

Infective endocarditis after transcatheter or surgical aortic valve implantation: pooled results from three randomized controlled trials

J. Lanz¹, J. Popma², M. Reardon³, T. Pilgrim¹, S. Stortecky¹, M. Deeb⁴, S. Yakubov⁵, S. Windecker¹

¹Bern University Hospital, Inselspital, Bern, Switzerland; ²Beth Israel Deaconess Medical Center, Boston, United States of America; ³The Methodist Hospital, Houston, United States of America; ⁴University of Michigan Health System, Ann Arbor, United States of America; ⁵OhioHealth Riverside Methodist Hospital, Columbus, United States of America

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Background: Infective endocarditis is a rare complication of aortic valve replacement with high morbidity and mortality. Data of randomized trials comparing the incidence and outcomes between surgical (SAVR) and transcatheter aortic valve replacement (TAVR) are scarce.

Purpose: To compare the frequency, timing and outcomes of infective endocarditis after TAVR and SAVR from 3 prospective randomized trials and examine the clinical outcomes.

Methods: Clinical data from the CoreValve Pivotal High-Risk, the intermediate-risk SURTAVI and the Evolut Low Risk randomized trials, which compared TAVR with a supra-annular, self-expanding transcatheter valve to SAVR, was pooled. Cases of infective endocarditis were independently adjudicated based on Duke's criteria necessitating 2 major criteria, or 1 major and 3 minor criteria, or 5 minor criteria. Baseline clinical and procedural characteristics for patients with and without endocarditis were obtained. The cumulative incidence of endocarditis through 5 years was determined using death as a competing risk. Kaplan-Meier estimates of all-cause mortality and the composite of all-cause mortality or stroke through 2 years were calculated for both treatment groups.

Results: Among 2249 TAVR patients, 12 cases of endocarditis (0.5%) were documented and among 1828 SAVR patients, 21 (1.1%) over a mean follow-up time of 2.25 ± 1.58 years. Baseline characteristics were well-balanced between the TAVR and SAVR patients with endocarditis. The cumulative incidence of endocarditis at 5 years was significantly different between the two groups (figure). The prevalence of diabetes was significantly higher in patients with endocarditis than in those without (57.6% vs. 34.2%, $p=0.005$). In endocarditis patients the rate of all-cause mortality was 39.4% for TAVR patients and 67.8% for SAVR patients at 2 years (log-rank $p=0.133$). The rates of all-cause mortality or stroke were 55.0% for TAVR and 64.6% for SAVR patients (log-rank $p=0.078$).

Conclusions: In this pooled analysis of three randomized trials comparing TAVR with a supra-annular, self-expanding bioprosthesis to SAVR, overall rates of endocarditis were low. The cumulative incidence of infective endocarditis at 5 years was lower in the TAVR group. Mortality after endocarditis was high.

