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IMAGES IN INTERVENTION

Percutaneous Closure of an Aorto-Atrial Fistula After Surgery for Infective Endocarditis

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A 44-year-old man was referred to the cardiology outpatient clinic due to dyspnea on exertion. He had undergone aortic valve replacement with a biological prosthetic valve (Carpentier-Edwards 23 mm, Edwards Lifesciences, Irvine, California) and reconstruction of the mitroaortic junction due to infective endocarditis by *Streptococcus viridians*, both events in 2004. Transthoracic echocardiogram revealed a mildly dilated left ventricle with preserved function, a biological prosthetic valve with mild stenosis (effective area 1.3 mm^2), and an abnormal flow in the left atrium (Fig. 1A). A transesophageal echocardiogram confirmed a patent communication between the aortic root at the level of the noncoronary sinus and left atrium, close to the anterior mitral leaflet, with preserved prosthetic function (Fig. 1B, Online Video 1). A 64-multislice computed tomography scan demonstrated the defect and allowed the measurement of both long- and short-axis diameters (Figs. 2A and 2B). Angiographic evaluation showed normal coronary arteries, and a multipurpose diagnostic catheter could be placed through the defect (Fig. 1C), allowing the injection of contrast into the atrium (Online Video 2).

Using a right femoral approach, interventional cardiologists were able to cross the defect and deployed 2 Amplatzer Vascular Plug III occluders (AGA Medical Corp., Plymouth, Minnesota) (Figs. 3A and 3B). Monitorization with real-time 3D transesophageal echocardiography

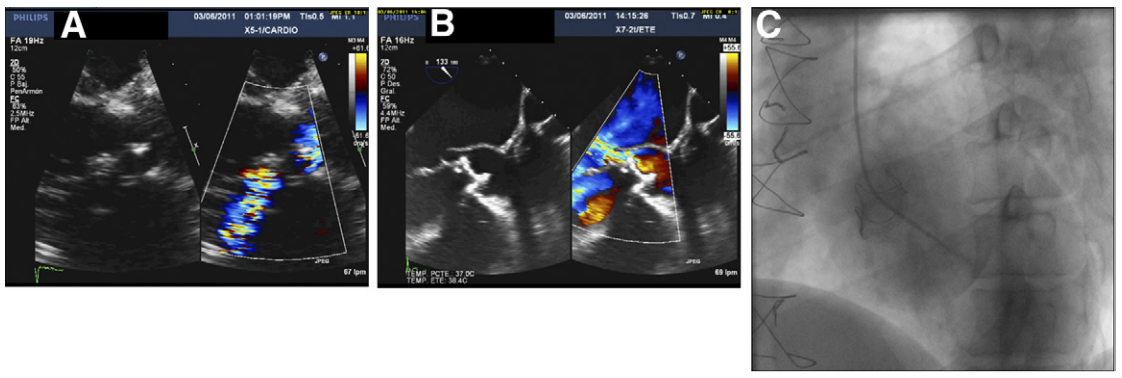

Figure 1. Diagnostic Work-Up: Echocardiogram and Angiography

(A) Parasternal long-axis 2-dimensional transthoracic echocardiogram showing an abnormal flow in the left atrium. **(B)** Transesophageal echocardiogram showing a patent communication between the noncoronary sinus and the left atrium. **(C)** Multipurpose catheter placed through the defect and injecting contrast into left atrium. See Online Videos 1 and 2.

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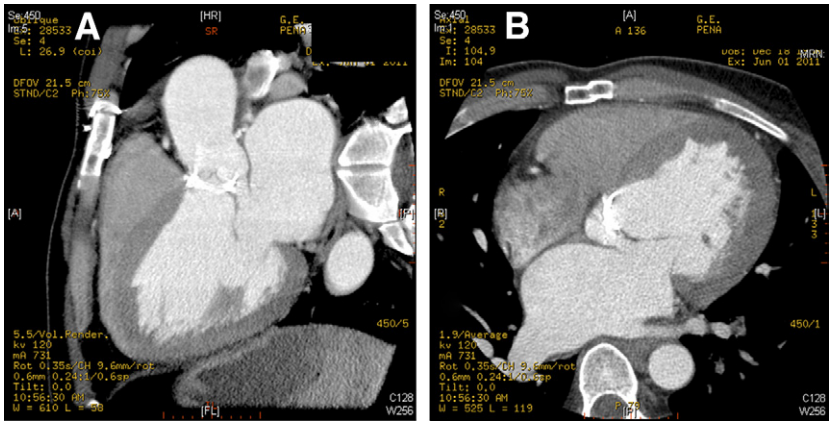

