

Does the Ross procedure effectively treat and reverse cardiac damage in young patients with prosthetic aortic valve dysfunction?

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Background

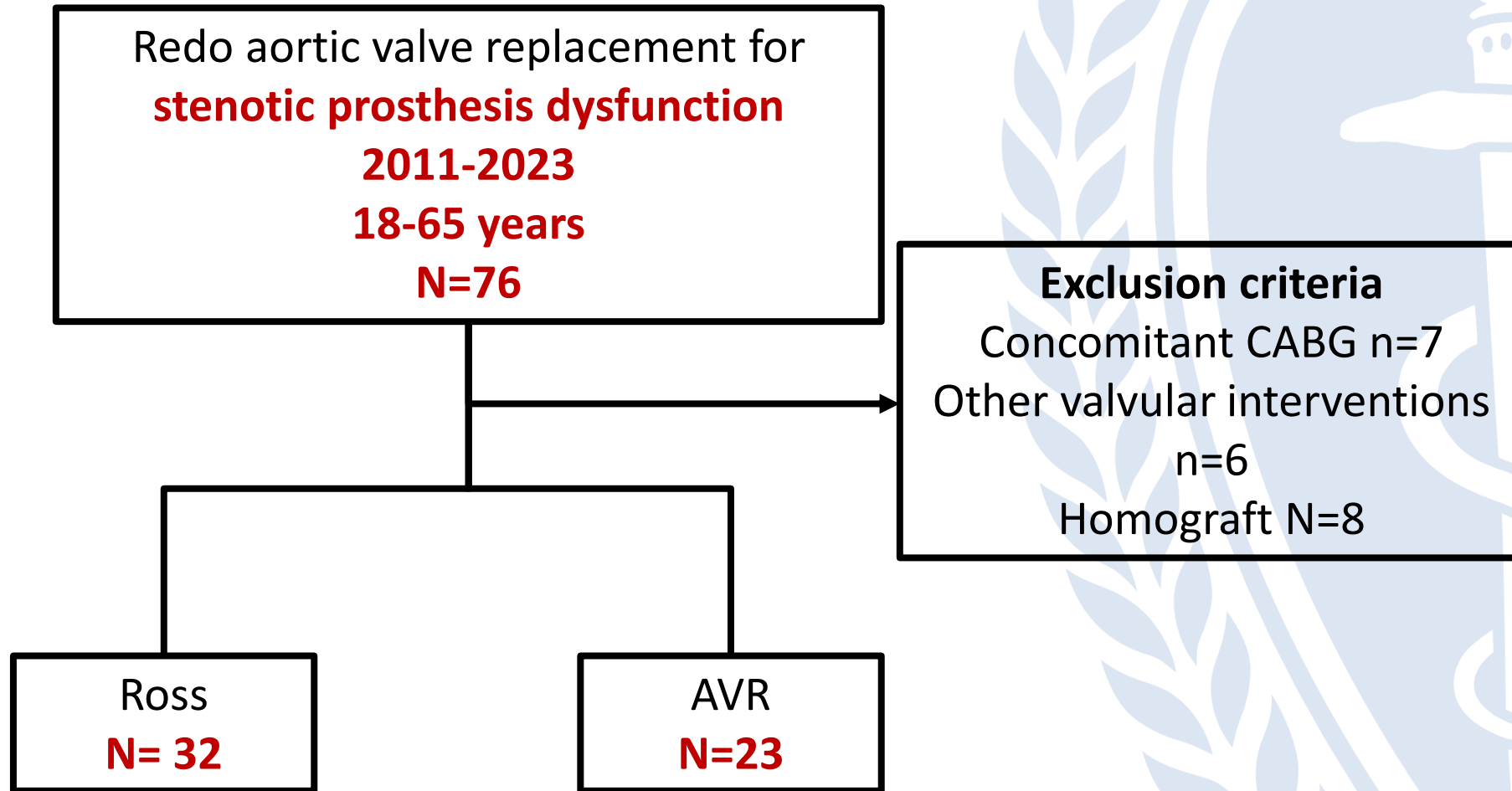
- **The Ross procedure closely mirrors the hemodynamics of a native aortic valve**
- **The living pulmonary autograft translates into a clinical benefit in young adults**
- **Attractive option for young patients with stenotic prosthetic dysfunction**

The effect of the pulmonary autograft in reversing cardiac damage in this patient population remains to be determined.

