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Case Report

A rare differential of acute abdomen: a case of internal hernia presenting as small bowel obstruction

Shahid Afridi S., Divya Jyoti Banerjee*

Department of Surgery, GMERS Medical College and hospital, Sola, Ahmedabad, Gujarat, India

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***Correspondence:**
Dr. Divya Jyoti Banerjee,
E-mail: div97banerjeee@gmail.com

ABSTRACT

Internal hernias, though uncommon, are crucial to consider when diagnosing intestinal obstruction. They typically arise from developmental abnormalities, less frequently from acquired issues. Developmental causes include abnormal or incomplete development of the mesentery or gut rotation. Surgery is the most common cause of acquired internal hernias, particularly laparoscopic gastrojejunostomy or duodenojejunostomy repair procedures. Internal hernias usually present with intestinal obstruction symptoms. Imaging plays a vital role in diagnosis. While an upright abdominal X-ray may show signs of obstruction, CT scanning is the definitive investigation. This report describes an 18-year-old male who presented with generalized abdominal pain for eight days and no stool or gas passage for the past three days. After confirmation of a mesenteric hernia through ultrasound and CT imaging, emergency laparotomy surgery was performed. Due to gangrenous bowel, resection was not possible, so an ileostomy was created. The tissue sample was sent for histological examination. Surgery remains the definitive treatment for internal hernias.

Keywords: Internal hernia, Midgut volvulus, Small bowel obstruction, Mesenteric defect

INTRODUCTION

Internal hernias occur when abdominal organs protrude through abnormal openings, either congenital (present at birth) or acquired (developed later in life), into different compartments within abdomen or pelvis.[1] These hernias are less common in adults compared to other types.

Causes

Congenital defects: Abnormal anchoring of the mesentery in the back of the abdomen, unusually large natural openings within the abdominal cavity and abnormal gaps within the mesentery itself.

Acquired defects: Formation of abnormal openings in the mesentery during surgery.

Internal hernias are often discovered incidentally during imaging tests for other reasons or may be found during surgery itself.[2] Abnormal rotation of the intestine's during development is considered a major cause of congenital internal hernias.[3]

These hernias are typically classified as left or right meso-colic hernias based on their location.

Symptoms

Due to potential for entangled bowel loops (volvulus), internal hernias often present with: Sudden and severe abdominal pain, abdominal distention, signs of intestinal obstruction (difficulty passing stool and gas) and signs of strangulation of bowel leading to gangrenous bowel segment

Treatment

Exploratory laparotomy surgery is the definitive treatment for internal hernias.

CASE REPORT

An 18-year-old male presented with generalized abdominal pain for 8 days (gradual onset, worsening over time) with obstipation for 3 days and multiple episodes of vomiting. There was no history of fever, trauma, previous abdominal surgery or significant medical or family history. Patient was not taking any regular medications.

On examination the patient was alert, conscious, cooperative, and oriented. He had tachycardia (heart rate 124 bpm) while other vital signs were normal. On palpation there was generalized abdominal tenderness with guarding. The patient also had moderately distended abdomen and digital rectal exam was suggestive of an empty rectum with bulging.

Laboratory tests were significant for a mild elevation in white blood cell count (12.55×10^9/L) with normal hemoglobin, platelets, liver, and kidney function tests.

Ultrasound imaging suggested significant dilatation of the ileal loops with thickened walls and minimal peristalsis, along with dilated fluid-filled jejunal loops and a colon distended with stool and gas.

Multi-detector CT scan of the abdomen and pelvis confirmed the suspicion of a midgut volvulus. Findings included a misty mesentery and a whirl sign in the mesenteric vessels near small bowel loops in umbilical region.

Figure 1: Erect abdominal X-ray.

Figure 2: Sagittal CT section showing swirl sign.

Given the high probability of intestinal ischemia and gangrene, the patient underwent an exploratory laparotomy through a midline vertical incision. The surgical team encountered gangrenous and dilated small bowel loops entangled within themselves, consistent with a midgut volvulus. Unfortunately, derotation (untwisting) of the intestine was not possible. Further exploration revealed a small defect in the mesentery with a trapped small bowel loop, confirming the presence of a mesenteric hernia.

