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IMAGES IN INTERVENTION

Percutaneous Repair of an Aortic Paraprosthetic Leak

An Alternative to Reoperating

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A 69-year-old man presented with severe aortic regurgitation and ongoing hemolysis 14 years after the insertion of a 23-mm ATS Medical mechanical aortic valve. His symptoms were progressive, and on admission he was not able to walk farther than 100 meters on a flat surface and was generally fatigued as a consequence of his anemia. He was deemed a high-risk candidate for surgical repair in view of multiple comorbidities, including chronic renal failure, left ventricular dysfunction with resultant pulmonary edema, and atrial fibrillation. It was therefore decided to close his paravalvular leak percutaneously.

The procedure was performed under local anesthetic with intracardiac echocardiography guidance. Vascular access was achieved through a 9-F sheath inserted via the right femoral artery, and an aortogram confirmed a moderate-sized paravalvular leak (Fig. 1, Online Video 1). The paravalvular leak was crossed with a Terumo wire (Fig. 2) under fluoroscopic and echocardiographic guidance. The defect was then balloon-sized and was found to measure 5.3 mm (Online Video 2). An 8-mm Amplatzer muscular septal occluder device (AGA Medical Corporation, Plymouth, Minnesota) (Figs. 3 and 4) was delivered via an 8-F El Gamal coronary guide catheter (Cordis, Miami Lakes, Florida) with a good final angiographic result (Fig. 5, Online Video 3). The patient made an uncomplicated recovery with improvement in both symptoms and hemolysis.

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Symptomatic paraprosthetic leak after heart valve replacement is not an insignificant problem, occurring in approximately 1% to 5% of patients. Reoperation carries a higher risk compared with the initial surgery (1). Because this clinical presentation is more commonly observed in older patients, this risk is potentially further compounded by the presence of other comorbidities. Arising from this dilemma, percutaneous strategies used to treat other structural heart conditions have been modified and applied safely and successfully in this context.

This strategy is one that should be considered in appropriately selected cases, and with the development of equipment more specific for percutaneous paravalvular leak repair, is likely to become increasingly adopted.

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REFERENCE

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Key Words: paraprosthetic leak ■ percutaneous repair ■ paravalvular leak.

APPENDIX

For accompanying videos and their accompanying legends, please see the online version of this article.

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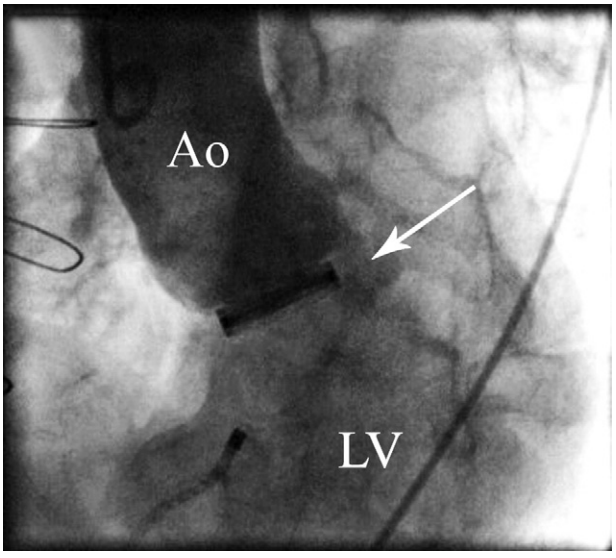

Figure 1. Pre-Procedural Aortography Performed in the Left Anterior Oblique Projection Shows Moderate Aortic Regurgitation Into the LV

The tract of the paravalvular leak is also demonstrated **(arrow)**. See Online Video 1. Ao = aorta; LV = left ventricle.

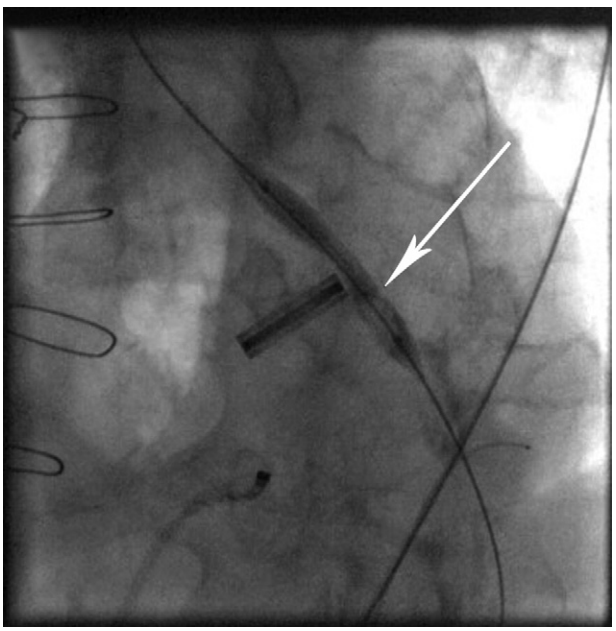

Figure 2. A Sizing Balloon Passing Through the Defect Over a Terumo Wire

See Online Video 2.

