Surgical Aortic Valve Replacement for Aortic Stenosis in the Era of Transcatheter Implantation

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Background: Open aortic valve replacement (AVR) is the standard of care for severe aortic stenosis (AS) with excellent results, yet the peri-operative morbidity and mortality among high-risk patients remains significant. The introduction of transcatheter aortic valve implantation (TAVI) as an alternative for high-risk surgical patients is thought to change clinical characteristics and outcomes of the remaining AVR patients in the TAVI era.
Methods: This is a single center analysis comparing two cohorts of consecutive patients undergoing isolated AVR for severe AS, in the 4 years before (period 1) and 3 years after (period 2) the introduction of TAVI to our heart center. Baseline characteristics were prospectively gathered to a registry. The logistic European System for Cardiac Operative Risk Evaluation (EuroSCORE) was calculated for each patient. Primary endpoint was 30-day mortality; secondary endpoints included 1-year mortality and major adverse peri-operative events.
Results: After exclusion of patients with bicuspid aortic valve and prior mechanical aortic prosthesis (not being TAVI candidates), study population consisted of 231 pts. in period 1 and 162 pts. in period 2. Mean age was 74 years in both periods with 45% and 50% male, respectively. Mean logistic EuroSCORE was 12.7 ± 12 (period 1) vs. 9.7 ± 9 (period 2), p=0.006. We found a trend for lower 30-day mortality (2% vs. 5%, p=0.1), in period 2, while one-year mortality was dramatically improved (6% vs. 15%, p<0.01). Interestingly, while EuroSCORE was an independent predictor of 30-day and 1-year mortality in period 1, it was not found to predict mortality in period 2 patients. The major complication rate didn't differ significantly between the two periods (p=0.19).
Conclusion: We show a significant improvement in baseline characteristics and mortality in patients undergoing surgical AVR for severe AS during the recent years. This change must be explained by the patients' selection process in the new TAVI era.

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