STS/EACTS Latin America Cardiovascular Surgery Conference

September 21-22, 2017 | Cartagena, Colombia

info@cardiovascularsurgeryconference.org
www.CardiovascularSurgeryConference.org

Tips and Tricks for Reop in Adult CHD

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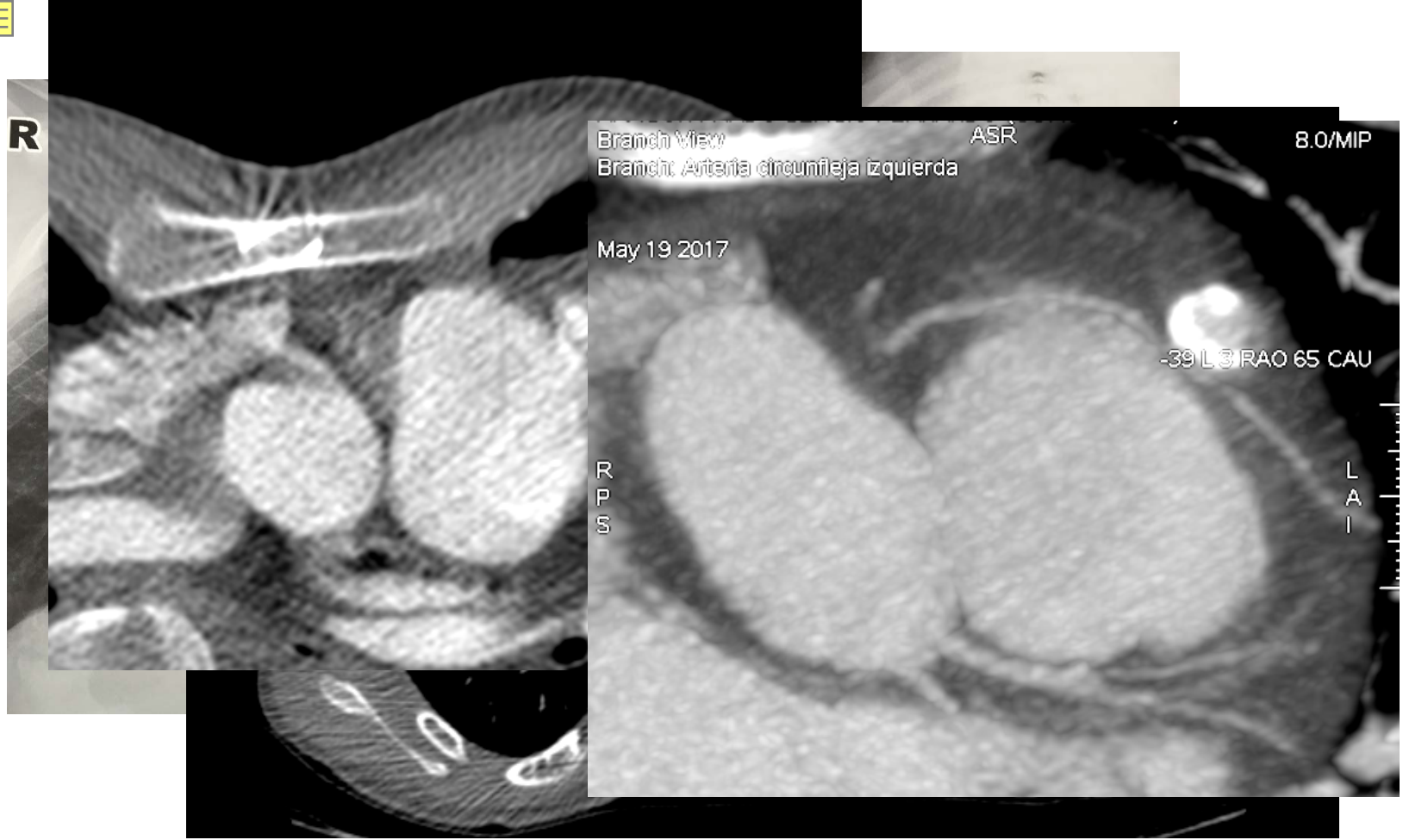
Bogotá, Colombia

