Six patients died (6%), three with complications associated with the procedure (Two with annulus rupture and one LV perforation) and the other three cases related to medical conditions. Relevant characteristics with in hospital mortality were age > 80 years, female gender, pulmonary hypertension and GFR < 60 ml/min.

Mortality risk estimation with the TAVR scales OBSERVANT, FRANCE2 and TAVI2, were 8.58%, 5.65% and 5.89% respectively. For STS and EUROscore II estimations were 5.03% and 6.1% respectively.

Conclusions: Open heart surgery mortality risk scores (STS, EuroSCORE II) were accurate at predicting mortality in TAVR population. Results for specific TAVR scales (OBSERVANT and TAVI2) were accurate as well, but FRANCE2 overestimates the expected mortality. Further prospective randomize trials should be perform to answer this question.

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Minimally Aortic Valve Replacement Operative Outcomes in Two Chilean Institutions

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Purpose: The aim of this study is report operative outcome of minimally invasive aortic valve replacement done through a partial upper sternotomy in two Chilean institutions.

Methods: Since November 2013 to September 2016 all patients (N=151) referred for isolated aortic valve replacement to the authors at two institutions had the operation done through a partial upper sternotomy down to the fourth intercostal space. Only contraindication was absence of transesophageal echo, Data obtained from a custom registry in prospective fashion

Results: Operative mortality 0.6%(1/156). Cross clamp/Cardiopulmonary Bypass time: 58± 13,2 min/69,4 ± 22,7 min, Conversion to full sternotomy 2.6% (4/156) reoperation for bleeding 2.6% (4/156), Postoperative atrial fibrillation 18.5%(29/156), permanent pacemaker 0.6%(1/156) Postoperative stay was 5 days (median).

Conclusions: Minimally invasive aortic valve replacement can be performed with satisfactory results and comparable to the conventional full sternotomy strategy.

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Single Center Early Results from the FDA Pivotal Trial of the Edwards Lifesciences Commence™ Aortic Valve Prosthesis

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Institution where study was performed: University of Pennsylvania

COMMERCIAL RELATIONSHIPS: W. Szeto: Research Grant, Edwards Lifesciences; J. Bavaria: Research Grant, Edwards Lifesciences
REGULATORY DISCLOSURE: The use of Commence™ Aortic Valve Prosthesis has not been approved by the FDA; it is still in the trial stages.

Purpose: Concerns about durability and longevity of bioprosthetic bovine aortic valves has led to innovative aortic valve design. The objectives of this study were to confirm the safety and efficacy of the Commence™ valve, and to present early data on the hemodynamic performance and adverse event rate.

Methods: The Commence™ valve is a bioprosthetic bovine valve comprising the stent frame and leaflet design of the FDA approved Magna Ease™ valve and novel Resilia™ technology. The Commence™ valve was implanted in the aortic position in 111 patients at a single center participating in a prospective, multicenter pivotal trial.

Peri-operative variables were collected on a prospective basis. Echocardiograms were reviewed by the site in addition to a core lab. Clinical follow-up and echocardiograms were obtained at discharge, 3, and 12 months.

Results: 111 patients were included in this analysis. Mean age was 64.0 ± 11.0 years. 80.2% were male. 54.1% had a bicuspid aortic valve. 17.1% had a history of diabetes. The mean STS mortality risk score was 1.13% ± 0.01. Isolated aortic valve replacement (AVR) was performed in 63% of patients. Indication for AVR included aortic stenosis (36.0%), aortic insufficiency (10.8%), mixed disease (49.5%), and prosthetic valve dysfunction (2.7%). Overall mean gradient (mmHg) was 8.49 ± 3.45; 9.64 ± 4.06 at 3 and 12 months postoperatively, respectively. Aortic insufficiency greater than 1+ was 0% at discharge and remained <1% out to 12 months.

Indexed effective orifice area remained stable over time (0.99 ± 0.28 and 0.98 ± 0.34 at 3 and 12 months, respectively). Mortality rate was 1.9% (n=2). Stroke rate was 4.9% (n=5), including 1 severe with subsequent mortality. 9.9% of patients required permanent pacemaker implant (n=11).

Conclusions: The Commence™ aortic valve has demonstrated excellent hemodynamics in early follow up. Future analysis with long term follow up will provide insight into the durability of this new Resilia™ technology.

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Our Experience: Minimally Invasive Aortic Valve Replacements

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†Disclosures not available

Purpose: Minimally invasive surgery offers less surgical trauma, less pain, improved cosmesis, and faster recovery. Opponents claim smaller incisions give poor exposure, leading to longer, more difficult, and more dangerous operations. We report our experience performing aortic valve replacements via minimally invasive anterior thoracotomy or mini-sternotomy, compared to conventional sternotomy.

Methods: All data were collected from our institution's Cardiac Surgery Database. 503 aortic valve replacements were performed at our institution from January 2012 - December 2015 using one of three techniques: Mini-thoracotomy (MT), Mini-sternotomy (MS), and Conventional sternotomy (CS). We retrospectively compared age, preoperative comorbidities and aortic valve dysfunction, along with morbidity and mortality, length of stay, and postoperative complications between the three groups of patients.

Results: Of the 503 cases, 267 (53.1%) were MT, 120 (23.8%) were MS, and 116 (23.1%) were CS. MT, compared with MS and CS, had a lower incidence of prolonged ventilator support [3.75% vs. 9.17% and 12.9%, respectively (p = 0.0034)], required a shorter ICU stay [40.9 vs. 59.5 and 58.0 hours, respectively (p<0.05)] and had shorter postoperative lengths of stay [5.7 vs. 7.4 and 9.6 days, respectively (p<0.05)], resulting in a shorter overall hospitalization [7.8 vs. 10.9 and 12.8 days, respectively (p<0.05)]. Incidence of stroke [0.75% vs. 0.83% and 0.86%, respectively (p=1.0)], reoperation for bleeding [2.6% vs. 5.0% and 2.6%, respectively (p=0.44)], renal failure [3.0% vs. 5.0% and 5.2%, respectively (p=0.44)], and atrial fibrillation [23.2% vs. 30.8% and 27.6%, respectively (p=0.26)], were lower in the MT group compared to MS and CS without significance. Overall, minimally invasive techniques resulted in increased survival [MT 1.5%, MS 1.67%, and CS 5.17% (p=0.13)].

Figure 1: Postoperative Complications

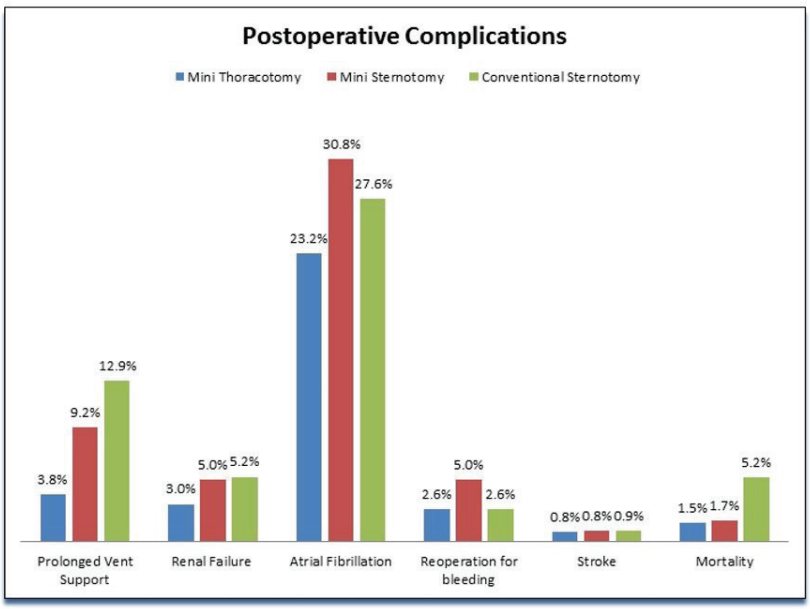

Table 1: Postoperative Hospitalization

	Mini Thoracotomy	Mini Sternotomy	Conventional Sternotomy	p-Value
ICU Duration (hours)	40.9	59.5	58.0	< 0.05
Post-op LOS* (days)	5.7	7.4	9.6	< 0.05

*LOS = Length of Stay

Conclusions: Minimally invasive aortic valve replacement is a safe, effective alternative to conventional sternotomy. In our study, mini-thoracotomy patients demonstrated decreased postoperative ventilation time, length of ICU stay, overall hospitalization time, and postoperative morbidity/mortality compared with mini-sternotomy and conventional sternotomy. Larger scale research may demonstrate further benefits of minimally invasive approaches.

ATRIAL FIBRILLATION

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Incidence of Postoperative Atrial Fibrillation After Minimally Invasive Mitral Valve Surgery

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Purpose: The aim of this study is to determine the incidence and risk factors of postoperative atrial fibrillation after minimally invasive mitral valve surgery and to compare intensive care unit and hospital length of stay among patients who presented postoperative atrial fibrillation and those who did not.

Methods: Retrospective descriptive Case - Control study, which included all adult patients undergoing minimally invasive mitral valve surgery from January 2013 to November 2015 at our institution. Patients with previous history of arrhythmias or cardiac surgeries, current active infective endocarditis, emergency surgeries and perioperative deaths were excluded from the study. Multivariate analysis was performed to determine risk factors associated with the development of postoperative atrial fibrillation.

Results: A total of 166 patients underwent minimally invasive mitral valve surgery and 90 (54%) patients were excluded from the study. We performed 44 (58%) mitral valve repairs and 32 (42%) replacements. From the 76 patients included in the study, 20 (26.3%) patients presented postoperative atrial fibrillation. There was a higher incidence of older patients (> 60 years) and female sex patients among those with atrial fibrillation. Multivariable analysis revealed that age older than 60 years old (OR, 7.03; 95% CI, 1,92 - 25,72; P = 0.003), and female sex (OR, 3.89; 95% CI, 1,06 - 14,12; P = 0.039), are independent predictors to develop atrial fibrillation. Intensive care unit length of stay was 1 day (1-3 days) versus 3 days (2-7 days) (P =0.01) and hospital length of stay was 6 days (4-9 days) versus 12 days (8-24 days) (P=.007) in the non-atrial fibrillation group and atrial fibrillation group, respectively.

Conclusions: Minimally invasive mitral valve surgery did not increase the incidence of postoperative atrial fibrillation. Age older than 60 years and female sex are independent predictors to develop atrial fibrillation. Those patients presenting postoperative atrial fibrillation have longer intensive care unit and hospital lengths of stay.

Bivariate Analysis

	Non Atrial fibrillation n=56	Atrial fibrillation n=20	P value
Mean age - years ± SD	52± 13	60± 10	0.01
Age > 60 years – n (%)	17 (30.4%)	14 (70%)	0.002
Female – n (%)	19 (34%)	13(65%)	0.01

Multivariate Analysis

	Odds ratio (OR)	95% CI	P value
Age > 60 years	7,034	1,924 - 25,715	0,003
Female	3,886	1,069 - 14,125	0,039

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Concomitant Atrial Fibrillation Surgery in Patients Undergoing Off-Pump Coronary Artery Bypass Graft Surgery (OPCABG): A Single Center Experience

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COMMERCIAL RELATIONSHIPS: J. Maldonado: Speaker Bureau/Honoraria, AtriCure, Edwards Lifesciences

Purpose: Ischemic cardiomyopathy and atrial fibrillation (AF) are often associated and treated during the same procedure. The OPCABG is growing, especially in patients in whom the extracorporeal circulation can increase morbidity and mortality. This leads to attempted Off-Pump atrial fibrillation surgery in these patients.

Methods: We performed a single center retrospective analysis of consecutive patients that underwent Off-Pump CABG and pulmonary veins isolation (PVI) with radiofrequency since January 2009 to June 2017. Patients were followed at 3, 6, 9, 12 months and annually after surgery with Holter monitoring. We analyzed the short and mid-term survival as well as freedom of AF.

Results: 186 patients had atrial fibrillation surgery with concomitant valve surgery or CABG. 16 patients had OPCABG and PVI. Mean age was 72,03 ± 6,68. 11 (68,8%) were men. 50% were smokers, 31,3% had COPD and the mean BMI was 26,56 ± 3,93. 14 (87,5%) had multi-vessel coronary disease and 2 (12,5%) had severe left main disease. The mean EuroSCORE was 10,69 ± 10,4 and EF was 50% ± 15,04. Complete revascularization was achieved in all patients, as well as PVI. 11 (68,75%) atriclip were implanted. 1 patient died in the first 30 days from pulmonary sepsis. No permanent pacemakers were required. 4 patients had postoperative atrial fibrillation that needed farmacological or electrical cardioversion. 1 patient required reintervention for major bleeding. The mean time of follow-up was 27,82 ± 28,97 month with 93,8% (±0,6) of survival at 24 months, and 85,7% (±0,13) of freedom of AF at 36 months.

Conclusions: The PVI Off-Pump can be an efficacious and safe procedure to treat AF in selected patients that required OPCABG, in order to avoid extracorporeal circulation and its associated complications.

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Hybrid Ablation for Long-standing Persistent Atrial Fibrillation: A Two Stage Nonconcomitant Approach Using the Cobra Fusion Device and Catheter Ablation (Single-Centre Experience)

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COMMERCIAL RELATIONSHIPS: M. Dalrymple-Hay: Speaker bureau/Honoraria, Edwards Lifesciences; G. Haywood: Consultant/Advisory Board, AtriCure; Other Research Support, AtriCure; D. Panagopoulos: Research Grant, AtriCure

Purpose: Results from catheter ablation alone for the treatment of long standing persistent atrial fibrillation (LsPsAF) remain disappointing. We describe encouraging single centre experience using a staged surgical followed by a catheter based approach for this difficult group of patients.

Methods: Patients with LsPsAF (continuous AF duration greater than one year) are offered non-concomitant hybrid ablation to isolate the Left Atrial Posterior Wall (LAPW) following MDT discussion. Patients first undergo unilateral video assisted thoracoscopic (VATS) epicardial radiofrequency ablation (Fusion) with subsequent electrophysiological study (EPS) and left atrial ablation as required to complete LAPW isolation after a minimum two months. In addition a right atrial cavo-tricuspid isthmus ablation line is performed. Follow-up is via clinical review at 4, 12 and 24 months with ambulatory holter monitoring at 12 and 24 months.

Results: 90 patients discussed at MDT, 68 accepted for treatment. To date, 55 patients have undergone epicardial thoracoscopic radiofrequency ablation, and 46 have completed a subsequent EP study/ablation. All patients had LsPsAF, 44 male, mean values of age 65 yrs, CHADS VASC 1.7, and BMI 30.

The commonest sites requiring closure of the surgical ablation line were right (28%) and left (25%) Superior Pulmonary vein followed by the LA roof (21%).

Mean follow up post blanking is 19 months (11-24.5 months). Post blanking period 35 of 40 patients (87.5%) in SR. 27 patients are one year post end of blanking period, of these 25/27 (92.5%) in SR, 22 (81%) off anti-arrhythmic drugs.

Conclusions: Early experience of this two stage procedure is encouraging in patients with LsPsAF. Longer follow up is required to see if the drop off seen with catheter ablation occurs. For wider adoption a trial of hybrid ablation versus catheter ablation in patients with LsPsAF is required.

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Safe Preservation of Myocardial Function with del Nido Cardioplegia in CABG Patients

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Purpose: Myocardial protection is crucial for a positive outcome during revascularization and the postop period; 4:1 solutions have been the cornerstone in adults. Although del Nido cardioplegia (DLN CP) has been used in pediatric and non-coronary adult surgery, limited data is available on its use during CABG.

Methods: Consecutive patients intervened by the same team were studied; intraoperative (see graph) and clinical variables (pre/post EF, pump/Xclamp times, IABP/inotrope use, extubation time, ICU and hospital LOS) were measured. The solution was prepared with 1 Liter of Multylitos-R™ and a mixture of potassium, magnesium, sodium bicarbonate, lidocaine and mannitol. CP was set at 1:4 (blood:crystalloid) with a built-in heat exchanger for 8ºC administration; 1.1 liter antegradely and 1.4 for hypertrophied hearts or in aortic insufficiency. A repeat dose was given at 60 minutes antegradely. Patient's temperature was maintained at 34ºC. to avoid warming while the heart was not completely empty.

