VASCULAR AND ENDOVASCULAR TECHNIQUES

Transabdominal Repair of Type IV Thoraco-abdominal Aortic Aneurysms

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Introduction

Aneurysms that involve the supracoeliac and/or descending thoracic aorta have been repaired through a left thoraco-abdominal incision (Fig. 1). While this affords excellent exposure of the entire thoraco-abdominal aorta, it necessitates division of the left costal margin and at least partial transection of the left hemidiaphragm to permit adequate separation of the ribs. Both peritoneal and pleural cavities are entered and the left lung is collapsed or retracted to expose the descending thoracic aorta.

Unsurprisingly this approach is associated with a high incidence of pulmonary complications, particularly in those patients with pre-existing pulmonary disease. Thus of 130 patients who underwent "conventional" repair of a thoraco-abdominal aortic aneurysm at St. Mary's Hospital between 1983 and 1993, 30% required ventilation for more than 5 days while in a further 16% postoperative recovery was delayed by persistent left basal collapse, consolidation and infection or effusion.

In order to reduce the incidence of such complications we have developed an alternative approach to "thoraco-abdominal" aneurysms that start to dilate at the level of the diaphragm (i.e. Crawford's Type IV), effecting repair through a subcostal incision (Fig. 2).

Operative Technique

The peritoneal cavity is entered and exploratory laparotomy performed. A fixed retractor such as an Omnitract is an essential aid to adequate exposure. The left colon is then mobilised by incising the lateral peritoneal reflection behind the sigmoid colon and a plane of dissection is developed behind the left kidney.

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before taking down the splenic flexure. This plane of dissection is then followed up to the hiatus of the diaphragm before reflecting the left kidney, spleen and tail of pancreas en bloc. This technique minimises the risk of traction injury to the spleen and exposes the aorta from the hiatus to the bifurcation. Incision of the crus then allows access to the distal thoracic aorta (as far as the pulmonary vein) and this can be clamped from within the abdomen without entering the left pleural cavity. The aneurysm is then repaired in the usual way by inlay grafting with direct reattachment of the visceral arteries.

This incision affords only limited access to the iliac arteries and a conventional thoraco-abdominal approach is preferable if these are aneurysmal.

Discussion

To date we have employed this approach in six patients. None have developed any significant pulmonary complications during the early postoperative period and repair was accomplished without any increase in duration of surgery, visceral ischaemia or volume of blood lost. Patients are spared the discomfort of a thoracotomy and epidural analgesia affords complete relief from abdominal pain. The late sequelae of thoracotomy are also avoided.

References