NO CONFLICT OF INTEREST

The Society of Thoracic Surgeons

EACTS
European Association For Cardio-Thoracic Surgery



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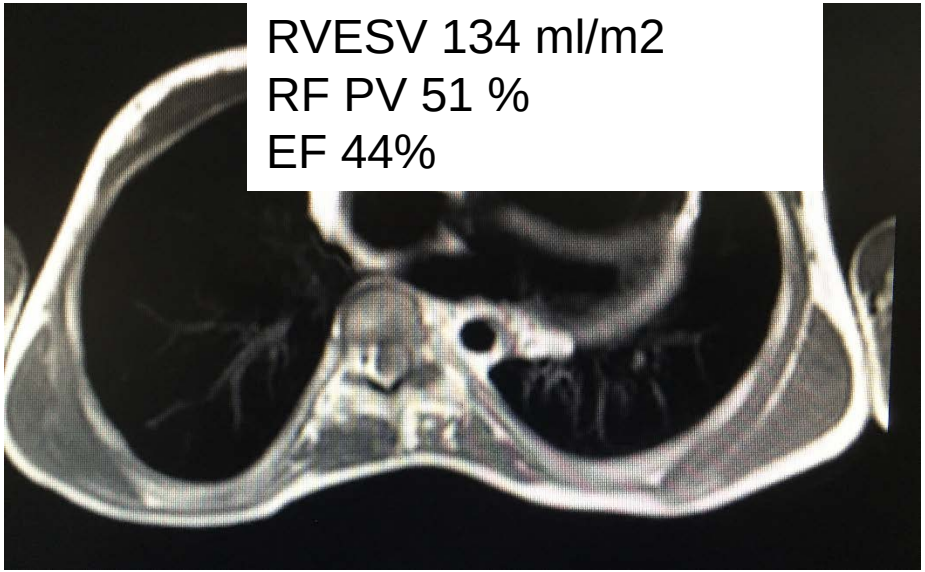
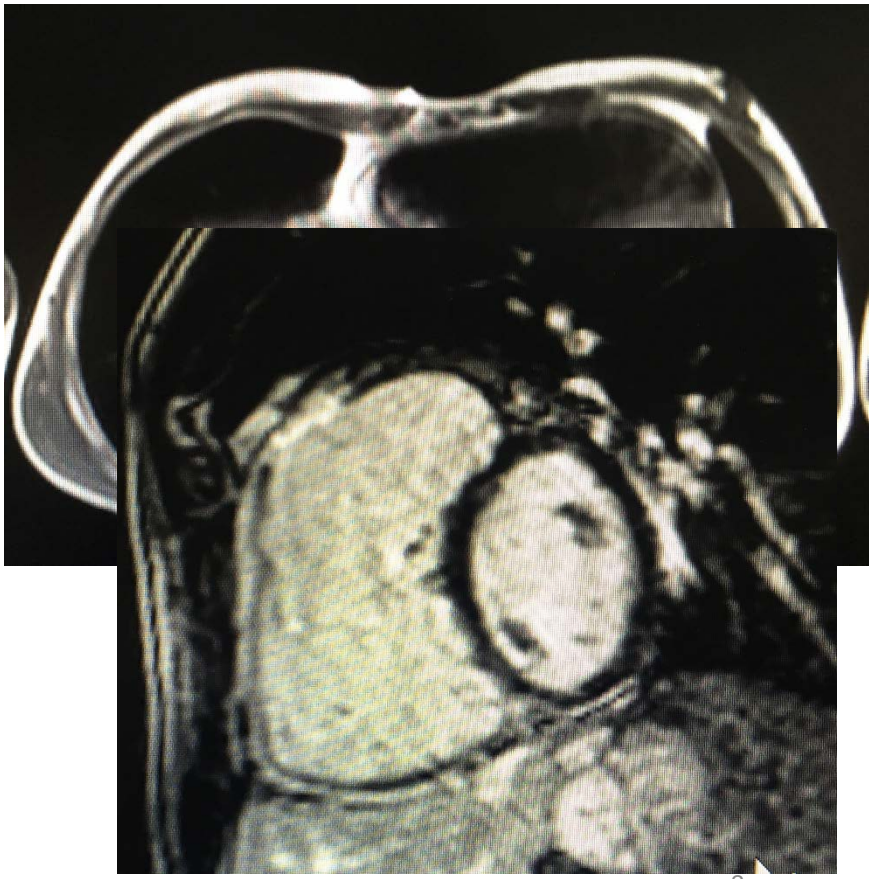
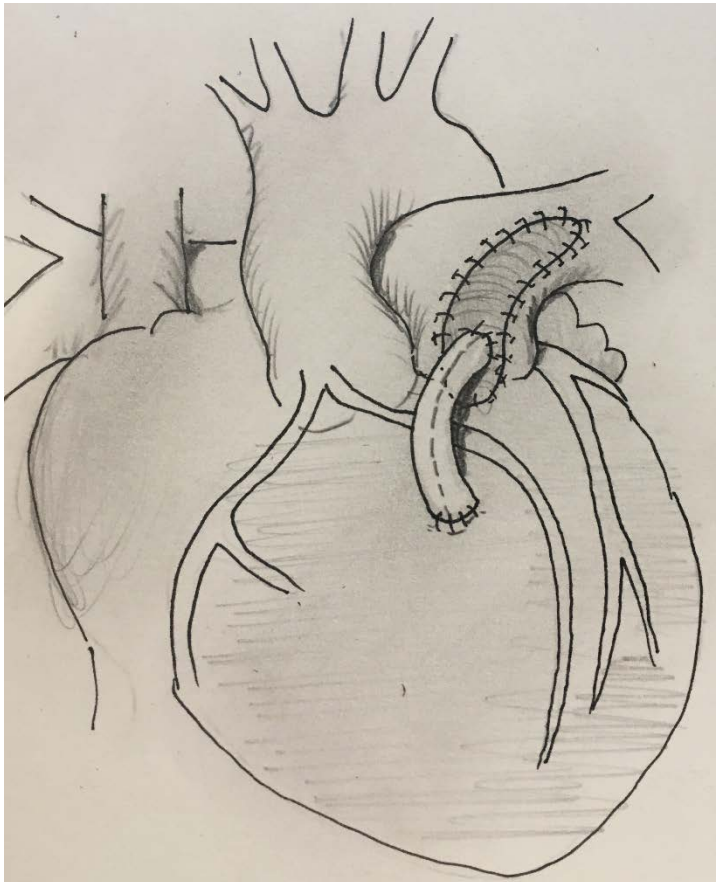
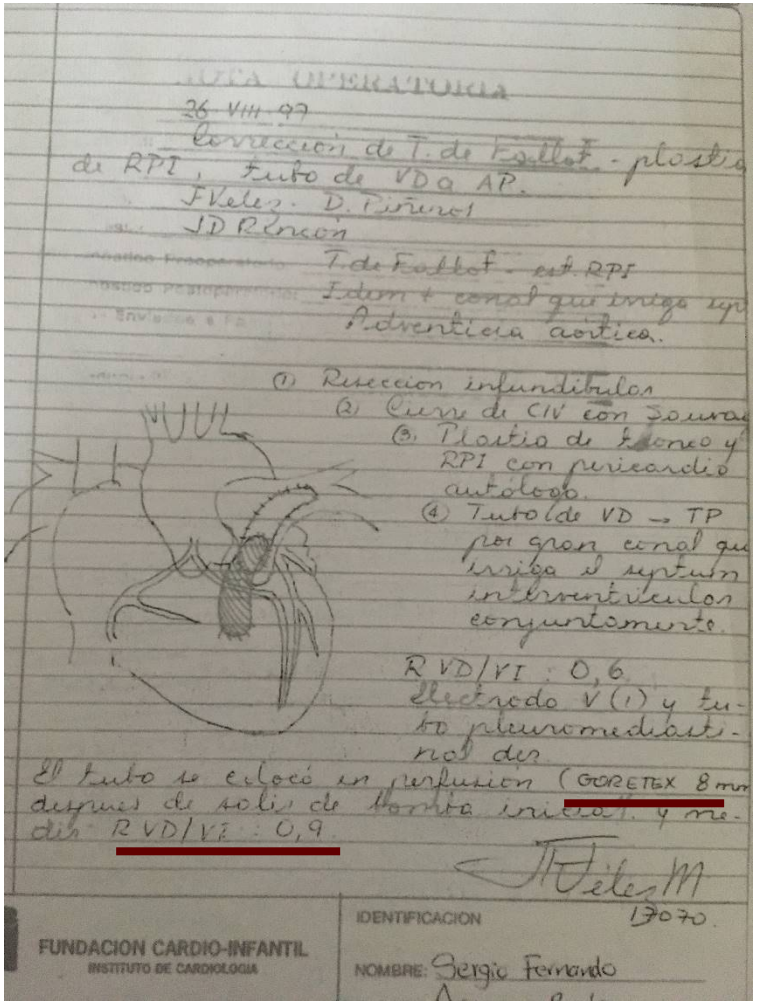
RVEDV 238 ml/m2
RVESV 134 ml/m2
RF PV 51 %
EF 44%









