

Trattamento chirurgico della valvulopatia aortica congenita dal neonato all'adulto

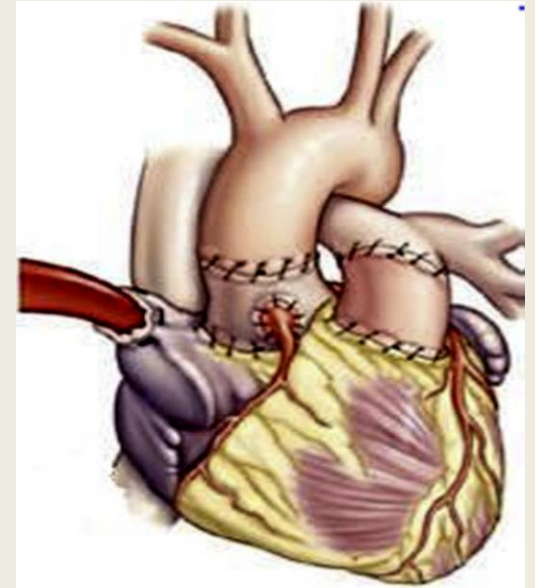
HOT TOPICS IN CARDIOLOGIA 2023

13 e 14 Novembre 2023

Villa Doria D'Angri
Via F. Petrarca 80, Napoli

Presidente del congresso: Dr. **Ciro Mauro**

AORN Cardarelli, Napoli



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Cardiopatie congenite
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Aortic Valve disease

Congenital

Acquired

Stenosis
Insufficiency
Mixed

Congenital aortic valve disease is for the majority a life-long condition requiring repetitive interventions at different ages

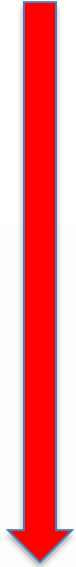
Can occur at different ages



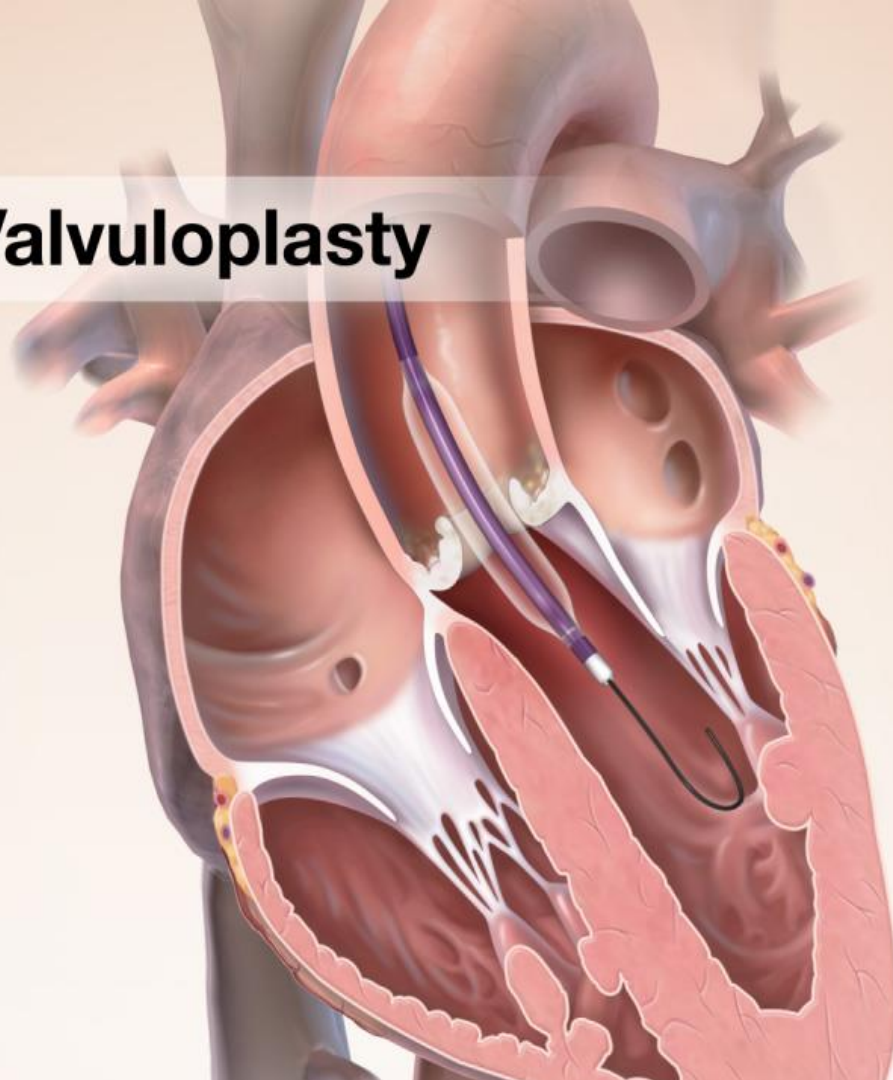
Newborn
Neonates

Stenotic bicuspid aortic valve
Incompetent after Balloon or Surgical AV
Small aortic anulus

