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Case Report

Strangulated hernia with bowel perforation through a defect of the broad ligament

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ABSTRACT

Intestinal obstruction is a very common cause for presentation to the Emergency Department while internal hernia is a rare cause of obstruction. Among internal hernias, defects of the broad ligament (BL) are extremely rare. Defects of the BL can be either congenital or secondary to surgery, pelvic inflammatory disease, and delivery trauma. Herein, we report a 43-year-old lady, who presented with signs and symptoms of perforated small bowel for which a diagnosis of acute peritonitis was made. At laparotomy, the cause of the perforation was found to be an internal hernia through a defect in the right BL. Surgical management was taken with a smooth postoperative course.

Key words: Bowel perforation, broad ligament, internal hernia, intestinal obstruction

Introduction

Intestinal obstruction is a common cause for presentation to the Emergency Department while internal hernia is a rare cause of such obstruction. Hernia through defects of the broad ligament (BL) is extremely rare.[1] The diagnosis of this condition is usually not made preoperatively due to its rarity and nonspecific manifestation. This report describes a rare case of intestinal obstruction with bowel perforation from internal hernia through a defect in the right BL.

Case Report

A 43-year-old lady presented to the Surgical Department with vomiting, constipation, abdominal colic, and distension for 3 days. She was known to have primary hypertension and old cerebrovascular accident. She had previous two cesarean sections. She was febrile. Abdomen was distended with central and right lower abdominal tenderness. There was localized peritonism in the right lower quadrant, with hyperactive bowel sounds. Leukocyte count was elevated to 18,000/mm^3. Multiple air-fluid levels were seen on an erect abdominal radiograph. Computed tomography (CT) was done to rule out complicated intestinal obstruction, which showed dilated small bowel down to the distal ileum, focal wall thickening with closed loops (whirlpool sign) suggestive of closed loop obstruction with free fluid in upper abdomen and pelvis [Figure 1].

Patient was prepared with nasogastric tube and Foley's catheter insertion, hydration, and intravenous broad spectrum antibiotic (imipenem 500 mg 4 times daily). Diagnostic laparoscopy was decided because of closed loop obstruction and, which showed closed loop of the ileum herniating through a 4 cm defect in the right BL, the proximal bowel was markedly dilated, and the incarcerated portion was necrotic with perforation [Figure 2]. The operation was converted to an open laparotomy because of presence of perforation, which showed 20 cm long of nonviable bowel (80 cm from the ileocecal junction), which was resected and end to end one layer interrupted hand sewn anastomosis was performed. A 4 cm defect in the right BL was closed with 2.0 nonabsorbable suture.

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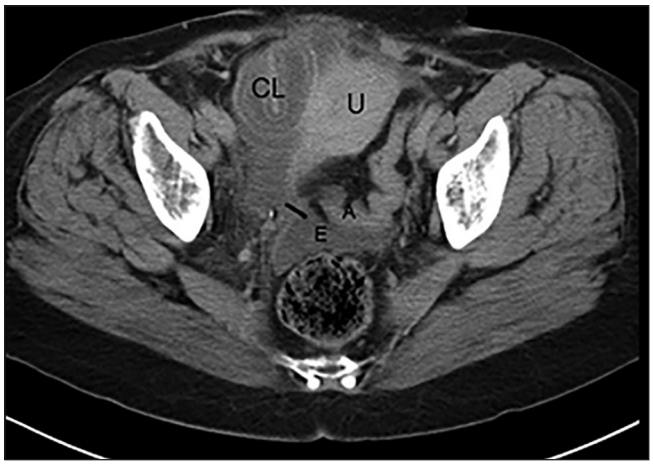

Figure 1: Computed tomography scan shows small bowel obstruction due to a broad ligament hernia (the black line at the defect), which is a closed-loop small bowel obstruction with a whirlpool sign closed loop (CL). The hernia located anterior to the uterus (U) pushing the uterus laterally to the left. Efferent and afferent ileal limbs (E and A, respectively.)

The patient had an uneventful postoperative recovery and was discharged home 5 days after surgery on oral antibiotic (cefuroxime 500 mg twice daily for 5 days). The histopathological report was consistent with gangrenous bowel.

