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CASE REPORT

Aorto-enteric Fistula Following Endovascular Repair of Abdominal Aortic Aneurysm

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Introduction

Endovascular repair of infra-renal abdominal aortic aneurysm (AAA) has been found to be feasible in an increasing proportion of patients. Although the long-term durability of this technique remains unknown, it provides an attractive alternative for "high risk" patients with severe cardiopulmonary disorders, hostile abdomens or with bleeding diatheses.[1] We report a case of endovascular repair in a patient with myelodysplasia, Crohn's disease and ischaemic heart disease who developed a late graft infection and aorto-enteric fistula. Graft infection with aorto-enteric fistula formation following open AAA repair is well recognised, though uncommon and has only recently been reported after endovascular repair.[2–6]

Patient Details

A 70-year-old gentleman was found to have an infra-renal AAA during routine investigations for a blood disorder. He presented to the haematology clinic with pancytopenia secondary to mesalazine (Pentasa) for small bowel Crohn's disease. His haemoglobin was 10.7 g/dl, white cell count was 1300/mm^3, and platelet count was 3800/mm^3. Mesalazine had been discontinued and on admission, his only medication was low dose aspirin commenced following coronary artery bypass grafting. The Crohn's disease was clinically quiescent. CT scan revealed the presence of a 6 cm aneurysm, which was anatomically suitable for endovascular repair. The diameter of the aneurysm neck was 24 mm and the common iliacs were just over 14 mm. A bifurcated stent-graft measuring 28 mm by 16 mm with a suprarenal, uncovered, balloon expandable, barbed stent (Zenith, Cook Europe, Bjaeverskov, Denmark) was tailor-made.

Preoperatively, the patient had a platelet count of 2400/mm^3, white cell count 1200/mm^3 and haemoglobin 10.8 g/dl. Five units of leucodepleted platelets were given immediately prior to the operation, and a further 5 units given intra-operatively to reduce the risk of haemorrhage. Surgery was performed under general anaesthesia. The body and contralateral limb of the stent-graft were delivered through the common femoral arteries, which were surgically exposed. Prophylactic antibiotics treatment consisted of cefuroxime 1.5 g and teicoplanin 400 mg given intravenously at induction, and 5000 IU of heparin administered intravenously just prior to the introduction of the delivery system of the stent-graft. Surgery and endovascular placement was uneventful. The completion angiogram showed no evidence of an endoleak. Blood loss was approximately 900 ml and 2 units of packed red blood cells were given in the peri-operative period. Cefuroxime 1.5 g and metronidazole 500 mg were administered postoperatively for five days. On the second postoperative day, the platelet count, haemoglobin and white cell count, were 13 000/mm^3, 9.5 g/dl and 1100/mm^3 respectively. Apart from a self-limiting, well circumscribed bruise around both groin wounds and pubic areas, the postoperative recovery was uncomplicated. The patient was discharged from hospital on the sixth postoperative day. At that time a CT scan confirmed exclusion of the aneurysm with no endoleak. A CT scan performed at approximately 6

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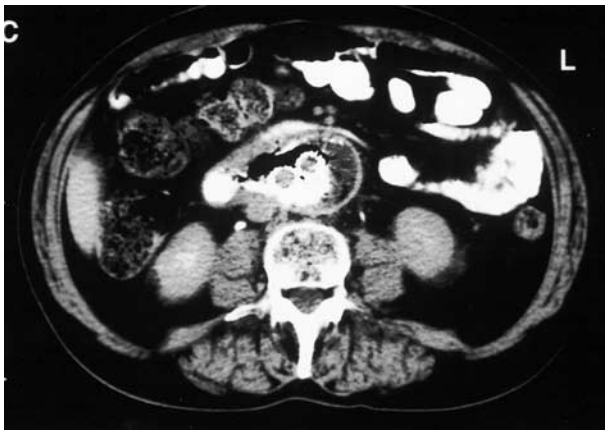

Fig. 1. Complete distortion of the aneurysm with gas and barium within the sac at 4 months.

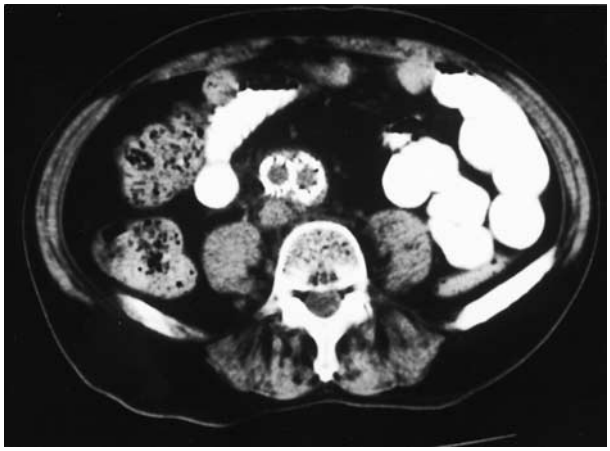

Fig. 2. Complete destruction of the aneurysm sac at 8 months.

weeks showed the stent to be in position with no evidence of infection nor distortion of the aneurysm sac.

Four months later the patient was admitted to hospital with a chest infection, which resolved rapidly with a course of intravenous piperacillin and netilmicin. During the course of this illness, the patient developed epigastric discomfort and nausea. Upper gastrointestinal endoscopy showed only mild gastritis. A CT scan of the abdomen demonstrated some asymmetry of the aneurysm sac but no evidence of endoleak or gas within the aortic sac. However, a further CT scan performed because of persistent pyrexia, abdominal pain and melaena, revealed gas within the aneurysm sac, with marked distortion of the sac. In addition, barium administered orally was seen to leak from the duodenum into the aneurysm sac (Fig. 1). A multidisciplinary review of management options was undertaken at this stage. The myelodysplastic condition was deemed to be irreversible and beyond therapeutic control, and in view of his general condition and co-morbid states, a policy of conservative management was pursued, with the full understanding and involvement of the patient and his family. He was treated with intravenous netilmicin, cefuroxime and metronidazole. CT scan at 8 months following surgery now showed complete destruction of the aneurysm sac (Fig. 2). Despite this, his epigastric symptoms settled, and discharge home was planned. Unfortunately, he collapsed and died the day he was due to go home. A request for post-mortem examination was declined by the family.

Discussion

Late graft infection following open abdominal aortic aneurysm repair may occur in up to 2% of cases.[2] The incidence after endovascular repair is unknown with so far three definite reports of aorto-enteric fistulae.[3–6] All three cases occurred later than 1 year after implantation.[4–6] Two were due to graft migration and kinking of the stent-graft device while the third was due to disruption of the suture between the supporting stent and the graft. Angulation of the device with erosion of the aortic wall was proposed as the cause of fistula formation in these cases. However, kinking of the stent-graft was not a feature in our case.

Endovascular repair was undertaken in our patient because it was felt to be a safer option in view of co-existing myelodysplasia, small bowel Crohn's disease and ischaemic heart disease. Although the short-term result proved satisfactory, the endovascular technique did not confer any long-term survival advantage, and, in fact, may have contributed to his subsequent demise. Unfortunately, it is difficult to be certain as to whether the aorto-enteric fistula was the cause or effect of graft infection. It may have resulted from a segment of bowel affected by Crohn's disease, eroding into the aneurysm sac.

This case places a cautionary note on the use of endovascular repair for abdominal aortic aneurysm in patients who are deemed unfit for open repair. The concerns as to whether the short-term advantage of endovascular AAA provides long-term benefit in these patients can only be answered by a randomised trial. However, one negative experience should not be allowed to prejudice an otherwise innovative technique.

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