

# Rupture of spleen post colonoscopy

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## ABSTRACT

نستعرض حالة مثيرة تعاني من نزيف هضمي سفلي لدى مريضه تبلغ من العمر 68 عام، حيث اجري لها تنظير للقولون نتج عنه تمزق للطحال. تم إبعاد المريضة من خلال إعطائهما المخاليل الوريدية اللازمة وكذلك نقل الدم المناسب، ثم استئصال الطحال. استعادت المريضة حالتها الصحية بعد العلاج وخرجت من المستشفى بعد 4 أيام. تمت مناقشة ندرة الحالة وطريقة العلاج المناسبة.

We review an interesting case of elective colonoscopy for rectal bleeding in a 68-year-old woman complicated by splenic rupture. She was managed by aggressive fluid and blood resuscitation followed by splenectomy. She had a smooth recovery and was discharged home 4 days after admission. The extreme rarity and interesting clinical course of the patient are discussed.

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Wherry and Zhener in 1974 described the first case of rupture of spleen post colonoscopy.<sup>1-3</sup> This is a very rare but potentially fatal complication of colonoscopy, which requires an early diagnosis and rapid management. Since that time a total of 66 cases of ruptured spleen post colonoscopy have been reported, 39 cases in the USA, 17 in Europe, 6 in Australia, 3 in Asia and one case from Canada.<sup>3</sup> Predisposing factors include splenomegaly, anticoagulation drugs, antiplatelet drugs, and difficult colonoscopy. Early diagnosis, aggressive fluid, and blood resuscitation in addition to splenectomy if needed are the keys to successful outcome in these cases. We present this case in order to raise high index of suspicion of splenic rupture

when evaluating patient with left sided abdominal pain post difficult colonoscopy.

**Case Report.** A 68-year-old woman presented to an outpatient colorectal clinic with a history of occasional rectal bleeding. Colonoscopy was conducted under light sedation and without difficulties. The exam was unremarkable up to the level of the cecum except for the presence of multiple diverticula in the descending colon and sigmoid colon. Four hours after colonoscopy she developed sudden severe left shoulder and left upper quadrant abdominal pain. On examination, she was afebrile with normal vital signs. Abdominal exam showed significant left upper quadrant tenderness, but no guarding or rigidity, and the bowel sounds were normal. The laboratory analysis revealed a normal hemoglobin level (13g/dl) and a mild leukocytosis ( $14.000 \times 10^9 / \text{litre}$ ). Abdominal and chest radiographs were normal, and there was no evidence of free gas in the abdomen. She denied any history of abdominal trauma and bowel function was within normal limits. She was assumed to have a post-colonoscopic diverticulitis or sealed perforation. She was started on antibiotics and scheduled for a computed tomography (CT) of the chest and abdomen, which shows a hypodense area within the spleen, indicative of subcapsular hematoma, hemoperitoneum, and sigmoid diverticular disease (Figure 1). By the end of CT scanning she reported worsening of her symptoms with signs of hemodynamic instability where she became significantly pale and tachycardic, with orthostatic hypotension. The laboratory analysis revealed a decrease in her hemoglobin from 13 g/dl to 6.7 g/dl and a significant drop in her hematocrit. After appropriate resuscitation with fluid and blood she was emergently taken to the operating room for exploration. A substantial hemoperitoneum, shattered spleen, and detached splenocolic ligament were found. Emergency splenectomy was performed, and hemostasis secured and a drain left in the splenic bed. She did not require any further transfusions after surgery and was discharged on post-operative day 4 after pneumococcal vaccination.



**Figure 1** • Computed tomography scan of the abdomen. White arrow shows subcapsular hematoma, and black arrow shows the residual enhancing spleen.