Results: From January 2015 to January 2017 a total of 192 CABG procedures were performed. Severe LMCAD: 6%; severe proximal multi-vessel disease (40%) came to the OR with IABP age: 63 (42-86) years; 21% female; STS score 1.21% (0.21- 4.4%); pump time 86 (55-209) min;
Xclamp time 75 (46-144) min; 22% received blood products. Cellsaver use: (100%); mammary use (100%); left ventricular function evaluated by intraop TEE mean pre/post procedure EF: 52%/52%; use of inotropes 72%; mean # of inotropes given: 1 (Dobutamine); IABP during or after procedure: 0%; overall surgical mortality 0.5%; extubation time: 4.8 hrs. (2-24); ICU stay: 4 (2-15) days; hospital length of stay: 8 (3-21) days.

Conclusions: DLN cardioplegia in adult CABG patients with intervals of 60 minutes is an alternative and effective myocardial protection strategy preserving myocardial function post CPB, achieving optimal clinical parameters, and promoting spontaneous defibrillation.

CABG - Del Nido Variables

Mean HCT after DLN administration %	Spontaneous recovery after xclamp removal Seconds	Need of defibrillation %	Mean seric K+ after DLN Meq/Lt	Mean intraop glucose level Gr/dl
27	152	0	4.3	146

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Incidence of Readmission and Medical Complications at 30 Days Following Ultra-Fast-Track Therapy Post Robotic-Assisted Cardiac Surgery

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COMMERCIAL RELATIONSHIPS: M. Chu: Speaker Bureau/Honoraria, LivaNova, Medtronic Canada, Symetis; B. Kiaii: Speaker Bureau/Honoraria, Medtronic, Symetis; Consultant/Advisory Board, Johnson & Johnson

†Disclosures not available

Purpose: An Ultra-fast-track approach to cardiac surgery has previously been described as an effective means to bypass the cardiac surgical intensive care unit (CSICU) in selected patients undergoing robotic-assisted minimally invasive coronary artery bypass surgery (RA-CABG). The goal of this study was to review 30 day follow-up of patients following an ultra-fast-track approach in order to identify optimal selection criteria for applying the ultra-fast track approach

Methods: We retrospectively reviewed our cardiac surgery database between September 2006 and April 2017. We identified 116 adult patients who had undergone RA-CABG, and 6 patients in whom RA-CABG was attempted but who required conversion to sternotomy.
Patients were selected for ultra-fast-track care by a multidisciplinary team and post-operative follow-up occurred either in an outpatient clinic or via telephone. We determined whether patients sought medical attention during the first 30 days postoperatively, or were readmitted to hospital, and the reason for seeking care.

Results: The average patient age was 61.6 ± 9.4 years, 79.1% were male, and 20.9% were female. Outpatient clinic follow-up was conducted in 97.9% of patients, and 2.1 % had a phone call, as we were unable to arrange in-person follow-up. In total, 6.0 % of patients required readmission to hospital mainly due to underlying lung disease, and 2.4 % sought medical attention within the first 30 post-operative days for superficial wound infection, shortness of breath due to atelectasis and non-specific back pain. There was no post-operative mortality within 30 days.

Conclusions: In this cohort, patients who underwent an ultra-fast track protocol after RA-CABG had a low incidence of complications including readmission to hospital in 30 days. In patients underlying COPD, there should be strict criteria to determine eligibility for an ultra-fast track approach following RA-CABG.

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Off-Pump Coronary Artery Bypass Surgery After 15 Years: Long-Term Results of a Cardiac Center in Chile

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Purpose: The benefits of off-pump coronary artery bypass graft (OPCAB) compared with conventional on-pump coronary artery bypass graft remain controversial in spite of there are studies with good results in the long term.

To assess and report the long-term results of OPCAB surgery after 15 years in a Regional Cardiac Surgery Center in south Chile

Methods: Retrospective analysis of the medical records and surgical protocols of 998 patients (aged 61.3+/- 6.5 years, 69% male) subjected to off pump coronary surgery between June 2002 and June 2017.

Results: 34% of patients presented with unstable angina. On angiography, the left main coronary artery had a proximal obstruction in 15% of patients. 35% presented with a myocardial infarction of different territories. 30% were managed previously with angioplasty.

Preoperative left ventricular function was 56.2% (30-65%). Mean Euroscore: 2.84. Average number of bypasses was 2.7 (DE+- 0.63). 2% of conversion to on pump technique. There was a 2% of operative mortality, myocardial infarction 3.4%, 2.3% need for re operation and there was a 2.4% of stroke. Long term follow up was complete in most patients and 93% are in NHYA CF I. Actuarial survival probability was 100%, 93%, 85% and 75% at 1, 5, 10 and 15 years. Probability of freedom from angina was 98%, and freedom of suffering a new myocardial infarction was 100% at more than 10 years. The probability of no need for a new coronary procedure (angioplasty or surgery) also was 100% at more than 10 years.

Conclusions: OPCAB surgery is a safe surgical technique, with an excellent bypass durability and permeability and also provides a prolonged time free from cardiac events such as mortality, angina, myocardial infarction, and the need of a new coronary procedure in the very long term follow up.

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Benefit of Preop Levosimendan on Adult Patients with High-Risk Ischemic Cardiomyopathy with a Low Left Ventricle Election Fraction in Coronary Artery Bypass Surgery

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Purpose: Patients with low LVEF are considered as high risk for CABG surgery. There are different strategies to improve mortality, but some of them with low rate of success. Levosimendan has modified the evolution of patients with cardiac failure, which may offer benefit. To determine the benefit of preoperatory levosimendan in adult patients with high risk ischemic cardiomyopathy with low LVEF intervened with CABG surgery

Methods: This was a retrospective study realized in our cardiac surgery center UMAE 34 in Monterrey, from a period January 2015 to January 2016. High risk patients with ischemic cardiomyopathy intervened with CABG were divided in two groups: patients with and without preoperatory levosimendan. Preoperatory, transoperatory and postoperatory features were noted. Statistical system SPSS v 22 was utilized for the analysis of the results and to establish the difference between groups.

Results: There was a total of 60 patients. Group 1. 22 patient with levosimendan at 24 hours before the surgery. Group 2. 38 patients without preoperatory levosimendan. The use of vasoactive drugs (40 vs 97%), bypass decanulation at first attempt (95.4 vs 39.4%), post-surgery renal failure (13.6 vs 71.5%) early extubation (86.3 vs 10.5%), perioperative MI (0 vs 68.42%). Postop Heart failure (4.5 vs 60.52%), intrahospitalary mortality (0 vs 39.4%), hospital stay > 10 days (9.1 vs 68.42).

Conclusions: Giving preoperatory levosimendan in the high risk ischemic cardiomyopathy group of patients with low LVEF lowers the post-surgical complications and mortality.

Table 1.

VARIABLES	LEVOSIMENDAN n= 22	SIN LEVOSIMENDAN n= 38	VALOR p
IAM POS QX			
SI	0	12 31.57%	0.002
NO	22 100%	26 68.5%	
EVC POS QX			
SI	0	3 7.89%	0.247
NO	22 100%	35 92.1%	
RITMO DIFERENTE A SINUSAL			
SI	1 4.5%	18 47.36%	0.001
NO	21 95.5%	20 52.64%	
ICC POS QX			
SI	1 4.5%	23 60.52%	0.001
NO	21 95.5%	15 39.5%	
SANGRADO POS QX			
SI	0	6 15.78%	0.055
NO	22 100%	32 84.22%	
MUERTE POS QX			
SI	0	15 39.5%	0.001
NO	22 100%	23 60.5%	

Table 2.

VARIABLES	LEVOSIMENDAN n= 22	SIN LEVOSIMENDAN n= 38	VALOR p
DIAS ESTANCIA HOSPITAL			
< 10 DIAS	20 90.9%	2 5.26%	0.001
> 10 DIAS	2 9.1%	26 68.4%	
FINADO ANTES DE 10 DIAS	0	10 26.31%	
MEDIASTINITIS			
SI	0	7 18.42%	0.33
NO	22 100%	31 81.6%	
USO DE BIAC POSQUIRURGICO			
SI	0	8 21%	0.019
NO	22 100%	30 79%	

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Impact of Diabetes Mellitus in the Off-Pump Coronary Artery Bypass Surgery: Short-Term Results from a Center in South America

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COMMERCIAL RELATIONSHIPS: J. Maldonado: Speaker Bureau/Honoraria, AtriCure, Edwards Lifesciences

Purpose: The Off-Pump coronary artery bypass surgery (OPCAB) is an alternative technique to the conventional On-Pump CABG. Diabetes Mellitus (DM) can cause multiple complications that can affect the results of OPCAB. We aim to analyze the short term impact of DM in OPCAB.

Methods: During an 8,5 years period, we evaluated retrospectively our clinical results with OPCAB surgery. We analyzed the incidence and predictors of 30-days survival and freedom of mayor cardio and cerebrovascular events (MACCE), defined as perioperative acute myocardial infarction, stroke and death

Results: From July 2008 to December 2016, OPCAB was performed in 755 patients in our surgical group. 254 (33.6%) patients were Diabetics, 91 (12.1%) were obese (IMC>30), 91,8% had multivessel coronary artery disease. 14 (1.9%) were in cardiogenic shock, and 38 (5%) required intraaortic balloon pump counterpulsation(IABP). The median Euroscore was 5,03 (± 4,79). Bilateral internal mammary artery (BIMA) was used in 13% of the cases. The mean number of grafts was 2,69(± 0,91). The 30-day survival was 97,7% and the 30-day freedom from MACCE was 97.4%.On the multivariate analysis, the readmission to the hospital in the first 30-day(HR: 0,91 IC95% 0,017-0,483; p= 0,005)was an independent predictor for mortality.Obesity (HR: 0,034 IC95% 0,002-0,730; p=0,031),use of IABP(HR: 0,074 IC95% 0,01-0,48; p=0,007),length of stay in ICU(HR: 1,209 IC95% 1,036-1,410; p=0,016), previous surgery(HR: 0,043 IC95% 0,005-0,377; p=0,004),DM(HR 0,18 CI95% 0,03-0,98; p=0,048),and Sternal deep wound infection(HR:0,041 IC95% 0,004-0,548; p=0,009)were predictors for MACCE

Conclusions: In the short term OPCAB Diabetes was a predictor of death, as it was for MACCE. In our surgical group, Obesity, COPD, use of IABP and previous surgery, increased the mortality and MACCE in diabetic patients undergoing OPCAB

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Myocardial Hybrid Revascularization vs. Coronary Artery Bypass Grafting for Complex Triple-Vessel Disease — Preliminary Results of the Merging Randomized Clinical Trial: Pilot Phase

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Purpose: This study aims to assess the long term safety and efficacy of hybrid procedures in comparison with traditional coronary artery bypass graft regarding the combined end point rate of all cause death, acute myocardial infarction, target vessel revascularization and stroke at the end of 2 years of follow up.

Methods: Pilot, prospective, randomized, single center trial enrolling 60 patients with multivessel coronary artery disease. Following diagnostic angiography demonstrating significant multivessel coronary disease (SYNTAX Score > 22) and consensus of the Heart Team, patients were consented and randomized 2:1 to hybrid treatment or conventional coronary artery bypass grafting. All patients were evaluated by the composite measure of major adverse cardiovascular events, defined as all cause death, myocardial infarction, stroke or unplanned repeat revascularization during 2 years follow-up.

Results: Between August 2014 and May 2017, 46 patients were included in the study (HCR=32 and CABG =14). The primary endpoint was observed in 3 patients (8%), all belonging to HCR group (12%), however, without statistical significance (p=0.54). There was no statistical difference between the groups (HCR vs. CABG, respectively) in terms of mortality (3.2% vs 0%), unplanned revascularization (7% vs 0%), MI (7% vs 0%), or any of the secondary outcomes evaluated. Patients who presented with any of the complications (12 patients 26%) had a tendency (not statistical significant) to be older (62 vs 59 years; p=NS), and to present with higher risk scores (EuroSCORE 1.40 vs 0.70; p=0,19) than patients without complications.

Conclusions: The preliminary analysis of the study demonstrated that the strategy of revascularization by the hybrid technique was not statistically different than the control group regarding the incidence of major adverse cardiovascular events. However, this study is the pilot phase and a multicenter trial is necessary to answer the question.

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Hybrid Coronary Artery Revascularization with Long-Term Follow-Up

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†Disclosures not available

Purpose: The role of hybrid coronary artery revascularization, defined as the combination of surgical revascularization of left internal thoracic artery (LITA) to left anterior descending (LAD) artery grafting performed robotic-assisted and percutaneous coronary intervention (PCI) of non-LAD coronary arteries, continues to develop. The long term patency of this approach is always questionable.

Methods: 158 patients underwent hybrid revascularization including minimally invasive robotic-assisted bypass of the LAD with LITA along with PCI of non-LAD vessels. All internal thoracic arteries were harvested with robotic-assistance and anastomosis were manually constructed through a small non-rib spreading incision or closed chest robotic assistance without cardiopulmonary bypass on the beating heart. 118 cases were performed in a single stage in a hybrid operating theatre and 40 cases were performed in two stages.

Results: There were no deaths or wound infections. There was one peri-operative myocardial infarction in the one stage group. One patient suffered a stroke and four patients required re-exploration for bleeding in the one stage group. The average ICU stay was 1.1 ± 0.53 days, and the average hospital stay was 4.6 ± 2.4 days. All patients were alive and symptom free except for one patient at 10 years follow-up. Follow-up angiogram at mean 8 months demonstrated patency rate of 94% for the LITA and 92% for the stents. Long term patency rate at mean of 5 years demonstrated persistent patency rate of 94% for the LITA and 92% for the stents.

Conclusions: Hybrid minimally invasive coronary artery revascularization is safe and feasible in patients with multi-vessel coronary artery disease. This approach allows complete coronary artery revascularization with decreased surgical trauma and post-operative morbidity with very acceptable long term patency results and outcomes. Randomized control trials are necessary to better determine the benefits of this technology.

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Single Centre Initial Experience with del Nido Cardioplegia in Adult Cardiac Surgery

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†Disclosures not available

Purpose: Del Nido cardioplegia(DNC)has been used in the pediatric population since the early 1990s. Recent medical literature suggests that it can be used safely in adult cardiac surgery patients The objective of this investigation was to describe our experience with DNC as a myocardial-protection strategy in a diverse group of adult cardiac surgery patients

Methods: We performed a restrospective analysis of all patients from Sept 2016 to April 2017 that underwent cardiac surgery utilizing DNC as myocardial protection strategy, delivered using the microplegia system(Quest medical, Dallas, Tx). Patients who had valve surgery with or without concomitant coronary artery bypass grafting (CABG), or minimally invasive/robotic assisted procedures, were selected.

Results: During the study period, 25 patients underwent cardiac surgery with DNC. Mean [SD] age was 65. 1 [10. 1] years, and 10 (37%) patients were female. Six (24%) patients underwent urgent surgery. Aortic valve replacement (AVR) was performed in 8 patients (32%, 3 via mini-thoracotomy), mitral valve repair (MVR) in 9 patients (36%, 1 patient robot assisted, 8 mini-thoractomy), AVR+CABG in 5 patients (20%), MVR+CABG in 1 patient (4%), and AVR+MVR+tricuspid valve repair in 1 patient (4%). Mean [SD] crossclamp time and bypass times were 104 [32] and 162 [62] minutes, respectively (Table 1).

One patient died post-operatively due to acute Type A aortic dissection (Table 1). Six (24%) patients required to be on inotropic support postoperatively. There was no post-operative myocardial infarction, reintervention, reoperation for bleeding or renal failure requiring dialysis. Median [IQR] intensive care and hospital lengths of stay were 1 [1,2] days and 7 [5,9] days, respectively.

Conclusions: DNC delivered using microplegia system is safe in adult patients undergoing complex and minimally invasive cardiac operations. It may be beneficial in patients at high risk of developing complications by reducing ischemic and pump time while providing excellent myocardial protection. Randomized studies are needed to further evaluate its efficacy in adult cardiac surgery.