NOTA OPERATORIA

26 VIII 97

Corrección de T. de Fallot - plastia de RPI, tubo de VD a AP.

F Velez. D. Piñuel

JD Roncon

T de Fallot - est RPI

Edem + conal que irriga sup

Adventicia aórtica.

① Resección infundibular

② Cierre de CIV con parche

③ Plastia de tronco y RPI con pericardio autólogo.

④ Tubo de VD → TP por gran conal que irriga el septum interventricular conjuntamente

R VD/VI : 0,6

Electrodo V(1) y tubo pleuromediastinal der

El tubo se colocó en perfusion (GORETEX 8 mm después de salir de bomba inicial. y medir R VD/VI : 0,9

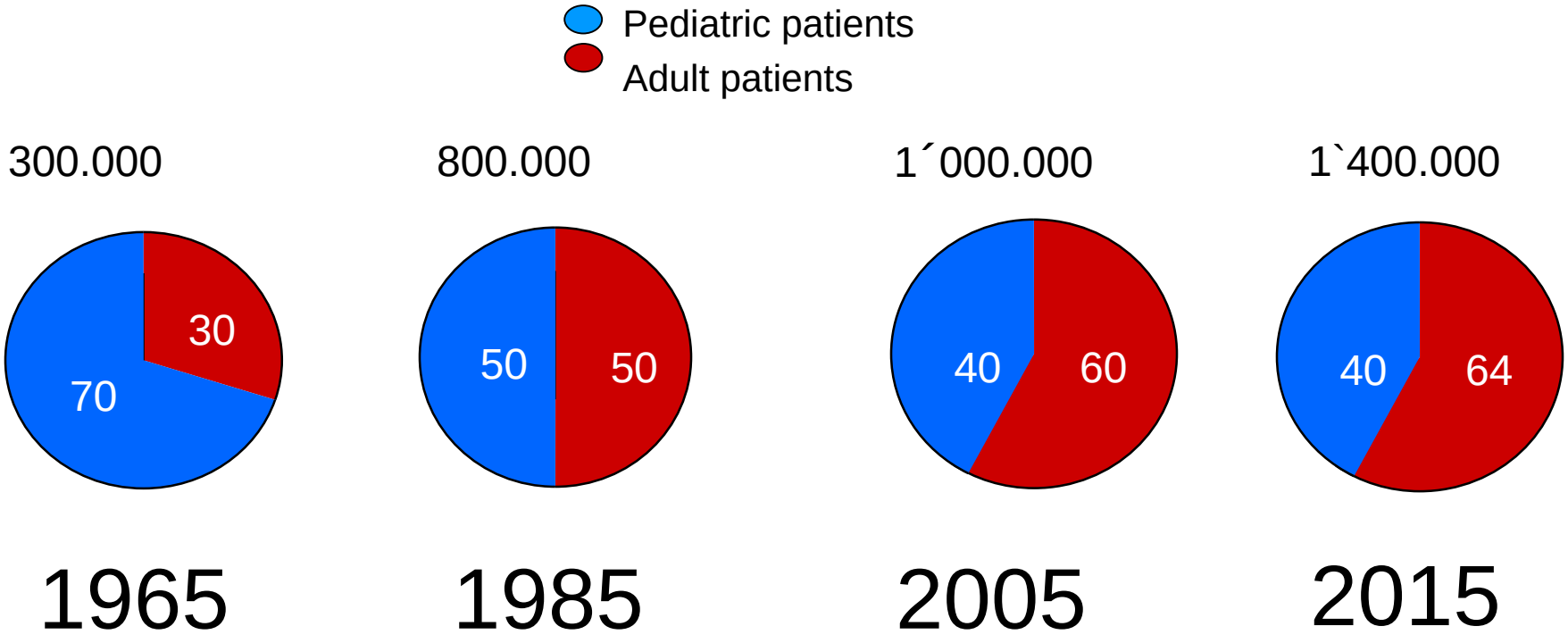
FUNDACION CARDIO-INFANTIL
INSTITUTO DE CARDIOLOGIA

IDENTIFICACION 17070

NOMBRE: Sergio Fernando

Number of Patients with CHD Reaching Adulthood

Annual growth 6% per year.

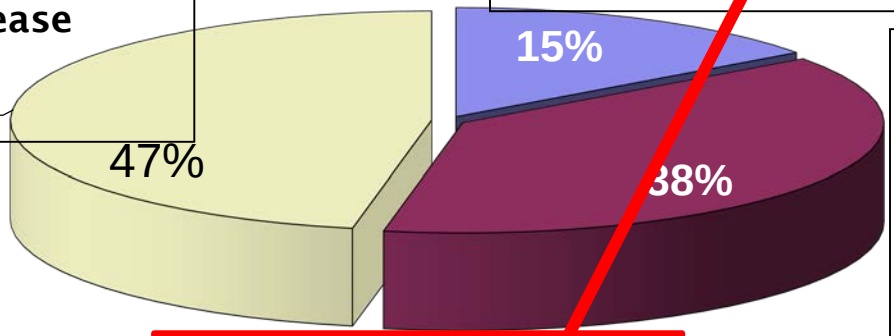


Williams et al. J Am Coll Cardiol 2006
Gilboa S,Circulation. 2016;134:101–109

(Complexity classification) (ACHD)

SIMPLE – 47%
Simple ASD
Simple Aortic Disease
Simple Mitral Disease
Simple PDA
Mild VPS

