

ASCENDING AORTA PSEUDOANEURYSM PRESENTING AS A PRESTERNAL PULSATILE MASS

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Abstract

Sixteen months after the replacement of the ascending aorta an 80-year-old lady was referred to our center for a presternal pulsatile mass. Computed tomography scan showed an ascending aorta pseudaneurysm extended through the sternum and filling the subcutaneous space. Surgical correction was successful. Specific surgical considerations of this case are discussed.

INTRODUCTION

Pseudoaneurysm formation after ascending aorta or aortic root replacement by a vascular prosthesis is a consequence of the dehiscence of the suture between the prosthesis and the aortic wall. The dehiscence causes the extravasation of blood that can be initially contained by remnants of the adventitia as well as by adhesions of the mediastinal structures avoiding a fatal haemorrhage. However, the formation of a pressurized chamber with blood flow in communication with the aortic lumen tends to expansive growth, which can cause numerous complications^{1,2}.

We present the case of a patient who underwent an ascending aortic aneurysm resection and aortic valve replacement who consulted for an asymptomatic, rapidly growing pre-sternal pulsatile mass.

CASE REPORT

An 80-year-old lady diagnosed with aortic regurgitation and ascending aortic aneurysm was referred for valve replacement and aneurysm resection. During the intervention, the femoral artery and the right atrium were cannulated. Immediately after initiation of cardiopulmonary bypass a retrograde aortic dissection progressed proximally into the aortic arch and ascending aorta. Deep hypothermic circulatory arrest was institut-

ed. The suprasinus ascending aorta was resected and a Dacron graft was sutured distally. The graft was cannulated, clamped, and antegrade perfusion was established. An aortic valve bioprosthesis was implanted, and the vascular graft was sutured to the proximal aorta.

The postoperative evolution was complex, requiring two reoperations for bleeding and prolonged mechanical ventilation. The patient also presented cerebellar ischemic stroke of possible cardioembolic origin secondary to episodes of paroxysmal atrial fibrillation. Persistence of residual dissection of the aortic arch and descending thoracic aorta was observed.

The patient was discharged and one year later consulted for retrosternal pain and sudden onset dyspnea. A computed tomography scan was performed and pulmonary embolism was ruled out. The clinical condition was diagnosed as hypertensive crisis.

Four months later she consulted for a pre-sternal tumour and her general practitioner performed a fine-needle puncture aspiration of the lesion, obtaining a bloody-looking fluid. The patient was referred to our centre. Upon admission, a 6x5 cm pulsatile pre-sternal mass was observed, with no signs of inflammation (Figure 1A). A computed tomography scan demonstrated an aortic pseudoaneurysm with leakage of contrast at the proximal graft anastomosis. The pseudoaneurysm extended through the sternum towards the subcutaneous plane (Figure 1B).

Due to the fragility of the patient, it was decided to treat only the pseudoaneurysm without correcting the persistent false

lumen at the level of the aortic arch. Before re-sternotomy, the subclavian artery and the femoral vein were cannulated. The patient was connected to the extracorporeal circulation circuit, cooled to 26 degrees (Figure 2) and afterwards a short circulatory arrest was instituted. The pre-sternal pseudoaneurysm was incised and the sternum was opened. After removing some thrombotic material, adhesences were dissected and cardiopulmonary bypass was re-established. A point of bleeding was identified between the graft and the proximal aorta which was corrected without aortic clamping. The postoperative course was uneventful.

DISCUSSION

Risk factors for pseudoaneurysm formation after ascending aortic replacement include infection, some genetic aortopathies, the use of formaldehyde sealants, and acute dissection^{1,2}. The time lapse between surgery and pseudoaneurysm formation is highly variable from one month up to two decades²⁻⁴. Due to their growth tendency, pseudoaneurysms can compress the surrounding structures and cause symptoms such as chest pain, dyspnea, heart failure and superior vena cava syndrome^{1,2}. In some cases, pseudoaneurysms may be asymptomatic and constitute incidental findings observed during a radiological examination. Exceptionally, they can erode the sternum or infiltrate through the sternotomy when bone healing is incomplete and appear as a pulsatile subcutaneous mass in the pre-sternal area³⁻⁶. The approach to ascending aortic pseudoaneurysms generally requires peripheral cannulation and deep hypothermia

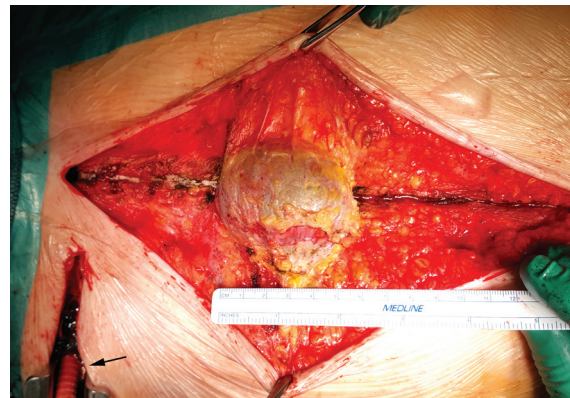


Figure 2

Intraoperative image. The pre-sternal extension of the pseudoaneurysm is appreciated before the opening of the thorax (6 x 5 cm). The arrow indicates the cannulation of the right subclavian artery using a Dacron graft for connection to the cardiopulmonary bypass circuit.

with a brief circulatory arrest before re-sternotomy to prevent bleeding^{1,2}. Except in cases with an active infection, direct closure of the dehiscence between the aorta and the vascular graft may be enough to correct the problem². The case described represents an unusual complication of ascending aortic surgery and highlights the need for close follow-up with imaging tests in these patients, especially when they have undergone surgery for acute dissection or a genetically based aortopathy.

Author Disclosure Statement: The authors declare that they have no conflict of interest

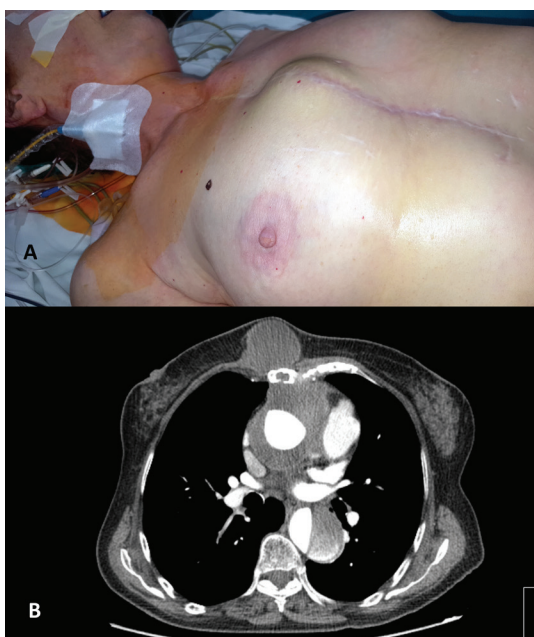


Figure 1

A: Pre-sternal mass at the level of the middle third of the sternum. B: Computed tomography. Mediastinal pseudoaneurysm is direct contact with the sternum. Blood passes the sternum through the midline storing under the skin. Descending thoracic aorta dissection persists.

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