



Concomitant mitral valve and thoracic aorta repair via upper J-mini-sternotomy

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Introduction

The combination of mitral valve (MV) pathology and thoracic aortic pathology occurs in 5-10% of cases

Incomplete surgical correction of the MV pathology in such cases can:

- Worsen early outcomes
- Increase the risk of re-intervention

Minimally invasive combined repair of the MV and thoracic aorta is:

- Technically challenging
- Poorly described in the literature

Aim

To present our experience of minimally invasive combined mitral valve and thoracic aortic repair

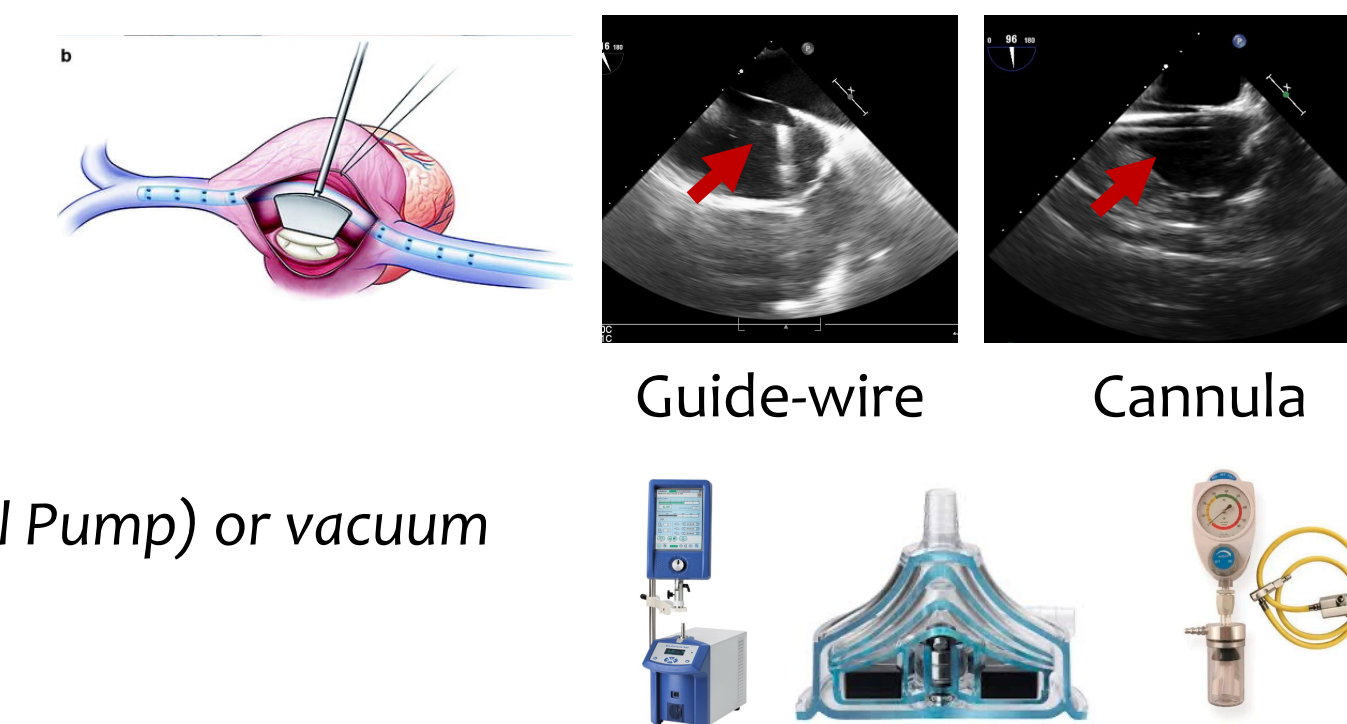
Patients

- ✓ A total of **399** patients undergoing minimally invasive thoracic aortic repair of them **31 (7.7%)** were included
- ✓ **Study period:** from 2016 to May 2024 at single center experience
- ✓ **Inclusion criteria:** Patients with combined MV repair