COMPLEX – 15%
Mitral Atresia, D-TGA, CCTGA, DORV,
Heterotaxy, Single V, Conduits, Truncus
Cyanotic, Eisenmenger



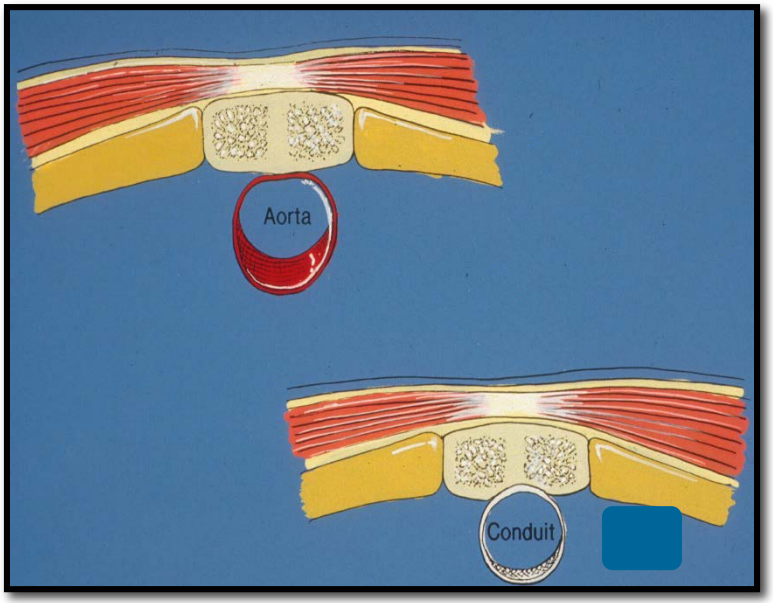
MODERATE – 38%
TOF
TAPVD
AV Canal
Ebstein
Primum ASD
Sub PS
Ao Coart
VPS
PR

**Arrhythmias.
Heart failure,
Pulm. Hypertension,
50% will need repeat interventions.**

Hoffman JACC Vol. 39, No. 12, 2002
Warnes JACC Vol. 37, No. 5, 2001

All reoperation have a risk

- Comorbidity
- Patent bypass grafts.
- Residual shunts
- Multiple previous sternotomies
- Prior chest irradiation
- Prior operation < 6-12 months
- Aortic operation
- Enlarged, hypertensive RA, RV RV-P conduit



Where and who should perform ACHS

Adult Congenital Heart Surgery: Adult or Pediatric Facility? Adult or Pediatric Surgeon?

Brian E. Kogon, MD, Courtney Plattner, BA, Traci Leong, PhD, Paul M. Kirshbom, MD, Kirk R. Kanter, MD, Mike McConnell, MD, and Wendy Book, MD

303 patients

Adult Hospital 4.3% Mortality,
Pediatric Hospital 5.1% Mortality

Adult surgeon 15.2% Mortality
Ped. surgeon 2.7%; Mortality (p 0.0008)

Conclusions. Caring for an anticipated aging adult congenital population with increasingly numerous coexisting medical problems and risk factors is best facilitated in an adult hospital setting. Also, when surgery becomes necessary, these adult patients are best served by a congenital heart surgeon.

Ann Thorac Surg 2009;87:833– 40)

Risk Factors and Early Outcomes of Multiple Reoperations in Adults With Congenital Heart Disease

Mayo Clinic Rochester from January 1, 1993, to December 31, 2007 **(984)**

Table 7. Risk Factors for Early Death

Variable	Univariate OR (95% CI)	*p* Value
History of stroke	3.56 (1.56–8.11)	0.003
Creatinine > 2 mg/dL	14.90 (5.29–41.96)	<0.001
Ejection fraction (per 10)	0.54 (0.41–0.72)	<0.001
Single ventricle	4.95 (2.22–11.03)	<0.001
Urgent operation	9.92 (4.30–22.88)	<0.001
Bypass time (per 10 min)	1.14 (1.10–1.18)	<0.001
Circulatory arrest time (per 10 min)	1.54 (1.02–2.33)	0.039
Cross-clamp time (per 10 min)	1.13 (1.07–1.20)	<0.001
Cardiac injury	2.75 (0.92–8.22)	0.071
Postoperative transfusion	3.95 (1.63–9.61)	0.002
Sternotomy #3	2.49 (1.20–5.17)	0.015
Sternotomy #4	3.11 (1.09–8.90)	0.009

Holst K, Dearani J, et al. Ann Thorac Surg 2011;92:122–30)

Risk Factors and Early Outcomes of Multiple Reoperations in Adults With Congenital Heart Disease

Early results

Sternotomy #	2	3	4	5+	All
N=	630	298	78	34	984
Mortality (%)	2.3	5.6	6.9	0	35 (3.6%)
Resp. failure (%)	5	6	7	16	57 (6%)
Pacemaker (%)	4	5	4	0	38 (4%)
Stroke (%)	1	2	1	0	12 (1%)
Renal failure (%)	3	4	6	3	31 (3%)
Sternal infect (%)	2	1	7	3	19 (2%)

Holst K, Dearani J, et al. Ann Thorac Surg 2011;92:122–30

Risk Factors for Mortality in Reoperations for Pediatric and Congenital Heart Surgery in a Developing Country

Carlos A. Villa-Hincapie, MD[1,2], Marisol Carreno-Jaimes, MD, MSc[1], Carlos E. Obando-Lopez, MD[1,2], Jaime Camacho-Mackenzie, MD[1,2], Juan P. Umaña-Mallarino, MD[1,2], and Nestor F. Sandoval-Reyes, MD[1,2]

(2009-2015) In seven years, 3,086 surgeries were performed, 481 were reoperations, and **238** patients fulfilled the inclusion criteria

Table 3. Univariate Risk Factors for Mortality.

Variable	OR	95% CI	*P* Value
Age < 4 years, yes	3.8	1.1-13.3	.04
Cross-clamp time > 100 minutes, yes	15.5	1.9-123.2	.001
STAT risk category > 3	4.2	1.1-16.3	.04

Abbreviations: CI, confidence interval; OR, odds ratio.

The number of resternotomies was not associated with mortality. Mortality prior to hospital discharge was 4.6%, and mortality after discharge but prior to 30 days after surgery was 0.54%. Operative mortality was 5.1%.

