Statin treatment after surgical aortic valve replacement due to aortic stenosis is associated with better long-term outcome

Background / Study Objective

Previous reports have shown that statin use is associated with better survival after transcatheter aortic valve intervention (TAVI).^{1,2} However, little is known about statin use after surgical aortic valve replacement (SAVR).

We aim to utilize a large, population-based data to study

- 1. The association between **time-updated statin use and primary MACE** (all-cause mortality, stroke or myocardial infarction (MI) and **secondary endpoints** (each component of MACE, cardiovascular mortality, peripheral artery disease, heart failure, new aortic valve intervention)
- 2. Potential associations between statin use and MACE in **predefined subgroups** based on age, sex, type of surgery and comorbidities
- 3. Potential associations between **statin treatment intensity and MACE**

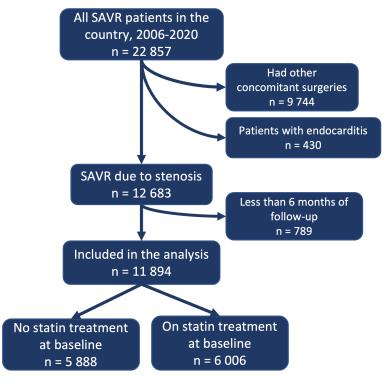


¹ Peri-Okonny PA et al. J Am Heart Assoc. 2019 Apr 16;8(8):e011529.

² Cubeddu RJ et al Am Heart J. 2023 Apr;258:27-37.

Patients

A flowchart of patient selection process.



- 11 893 patients were included 2006-2020
- 50.5% were dispensed with statins at baseline
 - 26.6% with high intensity
 - 68.4% intermediate intensity
 - 3.5% low intensity
- Median follow-up time was 5.4 (IQR 2.7-8.5, range 0-13.5) years
- Patients with statins at baseline were significantly older, more often male, had higher BMI and more comorbidities



Methods

- Five mandatory national registries were integrated
 - Information on comorbidities, emigrations, time-updated secondary prevention medications, mortality, and other complications
- Baseline was set as 6 months after discharge
- Dispensed medication was updated every third month
 - two consecutive 3-month period without dispense of medication was considered off-treatment
- Predefined subgroups
 - age (</≥ 75 years), sex, type of prothesis, hypertension, diabetes, hyperlipidemia,
 PAD, LVEF (</≥ 50%), prior MI, prior stroke and eGFR < 60ml/min
- Cox regression model adjusted for
 - age, sex, type of prothesis, year of surgery, comorbidities and other time-updated secondary prevention medications (beta-blockers, RAS-inhibitors and platelet inhibitors)

Results 1

Statin use after SAVR in patients with aortic stenosis is associated with significantly lower risk for MACE, all-cause mortality and cardiovascular mortality

Statin therapy - Outcomes	aHR (95% CI)		p-value
MACE	0.76 (0.71-0.82)		0.001
Death	0.69 (0.64-0.75)		<0.001
Myocardial infarction	0.90 (0.70-1.16)		0.42
Stroke	0.90 (0.79-1.02)		0.10
Cardiovascular mortality	0.74 (0.66-0.83)		<0.001
Peripheral artery disease	1.00 (0.88-1.13)		0.98
New aortic valve intervention	1.16 (0.91-1.49)		→ 0.23
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Results 2

Statin therapy - MACE		aHR (95% CI)		p-value for interaction
All patients		0.76 (0.71-0.82)		,,
Sex	Male Female	0.73 (0.66-0.80) 0.81 (0.72-0.90)		0.17
Age		0.80 (0.72-0.90) 0.76 (0.68-0.84)		0.096
EF <50%	Yes No	0.82 (0.70-0.94) 0.74 (0.68-0.80)		0.53
Prior MI	Yes No	0.77 (0.63-0.95) 0.75 (0.69-0.81)		0.70
Previous stroke	Yes No	0.76 (0.57-1.01) 0.77 (0.71-0.83)		0.31
Peripheral artery disease	Yes No	0.80 (0.66-0.96) 0.76 (0.70-0.82)	—	0.22
Hypertension	Yes No	0.72 (0.66-0.78) 0.86 (0.75-0.97)		<0.001
Diabetes	Yes No	0.72 (0.62-0.83) 0.78 (0.72-0.85)		0.33
Hyperlipidemia	Yes No	0.66 (0.58-0.76) 0.81 (0.74-0.88)		0.040
eGFR <60 ml/min	Yes No	0.85 (0.75-0.95) 0.71 (0.64-0.78)		0.18
Type of prothesis		0.79 (0.73-0.85) 0.73 (0.58-0.91)		0.61
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Statin therapy - MACE

Vs. no statin use	aHR (95% CI)
Low intensity	0.83 (0.65-1.05) p=0.12
Intermediate intensity	0.74 (0.68-0.80) p<0.001
High intensity	0.86 (0.77-0.97) p=0.011

- Ongoing statin therapy was associated with significantly lower risk for MACE in all predefined subgroups
- Patients with hypertension and hyperlipidemia had even stronger associations between statin treatment and lower risk for MACE
- Intermediate and high intensity statins were associated with reduced risk for MACE

Conclusion

- 1. Ongoing statin treatment after isolated SAVR due to stenosis is associated with a reduced risk for MACE, all-cause mortality and cardiovascular mortality
- 2. Statin treatment is associated with a reduced risk for MACE in all investigated subgroups of patients
- Intermediate and high intensity statins were associated with a reduced risk for MACE and all-cause mortality

Ongoing statin treatment may be beneficial for patients after isolated SAVR