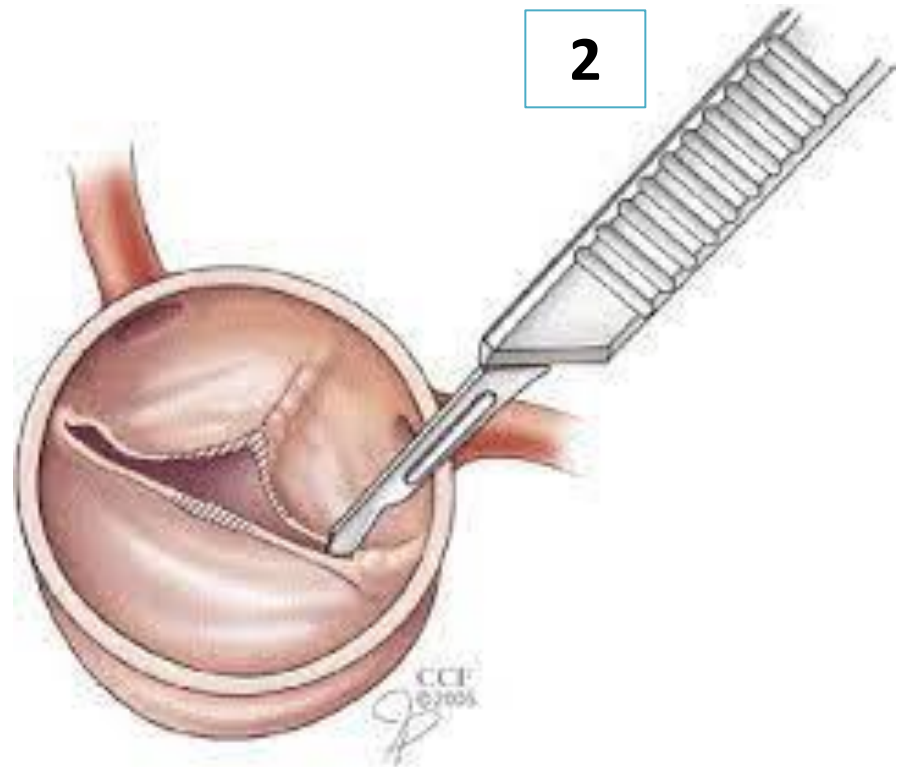
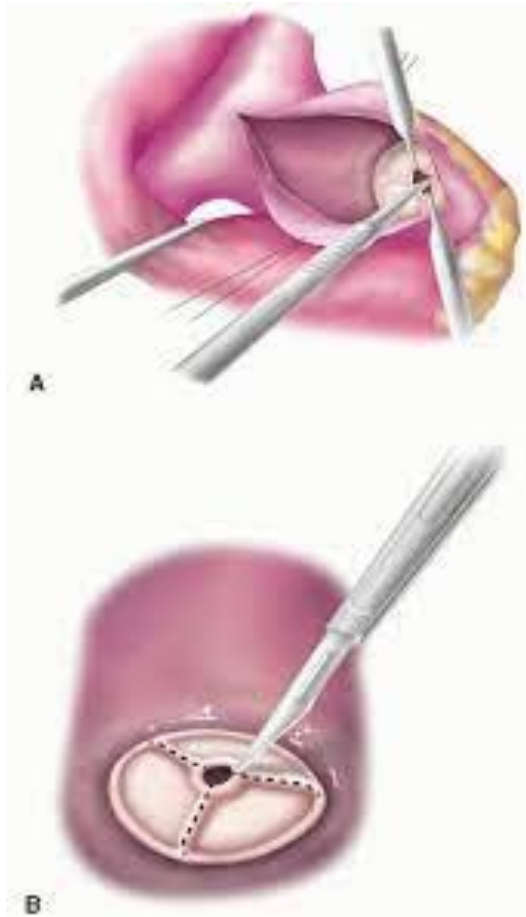
Aortic Balloon Valvuloplasty
Surgical commissurotomy
Ross/Ross konno



