

Long term durability of bioprosthetic aortic valve replacement in young patients with bicuspid aortic stenosis

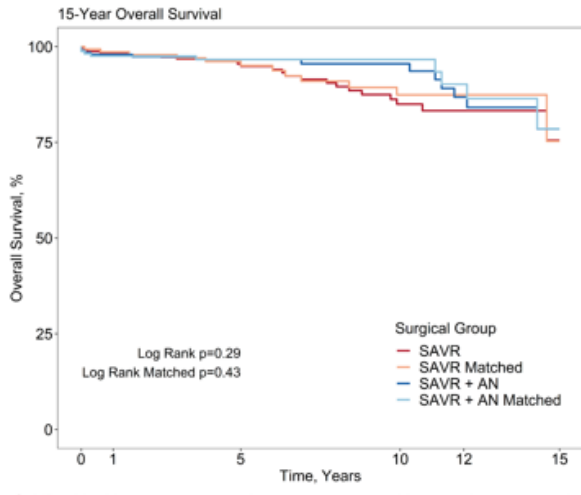
Objective: The optimal initial procedure approach, surgical or transcatheter, is controversial for patients with bicuspid aortic valve (BAV) considering lifetime management of aortic stenosis (AS) in these younger patients. We sought to establish a long-term surgical aortic valve replacement (SAVR) benchmark for young (<65 years) BAV patients with AS.

Methods: Using institutional data from 2004-2022, 498 BAV patients less than 65 underwent SAVR for AS with bioprosthetic valves with or without aneurysm repair (SAVR vs. SAVR/AN). We examined operative outcomes, long term valve durability and reintervention in those with TAVR potential, isolated AS without aneurysm, to those in whom surgical intervention would be preferred, AS and an aneurysm.

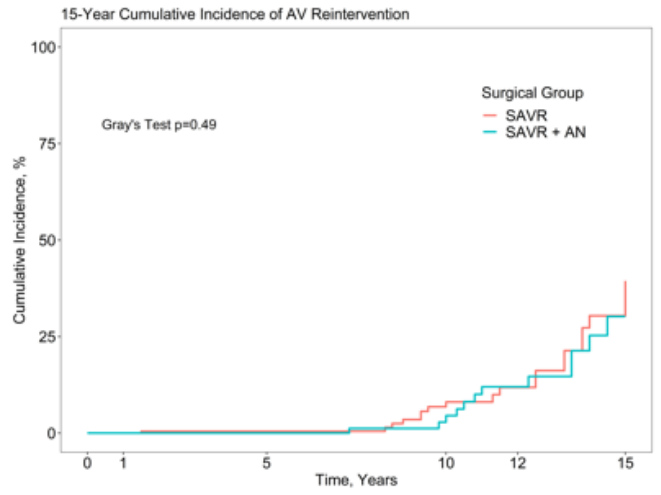
Results: The total cohort comprised 281 isolated SAVR patients and 217 with concomitant aneurysm repair (SAVR/AN). The average age was 55 ± 8 years, with STS PROM: 0.8 and mean valve size: 25mm, which increased over time. Operative mortality (0.7% vs. 1.4%) was similar between SAVR and SAVR/AN patients. Predischarge permanent pacemaker implantation occurred in 1.6% (n=8/498) patients. During follow-up (5.9 ± 4.9 years; range: 0.2, 18.2 years), the cumulative incidence of reintervention at 10 years for structural valve degeneration (n=33) including Valve-in-Valve (ViV; n=15) was 6.6% (8.1% SAVR vs. 4.5% SAVR/AN, p=0.66). No mortality was observed for ViV or redo-SAVR. Average AV gradient at follow up increased over time and was 12.8 ± 8.7 overall, and higher in the SAVR only group (13.7 ± 8.8 vs. 11.7 ± 8.4). Using linear mixed modeling to account for repeated measurements, patients who underwent aneurysm repair had a lower average mean gradient (1.9 less than SAVR Only, p<0.05) compared to those without aneurysm repair throughout the follow up period. Moderate or greater aortic regurgitation and paravalvular leak were observed in 6.5% and 0.3% respectively at most recent follow-up.

Conclusion: Bioprosthetic valve replacement for bicuspid valve aortic stenosis in young patients is a very safe procedure, with low need for pacemaker and excellent durability. Current use of large diameter, and/or expandable valves, should allow for the routine use of valve-in-valve when needed. These results support initial SAVR when considering lifetime management of aortic stenosis.

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SAVR	281	221	140	66	40	16
SAVR Matched	179	139	88	44	27	10
SAVR + AN	217	184	117	56	38	12
SAVR + AN Matched	179	152	92	41	28	8



SAVR + AN	217	184	117	54	34	9
SAVR	281	221	139	61	36	8