

Cardiac Imaging

Successful Transapical Transcatheter Prosthetic Mitral Paravalvular Leak Closure

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A 71-year-old female was admitted to our department with severe dyspnea (NYHA class III) and hemolytic anemia (hemoglobin level 7.0 g/dL, lactate dehydrogenase 1500 IU/L). She had a history of metallic aortic valve replacement 16 years before for aortic stenosis, metallic mitral valve replacement 3 months before for mitral stenosis, and a permanent pacemaker implantation 1 week before for tachy-brady syndrome. Transesophageal echocardiography (TEE) showed a severe mitral paravalvular leak through a crescent-shaped hole that was located in the anterolateral portion of the mitral valve prosthesis. (Figures 1 & 2). Active endocarditis was excluded.

Because of the presence of two mechanical valves, the anterolateral position of the paravalvular leak and the recent placement of a permanent pacemaker, we decided to close the leak transapically. The procedure was performed in the operating room under general anesthesia, with

TEE and fluoroscopic guidance. Following a left anterior mini-thoracotomy the defect was catheterized using a Terumo wire loaded on a multipurpose 5F catheter. After the positioning of the catheter inside the left atrium (LA), the Terumo wire was replaced by an Amplatzer stiff wire, which supported the insertion of a multipurpose 7F guide catheter to the LA. Through the guide catheter, a 10 mm × 5 mm Vascular Amplatzer plug III (AGA Medical Corporation, Plymouth, MN) was successfully deployed under 2D and 3D TEE and fluoroscopic imaging (Figure 3). Good valve function was confirmed immediately post deployment. TEE showed an appropriate position of the device and no residual leak. (Figures 4 & 5).

No complications were observed. The patient was discharged 3 days after the procedure in NYHA class I-II. The hemolytic indices showed a very good recovery (hemoglobin level: 10.5 g/dL, lactate dehydrogenase: 375 IU/L).

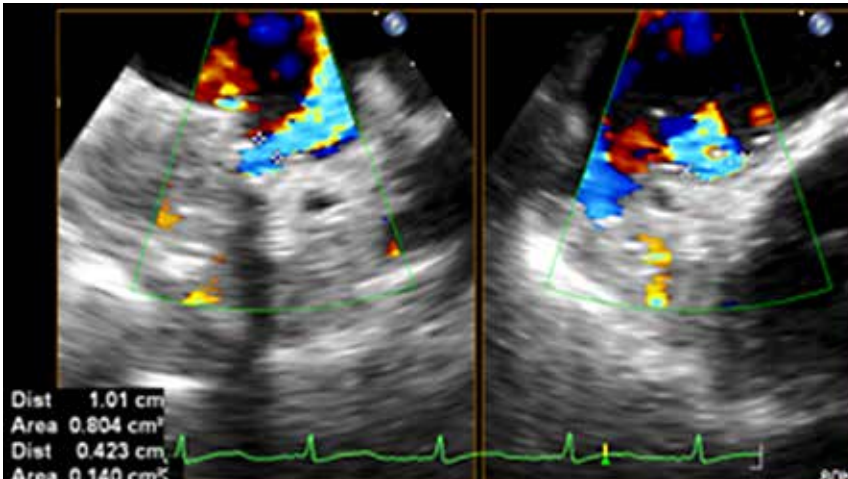


Figure 1. Preoperative two-dimensional transesophageal echocardiography (TEE), color biplane imaging: a moderate oval shaped paravalvular leak (PVL), 1.01 × 0.42 cm in size, was detected.



Figure 2. Preoperative real-time 3D TEE, atrial view, showing the PVL (arrow) at the 9 o'clock position, slightly distant from the prosthetic cuff. LAA – left atrial appendage.

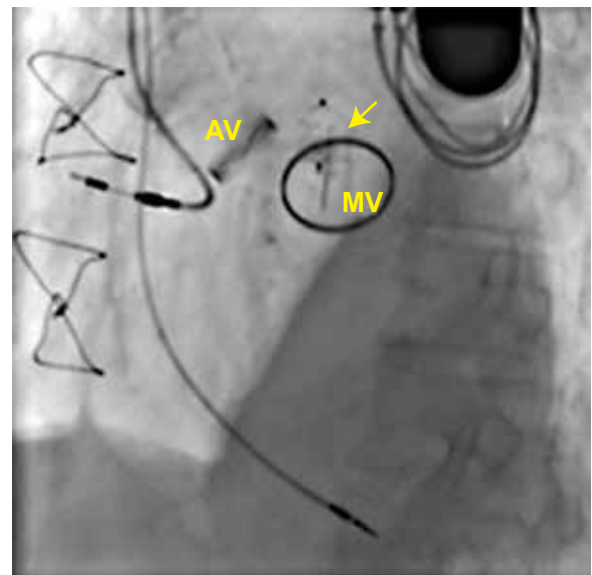


Figure 3. Fluoroscopy demonstrating the Vascular Amplatzer plug (arrow) deployed. AV – aortic valve; MV – mitral valve.



Figure 4. Postoperative real-time 3D TEE, atrial view, showing the Vascular Amplatzer plug (arrow). LAA – left atrial appendage.

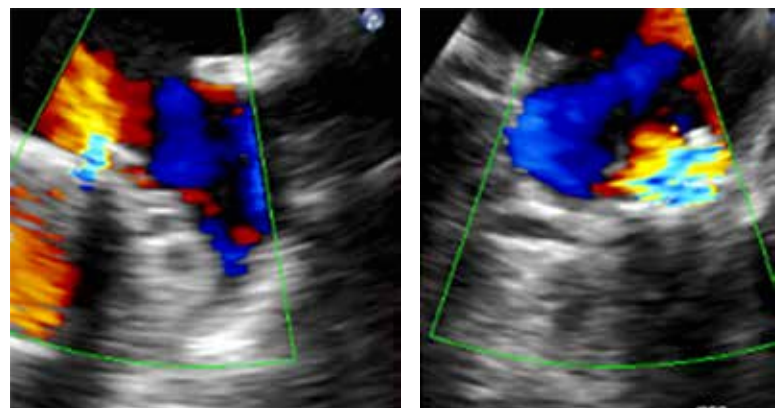


Figure 5. Postoperative 2D TEE after placement of the Vascular Amplatzer plug, showing complete occlusion of the PVL. Mild foaming through the device was also noted.