

Minimally Invasive Redo Aortic Root Procedure Through Right Anterior Thoracotomy Approach



The First Affiliated Hospital
of Xi'an Jiaotong University

Safe, Feasible, and Low Mortality in 46 Selected Patients



BACKGROUND

- **Challenge:** Redo cardiac surgery risks severe bleeding and adhesions.
- **Advantage:** Minimally invasive approach reduces trauma and preserves sternal integrity.
- **Objective:** Evaluate safety and feasibility of the right thoracotomy approach.

METHODS

- **Design:** Retrospective, single-center, single-surgeon series.
- **Cohort:** 46 patients (Jun 2022 – Dec 2025).
- **Approach:** Right Anterior Thoracotomy (2nd/3rd ICS).
- **CPB:** Femoral arterial cannulation + femoral & internal jugular venous cannulation (or axillary artery if needed).
- **Procedures:** Redo AVR / Ascending Aorta / Root (Bentall).

SURGICAL TECHNIQUE

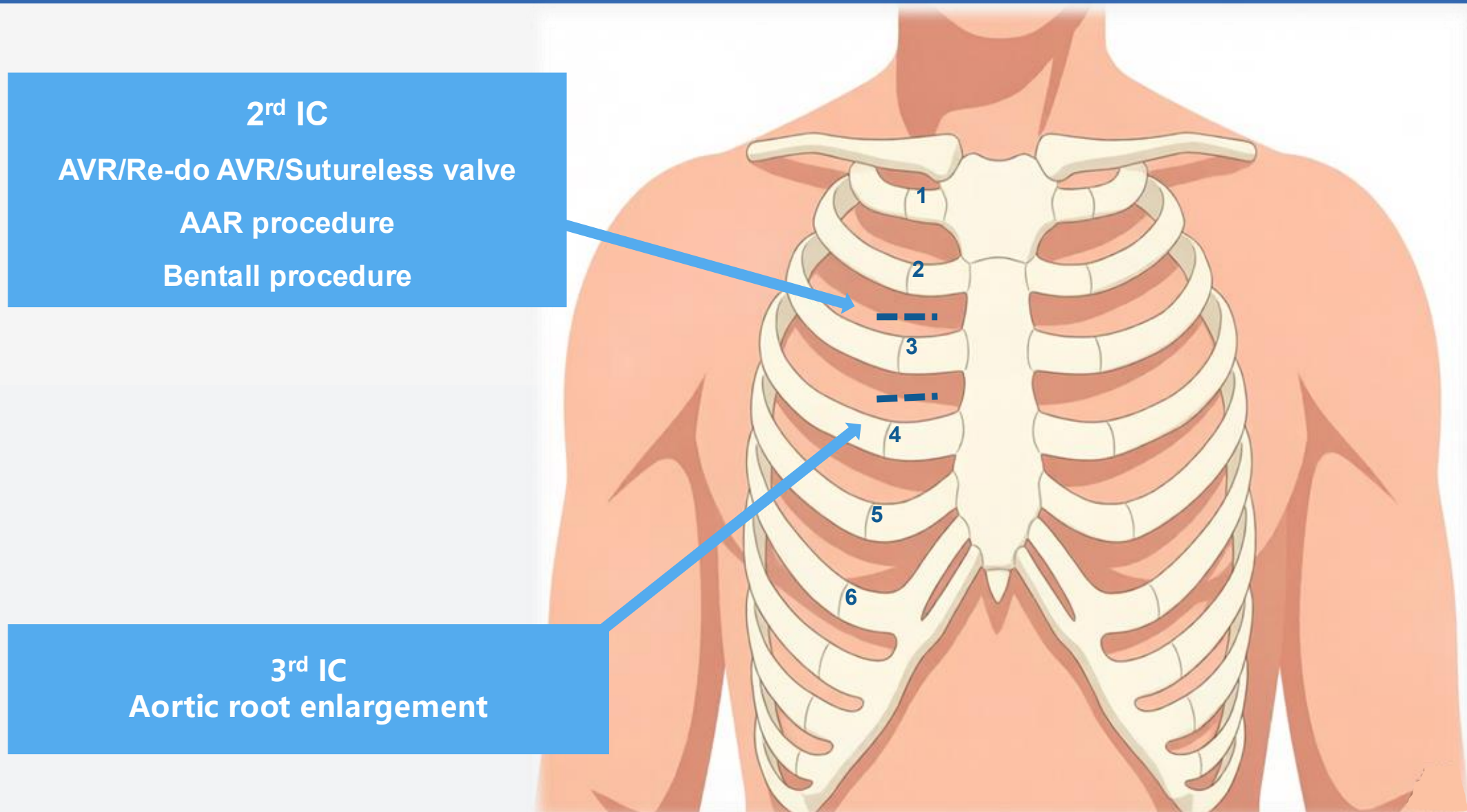


Figure1. Redo AVR to a sutureless valve (Percival) 17 years after mechanical AVR

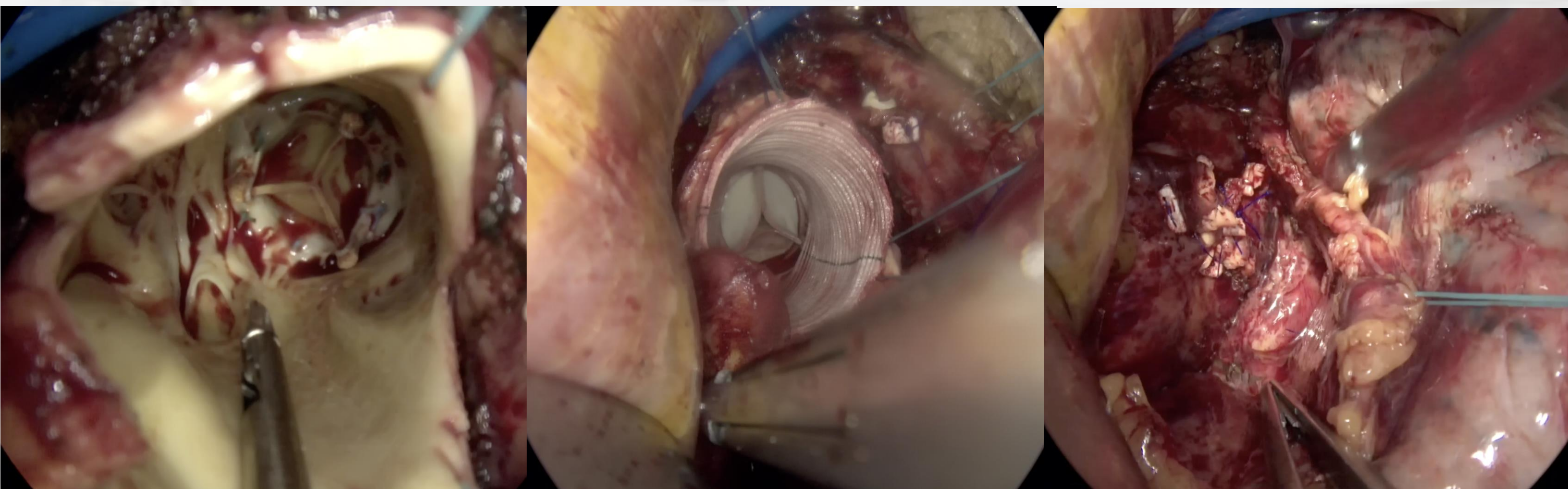


Figure2. Redo Bentall for root aneurysm/dissection and valve failure at 6 years

RESULTS

Group Characteristics	N=46	Perioperative Characteristics	N=46
Age (years),mean ± SD	49.7 ± 12.6	Operation Time (min),Median (IQR)	267(202-322)
