

# Splenic Injury After Colonoscopy

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## ABSTRACT

Colonoscopy is a routine procedure to screen for colorectal cancer. Splenic injury is an extremely rare but potentially fatal complication. We present a case of a 74-year-old woman on edoxaban who underwent a screening colonoscopy at a nearby outpatient surgery center. While in the recovery room, she experienced abdominal pain, hypotension, and episodes of syncope, arriving to our Emergency Department approximately 10 hours after the colonoscopy. She presented to the Emergency Department with a distended abdomen, hypotensive, and with significant abdominal pain. Abdominal computed tomography scan showed significant hemoperitoneum around the bilateral paracolic gutters, spleen, and gastric fundus. She underwent emergent midline laparotomy with evacuation of 1.5 L of hemoperitoneum with ongoing bleeding from her deseroalized spleen, suggesting traction injury from colonoscopy. In patients with abdominal pain, hypotension, and low hemoglobin postcolonoscopy, splenic injury should be considered in order to recognize early and manage appropriately.

**Key Words:** Abdominal pain; Splenic injury; Colonoscopy; Spleen; Anticoagulant; Complication

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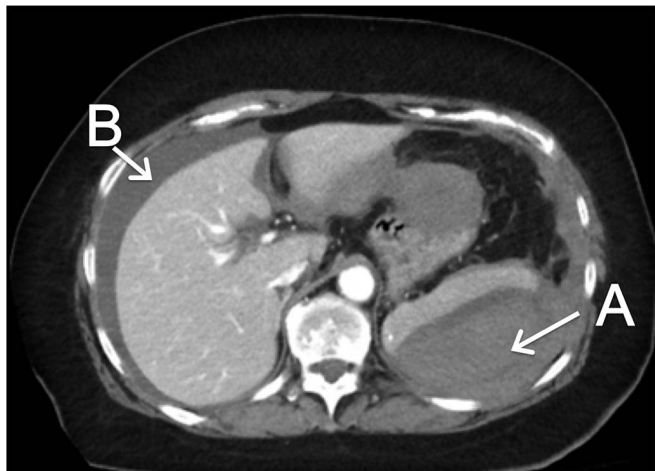
## INTRODUCTION

Colonoscopy remains the gold standard for colorectal cancer screening. Complications after colonoscopy are well described and most often include colonic perforation, bleeding from biopsy sites, and reactions to the sedative medications. Extracolonic injuries are exceedingly rare, with estimates reported between 0.07 and 2.7 per 1,000, but the consequences can be life threatening.<sup>1-3</sup> Confounding the bleeding risks associated with colonoscopy is the concomitant use of anticoagulants in elderly patients. We describe a case of hemorrhagic shock after colonoscopy due to traction injury of the spleen in a patient taking edoxaban.

## CASE PRESENTATION

A 74-year-old woman was admitted to the surgical service with abdominal pain and hypotension approximately 10

hours after completion of a screening colonoscopy due to history of adenomatous polyps. She had a history of paroxysmal atrial fibrillation managed with 60 mg of edoxaban daily with 24 hours of abstinence at time of arrival, had a pacemaker managed with 81 mg of aspirin daily, as well as a surgical history significant for a left radical nephrectomy for renal cell carcinoma, hysterectomy, appendectomy, and cholecystectomy. The colonoscopy was performed by a seasoned gastroenterologist in an outpatient surgery center, and was reportedly difficult due to a tortuous sigmoid and descending colon with multiple diverticula. Two adenomatous polyps 3 mm in size were resected and would ultimately result as benign tubular adenomas without dysplasia or carcinoma. She had hypotension in the recovery room with the most severe blood pressure measuring 68/33 mm Hg. The patient was observed for several hours in the outpatient recovery room while crystalloid fluid was initiated, but



**Figure 1.** A, Splenic hematoma with B, hemoperitoneum.

ultimately she was transported to our Emergency Department in hemorrhagic shock after no improvement. In the Emergency Department, her clinical examination revealed a distended abdomen with significant abdominal pain, and she remained persistently hypotensive with a blood pressure of 89/51 mm Hg; her hemoglobin had dropped from a preprocedure level of 14 mg/dL to 9.2 mg/dL. Massive transfusion protocol was initiated, tranexamic acid infused, and 4-factor prothrombin complex concentrate was given to reverse her edoxaban. A computed tomography (CT) scan was done showing a large amount of hemoperitoneum, tracking around the bilateral paracolic gutters, spleen, and gastric fundus. She had extensive hemoperitoneum in the pelvis and a large subcapsular hematoma of the spleen without definitive active extravasation (**Figure 1** and **Figure 2**).

She underwent emergent midline laparotomy with evacuation of 1.5 L of hemoperitoneum. After prolonged lysis of adhesions of the left upper quadrant from her prior left radical nephrectomy, we found ongoing bleeding from the lateral surface of her spleen which was completely deserosalized. This suggested she had a large rupture of a subcapsular hematoma, which was caused by colonoscopic traction while navigating the splenic flexure. She recovered from surgery, was discharged home on postoperative day 5 after her ileus resolved, and received postsplenectomy vaccines 2 weeks after discharge.

## DISCUSSION

Splenic injury due to colonoscopy (SIC) is a known but extremely rare complication of colonoscopy. A review by



**Figure 2.** Splenic hematoma (arrow).

Desai et al.<sup>4</sup> found a total of 66 cases of SIC published in the literature; with 15 million colonoscopies being performed annually in the United States alone, highlighting just how infrequently this injury occurs.<sup>1,4</sup> Patients suffering from SIC are often older females with prior abdominal surgeries, and in whom colonoscopy was reported to be difficult.<sup>4–6</sup> In patients with postcolonoscopic instability, failure to recognize this possibility may be life threatening. In addition to colonic perforation and intraluminal hemorrhage, SIC should be considered in patients who complain of postcolonoscopy abdominal pain and have evidence of ongoing blood loss or signs of shock. Abdominal ultrasound or CT scan can aid in rapid diagnosis, and expeditious surgical consultation is warranted if SIC is confirmed. In addition to resuscitation measures, appropriate reversal, if one is available, of any anticoagulants present is recommended. Our patient was taking the direct factor-Xa inhibitor edoxaban, for which no US Food and Drug Administration–approved reversal agent was available at the time; future research on this treatment option is warranted. Lastly, our patient’s splenic injury was managed with splenectomy; splenic artery angioembolization is, in concept, an alternative treatment modality that can spare patients the morbidity associated with operative splenectomy, but remains a poorly studied treatment modality for the management of SIC.<sup>7</sup>

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