CASE REPORT

Endovascular Treatment of a Ruptured Thoracic Aortic Aneurysm

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Introduction

The surgical treatment of thoracic and thoraco-abdominal aortic aneurysms is associated with major morbidity and mortality. Emergency surgery for rupture of a thoracic aortic aneurysm has a mortality rate of greater than 50%. We report the endovascular management of a ruptured distal thoracic aneurysm.

Case Report

A 70-year-old male, heavy smoker (more than 20 cigarettes/day) was admitted as an emergency with acute chest pain, moderate anaemia (Hb 11.5/dl) and hypotension. A chest and abdominal CT angiogram showed a thoracic aorta aneurysm above the coeliac trunk and a left haemothorax (Fig. 1A).

The normal thoracic aorta had a diameter of 25 mm and the length of the saccular aneurysm neck was 3.5 cm. A 30-mm × 5-cm Vanguard endoprosthesis was chosen.

Emergency endovascular surgery was performed under general anaesthesia from the right femoral artery. After i.v. administration of 5000 IU of heparin, the device was placed in the usual manner into the thoracic supraceliac aorta. Angiography documented an inferior endoleak, and a second similar stent graft was successfully delivered. The overlapping endografts produced a complete aortic aneurysm exclusion on the final aortogram and CT angiogram (Fig. 2B, Fig. 1B).

The patient was extubated in the operating room, transferred to the recovery room with no requirement for intensive care. On the first postoperative day the patient was well and mobilised. A left thoracocentesis evacuated 350 ml of blood.

Discussion

Since the pioneering works of Parodi using endovascular stent graft in the treatment of infrarenal aortic aneurysms, this minimally invasive technique has rapidly evolved as a potential alternative to conventional surgical treatment.

The thoracic aorta has a diameter of over 25–30 mm and, because of the limited availability of large stent grafts this technique has had a limited use in the management of pathology of the thoracic aorta. Only a few vascular centres in the world report important experience in thoracic aortic stenting.

The advantages of this minimally invasive technique are elimination of the complications of thoracotomy or thoraco-phreno-laparotomy. In particular, respiratory and cardiac postoperative failure should be reduced, and aortic cross-clamping is unnecessary, thus reducing the risk of haemorrhage, paraplegia and renal failure.

The requirement for accurate imaging limits the use of this technique in the management of ruptured thoracic aortic aneurysm. With increasing experience, technological improvements and major availability of different-size covered stent grafts, this endovascular technique may be applied in the future to acute contained rupture of thoracic aorta, especially in haemodynamically stable patients.
Fig. 1. (A) CT angiography shows contained rupture of a distal thoracic aortic aneurysm. (B) Successful exclusion of ruptured aneurysm.

Fig. 2. (A) Intraoperative aortogram shows the aortic aneurysm. (B) Final aortogram shows successful exclusion of aneurysm.

References


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