

Unraveling the complexity of multivalvular heart diseases: challenges and solutions. Surgical vs transcatheter approaches.



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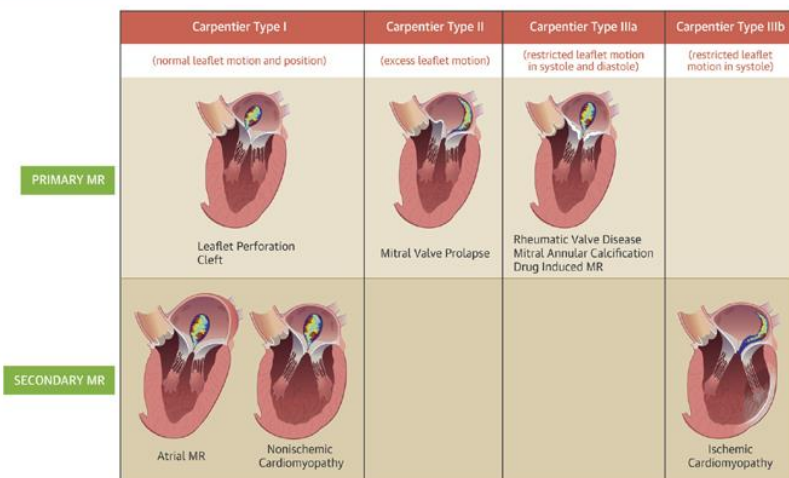


MVD: Mode, timing, sequence

	Surgery	Transcatheter
Patient's profile	Young – low risk	Intermediate, high risk
Type of valvular heart disease	Primary	Secondary
Sequence	All at once	Staged stepwise approach
Number of procedures	Single	Reassessment in optimized loading
		conditions after initial valve procedure
First step	All the valves	Start with the downstream and the most severe lesion

Primary vs secondary concomitant valvular disease - TAVR

CENTRAL ILLUSTRATION: Classification of the Etiology of MR



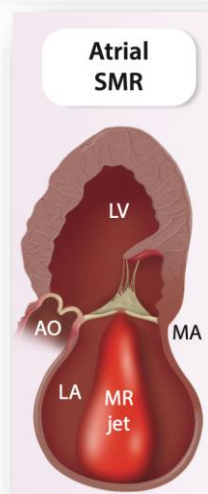
El Sabbagh, A. et al. J Am Coll Cardiol Img. 2018;11(4):628-43.

Adaptive development of concomitant secondary mitral and tricuspid regurgitation after transcatheter aortic valve replacement

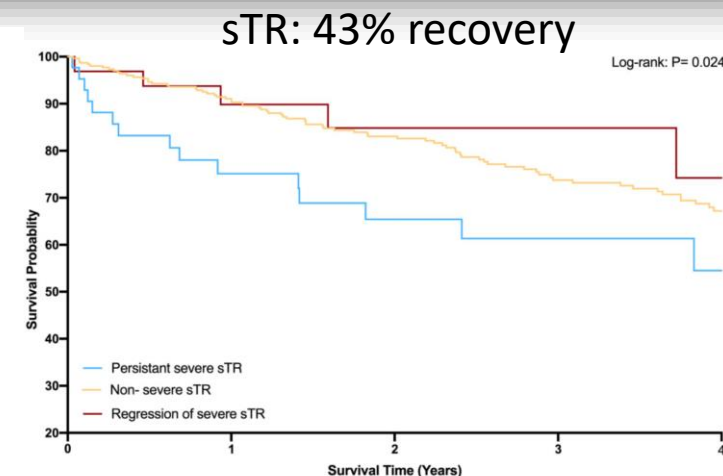
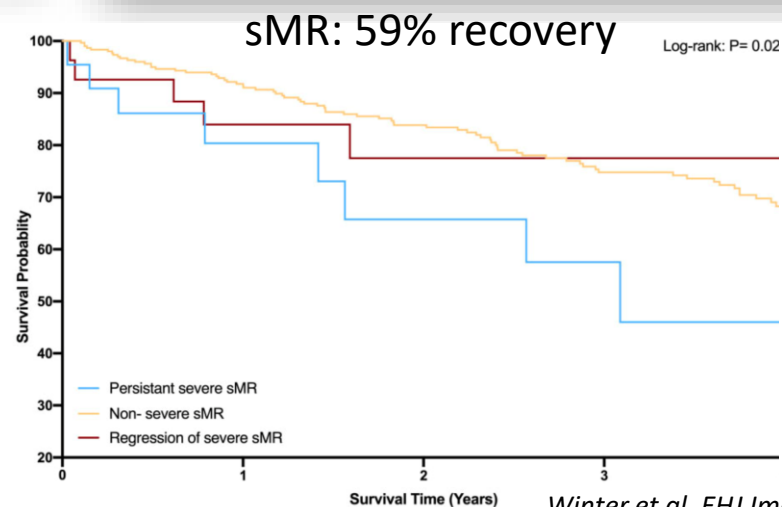
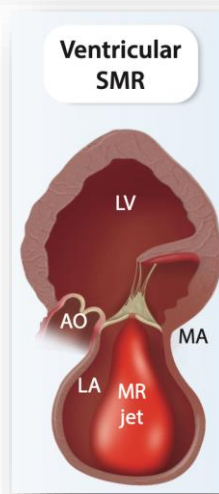
429 TAVR patients, 13% sMR, 17% sTR

