Late Device Dislodgement After Percutaneous Closure of Mitral Prosthesis Paravalvular Leak With Amplatzer Muscular Ventricular Septal Defect Occluder

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Symptomatic paraprosthetic leak can be treated with percutaneous transcatheter closure as an alternative to cardiac surgery. Dedicated devices are not yet available, but once the morphology of the leakage has been defined, it is possible to choose among the existing devices that are currently used for other percutaneous procedures.[1–3]

A 55-year-old woman presented with severe hemolytic anemia, jaundice, dyspnea, and recent recurrent bacterial endocarditis that was complicated by mitral prosthetic detachment. The patient's clinical history was characterized by rheumatic mitral valvulopathy, for which she had been treated at the age of 33 years with prosthetic valve implantation, and 2 subsequent reinterventions of prosthetic mitral valve replacement for thrombosis and endocarditis. Transesophageal echocardiogram showed a posterolateral leak (Figure 1 and Movies I and II). Because this would be her fourth reoperation, percutaneous transcatheter closure of the leak was recommended. Under general anesthesia and transesophageal echocardiogram monitoring, the procedure was performed as previously described.[2,3] The leak was crossed in retrograde fashion from the left ventricle, a transseptal puncture was performed, an exchange wire was snared and exteriorized from the right femoral vein, forming an arteriovenous loop, and the delivery catheter was positioned in the left ventricle. The device selected was a 12-mm Amplatzer muscular ventricular septal defect occluder (AGA, Inc, Golden Valley, Minn); it was successfully implanted in the leak (Figure 2 and Movies II and III). The patient was discharged 5 days later in good hemodynamic condition, with a tiny residual leak and no hemolysis and in New York Heart Association class I. Two months later, on a transesophageal echocardiogram for sudden recurrent hemolysis with severe anemia and ankle edema, the patient was diagnosed with device dislodgement in the left atrium (Figure 3 and Movies IV and V) and severe regurgitation, and surgery was planned. Just before the chest was opened, the device was completely mobilized in the left atrium (Figure 4). The prosthetic valve function was not compromised because the device, once sitting on the atrial surface of the prosthesis, was always moved by the eccentric regurgitant jet (Movie VII). The device was removed surgically (Figure 5 and Movie VIII) and the leak was sutured. The patient was discharged 7 days later in good hemodynamic condition.

This unusual event of late device dislodgement after a safe, efficacious, percutaneous implantation confirms how this interventional cardiology technique is "far from ideal."[3] Even if the procedure is feasible, a dedicated device is needed; the shape should fit the leak morphology without interfering with leaflet function. Criteria for the correct selection of device dimensions must be defined to obtain a stable position and a complete leak closure. During the follow-up, one must be aware of the possibility of a late device embolization, especially when symptoms suddenly worsen.

Disclosures

None.

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The online-only Data Supplement, consisting of Movies I through VIII, is available with this article at http://circ.ahajournals.org/cgi/content/full/115/8/e208/DC1.

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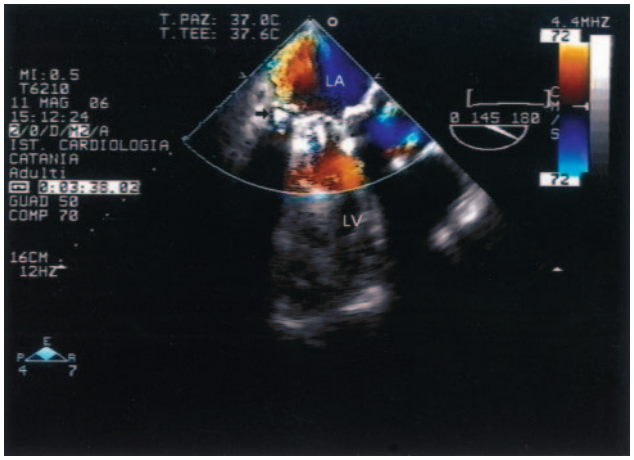

Figure 1. Transesophageal echocardiogram, long-axis view. The leak is localized posteriorly (arrow) and causes a severe regurgitant jet with "Coanda" effect. LA indicates left atrium; LV, left ventricle.

