

Delayed Mesenteric Hematoma of the Sigmoid Colon Following Blunt Abdominal Trauma

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Case Presentation:

A 25-year-old Hispanic male was transferred to our level I trauma center after being ejected 40 feet from a motor vehicle crash. Once stabilized in the trauma bay, a computed tomography (CT) scan of the abdomen/pelvis with IV contrast revealed two AAST Organ Injury Scale grade III liver lacerations without contrast extravasation, bilateral pulmonary contusions, right posterior non-displaced fourth rib fracture, non-displaced right scapular body fracture, and bilateral anterior and posterior pelvic fractures [Figures 1–2]. A non-operative approach to the hepatic lacerations was chosen and the patient underwent closed reduction and percutaneous pinning of his posterior pelvic fractures as well as anterior external fixation of his bilateral pubic rami fractures.

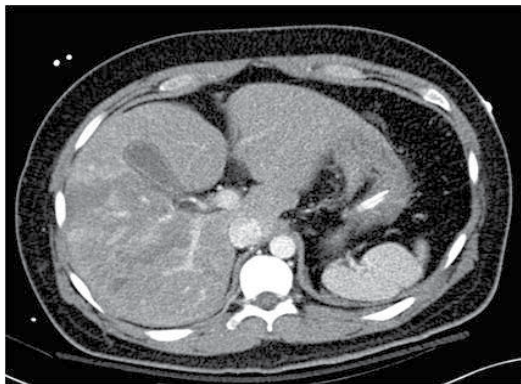


Figure 1 – Initial CT Abdomen and Pelvis-axial view, HD 0

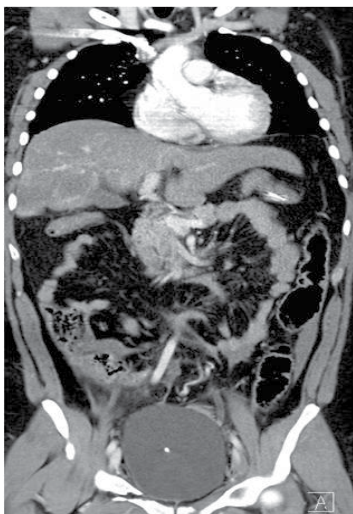


Figure 2 – Initial CT Abdomen and Pelvis-coronal view, HD 0

A follow-up CT scan of the abdomen/pelvis on hospital day seven demonstrated stable perihepatic fluid, resolving hepatic lacerations, and distended loops of colon. By hospital day eight, the patient's aspartate transaminase and alanine transaminase were normalizing despite a progressively increasing total bilirubin of 7.8. He underwent endoscopic retrograde cholangiopancreatography (ERCP) where faint tertiary bile duct abnormalities were identified and a biliary stent was placed. In the face of an increasing lipase of 1019 on hospital day nine, diagnostic laparoscopy with peritoneal lavage was performed where 350 mL of old dark blood was drained and a sub-hepatic drain was placed. The right liver laceration was stable without gross surgical bleeding identified. No other pathology was encountered.

On hospital day thirteen, the patient reported mild nausea with minimal abdominal distention. His sub-hepatic drain had collected 575 mL in the previous 24 hours. Laboratory studies revealed a stable hemoglobin of 10.0 g/dl, leukocytosis of 19.1 k/uL, and lipase of 2440 U/L; the lipase increased to 3034 U/L the following morning. CT abdomen/pelvis with triple contrast documented a markedly compressed mid-sigmoid colon with impending obstruction and a large surrounding mesenteric hematoma [Figures 3-4].



Figure 3 - CT Abdomen and Pelvis Mesenteric Hematoma-axial view, HD 13



Figure 4 – CT Abdomen and Pelvis Mesenteric Hematoma-coronal view, HD 13

What would you do?

- A) Monitor the patient in the ICU with serial CT scans.
- B) Angiographic embolization of bleeding vessels.
- C) Surgically explore the hematoma.
- D) Surgically resect a portion of the sigmoid colon along with the hematoma.

What we did and why:

Correct answer: D

The following morning the patient underwent exploratory laparotomy where a large 8.5x7.0x15.0 cm hematoma was found embedded in the sigmoid mesentery. Due to concern for compromised blood supply to the sigmoid colon and latent ischemia, a sigmoid colon resection was performed with removal of the hematoma followed by side-to-side anastomosis. Two intraoperative units of fresh frozen plasma (FFP) were administered and the hepatic lacerations ceased to bleed. The hepatic lacerations appeared stable. The lesser sac and entire pancreas were explored and appeared normal. The patient's postoperative course was uncomplicated with return of bowel function on post-operative day eight. The elevated Lipase seen preoperatively returned to normal consistent with resolution of his impending bowel obstruction. The biliary stent was removed with follow-up ERCP and the patient was discharged with normal liver function tests, amylase, and lipase.

This is a unique case of a delayed mesenteric hematoma of the sigmoid colon following blunt abdominal trauma. While the mechanism Blunt abdominal trauma most commonly affects the liver and spleen, followed by the intestines and mesentery [1]. Mesenteric injuries resulting from trauma can lead to life-threatening hemorrhages or bowel ischemia [2]. Published cases of delayed mesenteric hematomas involving the colon are rather limited.

CT is the standard imaging modality used to diagnose bowel and mesenteric injuries in hemodynamically stable patients with blunt abdominal trauma [1,3]. CT findings consistent with major

mesenteric injuries that indicate the need for urgent surgery include active blood extravasation, mesenteric avulsion resulting in intestinal ischemia, and full-thickness tear of the mesentery [1]. CT findings consistent with minor mesenteric injuries that suggest the possibility for conservative management and observation include partial lacerations of the mesentery, focal mesenteric contusions, and stable mesenteric hematomas [1]. Non-specific CT findings that necessitate clinical correlation and further diagnostic studies include thickened bowel wall, mesenteric fat stranding, and unexplained fluid in the peritoneal space [4]. In blunt abdominal trauma, minor mesenteric injuries may not show clinical signs or symptoms of bowel obstruction for up to 3 months and thus may go undiagnosed [2].

Our patient did not show evidence of mesenteric injury until the CT scan on hospital day thirteen, which coincided with mild nausea and abdominal distention. It is possible that his hematoma resulted from a minor mesenteric injury that was subclinical and undetectable on initial CT. This injury could have slowly developed over the first two weeks into a large mesenteric hematoma while the patient was on standard subcutaneous heparin deep vein thrombosis prophylaxis. In the trauma literature, the risk of bleeding from both unfractionated heparin and low molecular weight heparin has been reported to be comparable at 3.6% [5]. While the mechanism cannot be confirmed, this case presents a unique feature of blunt abdominal trauma resulting in a large, delayed hematoma embedded in the mesentery surrounding the sigmoid colon.

There is currently limited information available on the natural course of mesenteric hematomas. Most documented cases of traumatic mesenteric hematomas appear to occur in the mesentery of the small intestine [6]. While observation and angiographic embolization can be considered for stable hematomas, large hematomas present a risk for a greater degree of vascular disruption and potential bowel ischemia and thus often need to be managed surgically [1,6]. Despite the absence of obvious bowel injury or necrosis, we proceeded to explore the hematoma and performed a limited sigmoid resection due to the size of the hematoma and its location embedded within the mesentery surrounding the sigmoid colon. If resection had not been performed, we expected inevitable vascular disruption and resultant bowel ischemia. Pathology did indeed confirm hemorrhage within the bowel wall.

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