

Image in cardiology

Three-dimensional Model for Percutaneous Closure of an Iatrogenic Fistula

Modelo tridimensional para cierre percutáneo de fístula iatrogénica

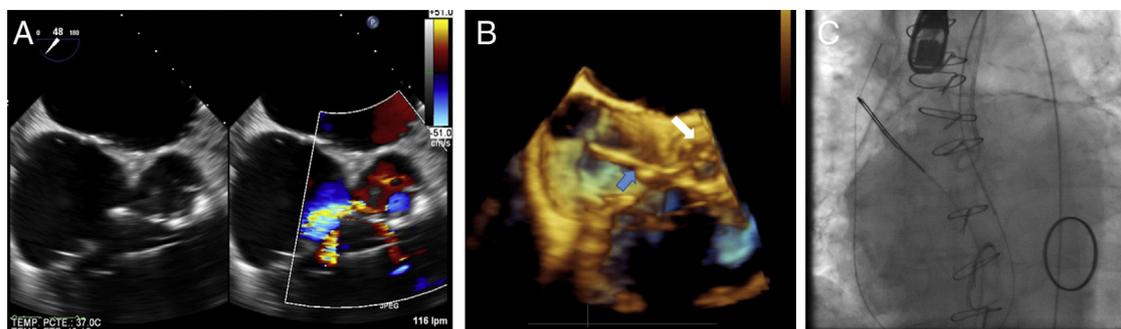
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Figure 1.

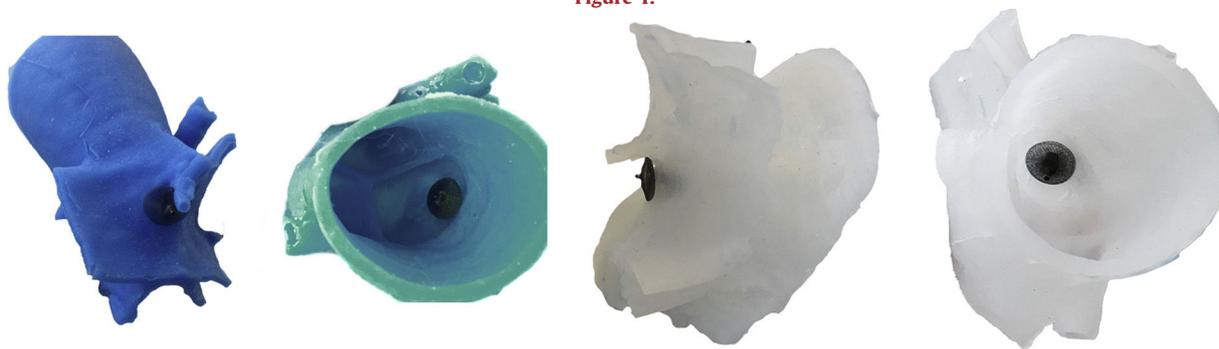


Figure 2.

A 74-year-old woman who had undergone mechanical mitral valve replacement and tricuspid annuloplasty 2 years previously was admitted with decompensated heart failure.

Echocardiography revealed a 4 x 3 mm fistula between the aorta and right atrium with high velocity flow between the anterior leaflet and the annuloplasty suture zone (Figure 1A).

Because the patient was symptomatic and had a high surgical risk, a percutaneous approach was used. Before the procedure, a 3-dimensional model was constructed (Figure 2), which allowed simulation of closure with different devices. The 3 × 6mm Amplatzer Duct Occluder II was chosen as this device achieved the most complete closure of the defect.

Via the left femoral artery, the fistula was cannulated from the aorta (Figure 1B, white arrow) with a hydrophilic guidewire (Figure 1B, blue arrow) and the aid of a 4-Fr multipurpose diagnostic catheter. To establish the arteriovenous circuit, the guidewire was captured with a snare catheter in the right atrium (Figure 1C) and externalized via the right femoral vein. Finally, the device previously tested in the model was deployed from the right femoral vein and complete closure was achieved with no residual flow.

Aorto-right atrial fistulae are an uncommon complication following cardiac surgery. Closure is recommended if patients are symptomatic, and the percutaneous approach is a therapeutic option. The creation of a 3-dimensional model prior to the procedure helps in planning and selecting the best closure device.

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