Aortic valve repair – a 10-year experience in Dubrava University Hospital

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KEYWORDS: aortic root, valve repair.

CITATION: Cardiol Croat. 2024;19(11-12):465. | https://doi.org/10.15836/ccar2024.465

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Introduction: The aortic root is a complex structure connecting the heart to systemic circulation that ensures intermittent, unidirectional channeling of large volumes of fluid while maintaining minimal resistance, and the least possible tissue stress during varying hemodynamic demands. When any component of the aortic root fails, the intricacy of this structure highlights the importance of reparative surgical techniques that preserve its functionality and anatomy[1]. Continuing research in this field is leading to improved surgical techniques with the goal of aortic valve repair becoming the new standard for patients suffering from AI and/or aortic root dilatation[2]. We report our 10-year experience with adult aortic valve repair.

Patients and Methods: Between 2014 and 2024, a total of 180 patients with AI with/without aortic root dilatation underwent aortic valve repair performed by a single surgeon. All the patients were included in the AVIATOR database and the transthoracic echocardiography examinations were reported during follow-up period.

Results: In baseline characteristics, mean age was 50.8±13.5 years and 82.7% of patients were males. Regarding the number of leaflets, majority of patients were in TAV group (52%), with 3% quadricuspid and 1% unicuspid. BAV patients were significantly younger, with narrower roots at the level of SV and STJ. No other major differences were observed. There were no deaths during the hospital stay and 7 patients died in the follow-up period with none of the deaths cardiac- related. Intraoperative conversion to valve replacement due to insufficient repair was necessary in 7 patients. Overall, 10 patients required reoperation – 3 in the early postoperative period and 7 in the later phases, resulting in a freedom from reoperation rate of 94.2% at 10 years.

Conclusion: Valve-sparing aortic root surgery is both challenging and demanding, yet it offers remarkable rewards, yielding excellent outcomes when approached with systematic methodology. External annuloplasty is recognized as the most physiological technique and has become a vital component of aortic valve repair[3]. With continuous advancements in surgical techniques and personalized strategies for each patient, we can achieve excellent repair durability and a high rate of freedom from valve-related complications.

RECEIVED:
October 13, 2024
ACCEPTED:
October 31, 2024

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