

IMAGES IN INTERVENTION

Early Anterior Mitral Valve Leaflet Mechanical Erosion Following Left Atrial Appendage Occluder Implantation



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An 84-year-old woman was referred to our center for a left atrial appendage occlusion (LAAO) procedure. Her medical history included alcoholic cirrhosis, permanent atrial fibrillation, and recent hemorrhagic shock related to gastrointestinal bleeding under oral anticoagulation. CHA₂DS₂-VASc (congestive heart failure, hypertension, age \geq 75 years, diabetes mellitus, prior stroke or transient ischemic attack or thromboembolism, vascular disease, age 65 to 74 years, sex category) and HAS-BLED (hypertension, abnormal renal and liver function, stroke, bleeding, labile international normalized ratios, elderly, drugs or alcohol) scores were both equal to 5. LAA ostium and neck dimensions were 31 mm and 26 mm, respectively, by computed tomography scan (Figure 1A).

The procedure was performed under general anesthesia and transesophageal echocardiography guidance that confirmed LAA dimensions. A 28-mm Amplatzer Amulet occluder (St. Jude Medical, St. Paul, Minnesota) was thus implanted. Post-procedural results showed device correct position and compression (Figure 1B), and absence of residual peridevice atrial leakage and filling. Mitral valve

kinetics was normal, although the device was in contact with anterior leaflet, but no additional valvular regurgitation was noticed (Figure 1C, Online Videos 1 and 2).

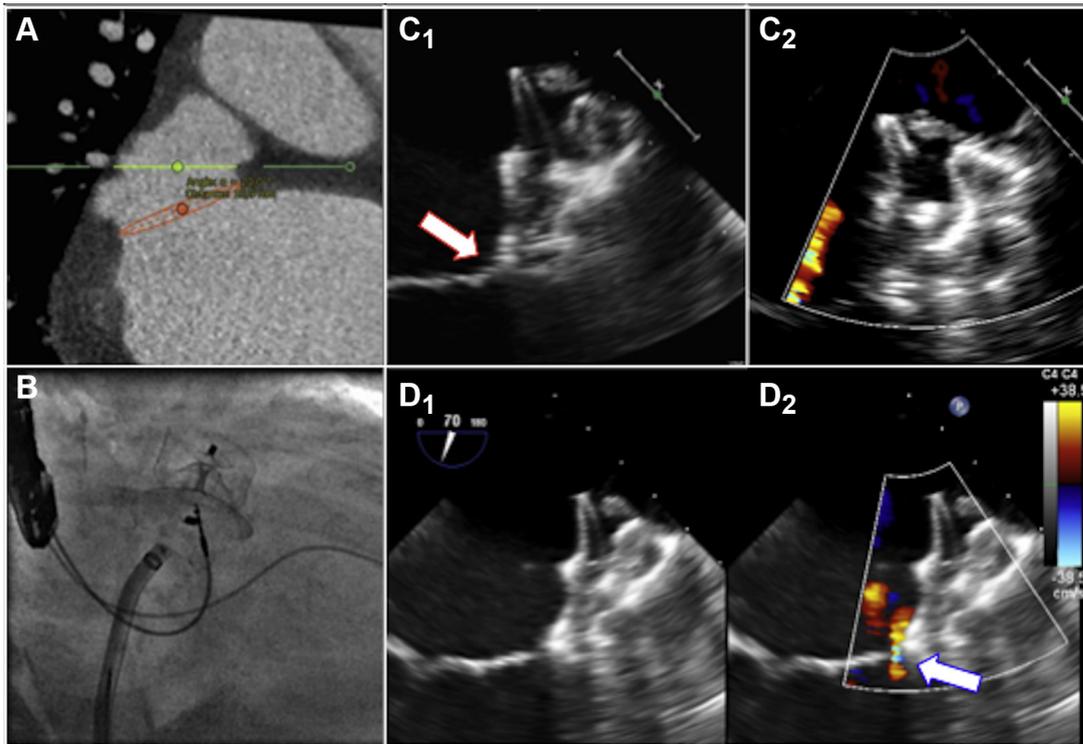
The patient was discharged under single antiplatelet therapy (aspirin) and had an uneventful clinical evolution. Routine transesophageal echocardiography control was performed 6 weeks after procedure and revealed neither residual peridevice leakage nor thrombus. However, a de novo mild mitral regurgitation was identified (Figure 1D, Online Video 3), which was related to a device-induced tear of the A1 portion of the anterior leaflet.

To our best knowledge, this is the first case of a mitral valve perforation following an LAAO procedure. The most plausible mechanism here is the progressive leaflet erosion by the 35-mm-diameter device outer disc. Hemolysis and endocarditis might represent theoretical complications and thus require close patient follow-up. This case advocates for the need to anticipate the anatomic relationships between device and native heart structure during LAAO procedures to avoid unexpected complications.

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FIGURE 1 Left Atrial Appendage Occlusion: Preparation, Procedure, and Follow-Up



(A) Left atrial appendage dimensions as assessed by pre-intervention computed tomography scan. Ostium diameter was measured to 31 mm and the device's lobe landing zone (neck) was measured to 26 mm. (B) Final angiographic view after the 28-mm Amplatzer Amulet occluder (St. Jude Medical, St. Paul, Minnesota) implantation. (C) Immediate post-implantation transesophageal echocardiography (TEE) view (Online Videos 1 and 2). (C1) The device outer disc was in contact with anterior leaflet (arrow), (C2) but no valvular regurgitation was identified. (D) Six-week control TEE. An erosion was identified in the anterior mitral leaflet, (D1) related a shearing process by the outer disc and (D2) creating a mild regurgitation (arrow) (Online Video 3).

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APPENDIX For supplemental videos and their legends, please see the online version of this paper.