

Strangulated small-bowel internal hernia through a defect in the broad ligament of the uterus presenting as acute intestinal obstruction: A case report

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ABSTRACT

Background: Internal hernias rarely lead to bowel obstruction; they are caused by a natural or unnatural opening within the peritoneal cavity. Defects in the broad ligament are extremely rare. Patients present with features of intestinal obstruction and most cases are diagnosed during surgery.

Case presentation: A 62-year-old parous woman presented with epigastric pain and attacks of vomiting for 1 week. The patient had had constipation for the last 5 days. She had no history of abdominal surgery. Abdominal examination revealed a distended abdomen with evidence of generalized abdominal tenderness.

Abdominal CT scan showed evidence of intestinal obstruction. During laparotomy there were dilated small-bowel loops with an evidence of internal hernia through a 3 cm × 3 cm defect in the left broad ligament, through which a segment of strangulated terminal ileum was passing. Resection of the strangulated bowel was performed with end-to-end intestinal anastomosis. The broad ligament defect was closed with a slowly absorbable suture material.

Conclusion: Surgery for intestinal obstruction due to internal hernias should follow the same principles of any case of intestinal obstruction, whether performed by the open conventional technique or laparoscopically. Surgery should not be delayed, to avoid increased morbidity and mortality. During surgery it is mandatory that the surgeon looks for any other possible defects and close them to avoid recurrence. Internal hernias caused by broad ligament defects are best managed by either closure of the defect or salpingectomy; the course of the ureter must be identified during surgery to prevent injury.

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1. Introduction

Internal intestinal hernia is defined as herniation of the small intestine through defects in the peritoneum. This herniation may also be caused by intestinal malrotation or abnormal peritoneal attachments, which may act as leading points for herniation. Internal intestinal hernia is a very rare cause of intestinal obstruction, accounting for less than 7% of such obstructions, while internal hernias caused by broad ligament defects constitute about 0.2–0.9% of all cases of intestinal obstruction. [1,2]

The first reported case of bowel herniation through a defect in the broad ligament concerned an autopsy by Quain in 1861. These defects may be congenital or acquired after pelvic surgery, inflammatory conditions in the pelvis, endometriosis, or obstetric trauma. [1]

The defect in the broad ligament may be unilateral or bilateral, and most cases have no any history of previous abdominal surgery, trauma, or pelvic inflammatory disease. The cause of these defects is not well understood because of rarity of the condition, but some studies have described the presence of cystic structures in the broad ligament which may be of remnants of Müllerian ducts; rupture of these cystic elements may result in the creation of such defects in the broad ligament. [1,3]

The diagnosis is usually difficult before surgery, as most cases present with features of intestinal obstruction, or bowel ischemia or both. Plain abdominal radiographs may show the typical radiological features of intestinal obstruction, but usually fail to diagnose the cause. CT scan may show evidence of strangulated loops of bowel in the Douglas pouch, which may be suggestive for this condition. [4,5]

Most cases require surgery, especially in the setting of intestinal obstruction; laparoscopic management may be successful in some cases, but if that approach fails, then open surgery will be required. The principles of surgical intervention include early intervention to prevent bowel strangulation, reduction of the hernia, resection of any non-viable part of the bowel and closure of the defect. Salpingectomy is

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another management option which will eliminate the risk of recurrence. [1,2,6,7]

2. Case presentation

A 62-year-old parous woman presented with epigastric pain and attacks of vomiting for 1 week. The pain was colicky in nature with no radiation to any anatomical location and was associated with 4 or 5 attacks of vomiting each day. The pain was reduced in intensity after each attack of vomiting. The patient had had constipation for the last 5 days.

She had history of ischemic heart disease and atrial fibrillation and was on regular treatments for both conditions. She had a history of curettage under anesthesia 2 times, which was 25 years before presentation, but no history of abdominal surgery, of pelvic inflammatory disease, or of endometriosis.

She currently had no drug allergy. The family history was negative for genetic diseases.

During the clinical examination, she had an increased pulse rate (110 beats/min), low blood pressure (90/60 mmHg), and normal temperature. The patient had no jaundice or pallor; her mouth was dry.

Abdominal examination revealed a distended abdomen with evidence of generalized abdominal tenderness and guarding. The bowel sounds were increased in frequency and high pitched.

The patient was admitted to the emergency department and received supportive therapy in the form of intravenous fluids, analgesics and prophylactic third-generation antibiotics in the form of cephalosporin. A naso-gastric tube was inserted with intermittent aspiration. The patient was then sent for abdominal CT scan, which showed evidence of intestinal obstruction with mild pelvic fluid collection and no evidence of free air in the peritoneal cavity (Fig. 1).