Objective

Assess the **reversal of cardiac damage** following the **Ross procedure** in patients with **stenotic prosthetic dysfunction** and **compare** it to patients with a **redo-AVR** in the same setting

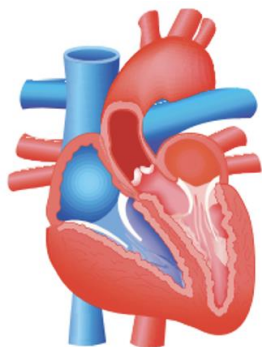
Methods



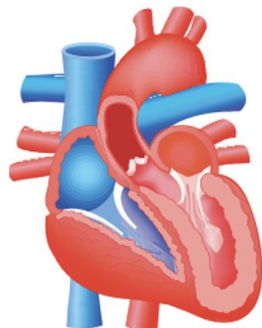
Mean Follow-up 4.7 years, 70 follow-up echocardiograms

Endpoints

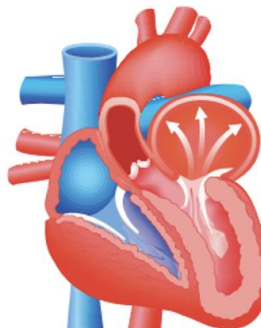
Primary endpoint



Stage 0
No damage

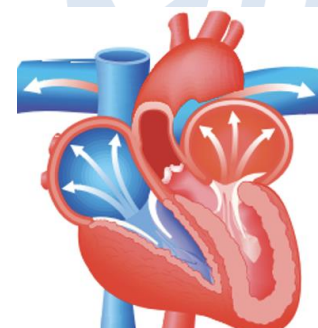


Stage 1
LV damage



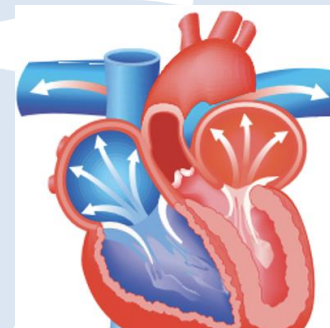
Stage 2

- LA or Mitral damage
- LA indexed volume > 35 ml/m²
- Atrial fibrillation
- Moderate-severe MR



Stage 3

- Pulmonary vasculature or tricuspid damage
- Systolic PAP > 60 mm Hg
- Moderate-severe TR



Stage 4
RV damage

- Moderate-severe RV systolic dysfunction

Secondary Endpoints

- NYHA class, mean aortic gradient, aortic valve area, LV mass

Comparison

- **Comparison within group**
 - Preoperative vs post-operative
- **Comparison between groups**
 - Redo-AVR vs Ross
- **Echocardiographic data analyzed with mixed effects models**

