

Impact of patient selection and volume on long-term survival after transcatheter aortic valve implantation

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Introduction: Transcatheter aortic valve implantation (TAVI) is currently recommended as a first line treatment for patients with severe aortic stenosis and high surgical risk. Trials in 2019 showed safety and long-term efficacy also in low risk patients^{1,2}. We aimed to investigate possible changes in patient selection for TAVI in our center after 2019's steep and marked increase in numbers of procedures performed annually.

Patients and Methods: We analyzed data from our prospective single center registry of TAVI procedures from 2011 to 2022. In all, 257 patients were included in the registry, out of which 87 (34%) patients were operated in the first period (low annual volume; 2011-2018), whereas 170 (66%) patients underwent TAVI in the second period (high annual volume; 2019-2022). Differences in patients' characteristics and 1-year, 2-year, and 3-year survival were analyzed between the two periods.

Results: There were no significant differences in patients' main clinical characteristics, comorbidities and periprocedural outcomes, except those patients treated in the second period had significantly higher Society of Thoracic surgeons (STS-MM) scores compared to the first period (23.6 vs 18, $p < 0.001$) and significantly lower proportion of patients with history of coronary artery bypass graft (CABG). Overall, 1-year and 2-year survival was 83% and 75%, respectively, with no differences between periods. 3-year survival after TAVI was 63%, with significantly more patients surviving 3 years after TAVI in the first (low volume) period (70% vs 55%, $p = 0.017$).

Conclusion: The steep increase in annual TAVI volume (from initial 1.5/month to 8/month in the second period) did not lead to more non-high-risk patients in the registry. Conversely, STS-MM scores were significantly higher during the second (high volume) period, meaning that with higher volume we started treating more complex patients. There were no differences in in-hospital, 1-year and 2-year survival. However, we observed lower long-term survival in the second period that was probably due to more complex patients entering the TAVI program. To achieve maximal long-term benefit of TAVI in near future, patients should be included in the TAVI program earlier, mainly by expanding the indication for TAVI to medium risk patients or elderly low risk patients with favorable anatomic characteristics warranting uncomplicated and successful TAVI procedure.

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LITERATURE

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