

Five-year outcomes after transcatheter versus surgical aortic valve replacement in low-risk patients



Background / Study Objective

- In the last years, the rapid development and wider indication for TAVI in younger and lower risk patients have led to increased attention to long term follow up
- Nevertheless, current RCTs (randomized clinical trials) based on low-risk patients provide only short- and mid-term follow up and do not reflect the real-world population
- The aim of this study is to retrospectively compare post-procedural outcomes and 5-year survival of low-risk patients who underwent surgical aortic valve replacement (SAVR) vs TAVI



Patients

- 351 consecutive patients with diagnosis of severe aortic stenosis were enrolled for SAVR (n=108) or transfemoral TAVI (n=243)
- Inclusion criteria: patients aged between 75 and 85 years with low surgical risk (Euroscore II < 4%) and isolated severe aortic stenosis
- Exclusion criteria: valve-in-valve procedures, redo surgery and the need for concomitant surgical procedures



Methods

- Type of study: retrospective
- Study period: September 2017- December 2021
- Normal variables and categorical variables were presented as mean and standard deviation and as frequency and percentage respectively
- Differences between groups were assessed using the Student's test for continuous variables and χ^2 test for categorical variables
- 5-year mortality was assessed and reported using the Kaplan-Meier method
- To make a meaningful comparison a propensity score matching was performed



Results 1

Baseline characteristics and comorbidities unmatched cohort

Variables	SAVR (n=108)	TAVI (n=243)	p value
Age, mean (SD)	78,45 ± 2,5	81,28 ± 2,6	<0,001
Female, n (%)	45 (41,7%)	125 (51,4%)	0,105
BMI, mean (SD)	26,59 ± 4,6	26,22 ± 5,1	0,526
Hypertension, n (%)	104 (96,3%)	226 (93,0%)	0,330
Diabetes, n (%)	31 (28,7%)	53 (21,8%)	0,176
Dyslipidemia, n (%)	55 (50,9%)	126 (51,9%)	0,908
Smoke, n (%)	38 (35,1%)	72 (29,6%)	0,320
COPD, n (%)	17 (15,7%)	33 (13,6%)	0,621
PAD, n (%)	15 (13,9%)	45 (18,6%)	0,357
CKD III-V, n (%)	17 (15,7%)	81 (33,3%)	0,001
RRT, n (%)	0 (0,0%)	4 (1,6%)	0,316
Stroke/TIA, n (%)	10 (9,3%)	20 (8,2%)	0,836
Poor mobility, n (%)	6 (5,6%)	38 (15,6%)	0,008
NYHA III-IV, n (%)	41 (38,0%)	89 (36,6%)	0,812
History of heart failure, n (%)	14 (13,0%)	40 (16,5%)	0,429
EF, mean (SD)	59,6 ± 9,4	59,9 ± 8,6	0,778
Euroscore II, mean (SD)	2,11 ± 0,82	2,40 ± 0,80	0,002

Baseline characteristics and comorbidities matched cohort

Variables	SAVR (n=78)	TAVI (n=78)	p value
Age, mean (SD)	79,0 ± 2,4	79,1 ± 2,4	0,869
Female, n (%)	33 (42,3%)	32 (41,0%)	1,000
BMI, mean (SD)	26,8 ± 3,5	26,4 ± 6,1	0,554
Hypertension, n (%)	76 (97,4%)	76 (97,4%)	1,000
Diabetes, n (%)	24 (30,8%)	23 (29,5%)	1,000
Dyslipidemia, n (%)	40 (51,3%)	47 (60,2%)	0,337
Smoke, n (%)	23 (29,5%)	28 (35,9%)	0,496
COPD, n (%)	11 (14,1%)	17 (21,8%)	0,664
PAD, n (%)	10 (12,8%)	20 (25,6%)	0,067
CKD III-V, n (%)	16 (20,5%)	10 (12,8%)	0,283
RRT, n (%)	0	2 (2,6%)	0,497
Stroke/TIA, n (%)	9 (11,5%)	7 (8,9%)	0,793
Poor mobility, n (%)	6 (7,7%)	8 (10,3%)	0,781
NYHA III-IV, n (%)	33 (42,3%)	34 (43,6%)	1,000
History of heart failure, n (%)	11 (14,1%)	19 (24,14%)	0,429
EF, mean (SD)	58,7 ± 10,2	59,2 ± 10,1	0,763
Euroscore II, mean (SD)	2,20 ± 0,82	2,23 ± 0,78	0,815

SD: standard deviation, BMI: body mass index, COPD: chronic obstructive pulmonary disease, PAD: peripheral artery disease, CKD: chronic kidney disease, RRT: renal replacement therapy, TIA: transient ischemic attack, NYHA: New York Heart Association, EF: ejection fraction.