Discussion

This is probably the first reported case of internal hernia through a defect of the BL with perforation of small bowel loop, as noted during surgical exploration. It is important to keep in mind the possibility of internal hernia because it may present with serious complication.

Internal hernias represent only 0.4-4.1% of all small bowel incarcerations, and of these, the hernias through a defect of the BL represent only 4% with only 28 reported cases.[1] An internal hernia is defined as the protrusion of an intra-abdominal viscus through or into the retroperitoneal fossae or a mesenteric defect.[2] The various types of internal hernias include paraduodenal hernias (53%), pericecal hernias (13%), hernias through the foramen of winslow (8%), sigmoid related hernias (6%), and transmesenteric hernias (8%).[2] Herniation of structures through a defect in the BL is even more uncommon and was firstly reported by Quain in 1861.

Hunt classified hernias of the BL into two types: The fenestra type that is caused by a complete fenestration through a defect in the BL as in the present case and the pouch type,[3] which involves herniation into the pouch from an anterior or posterior opening.[4] The etiology is unknown, nevertheless, congenital, and acquired causes

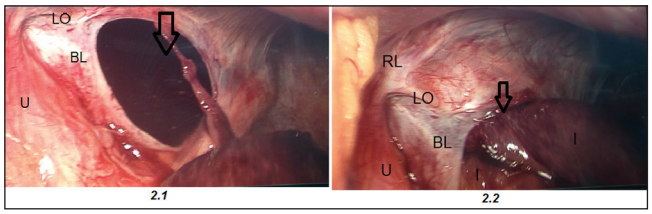

Figure 2: A laparoscopic picture is revealing a defect in the right broad ligament (BL) (black hollow arrow). Afferent and efferent ileal loops (I). The round ligament (RL), the ovarian ligament (LO), and the uterus (U)

had been reported. The acquired ones include previous surgeries, pregnancy and birth trauma, endometriosis, and pelvic inflammatory disease. There are 2 cases of unilateral congenital BL defect reported in English literature, first by Hiraiwa *et al*. in 2006[4] and the 2nd case by Ngabou *et al*. in 2012.[5] Review of the case reports revealed that the most common content of a hernia through a defect in the BL was the small bowel (25 out of 28 cases), especially the ileum. The sigmoid colon, cecum, appendix, and ovary have been reported to herniate through a BL defect resulting in complications such as bowel ischemia, ileovaginal fistula, and strangulation of the ovary.[6] Our case is the first one, which presented with bowel perforation as a complication. The defect is usually unilateral and rarely bilateral. Other classification was mentioned by Cilley *et al*. in 1986 which was based on the anatomical location of the defect. Type 1: The most common (like in our case) the defect through the entire BL, type 2: Through the mesosalpinx or mesovarium, and type 3: Throughout the meso-ligamentum teres.[3]

The preoperative diagnosis of an internal hernia through a defect in the BL is often difficult as the clinical picture of small bowel obstruction is nonspecific. However, there were 5 cases diagnosed by CT preoperatively.[7] The pathognomonic radiological feature of small bowel obstruction due to a BL hernia, as in this case, is a closed loop small bowel obstruction with a hernia located lateral to the uterus as first described by Balthazar *et al*.[7]

Laparoscopic surgery has gained an increasingly important role in the diagnosis and treatment of intestinal obstruction. The 1st case of laparoscopic repair of the hernia through a BL defect was reported by Guillem *et al*. in 2003, since that time, 13 out of 20 cases were carried out laparoscopically with an uneventful outcome, while the 8 cases before 2003 were managed by laparotomy.[8,9] Diagnosis and effective surgical treatment of complicated internal hernia are challenging by laparoscopy, but it can be carried out through an open approach. In our patient, we converted to laparotomy because of safety and ease of accomplishment.

Conclusion

BL hernia is the rarest form of internal hernia that may lead to severe complications. It must be kept in mind as a possible cause of intestinal obstruction in females. CT scan may suggest the diagnosis. Diagnostic laparoscopy is ideal as it allows for definitive diagnosis and effective surgical treatment, but it can be carried out through an open approach. Early surgical treatment is mandatory in these cases to reduce morbidity and mortality from strangulation.

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