N(%), mean ± SD, Me (Q1-Q3)	N = 31	N(%), mean ± SD, Me (Q1-Q3)	N = 16
Age, years	56.4 ± 17.1	HF NYHA	
BMI, kg/m ²	28.2 ± 5.4	- I class	4(13)
BSA, m ²	2 ± 0.3	- II class	10(32)
Marfan syndrome	7(23)	- III class	8(26)
Aortic pathology:		AF	8(26)
- Root aneurysm	18(58)	AV-block	1(3)
- Degenerative aneurysm	12(39)	EF, %	51.3 ± 8.1
- Type A AD	1(3)	EDD, cm	7.11 ± 1
BAV	9(29)	Pulmonary hypertension, mm Hg	42 ± 14
Aortic regurgitation	3 (2.88 – 4)	CAD	3(10)
MV pathology:		Diabetes	4(13)
- Functional MI	17(55)	RF	2(6.5)
- Rupture anterior leaflet chords	2(6.5)	Peripheral atherosclerosis	3(10)
- Rupture posterior leaflet chords	4(13)	COPD	2(6.5)
- Prolapsus	3(10)		
- Degenerative lesion	4(13)		
- Endocarditis	1(3)		
Mitral regurgitation	2.7 ± 0.7		

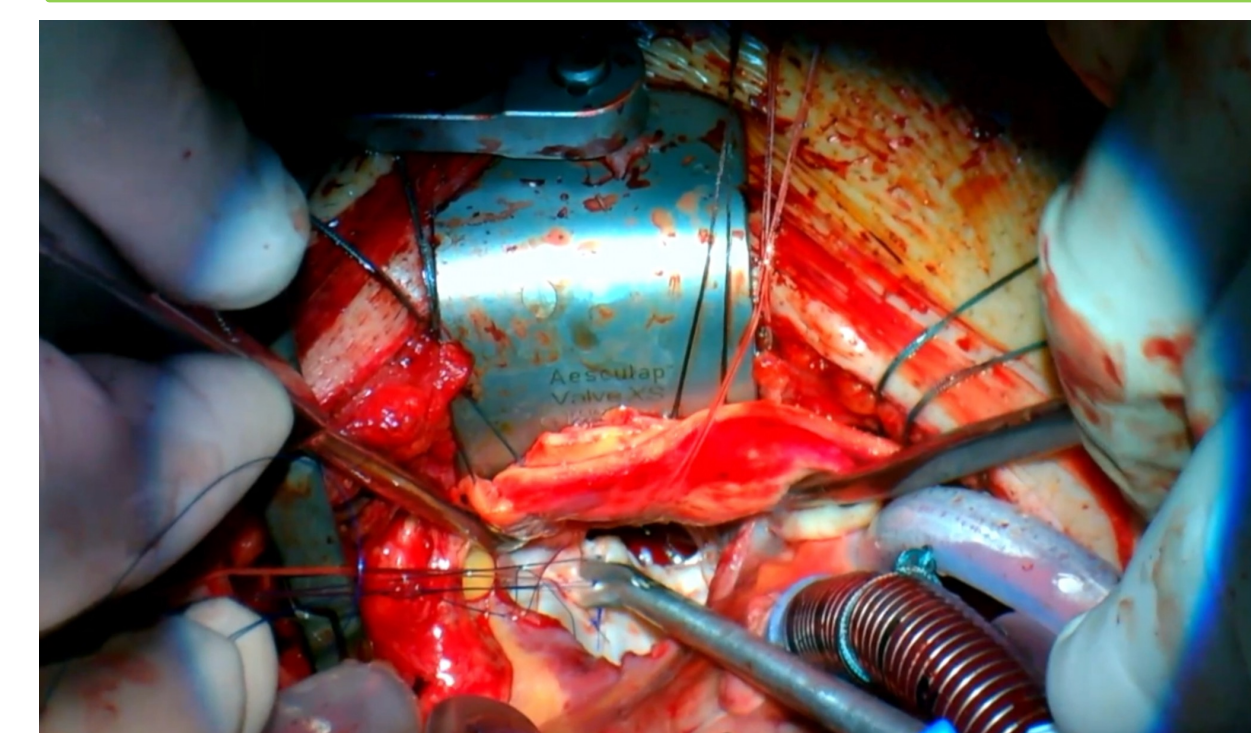
Methods

- ✓ In all cases, patients with J-shaped mini-sternotomy (MS) through IV intercostal space
- ✓ Peripheral cannulation using a two-level Carpentier cannula (Medtronic), including percutaneous puncture

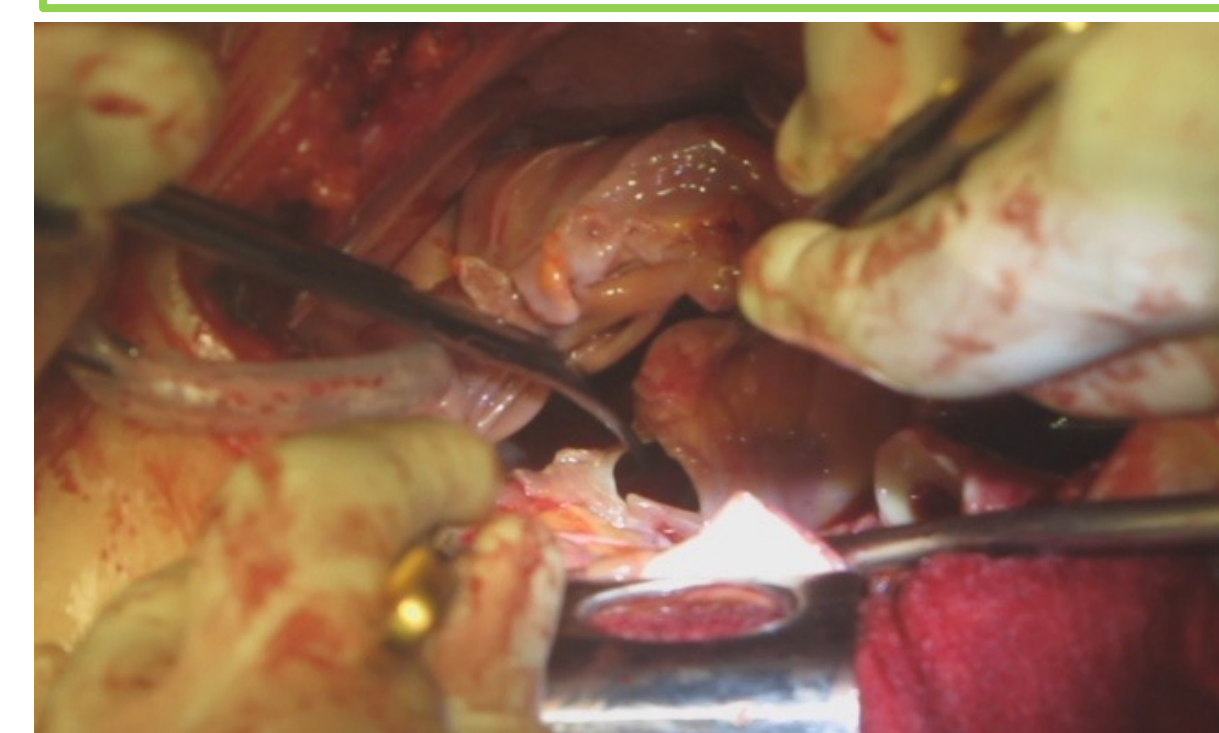


MV surgical approach

Left atriotomy through the LA roof, n = 17 (55%) (now)



