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Late atrial migration of a transcatheter mitral valve despite prior valve-in-valve transcatheter aortic valve implantation

Short title: Delayed transcatheter mitral valve migration

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Transcatheter mitral valve implantation (TMVI) has emerged as a therapeutic option for patients at high surgical risk or with prior valvular interventions. Despite increasing use, the procedure remains technically challenging and associated with specific complications, including left ventricular outflow tract obstruction, device malposition or migration, and paravalvular regurgitation [1, 2].

Pre-procedural anatomy plays a key role in determining procedural outcomes. The interaction between the anterior mitral leaflet, annular geometry, and the left ventricular outflow tract may significantly influence device expansion, anchoring, and complication risk [3].

Careful preprocedural imaging, appropriate prosthesis sizing, and meticulous procedural planning are therefore essential to minimize the risk of device malposition and migration.

Device migration or embolization has been reported in up to approximately 3% of TMVI procedures using balloon-expandable valves, particularly in complex anatomical settings such as severe annular calcification. Both early and delayed migration have been described [4].

A 77-year-old woman with history of surgical aortic valve replacement with a Perceval S bioprosthesis (size L) presented with symptomatic mitral stenosis and aortic bioprosthesis degeneration. She underwent combined valve-in-valve transcatheter aortic valve implantation using a 23-mm Myval transcatheter heart valve and TMVI using a 30.5-mm Myval transcatheter heart valve in complex multivalvular setting (**Figure 1A**; Supplementary material, *Video S1*). TMVI sizing was based on preprocedural transesophageal echocardiographic (TEE) measurements. Preprocedural TEE demonstrated an annular diameter of 29 × 32 mm (anteroposterior × intercommisural) and an anterior mitral leaflet length of 22 mm, which guided TMVI sizing.

Both valves were deployed with a single nominal balloon inflation without post-dilatation.

The procedure was performed under fluoroscopic and TEE guidance. Due to the risk of coronary obstruction, a protective left main coronary artery stent was implanted.

Immediate post-implantation TEE demonstrated small initial mitral paravalvular leak resolved within minutes and was replaced by mild central mitral regurgitation. Early imaging suggested elliptical deformation of the prosthetic frame within a non-uniform annulus (**Figure 1B, D**; Supplementary material, *Video S2–S3*).

At 1 year follow up, TEE showed atrial displacement of the mitral prosthesis by approximately 5 mm, associated with a newly developed moderate (grade 2) mitral paravalvular leak (**Figure 1C, E–F**; Supplementary material, *Video S4*). No new clinical symptoms were reported.

Despite the presence of prior surgical aortic valve replacement and valve-in-valve transcatheter aortic valve implantation, which might enhance prosthesis stability of the transcatheter mitral prosthesis, late atrial migration still occurred. The exact mechanism remains uncertain and is likely multifactorial. Infective endocarditis was excluded during follow-up.

Because of progressive atrial migration of the mitral prosthesis and concern for further displacement with worsening mitral paravalvular regurgitation, the Heart Team recommended

surgical mitral valve replacement. Unfortunately, the patient died two weeks after surgery due to postoperative stroke.

Supplementary material

Supplementary material is available at https://journals.viamedica.pl/polish_heart_journal.

Article information

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REFERENCES

1. Russo G, Maffi V, Massaro G, et al. Transcatheter mitral valve implantation in severe mitral annular calcification: A case report. *Eur Heart J Case Rep.* 2025; 9(1): ytae669, doi: 10.1093/ehjcr/ytae669, indexed in Pubmed: 39748937.
2. Scisło P, Rdzanek A, Pędzich E, et al. First transcatheter mitral valve implantation in Poland. *Pol Heart J.* 2025; 83(11): 1349–1350, doi: 10.33963/v.phj.108503, indexed in Pubmed: 40956229.
3. Wang DD, Eng M, Greenbaum A, et al. Predicting LVOT obstruction after TMVR. *JACC Cardiovasc Imaging.* 2016; 9(11): 1349–1352, doi: 10.1016/j.jcmg.2016.01.017, indexed in Pubmed: 27209112.
4. Ueyama HA, Gleason PT, Babaliaros VC, et al. Transcatheter mitral valve replacement in failed bioprosthetic valve, ring, and mitral annular calcification associated mitral valve disease using balloon expandable transcatheter heart valve. *Methodist Debaquey Cardiovasc J.* 2023; 19(3): 37–49, doi: 10.14797/mdcvj.1221, indexed in Pubmed: 37213881.