Table 2 Crude and multivariable Cox regression model assessing the impact of persistence of severe secondary mitral regurgitation or tricuspid regurgitation of all-cause mortality.

	Univariable model		Bootstrap-adjusted confounder model ^a	
	Crude HR (95% CI)	P-value	Adj. HR (95% CI)	P-value
Persistence of severe sMR	2.29 (1.10–4.76)	0.027	2.44 (1.15–5.20)	0.021
Persistence of severe sTR	1.88 (1.08–3.27)	0.026	2.09 (1.20–3.66)	0.010



ESC Guidelines 2025

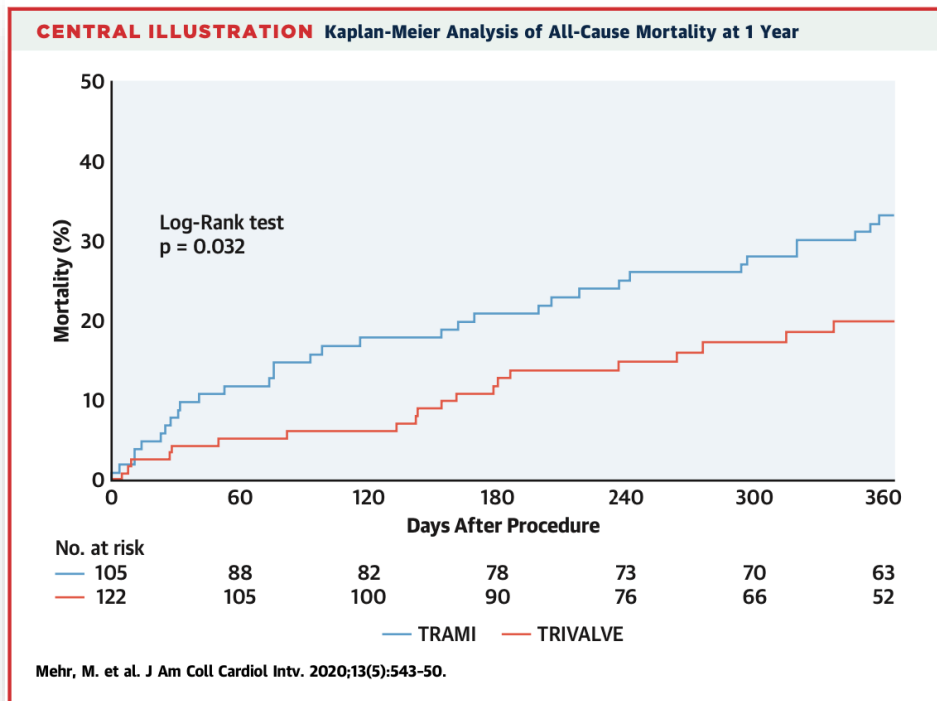


Winter et al. EHJ Imaging 2021;22:1045

Concomitant MR and TR

Retrospective comparison of TRAMI and TRIVALVE
N=228

Concurrent TMTVR was associated with a higher 1-yr survival
Compared with isolated TMVR in patients with both MR and TR.



