

Intestinal Obstruction Secondary to Left Paraduodenal Hernia: A Case Report

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Received: 12 July 2025

Accepted: 25 July 2025

Published: 30 July 2025

J Short Name: AJSCCR

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Keywords:

Internal Hernia; Paraduodenal Hernia; Small Bowel Obstruction; CT Diagnosis; Laparoscopy

Citation:

Salah Termos, Intestinal Obstruction Secondary to Left Paraduodenal Hernia: A Case Report. Ame J Surg Clin Case Rep® 2025; V9(1): 1-4

1. Abstract**1.1. Introduction**

Internal hernias are rare but potentially life-threatening causes of intestinal obstruction. They involve the protrusion of abdominal contents through a mesenteric or peritoneal aperture. Among them, preduodenal hernias (PDH) are the most common congenital internal hernias. We describe a 40-year-old male with symptoms of small bowel obstruction. CT imaging suggested a left preduodenal hernia. He underwent diagnostic laparoscopy, which was converted to laparotomy due to difficulty in reduction. Surgical repair was successfully performed. The patient had an uneventful recovery and was discharged on postoperative day four. Internal hernias such as PDH should be considered in patients with small bowel obstruction and no prior abdominal surgery. Prompt imaging and surgical management are key to preventing complications.

2. Introduction

Internal hernias involve the protrusion of abdominal viscera through a mesenteric or peritoneal defect within the peritoneal cavity. With an incidence of less than 1%, internal hernias are rare but clinically significant causes of small bowel obstruction [1,2]. Among them, paraduodenal hernias (PDH) are the most common congenital type, representing about 53% of internal hernias [3]. PDH is more commonly left-sided (75%), typically affecting males in their 30s or 40s [4]. Because of their congenital nature and absence of external signs, diagnosis is often delayed. A high index of suspicion is necessary, particularly in patients with no prior abdominal surgery—often referred to as having a “virgin abdomen” [5].

3. Case Presentation

A 40-year-old male presented with a 3-day history of vomiting, diffuse abdominal pain, anorexia, and obstipation. He reported a similar episode 3 months earlier that resolved spontaneously. He had no significant medical, surgical, or trauma history. On examination, the patient was vitally stable, but had a rigid and tender abdomen. Laboratory investigations were notable for:

- WBC count: $14 \times 10^9/L$, Lactate: 1.9 mmol/L and others were unremarkable.

Upright abdominal X-ray showed dilated small bowel loops (Figure 1). Contrast-enhanced CT abdomen and pelvis demonstrated encapsulated loops of small intestine in the left upper quadrant, mesenteric defect consistent with a left paraduodenal hernia, engorged and stretched mesenteric vessels and proximal duodenal dilation (3.1 cm) (Figure 2). These findings matched classic CT descriptions of PDH: a cluster of jejunal loops between the pancreas and stomach, near the ligament of Treitz, with anterior displacement of the inferior mesenteric vein (IMV) a hallmark sign [3]. After stabilization and preparation, patient underwent diagnostic laparoscopy, which revealed entrapped bowel loops within a 2 cm defect in the mesocolon (Figure 3). Laparoscopic reduction was unsuccessful due to tight incarceration and risk of injury. The procedure was converted to a midline exploratory laparotomy, and the herniated bowel was clearly demonstrated and later reduced successfully (Figure 4). The defect was closed using nonabsorbable monofilament sutures in a figure-of-eight fashion. There was no evidence of ischemia or necrosis. The patient recovery was uneventful and was discharged on postoperative day four. Follow up was smooth and unremarkable.

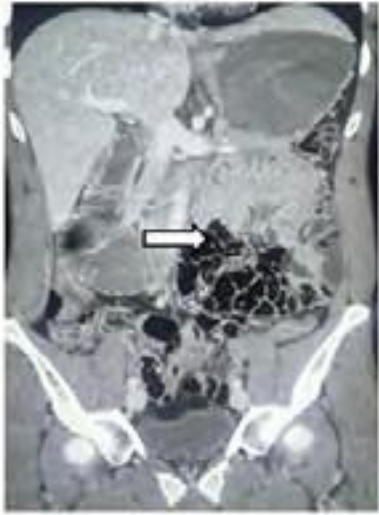


Figure 1: Plain abdominal x-ray showing SBO with abnormal bowel gas patterns in the L1 hypochondrium (Arrow).



Figure 2: Plain abdominal x-ray showing SBO with abnormal bowel gas patterns in the L1 hypochondrium (Arrow).



Figure 3: Enhanced CT scan coronal and axial views revealing clusters of bowel loops entrapped in the left side of the Treitz.

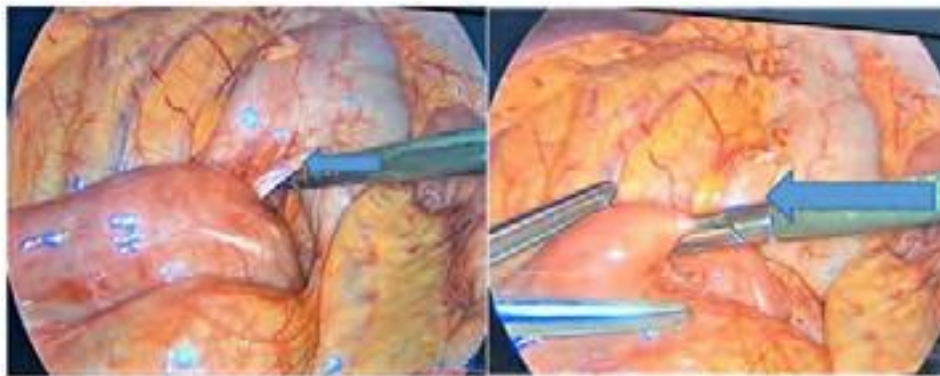


Figure 4: Laparoscopic exploration demonstrating the left paraduodenal hernia through the mesenteric defect (arrow).

