Our experience with aortic valve repair with a remodeling technique, extraaortic ring implantation and root replacement

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Objective: Aortic valve replacement (AVR) is still the most commonly used therapeutic option for patients suffering from AR. Aortic valve repair (AVRep) is an attractive alternative method, since it avoids the risks of prosthesis-related complications.[1-3] We would like to present our experience with the Yacoub root remodeling, valve sparing technique with the extraaortic expansible ring.

Patients and Methods: Between November 2014 and July 2019, a total of 79 patients (52.6±13.3 years; 15.2% female, EuroScore II of 3.15%±2) underwent AVRep, 12 due to isolated cusp malcoaptation and 67 associated with aortic root dilatation. Reconstruction was done with the Coroneo Extraaortic Ring (27 (25-31)), and the Gelweave graft (28 (26-32)). 44 patients had a tricuspid valve, 33 patients had a bicuspid valve, and 2 patients had an unicuspid valve. Concomitant procedures included Mvrep and TVrep in 4 patients, CABG in two patents. Aortic arch was replaced in two patients, two patients underwent hemiarch replacement, and two patients had aortic arch replacement with stented conduit and placement of stent in descending thoracic aorta (EVITA stent graft Jotec GmbH). Echocardiography was used to determine AR severity grade preoperatively, during immediate post-operative period (within 7 days from operation) and at early follow-up.

Results: In postoperative follow-up no patients died. Freedom from reoperation was 88% (10/79) and there were 2 patients reoperated due to early postoperative regurgitation, one patient was reoperated due to AI after two years, and one was operated due to pseudoaneurysm formation after 2.5 years. A significant decrease in LV end-diastolic diameter was observed (LVEDD) (60mm preoperatively, 53 mm postoperatively) with further decrease at early follow-up. At follow up none of the patients had major AR (AR0=61, AR1+=14, AR2+=4).

Conclusions: We have proved that AVRep is a good alternative for patients with aortic insufficiency and leads to LV reverse remodeling with comparable results in terms of LVEDD and LVEF immediately post-operatively and at early follow up. It is feasible to use this technique in tricuspid, bicuspid, as well as unicuspid valves with excellent results.

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