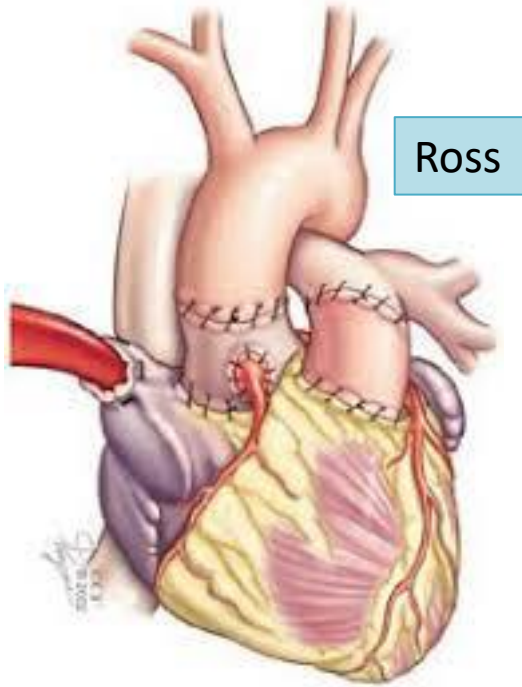
Aortic Valvuloplasty



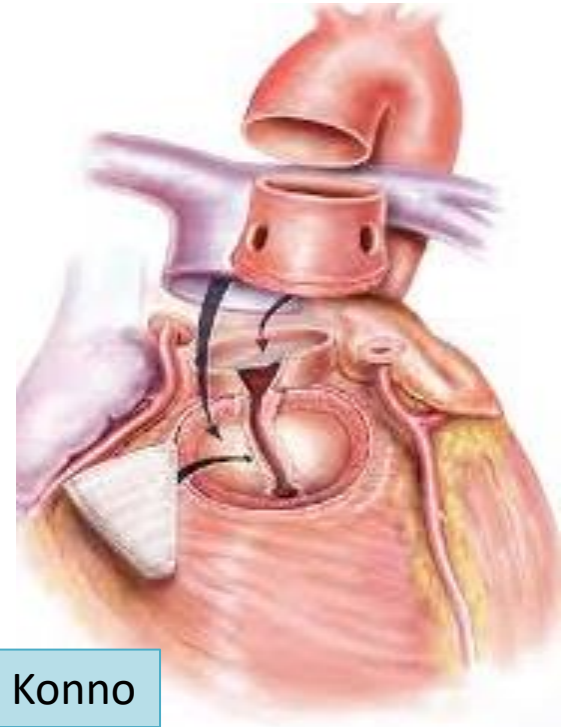
2



Surgical commissurotomy



3



ROSS Procedure indicated ONLY for

1. salvage of failed Balloon Ao Valvuloplasty
2. failed Surgical Ao Valvuloplasty
3. treat complex LVOT lesions
4. solve small anulus stenosis
(Shone complex – Neonatal Ross-Konno operation)

Neonatal Aortic Valve Stenosis

Balloon Ao. Valvuloplasty (BAV) Vs Surgical Ao. Valvulopl. (SAV)

Surgical AV

- less reop rates (fig.),
- more prone to residual AS,
- better anatomy for future surgery,
- less diastolic dysfunction,
- better fit bicuspid or tricuspid AV

Balloon AV (PROCEDURE OF CHOICE)

- less invasive particularly for low EF,
- no neonatal X-clamp,
- no intrapericardial adhesion,
- more prone to residual AR,
- better fit unicuspid AV