Bi-atrial transeptal access (Guiraudon), n = 14 (46%) (in early experience)



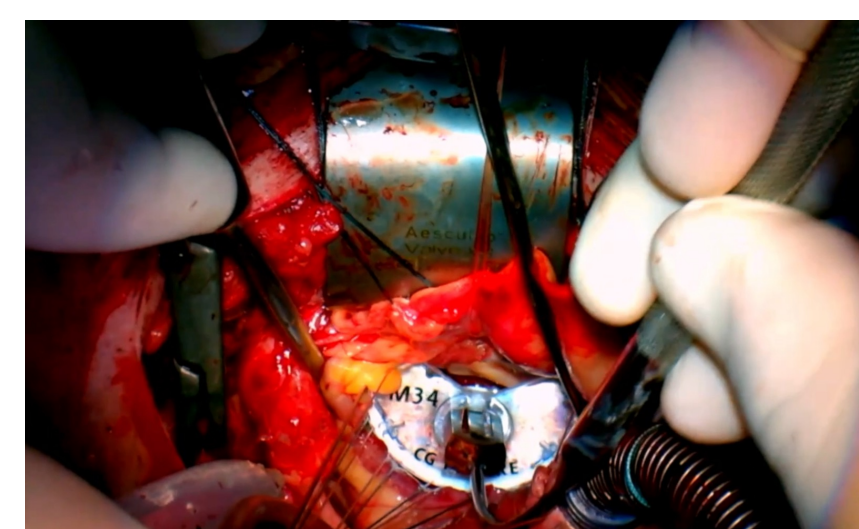
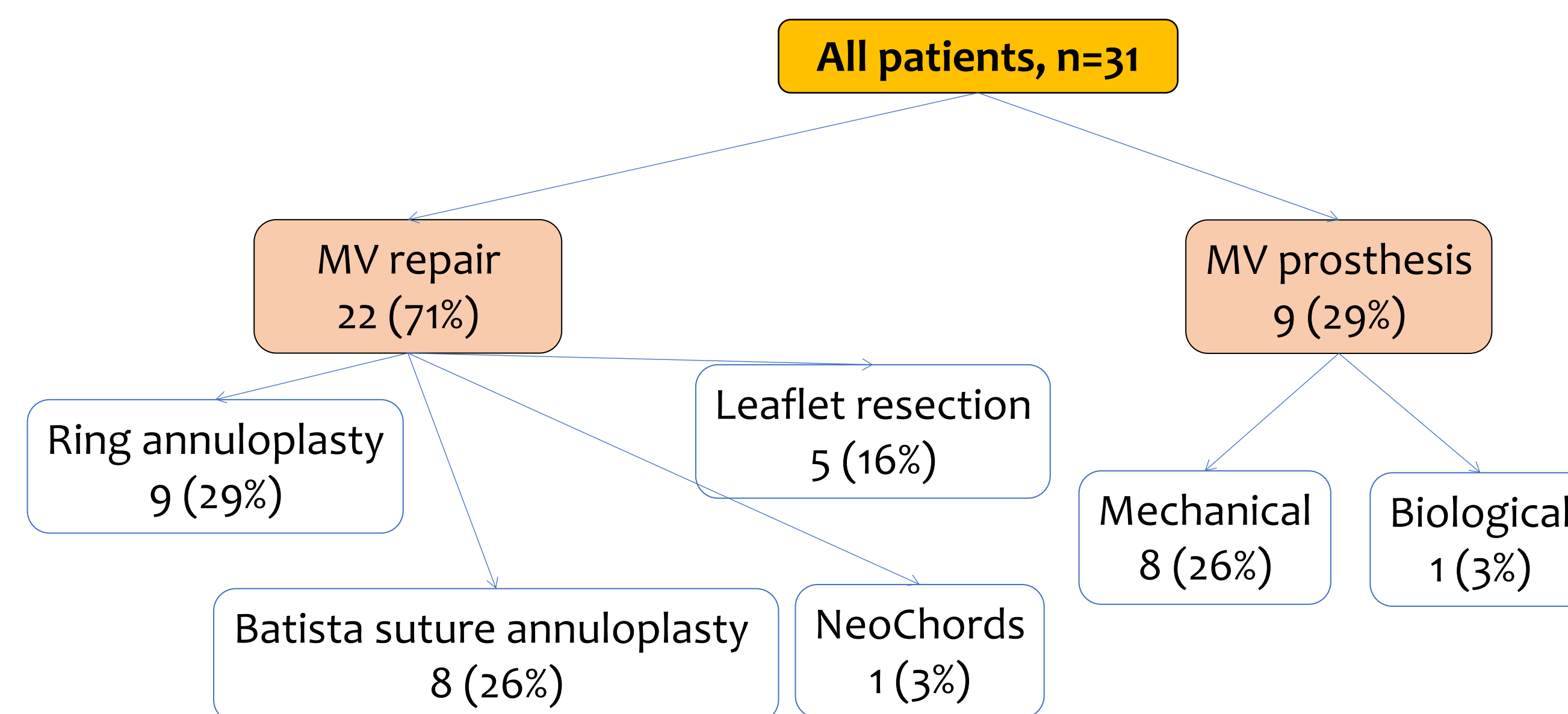
Surgical technique