HEART FAILURE

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HeartWare HVAD Pump Exchange though Left Minithoracotomy Approach

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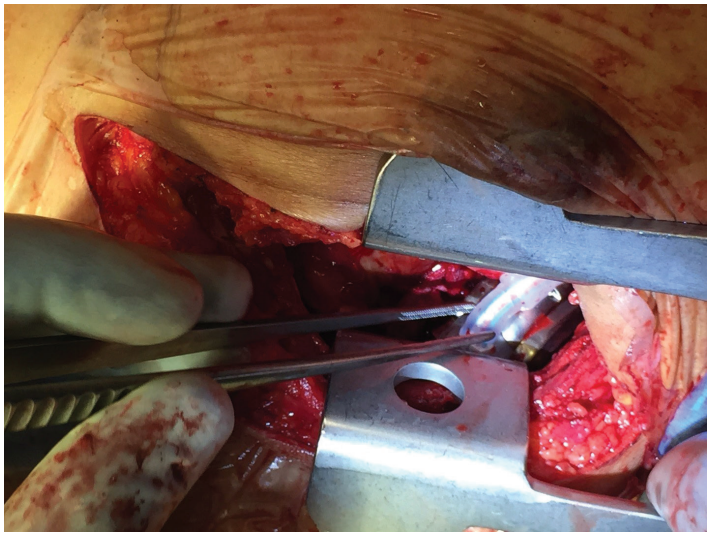
Purpose: In LVAD patients pump thrombosis is considered a major adverse event. Upon presentation, medical management is initiated by utilizing lytic therapies or augmenting anticoagulation. Ultimately, this approach has not proven to resolve the episode of thrombosis, thus leading to a pump exchange.

Methods: Between January 2013 and June 2017, 32 patients (28 male, 87.5%) underwent implantation of the HeartWare HVAD at our institution. Median age at implant was 55 years. Medical treatment was defined as intravenous administration of heparin, argatroban or tissue plasminogen activator. Surgical treatment included exchange of HVAD pump though left mini-thoracotomy.

Results: Six patients (18.75%) developed 9 episodes of pump thromboses: 1 patient had 3 events, 4 had 2, and 1 patient presented 1 episode. The median time to the first thrombosis was 492 days. Initial medical management was attempted in all episodes of thrombosis (tissue plasminogen activator in 3, heparin in 6 and argatroban in 3 patients). Medical management was unsuccessful in all cases leading to pump exchange via left mini-thoracotomy in all 6 patients. HVAD pump exchange was performed under general anesthesia through a left mini-thoracotomy at level of 5th or 6th intercostal space. Four patients were supported on cardiopulmonary by-pass (CPB) through femoral cannulation, while two patients did not require CPB support. There were no significant early postoperative complications after device exchange, and all patients survived to hospital discharge.

Conclusions: HVAD pump exchange can be performed safely through a left mini-thoracotomy approach. This results need further study on larger cohort of patients, but favorable outcomes support the early indication for pump exchange in patients with pump thrombosis.



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von Willebrand Factor Degradation Fragments Are a Mechanistic Link Between Continuous-Flow LVAD Support and Gastrointestinal Angiodysplasia and Bleeding

***C. Bartoli**, S. Hennessy-Strahs, J. Kang, P. Atluri†, M. Acker, C. Bermudez†*

Institution where study was performed: University of Pennsylvania

†Disclosures not available

Purpose: Patients with a continuous-flow left ventricular assist device (LVAD) bleed from gastrointestinal angiodysplasia at an alarming rate.

Supraphysiologic shear stress within LVADs causes pathologic degradation of von Willebrand factor (vWF) multimers into vWF fragments. Relationships between vWF degradation and bleeding from angiodysplasia have not been explored. We tested the hypothesis that LVAD patients with higher levels of plasma vWF fragments are more likely to develop gastrointestinal bleeding from angiodysplasia.

Methods: Paired blood samples were collected from patients before and during continuous-flow LVAD support (n=35, 417±53 days support). Patients were stratified as non-bleeders and bleeders (from angiodysplasia). Plasma vWF multimers and vWF fragments were quantified with agarose and polyacrylamide gel electrophoresis and immunoblotting.

Results: In all patients, LVAD support degraded high-molecular-weight vWF multimers (-9±1%, $p<0.0001$) into low-molecular-weight vWF multimers (+40±6%, $p<0.0001$) and vWF fragments (+54±6%, $p<0.0001$). In patients that developed gastrointestinal bleeding from endoscopy-confirmed angiodysplasia (n=7, onset 58±24 days support), vWF fragments were significantly elevated versus non-bleeders (+85±16% versus +46±5%, $p<0.01$).

Conclusions: Continuous-flow LVAD support caused an acquired vWF deficiency with a characteristic profile of pathologic vWF degradation. Higher levels of vWF degradation fragments were observed in patients who bled from gastrointestinal angiodysplasia than non-bleeders. This finding supports the novel hypothesis for a mechanistic link between vWF fragments and angiodysplasia. Plasma vWF fragments may have clinical utility as a biomarker to risk stratify patients for LVAD-associated gastrointestinal bleeding.

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The Role of Short-Term Assist Devices for Cardiogenic Shock

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†Disclosures not available

Purpose: To analyze our results with short term assist devices in the management of Intermacs 1 profile patients from different etiologies

Methods: Retrospective single center cohort analysis of those patients who developed cardiogenic shock requiring mechanical circulatory support. Short term included

Results: Fifty-one MCS patients, 35 were adults (mean-age 50 ± 11 years) and 16 were pediatrics (mean age 11 ± 5 years). The overall survival was 53% (ECMO 57% and TLCP 48%; p=NS). The etiologies were classified into 3 categories: post cardiotomy shock 14 p; post heart transplant graft failure 12 p and others etiologies 25 p (15 dilated cardiomyopathy, 6 myocarditis, 2 acute myocardial infarction and 2 restrictive cardiomyopathy). Thirty-two p were assisted with ECMO and 19 with TLCP (15 biventricular; 4 left ventricular support).
Twenty-four p were bridge to transplant (BTT); 5 of those declared futile and 19 p were transplanted. BTT mean time support was 10 days (range 2-30 days). Post transplant survival was 85%.

Twenty-four p were bridge to recovery (BTR), 83% of those patients recovered the ventricular function. BTR mean time support was 7 days (range 3-17 days).

Conclusions: Our results were similar to the international published data. We found short term assist devices a useful strategy in the management of patients who present INTERMACS 1 profile.

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20 years of Mechanical Circulatory Support at University of Miami / Jackson Memorial Hospital

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COMMERCIAL RELATIONSHIPS: S. Pham: Consultant/Advisory Board, Abiomed, Inc.

†Disclosures not available

Purpose: The Mechanical Circulatory Support (MCS) Program at University of Miami / Jackson Memorial Hospital (UM/JMH) was founded in 1996. Technological advances have resulted in expansion of indication of MCS therapies, in benefit of our patient. We present the experience of our program, general postoperative outcomes, and discuss future directions.

Methods: We retrospectively analyzed of the development and outcomes of MCS program at UM/JMH. We reviewed 260 MCS implants between 1996 and 2016. Patients were divided in type of device and indication (bridge to transplant or destination therapy).
Postoperative follow-up was done following INTERMACs guidelines and all adverse events were recorded.

Results: The first implant of durable MCS device was performed in 1996. A total of 260 implantable MCS devices have been implanted over the course of 20 years. A total of 82 pulsatile devices (PD) until the year 2008, and in 2009, 173 continuous flows devices (CFD) were implanted, including 121 HeartMate II, and 52 HeartWare. Forty patients required temporary right ventricular support. Hospital mortality was 22%. Mortality for PD was 36%, and CFD was 16%.

There are currently 69 patients on CFD support, of whom 30 patients received the device as bridge to transplantation, and 39 patients received the device as destination therapy. Average time of support for this group of patients is 183 days (range 2 to 2211).
About 50% of patients receiving heart transplantation in our program in recent years have been bridged with LVAD support.

Conclusions: The MCS Program at UM/JMH evolved over 20 years by improving surgical techniques and post-op care, that resulted in improved surgical outcomes, and reduced adverse events. This development has mirrored the technological evolution of MCS, placing UM/JMH MCS Program as one of the largest of SouthEast USA.

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Continuous Flow Left Ventricular Support Is Safe and Effective Therapy on Patients over 65 Years of Age

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†Disclosures not available

Purpose: The incidence of heart failure increases with advancing age, affecting 1.5% of patients >65 years. Continuous flow left ventricular assist devices provide long term support for patients with advanced heart failure. We sought to characterize the outcomes of patients receiving CF-LVAD in our program.

Methods: We present a retrospective analysis of the mechanical support registry at our institution, including all patients older than 65 years of age who received CF-LVAD. Demographic data, as well as indication for LVAD, INTERMACS score at time of implant, type of CF-LVAD, and postoperative complications were analyzed. Primary end-point included operative mortality, and secondary end-point included development of major postoperative complications, and long term survival to transplantation or death.

Results: A total of 159 patients received CF-LVAD between 2010 and 2016, including 43 (27%) > 65 years. Heart Mate II was implanted in 36 (84%), and HeartWare in 7 (16%) of patients. Among patients > 65 years of age, 73% received CF-LVAD as destination therapy, and 27% as bridge to transplantation. Four patients required concomitant tricuspid valve repair. INTERMACS score at time of implantation was I in 14%, II in 70%, and III in 16% of patients. Hospital mortality was 13%. Survival to hospital discharge was 50% for INTERMACS I patients, 90% for INTERMACS II, and 100% for INTERMACS III. Major operative complications included acute kidney insufficiency (n=3, 7%), and stroke (n=2, 5%). Major causes of death included multisystem organ failure, and stroke. Among 37 (87%) patients discharged from hospital alive, average time of support was 847 days (range 68 - 2,200), and t patients received heart transplantation.

Conclusions: LVAD implantation is safe and effective therapy for heart failure patients > 65 years. Operative mortality is low, and comparable to younger patients for INTERMACS II and III patients, while patients on INTERMACS I present high operative mortality.

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Gastrointestinal Bleeding in Patients Supported by Ventricular Assist Devices Is Not Associated with Anticoagulation Level or Device Settings

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†Disclosures not available

Purpose: Gastrointestinal (GI) bleeding is a frequent complication in patients with continuous flow left ventricular assist devices (CF-LVADs). Existing literature have failed to consistently identify risk factors for GI bleeding. We hypothesized that anticoagulation level and device settings are not associated with episodes of GI bleeding.

Methods: We included patients with a CF-LVAD who developed GI bleeding at our institution from May 2008 through February 2017 as cases. Analysis time began on the date of LVAD implant and ended on date of transplant, LVAD explant or exchange, patient death, or last follow-up. Date of GI bleed was used as failure time. Each case was matched with up to four control patients by LVAD duration and implant age. Multivariate analysis was performed to evaluate the association of the patients' international normalized ratio (INR), platelet count, LVAD pump speed, and presence of aortic valve (AV) opening with GI bleed.

Results: During the analysis time, 229 patients were implanted with a CF-LVAD, and 42 (18%) patients developed a GI bleed. In the overall cohort, patients who developed a GI bleed were significantly older at time of LVAD implant (p<.001), had a lower baseline hemoglobin (p=.014), and were more likely to have an LVAD implanted for ischemic cardiomyopathy (p=.034) as destination therapy (p=.041) compared to those without a bleed. After matching, conditional logistic multivariate analysis revealed that INR, platelet count, pump speed, and presence of AV opening were not associated with increased odds of GI bleed.

Conclusions: There is conflicting data on the etiology of GI bleeding post-LVAD implant. In patients with CF-LVADs in our study, INR, LVAD speed, and aortic valve opening are not predictive of GI bleeding after matching for implant duration and age.

Table 1. Baseline and Matched Patient Characteristics

	No GI Bleed	GI Bleed	*p*-value
Entire Cohort			
Number	187 (81.7%)	42 (18.3%)	---
Median Age (Years)	56 (45-65)	65 (55-72)	<.001
Median BMI (kg/m^2)	28.4 (24.7-33.6)	26.8 (22.5-30.5)	.027
NYHA Class III or IV	172 (92%)	39 (93%)	.848
Median Baseline Values			
INR	1.2 (1.1-1.4)	1.3 (1.1-1.4)	.435
Hemoglobin (g/dL)	11.3 (9.9-12.4)	10.4 (9.3-11.2)	.014
Platelet Count	186 (130-233)	184 (136-215)	.506
ALT (units/L)	23 (16-38)	25 (17-47)	.427
AST (units/L)	26 (19-35)	25 (22-37)	.633
Creatinine (mg/dL)	1.3 (1.0-1.7)	1.6 (1.2-1.9)	.124
Device Strategy			
Bridge to Recovery	5 (3%)	1 (3%)	.041
Bridge to Transplant	85 (47%)	11 (26%)	
Destination Therapy	90 (50%)	30 (71%)	
Primary Cardiomyopathy			
Idiopathic	75 (49%)	13 (32%)	
Ischemic	59 (39%)	26 (63%)	.034
Viral	5 (3%)	1 (2%)	
Familial	14 (9%)	1 (2%)	
Transplanted	44 (24%)	9 (21%)	.771
Deceased	53 (28%)	15 (36%)	.345
Matched Cohort			
Median Time to Bleed (Days)	---	30 (16-111)	---
Parameters on Day of Event			
INR	2.2 (1.4-2.7)	2.2 (1.6-2.7)	.841
Hemoglobin (g/dL)	9.6 (8.6-11.4)	7.9 (7.1-8.5)	<.001
Platelet Count	230 (181-322)	216 (186-264)	.363
LVAD Flow Rate (lpm)	5.0 (4.5-5.6)	5.0 (4.4-5.7)	.961
LVAD Pump Speed (rpm)	9000 (8800-9200)	9200 (8790-9400)	.365
LVAD Pulsatility	5.4 (4.7-6.2)	5.0 (4.3-5.5)	.003
LVAD Power (watts)	5.5 (5.0-6.0)	5.6 (5.1-6.3)	.216
Aortic Valve Opening	39 (43%)	22 (58%)	.119
LVEDD (cm)	5.6 (5.0-6.4)	5.7 (4.8-6.5)	.981

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Circulatory Support in Acute Heart Failure and Arrhythmic Storm with ICD Lead Endocarditis: Multisystemic Stabilization and Heart Transplant

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Institution where study was performed: Clínica Universitaria Colombia

COMMERCIAL RELATIONSHIPS: J. Maldonado: Speaker Bureau/Honoraria, AtriCure, Edwards Lifesciences

Purpose: Cardiac transplant after infective endocarditis (IE) remains controversial, especially with active infection, where transplant is contraindicated because of the high risk of donor organ infection. We aim to show a case where we used circulatory support to control active infections and multiorgan dysfunction, allowing bridge to cardiac transplantation.

Methods: We present the case of a 23-year-old male, without previous medical history, who presented with acute decompensated heart failure. The echocardiogram showed dilated cardiomyopathy (LVEF 17%). Myocarditis was suspected. An ICD was implanted for primary prevention. He presented with electric storm to local hospital 10 days later with adequate ICD discharges, developing renal insufficiency, ischemic hepatitis and cardiogenic shock requiring hemodynamic support and haemodialysis. A central venous catheter infection was documented. Antibiotics were started and the patient was transfer to our institution.

Results: Pre-transplant study was started. The patient had a torpid evolution with refractory heart failure and sepsis. Antibiotic coverage was broadened. TEE showed ICD electrode endocarditis, severe biventricular dysfunction (LVEF 8%), severe mitral, tricuspid and pulmonic regurgitation. A peripheral Veno-Arterial ExtraCorporeal Membrane Oxygenator (ECMO) was implanted through femoral vein and artery, as bridge to decision, pending multiorgan dysfunction and sepsis modulation. Electrodes and ICD were removed. The patient developed pulmonary edema and pneumonia, severe coagulopathy, severe renal insufficiency, acalculous cholecystitis, Acinetobacter baumanni and Candida sepsis and multiple soft tissue infections. Every complication was treated by a multidisciplinary group achieving stabilization and resolution of the sepsis. The peripheral ECMO (after 24 days) was switched to Biventricular Assist Device (BiVAD), allowing physical rehabilitation and removal from mechanical ventilation. After 45 days on BiVAD, the patient was successfully transplanted and was discharged 18 days after with no important complications.