Both BAV & SAV freedom from AV replacement 50% at 15

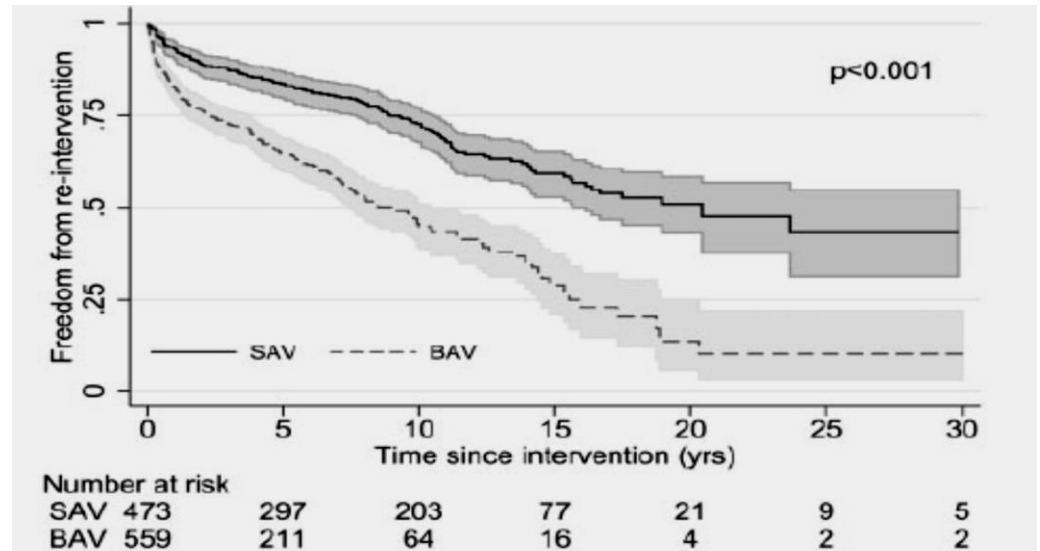
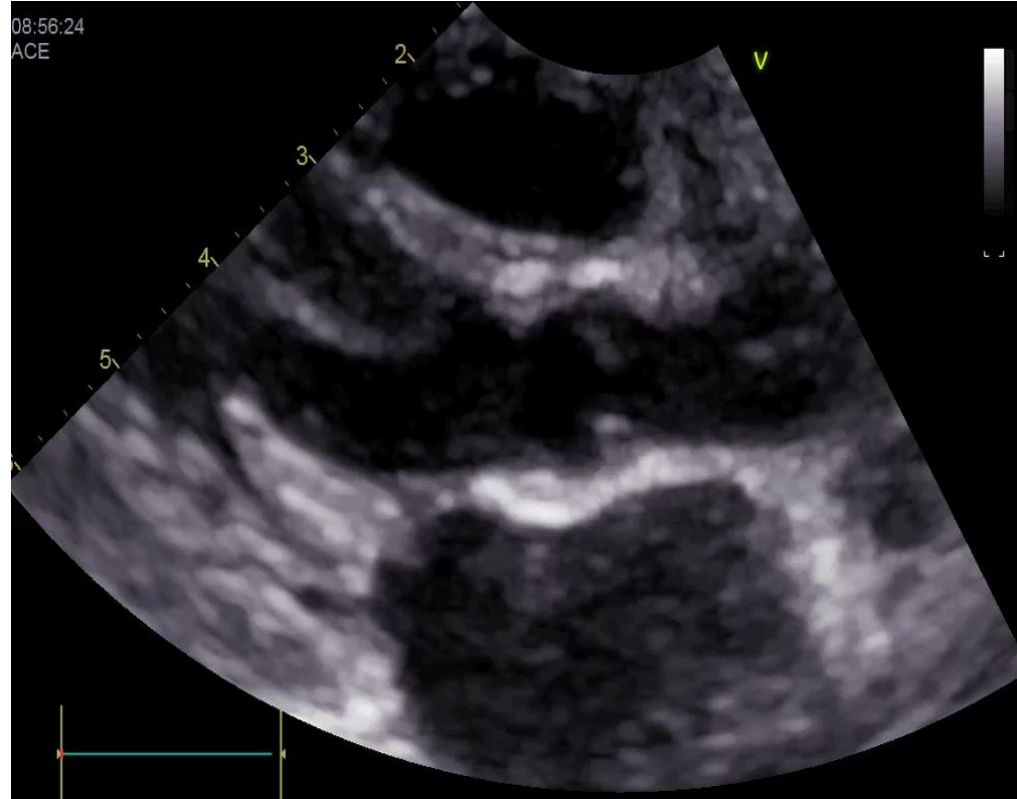
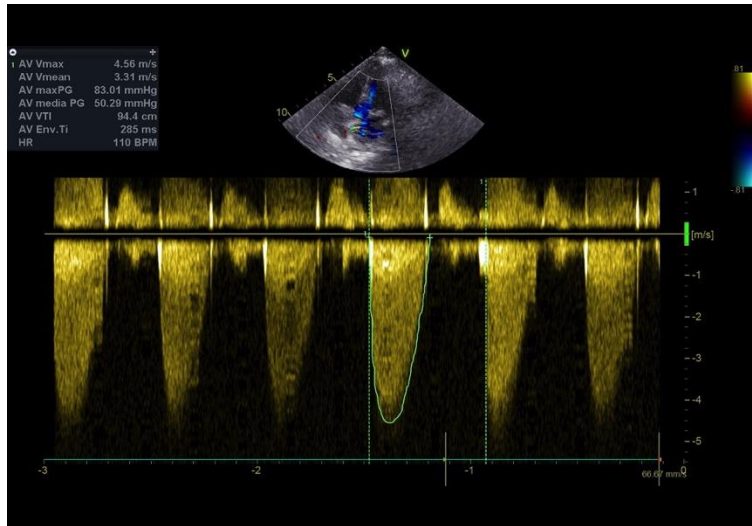


Figure 1: Freedom from re-intervention following catheter-based and surgical procedures for critical aortic stenosis (reproduced from Hill *et al.* [1]). BAV: balloon aortic valvuloplasty; SAV: surgical aortic valvuloplasty.

2 day old baby boy with aortic stenosis

Aortic Valve stenosis Severe

- Mean Gradient 50 mmHg
- max Velocity is > 4.5 m/s
- Indexed aortic valve area is 0.40 cm²/m²



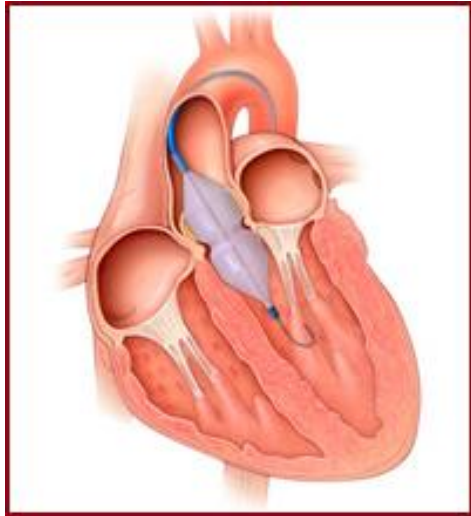
Aortic Balloon Valvuloplasty

October, 1983

American Heart Journal

Aortic balloon valvuloplasty

Zuhdi Lababidi, M.D. *Columbia, Mo.*



Results

2010-2020 92 patients

Gradient Reduction

Catheterism Data

Gradiente di picco PRE-VALVULOPLASTICA

54,62 mmHg (-20-110)