Figure 3: Intra operative photo showing gangrenous small bowel volvulus.

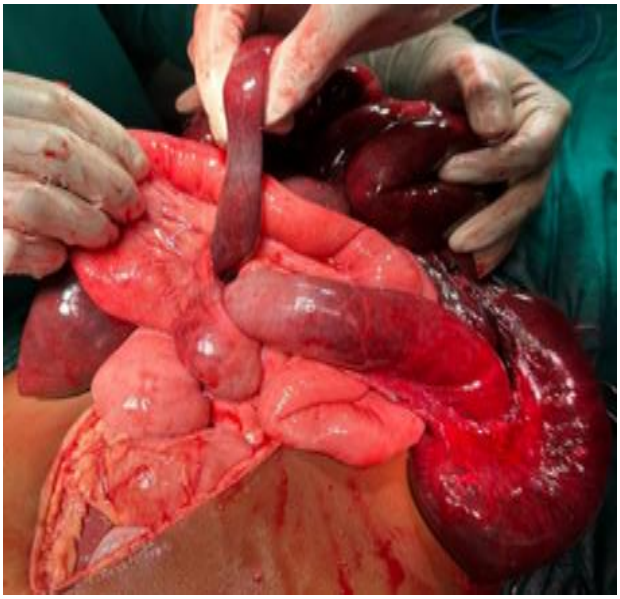

Figure 4: Intra operative picture showing herniation of ilieal loop through mesenteric defect.

Approximately 100 cm of gangrenous ileum, located 20 cm from the ileocolic junction, was resected. The resected tissue was sent for histopathological examination, and peritoneal fluid was collected for microbiological analysis. A double-barrelled ileostomy was fashioned to divert intestinal contents. A 32 French ADK drain was placed in the pelvic region for postoperative drainage. The laparotomy was then closed using tension sutures.

DISCUSSION

Internal hernias, accounting for only 0.2-0.9% of all hernias, are a relatively uncommon cause of intestinal obstruction. They occur more frequently in males, with a male-to-female ratio of 3:2. Several subtypes exist, including para-duodenal, peri-cecal, foramen of Winslow, trans-mesenteric, inter-sigmoid, supra-vesical or pelvic, and trans-omental hernias. Our case report highlights a mesenteric hernia, a less frequent type. Mesenteric hernias develop when a portion of the intestine protrudes through an abnormal opening within the mesentery, the tissue supporting the small intestine and colon. These hernias most commonly occur near the junction of the ileum and colon (ileocolic junction), although defects in the sigmoid mesentery have also been documented.

Patients with mesenteric hernias may not experience any symptoms for years, or they may present acutely with sudden, severe abdominal pain.[4] This acute presentation typically signifies intestinal obstruction, often caused by compression of bowel loops at the hernia's neck or twisting (torsion) of the herniated segment.

The clinical presentation of internal hernias can be ambiguous, ranging from years of no symptoms to sudden, severe abdominal pain. When symptoms do arise, they often mimic intestinal obstruction, including sudden onset of severe pain, inability to pass stool or gas and abdominal distention.[5] While a baseline abdominal X-ray may reveal multiple air-fluid levels, and ultrasound might suggest dilated bowel loops and signs of obstruction (reports can vary due to subjectivity), the gold standard for diagnosis is a CT scan of the abdomen and pelvis (CECT). In cases of closed-loop obstruction, a CT scan can sometimes show a characteristic "whirl sign."[6]

Early diagnosis and intervention are critical in managing internal hernias. Every minute of delay can worsen the patient's condition. Exploratory laparotomy remains the definitive treatment approach.

CONCLUSION

Internal hernias, particularly the mesenteric type, pose a significant challenge due to their rarity and often non-specific presentation. Maintaining a high index of suspicion and utilizing advanced imaging techniques like CT scans are crucial for timely diagnosis and surgical intervention to prevent complications.

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