POLISH ARCHIVES OF
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Article type: Clinical image

Received: April 3, 2024.

Revision accepted: April 8, 2024.

Published online: April 11, 2024.

ISSN: 1897-9483

Pol Arch Intern Med.

doi:10.20452/pamw.16726

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68-year-old man was referred for transcatheter management of severe mitral regurgitation, likely to a prior episode of infective endocarditis at an unknown point in time. In 2015 he had undergone mitral valve replacement with biological prosthesis Labcor 33 (Labcor Laboratórios Ltda) and tricuspid annuloplasty with a 34 mm ring Edwards MC3 (Edwards Lifesciences).

After 8 years from surgery transoesophageal echocardiography (TOE) revealed a perforated mitral prosthetic leaflet causing severe regurgitation (Figures 1A and 1B). Our patient was deemed ineligible for cardiac surgery because of multiple comorbidities.

Valve-in-valve transcatheter mitral valve implantation (ViV-TMVI) was performed, utilizing fluoroscopic and TOE guidance. We pursued widely accepted procedure to deliver balloon-expandable valve Sapien 3 29 mm (Edwards Lifesciences) via right femoral vein by the transseptal approach and during rapid pacing. However, we found it extremely difficult to

navigate within enlarged left atrium despite what seemed to be an optimal postero-inferior interatrial septum puncture (Figure 1C). We finally reached desired position of transcatheter heart valve (THV) after several unusual and harsh bending of the delivery system. Excessive maneuvers and bending could possibly contribute to delayed and non-uniform balloon inflation, which in turn resulted in bioprosthesis dislodgement into the left ventricle (Figure 1D). As the surgery was a poor option, we decided to go for the second valve. During extended rapid pacing with cautious interplay of delivery system and stiff wire (distal loopy part acted like a snare enabling us to draw THV closer to subvalvular position), we were able to deploy another Sapien 3 29 mm anchoring the proximal part of the previous loose valve (Figures 1E to 1G).

Postoperative echocardiography confirmed complete expansion of the prostheses with a mean gradient of 4 mm Hg and effective orifice area of 1,8 cm^2, which are in line with previously reported data [1,2]. No paravalvular leak was noted. Despite double frames of bioprostheses no left ventricular outflow tract obstruction was observed either in echocardiography (peak gradient of 10 mm Hg) or in computed tomography (Figure 1H). The postprocedural period was uneventful.

Our case report demonstrates a transcatheter bailout management of a dislodged prosthesis during mitral valve-in-valve implantation. In Poland, data on ViV-TMVI remains limited [3]. As the number of patients with failed mitral bioprostheses, who are ineligible for redo surgery, continues to rise, further studies on the safety, efficacy, and long-term outcomes of ViV-TMVI are warranted.

Article information

Acknowledgments None.

Funding None.

Conflict of interest None declared.

How to cite Kralisz P, Frank M, Stankiewicz A, et al. Mitral valve-in-valve rescue: managing dislodged first prosthesis with transcatheter second valve implantation. Pol Arch Intern Med. 2024; XX: 16726. doi:10.20452/pamw.16726.

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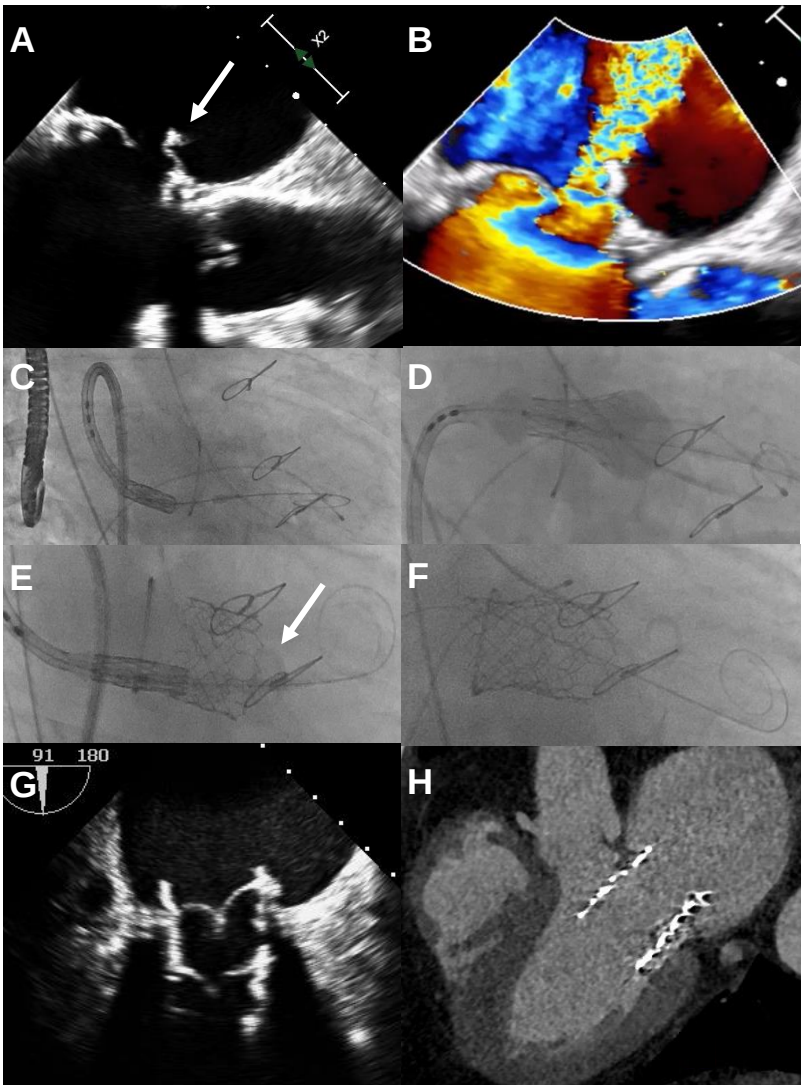

Figure 1 Images of mitral valve-in-valve rescue procedure in different modalities: **A** – perforated mitral prothesis leaflet (arrow) in transoesophageal echocardiography (TOE); **B** – severe mitral regurgitation in TOE Color Doppler; **C** – challenges in delivery system navigation due to enlarged left atrium in angiography; **D** – non-uniform balloon inflation during transcatheter heart valve (THV) deployment; **E** – anchoring the proximal part of previous loose THV to the another THV using delivery system, stiff wire and pigtail catheter (arrow); **F** – the final result in angiography; **G** – complete expansion of the prostheses in TOE; **H** – no left ventricle outflow tract obstruction in computed tomography

Short title: Mitral valve-in-valve rescue: seeing double