Diagnostic laparoscopy was performed but then the operation was converted to the open technique due to dilated bowel loops causing difficulties in appropriate visualization of the intestine and the intra-abdominal organs.

Midline abdominal incision was performed. There were dilated small-bowel loops with evidence of internal hernia through a defect at the left broad ligament. The defect was about 3 cm × 3 cm in diameter, through which a 20-cm segment of strangulated terminal ileum was passing. Resection of the strangulated segment of ileum was performed followed by end-to-end intestinal anastomosis (Figs. 2–4).

The defect of the broad ligament was closed with a slowly absorbable suture material. The course of the left ureter was identified before suturing the defect.

The patient started oral intake 48 h after the surgical procedure after the naso-gastric tube was removed and the bowel sounds returned to normal.

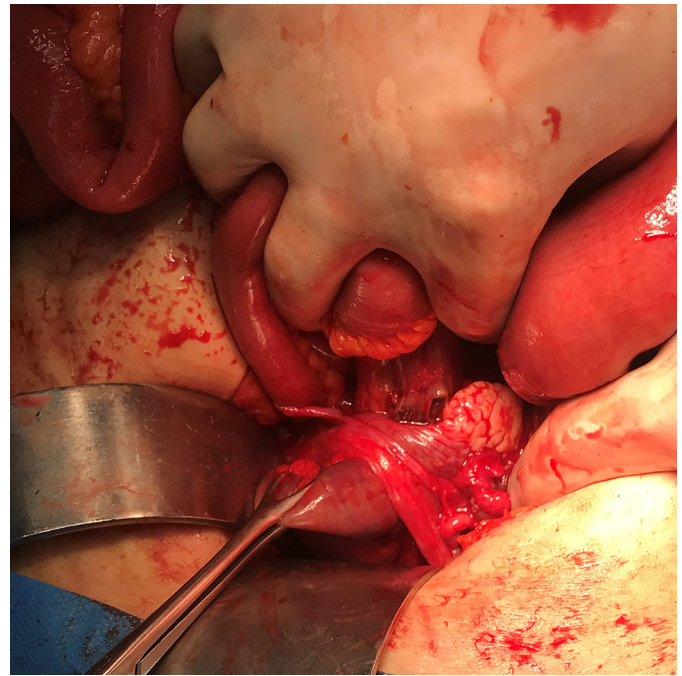


Fig. 2. An intraoperative picture showing herniation of the small bowel through a defect in the left broad ligament.

The patient was then discharged home 4 days after surgery with no post-operative complications. At 1-year follow-up after surgery the patient was doing well, with no complications or recurrence.

3. Discussion

Generally, internal hernias are rare causes of bowel obstruction and constitute less than 7% of all causes of intestinal obstruction. More than 50% of cases of internal intestinal herniation are para-duodenal in type; other types include herniation through mesenteric defects, supra-vesical or peri-vesical, inter-sigmoidal, herniation through the foramen of Winslow, and trans-omental. The majority of cases of trans-mesenteric hernias are acquired and follow roux-en-Y bowel reconstructions. [2,8]

Patients with internal intestinal hernia may have history of intermittent attacks of small-bowel obstruction before the condition is diagnosed. In our case the patient presented with acute intestinal obstruction with no history of previous attacks of abdominal pain. [1,8,9]

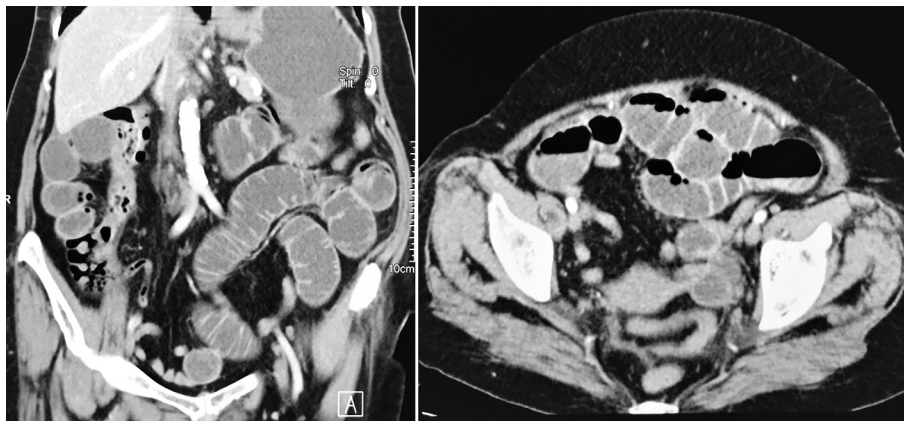


Fig. 1. CT scan of the abdomen showing dilated small-bowel loops.