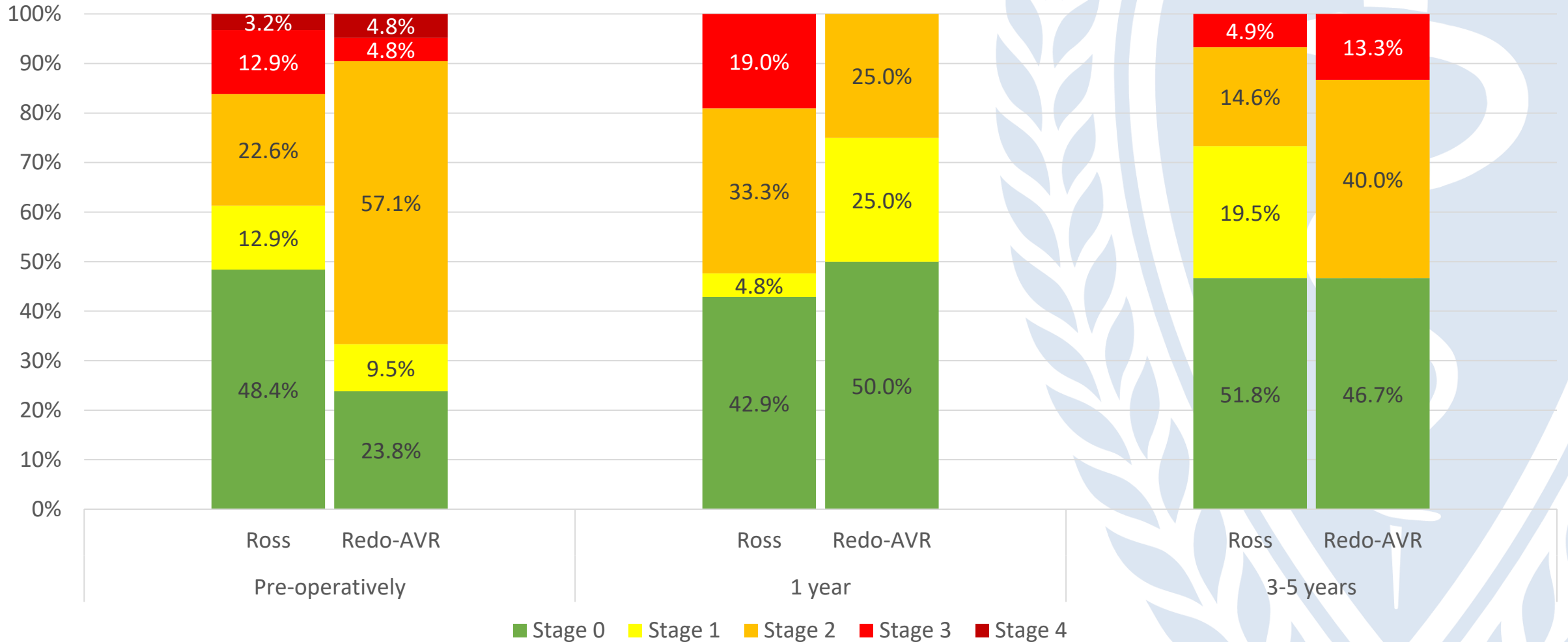


Baseline characteristics

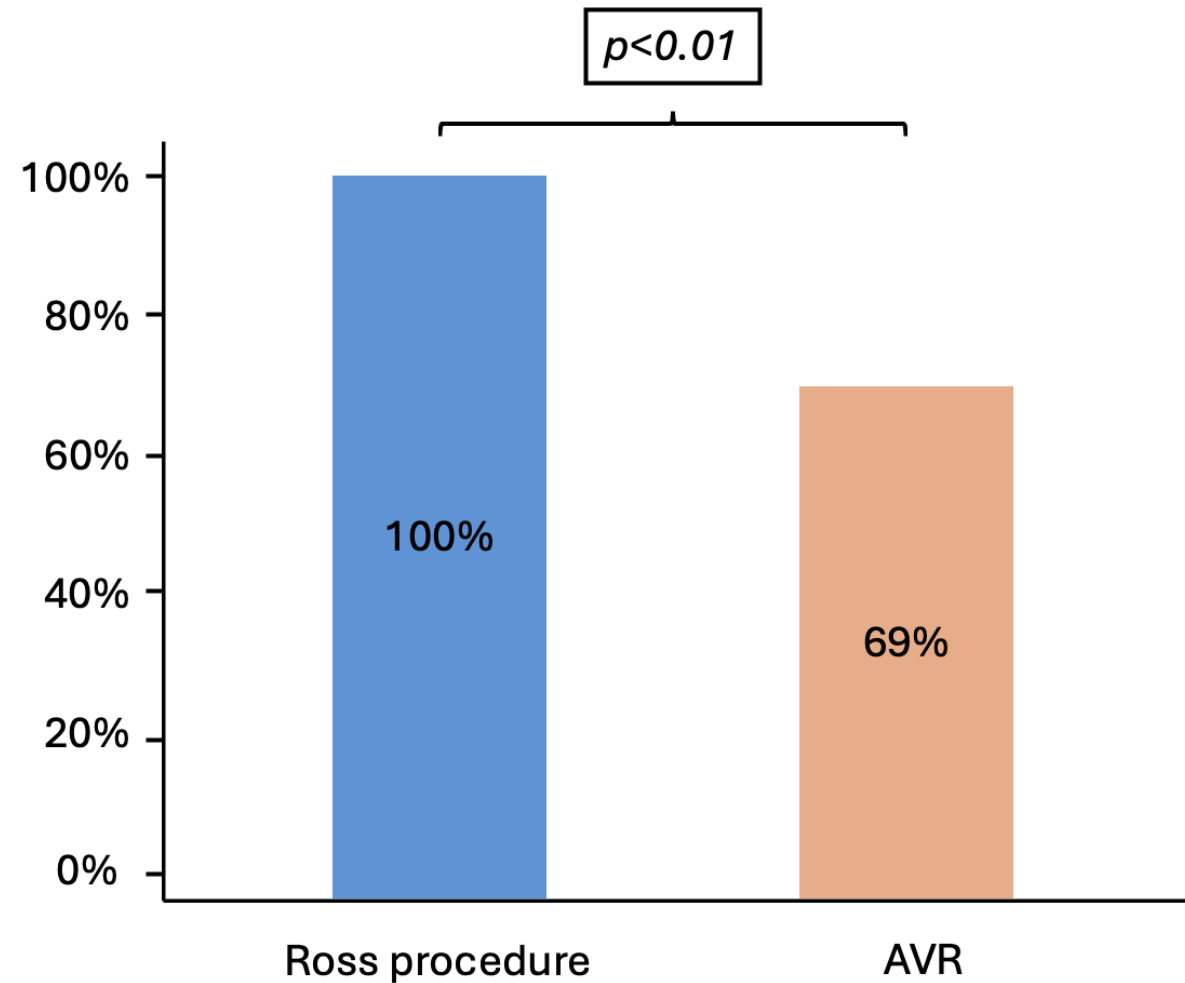
Variable	Ross	AVR	P value
Sex (female)	17 (49%)	8 (35%)	0.42
Age	43 ± 12	58 ± 7	< 0.01
BMI	28±6	33±5	< 0.01
CAD	1 (3%)	5 (22%)	0.08
AF	1 (3%)	10 (44%)	<0.01
CKD	1 (3%)	5 (22%)	0.08
Endocarditis	5 (14%)	9 (39%)	0.15
Active	2 (40%)	9 (100%)	0.09
Treated	3 (60%)	0	
STS	1.7±2.1	2.2±1.5	0.31
LVEF	61±7%	59±10%	0.45
Aortic mean gradient	44±21	39±23	0.36
AVA	1.1±0.6	1.1±0.5	0.95