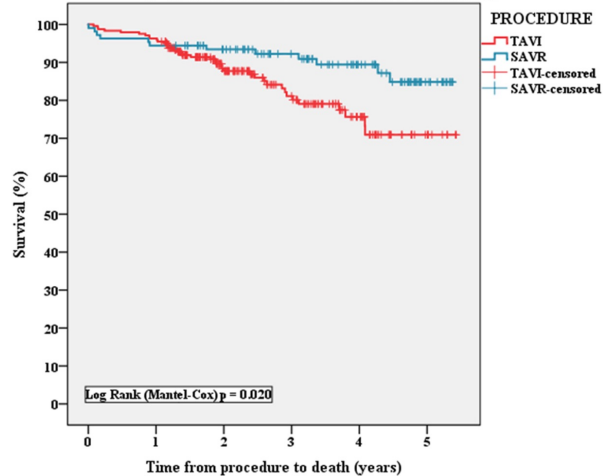


unmatched cohort

Post-procedural outcomes	SAVR (n=108)	TAVI (n=243)	p value
AKI, n (%)	32 (29,6%)	11 (4,5%)	<0,001
Stroke, n (%)	1 (0,9%)	6 (2,5%)	0,681
MI, n (%)	1 (0,9%)	3 (1,2%)	1,000
New onset LBBB, n (%)	2 (1,8%)	58 (23,9%)	<0,001
New onset AF, n (%)	5 (4,6%)	7 (2,9%)	0,525
PM implantation, n (%)	6 (5,5%)	27 (11,1%)	0,115
Access site infection, n (%)	0	2 (0,8%)	1,000
Inotropic support, n (%)	3 (2,8%)	4 (1,6%)	0,444
PVL (at least mild-moderate), n (%)	0	11 (4,5%)	0,021

AKI: acute kidney injury, MI: myocardial infarction LBBB: left bundle branch block, AF: atrial fibrillation, PM: pace-maker, PVL: paravalvular leak

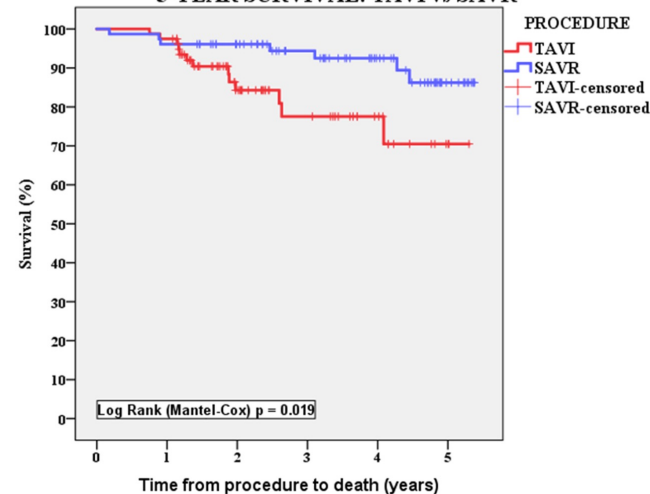
5-YEAR SURVIVAL: TAVI vs SAVR



matched cohort

Post-procedural outcome	SAVR (n = 78)	TAVI (n = 78)	p value
AKI, n (%)	26 (33,3%)	4 (5,1%)	<0,001
Stroke, n (%)	1 (1,3%)	0	1,000
MI, n (%)	1 (1,3%)	1 (1,3%)	1,000
New onset LBBB, n (%)	1 (1,3%)	9 (11,5%)	0,018
New onset AF, n (%)	3 (3,8%)	2 (2,6%)	1,000
PM implantation, n (%)	4 (5,1%)	10 (12,8%)	0,160
Access site infection, n (%)	0	0	-
Inotropic support, n (%)	3 (3,8%)	2 (2,6%)	1,000
PVL (at least mild-moderate), n (%)	0	3 (3,8%)	0,245

5-YEAR SURVIVAL: TAVI vs SAVR



Conclusion

- In our analysis 5-years survival is significantly higher in SAVR patients in both unmanched (p value 0,020) and matched (p value 0,019) cohort
- TAVI is associated with a higher incidence of conduction abnormalities and PVL, that can overall impact on the long- term survival
- According to our results, life expectancy, more than age, is the key factor for selecting the most appropriate approach for each patient
- Routine TAVI indication in younger and lower risk patients should only be considered when the longer-term outcomes of these patient populations are available

