CASE REPORT

Acute rectal ischaemia following emergency abdominal aortic aneurysm surgery

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Abstract
We present a case of isolated rectal ischaemia, a rare complication after emergency surgery for a ruptured abdominal aneurysm. We discuss the possible aetiology of this condition and how this rare condition may be missed unless care is taken at the time of reoperation.

INTRODUCTION
Ischaemic colitis is a recognized complication of abdominal aneurysm surgery occurring in ~2% of all cases (elective and emergency); the development of colonic ischaemia significantly increases mortality (37.8% vs 6.7%) [1]. Ischaemic colitis is observed more commonly after open surgery, compared to EVAR, and when surgery is undertaken for a ruptured aneurysm [1]. Other risk factors for the development of ischaemic colitis include: hypovolaemic shock, duration of surgery, blood loss and pre-existing renal and respiratory dysfunction [2].

The rich blood supply of the rectum, arising from the inferior mesenteric, internal iliac and median sacral arteries, usually acts to protect the rectum from ischaemia. Cases of isolated rectal ischaemia following aortic aneurysm surgery are very rare; a PubMed search identified just five cases occurring in the postoperative period [3–5]. We report a case of acute rectal ischaemia, requiring emergency surgery, following emergency ruptured abdominal aortic aneurysm repair.

CASE REPORT
A 77-year-old man, with a background of hypertension, atrial fibrillation, aortic valve replacement and a coronary artery bypass graft in 2014, was admitted to the emergency department with acute abdominal pain. Examination revealed a central pulsatile mass, the patient was alert and orientated with a blood pressure of 90/60 mmHg and heart rate of 60 beats per minute. A computed tomographic scan confirmed the presence of a ruptured infrarenal abdominal aortic aneurysm.

The patient was on long-term anticoagulation with Warfarin, with an international normalized ratio (INR) of 2.8; this was not reversed prior to or during the patient’s surgery. Laparotomy revealed a posterior rupture of the abdominal aneurysm. The patient underwent an uneventful infrarenal tube graft repair with minimal additional blood loss. The patient received four units of packed red cells intraoperatively and a further two units in the postoperative period.

Postoperatively, the patient remained intubated, ventilated and was taken to the intensive care unit for ongoing supportive care. Approximately 12 hours after surgery, the patient suffered an episode of dark red per rectal bleeding with a melaena-like malodour. The patient’s inotropic support had steadily increased throughout the day, and while there had been an initial improvement in the patient’s pH and base excess, these plateaued at 7.2 and −11 mEq/l, respectively. There was no concern regarding limb ischaemia, and rigid sigmoidoscopy was unhelpful in ascertaining whether there was mucosal ischaemia of the sigmoid colon or rectum as the view was obscured by dark blood. The decision was made to return the patient to theatre due to the suspicion of colonic ischaemia.
On reoperation, the sigmoid colon appeared slightly dusky, however viable, and the remainder of the colon and small bowel looked normal. On closer inspection, there was a rim of ischaemic (black) rectum, seen just above the peritoneal reflection. Dissection beyond the peritoneal reflection revealed full thickness ischaemia of the rectum deep into the pelvis. The patient had a low Hartmann’s resection of the sigmoid and majority of the rectum, undertaken by a colorectal surgeon. The patient made a slow recovery, complicated by dehiscence of the rectal stump, however, was discharged from hospital on Day 53.

**DISCUSSION**

This case highlights a rarely reported complication of abdominal aneurysm surgery. The aetiology in this case is likely multifactorial; patients undergoing emergency aneurysm repair will inevitably have suffered a period of hypovolaemic shock, which has been cited in isolation, as a cause of rectal ischaemia.

In addition to this period of hypovolaemia, the inferior mesenteric (IMA) and median sacral arteries are usually sacrificed intraoperatively (although are frequently occluded) and the remaining rectal arterial supply is likely to be atherosclerotic. Review of this patient’s imaging revealed bilateral internal iliac artery origin stenosis although both remained patent postoperatively. The patient had pre-existing occlusion of the IMA; however, the medial sacral artery was patent, while the median sacral artery normally plays a minor role in rectal perfusion, in the context of IMA occlusion and internal iliac stenosis may have been more significant.

There is also the risk of embolic occlusion of the rectal arteries following reperfusion. Intraoperative anticoagulation may help mitigate this factor. In this case, the patient was not given further anticoagulation, as the INR was 2.8 preoperatively; however, it may be a worth consideration in a non-anticoagulated patient.

It is anticipated that most cases of rectal ischaemia will be identified at the time of reoperation, when the expectation is of identifying left colonic ischaemia. It is worth remembering that, as in this case, the ischaemic rectum may be almost entirely within the pelvis, below the peritoneal reflection. It is therefore important that when such patients are returned to theatre, the exploratory laparotomy includes a thorough assessment of the pelvis. If low rectal surgery is required, given the increased complexity, the patient will benefit from the input of a colorectal specialist.

**CONFLICT OF INTEREST STATEMENT**

None declared.

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