

IMAGES IN INTERVENTION

Percutaneous Aortic-to-Right Atrial Fistula Closure as a Complication of Surgical Aortic Valve Replacement



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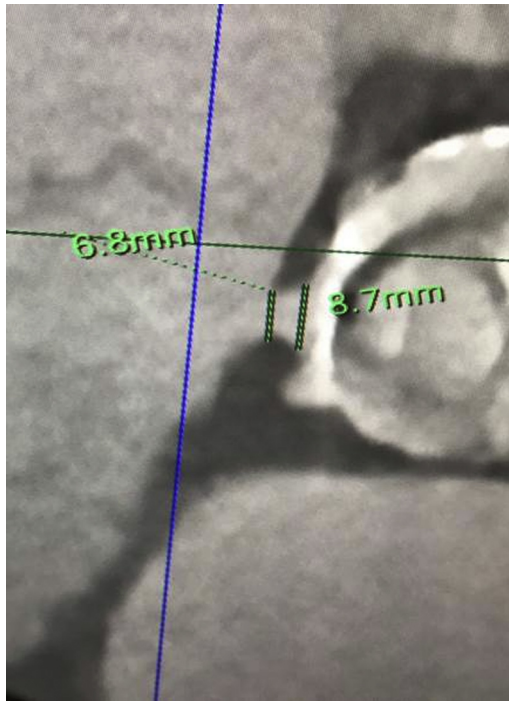
We report the case of a 61-year-old man with a history of type A aortic dissection who underwent emergency repair with a Dacron graft in 2015, followed 1 year later by mechanical aortic valve replacement for severe aortic regurgitation, who presented to our institution with multiple admissions for right-sided failure: recurrent ascites and leg edema requiring intravenous diuresis and paracentesis. Transthoracic echocardiography showed a normal left ventricular ejection fraction and moderate right ventricular dilation (a new finding). The aortic mechanical valve showed normal function, with a visible shunt between the proximal ascending aorta and the right atrium ([Online Video 1](#)). In addition, there was moderate tricuspid regurgitation. Transesophageal echocardiography showed a large shunt by color Doppler originating from the ascending aorta (between the right coronary and noncoronary sinuses) consistent with a sizable aortic-right atrial fistula ([Online Video 2](#)). The decision was made to perform percutaneous aortic-to-right atrial fistula closure.

Cardiac computed tomography performed for procedural planning showed a maximal fistula diameter of 8.7 mm, with a neck and body similar in morphology to a patent ductus arteriosus ([Figure 1](#)).

The procedure was performed under general anesthesia and transesophageal echocardiographic guidance using a 6-F catheter through a right radial approach. Aortography showed a fistula between the noncoronary and right coronary sinuses into the right atrium ([Online Video 3](#)). The fistula was crossed with a Terumo stiff wire using a JR 4.0 5-F catheter from the arterial side ([Online Video 4](#)). The Terumo wire was snared into the right femoral vein, and an arteriovenous rail was formed ([Online Video 5](#)). A 9-F delivery sheath was introduced through the right femoral vein, and a 14/12-mm Amplatzer Duct Occluder (St. Jude Medical, St. Paul, Minnesota) was deployed across the fistula from the venous side ([Online Videos 6 and 7](#)). We chose an Amplatzer Duct Occluder because the fistula resembled a patent ductus arteriosus, and deployment from the venous

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FIGURE 1 Gated Multislice Computed Tomographic Reconstruction of the Chest at 35% Phase

Fistula between the noncoronary sinus and right atrium with a maximal diameter of 8.7 mm. See [Online Videos 1, 2, 3, 4, 5, 6, 7, 8, and 9](#).

side allowed us to position the aortic disc as close to the wall as possible far from the discs ([Online Video 8](#)). Transesophageal echocardiography showed successful closure with trivial residual shunt ([Online Video 9](#)). Eight months since fistula closure, the patient has had complete resolution of symptoms, with no heart failure readmissions, New York Heart Association functional class I symptoms, and normalization of right ventricular size.

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