Supplemental Material for:

Phenotype-Specific Mitral Regurgitation Trajectories Following TAVR in Low-Flow Aortic Stenosis

Supplemental Tables

Supplemental Table 1. Association of transcatheter aortic valve platform with mitral regurgitation trajectory after TAVR in patients with low-flow aortic stenosis

Valve Platform	N	Improved, n (%)	Stable, n (%)	Worsened, n (%)	Adjusted OR for worsening (95% CI)	P value
Panel A. 30-Day MR Trajectory						
SAPIEN	253	66 (26.1)	141 (55.7)	46 (18.2)	Reference	-
CoreValve/Evolut	188	54 (28.7)	114 (60.6)	20 (10.6)	0.70 (0.37–1.31)	0.261
ACURATE	2	1 (50.0)	0 (0.0)	1 (50.0)	-	-
Panel B. 1-Year MR Trajectory						
SAPIEN	156	44 (28.2)	83 (53.2)	29 (18.6)	Reference	-
CoreValve/Evolut	130	45 (34.6)	66 (50.8)	19 (14.6)	0.94 (0.44–2.00)	0.880
ACURATE	4	2 (50.0)	1 (25.0)	1 (25.0)	-	-

Values are n (%) unless otherwise indicated; percentages are calculated within valve platform. CoreValve/Evolut was analyzed as one self-expanding valve family. Pearson chi-square tests compared the three-category MR trajectory distribution between SAPIEN and CoreValve/Evolut recipients: 30 days, χ^2=4.83, df=2, p=0.090 (N=441); 1 year, χ^2=1.68, df=2, p=0.431 (N=286). Adjusted ORs are from logistic regression models for MR worsening versus stable/improved MR, adjusted for LFAS phenotype, age, sex, and baseline MR grade, with SAPIEN as the reference platform. ACURATE was reported descriptively but excluded from inferential analyses because of the small sample size.

Abbreviations: CI, confidence interval; df, degrees of freedom; LFAS, low-flow aortic stenosis; MR, mitral regurgitation; OR, odds ratio; TAVR, transcatheter aortic valve replacement.

Supplemental Table 2. Baseline characteristics and outcomes by MR trajectory analytic cohort availability

Characteristic	Echo Available	Echo Unavailable	p-value
	n (%)[1]	*n (%)*[1]	
Panel A. 30-Day MR Trajectory Availability [Echo available: N = 443 | Echo unavailable: N = 171]			
Age, years, median (IQR)	82.4 (75.8–87.5)	83.8 (77.1–88.7)	0.110
Male sex, n (%)	279 (63.0%)	103 (60.2%)	0.592
LFAS phenotype, n (%)			0.084
LFHG	121 (27.3%)	32 (18.7%)	
cLFLG	107 (24.2%)	48 (28.1%)	
pLFLG	215 (48.5%)	91 (53.2%)	
STS-PROM, %, median (IQR)	3.3 (2.1–5.1)	3.7 (2.4–5.8)	0.065
Baseline MR grade, median (IQR)	2.0 (1.0–2.0)	2.0 (2.0–2.0)	**0.009**
Moderate-or-greater MR (grade ≥3), n (%)	65 (14.7%)	34 (19.9%)	0.147
Chronic kidney disease, n (%)	143 (32.3%)	70 (40.9%)	0.054
Atrial fibrillation, n (%)	163 (36.8%)	61 (35.7%)	0.869
Coronary artery disease, n (%)	212 (47.9%)	96 (56.1%)	0.080
Prosthesis–patient mismatch, n/N (%)	51/303 (16.8%)	3/30 (10.0%)	0.441
Clinical Outcomes			
All-cause mortality, n (%)	69 (15.6%)	48 (28.1%)	**<0.001**
Heart failure hospitalization, n (%)	41 (9.3%)	25 (14.6%)	0.075
Composite death or HFH, n (%)	98 (22.1%)	64 (37.4%)	**<0.001**
Panel B. 1-Year MR Trajectory Availability [Echo available: N = 290 | Echo unavailable: N = 324]			
Age, years, median (IQR)	82.0 (76.2–87.2)	83.5 (76.5–88.8)	0.112
Male sex, n (%)	175 (60.3%)	207 (63.9%)	0.412
LFAS phenotype, n (%)			**0.002**
LFHG	77 (26.6%)	76 (23.5%)	
cLFLG	54 (18.6%)	101 (31.2%)	
pLFLG	159 (54.8%)	147 (45.4%)	
STS-PROM, %, median (IQR)	3.0 (1.9–4.8)	3.8 (2.5–5.7)	**<0.001**
Baseline MR grade, median (IQR)	2.0 (1.0–2.0)	2.0 (1.0–2.0)	0.063
Moderate-or-greater MR (grade ≥3), n (%)	36 (12.4%)	63 (19.4%)	**0.024**
Chronic kidney disease, n (%)	83 (28.6%)	130 (40.1%)	**0.004**
Atrial fibrillation, n (%)	89 (30.7%)	135 (41.7%)	**0.006**
Coronary artery disease, n (%)	137 (47.2%)	171 (52.8%)	0.197
Prosthesis–patient mismatch, n/N (%)	26/169 (15.4%)	28/164 (17.1%)	0.788
Clinical Outcomes			
All-cause mortality, n (%)	22 (7.6%)	95 (29.3%)	**<0.001**
Heart failure hospitalization, n (%)	16 (5.5%)	50 (15.4%)	**<0.001**
Composite death or HFH, n (%)	36 (12.4%)	126 (38.9%)	**<0.001**

Unless otherwise noted, categorical variables are shown as n (%) using the number of patients with nonmissing data for each variable within each group as the denominator. Continuous variables are shown as median (IQR). For PPM, n/N (%) reflects patients with available PPM data. Clinical outcomes are shown descriptively to illustrate landmark/survivorship selection and were not used to define baseline comparability. Continuous variables were compared using the Wilcoxon rank-sum test. Categorical variables were compared using the chi-square test or Fisher exact test when any expected cell count was <5. Bold p values indicate p<0.05. Groups correspond to the MR-trajectory analytic cohorts used in the primary manuscript analyses. 30-day MR trajectory availability required an echocardiogram 15–90 days after TAVR with computable MR change; echocardiograms obtained after a composite endpoint event were excluded. 1-year MR trajectory availability required an echocardiogram 185–545 days after TAVR with computable MR change and no composite endpoint event within 365 days. Patients without a qualifying echocardiogram or with a pre-landmark composite event were included in the unavailable group.

Abbreviations: AF = atrial fibrillation; CAD = coronary artery disease; CKD = chronic kidney disease; cLFLG = classical low-flow, low-gradient aortic stenosis; HFH = heart failure hospitalization; IQR = interquartile range; LFAS = low-flow aortic stenosis; LFHG = low-flow, high-gradient aortic stenosis; MR = mitral regurgitation; pLFLG = paradoxical low-flow, low-gradient aortic stenosis; PPM = prosthesis–patient mismatch; STS-PROM = Society of Thoracic Surgeons Predicted Risk of Mortality; TAVR = transcatheter aortic valve replacement.