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Haemorrhagic shock caused by splenic rupture following routine colonoscopy

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Dear Editor:

We report a case of acute abdominal pain with haemorrhagic shock, which was caused by a splenic rupture, following a routine colonoscopy. Splenic rupture is a rare but potentially fatal complication. It should be considered in patients with signs of haemorrhagic shock after colonoscopy, but with no evidence of gastrointestinal bleeding.

A 62-year-old woman presented in our emergency department with acute abdominal pain. On physical examination the patient showed hypotension (80/55 mmHg), a heart rate of 96/min and diffuse abdominal tenderness and guarding in all four quadrants.

Twelve hours earlier the patient underwent a routine follow-up colonoscopy 2 years after curative radiotherapy for anal squamous cell carcinoma. The colonoscopy was performed under intravenous sedation with propofol with no reported difficulties. Shortly after the procedure the patient reported pain radiating to the left shoulder and arm. Due to the fact that this pain subsided spontaneously, the patient was discharged in a stable condition. At admission there was no sign of gastrointestinal bleeding. Laboratory studies revealed a white blood cell count of $10.8 \times 10^9/l$, a haemoglobin level of 61 g/l, a haematocrit level of 18%, a platelet count of $273 \times 10^9/l$, normal concentrations of electrolytes

and normal coagulation. Initial fluid resuscitation in the emergency room did not lead to normotension and an emergency laparotomy had to be initiated without further diagnostics. Intraoperatively, 2 l of blood were found in the abdominal cavity. A centrally located splenic laceration, with the lower part of the spleen almost completely detached, was identified as the source of the bleeding. The colon was in its entirety was examined and no evidence of any lesions was found. A splenectomy was performed and the patient recovered uneventfully.

Histopathological examination showed a rupture of an otherwise normal splenic parenchyma. The patient was transfused with six units of allogenic erythrocyte concentrates and two units of fresh frozen plasma in total and received a pneumococcal vaccination 2 weeks after surgery.

Colonoscopy is routinely used for diagnostic and therapeutic procedures. Typical complications following colonoscopy include intraluminal haemorrhage and colonic perforation, with incidence rates of 1–2% and 0.1–0.2% respectively. Therapeutic colonoscopies have a higher complication rate than diagnostic procedures. Patients with colonic perforation usually present with abdominal pain caused by peritonitis, while patients with non-perforating colonic wall lacerations usually present with anal

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bleeding. Very few patients present with haemorrhagic shock. In those patients with no evidence of gastrointestinal bleeding the rare complication of a splenic lesion has to be considered in the emergency situation, even after routine colonoscopy.

Splenic laceration following colonoscopy was first reported in 1974 and a total of 32 cases has been reported since. This is a very rare complication considering the vast number of colonoscopies performed today. Patients usually present with abdominal pain, some (13 out of 32) also with signs of haemorrhagic shock. Low blood haemoglobin without anal bleeding is typically found. Most patients are diagnosed by computed tomography or sonography while some (including our patient) are diagnosed by

laparotomy. It has to be considered as a serious complication as two deaths have been reported in the literature.

The condition is rare, but may become more frequent with the increasing numbers of colonoscopies performed. The mechanism leading to this complication is not yet clear: capsular avulsion by stretching of the splenocolic ligament while passing the left flexure is generally thought to be the cause, but it has also occurred following seemingly easy colonoscopies. For patient comfort intravenous analgesia and sedation is routinely used during colonoscopy today. In National Health Service facilities in England 94.6% of patients receive intravenous sedation. With intravenous analgesia and sedation being used, the patient does not feel and cannot report pain or discomfort. We suggest that this missing

feed-back, which may prevent manoeuvres that put too much strain on the splenocolic ligaments, could be a contributing factor to splenic trauma during colonoscopy. Intravenous sedation and analgesia is only reported to be used in five of the 32 cases in the literature, although most authors (26) did not specify its use. In nine reported patients a non-operative management was successful. However, most patients (23) in the literature were treated with splenectomy. Spleen-conserving operations like splenorrhaphy could be of advantage in less severe cases, but no successfully treated cases have been reported so far. In the reported case with hypovolaemic shock and a central laceration of the spleen, spleen-conserving therapy was not possible.