SHORT REPORT

Delayed Presentation of Rectal Ischaemia Following Aortic Surgery: Rectal Stricture, Local Perforation and Graft Infection

M. A. Tomlinson, B. Gold, M. H. Thomas and N. Browning

Department of Vascular Surgery, St Peter’s Hospital, Chertsey, Surrey, KT16 0PZ, U.K.

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Introduction

Acute colonic ischaemia following aortic surgery is well recognised, but rectal ischaemia is a much rarer complication, with a high mortality and morbidity. If ischaemia does not affect all layers of the bowel wall, then bowel necrosis may not occur,1 but an ischaemic stricture will result.2 We report a case of ischaemic rectal stricture following emergency repair of a leaking abdominal aortic aneurysm, complicated by a delayed local perforation, and secondary graft infection.

Case History

A 71-year-old male underwent emergency aortobifemoral repair for a leaking abdominal aortic aneurysm with iliac aneurysmal dilatation. He sustained a prolonged period of hypotension during the procedure, and the patent inferior mesenteric artery was ligated. The common iliac arteries were oversewn at their origin.

His recovery was complicated by a prolonged period of ventilation, wound haematoma in the left groin (which was managed conservatively) and post-operative diarrhoea without bleeding. Symptoms of intractable diarrhoea persisted after discharge for several weeks. Multiple stool samples failed to identify any pathogenic organism and Clostridium difficile toxin could not be identified in the bloodstream.

Rigid sigmoidoscopy revealed a smooth upper rectal stricture, though the rectal mucosa appeared normal; biopsies revealed patchy acute inflammatory cell infiltrate in the lamina propria. A gastrograffin enema (Fig. 1) confirmed this, and identified a very small leak of contrast into the pararectal tissues, as well as sigmoid diverticular disease. Dilatation of the stricture was planned.

Before this could be done he presented acutely to casualty with a painful swelling in the left iliac fossa and groin. He gave a two months history of night sweats, progressive anorexia, malaise, lethargy, and chronic diarrhoea. He was pyrexial and there was a tender, erythematous, non-pulsatile 8 cm diameter swelling in the left iliac fossa above the scar from the previous groin incision. Digital rectal examination was normal. An urgent CT scan of the aorta confirmed the diagnosis of graft infection, with a gas/fluid filled collection visible around the left limb of the graft (Fig. 2).

At laparotomy the trunk and right limb of the graft were well incorporated; the left limb of the graft was poorly incorporated and surrounded by pus. It was excised and a left axillo-popliteal bypass constructed with a silver-coated graft. The remainder of the laparotomy appeared normal, and there was no evidence of colonic perforation. However seven days post-operatively faeces discharged from the left groin wound. The patient underwent emergency re-laparotomy; a perforation of the upper rectum was now obvious, and a Hartmann’s procedure performed. Examination of the specimen revealed a smooth benign stricture of the upper rectum with a local perforation.

Please address all correspondence to: N. Browning, Ashford Hospital, London Road, Ashford, Middlesex, TW15 3AA, U.K.
He made a good recovery and *Citrobacter braakii* sensitive to meropenem and amikacin was cultured from the graft material and pus. He was discharged 21 days post-Hartmann’s procedure on long-term intravenous antibiotics (teicoplanin and meropenem) via a Hickmann line, continued for 6 months. Repeat CT scan 3 months later revealed no evidence of graft infection. He has remained well with no symptoms or signs of sepsis, normal full blood count and C-reactive protein to recent review at 18 months after surgery, and has now been discharged from outpatient follow up.

**Discussion**

Ischaemic colitis after aneurysm surgery usually affects the splenic flexure but there are occasional reports of rectal ischaemia after aortic surgery.\(^1\)\(^-\)\(^6\) The mortality rate due to these complications is 0.6% for elective aortic procedures and 7% for emergency aneurysm repair,\(^6\) transmural ischaemia carries a 100% mortality if not operated on and 66% mortality with a Hartmann’s procedure. All predispose to aortic graft infection, which carries a similarly high mortality and morbidity. Our patient had several of the known risk factors for post-operative colonic ischaemia; emergency aortic aneurysm repair, prolonged hypotension, ligation of the inferior mesenteric artery, and prolonged operating time because a bifurcated aortobifemoral graft was required.

If the ischaemia is less severe, stricture formation ensues; this may result in obstructed defaecation with the attendant risk of perforation. This seems to have been the mechanism in our case, given the time interval between initial surgery, and presentation with infection of the left limb of a bifurcated graft 5 months after surgery, having suffered intractable symptoms of diarrhoea in the interim. The leakage of contrast adjacent to the rectal stricture, seen on the gastrograffin enema, supports this. It would seem that the left limb of the graft may have sealed the perforation, which then manifested itself once the graft was removed.

The suspicion or presence of *Clostridium difficile* infection may mask the ischaemic aetiology of the post-operative colitis, and certainly led to some delay in diagnosis. Random endoscopic biopsies or monitoring of intramucosal pH in the sigmoid colon may be useful if available.\(^1\)\(^-\)\(^7\)

Management of infected aortic grafts is contentious but most surgeons advocate total graft excision with either extra-anatomic or *in-situ* reconstruction. However, in the case of bifurcated grafts excision of the affected limb alone, extra-anatomic reconstruction, and high dose local and intravenous antibiotics is

**Fig. 1.** Gastrograffin enema showing smooth upper rectal stricture.

**Fig. 2.** Abdominal CT scan revealing a gas/fluid filled collection around the left limb of the bifurcated aortic graft.

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reported with some success. This technique was utilised in this case due to the operative findings at laparotomy; as the main trunk and right limb of the graft were very well incorporated it was deemed inordinately high-risk to attempt to remove them.

The residual aortic and the extra-anatomic grafts remain at risk of infection. Use of a silver-coated prosthetic graft is thought to lend some resistance to infection and was used for the axillo-popliteal revascularisation for this reason.

There is no clear consensus on the duration of antibiotic therapy post-operatively, but we consider it crucial to base therapy on organisms cultured from the blood pre-operatively and from the graft material or aortic wall removed. There is some evidence that long term culture-specific antibiotic therapy given intravenously for 6 weeks, then orally for 6 months, is of benefit. If no oral alternative is available, as in this case, then long-term intravenous therapy via a tunnelled line is indicated.

Summary

This patient has survived an unusual combination of serious complications following his emergency aneurysm repair. However there was some delay in recognising the underlying complication of ischaemia rectal stricture, and we would thus advise that protracted symptoms of diarrhoea should be investigated urgently and thoroughly to exclude colonic ischaemia, as otherwise this may result in late presentation with colorectal perforation or graft infection.

References