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Mortality of surgical redo aortic valve replacement versus transcatheter aortic valve-in-valve implantation in patients with degenerated aortic bioprosthesis: a meta-analysis

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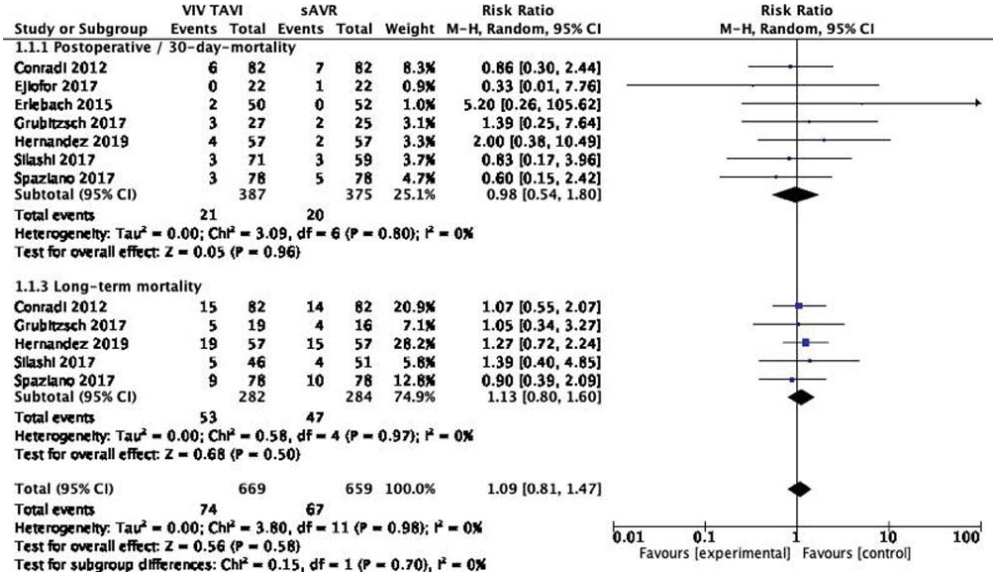
Background: Transcatheter valve-in-valve (tVIV) implantation for degenerated aortic bioprosthesis has become an alternative to surgical aortic valve replacement (sAVR) in the past few years. However, some concerns have been raised regarding to the long-term safety and efficacy of tVIV. The objective was to compare the clinical and echocardiographic outcomes of tVIV implantation with redo cAVR.

Methods: After an extensive search of PubMed we included 7 observational studies (3 used propensity score matching) comparing tVIV versus sAVR in 762 patients The primary endpoint was all-cause mortality determined from the longest available survival data. Other outcomes of interest were stroke, permanent pacemaker implantation, paravalvular leak, hospital stay and postoperative aortic valve gradient. The review was conducted according to the MOOSE recomendations. Der Simonian and Laird random effects model was used to estimate summary measures and their 95% CI.

Results: Patients in the tVIV group were significantly older (78 vs 73 y.o.) and had a higher baseline risk compared to those in the re-sAVR group (Euroscore 19.7 vs 14.3). There was no statistical difference in procedural or 30-day mortality 5.4% vs 5.3% in tVIV and sAVR, respectively (RR 0.98, 95% CI 0.54–1.80; p=0.96], and long-term mortality (from 6 month to 5 years) 18.7% versus 16.5% (RR 1.13, 95% CI 0.80–1.60; P=0.50). The risk of stroke was similar (1.5% in tVIV vs 2.4% in sAVR, p=0.47). tVIV was associated with a significantly lower rate of permanent pacemaker implantations 6.9% vs 12.1% (RR 0.58, 95% CI 0.36–0.94; P=0.03) and shorter hospital length stay (7 days vs 12 days, p=0.02). However, echocardiographic postoperative aortic valve gradients were lower in sAVR group than in tVIV (RR 1.83, 95% CI 0.75–2.91, p<0.001).

Conclusion: This meta-analysis suggests that patients with aortic degenerated bioprosthesis treated with tVIV have similar 30-day and long-term mortality with lower need of permanent pacemaker and length stay than sAVR. Thus tVIV is a valid alternative to standard surgical treatment.



30-day and long-term mortality