SHORT REPORT

Endovascular Repair of Intra-thoracic Left Subclavian Artery Aneurysm with a Stent Graft

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Introduction

True aneurysms of the intra-thoracic portion of the subclavian artery are rare, comprising 3.5% of all peripheral aneurysms and the presence of associated aneurysms has been reported in as many as 46% of patients.\(^1\) The morbidity and mortality from standard surgical treatment is relatively high.\(^2\) Transluminal implantation of a covered stent graft has been reported as a feasible and safe procedure for the treatment of such aneurysms.\(^2\)–\(^11\) We present here one case of true aneurysm of the intra-thoracic portion of the left subclavian artery successfully treated by an endovascular technique.

Case Report

A 76-year-old male patient was admitted to our hospital with left sided chest pain and a productive cough. He has a history of coronary artery disease with a myocardial infarction 6 years previously. He had also had an emergency operation for a large ruptured abdominal aortic aneurysm treated at our department with a tube-graft 4 years prior to this presentation. A chest x-ray revealed a large mass in the upper lobe of the left lung and a CT-scan suggested the lesion was a 12 cm aneurysm of the left intrathoracic subclavian artery (Fig. 1). He was referred to the vascular unit for treatment.

Angiography was performed to define the aneurysm which had a proximal and distal neck of 10 and 6 mm diameter respectively. The length of the proximal neck was 4 cm (Fig. 2). Under general anaesthesia the patient was placed supine with his left arm outstretched at an angle of 90°. The neck and thorax were prepared and draped in the event that an endovascular procedure could not be carried out.
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An Amplatz super-stiff guide wire was inserted via the right common femoral artery, advanced from the aortic arch through the aneurysm and retrieved with a goose-necked catheter passed through a 12 Fr introducer sheath placed in the left axillary artery. A 10 mm Wallgraft was deployed to the distal portion of the aneurysm and a 12 mm Wallgraft in the proximal portion. Completion angiography revealed successful exclusion of the aneurysm and preservation of the left vertebral artery (Fig. 3).

The postoperative course was uneventful. A CT scan performed after 48 h confirmed the complete exclusion of the aneurysm and the patient was discharged on the 3rd postoperative day. He remains well 3 months after the operation. A CT scan at this time confirmed that the aneurysm was completely thrombosed, has diminished in size (10.6 cm in diameter) and the graft remains patent (Fig. 4).

Discussion

The standard management of a subclavian artery aneurysm has until now been open surgical repair.1,2 Surgery has a perioperative mortality ranging from 3–8% and a morbidity rate ranging from 6–8%.2 Transluminal placement of a stent graft is a new approach that can be very helpful in the treatment of such aneurysms and has the potential of decreasing the morbidity, mortality and costs involved in the care of these patients.

The first experience of endovascular treatment was reported in 1993 for a false subclavian aneurysm secondary to an unsuccessful attempt to gain vascular access for total parenteral nutrition.1 From a review of the literature,2–11 since then 34 cases of endovascular treatment have been reported, in 21 cases of false aneurysms and in 13 cases of true aneurysm. The stents were covered with dacron or PTFE and during deployment major complications were not reported with complete exclusion of the aneurysm in all cases. During the follow-up period ranging from 2 to 30 months no endoleaks were observed and in no case was there occlusion of the stent graft.2–11
In our opinion endovascular repair should be performed in the operating theatre in case of failure or complication when open surgery has to be used. However, endovascular repair of a subclavian artery aneurysm as a primary treatment is technically feasible, safe and shows promise. Although early results are encouraging longer term follow up will be necessary to fully assess the effectiveness of this technique before it can be recommended for widespread use.

References