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Impact of severe aortic stenosis treatment strategy in low-risk patients: a propensity matched analysis of surgical aortic valve replacement versus transcatheter aortic valve implantation

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Introduction: Recent studies suggest that transcatheter aortic valve implantation (TAVI) benefits might extend to lower risk patients. Our goal was to compare the impact of treatment strategy in mortality and periprocedural complications in a low-risk severe aortic stenosis population.

Methods: Single-center retrospective study which screened patients undergoing intervention from June/2009 to July/2016 (682 isolated aortic valve replacement patients) and from June/2009 to July/2017 (400 TAVI patients). Low-risk was defined as EuroScore II <4% for single non-CABG procedure. After excluding patients with EuroScore II \geq 4%, previous cardiac surgery and/or undergoing pre-treatment PCI, 544 AVR and 119 TAVI patients were included.

TAVI patients were propensity score paired in a 1:1 ratio with a group of AVR patients, matched by age, NYHA class, diabetes mellitus, COPD, atrial fibrillation, creatinine clearance and LVEF <50% (mean standardized difference <10% for matching variables). All patients completed at least 1 year of follow-up. Outcomes were adjudicated according to VARC2 criteria.

Results: A total of 158 patients (79 AVR and 79 TAVI) were matched (mean age 79 \pm 6 years, 79 men). Median EuroScore II was 2.3% (IQR 1.6–3.0%), 46% were in NYHA class \geq 3 and 91% had preserved ejection frac-

tion. Main comorbidities were hypertension (n=105, 67%), diabetes mellitus (n=48, 30%), COPD (n=35, 22%) and coronary artery disease (n=30, 19%). Most patients had at least mild renal function impairment and median creatinine clearance was 58 ml/min (IQR 43–62 ml/min).

The 30-day mortality was 2.5% (n=2 in each group) and there were no differences in in-hospital complications. During a median follow-up of 3.8 years (IQR 2.1–6.1), 67 deaths occurred (39 on the AVR group and 28 on the TAVI group), and treatment strategy did not influence all-cause mortality (HR 0.97, 95% CI 0.60–1.60, log rank p=0.92) - figure 1. By multivariate analysis, need for dialysis during hospitalization remained the only independent predictor of all-cause mortality (adjusted HR 6.40, 95% CI 1.57–28.14, p=0.01).

Conclusion: In this low-risk matched population, treatment strategy did not influence mortality neither complications. Older age, higher NYHA class and renal impairment were the main contributors to the predicted surgical risk. These results suggest that both options are safe for low-risk patients, even though Heart Team remains essential to contemplate other variables that might alter patient management.

