

Outcome of 1196 Aortic Valve Reconstruction – The Ozaki Procedure

Objective: Introduced in 2007, aortic valve reconstruction with autologous pericardium --Ozaki procedure-- has become an attractive option for aortic valve replacement. Multiple studies have demonstrated good short-term outcomes. In this longest-term and most detailed single-institution study of the Ozaki procedure, our objective was to investigate the intermediate term results after the Ozaki procedure.

Methods: From 4/2007 to 5/2021, 1,196 consecutive Ozaki procedures were performed. Patient age ranged from 11 to over 90 years, 712 (60%) were male, 50 (4.2 %) had previous cardiac surgery, and 155 (13%) were on dialysis. 651 (54%) had pure aortic stenosis, 289 (24%) pure regurgitation and 87 (7.2%) mixed stenosis and regurgitation. 322 (27%) had bicuspid valves and 28 (2.3%) infective endocarditis. Concomitant procedures were performed in 551 (46%). Complications, serial postoperative echocardiogram data, and follow-up information on aortic valve reoperations and mortality were collected and analyzed by multivariable longitudinal data analyses for valve performance, and time-to-event analyses for reoperation and mortality. Fifty percent of patients (n=598) were followed more than 3.2 years for these events and changes, 10% (n=119) more than 9 years; 5,023 patient-years of follow-up were available for analysis.

Results: Mean Cardiopulmonary bypass and aortic clamp time for isolated Ozaki procedures were 151+/-37 and 105+/-29 minutes, respectively. Operative mortality was 4.6% (n=55), postoperative stroke 2.6% (n=31), new dialysis 4.0% (41/1,035), new heart block 1.5% (18/1,188). At 6 months, 5 years, and 10 years, peak/mean aortic valve gradients were 14.0/7.4, 15.5/8.0, and 15.5/8.2 mmHg (figure); moderate or severe aortic regurgitation was 0.30%, 2.9%, 6.6%, respectively. LV mass index decreased from 141+/-52 g/m² preoperatively to estimated 100+/- 1.1 g/m² at 6 months and 90+/-1.8 g/m² at 10 years. There were 38 reoperations, 17 for infective endocarditis. Freedom from reoperation was 91.2% at 10 years. 166 deaths, including 19 (11%) cardiac deaths were observed. Survival was 75% at 10 years.

Conclusions: The Ozaki procedure creates a good aortic valve with low stable gradients up to at least 10 years. Aortic regurgitation increased over time, but risk of reoperation was low. These results support the continued use of the Ozaki procedure for aortic valve replacement for any unreparable valve pathology.

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