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Case Report

Pseudoaneurysm of the Ascending Aorta after Aortic Valve Replacement that Presented as a Pulsatile Chest Wall Mass

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Abstract

We describe the case of a man incidentally found to have a pseudoaneurysm of the ascending aorta at the site of a previously (12 years ago) implanted metallic prosthetic aortic valve. Transthoracic echocardiography and computed tomography images demonstrate the pseudoaneurysm. The patient has undergone surgical repair with a good result.

Keywords: Ascending aorta and surgical repair, prosthetic valve, pseudoaneurysm

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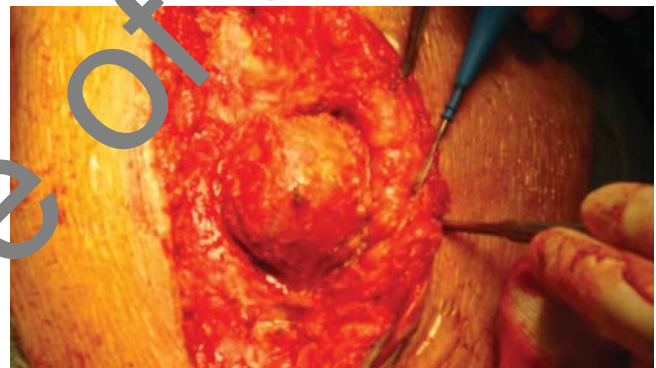


Figure 1. Pulsatile chest wall mass which was an aortic aneurysm full of clotted blood.

Introduction

Pseudoaneurysm of the ascending aorta is a rare, but life threatening complication of open heart surgery particularly following aortic valve replacement and surgeries of the thoracic aorta. Several predisposing factors have been found such as dissection of native aorta, infection, connective tissue disorders, preoperative hypertension, aortic calcification and the blowout of the aortotomy site. Pseudoaneurysm of the ascending aorta could present itself as a pulsatile mass, angina due to graft compression, chest pain, dysphagia or stridor. Repeat surgery for a large pseudoaneurysm of the ascending aorta is a surgical challenge. Sternal

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re-opening can precipitate fatal haemorrhage or cerebral air embolism.

Case Report

A 45-year-old male with a history of mechanical aortic valve replacement twelve years prior presented with a pulsatile chest wall mass and non-exertional chest pain, since four months previous. The mass, located on the right sternal border was 10 × 12 cm in size (Figure 1). Its size had increased over the past month. On physical examination, stable vital signs and metallic heart sounds were noted. Transthoracic echocardiography showed an ejection fraction of 55% and normal function of the bileaflet prosthetic valve with a mean gradient of 5 mmHg. Also noted was a large cavity at the anterior side of the ascending aorta that extended to the ostium of the right coronary artery (RCA) with a compressive effect on the right ventricle and main pulmonary artery. The mass was adjacent to the RCA ostium, therefore catheterization was aborted and the patient underwent a computed tomography angi-

ography of the coronary arteries which showed patent arteries and confirmed the presence of a pseudoaneurysm with a compressive effect on the RCA. The patient was transferred to the operating room and after a sternotomy, the pseudoaneurysm was excised and a Dacron graft anastomosed to the sinotubular junction. The patient was easily weaned off with no complications.

Discussion

Pseudoaneurysms of the aorta that follow aortic procedures are a rare, life threatening complication which usually occurs at anastomosed suture lines, or at the aortotomy or aortic cannulation sites. The pathophysiology involves transmural disruption of the aortic wall and containment of the leakage by surrounding tissues. Most episodes have infective causes but connective tissue disorders and dissection of native aorta are other predisposing factors.¹ Symptoms include mass effect of mediastinal structures and angina chest pain due to the compressive effect on coronary grafts. Contrast computed tomography scanning, MRI and echocardiography are useful in the diagnosis of a pseudoaneurysm of the ascending aorta. Surgical repair is mandatory and emergent once the diagno-

sis is established.^{2,3}

The most important issue is to protect the brain and systemic perfusion prior to opening the chest, because inadvertent pseudoaneurysm rupture during a repeat sternotomy or mediastinal dissection can lead to a catastrophic intraoperative hemorrhage.⁴ To secure the circulation before sternotomy, femoro-femoral bypass and hypothermic circulatory arrest was applied in this case. Previous reports also used this procedure to secure systemic perfusion.

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