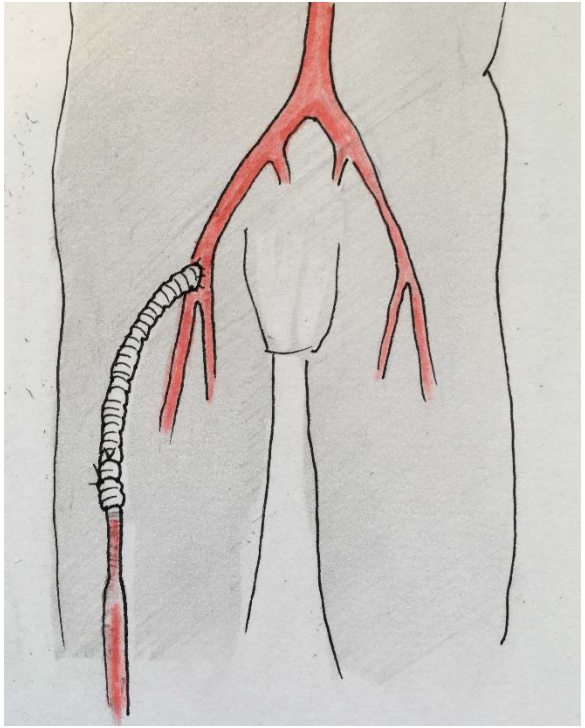
World Journal for Pediatric and Congenital Heart Surgery 2017, Vol. 8(4) 435-439

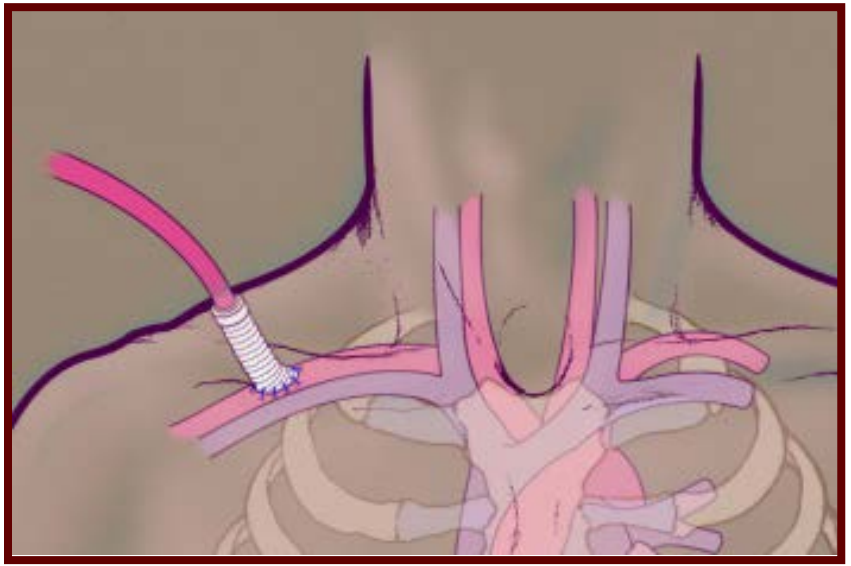
Preoperative Cardiac Issues

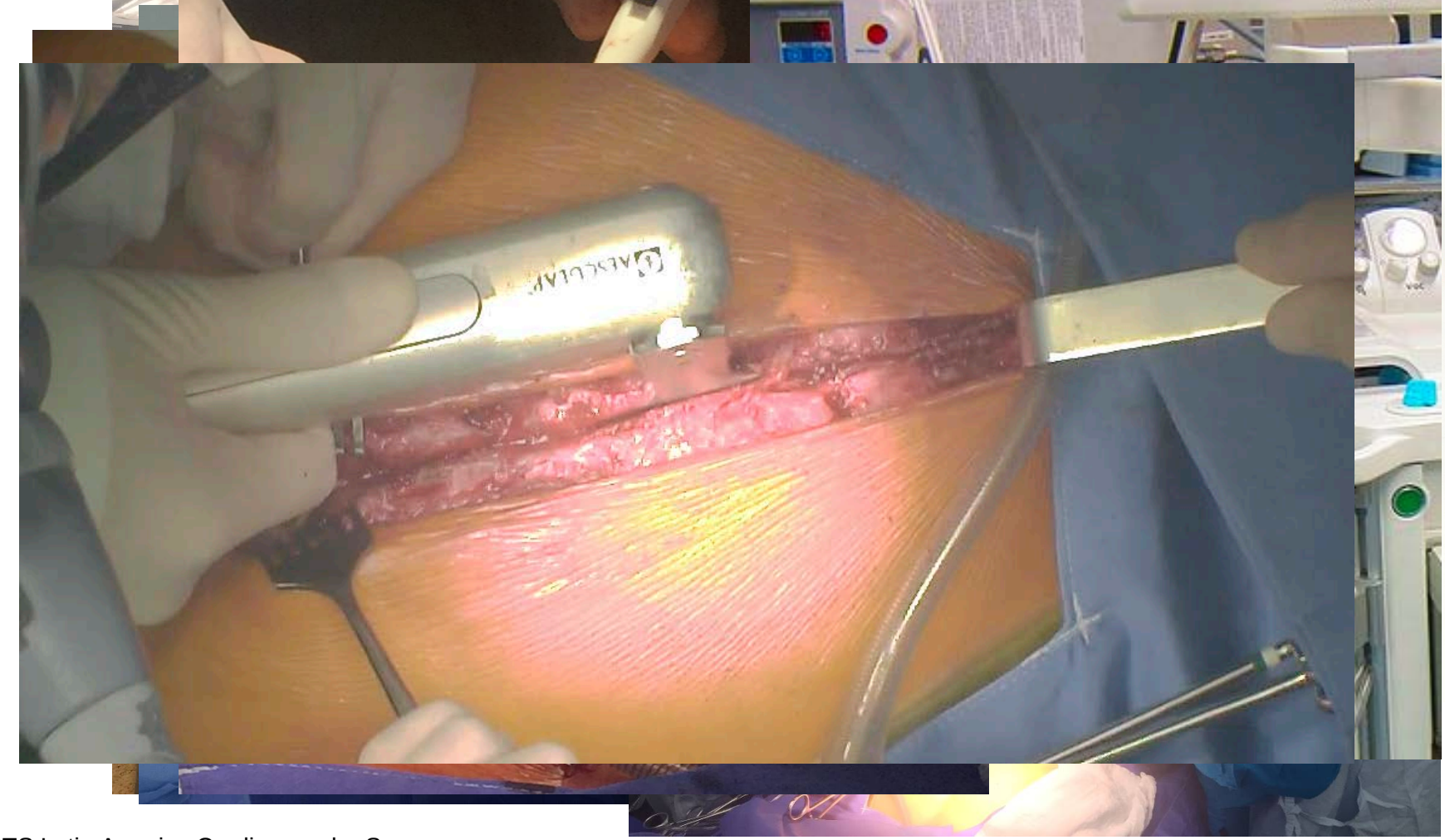
- Previous Diagnosis and operative note.
- Comorbidities
  - **Coronaries**
  - HT, PHT, Smoking, Diabetes, Prev. Stroke, # Sternotiomies, Vascular disease, Arrhythmias residual shunts.
- Suspected structure against the sternum.
- **Method of study**
  - **Rx Ray.**
  - **Echocardiography**
  - **Coronary angiography**
  - **CT, MRI - function, volumes, mediastinal vascular anatomy**
  - **Duplex of femoral vessels**
  - **Arrhythmia - ECG, Holter, EP study.**