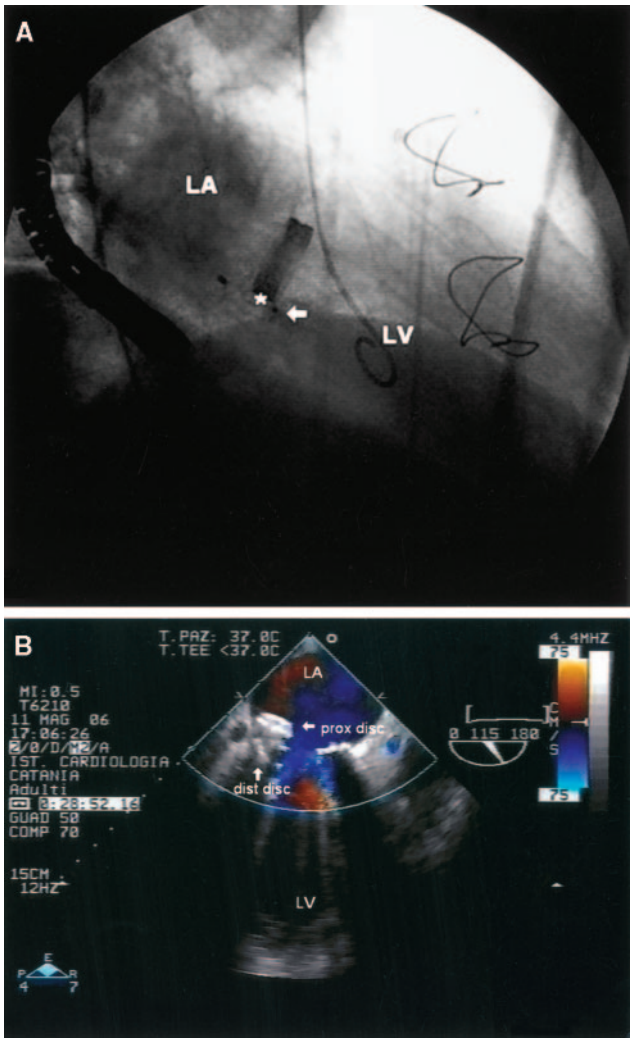

Figure 2. A, Fluorography acquisition after device placement in the paravalvular leak (*). B, Transesophageal echocardiogram, long-axis view. Note the position of the distal disc entrapped inside the leak, without any residual regurgitation or leaflet motion interference. LA indicates left atrium; LV, left ventricle.

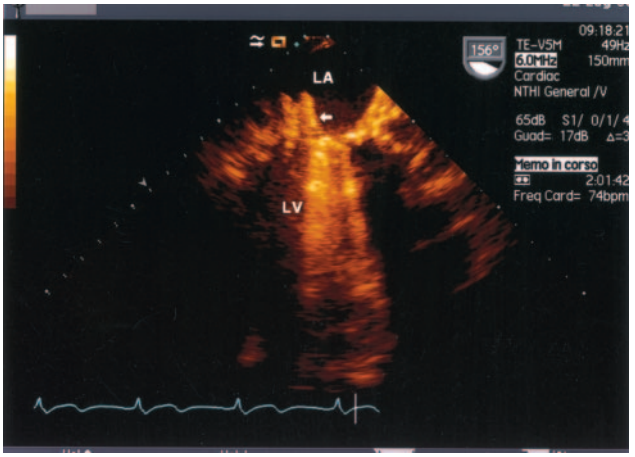

Figure 3. Transesophageal echocardiogram, long-axis view. The device is completely dislodged in the left atrium (LA) but is still attached to the leak by the distal disc (arrow). LV indicates left ventricle.

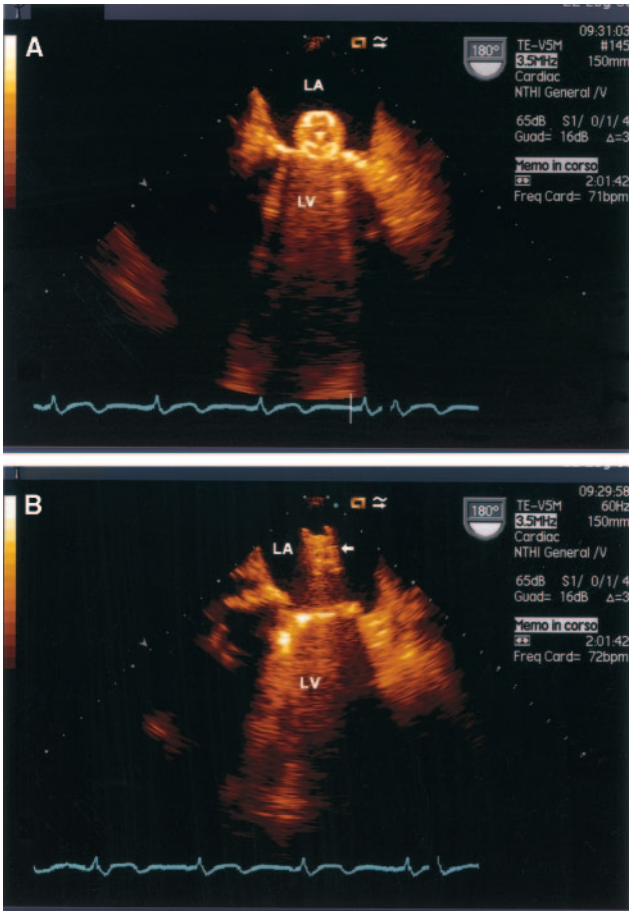

Figure 4. Transesophageal echocardiogram, long-axis view. Two different frames captured during the intraoperative transesophageal echocardiogram examination show the mobilization of the device. The device is seated on the left atrial surface (LA) of the prosthesis (A) and is moved away by the regurgitant jet (B). LV indicates left ventricle.

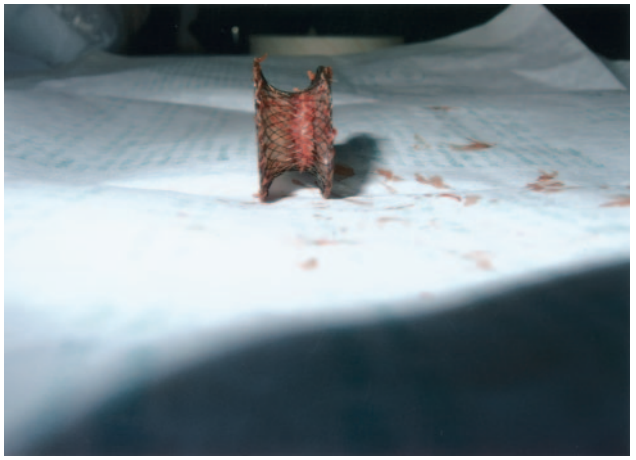

Figure 5. Picture of the Amplatzer muscular ventricular septal defect device (AGA, Inc, Golden Valley, Minn) after extraction from the left atrium.