Evolution of tricuspid regurgitation after transcatheter edge-to-edge mitral valve repair for secondary mitral regurgitation and its impact on mortality Multicentric European registry, N=503

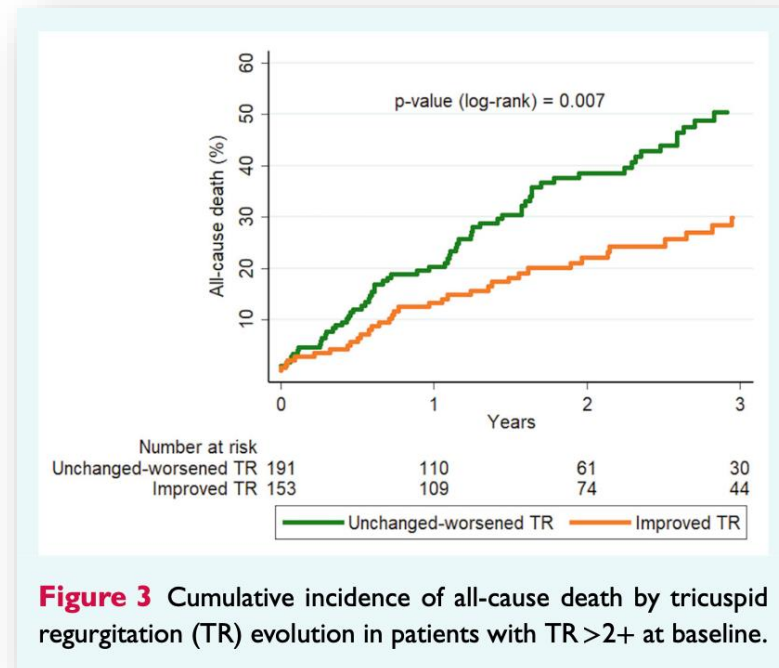


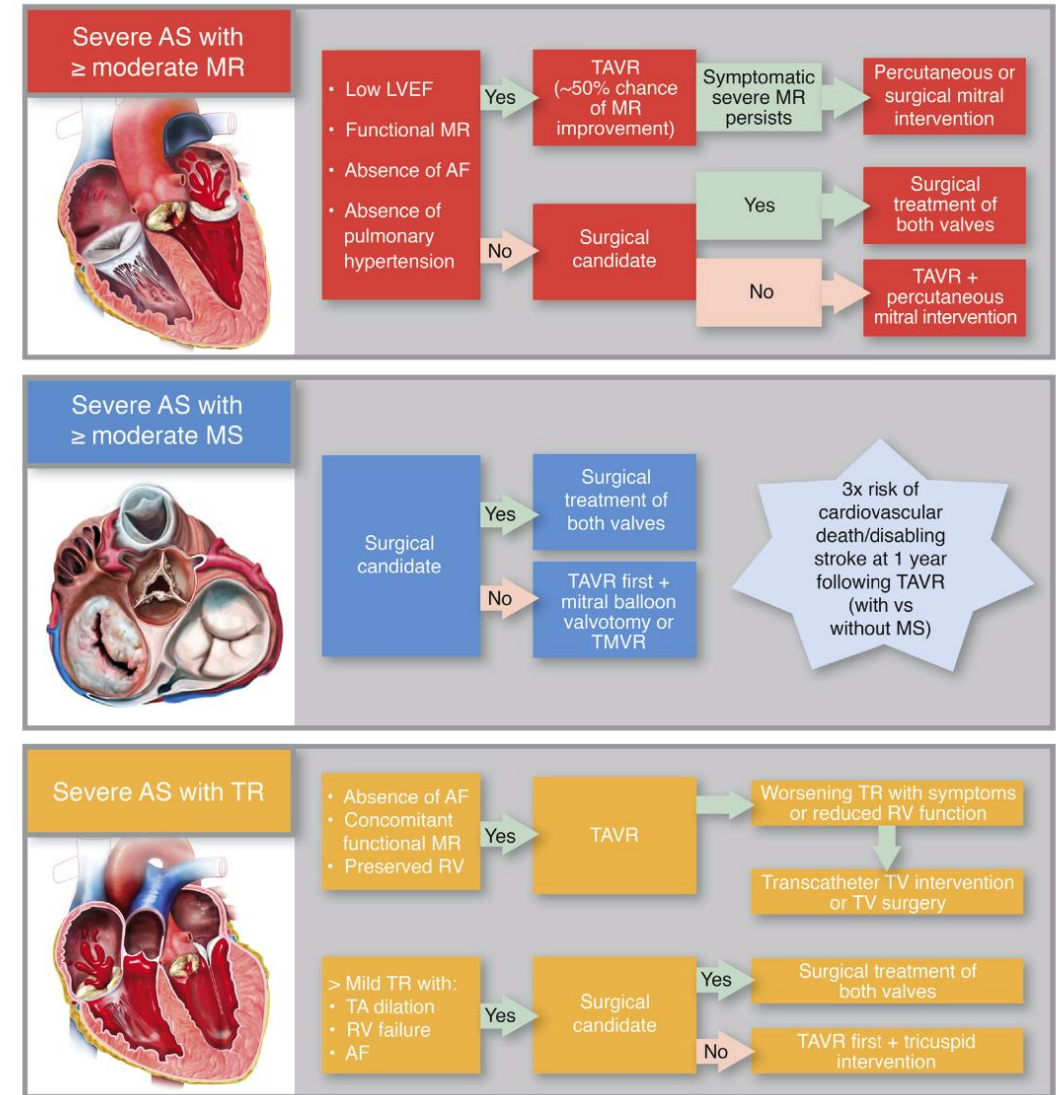
Figure 3 Cumulative incidence of all-cause death by tricuspid regurgitation (TR) evolution in patients with TR >2+ at baseline.

More than one third of patients with SMR undergoing successful M-TEER experienced an improvement in TR. Pre-procedural TR was not associated with outcome, but a TR $\leq 2+$ at short-term follow-up was independently associated with long-term mortality. Optimal M-TEER result and a small left atrium were associated with a higher likelihood of TR $\leq 2+$ after M-TEER.

Key messages

- ✓ MR is the most frequent concomitant valvular disease in TAVR patients, followed by TR, MS and AR.
- ✓ Persistent severe sMR and sTR after TAVR are independant predictor for mortality.
- ✓ Persistent severe sTR after succesful M-TEER is associated with mortality.
- ✓ Since a significant proportion of patients recovered from the concomitant **secondary** valvular disease after the initial procedure, a **staged stepwise strategy** seems to be appropriate in case of transcatheter approach.
- ✓ It would avoid a major surgery on multiple valves and a premature intervention on moderate valvulopathy, thereby delaying prosthetic valve degeneration at f-up.

CENTRAL ILLUSTRATION Proposed Pathway for the Treatment of Severe AS With Coexistent Second Valvular Disease