Conclusions: Circulatory support was successful while controlling active infections and multiorgan dysfunction in this particular case, allowing the patient to be considered for cardiac transplant in a better clinical situation. This case supports that cardiac transplant is possible, in selected individuals, despite the infective high risk.

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Holter Abnormalities in Orthotopic Heart Transplantation Patients: Retrospective Results from the Largest Heart Transplant Referral Center in Colombia, South America

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†Disclosures not available

Purpose: Electrocardiographic (EKG) abnormalities and cardiac arrhythmias can occur in orthotopic heart transplantation (OHT) patients. There is no available data on the prevalence of these alterations detected with Holter monitoring and their relationship to patient outcomes. We wanted to be the first center in South America to analyze such association.

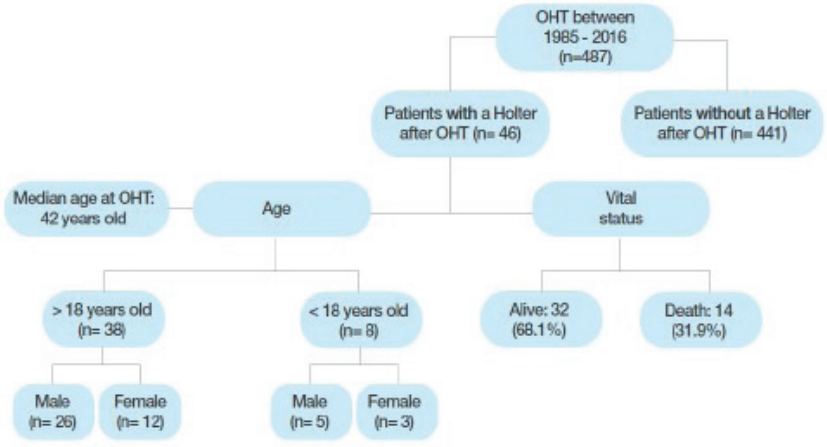
Methods: A retrospective, observational, descriptive study was performed. A database of 487 OHT patients between 1985 and 2016 (31 years) was reviewed and analyzed. All of the Holter monitor results reported on these patients were reviewed and the prevalence of various arrhythmias and Holter abnormalities were noted. The inclusion criteria involved any OHT patient with a Holter monitor report in order to avoid selection bias. Fisher´s exact test and chi square was used to evaluate significant association between mortality, sex and Holter.

Results: Of the 487 OHT patients, only 46 (9.4%) had available Holter reports. Of those, 31 (65.9%) were male. The median age at transplant was 42 years, Interquartil range (IQR) (25.25-52). The most common arrhythmia was atrial flutter (4.3%) followed by atrial fibrillation (2.2%). A right bundle branch block (RBBB) pattern was seen in 32.6%, and first-degree atrioventricular block (AVB) in 10.8%. Mortality and the presence of intraventricular conduction delays had a statistical significant association (P=0.048, CI 95%).
Although a trend was observed between mortality and the presence of RBBB itself, this did not reach statistical significance (P=0.058, CI 95%).

Conclusions: Our study suggests an overall low prevalence of arrhythmias such as atrial flutter or atrial fibrillation on occasional 24 Holter recording, with high prevalence of RBBB and an association between mortality and the presence of intraventricular conduction delay. Further studies are required to determine the reproducibility of our findings.

Rhythm/ Fin	*Populatio n (n=46)*	*Mortality (n= 14)*	*P value, CI 95%*
Sinus rhyth	40 (86.9%)	12 (85.8%)	0.276
Atrial fibrilla	1 (2.2%)	1 (7.1%)	
Atrial flutter	2 (4.3%)	0 (0%)	
Atrial and ve	1 (2.2%)	0 (0%)	
Heart rate			
Median averaged heart rate	95, IQR (84.25-104)	QR (86.5-103	0.733
Minimum heart rate - beats/min	76, IQR (58.50-84.75)	QR (51.25-85	0.871
Maximum heart rate - beats/min	120, IQR (110.25-135)	IQR (111.25-	0.452
Heart block			
Intraventricular conduction delay - beats/min	16 (34.8%)	9 (64.3%)	0.048*
Right Bundle Branch Block - no. (%)	15 (32.6%)	8 (57.1%)	0.058
Left Bundle Brach Block - no. (%)	0 (0%)	0 (0%)	-
Nonspecific intraventricular conduction delay - no. (%)	1 (2.2%)	1 (7.1%)	0.304
First degree AV block - no. (%)	5 (10.9%)	3 (21.4%)	0.157
Second and third degree AV block - no. (%)	0 (0%)	0 (0%)	-

Table 1. OHT findings and association with mortality



Study population

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Cardiac Surgery in Cardiogenic Shock

***J. Rios**, J. Morón*
Institution where study was performed: Cardiovascular National Institute, EsSalud, Lima, Perú

Purpose: The mortality in cardiac surgery of cardiogenic shock is very high. However, in some cases surgery has been shown to decrease mortality in those patients. In order to determine mortality of cardiogenic shock in patients undergoing cardiac surgery and the risk factors associated with it, we conducted a retrospective investigation.

Methods: We conducted a retrospective study from January 2012 to December 2015. Cardiogenic shock was defined according to definitions of the Shock trial Registry study. We determined the 30-day mortality and the variables associated with it.

Results: 45 patients were admitted for cardiac surgery in cardiogenic shock, IAM-ACS or its complications were the cause in 33 patients (73%) and in 10 (22%) was critical aortic stenosis or acute valvular insufficiency due to endocarditis (valvular disease). Mortality was 47 % (21 patients). The shock caused by IAM-ACS had higher mortality (52%) than caused by valve disease (30%) but without statistical significance (p = 0.23, CI 95 %, OR:1.7). The elevation of creatinine above 1.2mg / dl was not a predictor of mortality with statistical significance (p=0.14, CI 95%, OR:2.8). The hyperlactataemia above 4 mmol/l had a mortality of 80 % and was a predictor of mortality with high statistical significance in both univariate analysis (p = 0.0001, CI 95 %, OR:9.3) and multivariate analysis (HR:4.76, p: 0.001 95% CI:1.91-11.88).

Conclusions: The mortality of cardiac surgery in cardiogenic shock is very high. Hyperlactataemia greater than 4 mmol/l is a good predictor of hospital mortality.

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Arrhythmogenic Right Ventricular Cardiomyopathy/Dysplasia and HeartMate II as Destination Therapy: A Case Report

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Purpose: Arrhythmogenic right ventricular dysplasia / cardiomyopathy (ARVD / C) is an inherited cardiomyopathy characterized by ventricular arrhythmias, increased risk of sudden cardiac death, and structural and functional abnormalities of the right ventricle with an unknown progression rate of right ventricular dysfunction. We present the case of a patient with Right Ventricular Arrhythmogenic Dysplasia / Arrhythmogenic Cardiomyopathy (ARVD / C) successfully led to the implantation of HeartMate II as target therapy.

Methods: We described the first patient with an ARVD/C implanted as a destination therapy after reconstruction of an aneurisma of the right ventricle.

Results: A 40 year- old female who was admitted to the advanced heart failure unit because of a stage D heart failure. She was diagnosed with an ARVD/C with an Echo TT shows biventricular dilated cardiomyopathy with apical aneurysm and right ventricular and left ventricular trabeculation compatible with ARVD / C, severe tricuspid insufficiency and 25% LVEF.

Heart failure team decided to study the heart transplant candidacy as an elective patient.
She was rehospitalized for an arrythmic storm and she required support with ECMO VA and then she was switched to LVAD support. We received the Antibody reactive panel that informed she was sensitized; for that reason we studied the possibility of a LVAD as a destination Therapy but first a right ventricular reconstruction was realized because of a finding of a right ventricular aneurysm.

Conclusions: This case shows a patient with ARVC / D and contraindication for heart transplantation who was adequately supported with LVAD, being a candidate for HeartMate II implantation as a destination therapy, which was successfully performed by adding right ventricular reconstruction techniques and relevant valve repairs, with excellent clinical results in short and long term.

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The Use of Extracorporeal Membrane Oxygenation in the Setting of Cardiovascular Collapse After Cardiac Catheterization

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†Disclosures not available

Purpose: The aim of this study is to report a single institution's outcomes with the use of Extra Corporeal Membrane Oxygenation (ECMO) in the setting of acute coronary syndromes associated with cardiovascular catheterization and subsequent development of cardiogenic shock.

Methods: A retrospective review of all patients with the following inclusion criteria was conducted at a single institution: 1. A diagnosis of acute coronary syndrome 2. A cardiac catheterization and/or percutaneous coronary intervention within 7 days of presentation 3. Hemodynamic collapse requiring ECMO utilization.

Results: 43 patients were identified as meeting the inclusion criteria. They had an average age of 56.8 years ± 12.4 years, 88.4% (n=38) were male. All patients suffered from cardiogenic shock. Procedural complications included vascular injury in 14 patients (32.6%), fasciotomy in 3 patients (7%) and requirements for cannula revision in 4 patients (9.3%). Renal failure occurred in 20 patients (46.5%) and 12 patients (27.9%) required hemodialysis. Hepatic failure was diagnosed in 3 patients (7%) and neurological events occurred in 34 patients (79.1%) and included acute cerebrovascular accidents in 7 patients (16.3%). Mortality occurred in 34 out of 43 patients during the index hospitalization equating to mortality rate of 79.1%. The 90-day mortality rate was 81.4% (n=35) (Table 1).

Conclusions: The use of ECMO in cases of acute coronary syndromes compromised by hemodynamic collapse is associated with poor outcomes, however, its use may be justified by the relatively young age and healthy comorbid status of patients with this presentation.

Table 1

Complication	N	%
Revision	4	9.3
Renal Failure	20	46.5
HD	12	27.9
Vascular Injury	14	32.6
Fasciotomy	3	7.0
Sepsis	5	11.6
CVA	7	16.3
Neurologic Event	34	79.1
Hepatic Failure	3	7.0
Decanulated	21	48.8
30D Mortality	34	79.1
90D Mortality	35	81.4

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Atrial Reduction Surgery in Giant Left Atrium with Modified "Spiral Technique"

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Institution where study was performed: Cardiovascular National Institute, EsSalud, Lima, Perú

Purpose: About 19% of patients who undergo mitral valve surgery have giant left atrium (LA), and mitral valve disease often is accompanied by chronic atrial fibrillation, especially when the left atrium is enlarged. Mitral valve surgery alone cannot resolve the arrhythmia and LA enlargement. The aim of this study is to report our experience performing LA reduction surgery added to mitral valve surgery.

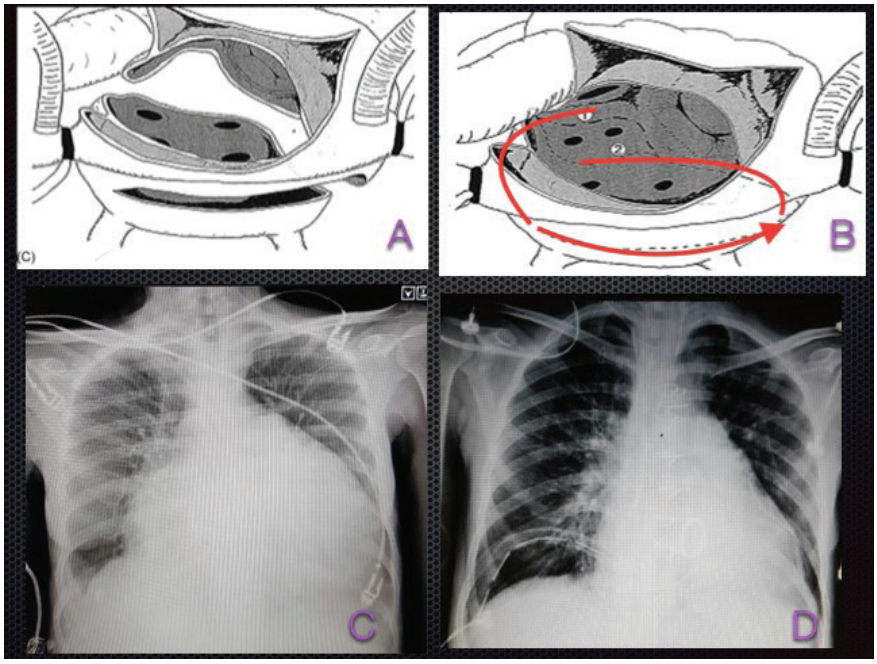
Methods: Prospective study from January 2016 to March 2017.

We determine mortality and complications in LA reduction surgery in patients undergoing mitral valve surgery with giant LA. The giant LA was defined when the anteroposterior diameter of the LA was greater than 70 mm on transthoracic echocardiography. All patients underwent intraoperative transesophageal echocardiography, among other procedures, as well as a monthly follow-up that included 24-hour Holter. The technique used for LA reduction was the modified "spiral technique" added to mitral valve surgery.

Results: Between January 2016 and March 2017, we operated 07 patients with giant LA secondary to mitral valvulopathy. Average age: 56 years. All patients had mitral stenosis and tricuspid insufficiency; the mean diameter of the left atrium was 88 mm, mean LVEF: 58%. All patients had preoperative AF. All patients underwent mitral valve replacement and tricuspid repair in addition to LA reduction.

Hospital mortality was 1/7 patients (14%). In the postoperative period the mean LA diameter was 52mm. No permanent atrioventricular conduction disturbances were observed. 5/7 patients are in sinus rhythm at an average follow-up of 8 months.

Conclusions: Left atrial reduction seems to be an effective alternative method for treating mitral valve disease with chronic atrial fibrillation and giant LA.



A) "Spiral resection" surgery by Sugiki et al., B) Modified "Spiral resection" surgery, C) preoperative X-ray, D) postoperative X-ray

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Clinical Outcomes of Young Patients Undergoing Endovascular or Open Repair for Abdominal Aortic Aneurysms: A Systematic Review and Meta-analysis

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Institution where study was performed: First Faculty of Medicine, Charles University in Prague, Czech Republic

Purpose: Abdominal aortic aneurysm (AAA) is typically treated via open repair. Endovascular aortic repair (EVAR) is a popular alternative, especially in younger patients (40-65 years) with a high postoperative mortality risk. Outcomes of open repair or EVAR remain uncertain in young patients, so we performed a meta-analysis to aid clinical decision-making.

Methods: PRISMA guidelines were followed. The PubMed, CNKI, and Cochrane library databases were searched for relevant articles comparing clinical outcomes for young (40-65 years) AAA patients undergoing elective EVAR and open surgical procedures using predefined search criteria. Two independent reviewers extracted data from eligible studies in a pre-defined data extraction grid and disagreements were resolved by discussion. Demographics were analyzed by descriptive statistics. The Cochran Q and I2 statistics were deployed to assess heterogeneity. Homogeneous data were meta-analyzed via a weighted DerSimonian-Laird random-effects model (RevMan v5 software). Forest plots were generated to assess clinical outcomes and publication bias

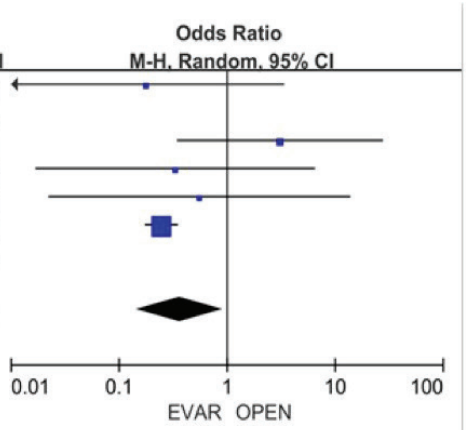
Results: Seven studies containing 28,105 patients met inclusion criteria and underwent meta-analysis. There was a decreased risk of 30-day mortality (OR = 0.37, 95% CI 0.15-0.93; p = 0.03) in the EVAR cohort of patients compared to the open group. However, there was no significant difference between the two groups with respect to the risks of re-intervention (OR = 0.95, 95% CI 0.47-1.93; p = 0.89) and long-term mortality (OR = 0.66, 95% CI 0.19-2.29; p = 0.51). No publication bias was detected

Conclusions: EVAR may have an effect on short-term outcomes in young AAA patients undergoing surgery, but their overall better physical status may protect them from long-term complications.

