# Left Paraduodenal Hernia: A Rare Cause of SBO Revealed by Unique CT Findings

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Background	Small bowel obstruction (SBO) is a clinically significant condition that typically presents with abdom- inal pain, distention, nausea and/or vomiting, often occurring in patients with a history of abdominal or pelvic surgery due to adhesions. SBOs are rare in virgin abdomens and should prompt consideration of less frequent etiologies, such as internal hernias. A left paraduodenal hernia (PDH), a rare anomaly of midgut rotation, represents one such cause. These hernias frequently remain asymptomatic until adulthood, potentially presenting acutely with SBO. CT imaging is the best diagnostic modality for visualization of a left PDH. Effective surgical management poses a challenge due to its rarity.
Summary	We report the case of a 35-year-old male presenting with acute onset abdominal pain consistent with SBO, despite having no history of abdominal or pelvic surgery. Classic CT findings were central in making the diagnosis of SBO secondary to a left PDH. Definitive surgical management was achieved via laparotomy.
Conclusion	This case highlights the necessity of maintaining a high index of suspicion for PDH when evaluating patients with SBO symptoms in the absence of prior surgery. Accurate diagnosis and effective treatment rely upon recognizing the typical imaging features and understanding the appropriate surgical approaches for this rare condition.
Key Words	paraduodenal hernia; virgin abdomen; small bowel obstruction; internal hernia; exploratory laparotomy

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## **Case Description**

A 35-year-old male with no past medical or surgical history presented to the emergency department with acute-onset severe abdominal pain associated with constipation and nausea. Initial assessment revealed mild hypertension with otherwise normal vital signs. Physical examination demonstrated slight abdominal distension accompanied by moderate left-sided abdominal tenderness and guarding.

Laboratory work-up was significant for leukocytosis (WBC 16.9) and lactic acidosis (lactic acid = 2.3 mmol/L). CT of the abdomen and pelvis with IV contrast revealed multiple abnormal, dilated loops of small bowel localized to the left upper quadrant with extensive bowel wall edema. These findings raised significant concern for acute bowel ischemia secondary to an internal hernia (Figures 1 and 2). Following prompt fluid resuscitation and IV antibiotic administration, the patient was taken urgently to the operating room for exploratory laparotomy.

Utilizing an upper midline incision, the abdomen was explored, revealing approximately 25% of the proximal jejunum incarcerated within the fossa of Landzert. The entrapped bowel was subsequently reduced from the paraduodenal space. Although initially appearing dusky, the bowel demonstrated satisfactory reperfusion after reduction and correction of an associated jejunal volvulus. The inferior mesenteric vein and left colic artery were identified immediately lateral to the hernial orifice and meticulously preserved during dissection. The hernia defect was then strategically widened via dissection directed towards the base of the ligament of Treitz to facilitate reduction and prevent recurrence without compromising vascular structures. Re-assessment confirmed the viability of the previously incarcerated bowel segment. Subsequently, the midline laparotomy incision was closed in standard fashion.

The patient's postoperative course was uneventful, and he was discharged on postoperative day 3, tolerating a regular diet, ambulating independently, voiding normally, and exhibiting appropriate return of bowel function. At his scheduled office follow-up on postoperative day eight, he was progressing well, and no further immediate intervention or follow-up was deemed necessary.

**Figure 1.** Dilated Loops of Small Bowel in the Paraduodenal Hernia Sac. Published with Permission



**Figure 2.** Small Bowel Loops Confined in the Left Upper Quadrant. Published with Permission



## Discussion

Small bowel obstruction (SBO) represents a significant source of morbidity and mortality in the United States, necessitating approximately 300,000 surgical interventions annually.<sup>1</sup> While adhesions resulting from prior abdominopelvic surgery constitute the predominant risk factor, accounting for up to 80% of SBO cases, obstruction can also arise in patients without previous surgical history (i.e., a "virgin abdomen").<sup>1</sup> Paraduodenal hernia (PDH) stands as one such etiology in this patient population.

A paraduodenal hernia is a rare congenital anomaly, occurring in approximately 2% of the population with a male-to-female ratio of 3:1.<sup>2</sup> These hernias often remain clinically silent until presenting acutely with symptoms of SBO, typically around a mean age of 38.5 years.<sup>3</sup> Left-sid-ed PDHs constitute the majority (approximately 75%) of cases, while right-sided PDHs account for the remaining 25%.<sup>4</sup> A left PDH occurs when small bowel loops herniate through the fossa of Landzert, a congenital peritoneal defect located lateral to the fourth portion of the duodenum and posterior to the inferior mesenteric vein (IMV) and the ascending branch of the left colic artery.<sup>2</sup> Consequently, PDHs are sometimes referred to as mesocolic hernias.

Contrast-enhanced CT is the primary imaging modality for establishing the diagnosis of a left PDH, enabling appropriate surgical planning and definitive treatment. Diagnostic imaging features, as demonstrated in this case, include the encapsulation of crowded and dilated small bowel loops within a well-circumscribed hernia sac, classically located in the left upper quadrant (Figures 1 and 2).

Prompt surgical management necessitates prompt intervention involving careful reduction of the herniated bowel. The standard approach, employed in this case, involves incising the anterior hernia sac margin medial to the IMV and widening the hernia orifice by dissecting towards the base of the ligament of Treitz, thereby obliterating the potential space. An alternative technique involves primary closure of the peritoneal defect after hernia reduction.<sup>4</sup> Irrespective of the chosen method, careful identification and preservation of the IMV and the ascending left colic artery are paramount to prevent vascular injury and ischemic complications. While open repair has been the traditional approach, contemporary evidence suggests that a laparoscopic approach may offer advantages, potentially reducing postoperative morbidity and hospital length of stay.5

## Conclusion

This case demonstrates the importance of maintaining high clinical suspicion for less common etiologies of SBO, notably internal hernias like PDH, particularly when evaluating patients presenting with obstructive signs and symptoms without a history of prior abdominal surgery (a "virgin abdomen"). Such patients require work-up with CT imaging to confirm the diagnosis and aid surgical planning. Curative treatment necessitates knowledge of specific surgical techniques.

## **Lessons Learned**

A left PDH, as illustrated here, involves the herniation of distal duodenum or proximal jejunum through the fossa of Landzert, a congenital mesocolic defect positioned posterior to the inferior mesenteric vein and the ascending left colic artery. Effective and curative surgical management necessitates precise anatomical knowledge and employs specific techniques, typically involving careful reduction of the herniated bowel followed by either widening of the hernia defect or primary closure of the paraduodenal space. Both approaches can provide definitive treatment but critically depend on identifying and preserving the vital mesenteric vasculature adjacent to the hernia orifice to prevent iatrogenic injury. Therefore, a thorough understanding of the presentation, diagnosis, and nuanced surgical management of PDH is crucial for surgeons treating patients with acute SBO.

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