Outcomes of Aortic Root Replacement with Aortic Valve Reimplantation in Patients with Residual Aortic Regurgitation

Objective: Aortic root replacement with aortic valve reimplantation (reimplantation) has excellent long-durability, especially in those with tricuspid aortic valves. However, few data exist regarding long-term outcomes of patients with residual aortic regurgitation (AR) prior to hospital discharge. Therefore, objectives were to characterize these patients and compare their outcomes to those without residual AR after reimplantation.

Methods: Patients were identified from a single center retrospective medical record review. Patients routinely had transthoracic echocardiograms prior to discharge. Residual AR was defined as mild or greater at discharge. Longitudinal echocardiographic trajectories were characterized and compared using mixed-effect cumulative logit regression.

Results: From 2002 to 2020, 636 patients with tricuspid aortic valves underwent reimplantation. Of these, 58 (9.1%) had residual AR prior to discharge. AR was mild in 53 (8.3%) and moderate in 5 (0.79%). Compared to patients without residual AR, patients with residual AR were more likely to have moderate or greater preoperative AR (41% vs 12%, p<.001), undergo concomitant aortic valve cusp repair (41% vs 23%, p=.003), and require return to cardiopulmonary bypass for further valve repair (12% vs 4%, p=.006). At 1, 5, and 10 years, at least moderate AR was present in 30%, 37%, and 37% of patients with residual AR at discharge, compared to 3.5%, 6.2% and 7.9% for patients without residual AR. Mean gradient remained low in both groups out to 10 years (7.2 mmHg vs 6.4 mmHg, p=.004). During the study period, 6 patients with residual AR underwent reoperation for progression to severe AR, and all had aortic valve replacement. Freedom from reoperation was 88% at 10 years for those with residual AR vs, 98% for those without residual AR (p<.001), and 10-year survival was 97% vs. 94 (p=.6).

Conclusion: Residual AR after aortic valve reimplantation for patients with tricuspid aortic valves is uncommon. However, residual AR is a predictor of progression to severe AR and need for reoperation. Close follow up is critical for long-term management of residual AR following reimplantation.

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