SHORT REPORT

Late Results of Mesh Wound Closure after Elective Open Aortic Aneurysm Repair

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Introduction. Incisional hernia is a common late complication after abdominal aortic aneurysm (AAA) repair. We examined the outcome after prophylactic placement of a pre-peritoneal polypropylene mesh during abdominal closure in consecutive patients having elective AAA repair.

Report. At least 30 months after surgery, 28 patients underwent clinical and ultrasound examination of their surgical wound for incisional hernias. Only one patient had a hernia in the original surgical scar. No patients had late mesh-related wound problems.

Discussion. Pre-peritoneal polypropylene mesh placement is a simple, safe and effective method to decrease the incidence of incisional hernia after AAA repair.

Keywords: Aortic; Aneurysm; Repair; Hernia; Mesh.

Introduction

The particularly high incidence of incisional hernia after abdominal aortic aneurysm repair is well recognised and reported to be as high as 30%.1,2 A recent systematic review suggested there is a 5-fold increased risk of incisional hernia after risk adjustment, compared with surgery for occlusive aortic disease (relative risk 5.45, 95 per cent confidence interval 2.48–11.94, p < 0.0001).1 It has been claimed that up to 40% of these hernias will require operative repair because of persistent abdominal pain or incarceration.3 The aim of the present study was to examine the long-term outcome of prophylactic pre-peritoneal mesh placement during abdominal closure after open AAA repair.

Report

Between January 2001 and September 2003, a polypropylene mesh was routinely placed in the pre-peritoneal space during abdominal closure after elective AAA repair. Consecutive patients under the care of a single surgeon were enrolled, all providing informed consent. Routine aortic surgery using the inlay technique was performed through a longitudinal midline incision. After clamp removal and haemostasis an extra-peritoneal plane was developed in which the mesh was placed. Details of the technique and early results have been reported previously.4

In April 2006 these patients were asked to attend the hospital for assessment. Their wounds were examined clinically by an experienced surgical trainee looking for an incisional hernia. An ultrasound scan (US) of the wound was then performed using a Sonosite Titan and any defects visible on ultrasound were measured.

Of 39 consecutive elective AAA repairs, 37 patients consented to mesh placement. One was excluded due to a planned second laparotomy and one had a transverse incision. There was only one patient in which it was not possible to place mesh due to difficulties in developing an extra-peritoneal plane. It was possible to develop an extra-peritoneal plane in all five of the patients who had a previous laparotomy.

Of the 36 patients who had mesh inserted, 3 had died, 2 had moved away (lost to follow-up) and 2 were very
unwell at home. Another one did not attend. Twenty-eight patients were therefore re-examined; 27 men and 1 woman with a median age of 74 years (range 61–83). The median time after AAA repair was 47 months (31–63).

No patient had a palpable incisional hernia. In two patients a hernia defect was identified on US (Fig. 1). In one of these it was in the proximal extension of the original incision done at a subsequent laparotomy for a perforated duodenal ulcer. This was asymptomatic and measured 1.2 × 0.9 cm. Only one patient had a hernia in the original operative scar. It was in the uppermost part of the wound and lay above the mesh, measuring 0.9 × 0.9 cm. Neither patient had symptoms or wanted their hernia repaired.

No patient described any peri-incisional pain that could relate to the mesh. Two of the patients followed up had a subsequent laparotomy: one for bowel cancer and the second had two laparotomies for an intra-abdominal abscess and a perforated duodenal ulcer. A third patient, now lost to follow-up, had a subsequent emergency laparotomy for a leaking false aneurysm of their distal anastomosis four months later. The mesh did not significantly delay access to the abdominal cavity and assisted in its reclosure.

Discussion

Incisional hernia rates are known to be lower if a transverse incision is used, but many surgeons continue to prefer a vertical midline laparotomy for aneurysm repair. Most incisional hernias develop within 2 years of operation. The insertion of polypropylene mesh in patients undergoing elective AAA repair in the present study almost entirely prevented the development of incisional hernias up to a median follow-up of 4 years (rate 1/28, 95 per cent confidence interval up to 18.9%). The one patient seen to have a small hernia in the original scar could be considered a technical failure – the mesh was not placed caudally enough. There were no long-term complications from mesh placement and three patients underwent subsequent laparotomy without major difficulty.

The prophylactic use of mesh to prevent incisional hernias in patients at particular risk has been described by a number of different authors. All have reported acceptably low infection, complication and hernia rates. A randomised controlled trial is needed to see the cost of the mesh is justified in AAA repair.

References


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