

IMAGES IN INTERVENTION

Percutaneous Closure of a Large Ascending Aorta Pseudoaneurysm Due to Mediastinitis Using an Amplatzer Occluder Device



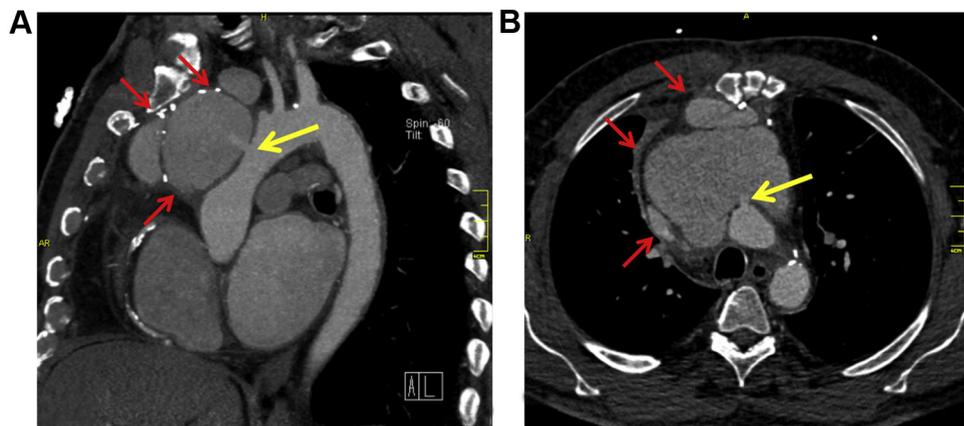
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A 63-year old man presented with chest pain. He had undergone coronary artery bypass graft surgery 15 years earlier and mitral valve repair due to severe regurgitation 6 months earlier with a simultaneous right internal mammary artery (RIMA) to left anterior descending artery graft. The

early postoperative period was complicated by mediastinitis, which required surgical drainage. Due to persistent infection, a vacuum device was used to drain inflammatory fluid.

During the present admission, the patient was afebrile with mild right arm edema, right jugular vein

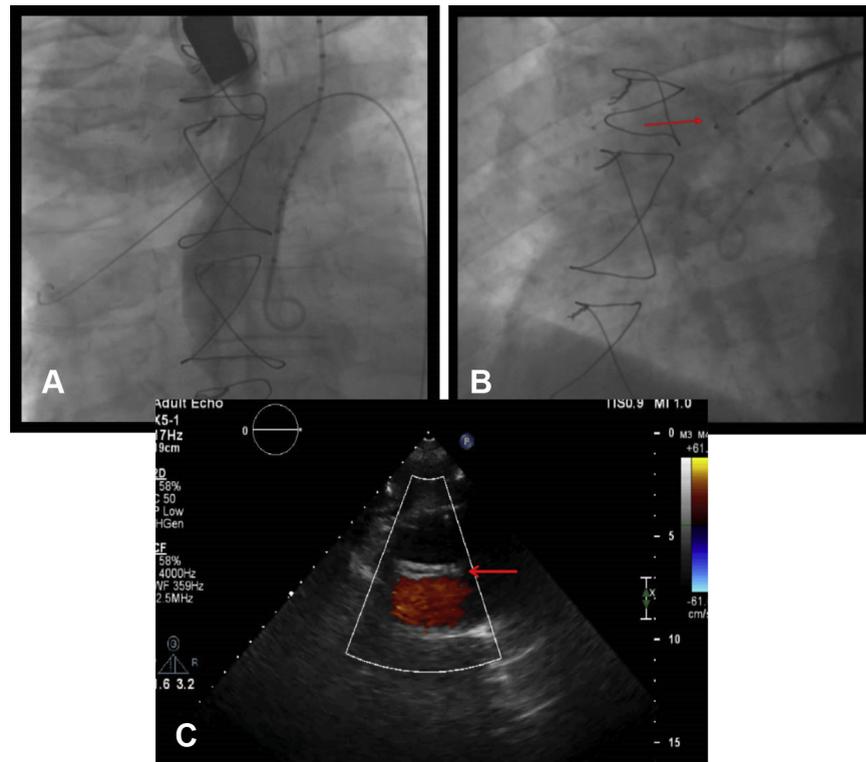
FIGURE 1 Computed Tomography Images Before Implantation