Operative issues

Previous Femoral or axillary arterial cannulation







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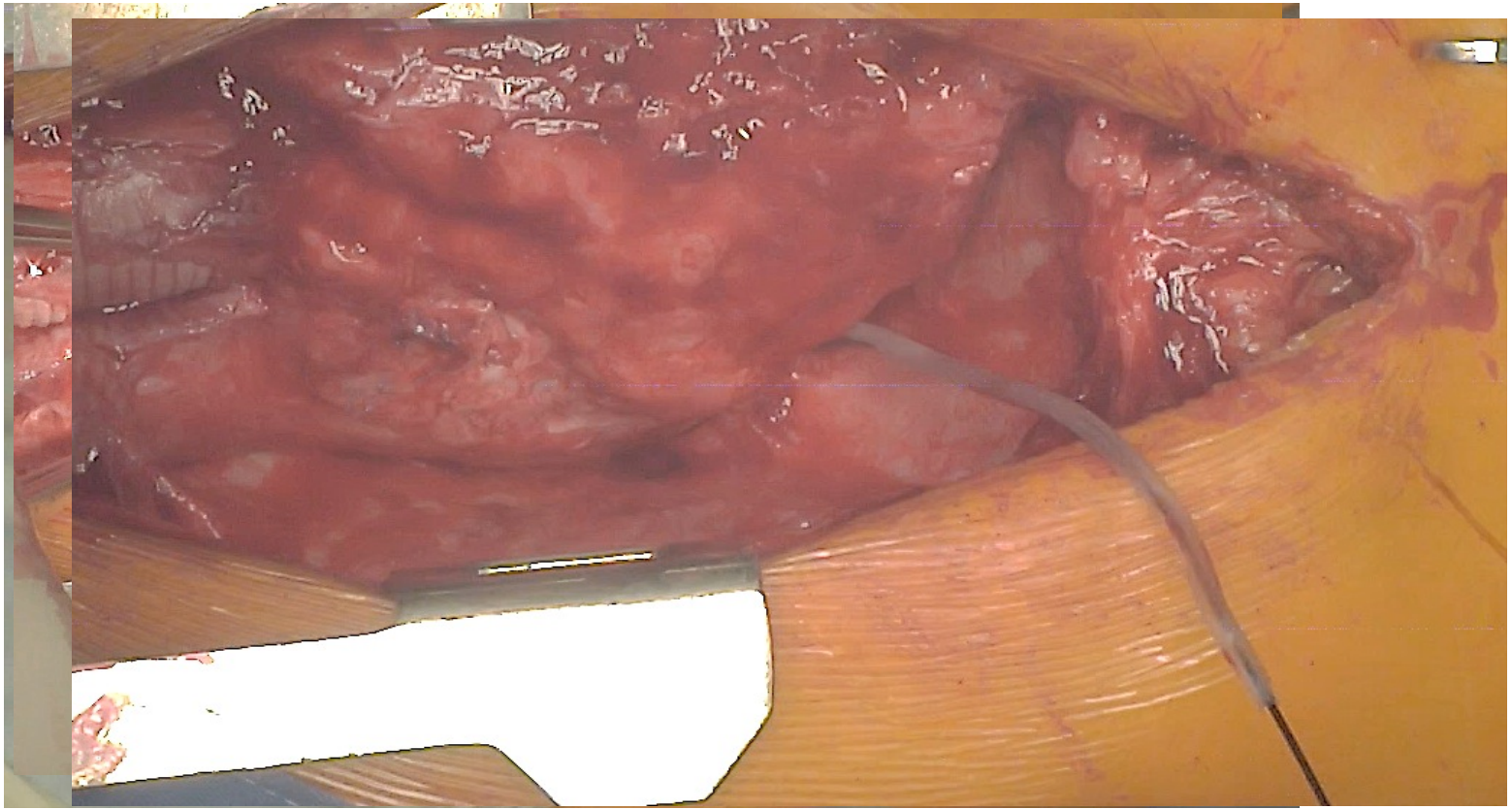

