Percutaneous Closure of Giant Saphenous Vein Graft Aneurysm

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A 78-year-old man was referred to our institution for treatment of an unusual expanding aneurysm. There was a history of prior coronary artery bypass surgery in 1999. Subsequently, he had developed exertional dyspnea, and chest X-rays demonstrated a right chest mass that was increasing in size. Multislice computed tomography revealed a partially thrombosed 16.5 × 6.5 cm aneurysm arising from the site of the saphenous vein conduit to the right coronary artery and extending in the distribution of this graft, suggesting a true saphenous vein graft aneurysm (Figs. 1A and 1B). This aneurysm impinged on the diaphragm, compressed the liver inferiorly, and did not communicate with the distal right coronary artery.

Due to the expanding aneurysm and potential for rupture, closure was recommended. A surgical approach was judged possible but required repeat sternotomy and use of cardiopulmonary bypass. Percutaneous closure was judged to be feasible and much less invasive and was elected by the patient.

From a femoral approach, a 7-F JR4 guide catheter (Medtronic, Inc., Minneapolis, Minnesota) was used to engage the neck of the aneurysm. Angiography was performed (Fig. 2A) and a 5 × 20 mm balloon was used to “size” the neck at approximately 3 mm in diameter (Fig. 2B). A stiff guidewire was introduced (Fig. 2C) over which a 9-F Amplatzer delivery sheath was cannulated into the neck of the aneurysm. A 4-mm Amplatzer Septal occluder device (AGA Medical, Golden Valley, Minnesota) was deployed (Fig. 2D), occluding the aneurysm neck. Aortic angiography and transesophageal echocardiography confirmed the absence of flow into or out of the aneurysmal cavity (Fig. 2E).

The patient was discharged the following day on aspirin and clopidogrel (75 mg). At 3 months post-procedure, the patient was asymptomatic and fully active.

Aortocoronary saphenous vein graft aneurysms are a rare complication of coronary artery bypass graft surgery. The incidence is unknown but may be increasing with increasing use of advanced imaging techniques (1–3). They often present as a mediastinal mass. Symptoms can be nonspecific and include dyspnea, chest discomfort, and hemoptysis. Rupture is associated with a high mortality rate. They are usually treated surgically, although secondary thrombosis due to coil deployment has been described (2,4).

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REFERENCES

Figure 1. Multislice Computed Tomography

(A) Shallow left anterior oblique view showing large aneurysm filled with thrombus with smaller patent cavity that communicates with the aorta. (B) Image reconstruction demonstrating relationship of aneurysm cavity to aorta. RCA = right coronary artery.

Figure 2. Angiography and Closure of Aneurysm in Shallow Left Anterior Oblique View

(A) Angiogram of aneurysm cavity. (B) Use of coronary balloon to “size” neck of aneurysm. (C) Stiff wire with formed J and Amplatzer delivery sheath. (D) Device deployment. (E) Post-deployment aortogram demonstrates absent flow into aneurysm.