4. Discussion

PDH results from abnormal midgut rotation during embryogenesis. Normally, the pre-arterial segment of the midgut rotates 270° counterclockwise around the superior mesenteric artery (SMA), eventually fixing to the posterior abdominal wall. Failure of this process can leave a persistent fossa of Landzert, allowing herniation of mobile small bowel loops [4,5]. Anatomically, the herniated bowel often lies posterior to the IMV and left colic artery, within the mesocolon (Figure

5) [6]. Treitz described three essential conditions for left PDH development [3,4]: 1. A fossa of Landzert, 2. IMV located at the neck of the hernia sac and 3. Sufficient mobility of the small bowel PDH may be asymptomatic, present with nonspecific abdominal pain, or cause acute intestinal obstruction in over 50% of cases [1,2]. Symptoms may be intermittent or chronic due to partial obstruction [4,5].

CT scan is the gold standard for diagnosis, providing superior anatomical detail. Key features include:

- Sac-like cluster of jejunal loops in the left upper quadrant
- Displacement of the stomach or pancreas
- Engorgement or crowding of mesenteric vessels
- IMV at the anterior border of the hernia sac (Figure 6) [7,8]

Plain abdominal radiographs are less specific but may reveal an oval mass of dilated loops in the left upper abdomen [9]. Surgical options are not standardized yet as there is no universal consensus on the optimal approach. Minimally invasive access, robotic or laparoscopic repair is gaining popularity due to shorter

hospital stay, faster recovery and lower complication rates [9]. However, conversion to laparotomy may be necessary in cases of incarcerated hernia, suspected bowel ischemia and intraoperative technical difficulty [10,11]. Careful handling is essential, as dilated bowel loops are prone to iatrogenic injury, especially during laparoscopic reduction [12]. In our case loops were very thin and dilated and due rarity of this medical condition and lack of expertise in advanced minimally invasive surgery we elected to convert to open and complete the procedure safely. Early surgical management significantly improves outcomes. Delay in diagnosis or surgery can result in strangulation, ischemia, or perforation, with mortality rates exceeding 20% in complicated cases [10].

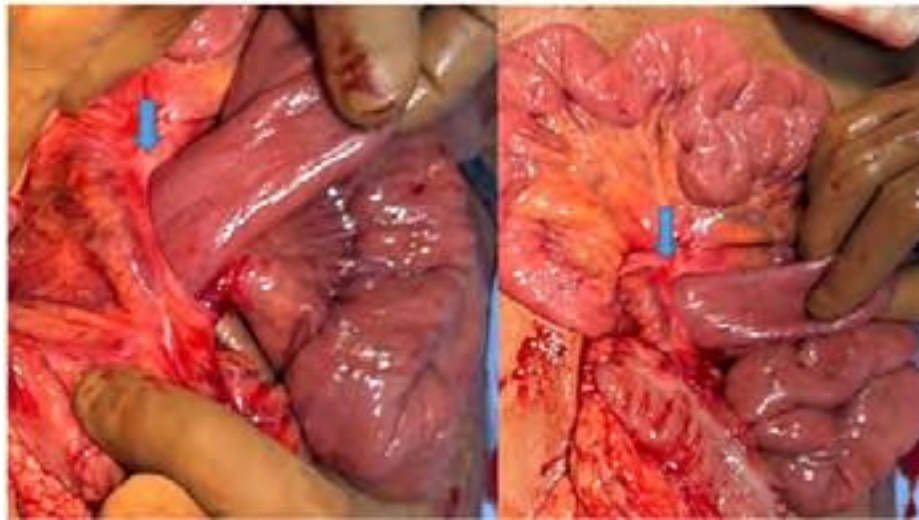


Figure 5: Confirming the Lt paraduodenal hernia at the Lt side of the IMV in the fossa of Landzert (arrow).

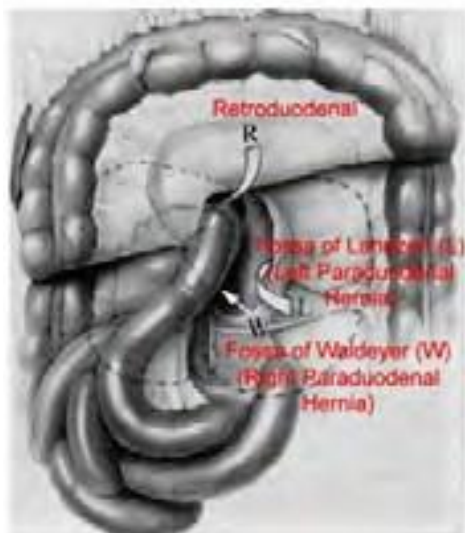


Figure 6: Displaying all types of paraduodenal hernias

5. Conclusion

Left preduodenal hernia is a rare but important cause of small bowel obstruction, particularly in younger patients without previous surgery. Awareness of the embryologic basis, characteristic CT findings, and surgical anatomy is essential



Figure 7: Illustrating the left paraduodenal hernia and relationship to the IMV [7].

for early diagnosis and management. CT imaging remains the most reliable diagnostic tool. Surgical treatment preferably laparoscopic when feasible is both diagnostic and therapeutic. Prompt intervention is critical to avoid life-threatening complications.

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