

# Transcatheter versus Surgical Aortic Valve Replacement in Patients with Prior Cardiac Surgery: A Systematic Review and Meta-Analysis

## Background:

An increasing number of patients with severe aortic stenosis (AS) have history of prior cardiac surgery which is associated with increased risk of aortic valve replacement. In such cases, the proposed benefit of surgical (SAVR) versus transcatheter aortic valve replacement (TAVR) remains unknown.

## Objective:

To evaluate the impact of prior cardiac surgery on clinical end points in patients undergoing TAVR versus SAVR for severe AS.

## Methods:

Literature search was performed using MEDLINE (via PUBMED), EMBASE, Google Scholar and Scopus databases. The included outcomes were procedural time, acute kidney injury (AKI), bleeding complications, stroke, permanent pacemaker implantation (PPI), duration of hospital stay, 30-day all-cause mortality and 1-2 year all-cause mortality. The main summary estimate was random effects Odds ratio (OR) with 95% confidence intervals (CIs).

## Results:

7 studies (3 randomized trials, 4 cohort) including 8,922 patients with mean age  $80 \pm 6.6/78 \pm 6.3$  and 75.5%/75.5% males in the TAVR and SAVR groups, respectively, were included. Our study found that, compared with SAVR, TAVR was associated with lower incidence of stroke (OR = 0.65 (95% CI: 0.44 - 0.97),  $p = 0.03$ ) and bleeding complications (OR = 0.36 (95% CI: 0.21 - 0.59),  $p < 0.01$ ). There was no difference in terms of AKI (OR = 0.71 (95% CI: 0.49 - 1.02),  $p = 0.06$ ), PPI (OR = 1.56 (95% CI: 0.97-12.54),  $p = 0.06$ ), 30-day all-cause mortality (OR = 0.87 (95% CI: 0.56 - 1.37),  $p = 0.54$ ) and 1-2 year all-cause mortality (OR = 1.15 (95% CI: 0.71 - 1.86),  $p = 0.57$ ) between the two groups (Figure 1). The average procedure time and duration of hospital stay were 170 minutes less (95% CI: -249.37, -92.53),  $p < 0.01$ ) and 3.6 days shorter (95% CI: -5.43, -1.95),  $p < 0.01$ ) in patients with TAVR, respectively.

## Conclusions:

In patients with prior cardiac surgery and severe AS, both TAVR and SAVR are reasonable options. However, TAVR may be associated with lower incidence of outcomes like stroke and perioperative bleeding.