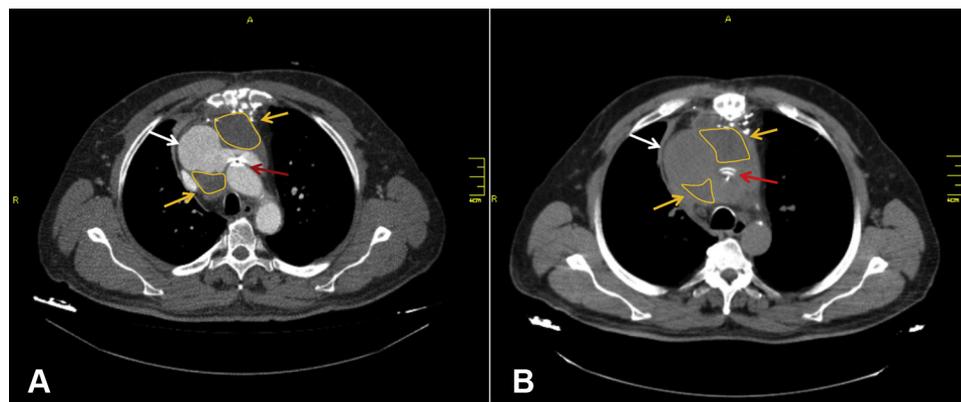
(A, B) Computed tomography scan demonstrating the pseudoaneurysm cavity (red arrows) and its orifice (yellow arrow) close to the innominate artery before intervention ([Online Video 1](#)).

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FIGURE 2 Amplatzer Occluder Device Implantation

(A) Aortography of the ascending aorta with a guidewire passed through the pseudoaneurysm mouth into its cavity during implantation ([Online Video 2](#)). (B) Angiographic image of the Amplatzer occluder device (**red arrow**) successfully implanted at the orifice of the aortic pseudoaneurysm ([Online Video 3](#)). (C) Transthoracic Doppler ultrasound image demonstrating the implanted device (**red arrow**) in the ascending aorta ([Online Video 4](#)).

FIGURE 3 Computed Tomography Images After Implantation

(A, B) Computed tomography scan demonstrating Amplatzer occluder device (**red arrow**), thrombus formation in the cavity (**yellow line and arrow**), and the remaining pseudoaneurysm cavity (**white arrow**) shortly after intervention.

distention, and audible systolic murmur. A computed tomography (CT) scan exposed a large aortic pseudoaneurysm with communication 1 cm below the innominate artery, probably as a result of inflammation, cannulation, and vacuum tubing (Figures 1A and 1B, Online Video 1).

Because of the 2 sternotomies, the RIMA graft across the sternum, and the position of the pseudoaneurysm, surgical treatment was not considered by the heart team. Thus, percutaneous closure of the pseudoaneurysm mouth with an Amplatzer septal occluder was selected.

However, there were concerns regarding the stability of the surrounding the orifice aortic rims and the support they could provide. Defect sizing was based on multisliced CT angiography, which showed the orifice to be 10 mm.

Via femoral access, a 0.035'-guidewire was inserted into the pseudoaneurysm, and over that, a 5-French multipurpose catheter was advanced into its cavity (Figure 2A, Online Video 2). The procedure was guided by angiography and transthoracic echocardiography (TTE). Finally, a 12-mm Amplatzer atrial septal

defect device was successfully delivered (Figure 2B, Online Video 3). This resulted in immediate flow elimination confirmed by Doppler (Figure 2C, Online Video 4). A repeat CT scan 10 days later confirmed a pseudoaneurysm size reduction by thrombus development in the cavity (Figures 3A and 3B).

In our case, the pseudoaneurysm cavity had relatively post-inflammatory fragile rims and large dimensions, which resulted in adjacent great vessel compression. Device implantation was even more challenging without TEE guidance due to the high orifice location. In conclusion, large post-inflammatory pseudoaneurysms can be successfully closed with off-label use of available equipment (1,2). However, the development of specific devices for on-label use is required.

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REFERENCES

1. Hussain J, Strumpf R, Wheatley G, Diethrich E. Percutaneous closure of aortic pseudoaneurysm by Amplatzer occluder device-case series of six patients. *Catheter Cardiovasc Interv* 2009;73:521-9.
2. Bhindi R, Newton J, Wilson N, Ormerod OJ. Percutaneous plugging of an ascending aortic pseudoaneurysm. *J Am Coll Cardiol Intv* 2008;1:327-8.

KEY WORDS mediastinitis, percutaneous closure, pseudoaneurysm

 **APPENDIX** For supplemental material and videos, please see the online version of this article.