1A

Study or Subgroup	EVAR Events	EVAR Total	OPEN Events	OPEN Total	Weight	Odds Ratio M-H, Random, 95% CI
Altaf 2013	0	40	4	68	8.5%	0.18 [0.01, 3.37]
Diehm 2008	0	25	0	25		Not estimable
Gupta 2012	4	369	1	282	13.9%	3.08 [0.34, 27.70]
Lee 2014	0	50	3	119	8.4%	0.33 [0.02, 6.50]
Sandford 2013	0	59	1	99	7.3%	0.55 [0.02, 13.77]
Schwartze 2009	38	12783	169	14067	61.9%	0.25 [0.17, 0.35]
Sirignano 2016	0	49	0	70		Not estimable
Total (95% CI)		**13375**		**14730**	**100.0%**	**0.37 [0.15, 0.93]**
Total events	42		178			

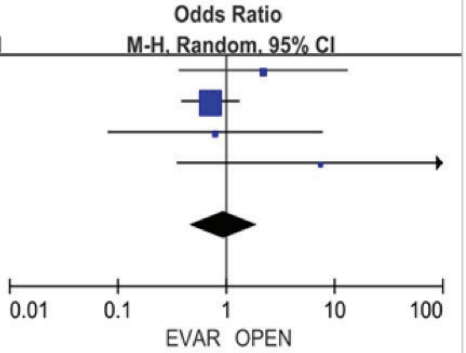
Heterogeneity: Tau² = 0.32; Chi² = 5.27, df = 4 (P = 0.26); I² = 24%
Test for overall effect: Z = 2.12 (P = 0.03)



1B

Study or Subgroup	EVAR Events	EVAR Total	OPEN Events	OPEN Total	Weight	Odds Ratio M-H, Random, 95% CI
Diehm 2008	4	25	2	25	14.1%	2.19 [0.36, 13.22]
Gupta 2012	21	369	22	282	71.7%	0.71 [0.38, 1.32]
Lee 2014	1	50	3	119	9.0%	0.79 [0.08, 7.77]
Sirignano 2016	2	49	0	70	5.2%	7.42 [0.35, 158.05]
Total (95% CI)		**493**		**496**	**100.0%**	**0.95 [0.47, 1.93]**
Total events	28		27			

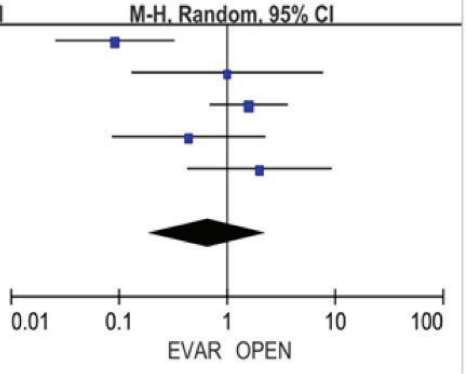
Heterogeneity: Tau² = 0.08; Chi² = 3.33, df = 3 (P = 0.34); I² = 10%
Test for overall effect: Z = 0.14 (P = 0.89)



1C

Study or Subgroup	EVAR Events	EVAR Total	OPEN Events	OPEN Total	Weight	Odds Ratio M-H, Random, 95% CI
Altaf 2013	3	40	32	68	21.5%	0.09 [0.03, 0.32]
Diehm 2008	2	25	2	25	15.9%	1.00 [0.13, 7.72]
Lee 2014	11	50	18	119	24.6%	1.58 [0.69, 3.65]
Schwartze 2009	2	12783	5	14067	18.7%	0.44 [0.09, 2.27]
Sirignano 2016	4	49	3	70	19.4%	1.99 [0.42, 9.30]
Total (95% CI)		**12947**		**14349**	**100.0%**	**0.66 [0.19, 2.29]**
Total events	22		60			

Heterogeneity: Tau² = 1.47; Chi² = 16.28, df = 4 (P = 0.003); I² = 75%
Test for overall effect: Z = 0.66 (P = 0.51)



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Triangular Plasty of Left Atrium for Atriomegaly During Mitral Valve Replacement

K. Vakulenko

Institution where study was performed: National Amosov's Institute of Cardiovascular Surgery, Kyiv, Ukraine

Purpose: To determine possibilities of left atrium (LA)`s reduction by original method of triangular plasty of LA (TPLA) during mitral valve replacement (MVR) for isolated mitral valve disease (MVD).

Methods: During 2005 - 2015 yy. 705 adult patients (pts) with MVD and LA`s atriomegaly (diameter of LA > 60 mm) average 71,7 ± 1,8 were operated at Institute. MVR were performed in all pts. There were 310 (43,4%) males, 395 (56,6%) females. Average age was 51,5 ± 6,9 yy. There were 428 (60,7%) in IY NYHA class and 277 (39,3%) in III class. The main reason of MVD were: rheumatism (69%). AF was marked in all pts. All data divided at 2 groups: group A - TPLA + ligation of LA`s auriculum was 128 pts and group B - 577 pts only MVR without LA`s plasty or ligation`s auriculum. All operations were performed with CPB, moderate hypothermia with crystalloid cardioplegia. Cross-clamping time of aorta (min) were: group A - 73,4 ± 8,6 and group B - 47,2 ± 4,9 ($p< 0,05$). Absence of using blood product in 41,5%.

Results: The hospital mortality were: in group A - 1,6% (n=2/128) and in group B - 2,6% (n=15/577) ($p<0,05$). Sinus rhythm was restored at discharge: group A - 7,2% and group B - 1,7% ($p<0,05$). At the remote period (average was 7,2± 0,7 yy) 651 (93,5%) pts were followed-up. Data of echo for group A: diameter of LA (mm) - preoperative (PRE) - 71,4 ± 1,4, postoperative (POST) - 51,6 ± 0,8, remote period (RP) - 52,2 ± 0,7; ejection fraction of LV (EFLV): PRE - 0,52 ± 0,05, POST - 0,55 ± 0,04, RP - 0,58 ± 0,02 . Data of echo for group B were: diameter of LA (mm): PRE- 71,3 ± 1,5 , POST - 69,3 ± 1,8, RP - 78,1 ± 1,8; EFLV: PRE - 0,53 ± 0,04 , POST - 0,54 ± 0,05, RP - 0,47 ± 0,04 . At remote period thrombembolic events and heart failure were marked respectively: in group A -1,7% and 2,9% and in group B -7,5% and 27,2% ($p<0,05$). Sinus rhythm was marked in group A - 3,5% and in group B - 0,0% ($p<0,05$).

Conclusions: The original method of TPLA was allowing to improve better clinical results at group A than in B ($p<0,05$).

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Minimally Invasive Cardiac Surgery Through Periareolar Approach

***J.S. Jaramillo**, M. Marin Cuartas, L.D. Saldaña Morales, A. Quintero, J. Escobar, J.C. Rendon*
Institution where study was performed: Clínica Cardio VID, Medellín, Colombia

Purpose: The aim of this study is to describe our experience with minimally invasive cardiac surgery through periareolar incision and to give some useful recommendations and considerations, which could help performing the periareolar approach.

Methods: This retrospective observational study describes our experience in 48 patients undergoing minimally invasive cardiac surgery through periareolar approach performed from January 2015 to December 2016 in our institution.

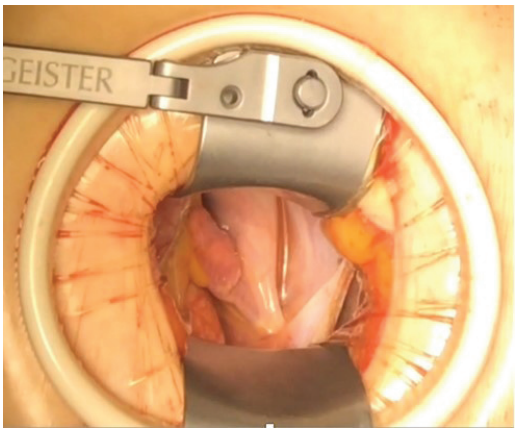
Results: A total of 48 patients underwent minimally invasive cardiac surgery through periareolar approach. We performed 19 (39.6%) atrial septal defect closures, 11 (23%) mitral valve repairs, 12 (25%) isolated mitral valve replacement, 3 (6.25%) mitral valve replacements combined with other procedures, 2 (4.2%) cardiac tumor resections, and 1 (2.1%) off-pump atrial perforation repair. All mitral valve repairs were performed with ring annuloplasty, 7 patients required neochordae and 2 patients required triangular leaflet resection. Mean times for aortic cross-clamping and perfusion were 69.29 ± 28.83 minutes (0-146 minutes) and 113.08 ± 47.30 minutes (0-261 minutes), respectively. There was no need for conversion to sternotomy. Median intensive care unit and hospital length of stay were 26 hours (0-120 hours) and 5 days (2- 17 days), respectively. Since the beginning of the series, one patient died from non-cardiac cause within 30-day postoperatively. No mitral valve repair required re-operation.

Conclusions: After adequate patient's selection, periareolar minimally invasive cardiac surgery is a safe approach which allows an accurate surgical technique, without increasing neither surgery times nor complications. Aesthetical results are better when compared with other kind of incision.

Table: Demographic variables and postoperative complications

Demographic variables and postoperative complications	
	n= 48
Female sex - n (%)	40 (83)
Mean age – years (range)	48.35 ± 14.35 (14 – 73)
Postoperative complications	
Coagulated hemothorax – n (%)	2 (4.2)
Atrioventricular block – n (%)	1 (2.1)
Breast hematoma – n (%)	1 (2.1)
Wound infection – n (%)	0

Postoperative cosmetic result



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Minimally Invasive Mitral Valve Repair: Our 4-year Experience

***J.S. Jaramillo**, M. Marin Cuartas, L.D. Saldaña Morales, A. Quintero, J. Escobar, J.C. Rendon*

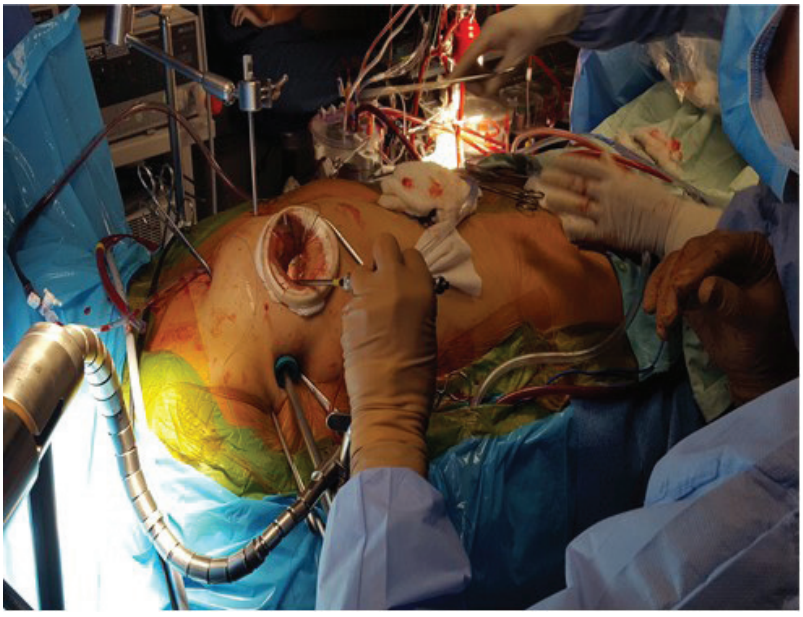
Institution where study was performed: Clínica Cardio VID, Medellín, Colombia

Purpose: Minimally invasive mitral valve repair has become a routine procedure at our institution. The objective of this study is to analyze the early and long-term outcomes of patients undergoing this procedure in the last 4 years at our institution.

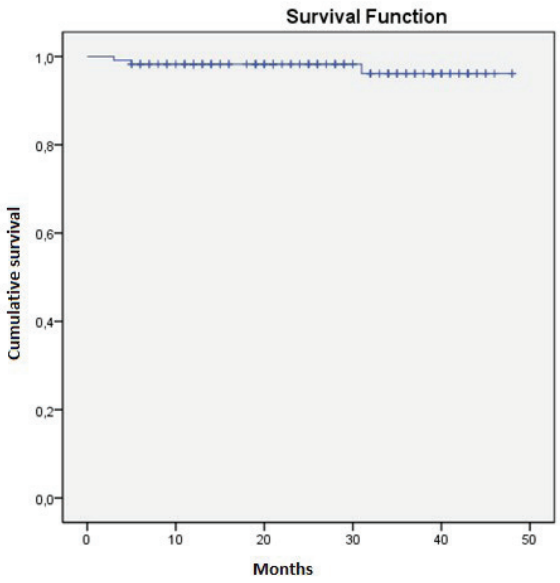
Methods: This retrospective observational study describes the 30-day outcomes and the 4-year follow up after minimally invasive mitral valve repair performed from January 2013 to December 2016 at our institution.

Results: We performed 114 minimally invasive mitral valve repairs. Successful repair rate was 99%. We performed 100 (88.5%) isolated mitral valve repairs. Additional procedures were performed in 13 patients (11.5%). Conversion to sternotomy was required in 3 patients (2.6%). Neochordae were used in 83 (76.3%) patients and triangular resection was performed in 27 patients (23.6%). Mean times for aortic cross-clamping and perfusion were 103 ± 30 minutes and 148 ± 42 minutes, respectively. Mean intensive care unit and hospital stays were 2 days and 4 days, respectively. Mechanical ventilation was longer than 24 hours in 12 patients (10.5%). Mayor adverse events were developed in 12/114 of patients (10.5%). There were no deep wound infections and no 30-day postoperative mortality. During the 4-year follow-up 3/114 patients (2.6%) died from non-cardiac causes and 3/114 patients (2.6%) required reoperation due late mitral valve repair failure.

Conclusions: Minimally invasive mitral valve repair in our institution is safe, reproducible and effective with few perioperative complications. Early and long-term outcomes in these patients are acceptable and comparable with those in recognized centers of experience.



Minimally invasive mitral valve repair through right minithoracotomy



Mortality Kaplan-Meier analysis after 4-year follow-up

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Worst Nightmare – Transcatheter Mitral Valve in Valve

***D. Petkov**, G. Nachev*

Institution where study was performed: University Hospital “St. Ekaterina” Sofia Bulgaria

REGULATORY DISCLOSURE: This abstract describes the off-label use of a device that is approved for another purpose.

Purpose: The objective of this presentation is to share our experience with transcatether aortic valve prosthesis (Sapien) in mitral position as “valve in valve procedure”.

Methods: From 2009 to august 2017 a total number of 152 patients underwent transcatheter valve implantation: 144 with standart TAVI, 3 “valve in valve” in aortic position and 5 “valve in valve” in mitral position.

The five mitral pts are survived mitral valve surgery (MVR-biological) in the past. All pts suffered from severe mitral stenosis, mitral regurgitation II -III and many others comorbidities. Three of pts were NYHA class III and two - class IV. Left ventricular ejection fraction (LVEF) less than 35 % we found in 2 pts, the rest three - between 35-70%. Peak mitral gradients were between 16-24(20)mmHg and mean gradients -5-12(8)mmHg. Mean STS score was 24,98, mean Logistic Euro score - 25,8 and STS 24,5%. . All pts were treated using a transapical approach. Positioning and valve implantation in four of pts was made with fluoroscopic approach in one patient the ring of mitral prosthesis (Aspire) was invisible fluoroscopic and procedure was done by 3D Echo (Video)

Results: All 5 replacements were successful without any conversion to conventional MVR using CPB. In early postoperative period we didn’t find any complication except one patient with acute renal failure who needs CVVH for 3 days. ICU stay 1-4 days, hospital stay 5-8 days. We couldn’t found post-procedural any valve regurgitation. All five pts survived procedure and was discharged. 3months, 6 months and 1 year follow up show decreasing gradients absence of new mitral regurgitation and improving NYHA functional class.

Conclusions: Our experience shows that transcatether valve is a reasonable approach for management of severe prosthetic mitral stenosis with low morbidity and zero mortality. This approach could be recommended as optimal treating strategy for high-risk patients with degenerative and structural changes in biological mitral prosthesis.

