ACG CASE REPORTS JOURNAL

CASE REPORT | SMALL BOWEL

Massive Gastrointestinal Bleeding Secondary to Ileal Invasion by Ventral Hernioplasty Mesh

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ABSTRACT

Surgical mesh migration is a very rare cause of gastrointestinal (GI) bleeding. We report a 56-year-old woman who presented with massive GI bleeding 10 years after ventral hernioplasty with mesh. Esophagoduodenoscopy and colonoscopy were normal. Computed tomographic angiography of the abdomen showed no active GI bleeding or bowel perforation. Tagged red blood cell scan suggested active bleeding in the proximal ileum. Exploratory laparotomy showed the ventral hernia mesh eroding into the ileum. This case emphasizes the limitations of radiologic imaging in evaluating GI bleeding and the recognition of ventral mesh migration and invasion as a potential etiology of small-bowel bleeding.

INTRODUCTION

Complications arising from surgical mesh hernioplasty, although rare, have been documented in the literature. These include bowel perforation, obstruction, fistula formation, volvulus, erosion, and, very rarely, gastrointestinal (GI) bleeding.[1-6] The symptoms from mesh migration can occur weeks to years after surgery. Most reported complications have been observed following inguinal mesh hernioplasty.[1] Imaging techniques such as angiography and radionuclide scanning are often ineffective in detecting bleeding sources, thus endoscopic examination or surgical exploration may be necessary.

CASE REPORT

A 56-year-old woman presented to the emergency department after a motor vehicle accident. She had no complaint except generalized musculoskeletal pain. No visible bleeding was noted, and dedicated computed tomographic (CT) imaging of the chest/abdomen/pelvis was negative for any evidence of blood loss or fracture. She reported occasional melena alternating with hematochezia in the last 4 years. She had been transfused with packed red blood cells (PRBC) for symptomatic anemia 4 years prior to presentation. Esophagoduodenoscopy (EGD) and colonoscopy done at that time were both normal. She had another normal EGD and colonoscopy 1 year prior and declined further workup for the source of her intermittent GI bleeding. Her past medical history was notable for a mesh repair of an abdominal wall hernia 10 years prior and chronic atrial fibrillation, which was treated with the anticoagulant warfarin.

On admission the patient appeared comfortable. Her vital signs were within normal limits, and the physical examination was normal except for mild bruising in the distribution of a seatbelt across her chest and abdomen. Her vital signs were within normal limits. Her labs were notable for low hemoglobin (5.4 g/dL) and subtherapeutic international normalized ratio (1.7). She received 2 units of PRBC at the time of admission. EGD and colonoscopy performed upon admission were both normal.

ACG Case Rep J 2018;5:e86. doi:10.14309/crj.2018.86. Published online: December 5, 2018.

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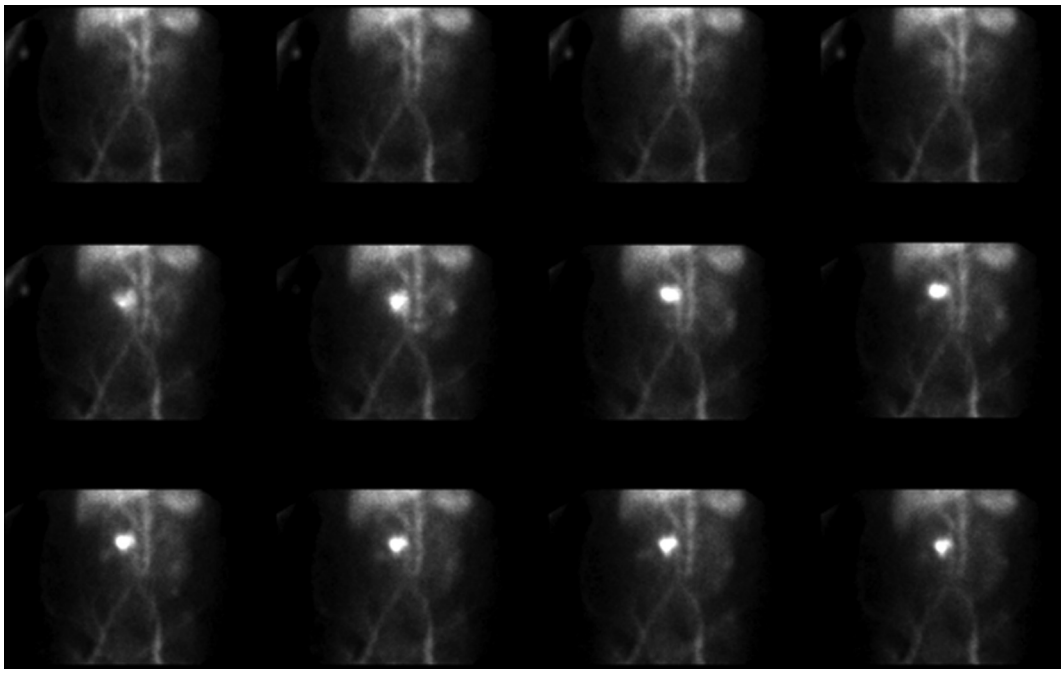

Figure 1. Tagged red cell scan showing intense tracer activity in the upper abdomen to the right of midline extending to the left.

