

Morbidity and Mortality Case Report

Delayed hollow viscus injury with an occult seatbelt abrasion presenting as a small bowel obstruction

Blynn L. Shideler^a, Danielle C. Berera^b, Lisa M. Knowlton^b, Ariel W. Knight^{b,*}^a Stanford University School of Medicine, Stanford, CA, USA^b Section of Acute Care Surgery, Department of Surgery, Stanford University, Stanford, CA, USA

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ABSTRACT

We present the case of a previously healthy 29-year-old male who presented with a small bowel obstruction in the absence of previous abdominal surgery who was found to have evidence of an occult seatbelt abrasion and ultimately multifocal hollow viscus injury secondary to blunt abdominal trauma at the time of exploratory laparotomy.

Hollow viscus injury is a rare, but potentially life-threatening, complication of blunt abdominal trauma. While cross-sectional imaging is an important diagnostic tool, results must be considered within a patient's clinical context as delays in surgical management can lead to significant morbidity and mortality.

Patient background & presentation

A previously healthy 29-year-old male with no past surgical history presented to our emergency department with acute onset abdominal pain with associated nausea and obstipation. He denied any recent sick contacts, substance use, and any personal or family history of inflammatory bowel disease or gastrointestinal malignancy.

Physical exam revealed an afebrile, hemodynamically normal, ill-appearing young man with diffuse abdominal tenderness. Initial laboratory studies were significant for a leukocytosis and modest transaminitis. CT abdomen/pelvis demonstrated long segment fecalization and dilation of the terminal ileum with a transition point in the right lower quadrant, concerning for an evolving high-grade small bowel obstruction (Fig. 1).

Initial treatment course

The patient was admitted to the surgical service for attempted nonoperative management. A nasogastric tube was placed to continuous wall suction with minimal bilious output. Over the next 18 h, serial abdominal exams noted worsening pain, rigidity, guarding, and ultimately development of diffuse peritonitis. As such, broad spectrum antibiotics were initiated and the decision was made to proceed immediately to the operating room for an exploratory laparotomy with anticipated adhesiolysis and possible bowel resection.

* Corresponding author at: 300 Pasteur Drive H3691, Stanford, CA 94305, USA

E-mail addresses: blynns@stanford.edu (B.L. Shideler), dberera@stanford.edu (D.C. Berera), drlmk@stanford.edu (L.M. Knowlton), awknight@stanford.edu (A.W. Knight).

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Intraoperative course

Prior to incision, ecchymosis and superficial abrasions were noted across the patient's suprapubic region, concerning for a seatbelt-related abrasion and occult blunt traumatic injury. This had previously been obscured by body hair and was only apparent after the abdomen was clipped.

Upon entering the peritoneal cavity, approximately 600 cc of old hemoperitoneum was encountered, and we thus performed a standard trauma laparotomy. In addition to a traumatic omental defect, two bucket handle-type injuries were noted at the ileocecal junction and the sigmoid colon with associated non-perforated bowel ischemia (Fig. 2). The ileocecal mesenteric injury had effectively created an internal hernia, which resulted in a closed loop small bowel obstruction. The involved small bowel was easily reduced and deemed viable. Both areas of devascularized bowel were resected uneventfully and a partial omentectomy performed. An ileocolic anastomosis was performed and an end descending colostomy created due to the presence of a large mesorectal hematoma. No intraoperative complications occurred and the patient returned to the general surgical floor postoperatively.

Postoperative course

Further postoperative debriefing with the patient revealed his involvement as a restrained passenger in a motor vehicle collision approximately 36 h prior to his presentation. His postoperative course was uneventful with return of bowel function by POD4. Following appropriate colostomy care education, he was discharged home on POD6. No additional injuries were identified on tertiary survey.

Case discussion

Hollow viscus and mesenteric injuries are relatively rare consequences of blunt abdominal trauma, carrying an approximately 2 % incidence [1]. Nevertheless, they are associated with 20–30 % morbidity and up to 10–20 % mortality rates due to limitations of cross-sectional imaging and delayed diagnosis [2]. Diagnostic delays as short as 5 h are associated with increased mortality, thus highlighting a high index of clinical suspicion, prompt diagnosis, and timely surgical management as being critical to optimal patient outcomes [3].

This case demonstrates a markedly delayed diagnosis of two blunt hollow viscus injuries with a somewhat challenging initial presentation. No history of prior trauma was offered or sought, and thus the patient was evaluated simply for generalized abdominal pain. While he ultimately underwent CT imaging—the gold standard noninvasive diagnostic modality for blunt hollow viscus injury—underlying blunt trauma was still not considered [3]. As such, he experienced an almost 24-h delay from ED presentation to definitive surgical management, fortunately without significant morbidity.

Despite its widespread use, CT imaging is relatively insensitive and nonspecific at identification of blunt hollow viscus injuries, which can lead to diagnostic delays. Accordingly, methods of improving early identification of hollow viscus injuries have been



Fig. 1. Representative axial cross-sectional Image of the patient's abdominal computerized tomography (CT) scan; white arrow indicating fecalization of the dilated terminal ileum and transition point in the right lower quadrant.

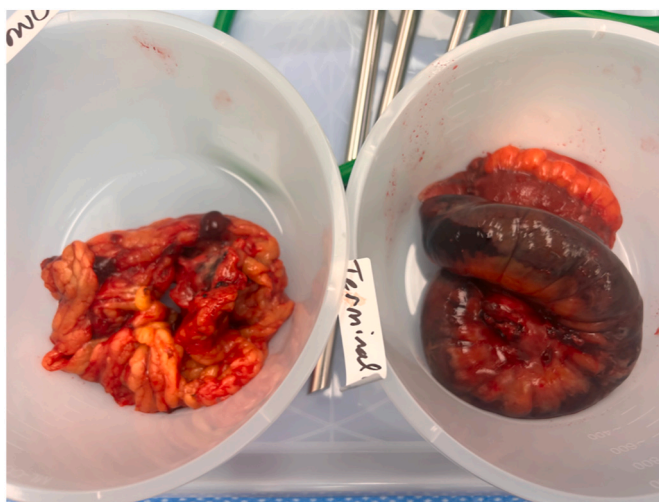


Fig. 2. Gross pathology specimens of resected ischemic sigmoid colon (left) and terminal ileum and cecum (right), both secondary to classic bucket handle-type injury.

proposed, such as the Bowel Injury Predictive Score (BIPS), which considers additional factors such as leukocyte count, abdominal pain, and grade of mesenteric injury (if visualized on CT) [4]. Additionally, a so-called “seatbelt sign,” which historically refers to periumbilical ecchymosis from older style lap belts or improperly worn modern seatbelts, has been associated with increased incidence of hollow viscus injuries as well as pancreatic transection and Chance-type lumbar spine fractures [1]. While this term is commonly and inappropriately used to describe to any visible skin and soft tissue injuries sustained from properly used motor vehicle restraints, the presence of any restraint-related abrasion on a trauma survey should raise clinical suspicion for underlying injuries.

Ultimately, with a clinical history of blunt abdominal trauma and concerning imaging findings (including, but not limited to, pneumoperitoneum, active extravasation from the mesentery, hemoperitoneum not attributable to a solid organ injury, supra-physiologic volumes of intraperitoneal free fluid, focal bowel thickening, and/or evidence of bowel ischemia or obstruction), surgeons should maintain a low threshold for operative exploration. This case serves as a cautionary tale to all clinicians to consider traumatic injury in the differential diagnosis of abdominal pain so as to expedite appropriate diagnostic workup and management and optimize patient outcomes.

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Declaration of competing interest

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