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Periareolar Access for Minimally Invasive Mitral Valve Surgery: The Brazilian Technique

***R. Poffo**, P. Montanhesi, S. Curcio, A. Toschi, R. Pope, C. Mokross, G. Rusca*

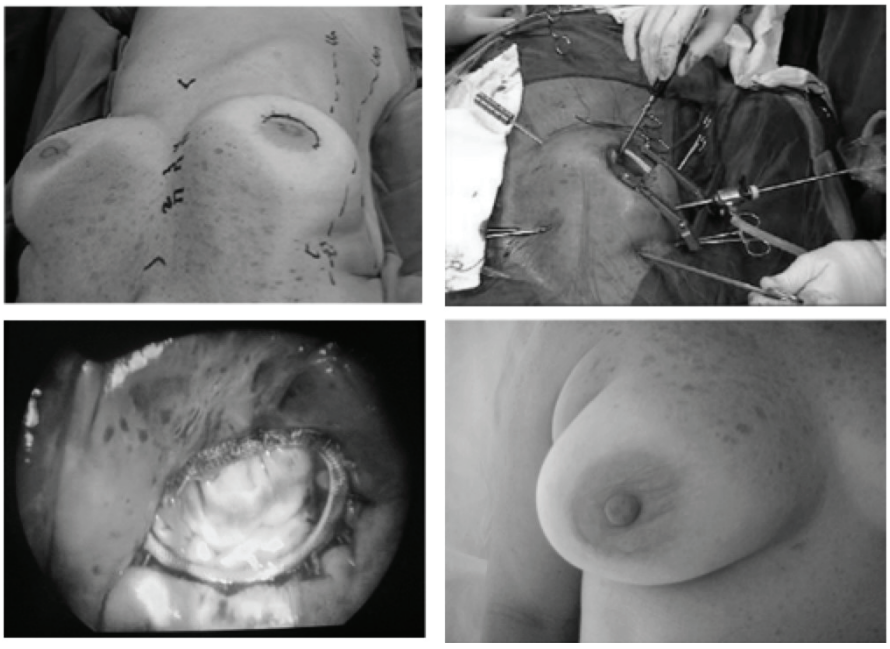
Institution where study was performed: Hospital Israelita Albert Einstein

Purpose: Describe an unprecedented route to video-assisted minimally invasive mitral valve surgery, combining the effectiveness of this method to a route on which manipulation of the mitral valve is optimized: the periareolar access.

Methods: Between February 2006 and June 2016, 214 patients underwent video-assisted minimally invasive cardiac surgery using the periareolar access. The cardiac pathologies approached were: mitral valvopathy (n=132), atrial septal defect (n=74), 24 patients presented associated tricuspid insufficiency, 35 presented associated atrial fibrillation. Eight patients had surgical extraction for pacemaker leads endocarditis. The age ranged from 18 to 72 years and 145 were female. The surgical approach was: femoral arterial and venous cannulation or right jugular vein cannulation, minithoracotomy on the right periareolar region, through the right breast and thoracoscopy.

Results: From the mitral valve pathology cohort (n=132) it was possible to perform mitral valve plasty in 95 patients and mitral valve replacement in 37 patients. There were no complications during the procedures. There was no conversion to thoracotomy in neither cases. There were no complications related to the surgical healing of the periareolar access or peripheral cannulation.

Conclusions: The periareolar access is safe and effective and can be used for video-assisted minimally invasive mitral valve surgery. It demonstrates excellent aesthetic and functional results.



Surgical aspects of the periareolar access

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Structuring a CV Surgical Program in the Dominican Republic: Implementation of QI Initiatives and Measurement of STS Indicators

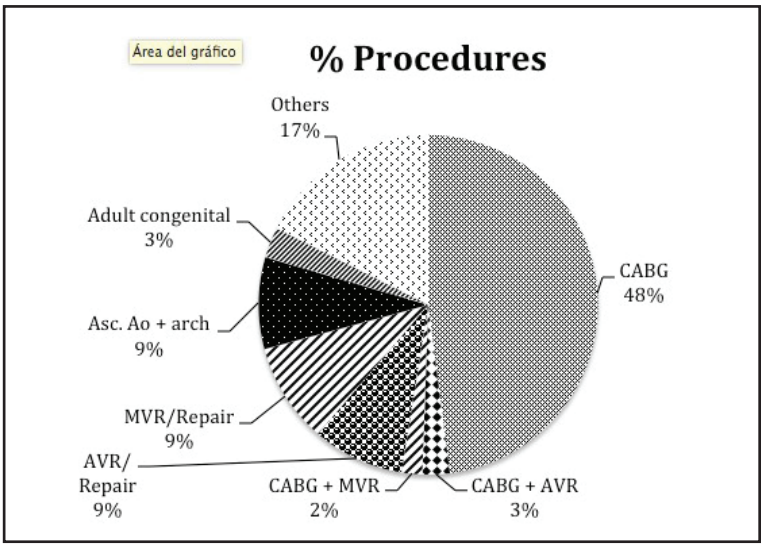
***B. Aguerrevere**, J. Iribarren, S. Mena, C. Jaquez, O. Gonzalez, J. Leyba, R. Pol, L. Vargas, C. Herrara*
Institution where study was performed: CEDIMAT Centro Cardiovascular, Santo Domingo Dominican Republic

Purpose: CV diseases are the leading non-communicable illnesses in this Caribbean nation. Little data is available on the performance of its 5 CV surgical programs, nor is there experience on the development of best practices initiatives. We sought to describe the implementation/impact of QI/STS measures in a recently re-organized center.

Methods: Our hospital is a non-profit, tertiary care state of the art academic adult and pediatric dedicated cardiac facility (18/127 ICU beds, 2 cath labs, 3 OR's), staffed by 4 adult cardiac and 2 vascular fully trained surgeons (1 senior, 5 juniors), full time anesthetists, perfusionists, RN's and intensivists. Weekly clinical multidisciplinary case discussions, quarterly Morbidity/Mortality sessions, clinical protocols (fast track extubation, blood conservation, intra-op TEE monitorization, multidisciplinary rounds, etc.) and tracking of STS indicators were established with institutional support. Team members were educated in their implementation; data was collected from electronic medical records by administrative/nursing staff.

Results: From October 2014 to May 2017 a total of 410 cardiac operations were performed: mean age 59 (17-85) years; 23% female; surgical interventions (see graph 1) were elective 372 (90%), urgent 25 (6%) or emergent in 13 (3%). Mean STS score was 3.09% (0.25-31.5%);
pump time 102 (17-403) min; Xclamp time 82 (12-335) min; 33% received blood products. Mammary use in elective cases (100%); major complications (stroke, renal failure and DSWI/mediastinitis) 2.8%; overall surgical mortality 4.38%; specific mortality by type of surgery performed: CABG 0.5%; AVR/MVR-repair 5.4%; aortic (including Acute Aortic Syndromes) 16%. Extubation time was 5.8 hrs. (0-144); ICU stay 5 (2-17) days; hospital length of stay 8 (3-43) days; 30-days readmission rate 2%.

Procedures October 2014 - May 2017



Conclusions: The implementation of QI initiatives, measurement of performance indicators and multidisciplinary systematization of clinical protocols in a cardiovascular surgical program are feasible endeavors in Latin-America. Institutional commitment and the involvement of professional organizations and health care policy makers ought to occur for this experience become reproducible.

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A Systematic Review and Meta-analysis of Clinical Outcomes with Off-the-shelf and Custom-made Devices for Thoracoabdominal Aortic Aneurysm Repair

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Institution where study was performed: First Faculty of Medicine, Charles University in Prague, Czech Republic

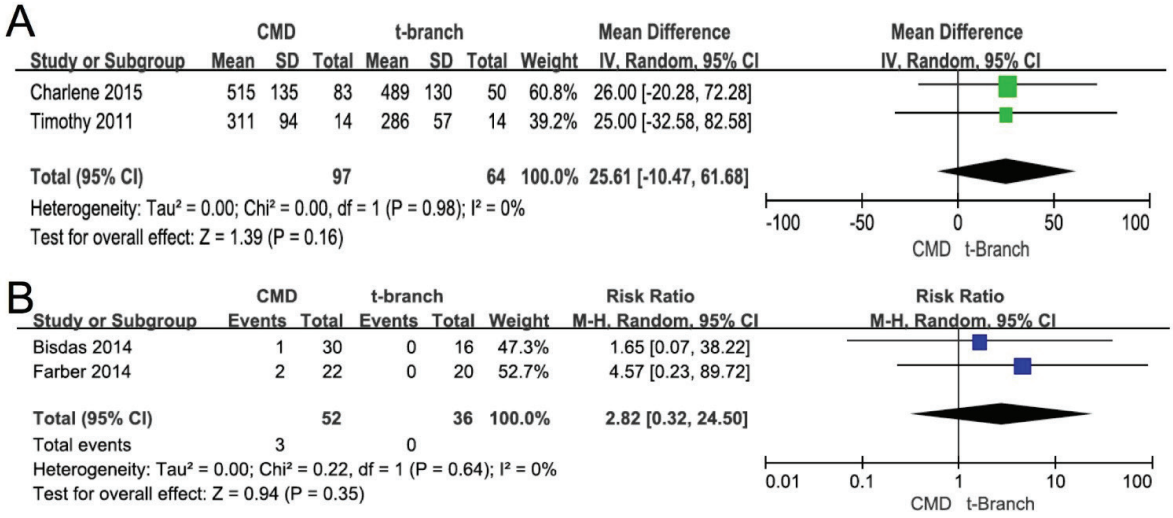
†Disclosures not available

Purpose: Thoracic endovascular aortic aneurysm repair (TEVAR) has been deployed as an appealing alternative to conventional open aortic aneurysm surgery (OP) to reduce post-operative complications of thoracoabdominal aortic aneurysms (TAAA). New innovations for TEVAR include off-the-shelf Zenith t-branch (t-branch) and custom-made devices (CMD). Here we performed a meta-analysis of device, clinical, and outcome data on t-branch and CMD use in TAAA

Methods: PRISMA guidelines were followed. The PubMed, CNKI, and Cochrane library databases were searched for relevant articles on t-branch and CMD use in patients undergoing TEVAR for TAAA using predefined search criteria. Two independent reviewers extracted data from eligible studies in a pre-defined data extraction grid and disagreements were resolved by discussion. Demographics were analyzed by descriptive statistics. The Cochran Q and I2 statistics were deployed to assess heterogeneity. Homogeneous data were meta-analyzed via a weighted DerSimonian-Laird random-effects model (RevMan v5 software). Forest plots were generated to assess clinical outcomes and funnel plots to assess publication bias

Results: Data were limited, with only four studies in total available for analysis. Operative times and mortality did not differ between CMD and t-branch groups (mean difference 25.61, 95% CI -10.47-61.68; p=0.16 (Figure 1A) and RR 2.82, 95% CI 0.32-24.5; p=0.35 (Figure
1B), respectively).

Conclusions: This is the first systematic review of clinical outcomes of patients with TAAA undergoing TEVAR with different devices. There were no statistically significant differences using either CMD or t-branch devices. However, some case reports suggest that t-branch use in TEVAR might become a preferential treatment option in the future.



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Clinical Outcomes and Prognostic Biomarkers After Transcatheter Aortic Valve Replacement: A Systematic Review and Meta-analysis

***W.C. Hsieh**, P.L. Chen, L. Golan, B.M. Henry, J. Lindner*

Institution where study was performed: First Faculty of Medicine, Charles University in Prague, Czech Republic

Purpose: Myocardial injury is a frequent complication of trans-catheter aortic valve replacement (TAVR) and is highly associated with post-operative cardiovascular morbidity and mortality. The aim of this meta-analysis was to assess the perioperative incidence of myocardial injury and associated prognostic biomarkers in adult patients undergoing TAVR.

Methods: PRISMA guidelines were followed. The PubMed, CNKI, and Cochrane library databases were searched for relevant articles on myocardial injury and associated prognostic biomarkers in adult patients undergoing TAVR using predefined search criteria. Two independent reviewers extracted data from eligible studies in a pre-defined data extraction grid and disagreements were resolved by discussion. Demographics were analyzed by descriptive statistics. The Cochran Q and I2 statistics were deployed to assess heterogeneity.
Homogeneous data were meta-analyzed via a weighted DerSimonian-Laird random-effects model (RevMan v5 software). Forest plots were generated to assess clinical outcomes and funnel plots to assess publication bias.

Results: Out of 283 studies reviewed for eligibility, 22 articles involving 41,026 patients undergoing TAVR were available for meta-analysis. The incidence of perioperative myocardial injury after TVAR was 2.0% (95% CI: 0.1%-0.2%). Valve embolization, major or
life-threatening internal hemorrhage, a history of coronary heart disease, procedural time, and baseline renal insufficiency were associated with perioperative myocardial injury (all p-values <0.01). Furthermore, the occurrence and degree of peri-procedural myocardial injury after TAVR was associated with pre-procedural hospitalization, left ventricular ejection fraction (LVEF), and short- and mid-term mortality (all p-values <0.05). The pooled incidence of myocardial infarction was 1.9% (95% CI, 1.4%-2.4%) in the overall population.

Conclusions: Myocardial injury after TAVR was associated with adverse procedural outcome. These data provide insights into the occurrence of myocardial injury after TAVR and provide avenues on how to improve the prognosis of patients with severe aortic stenosis undergoing TAVR.

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The Clinical and Prognostic Value of Serum Albumin in Patients Undergoing Aortic Valve Replacement: A Systematic Review and Meta-analysis

***W.C. Hsieh**, J.Lindner, A. Aboud, B.M. Henry, M. Omara, H. Kolesova, J. Prik*

Institution where study was performed: First Faculty of Medicine, Charles University in Prague, Czech Republic

Purpose: Conventional risk assessment algorithms for aortic stenosis have limitations. Patient-specific prognostic biomarkers would benefit risk assessment. Serum albumin levels have been measured in patients undergoing aortic valve replacement (AVR), but results are inconclusive. We therefore conducted a meta-analysis of the prognostic value of serum albumin levels in patients undergoing AVR.

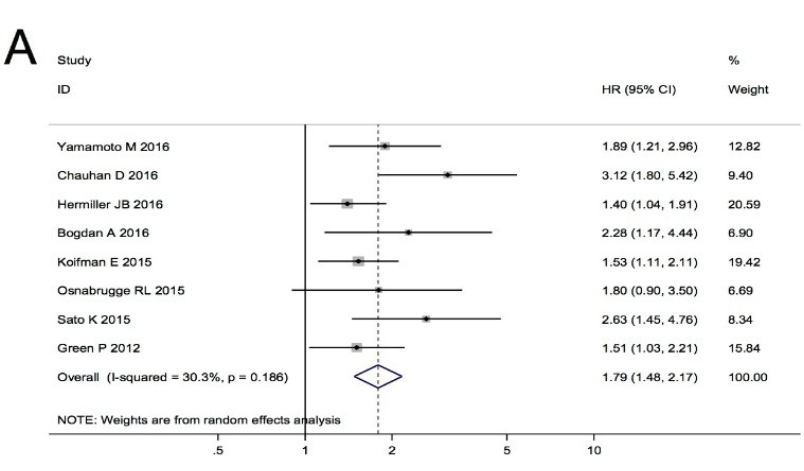
Methods: PRISMA guidelines were followed. The PubMed, CNKI, and Cochrane library databases were searched for relevant articles reporting serum albumin levels in patients undergoing AVR for symptomatic aortic stenosis using predefined search criteria. Two independent reviewers extracted data from eligible studies in a pre-defined data extraction grid and disagreements were resolved by discussion.

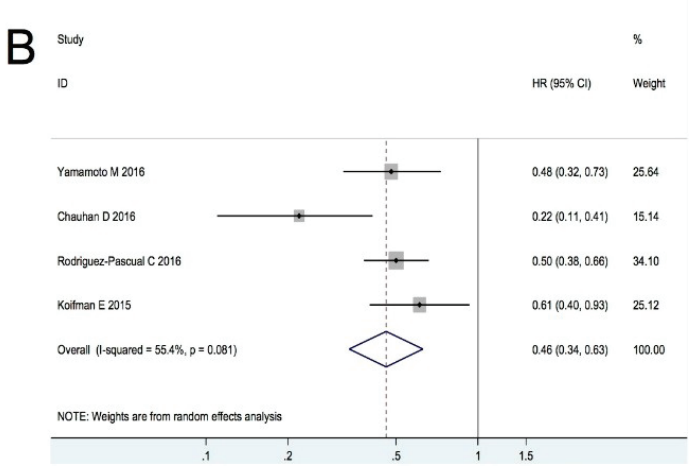
Demographics were analyzed by descriptive statistics. The Cochran Q and I2 statistics were deployed to assess heterogeneity.