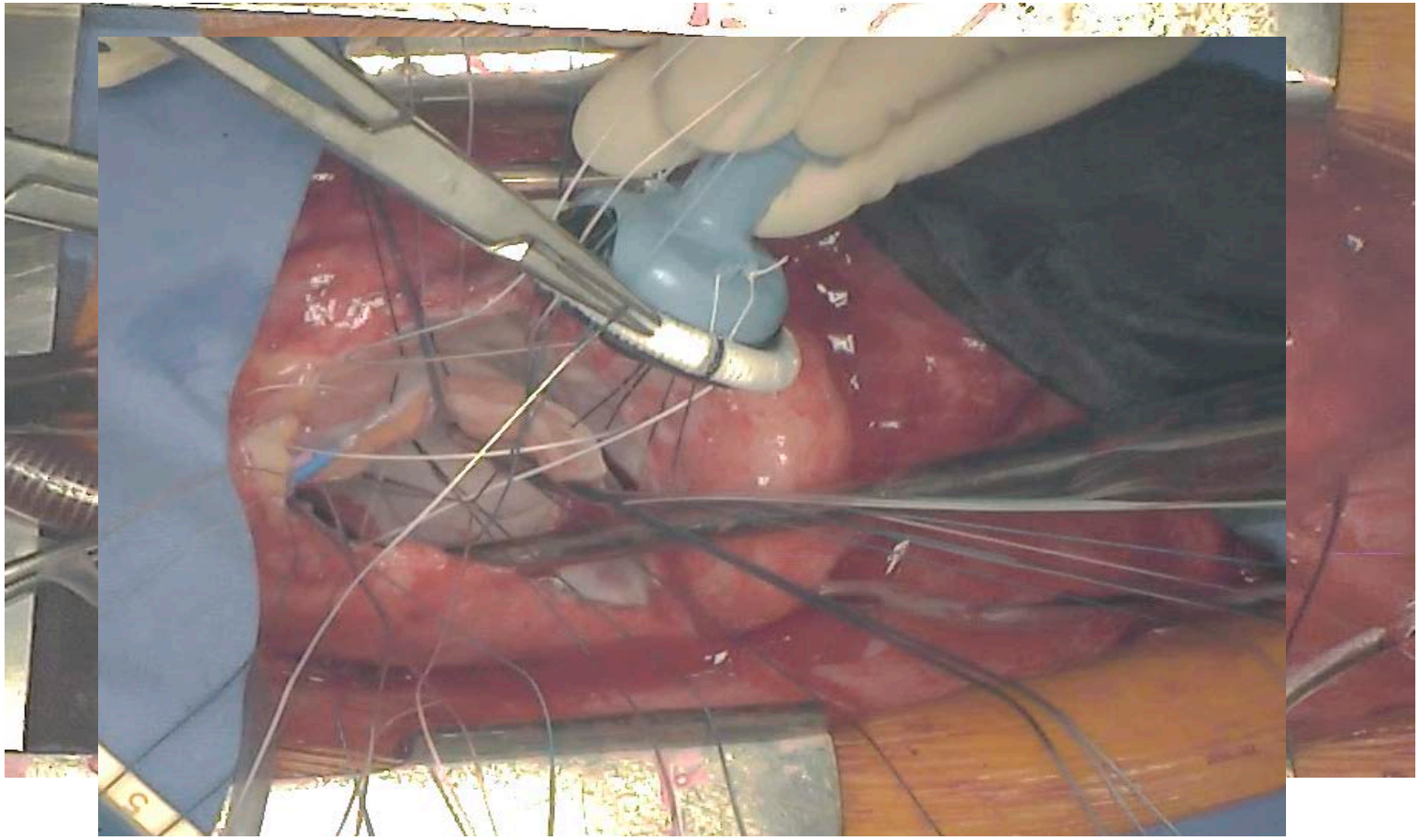

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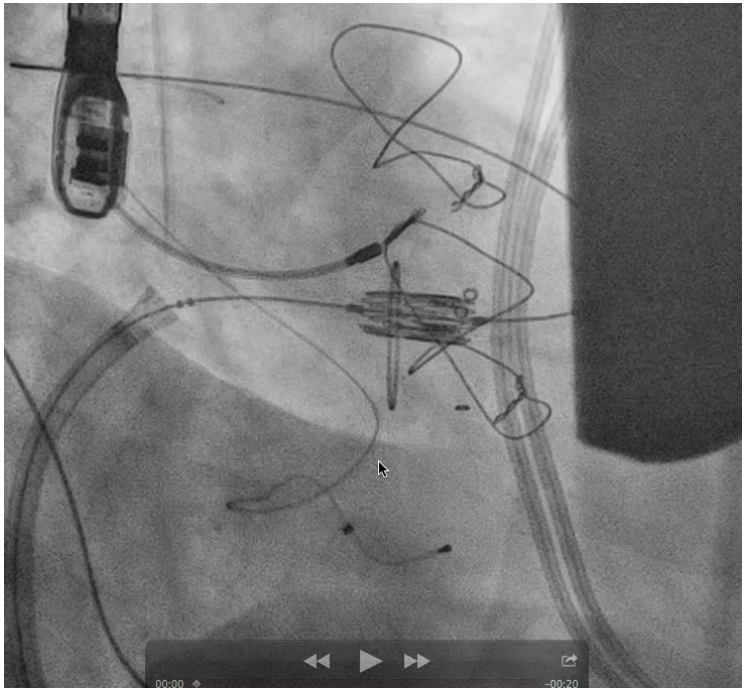
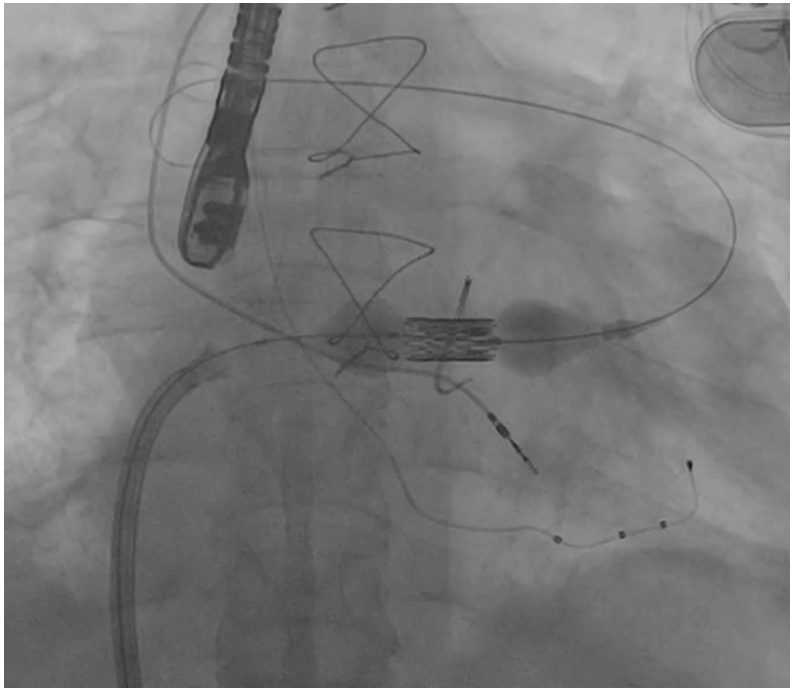
Tea