Gradiente di picco POST-VALVULOPLASTICA

23,42 mmHg (0-65)



RIDUZIONE PERCENTUALE DEL GRADIENTE

59,1%

$p < 0,05$

Echographic Data

Gradiente Massimo PRE-VALVULOPLASTICA

80,88 mmHg (50-141)



Gradiente Massimo POST-VALVULOPLASTICA

48,56 mmHg (10-85)

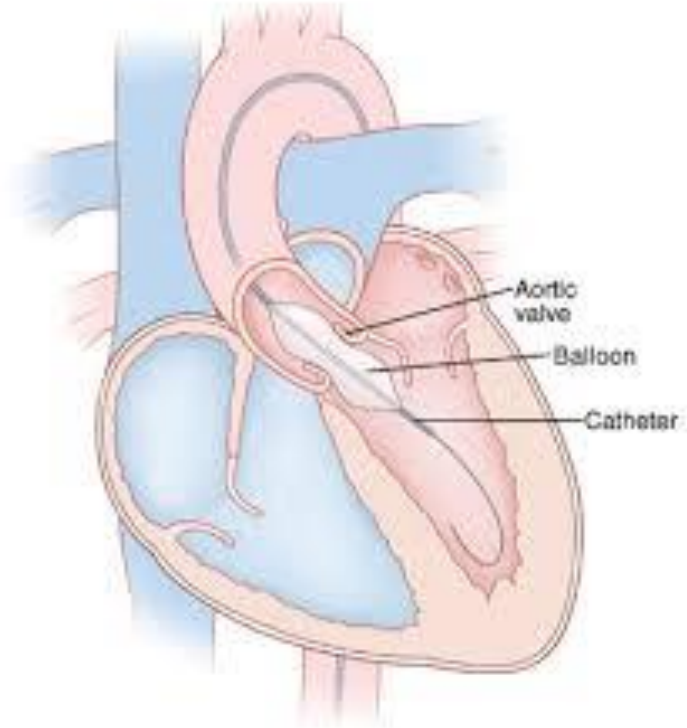


RIDUZIONE PERCENTUALE DEL GRADIENTE

42,7%

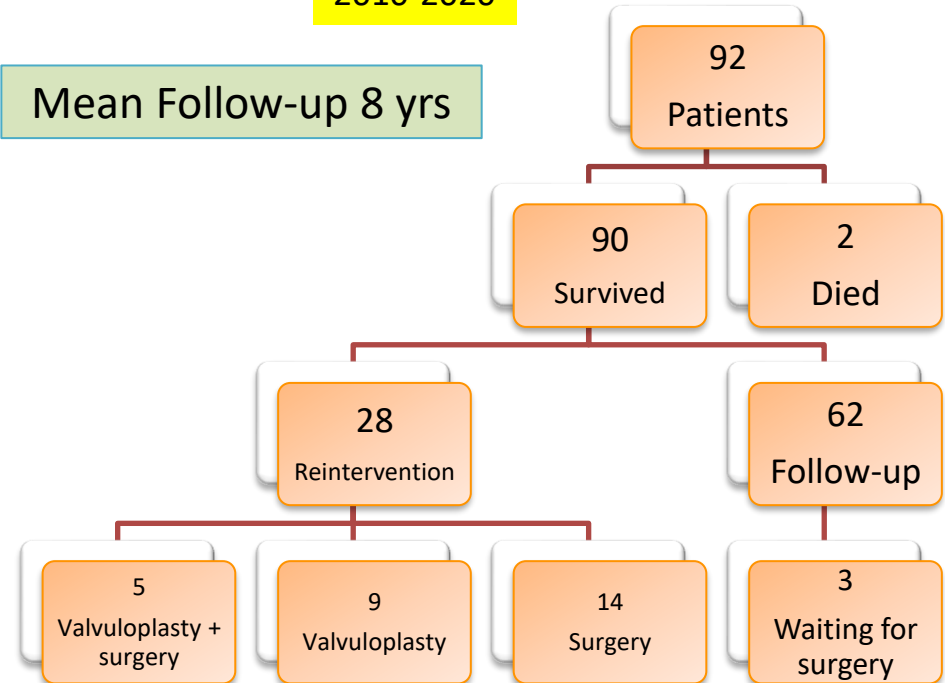
$p < 0,05$

Results



2010-2020

Mean Follow-up 8 yrs



Infant
Toddler

Pre
schooler

School
age

- (Aortic Balloon valvulopathy)
- Aortic valve repair
- Aortic valve replacement
 - Ross/Ross Konno
 - Ozaki