On the third day of admission, she had a large bloody bowel movement and became hemodynamically unstable. Repeat EGD was normal. She continued having bloody bowel movements with ongoing anemia and required transfusion of 5 additional units of PRBC. CT angiography of the abdomen revealed a paramedian ventral mesh located inferiorly on the right lower abdomen, and no evidence of contrast extravasation (Figure 1). A tagged red blood cell study suggested an active bleed in the right upper quadrant likely originating from the proximal small bowel (Figure 2). Selected angiography of the celiac and superior mesenteric artery failed to demonstrate any active bleeding. Due to persistent low hemoglobin, hemodynamic instability, and massive transfusion requirements (a total of 14 units of PRBC), surgical exploration was performed.

Exploratory laparotomy findings showed a synthetic abdominal mesh protruding into the mid portion of the ileum, extensive surrounding adhesions, and serosal tears. We resected 30 cm of the involved small bowel and performed primary anastomosis. Pathological findings were notable for dense mesh invading the bowel wall, blood in the ileum, and hyperemic mucosa with multiple areas suggestive of perforation. Postoperatively, anticoagulation was resumed, and she had no further episodes of melena or hematochezia. She was discharged 2 weeks later with a stable hemoglobin (8.3 g/dL).

DISCUSSION

Mesh migration and erosion from hernioplasty, although rare, have been documented in literature. The symptoms from mesh migration can occur weeks to years after surgery. Erosion into the bowel wall typically presents with perforation, obstruction, volvulus, episodic GI bleeding, and rarely with life-threatening GI bleeding. In this case, the patient experienced ventral hernioplasty mesh migration that presented with life-threatening GI bleeding diagnosed on exploratory laparotomy.

Our patient had been bleeding intermittently for 4 years prior to presentation. Blunt abdominal trauma from seat belt injury from the motor vehicle accident may have generated shearing forces that worsened the mesh erosion, ultimately provoking massive GI bleeding. While the patient's anticoagulation

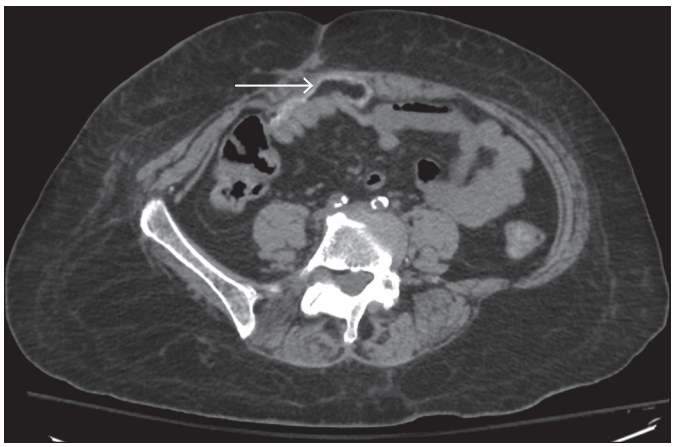

Figure 2. Computed tomography angiography of the abdomen and pelvis showing a ventral mesh without evidence of bleeding and perforation.

likely contributed to the bleeding, at no point was her international normalized ratio therapeutic or supratherapeutic. While the presence of melena suggested an upper GI bleed, the negative upper endoscopy suggested the bleeding was distal to the ligament of Treitz and likely originated from the small bowel or right colon. Video capsule endoscopy is the recommended first-line tool for a suspected small-bowel bleed, but our patient's profound hemodynamic instability warranted more aggressive workup.[7] Due to the unavailability of a deep small-bowel enteroscopy, we proceeded with a CT angiogram, which did not reveal a bleeding source. However, the tagged red blood cell scan demonstrated active bleeding in the right upper quadrant of the abdomen, suggestive of a bleed source in the small bowel. The absence of inflammation and perforation on CT is not unusual, as other cases of mesh migration have reported similar findings.[1,6]

Angiography and radionuclide imaging require active blood loss to detect bleeding sources. While radionuclide scanning is the most sensitive radiographic test for GI bleeding, it is less specific than either a positive endoscopic or angiographic examination because blood can move in either a peristaltic or antiperistaltic direction, which limits its accuracy.[8] Accuracy varies substantially, ranging from 24% to 91%.[9-11] In a study of 203 patients undergoing ^{99m}Tc-labeled red cell scintigraphy for lower GI bleeding, radionuclide scanning accurately suggested a site of bleeding in 13 of the 52 cases.[12] The tagged red cell scan was the most sensitive test for identifying an ongoing bleed in our patient, but it incorrectly localized the region of the bleeding.

Small-bowel bleeding due to ventral hernioplasty mesh migration is very rare. This case emphasizes its consideration in patients with previous mesh repair and suspected small-bowel bleeding. Our patient's hemodynamic instability necessitated an emergent exploratory surgery. Physicians should keep in mind the possibility of mesh-associated bleeding in patients with a prior history of such surgical repair to expedite the diagnosis in such clinical circumstances.

DISCLOSURES

Author contributions: A. Chris-Olaiya wrote the manuscript and reviewed the literature. J. Zweig reviewed the literature. B. Doherty, T. Cornell, V. Nambudiri, and N. Balanchivadze revised the manuscript. N. Balanchivadze is the article guarantor.

Financial disclosure: None to report.

Informed consent was obtained for this case report.

Received March 16, 2018; Accepted August 6, 2018

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