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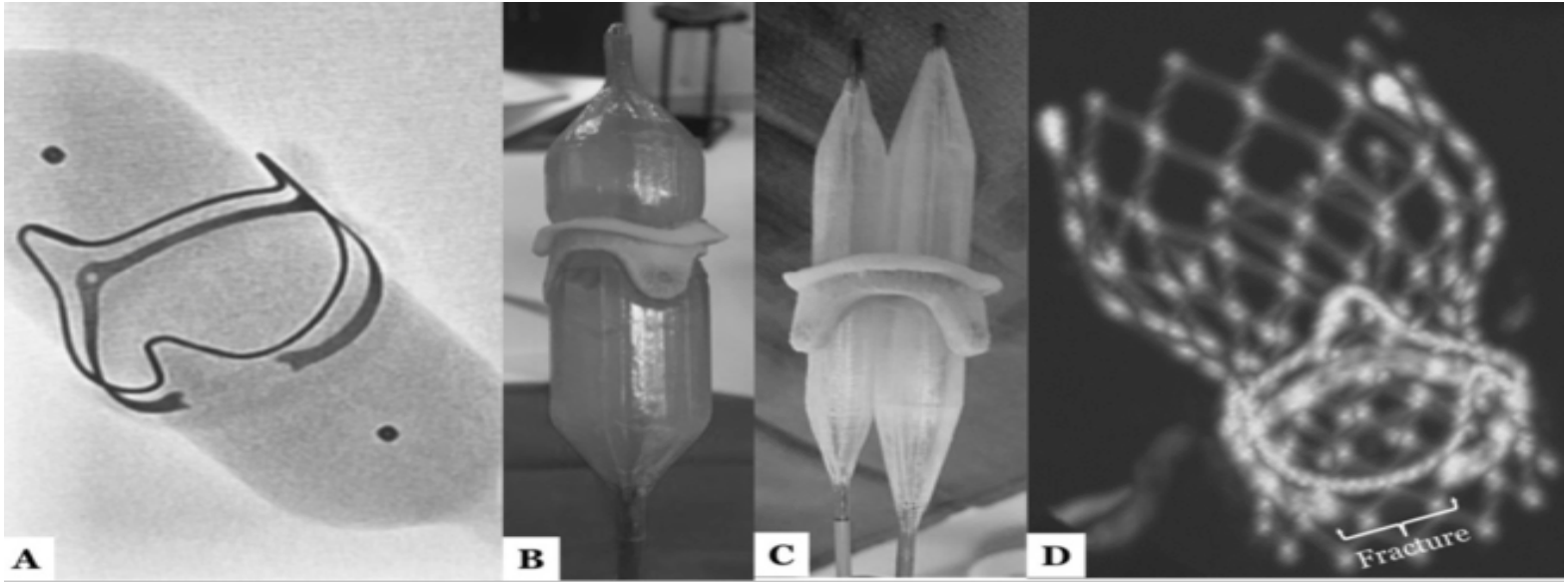
Reintervention on biological prosthesis

Prosthetic Surgical Tissue Valve Enlargement Using a High-Pressure Balloon (Fracturing the Ring) to Facilitate Transcatheter Valve-in-Valve Implantation



Available Prosthesis valves in the US, sizes 19 mm and 21 mm, were obtained for bench top testing. Valves studied were Mitroflow, Magna and Magna Ease, Trifecta and Biocor Epic, and Hancock II and Mosaic.

Trifecta and Hancock II surgical valves could not be fractured

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STS meeting 2017

Reoperations in ACHD

Fundación Cardioinfantil

56 patients From January 2004 to June 2017 Age, years 22.8 ± 11.7

Diagnosis	No (%)
Conotruncal anomalies*	26 (46.4)
Ebstein/tricuspid valve disease	6 (10.7)
atrioventicular septal defect	3 (5.4)
subaortic stenosis	3 (5.4)
anumalus pulmonary vein	3 (5.4)
pulmonary stenosis	1 (1.8)
Coarctation	1 (1.8)
other	13 (23.2)
Total	56 (100)

* Includes double-outlet right ventricle, pulmonary atresia, transposition of the great arteries, tetralogy of fallot, truncus arterious.

Procedure	No[a]
Pulmonary valve	
Repair	1
Replacement	19
Aortic valve	
Replacement	8
Tricuspid valve	
Repair	7
Replacement	4
Mitral valve	
Repair	2
Replacement	5
Ventricular septal defect	2
Auricualr septal defect	4
Fontan	2
TOF	3
Coronary artery bypass graft	1
Myectomy	1
Systemic PA shunt	3
Other	8

[a] Multiple procedures may be performed in one patient; multiple-valve procedures 9 (16%)
PA= Pulmonary artery

Fundación Cardioinfantil

Reoperation ACHD

56 patients From January 2004 to June 2017

	Sternotomy Number				
	2	3	4	All	P value difference between groups
Variable[a]	n=41	n=14	n=1	n=56	
CPB time, minutes	139 ± 64	145 ± 56	324	144 ± 66 (91 - 195)	0.136
Cross-clamp time, minutes	89 ± 38	102 ± 36	240	92 ± 43 (61 -123)	0.21
open chest	6 (14.6)			6 (10.7)	0.39
postoperative transfusion	7 (21 %)	1 (8.3 %)		8 (17.4 %)	0.52
CVE	1 (2.4%)		1 (100)	2 (3.6)%	0.03
death	3 (7%)			3 (5.4%)	0.58
Artery cannulation site					0.49
Femoral	5 (13.2%)	3 (23.1%)	0		
Aorta	33 (86.8)	10 (76.9)	1 (100)		

[a] Categoric data are expresed as number (%) and continuous data as mean +- estándar deviation (Interquartil range). CPB= cardiopulmonary by pass

Conclusion

- Reoperation always a risk factor.
- Previous plan. Medical and surgical history
- Checklist.
- Experienced center
- Experience pediatric cardiac surgeon. Experience in reoperation and aortic and valve surgery
- Be prepared and anticipate events
- Heart team.

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Thank You

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