- stenotic bicuspid aortic valve
- incompetent after Balloon or Surgical AV
- Small aortic anulus

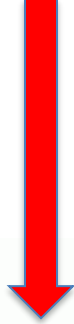


- stenotic bicuspid aortic valve
- incompetent prolapsing bicuspid or tric
- incompetent after Balloon or Surgical AV
- Small aortic anulus

School
age

Teenagers

Young
adult

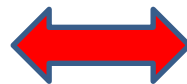
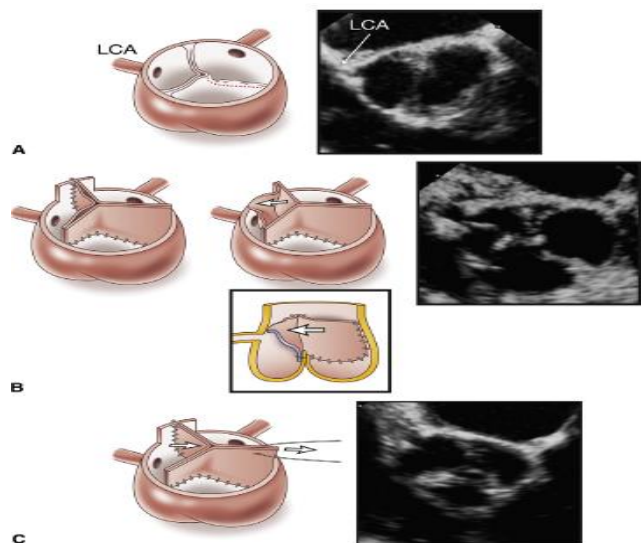


- Aortic valve repair
- Aortic valve replacement
 - Ross/Ross Konno
 - Ozaki
 - Anulus enlargement AV replacement

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The great debate series: surgical treatment of aortic valve abnormalities in children

Yves d'Udekem^a, James S. Tweddell^b and Tom R. Karl^{c,d,*}



The dilemma of prosthesis choice in pediatric AVR.

Central Message

All valve substitutes provide suboptimal results in children, reflecting the urgent need for innovative repair and replacement options.

AV REPAIR

VS.

AV REPLACEMENT

Patients population

- **36 patients May 2015 August 2023**
- **Techniques:**
 - Leaflet Shaving,
 - Decalcification
 - Leaflet augmentation
 - Leaflet plication
 - Commissurotomy
 - Commissure reconstruction with patch
 - Annuloplasty
 - Tricuspidalization
- **Associated procedure:**
 - 16 Asc Aorta replacement Tube graft
 - 6 Subaortic membrane resection

Results - Demographic

N° Patients	36
Age at Surgery (Mean, SD) yrs	14.2 ± 6.8
Gender M/F	24/12
Weight at surgery (Mean, SD) Kg	52.2 ±9.1
Bicuspid AV/Total (%)	29/36 (80%)
Valve lesion	
Ao Stenosis	24 (22 Bicuspid)
Ao Regurgitation	9 (5)
Mixed disease	3 (2)
Bicuspid Classification (sec. Shaefer):	
Type I (dx-sx)	19
Type II (ds-nc)	10
Type III (sx-nc)	0