Figure 2. Diagnostic Work-Up: Computed Tomography Scan

A 64-slice computed tomography scan in sagittal **(A)** and transverse **(B)** axes showing the defect close to the prosthetic valve and the anterior mitral leaflet.

showed a marked decrease in the shunt magnitude and that both devices did not interfere with the mitral valve or aortic prosthetic valve function (Figs. 3C and 3D, Online Video 3).

Fistulas between the aorta and cardiac cavities after infective endocarditis are rare. These aortocavitary communications create intracardiac shunts, which may result

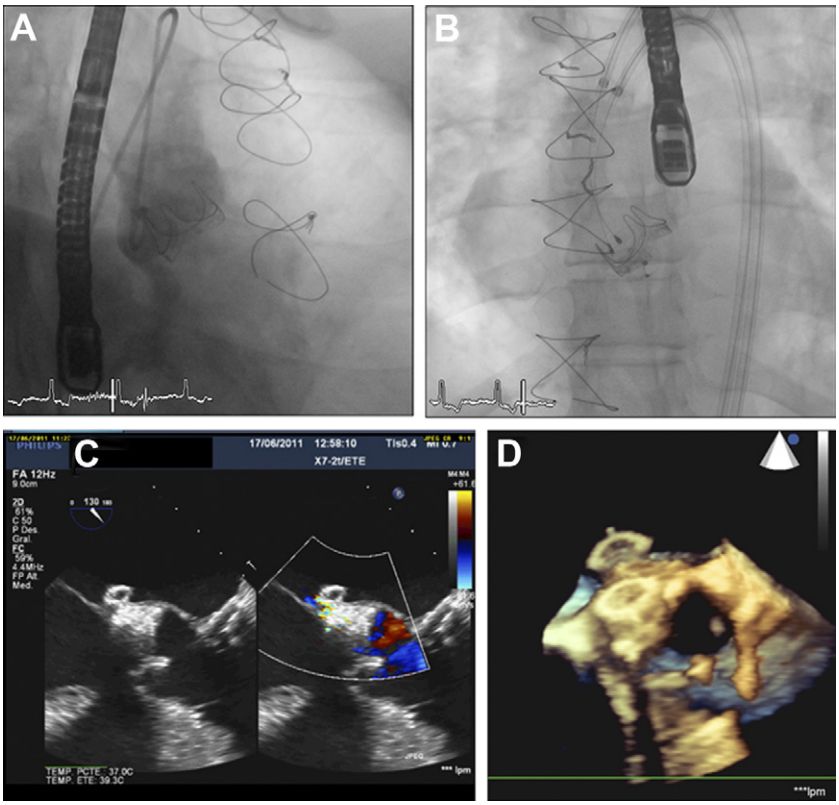

Figure 3. Percutaneous Closure of the Fistula With the Vascular Plug

(A) Pig-tail contrast injection showing the defect at the beginning of the closure procedure. **(B)** Two Amplatzer Vascular Plug III devices positioned through the fistula and ready to be deployed. **(C)** A 3-dimensional real-time transesophageal echocardiogram with the closure devices placed in the fistula and with minimum shunt detected with Doppler. **(D)** Three-dimensional transesophageal echocardiogram reconstruction of the closure device deployed in the aortocavitary communication. See Online Video 3.

in clinical deterioration (1,2). Although surgery is the treatment of choice, such a therapeutic option may cause serious complications, and the mortality could be high (3). Percutaneous treatment represents an attractive alternative, and the improvement of recent occlusion devices has placed this technique in the frontline for the treatment of these defects (4).

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APPENDIX

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