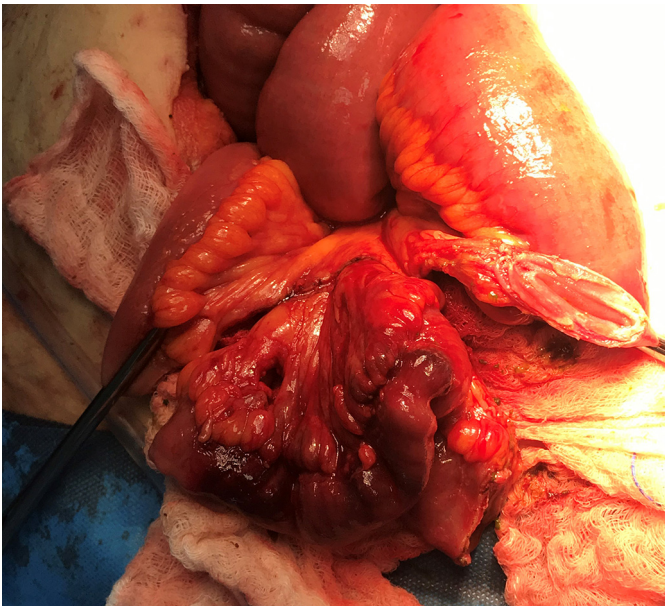


Fig. 3. An intraoperative picture showing the strangulated part of the bowel that was herniated.

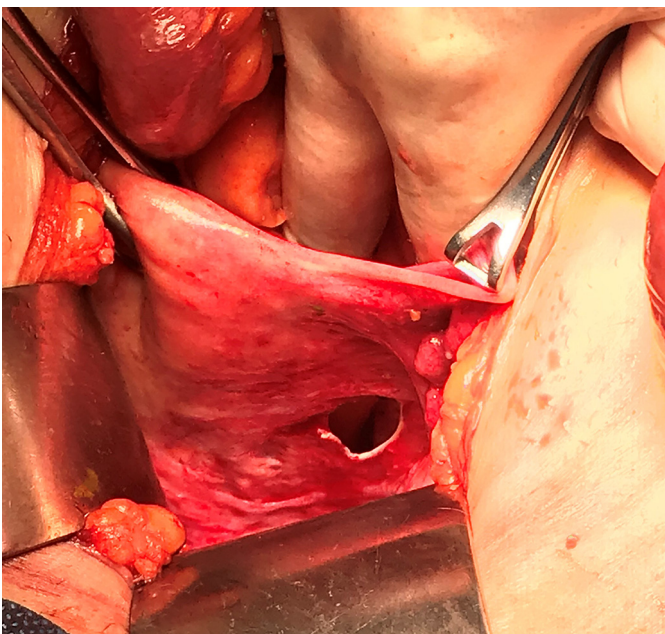


Fig. 4. An intraoperative picture showing the defect in the left broad ligament.

Some authors classify internal hernias of the broad ligament into 2 main types: the fenestra type, in which there is a complete opening in the broad ligament; and the pouch type, in which there is a pouch in the broad ligament which may be anterior or posterior and inside which the bowel becomes herniated; there is also the hernia sac type. The current case was of the fenestrated type, as there was a well-defined opening in the left broad ligament. [1]

Although Quain was the first to describe this condition, in autopsy in 1861, Allen and Masters reported a series of cases in 1955, and for this reason it is sometimes referred to as Allen-Masters syndrome. [6]

Although the pathogenesis is still not well understood, regardless of the classification, surgery should follow the same principles of any case of intestinal obstruction, whether performed by the open conventional technique or laparoscopically. Surgery should not be delayed, to avoid increased morbidity and mortality. During surgery it is mandatory that the surgeon looks for any other possible defects and close them to avoid recurrence. The course of the ureter must be identified in such cases before applying sutures or performing salpingectomy; the ureters pass below the uterine arteries on each side, as stated in the mnemonic “water under the bridge”. If oophorectomy is also required, ligation of the ovarian vessels must be performed as they pass through the infundibulo-pelvic ligament, to avoid inadvertent ureteric ligation. The prognosis is usually excellent provided prompt surgical intervention is undertaken. Long-term follow-up is usually not mandatory. [1,10–12]

Contributors

The two authors contributed equally to the concept and writing of this case report, and both saw and approved the final manuscript.

Conflict of interest

The authors declare that they have no conflict of interest regarding the publication of this case report.

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