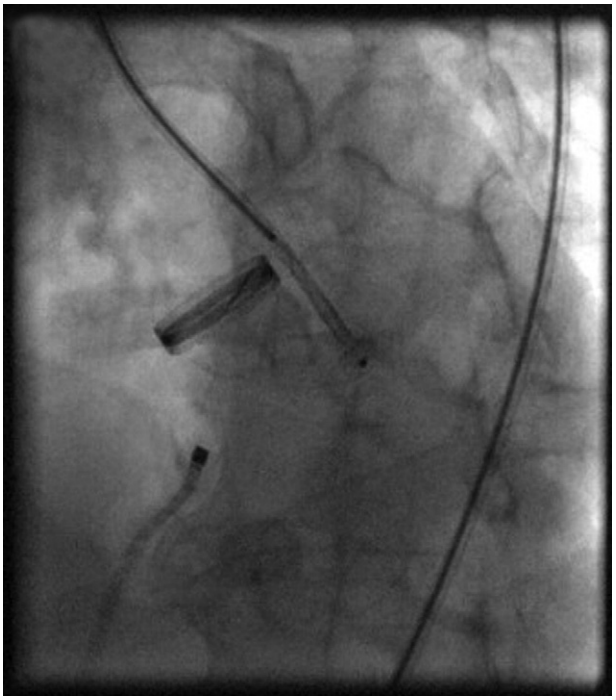

Figure 3. A Muscular VSD Device Is Delivered With Left Ventricular Disc Opened

An intracardiac echocardiography probe is seen positioned in the right ventricular outflow tract. VSD = ventricular septal defect.

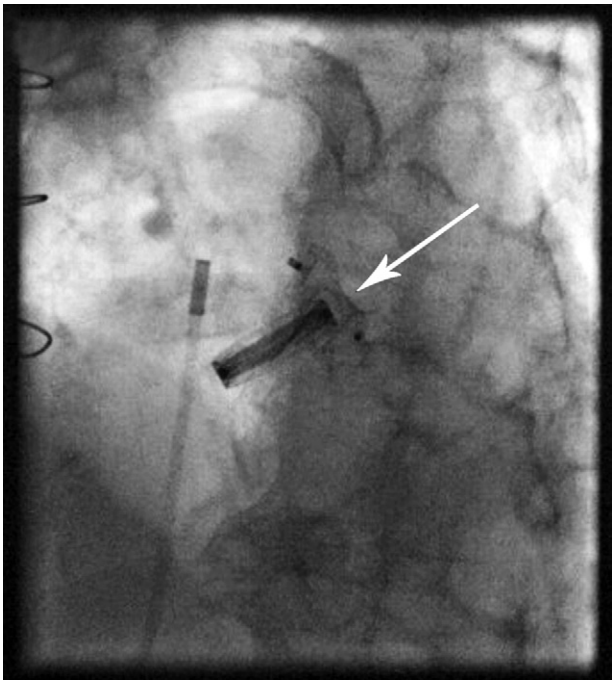

Figure 4. The VSD Device Fully Deployed Across the Defect

The ventricular septal defect (VSD) device **(arrow)** is seen fully deployed across the defect.

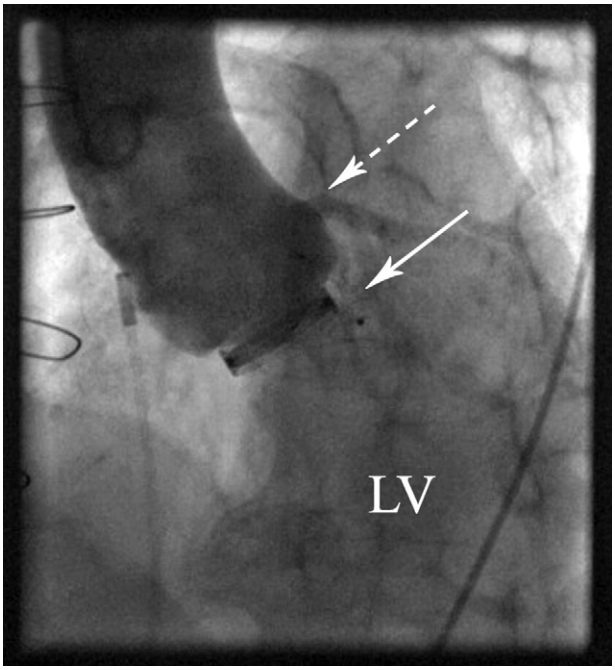

Figure 5. Post-Procedural Aortography in the Left Anterior Oblique Projection Demonstrating a Reduction in Paraprosthetic Aortic Regurgitation

Post-procedural aortography shows a significant reduction in aortic regurgitation with the device seen in situ **(closed arrow)**, clear of the ostium of the left main coronary artery **(dashed arrow)**. See Online Video 3. LV = left ventricle.