Does the availability of transcatheter aortic valve replacement impact inpatient outcomes after surgical aortic valve replacement? Analysis of the national inpatient sample

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Background: With the introduction of transcatheter aortic valve replacement (TAVR), the treatment of aortic stenosis (AS) has experienced a paradigm shift, altering patient selection for surgical aortic valve replacement (SAVR) over the past decade. What remains to be determined is the impact of a hospital's ability to offer TAVR, in the contemporary era, on inpatient outcomes following SAVR.

Purpose: The goal of this study was to assess inpatient mortality and the use of mechanical aortic valve replacement (mAVR) in patients undergoing SAVR at TAVR versus non-TAVR centers in the United States.

Methods: The National Inpatient Sample (2011–18), a probability sample of inpatient visits in the United States, was used to study trends in admissions for SAVR at TAVR and non-TAVR centers; in-hospital mortality was trended over time. Survey estimation commands were used to determine weighted national estimates.

Results: There were 559,365 inpatient visits for SAVR with 75.2% (95% CI 74.2%-76.2%) and 24.7% (95% CI 23.8%-25.8%) receiving bioprosthetic SAVR (bAVR) and mAVR, respectively at TAVR centers and 64.5% (95% CI 63.3%-65.6%) and 35.5% (95% CI 34.4%-36.7%) receiving bAVR and mAVR, respectively at non-TAVR centers. SAVR recipients at non-TAVR centers were older when compared to recipients at TAVR centers (68.3±0.09 vs 66.9±0.11 years p<0.001). Heart failure, cardiac arrhythmias, peripheral vascular disorders, complicated hypertension and diabetes, renal failure and liver disease were more common in patients undergoing SAVR at TAVR-centers. During the study period, both crude (OR = 0.78 95% CI 0.73–0.83) and adjusted (OR = 0.79 95% CI 0.73–0.86) inpatient mortality was lower amongst SAVR recipients at TAVR centers. The utilization rates of mAVR at both TAVR and non-TAVR centers decreased over time amongst all age groups (p trend <0.001).

Conclusions: Patients undergoing SAVR at TAVR centers were younger and had more co-morbidities compared to patients undergoing SAVR at non-TAVR centers. Although patients undergoing SAVR at TAVR centers had significantly more co-morbidities, inpatient mortality was lower at TAVR centers compared to non-TAVR centers. Further research is needed to determine whether the impact of a multidisciplinary cardiac approach resulted in significant differences in patient selection for SAVR, due to the availability of TAVR, influencing patient outcomes.