Homogeneous data were meta-analyzed via a weighted DerSimonian-Laird random-effects model (RevMan v5 software). Forest plots were generated to assess clinical outcomes and funnel plots to assess publication bias.

Results: Ten studies containing 7,762 patients were available for analysis. Low serum albumin levels were associated with an increased risk of short-term (HR = 1.79, 95% CI 1.48-2.17; p < 0.0001; Figure 1A) and long-term mortality in patients with aortic stenosis undergoing AVR (HR = 1.71, 95% CI 1.42-2.05; p < 0.001). The mortality risk associated with patients having a 1g/dl increment in serum albumin was 0.46 (95% CI 0.34-0.63; p < 0.0001; Figure 1B)

Conclusions: Serum albumin may be a reliable prognostic biomarker in patients undergoing AVR, with low serum albumin levels associated with decreased survival. This simple and cheap biomarker may aid clinical management planning and identify high-risk patients.





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The Prognostic Value of Admission C-Reactive Protein in Patients with Acute Aortic Dissection: A Systematic Review and Meta-analysis

***W.C. Hsieh**, B.M. Henry, C.C. Hsieh, P. Maruna, M.Omara, H. Kolesova, S.M. Shen, J. Lindner*

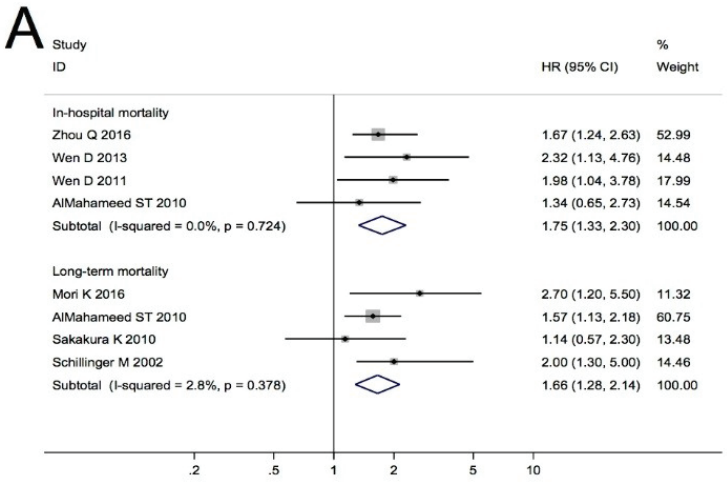
Institution where study was performed: First Faculty of Medicine, Charles University in Prague, Czech Republic

Purpose: There are currently no reliable prognostic biomarkers to stratify patients with acute aortic dissection (AAD) to optimal medical or surgical management. C-reactive protein (CRP) is a controversial prognostic biomarker for AAD. We conducted a meta-analysis of admission CRP in patients with AAD to fully assess its prognostic value

Methods: PRISMA guidelines were followed. The PubMed, CNKI, and Cochrane library databases were searched for relevant articles using predefined search criteria and their bibliographies analyzed for additional studies. Two independent reviewers extracted data from eligible studies in a pre-defined data extraction grid and disagreements were resolved by discussion. Demographics were analyzed by descriptive statistics. The Cochran Q and I2 statistics were deployed to assess heterogeneity. Homogeneous data were meta-analyzed via a weighted DerSimonian-Laird random-effects model (RevMan v5 software). Forest plots were generated to assess clinical outcomes and publication bias

Results: Twelve studies containing 2,235 patients met inclusion criteria and underwent meta-analysis. High levels of pre-operative CRP were not associated with an increased risk of in-hospital mortality (HR = 1.75; 95% CI: 1.33-2.30, p = 0.724) or long-term mortality (HR = 1.66; 95% CI 1.28-2.14, p = 0.378) in patients with AAD (Figure 1A). However, studies reporting adjusted estimates suggested an increased risk of in-hospital mortality (HR = 1.66; 95% CI: 1.28-2.14, p = 0.054) with a one-unit increment in pre-operative CRP levels in AAD patients (Figure 1B). No publication bias was detected.

Conclusions: Current conventional risk assessment algorithms for AAD have limitations. Higher levels of pre-operative CRP are associated with an increased risk of in-hospital mortality from AAD. CRP may be a useful prognostic biomarker in patients with AAD when used as part of clinical decision-making.



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Does the Position of the Drains After Open Heart Surgery Make a Difference?

***A.M. Refat**, A. Meawad†*

Institution where study was performed: Zagazig University Hospital

†Disclosures not available

Purpose: Post-operative drainage and decompression of pericardial cavity is empirical. The conventional method of evacuating fluid and air from mediastinum is through insertion of suitable semi-rigid tube(s) connected to under water sealed drainage system. Post-operative pericardial effusion (mostly retro-cardiac) and possible tamponade may increases the morbidity and mortality for such patients. The aim of this study was to evaluate the overall results of inserting 2 mediastinal drains, one retro-cardiac and on retrosternal and comparing them with inserting two retrosternal tube.

Methods: Three hundred patients were enrolled in our study. 150 patients in Group A with two retrosternal drain and 150 patients in group B with 2 drains, one retrosternal and one retro-cardiac. Patients, who are going for redo, have any bleeding disorder, re-explored for bleeding were excluded from our study. This prospective randomized study was conducted on adult cardiac surgery patients undergoing CABG, valve surgery or combined procedure. Post-operative bleeding and need for products were compared. Post operative echocardiography was performed before discharge from hospital, in the first post-operative visit and after 3 months.

Results: No significant difference between both groups regarding demographic data type of procedure or operative data. In post-operative period there was higher drain in group B though not statistically significant and no significant difference in blood and blood product requirements. In the post-operative course, 32 patients(21.3%) of group A had post-operative pericardial collection ranging from mild to severe, 10 (6.6%)of them needed surgical intervention for massive effusion(mostly retro-cardiac). In group B, 20(13.3%) patients had pericardial collection but only 5(3.3%) patient's needed surgical intervention.

Conclusions: Though no significant difference between both groups regarding post operative drain amount or need for transfusion but retro-cardiac drain aided in decreasing the percentage of postoperative pericardial effusion and tamponade and consequently the number of patients needing surgical drainage.

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Cannulation Strategies in Minimally Invasive and Robotic Cardiac Surgery

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Institution where study was performed: Hospital Israelita Albert Einstein

Purpose: Retrograde perfusion is associated with a higher risk of stroke and complications from arterial femoral cannulation, as aortic dissection, distal limb ischemia, wound seroma, lymphoid fistula, and wound infection. The objective of this study is to assess the incidence of complications related to perfusion strategies in minimally invasive cardiac surgery.

Methods: Prospective study included 89 consecutive patients with acquired or congenital cardiac pathologies submitted to minimally invasive cardiac surgery using cardiopulmonary bypass from March 2010 to March 2017. Evaluation of anatomical or pathological abnormalities of the peripheral vascular system was performed in all patients. A luminal diameter of 5,0 mm or less, the presence of tortuosity, extensive calcification or signs of dissection in any segment of the aorto-ileo-femoral system were absolute contraindications for peripheral cannulation. Follow-up was performed 30 days after hospital discharge. Continuous variables were expressed as mean, standard deviation, median and range, and categorical data, as count and percentage.

Results: Upper partial sternotomy (30,3%), video-assisted (22,5%) and robotic procedures (47,1%) were performed. Fifty-three patients (59,5%) were male; mean age was 52,9 ± 18,9 years; mean body surface area was 1,85 ± 0,24 m2. Comorbidities were hypertension (43%), smoking (16%), and dyslipidemia (11%). Femoral cannulation was performed in 76,4% of patients with no complications. Venous cannulation was peripheral in all cases. There was one conversion to full sternotomy due to right ventricle perforation during femoral venous cannulation, with no further complications. Mean cardiopulmonary bypass time and mean aortic cross-clamp time were respectively 180,02 ± 59,19 and 128,91 ± 48,59 minutes. Most common complication was arrhythmia (16%). No stroke or wound infection were observed. The median intensive care unit (ICU) stay was 1 day and total hospital stay, 4 days. Thirty-day mortality was 1,12% (N=1). Short-term outcomes were satisfactory in all 88 cases.

Conclusions: Peripheral cannulation was found to be feasible, safe and effective in selected patients, with low risk of femoral complications and cerebral embolism and low morbi-mortality. Evaluation of abnormalities of the peripheral vascular system with computed tomography angiography is mandatory. Longer follow-up and larger cohort may support our initial results.

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Single Shot Cardioplegia for Minimally Invasive Cardiac Surgery

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Purpose: Minimally invasive cardiac surgery (MICS) has been performed as a routine worldwide for more than a decade using different cardioplegia strategies. The purpose of the present study is to analyze the efficacy and safety of performing a single-shot of Custodiol®-HTK (C-HTK) cold antegrade crystalloid cardioplegia for myocardial protection in MICS.

Methods: Patients submitted to MICS from November 2009 to January 2017 were retrospectively evaluated. In all of them, C-HTK-solution was performed. Surgical and clinical data were analyzed. Continuous variables were expressed as mean, standard deviation, median and range, and categorical data were expressed as count and percentage.

Results: Patients using single-shot C-HTK showed low rate of clinical complications. The single administration avoided interrupting surgery each 20-30 minutes, what is required when using traditional cold crystalloid or blood cardioplegia. The mean volume of C-HTK solution infused was 2070,73 ± 542,85ml. Besides the high volumes needed to guarantee adequate cardiac protection, hemoconcentration and intraoperative blood salvage were performed objectifying negative hydric balance, what would minimize unwanted effects of hemodiluition.

Hyponatremia was reported in ten (12,2%) of the 82 patients analyzed, with no further related complications. Fourteen (17,1%) patients received red blood cell transfusion. Intraoperative echocardiography was performed in all cases: no ventricular dysfunction was observed after interruption of CPB. Median Intensive Care Unit length of stay was 1 day and total stay, 4 days. There were no intraoperative complications, conversions to full sternotomy or death from any cause within 30 days of follow-up.

Conclusions: Single shot cardioplegia using C-HTK solution is a feasible and effective myocardial protection strategy, allowing rapid and homogeneous heart cooling, adequate buffering effects, providing good recovery of cardiac function even after long periods of CPB. The possibility of being performed in a practical single-shot dose is ideal for MICS.

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Robotic Cardiac Surgery in Brazil

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Institution where study was performed: Hospital Israelita Albert Einstein

COMMERCIAL RELATIONSHIPS: D. Hatanaka: Speaker Bureau/Honoraria, Edwards Lifesciences; A. Teruya: Speaker Bureau/Honoraria, Edwards Lifesciences

Purpose: Robotic cardiac surgery (RCS) in Brazil has been evolving rapidly since the first procedure using the DaVinci® robotic system was performed in Latin America, in 2010. The aim of this article is to evaluate short and mid-term results in patients undergoing RCS in Brazil.

Methods: From March 2010 to June 2017, 57 consecutive patients underwent robotic cardiac surgery. Thirty-nine patients were male (68,4%), with a mean age of 51.3±17.9 years. Participants had a mean ejection fraction of 62±5%. The procedures included in this study were mitral valve surgery, surgical treatment of atrial fibrillation, atrial septal defect closure, resection of intra-cardiac tumors, totally endoscopic coronary artery bypass and pericardiectomy.

Results: The mean time spent on cardiopulmonary bypass (CPB) during RCS was 154.9±94.2 minutes and the mean aortic cross-clamp time was 114.48±75.66 minutes. Thirty-two patients (82%) were extubated in the operating room immediately after surgery. The median intensive care unit (ICU) length of stay was 1 day and the median hospital length of stay was 5 days. For each type of procedure, endpoints were individually reported. There were no conversions to sternotomy and no intra-operative complications. Patient follow-up was complete in 100% of the participants, with two early deaths unrelated to the procedures and no re-operations at mid-term.

Conclusions: RCS appears to be feasible, safe and effective when used for the correction of various intra- and extra-cardiac pathologies. Adopting the robotic system has been a challenge in Brazil, where its limited clinical application may be related to the lack of specific training and the high cost of technology.

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Cardiac Surgery through Minithoracotomy

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Institution where study was performed: Cardiovascular National Institute, EsSalud, Lima, Perú

Purpose: Determine the mortality and major cardiovascular events of minimally invasive cardiac surgery. Quantify the use of blood components, rate of reoperations and intensive care unit (ICU) stay.

Methods: Retrospective study between 2013-2016. The surgical approach used was right minithoracotomy with direct vision. Extracorporeal circulation was performed with cannulation of the femoral artery and femoral/jugular veins.

Results: Between 2013 and 2016 we operated 71 patients through right minithoracotomy, 80% men, 20% women, average age 47.8 years, average Euroscore II 1.6. We performed 27 interatrial closure surgeries (10 tricuspid valve repair), 29 mitral valve replacements, 6 mitral valve repairs, 5 aortic valve replacements and 4 intraauricular tumor excision. The 30-day mortality was 1.4% (a patient who presented atrioventricular disruption post mitral valve replacement). One patient had a stroke and another reentered to the operating room for bleeding. 32 patients (45%) required blood transfusión in the intra or postoperative period. The mean time to endotracheal intubations was 11.3 hours and the mean stay in the ICU was 2.1 days.

Conclusions: Mini-invasive cardiac surgery through right minithoracotomy is a safe procedure with acceptable rates of mortality in our center.

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Intraoperative Autologous Donation Technique in Patients with Cardiopulmonary Bypass in Heart Surgery

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Institution where study was performed: Hospital General Del Sur Puebla

Purpose: intraoperative and postoperative severe anemia has been associated with increased morbidity and mortality. Reported data of adverse effects of allogenic blood. There have been developed strategies for blood conservation in order to reduce or avoid transfusions during and after cardiac procedures. Within this conservational strategies is aggressive intraoperative autologous donation.

Table 1. Demographic description

	With autologous donation **(n=11)**	Without autologous donation **(n=11)**	**(p)**
Sex (M)	8 (72.3%)	6 (54.5%)	0.375[a]
Age (years)$\bar{x}$±ED (max-min)	45.73±25.2 (28.8 - 62.6)	50.82 ± 14.6 (41 - 60.6)	0.568[b]
Pre-Op Hb (g/dl)$\bar{x}$±ED (max-min)	14.74±1.4 (13.7 - 15.7)	13.59 ± 1.85 (12.3 - 14.8)	0.118[b]
Weight (kilos)$\bar{x}$±ED (max-min)	59.73 ± 9.02 (53.6 - 65.7)	65.27 ± 8.81 (59.3 - 71.1)	0.160[b]
Comorbidities			0.824[a]
DM2	2 (18.2%)	3 (27.3%)	
HAS	1 (9.1%)	1 (9.1%)	
DM2 + HAS	5 (45.5%)	0 (0%)	
None	2 (18.2%)	1 (9.1%)	
Other	1 (9.1%)	6 (54.5%)	

a = chi square
b = Student t

Table 2. Results

	With autologous donation **N (%)**	Without autologous donation **N (%)**	**(p)**
Cardiopulmonary bypass (minutes)	72.82 ± 18.421	84.73 ± 26.4	0.241[b]
Aortic clamping (minutes)	51.91 ± 19.128	58.82 ± 24.89	0.413[b]
Allogeneic transfusión	2 (18.2%)	10 (90.9%)	0.000613[a]
Allogeneic packed red blood cells used	0.27 ± 0.64	2.82 ± 1.40	0.000024[b]
Total packets allogeneic and autologous used	1.27 ± 0.64	2.82 ± 1.40	0.0034[b]
Cardiac complications	0 (0%)	1 (9.1%)	0.306[a]
Pneumonia	0 (0%)	4 (36.4%)	0.027[a]
Using cell saver	1 (9.1%)	0 (0%)	0.306[a]
Days of mediastinal drainage	3.27 ± 0.64	3.91 ± 1.30	0.161[b]
Day stay in ICU	4.18 ± 1.68	5.81 ± 1.94	0.026[b]

a = chi square
b = Student t

Methods: comparative, prospective, longitudinal, experimental and single-center study. Adult patients requiring elective cardiac surgery with use of cardiopulmonary bypass in General Hospital Puebla "Dr. Eduardo Vazquez Navarro" operated from March 2015 to September 2015. Exclusion and elimination criteria included pediatric aortic aneurysms, aortic dissections, patients and surgical emergencies.