Cardiac damage

Cardiac Damage Stages

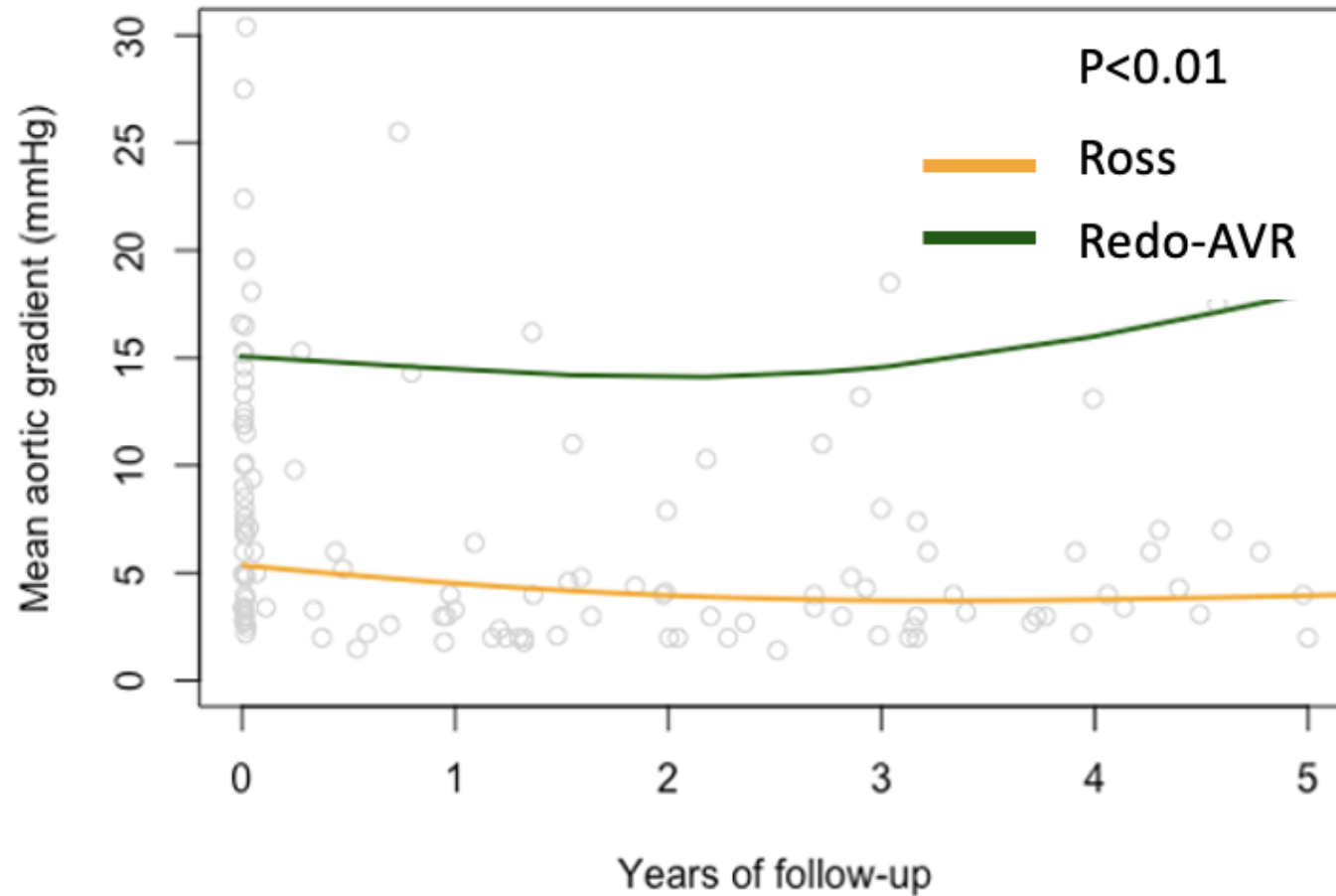


NYHA class