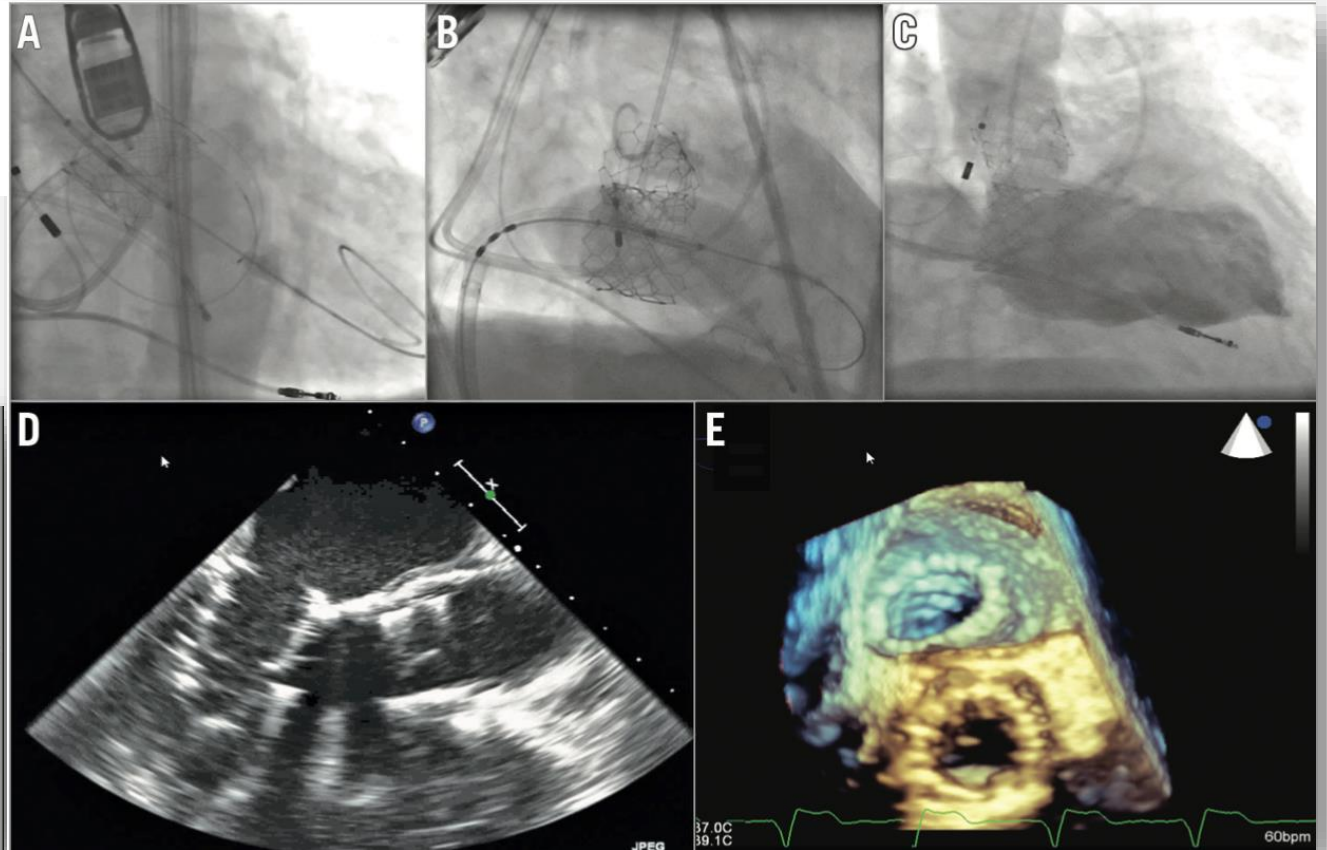
Khan, F. et al. J Am Coll Cardiol Interv. 2020;13(13):1503-14.

Multi primary valvular disease: combined approach

Surgery in young low risk patients, transcatheter combined procedures published in case reports of high risk patients.

Simultaneous transfemoral aortic and transseptal mitral valve replacement utilising SAPIEN 3 valves in native aortic and mitral valves

Case-report: 1 patient 87-yr old
AS and MAC



Conclusions

- ✓ Multivalvular disease is a complex situation.
- ✓ Given the heterogeneity of clinical scenarios and the lack of strong scientific evidence, the mode of treatment (surgery vs transcatheter), timing and sequence should be evaluated case by case by the heart-team at a Heart Valve Center.

Surgery

- 👉 **All at once**
- 👉 **Primary**
- 👉 **Low risk**



Transcatheter

- 👉 **Staged stepwise**
- 👉 **Secondary**
- 👉 **High risk**

