

Summary

Risk factors for failure of aortic valve-sparing procedures

Introduction: Valve- sparing procedures restore correct function of the aortic valve without the usage of a valve replacement and thus eliminates the risks of its presence. Their disadvantage is the uncertainty of long-term correct function of the valve and the risk of recurrence of the defect.

Aim: To evaluate medium to long-term outcomes of aortic valve-sparing procedures with focus on patient survival, reoperation and recurrence of aortic regurgitation. In the analysis of the results of operations identify the risk factors of failure of the aortic valve. To determine the effect of various surgical techniques used in aortic annuloplasty on the risk of aortic annulus re-dilatation and the failure of aortic valve-sparing procedure in long-term follow-up. To evaluate the results of valve-sparing procedures in frequency of failure with recurrence of defect and frequency of reoperations between groups of patients with tricuspid and bikuspid aortic valve.

Methods: From 11/2007 to 10/2017 was a total of 198 aortic valve sparing operations performed at our department. Patients' mean age was 48.4 ± 13.5 years. Of the total, 74 (37%) patients had tricuspid valve, 121 (61%) had bikuspid valve and 3 (2%) patients had unicuspid aortic valve. Dilatation of the aortic root and / or ascending aorta occurred between 106 patients, cusp prolapse occurred between 92 patients.

Results: Out of 198 operations, supracoronary aortic root replacement (24), reimplantation of the aortic valve (11), remodeling of the aortic root (71), combined in a group of 66 patients with implantation of the external annuloplasty ring, and 92 aortic cusp interventions were performed. 30-day mortality was 0%. Median follow-up is 2.8 years (194 patients). During this period 4 patients died. 19 patients were reoperated (9.5%); 15 for recurrent aortic regurgitation, 1 for development of aortic stenosis, 2 for vascular graft infection and 1 for aortic root pseudoaneurysm. At reoperation, 1 valve repair, 1 replacements by bioprosthesis and 14 by mechanical prosthesis (1 with pseudoaneurysm closure), and 2 aortic root replacements by homograft were performed. The leading cause of aortic regurgitation recurrence was cusp prolapse and aortic annulus re-dilatation (9x). Aortic valve restriction and retraction were other causes of repair failure (6x).

Conclusion: Aortic valve-sparing operations should be considered as a method of choice for selected patients. Assuming the correct choice of procedure type according to the preoperative echocardiographic examination, these operations have favorable and well predictable results. Statistically significant risk factors for the late failure of aortic valve-sparing procedure have been shown in our study: the degree of residual aortic regurgitation, the eccentric direction of the jet, and the type of aortic cusps coaptation in the plane and especially below the plane of the aortic annulus. Comparing the effect of the surgical technique used in the aortic annuloplasty, we confirmed the highest rate of failure of the aortic valve reconstruction in subcommisural plications compared to other used procedures. Comparing the aortic valve-sparing procedures in groups of patients with bicuspid and tricuspid aortic valve, we demonstrated in both groups similar medium to long-term survival without recurrence of defect and necessity of reoperation.