

Percutaneous Closure of a Delayed Left Ventricular Pseudoaneurysm After Transseptal Transcatheter Mitral Valve Replacement



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A 65-year-old woman underwent transseptal transcatheter mitral valve-in-valve replacement (TMVR) with a 29-mm SAPIEN 3 valve (Edwards Lifesciences, Irvine, California). A hand-curved, Amplatz Super-Stiff wire (Boston Scientific, Marlborough, Massachusetts) was used for valve delivery. She was discharged 4 days later and remained free from hospital readmission. However, routine echocardiography 8 months afterward revealed a left ventricle pseudoaneurysm (PSA) that had grown in size to 3.0 cm × 3.4 cm × 2.6 cm with a 1.4 cm × 1.6 cm neck (Figures 1A to 1D). A multidisciplinary heart team evaluation determined that attempt at percutaneous closure was the most appropriate course of action. The procedure was performed in a hybrid operating room with a plan to convert to open surgery if necessary. An Agilis NxT steerable catheter (St. Jude Medical, St. Paul, Minnesota) was placed through the previous atrial septostomy to deploy a closure device transseptally. However, ventriculography performed through a pigtail catheter suggested that a retrograde approach provided a more favorable deployment angle. Thus, a 9-F Amplatz Torqvue (St. Jude Medical) delivery sheath

was inserted across the aortic valve and a 16-mm Amplatz muscular ventricular septal defect occluder (St. Jude Medical) was deployed in the PSA neck (Figures 1E and 1F, Online Video 1). An echocardiogram 3 months later confirmed successful closure (Figures 1G and 1H).

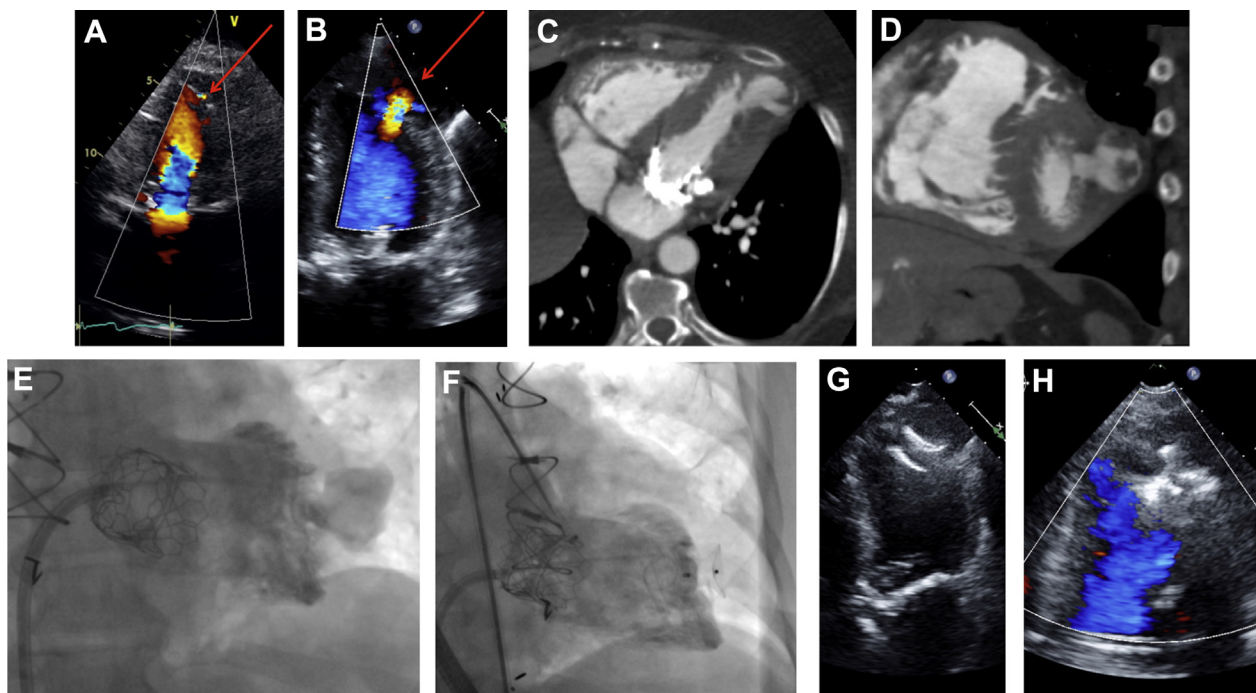
Left ventricular PSA is a rare complication after transcatheter valve replacement, with most reports implicating transapical access as the proximate cause (1-4). Improvements in transcatheter design have allowed for a preliminary experience with TMVR, though procedural and device limitations exist. To our knowledge, this represents the first report of delayed left ventricular PSA after TMVR without transapical access. The use of a prior atrial septostomy for pigtail ventriculography facilitates placement of a closure device and should be considered when attempting percutaneous ventricular PSA closure after transseptal TMVR.

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FIGURE 1 Echo, CT, and Catheterization Imaging of LV Pseudoaneurysm and Closure



(A, B) Echocardiogram (echo) after transcatheter mitral valve-in-valve replacement and 8 months later demonstrating enlarging left ventricle (LV) pseudoaneurysm (arrows). (C, D) Computed tomography (CT) scan in axial and coronal sections. (E, F) Transseptal pigtail ventriculography-guided successful closure (Online Video 1). (G, H) Echocardiogram 3 months later confirmed closure.

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KEY WORDS percutaneous, pseudoaneurysm, transcatheter, transseptal

APPENDIX For a supplemental video and its legend, please see the online version of this article.