



A huge thrombosed aneurysm of a saphenous vein graft leading to compression of cardiac structures: role of multimodality imaging

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Aneurysmal change of saphenous vein grafts (SVG) is a rare condition that predominantly develops 10–20 years after coronary artery bypass graft (CABG).^[1] Natural course includes mechanical complications due to mass effect, myocardial infarction and aneurysmal rupture. Aneurysmectomy can be considered when it induces such complications. We demonstrate complete set of diagnosis, treatment and post-operative imaging of a huge SVG aneurysm that was successfully treated with surgical resection.

A 69-year old male was admitted due to dyspnea (New York Heart Association class III) and chest pain (Canadian Cardiovascular Society class II). He had a history of quadruple aortocoronary bypass with SVG to the mid left anterior descending artery (LAD), distal left circumflex artery, obtuse marginal branch (OM), and right coronary artery due to 3-vessel disease 20 years ago. He underwent redo-CABG due to total occlusion of native distal LAD and posterolateral branch seven years ago [left internal mammary artery (LIMA) to distal LAD, diagonal branch, OM and posterior descending artery (PDA) with radial artery Y-graft]. Initial chest X-ray showed abnormal silhouette on the right cardiac border with dominant left pleural effusion. The echocardiography revealed a round shaped huge echogenic mass mainly compressing left atrium (LA) and compromising mitral inflow with exaggerated respiratory variation by pulsed wave Doppler (Figure 1A). Coronary angiography showed a completely occluded SVG to OM in the proximal portion and a patent LIMA to distal LAD, diagonal branch, OM and PDA. On cardiac multi-slice computed tomography (CT) with 3D reconstruction, a huge aneurysm with thrombus formation arising from the SVG to OM was diagnosed (Figure 1B, 1C). Owing to intractable symptom

with hemodynamic significance despite optimal medical therapy, surgical resection was planned. The aneurysm was originating from proximal portion of the SVG to OM branch. Proximal communicating site of aneurysm was excised and repaired with 3–0 prolene suture. Aneurysmal sac was completely filled with old hematoma and was totally excluded (Figure 2A). After that, distal communicating site of SVG to OM were repaired with 4–0 prolene suture. Post-operative echocardiography and CT showed expansion of cardiac chambers with improved respiratory mitral inflow variation (Figure 2B, 2C). The patient was discharged with improved clinical symptoms and straightforward post-operative recovery. He had a stable condition at three months follow up in the outpatient clinic after discharge.

Aneurysmal change of SVGs is a rare condition that predominantly develops 10–20 years after CABG.^[1] The possible mechanisms of their development include atherosclerotic generation leading to weakening and dilatation of grafts, varicosis in the graft and vessel injuries during harvesting.^[2] Patients who have chest pain and mediastinal mass on the chest X-ray with history of previous bypass surgery should be suspected for the diagnosis of SVG aneurysm.^[3] Coronary angiography, CT or magnetic resonance imaging are used to confirm the diagnosis and to determine precise location, patency and communicating site of the aneurysmal sac for the guidance of surgical approach. In this case, coronary angiography was not informative, because SVG ostium to OM branch was totally occluded and aneurysm was not visualized. Echocardiography can be performed easily and safely in any condition of the patients and is useful for finding hemodynamic disturbance. The optimal treatment strategy is still unclear. However, surgery to remove or exclude the aneurysm should be considered when it induces myocardial ischemia or mechanical com-