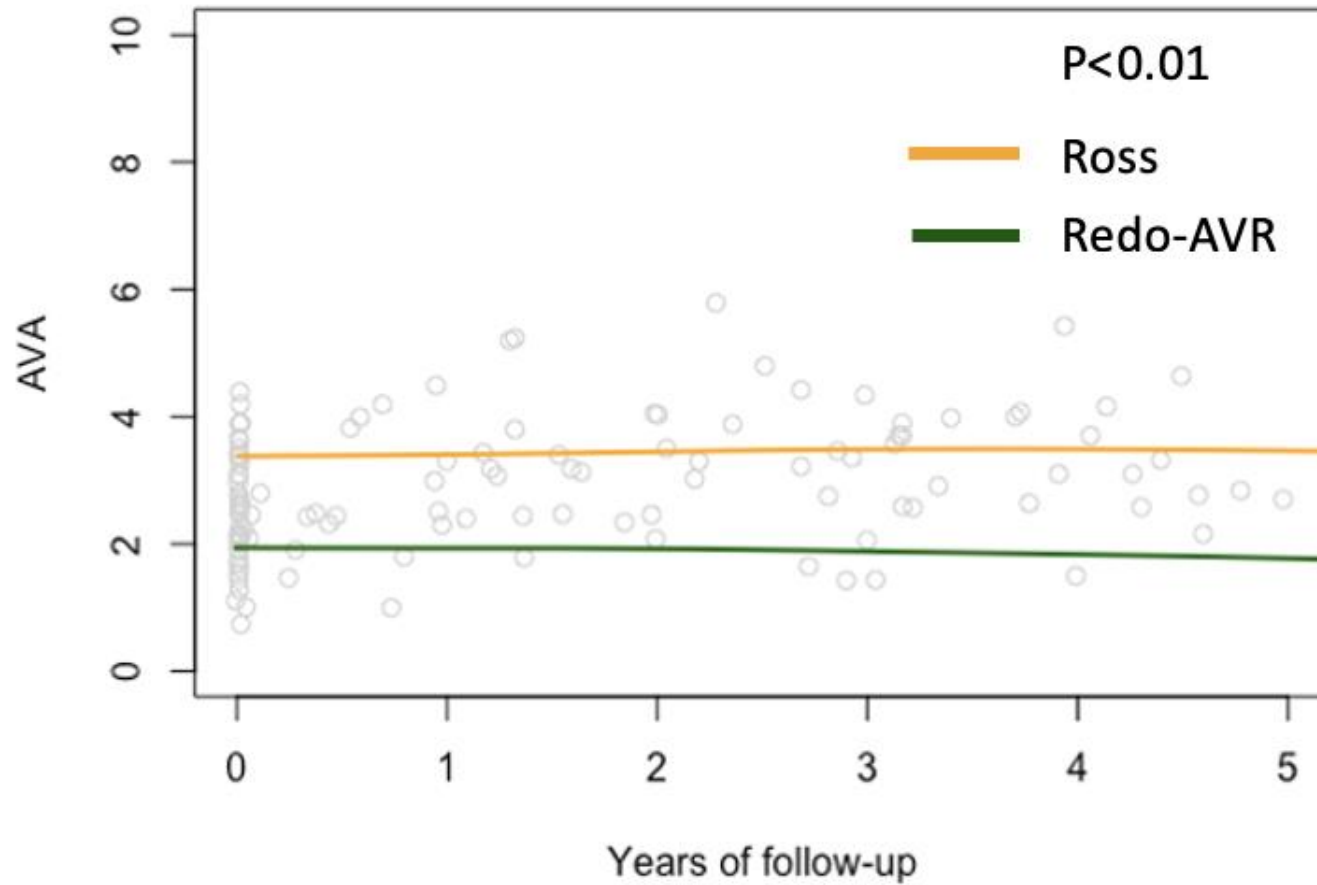
Proportion of patients with NYHA class 1 or 2 at latest follow-up