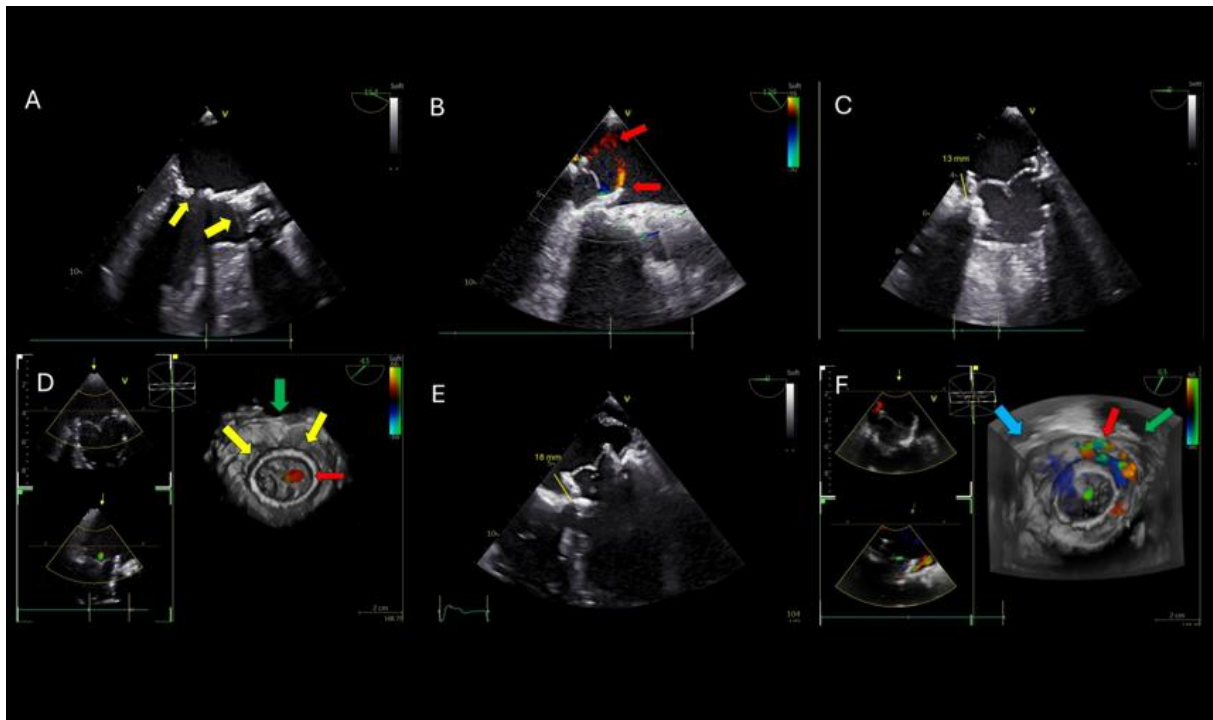


Figure 1. **A.** Pre-procedural transesophageal long — axis view demonstrating a degenerated surgical aortic bioprosthesis and heavily calcified mitral valve in complex multivalvular setting. Yellow arrows indicate the degenerated surgical aortic bioprosthesis and heavily calcified mitral valve. **B.** Post-procedural transesophageal long-axis color Doppler view after combined valve-in-valve transcatheter aortic valve implantation and transcatheter mitral valve implantation demonstrating a small paravalvular leak adjacent to the mitral prosthesis. Red arrow indicates paravalvular leak adjacent to the mitral bioprosthesis. **C.** Post-procedural modified mid-esophageal view demonstrating the initial position and baseline left atrial protrusion height of the mitral prosthesis. The line segment indicates baseline left atrial protrusion height. **D.** Three-dimensional *en face* transesophageal view demonstrating elliptic deformation of the mitral prosthetic frame with mild central regurgitation following resolution of the initial paravalvular leak. Yellow arrows indicate elliptic deformation of the prosthetic frame, the green arrow indicates the aortic root, and the red arrow indicates mild central regurgitation. **E.** Follow-up modified mid-esophageal transesophageal view demonstrating atrial displacement of the mitral prosthesis with a 5 mm increase in left atrial protrusion height compared with baseline. The line segment indicates the measured increase in left atrial protrusion height at follow up. **F.** Three-dimensional *en face* transesophageal view demonstrating crescentic paravalvular regurgitation accompanied by mild central regurgitation at follow-up. The blue arrow indicates the left atrial appendage, the green arrow indicates the aortic root and the red arrow indicates the paravalvular regurgitation, while the central color Doppler signal represents mild central regurgitation