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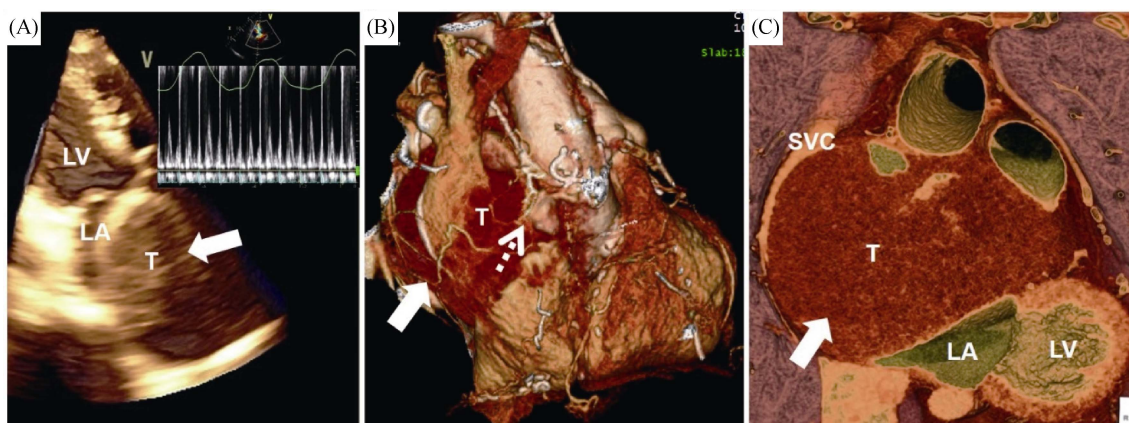


Figure 1. Pre-operative echocardiography and cardiac computed tomography. (A): Echocardiography showing a huge echogenic mass (thick arrow) compressing LA and compromising mitral inflow (respiratory variation: 29%); (B, C): 3D reconstruction of cardiac computed tomography showing a huge aneurysm (thick arrow) filled with thrombus arising from saphenous vein graft to obtuse marginal branch (dotted arrow). LA: left atrium; LV: left ventricle; SVC: superior vena cava; T: thrombosed aneurysm.

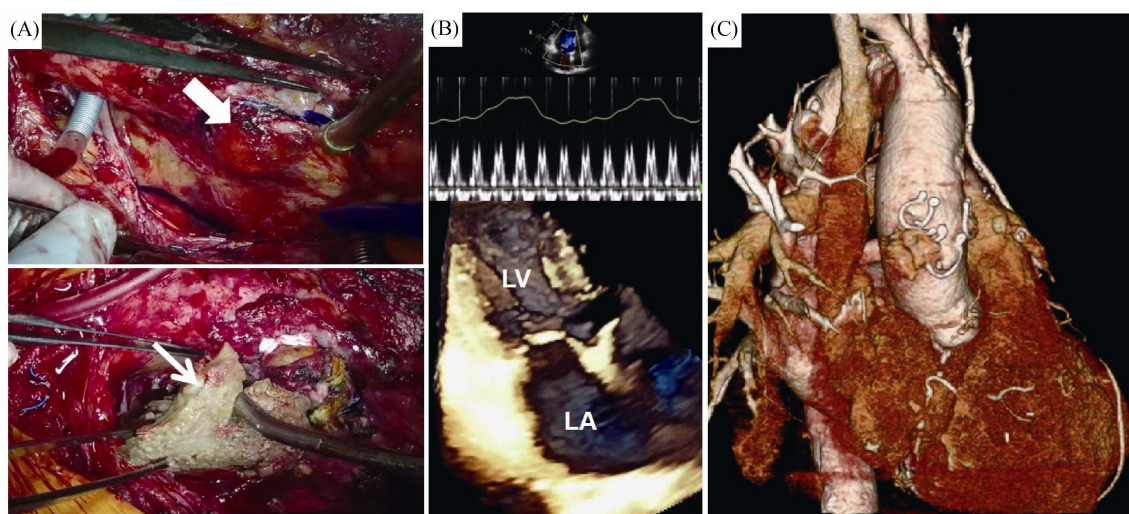


Figure 2. Intra-operative photograph and post-operative imaging findings. (A): A large saphenous vein graft aneurysm (thick arrow) containing old hematoma (thin arrow) exposed during surgery; (B, C) post-operative echocardiography and cardiac computed tomography showing complete resection of thrombosed aneurysm with expansion of cardiac chambers and improved hemodynamics (respiratory variation of mitral inflow: 6%). LA: left atrium; LV: left ventricle.

plication.^[4] The present case demonstrates complete set of diagnosis, surgical treatment and post-operative findings in patients with thrombosed SVG aneurysm. Multimodality imaging played an essential role to evaluate a thrombosed SVG aneurysm with hemodynamic derangement and improvement at follow up after surgical resection.

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