

## Spontaneous splenic rupture four days after an open appendicectomy

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### ABSTRACT

**INTRODUCTION** Spontaneous splenic rupture is a rare but dangerous event that requires prompt diagnosis and frequently an emergency splenectomy. Previous case reports have described the occurrence in patients with medical conditions, anticoagulant treatments, endoscopic procedures, laparoscopic surgery or no particular predisposing factor. Our report is the first to describe the occurrence of spontaneous spleen rupture following a laparotomy conducted in the lower abdomen.

**CASE HISTORY** A 62-year-old woman presented with a 10-day history of right iliac fossa pain radiating to the right leg and associated vomiting. Following a routine blood check and computed tomography (CT), she underwent an open appendicectomy through a lower midline laparotomy for an appendicular abscess. Four days later, she experienced haemorrhagic shock and a second CT scan diagnosed a spontaneous splenic rupture that required a prompt splenectomy.

**CONCLUSIONS** Our case is the first that describes the spontaneous rupture of the spleen following an open procedure conducted in the lower quadrants. This entity must still be considered as a rare but potential cause for postoperative bleeding when no other obvious sources are identified.

### KEYWORDS

Appendicectomy – Splenic – Rupture – Complication

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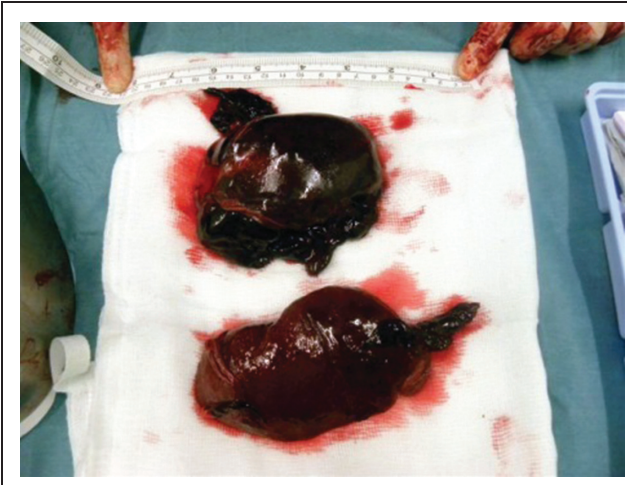
Spontaneous splenic rupture is a rare event that may manifest in patients with no predisposing risk factors<sup>1</sup> but it is associated more frequently with diseases that increase the volume of the spleen or treatments that favour bleeding and even follow long-term anticoagulation.<sup>2</sup> Spontaneous ruptures have also been reported following invasive procedures. The traction on the splenocolic ligament or the presence of peculiar adhesions between the spleen and the colon may favour ruptures following colonoscopies.<sup>3</sup> Similarly, endoscopic retrograde cholangiopancreatography has also been associated with splenic injuries from tractions on the greater curvature of the stomach.<sup>3,4</sup> Finally, a number of case reports have described splenic ruptures after laparoscopic surgery such as salpingectomies, Nissen funduplications and repair of perforated duodenal ulcers.<sup>5</sup> In the present report, we describe the first case of a delayed spontaneous splenic rupture following an open surgical procedure.

### Case History

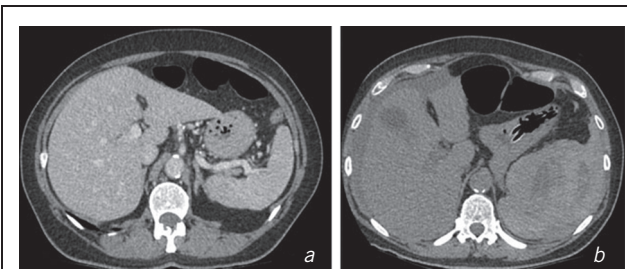
A 62-year-old woman presented with a 10-day history of right iliac fossa pain and vomiting. She had a background of significant ischaemic heart disease treated with two coronary stents. On admission, she was afebrile and haemodynamically stable but the abdomen was tender in the right

iliac fossa. A hard tender mass was palpable in the same area and inflammatory markers were raised (white cell count  $15.3 \times 10^9/l$ , C-reactive protein 145mg/l). Following the initial management with intravenous fluids, fasting, analgesia and intravenous antibiotics, she underwent urgent computed tomography (CT). This showed a complex right iliac fossa mass of a 55mm with fluid collection and adjacent inflammatory changes.

The patient underwent an emergency appendicectomy through a midline incision, the abscess was drained and the appendix removed. The abdomen was then washed out with 3l of normal saline and iodine, a Robinson drain was left in situ and the patient continued the antibiotic therapy. The postoperative course was uneventful until four days later when she became haemodynamically unstable. Standard resuscitative manoeuvres were adopted and a second CT scan demonstrated a presumed haematoma of 150mm diameter in the left upper quadrant, suggestive of a splenic rupture. An emergency relaparotomy found a spleen that was ruptured and in two pieces (Fig 1), and a splenectomy was carried out. No directly causative factors for rupture were found at laparotomy. Seven days later, the patient was safely discharged home. The histological examination confirmed normal dimensions (110mm x 40mm x 40mm) with normal architecture and no evidence of intrinsic disease of the spleen.



**Figure 1** Intraoperative appearance of the spleen as removed from the abdominal cavity, showing the spleen in two separate pieces as it was found



**Figure 2** Computed tomography of before (a) and after (b) rupture of the spleen

## Discussion

Previous case reports have described the postoperative occurrence of spontaneous splenic ruptures following laparoscopic surgery. In these patients, it is likely that traction forces were transmitted to the spleen through congenital adhesions/ligaments with the surrounding organs or the abdominal wall at the induction of the pneumoperitoneum<sup>3</sup> or during the operation. Owing to the rarity of the rupture, it might not be evident that the source of bleeding in a

postoperative patient is the spleen and sometimes multiple laparotomies are required for a proper diagnosis and treatment.

We describe a case of spontaneous splenic rupture following an open appendectomy via a lower midline incision. No common pathogenetic mechanisms were identified and the only event that correlated was the recent surgery. In our case, the operating field was well away from the left upper quadrant and it seems unlikely that any tension would have been applied to the splenic ligaments or parietal adhesions. It is possible that damage to the spleen could have occurred when the patient was transferred to the operating table or as a complication of the low molecular weight heparin used to prevent deep vein thrombosis.<sup>2</sup> It is also possible that acquired adhesions might have been present owing to the longstanding history of perforation with abscess but these would have been loose after ten days from the onset of the symptoms.

Splenic rupture in a histologically normal spleen is a rare occurrence, with spontaneous rupture generally being the first presentation of a disease.<sup>5</sup> Together with the fact that rupture occurred only four days following surgery, this makes it unlikely to be a chance association. Although these remain hypotheses, our case is the first to describe the occurrence of spontaneous spleen rupture following a laparotomy conducted in the lower abdomen.

## Conclusions

Spontaneous splenic ruptures can present even following open surgery in the lower abdomen. Although this possibility is rare, it must be remembered as a potential source for postoperative haemorrhage when no other obvious source is identified.

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