Mean aortic gradient



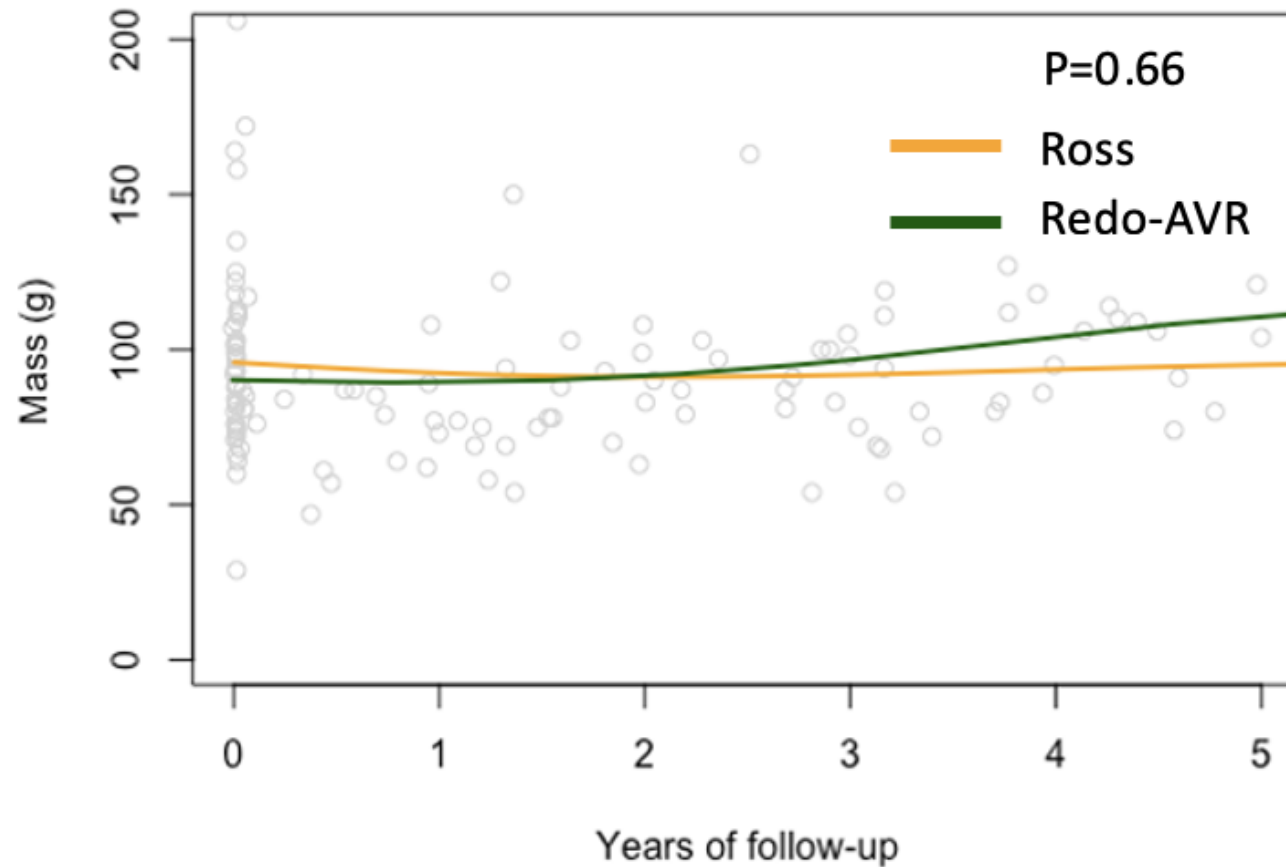
Higher aortic gradient with redo-AVR and increasing over time.
The Ross gradient remains stable over time.

Aortic valve area



Aortic valve area is lower and decreasing over the 5-year period with a redo-AVR.

LV mass



No significant difference in LV mass between the two groups.

Conclusions

- **Cardiac damage improvement was not significantly different between the two groups**
- **Better hemodynamic performance with the Ross procedure**
- **Better NYHA class at follow-up with the Ross procedure**
- **Longer follow-up is required to assess the regression of cardiac damage and correlate it with the improved hemodynamics**