- ✓ LV drainage classical
- ✓ CO₂ insufflation (flow up to 4 l/min)
- ✓ Drains and electrodes prior to aortic clamp removal
- ✓ Nitinol staples for osteosynthesis

The endpoints of the study were hospital mortality, early and long-term outcomes, and complications.

Data are expressed as mean ± standard deviation (SD), or as median and range. The two-tailed unpaired t-test was used to compare continuous values. For categorical variables, the two sided χ^2 -test or Fisher's exact test were used to assess differences between two groups. The threshold of significance was set at P < 0.05

Results



Cardioplegia:

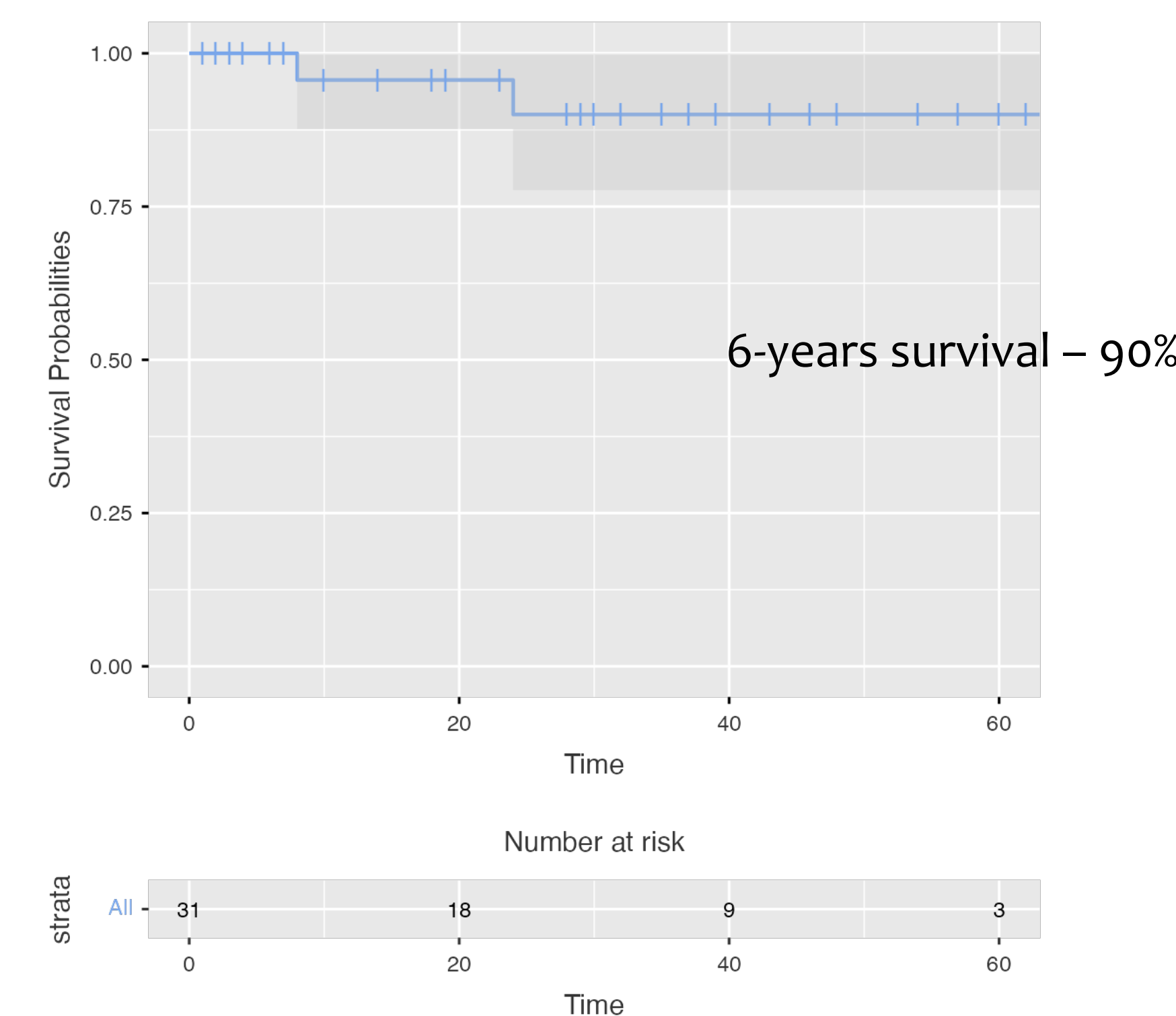
- ✓ Custodiol – 6 (19%)
- ✓ Warm blood by Calafiori – 10 (32%)
- ✓ Del Nido – 15 (48%)

Thoracic aortic repair	N (%)
David	11 (35)
Bentall - DeBono	11 (35)
AAR + AVR	9 (29)
FET	1 (3)
Maze procedure	5 (16)
TV repair by Batista	2(6.5)
LA reduction	9 (29)
LA appendage resection	17 (55)
ASD repair	3(10)

CPB – 162 ± 33.5 min
X-clamp – 139 ± 30.4 min
Bloodloss – 800 (625 – 925) ml
Skin-to-skin time – 5.53 ± 1.15 h

N(%), mean ± SD, Me (Q1-Q3)	N = 31
Skin incision, cm	7.1 ± 0.5
Ventilation time, h	6.7 ± 3.2
ICU stay, days	1 (1 – 2)
Hospital stay, days	10 (9.8 – 12)
AV-block:	
- persistent	1 (3)
- temporary	3 (10)
MI	1(3)
Stroke	0(0)
Bleeding	1 (3)
AF	7 (23)
Respiratory failure	1 (3)
Hospital mortality	1 (3)
30-day mortality	0(0)

✓ **No conversion cases and re-intervention on thoracic aorta and mitral valve**



Conclusions

- J-shaped mini-sternotomy is a safe and effective approach for minimally invasive combined surgical treatment of thoracic aortic and mitral valve (MV) pathology

- Both surgical approaches to the MV (through the roof of the left atrium and vertical transeptal by Guiraudon) provide satisfactory exposure and allow all necessary surgical interventions to be performed

- Experience with traditional and minimally invasive surgery on the thoracic aorta and MV is an important factor for successful outcomes with this approach

The authors declare no relevant conflict of interests regarding this poster