Results - Operative

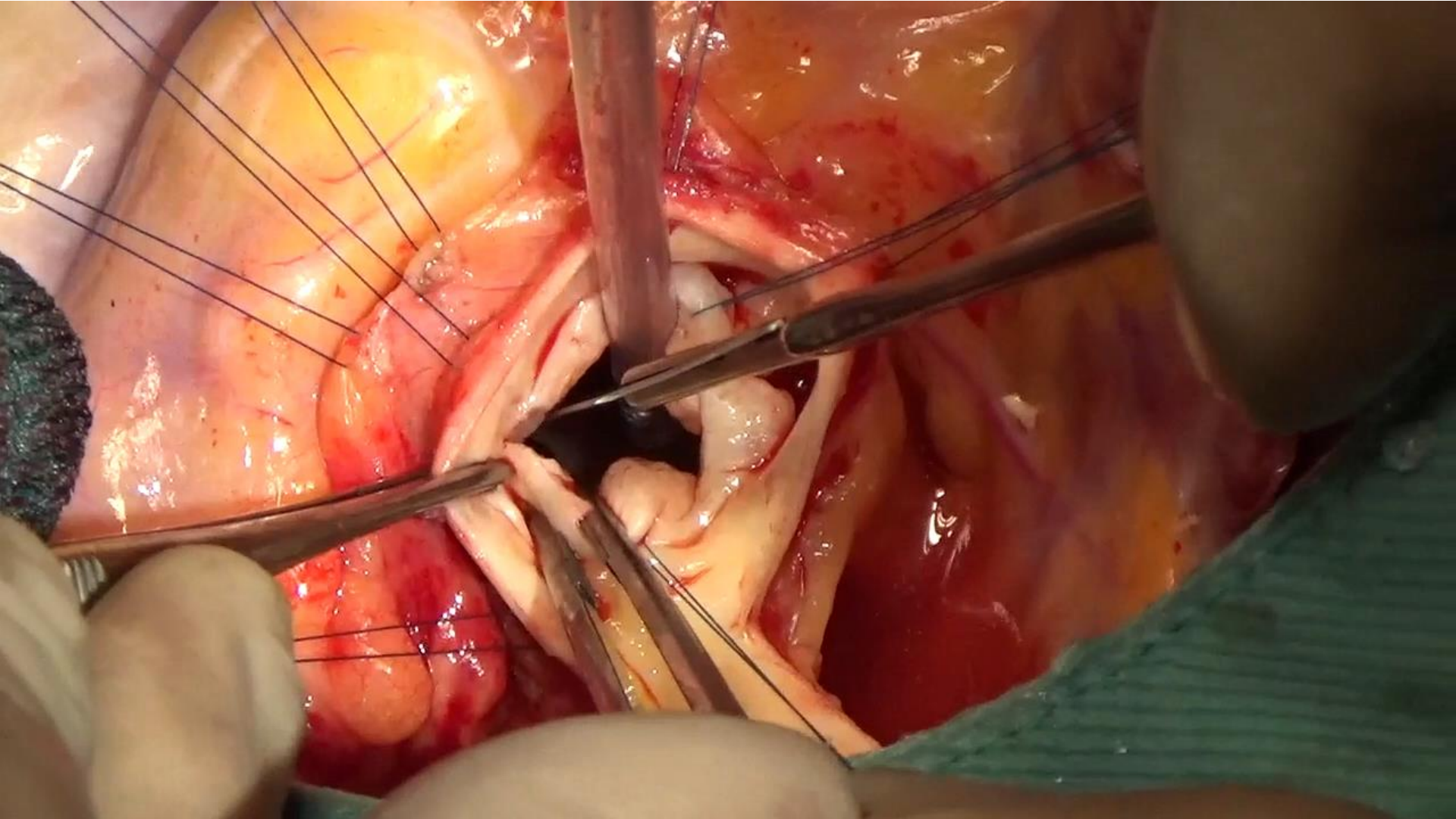
SURGICAL TECHNIQUE	N°/36 Patients (%)
Leaflet Shaving	29 / 36 (80%)
Commissurotomy	15 / 36 (44%)
Rafe excision	12 / 36 (33%)
Leaflet Reduction (Plicatio)	12 / 36 (33%)
Neocommissural Creation (Patch)	9 / 36 (25%)
CardioCell	2
Autologous Peric.	5
Eterologous Peric.	2
Decalcification	10 / 36 (27%)
Leaflet Extension (Autol. Peric.)	6 / 36 (15%)
Anulus Reduction (Intercomm. Stitches)	4 / 36 (12%)
Tricuspidalization	1 / 36 (4%)

Results – Follow Up

Early Death /Major Complication	0
FOLLOW UP (Months)	46.7 ± 11
Freedom from Reoperation	34 / 36
1 Patient : Mechanical AVR – Endocarditis – 1 Patient : Ross konno After 3 yrs From AV Repair	
Patients with AV Repair at last follow up	34 / 36
None or mild AI or AS	29 / 34 (85%)
Moderate AS	2 / 34 (6%)
Moderate AI	2 / 34 (6%)
Severe AS (waiting for Ross Konno)	1 / 34 (3%)