**Discussion.** Rupture of the spleen post colonoscopy is a very rare but potentially fatal condition. Wherry and Zhener reported the first case in 1974.<sup>2,4</sup> Colonoscopy is considered a safe procedure with minimal morbidity and mortality. It is estimated that 14.2 million colonoscopies are performed in the USA annually with a complication rate of 5/1000 colonoscopies. Perforation and bleeding are the most common post colonoscopy complications.<sup>2,10</sup> Other less common post colonoscopy complications include pneumothorax, pneumomediastinum, mesenteric tear, retroperitoneal abscess, volvulus and hernia incarceration.<sup>2-4,10</sup> (Interestingly, there were no reported cases of ruptured spleen in this large study). Smith and Nivatvongs<sup>5</sup> reviewed complications related to colonoscopy in 7,959 patients and Macrae and Williams<sup>11</sup> reviewed another 5000 patients, none of them reported ruptured spleen as a complication of colonoscopy. On the other hand, Moses and Leskovitz<sup>12</sup> reported one single case of ruptured spleen following colonoscopy in 6,012 procedures.<sup>9</sup> Female gender (F: M=3.2:1) and old age ( $62 \pm 12$ ) years were considered risk factors for spleen rupture post colonoscopy.<sup>4</sup> Our patient was female, and she was 68 years old. Other risk factors that may predict rupture of spleen post colonoscopy include coagulopathy and being on anticoagulant drugs, splenomegaly, intraabdominal adhesions, and difficult procedure.<sup>2,3</sup> Our patient was taking 100 mg of aspirin daily, which was discontinued 2 days prior to colonoscopy. Although aspirin is known to increase the risk of bleeding, no association has been described in the literature between aspirin use and splenic rupture after colonoscopy. There are 3 presumed mechanisms of splenic injury post colonoscopy; first, excessive traction on the splenocolic ligament, which

leads to a tear in the splenic capsule or even capsular avulsion. Second, preexisting adhesions between the spleen and colon can lead to excessive traction on the spleen even during easy colonic intubations as a result of decreased mobility between the spleen and the colon. Third, is direct trauma to spleen resulting from difficult introduction of the scope through splenic flexure.<sup>3,6,9</sup> The colonoscopy report stated that the gastroenterologist had no difficulty passing the scope from the rectum to the ileocecal valve during her procedure. Ruptured spleen following colonoscopy is a serious issue requiring early recognition and rapid treatment. The most common presenting feature is abdominal pain, which is typically in the left upper quadrant with radiation to the left shoulder (Kehr's sign). In a large review, abdominal pain was the presenting symptom in 93% of the cases and Kehr's sign was found in 88% of the cases.<sup>4</sup> Most patients 93% presented in the same series within the first 48 hours after colonoscopy.<sup>4</sup> Delayed presentation however, was reported in one case after 10 days.<sup>9</sup> Findings on physical examination are similar to those reported from ruptured spleen due to other causes, and it usually varies from mild tenderness in the epigastrium and left upper quadrant; to diffuse peritoneal sign with absent bowel sounds.<sup>2-8</sup> Abdominal CT with intravenous (IV) contrast is the study of choice to diagnose splenic trauma with a reported sensitivity reaching 96%.<sup>4</sup> It is also an excellent tool on deciding the magnitude of the problem and the amount of blood loss in the peritoneum. The management can be either conservative or surgical. Surgical intervention is required for patients with hemodynamic instability, underlying splenic disease, significant hemoperitoneum observed on CT scanning, and grade 5 splenic injuries according to the American Association for the Surgery of Trauma Splenic Injury Scale.<sup>4,6-7</sup> Stable patients who have closed, subcapsular splenic hematomas may be treated conservatively with broad-spectrum antibiotics, IV fluids, blood transfusion, and close hemodynamic monitoring. However, high failure rate of conservative management has been reported in patients requiring more than one unit of blood transfusion.<sup>4,10</sup> In the literature review by Saad et al,<sup>4</sup> 31% of cases of splenic rupture following colonoscopy were successfully managed conservatively, 68% required splenectomy and one case was successfully managed with splenic artery embolization.

In conclusion, ruptured spleen should be kept in mind in all patients presenting with left upper quadrant pain with radiation to the left shoulder (Kehr's sign) following colonoscopy. Abdominal CT scan with IV contrast confirms the diagnosis. Surgical versus conservative management of these patients depends on the course of the patient and the extent of splenic rupture.

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