Ruptured saphenous vein graft aneurysm

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Received 29 July 2013; received in revised form 27 August 2013; accepted 28 August 2013

Abstract

Ruptured saphenous vein graft (SVG) aneurysm is a rare source of significant morbidity and mortality. SVG is a common technique of coronary artery bypass grafting (CABG), but vein graft aneurysm and ruptured SVG aneurysm have not received the required attention as only few case reports exist. We present the case of a 50-year old man with ruptured vein graft aneurysm who had significant postoperative complications following surgery, and outline some preventive/management strategies.

Keywords: Saphenous vein graft • Aneurysm • Rupture • Management

CASE REPORT

A 50-year old male, heavy smoker, presented with chest pain and was found to have a ruptured saphenous vein graft (SVG) aneurysm. At the age of 30, he had percutaneous coronary intervention to the left anterior descending artery (LAD). Five years later, he had coronary artery bypass grafting (CABG) ×4 with left internal mammary artery (LIMA) graft to LAD and SVG to diagonal, right coronary and obtuse marginal (OM) arteries. A cardiac magnetic resonance imaging done at the age of 45 showed features of ischaemic cardiomyopathy. A biventricular implantable cardioverter defibrillator (ICD) was implanted with good remodelling response. The patient presented again with angina symptoms at the age of 50 and angiography showed a patent LIMA to LAD and the vein graft to the OM artery had an incompletely thrombosed 4.7 cm aneurysm (Fig. 1). He was referred for redo CABG, and a day prior to admission for surgery, he presented with chest pain. A computerized tomography (CT) scan showed an increase in size of the SVG aneurysm to 6.7 × 6.7 cm over a 6-month period, associated with haemopericardium features consistent with rupture (Fig. 2). Electrocardiography (ECG) showed low voltage with wide spread ST-segment depression. He was stabilized and had emergency redo off-pump CABG ×2 with SVGs to posterior descending artery (PDA) and OM, and excision of the vein graft aneurysm to the OM artery. He required inotropic support. The postoperative period was complicated by chest infection, acute respiratory distress syndrome, left subclavian and axillary vein thrombosis, left hemiparesis, which later resolved, and a cardiac arrest which required cardiopulmonary resuscitation (CPR). He required prolonged respiratory support with tracheostomy and decannulation after 60 days in intensive care. The patient was still doing very well at 1-year follow-up.

DISCUSSION

SVG is a common technique of CABG and vein graft disease is the drawback of this technique. SVG aneurysm is a rare but significant source of morbidity and mortality. This entity has not received the desired attention from clinicians and researchers as only few case reports on the subject exist. The incidence of minor dilatation of SVG has been reported as up to 14%, but significant aneurysmal dilatation is unusual with an incidence of <1% [1, 2].

The clinical features of SVG aneurysm are variable, ranging from asymptomatic incidental finding [3], mediastinal mass with pressure effect on atria [4], right ventricle to coronary artery. It may present with haemoptysis, angina, myocardial infarction or fistula formation. SVG aneurysm should be considered in diagnosis of patients with mediastinal mass who had previous SVG. This is a preventable source of significant morbidity as demonstrated by our case. Our patient stayed 60 days in intensive care as a result of multiple postoperative complications. Most reported cases of SVG aneurysm were treated prior to rupture either surgically or with percutaneous closure using covered stent grafts, coil embolization, vascular plug insertion and ethylene vinyl alcohol copolymer injection, and made an uneventful recovery. It is essential to determine a threshold at which intervention on SVG aneurysm should be done to avoid rupture. We recommend the following criteria for intervention on SVG aneurysm: size >3 cm, any symptoms attributable to the graft, suboptimal graft patency and when found during any other heart operation. We suggest that these cases should be discussed at multidisciplinary team meetings and the least invasive and safe options be pursued.

No cases of arterial graft aneurysm have been reported, and it is advisable for cardiac surgeons to use arterial grafts for CABG especially in younger patients. Where vein grafts are used, avoidance of large calibre veins and gentle handling will be helpful to prevent aneurysms.

CONCLUSION

Ruptured SVG aneurysm is a rare, preventable source of significant morbidity and mortality; its pathology needs further evaluation to develop an organized management strategy.

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Funding

Conflict of interest: none declared.

REFERENCES


Figure 1: Saphenous vein graft aneurysm on CT scan (A) and angiogram (B).

Figure 2: CT scan showing ruptured saphenous vein graft aneurysm.