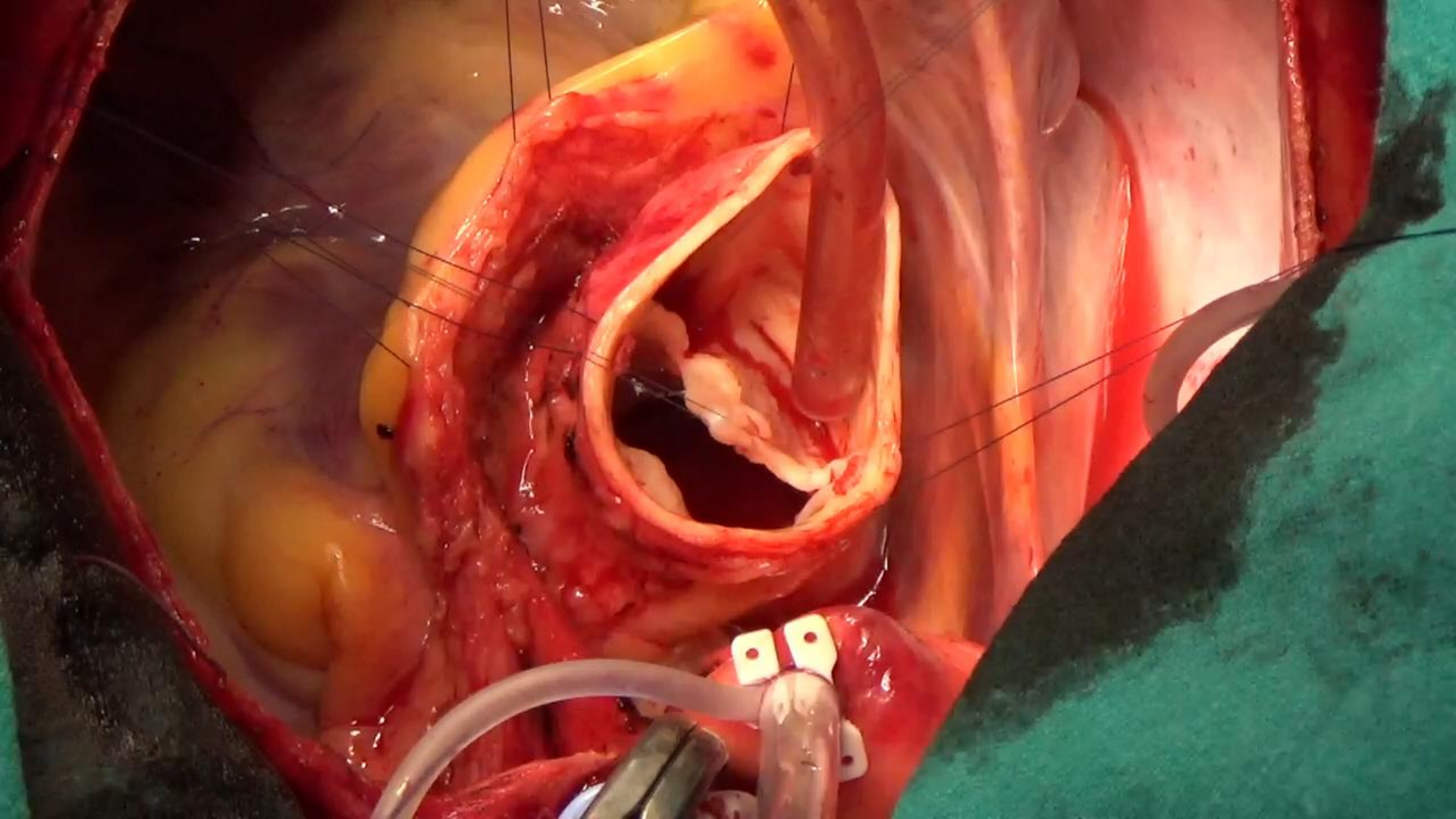
CG ddn 06/07/00, età 17anni M, 69 Kg

- **ECO pre op: SA severa** : AVA 0.7 m², grad max 115 mmHg, medio 60, IA moderata, valvola aortica bicuspidale (fusione fra ccdx e ccx) anello aortico 17mm.
- **9/6/2020 :Intervento di plastica valvolare aortica:** rafe fra ccx e ccdx bicuspidia, commissurotomia ccd/ccx, rafe calcifico, shaving delle cuspidi
- **Ecocardiogramma post op:** Gradiente massimo 25 mmHg, medio 10 mmHg IA lieve , FE conservata.



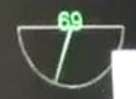
RAV ddn 25/04/98, 21 anni M, 65 Kg

- **Eco pre op: IA severa**, Vena Contracta 8 mm, Aneurisma Aorta Ascendente 51mm.
Fusione fra ccds/cnc, rafe mediano
- **23/7/2019: Intervento di plastica valvolare aortica:**
 - Shaving cuspidi,
 - Rimozione rafe,
 - Anuloplastica sottocommissurale,
 - Plicatura cuspidi anteriore,
 - Sostituzione aorta ascendente con protesi Dacron 26
- **Ecocardiogramma post op:** IA lieve, assenza di stenosi aortica, FE conservata, normali diametri del V.sx



RDI ddn 17/6/92, 28 anni, M, 91Kg

- s/p decoartazione in epoca neonatale e valvuloplastica percutanea
- **SA severa IAO lieve moderata** (grad max 90 mmHg, medio 55, AVA 0.9),
valv ao bicuspid (orientamento lat-lat)
calcificazione e fusione della commissura anteriore,
IA lieve moderata
Anulus ao 19 mm, seni valsalva 28 mm,
Ao ascendente dilatata 46 mm
- **1/6/2020 : Intervento di plastica valvolare aortica + sostituzione ao ascendente:**
Valvola bicuspid: commissurotomia anteriore con decalcificazione e shaving
ricostruzione con patch pericardio eterologo a libro,
Sostituzione ao asc con protesi Dacron 22 mm.
- **Ecocardiogramma post op:** Area Valvolare 2 Cm²,
- Gradiente max 25 mmHg, IA lieve , FE conservata



2D

FPS	61
Frequenza	5.0 MHz
Potenza	-1 dB
Guadagno	-10 dB
Compress	60 dB
DDP	0.7
Prof.	10.0 cm

1938 1955

31.9

Grazie per la cortese attenzione



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