male Gender, n (%)	31 (67.4%)	Cardiopulmonary Bypass Time (min),Median (IQR)	142(118-168)
BMI(kg/m²),, n (%)	24 .2± 2.4	Aortic Cross-clamp Time (min),Median (IQR)	97(78-115)
Hypertension , n (%)	11 (23.9%)	ICU Stay (days),Median (IQR)	2(1-3)
Diabetes Mellitus , n (%)	2 (4.3%)	Re-exploration for Bleeding (%),Median (IQR)	2 (4.3%)
COPD , n (%)	6 (13.0%)	Red Blood Cell Transfusion,Median (IQR)	2(1-3)
Previous Cerebrovascular Disease, n (%)	5 (10.9%)	24-hour Drainage (ml),Median (IQR)	359(297-415)
Peripheral Vascular Disease , n (%)	6 (13.0%)	Mechanical Ventilation >24h (%)	3(6.5%)
Acute Infective Endocarditis , n (%)	7 (15.2%)	New-onset Stroke (%)	1 (2.2%)
Renal Insufficiency , n (%)	3 (6.5%)	Pulmonary Infection (%)	1 (2.2%)
LVEF ,mean + SD	54.9 ± 8.5	Hemodialysis (%)	1 (2.2%)
NYHA Class ≥ III , n (%)	40 (87.0%)	ECMO (%)	1 (2.2%)
Emergency Surgery , n (%)	5 (10.9%)	Third-degree Atrioventricular Block (%)	1 (2.2%)
Time from First Surgery (years),Median (IQR)	7(5-10)	Postoperative Hospital Stay (days)	11(9-13)
		In-hospital Mortality (%)	1 (2.2%)

CONCLUSIONS

- Safe & effective in selected redo aortic root patients.
- No conversion to sternotomy in 46 consecutive cases.
- Best performed by experienced surgeons in high-volume centers.
- Larger studies needed for long-term validation.