

## IMAGE FOCUS

doi:10.1093/ehjci/jes131  
Online publish-ahead-of-print 26 June 2012

## Giant pseudoaneurysm of a saphenous vein graft

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We present a 74-year-old man with a history of ischaemic heart disease who underwent coronary artery bypass graft surgery 25 years ago, and who presents with a cardiac mass in a routine echocardiogram (ECG).

On clinical exam he was normotensive and asymptomatic. ECG showed sinus rhythm and changes suggesting lateral ischaemia. Chest X-ray revealed a voluminous mass in relation with the right chambers.

A new transthoracic and transoesophageal echocardiography was performed, showing a 65 × 86 mm rounded mass next to the right atrium containing a central vascular structure (Panels A and C; see Supplementary data online, Videos S4–8; Figures S9 and 10). Severe mitral regurgitation and mild systolic dysfunction of the left ventricle were also observed (see Supplementary data online, Video S1).

Subsequent CT scan imaging showed that the mass was a voluminous permeable pseudoaneurysm of a saphenous vein graft (SVG) connecting the aorta to the posterior interventricular artery. It contained hourglass-shaped thrombotic material with no clear identification of a distal anastomosis. The approximate size of the clot was similar to that referred to in the echocardiography. The mass effect on RA and RV was also observed (Panel B; see Supplementary data online, Figures S2 and 3). Coronary angiography confirmed these findings.

Based on these findings the patient was proposed for surgery including aneurysmectomy, mitral valve replacement, and a new CABG.

Biopsy taken after mass resection revealed thrombotic material with no vascular wall found, supporting the diagnosis of pseudoaneurysm of the SVG (Panel D of the image and see Supplementary data online, Figure S11; Panels A and C show the mass during surgery, Panels B and D show macroscopic samples of thrombotic material).

SVG pseudoaneurysms are uncommon complications of the CABG that can appear from the early postoperative period to several years later. Clinical presentation can range from asymptomatic patients to fatal outcomes such as rupture and sudden death. A significant proportion of these patients may be diagnosed by a routine ECG. The differential diagnosis between aneurysm and pseudoaneurysms is not always easy. Early aneurysms and pseudoaneurysms occur in the anastomotic area and are usually related with a deficient surgical technique. On the other hand, late aneurysms and pseudoaneurysms are mostly related with atherosclerosis. Late true aneurysms are usually located in the body of the graft, whereas false aneurysms are mostly located close to the anastomosis. In the case reported, the whole graft was affected. Different imaging techniques suggested the diagnosis of pseudoaneurysm, and confirmed when no vascular wall was found in the biopsy.

Surgery is the elective treatment although endoluminal exclusion with covered stents for patients who are poor operative candidates has also been used. Close follow-up with imaging techniques and clinical evaluation has been proposed as the elective treatment for asymptomatic patients.

This case demonstrates the benefit of combining imaging modalities for the identification and management of thoracic masses. Echocardiography may be sufficiently sensitive for determining their origin, but the finding should be confirmed by biopsy if possible.

Supplementary data are available at *European Heart Journal – Cardiovascular Imaging* online.