Results: A total of 22 patients were included in this study: Group 1 (preoperative autologous donation) included 11 patients, 8 men and 3 women, with a mean age of 45.7 years (range 28-62 years). Group 2 (without preoperative autologous donation) integrated by the same number of patients. 11 in total, 6 men and 5 women, with a mean age of 50.8 years (range 41-60 years). There were found a significant difference In ICU hospitalization times (4.1 days of group 1 vs 5.8 days of Group 2, p = 0.026) and a lower requirement for blood transfusion (2 of group 1 vs 10 of group 2, p = 0.000613).

Conclusions: The results obtained in this study suggests that the use of perioperative autologous blood donation in patients requiring elective cardiac surgery with cardiopulmonary bypass is useful, safe, reduced need of red blood cells transfusion. Avoiding blood transfusions may contribute to risk reduction in postoperative complications and long-term mortality.

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Comparison of The Society of Thoracic Surgeons Predicted Risk of Mortality, Logistic EuroSCORE I and EuroSCORE II in Israeli Patients Undergoing Cardiac Surgery

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Institution where study was performed: Hadassah Hebrew University Medical Center, Israel

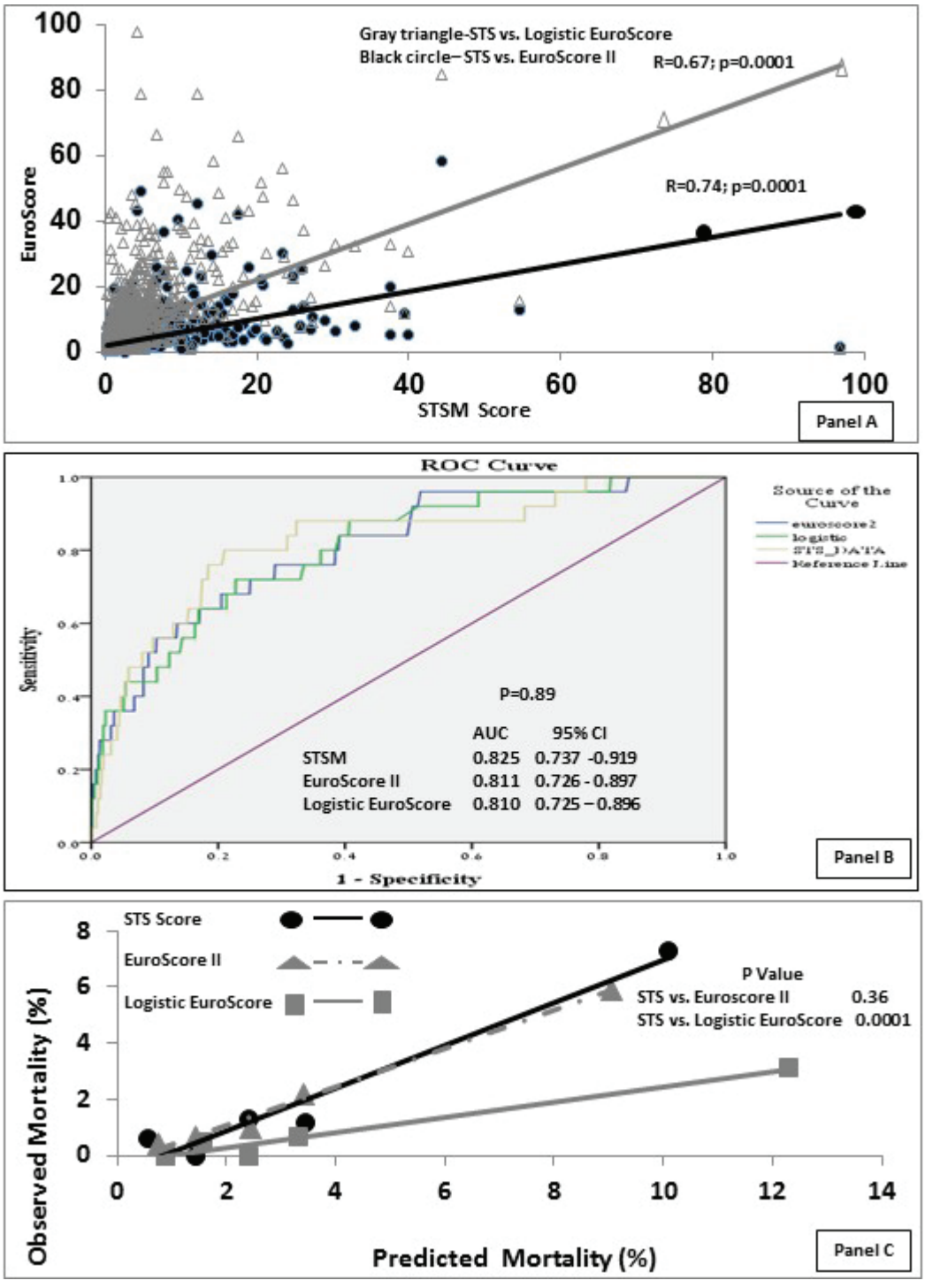
Purpose: Recently, the Israeli Society of Cardiothoracic Surgery and Israel Ministry of Health have worked together to establish the first national-level adult cardiac surgery database, linked to that of the Society of Thoracic Surgeon Adult Cardiac Surgery Database (STS ACSD). However, the fundamental social, economic and cultural differences between the US and Israel, coupled with marked differences in healthcare systems, infrastructure, patient profiles, referral and practice patterns have all raised concerns with regards to applicability and validity of STS ACSD risk-prediction models and quality assessment tools in Israeli patients. We aimed to compare the accuracy of the STS predicted risk score of mortality (PROM), the EuroScore II (EuII) and the Logistic EuroScore I (LEu) in Israeli patients undergoing cardiac surgery.

Methods: The study cohort consisted of 1279 consecutive patients who had cardiac operations with a calculable STS PROM. Data were prospectively entered into our departmental STS-linked database and used to calculate STS PROM, EuII and LEu. Correlation between the scores was performed using the Spearman test. For each score we calculated the observed versus expected mortality and assessed discrimination using the Area Under the Receiver Operating Curves (AUC). Finally, to examine model calibration, we plotted the observed versus expected mortality after dividing the entire cohort into 5 risk-score groups.

Results: The observed 30-day operative mortality was 1.95% (25 patients). The average STS PROM, EuII and the LEu scores were 3.12%, 3.31% and 7.97% with O/E ratios of 0.62, 0.59 and 0.24, respectively (STS vs EuII p=0.36, STS vs LEu p=0.0001). There was a good correlation between the STSM and both Eu scores (Figure, Panel A). The 3 scores had good discrimination power with high and similar AUCs (Figure, Panel B). Model calibration was similar between the STSM and EuII, both significantly more accurate than the LEu who tended to overestimate mortality (Figure, Panel C).

Conclusions: The STS PROM and the EuII risk-prediction models of mortality performed equally well. The LEu overestimated mortality. Our data indicate that the observed versus the STSM ratio is an accurate quality metric in Israeli patients undergoing cardiac surgery. Further studies in a much larger cohort are necessary to validate the entire spectrum of the STS risk-prediction models of procedural outcomes.

STS PROM vs EuroSCORE II and Logistic EuroSCORE I in Israeli Patients Undergoing Cardiac Surgery



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Conservative Pro-Erythrogenic Therapy in Ultra-Restrictive Patient Blood Management in Cardiac Surgery

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Institution where study was performed: Yavapai Regional Medical Center

Purpose: Patient Blood Management (PBM) has been shown to decrease blood utilization which at the least saves an important and precious resource, decreases costs, and limits the exposure to known and unknown inherent risks of blood transfusions. Our objective was to decrease utilization of pro-erythrogenic drugs (one of the largest cost factors) while maintaining excellent (<10%) transfusion rates

Methods: Decreasing the cost of PBM therapy by becoming more conservative in the use of E/Fe was undertaken and prospectively compared to historical controls. 342 consecutive patients who underwent any type of cardiac surgery were examined of which 244 were historical controls (pre-change) who received E/Fe for HgB < 12mg/dL and 98 patients (post-change) whose trigger for E/Fe therapy was a trigger was a HgB < 9mg/dL.

Results: Overall results demonstrated a >50% reduction in use of E/Fe without a significant decrease in units transfused or mortality. Also of significance is that our transfusion rates for the primary surgeon ranged from 3.9% to 1.6% with a mortality of 0.8% to 1.6% for 307 all-comer cardiac surgical patients.

Conclusions: Ultra-conservative transfusion rates can be achieved in a cost-effective fashion without significant dependence of pro-erythrogenic drugs.

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Single Center Experience in Latin America with the HeartMate II and III Left Ventricular Assist Devices

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Institution where study was performed: Fundación Cardioifantil, Instituto de Cardiologia, Bogota Colombia

†Disclosures not available

Purpose: Left ventricular assist devices (LVAD) are well-established therapy to patients with end-stage heart failure ineligible for cardiac transplantation. HeartMate (HM) II and III provide excellent survival with improvement in patients quality of life. This abstract reports on the institutional experience of a single center in Latin America with this devices.

Methods: Patients met inclusion criteria defining advanced-stage heart failure. Prospective registry of consecutive patients was done between April of 2014 to May of 2017. HM II was implanted in the first 7 patients and HM III in last 2 patients.

Table 1. Patient characteristics

Cases	Cardiomyopathy	Stratification	Surgery	Complications
1. F 56y	Idiopathic, EF 15%	INTERMACS 4 DTRS 8	HM II	Major bleeding
2. F 41y	ARVD/C, EF 15%	INTERMACS 2 DTRS 9	HM II + AR + TR + Aneurysm plication RV	No
3. M 15y	Idiopathic, EF 31%	INTERMACS 3-4 DTRS 7	HM II	No
4. F 42y	Viral, EF 12%	INTERMACS 3 DTRS 8	HM II	Major bleeding
5. F 65y	Toxic (Anthracycline), EF 30%	INTERMACS 4 DTRS 2	HM II	No
6. M 67y	Idiopathic, EF 10%	INTERMACS 4 DTRS 2	HM II + Aortic valve closure	No
7. M 73y	Valvular, EF 20%	INTERMACS 4 DTRS 8	HM II + AR + TR	LVAD repositioning, RRT, sepsis, death
8. M 36y	Viral, EF 10%	INTERMACS 4 DTRS 6	HM III	Major bleeding
9. M 71y	Chagas, EF 15%	INTERMACS 3 DTRS 7	HM III + AVR	No

F: female, M: male, EF: ejection fraction, ARVD/C: Arrhythmogenic Right Ventricular Dysplasia/Cardiomyopathy, INTERMACS: Interagency Registry for Mechanically Assisted Circulatory Support, DTRS: Destination Therapy Risk Score, HM: HeartMate, AR: Aortic Repair, TR: Tricuspid Repair, RV: Right ventricle, AVR: Aortic Valve Replacement, RRT: renal replacement therapy.

Results: Detailed patient characteristics are given in Table 1. 4/9 female, 3/9 idiopathic aetiology, 6/9 INTERMACS profile 4, 3/9 Destination Therapy Risk Score 8. Body mass index ranged from 19 to 25 and age from 15 to 73 years (mean 51+/-19). 4/9 required simultaneous valve surgical procedure to LVAD. Average length of ICU stay was 13+/-12 days and hospital stay was 28+/-12 days. The most common postoperative adverse event was major bleeding (3/9). Patient No.7 required at 29 postoperative day repositioning the LVAD due to misalignment with free wall inflow obstruction and died 29 days later due to multiorganic failure. The overall survival was 88%. In follow-up of 18 months (range 1-38), patient No.1 required at 36 months of the implant surgical drainage of subdural hematoma without sequelae; patient No.4 required hysterectomy, there wasn't any driveline infections, gastrointestinal bleeding or pump thrombosis, and all of them are in NYHA I.

Conclusions: These results demonstrates excellent survival and improving in functional class with low adverse event rates with the use of the HM II and HM III continuous-flow LVAD for medium-term support in the first 9 cases of single center experience in Latin America, with comparable results with reference centers worldwide.

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Surgical Repair for Tricuspid Insufficiency: Long-Term Survival at 8 Years in 114 Patients

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Institution where study was performed: Hospital Regional de Temuco, Chile

Purpose: To assess and report the long term results of tricuspid valve repair in adult patients in a regional cardiac surgery center in south Chile.

Methods: Retrospective review of clinical and operative records of 114 patients aged 57.8 +/- 13 years (72 women) subjected to tricuspid reparative surgery concomitant with other cardiac procedures between 2009 to 2017.

Results: In 45% of cases ethiology was due to inactive rheumatic disease and 2.6% was due to endocarditis. 63% presented with AFib and 75% were in NYHC CFIII. 15.8% had a previous cardiac valve surgery.

Preoperative echocardiography showed severe tricuspid insufficiency in 56% of cases and pulmonary hypertension was severe in 39.5%. In all cases tricuspid repair was performed through the insertion of a semi rigid ring as a concomitant procedure for mitral repair/replacement in most cases, aortic valve replacement, surgical closure of an ASD, CABG surgery and the resection of cardiac tumors. Overall post operative mortality was 16% due to multi-organic dysfunction in 6%, cardiac failure in 5% and cerebral hemorrhage in 4.3%. Mean long term follow up was 78.8+/- 7.2 months. Actuarial survival was 74% at 60 and 68% at 96 months.

Conclusions: Surgical tricuspid valve repair for moderate to severe tricuspid insufficiency associated to other cardiac diseases provides a good symptomatic recovery, with an excellent long term actuarial survival.

TR repair survival curve

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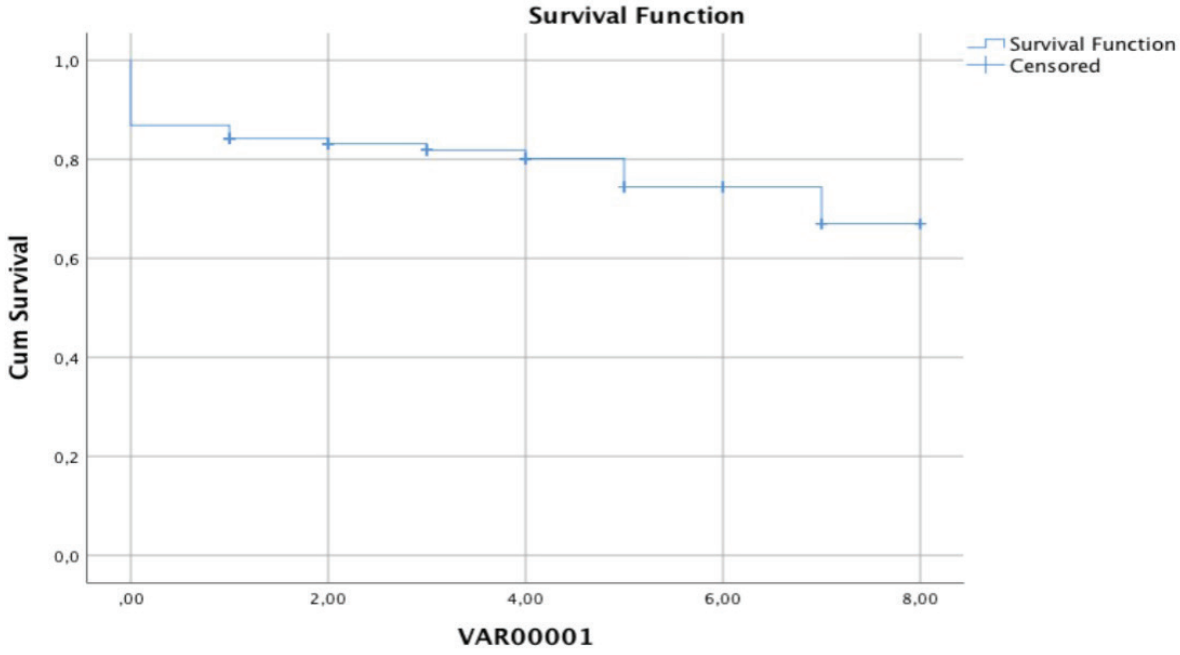

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The information in this Program Book is accurate as of September 1, 2017.