

# Left Paraduodenal Hernia and Its Laparoscopic Management

Siddhi Chawla<sup>1</sup>  Vasantha Choudhary<sup>1</sup> Pawan Morwani<sup>1</sup> Rajesh Kumar<sup>2</sup> Aditya Charan<sup>1</sup>

<sup>1</sup>Department of Radiology, Sardar Patel Medical College, Bikaner, Rajasthan, India

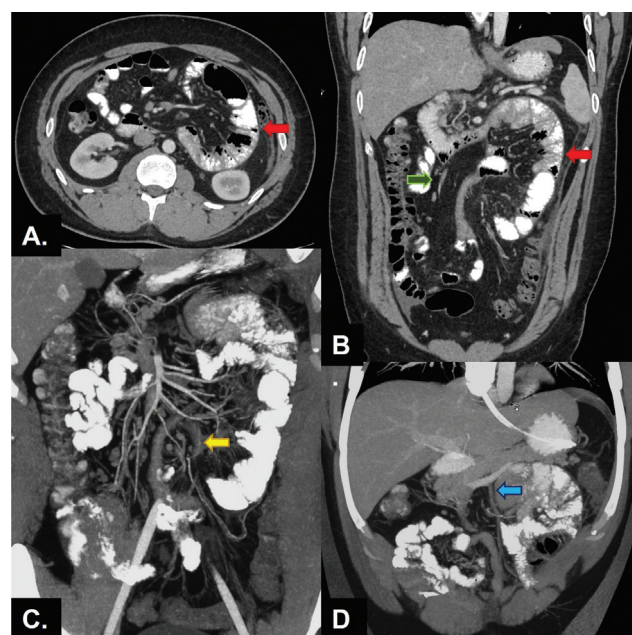
<sup>2</sup>Department of Surgery, Sardar Patel Medical College, Bikaner, Rajasthan, India

Address for correspondence Siddhi Chawla, MD, DNB, MNAMS, PDCC Pediatric Radiology, Department of Radiology, Sardar Patel Medical College, Bikaner 334001, Rajasthan, India (e-mail: siddhi.chawla870@gmail.com).

J Gastrointestinal Abdominal Radiol ISGAR 2024;7:86–88.

We highlight the case of a 35-year-old man who complained of 1-month history of on and off abdominal pain in the epigastric region that aggravated in the last 2 days. It was often associated with nausea, and occasional episodes of vomiting accompanied the pain in the past. It got worse after meals and resolved 1 to 2 hours later. There was no operative history and presence of chronic ailment. On physical examination, the abdomen was soft on palpation. Blood investigations revealed normal com-

plete blood count, serum amylase, and liver and kidney function tests. Endoscopy was performed, which showed no abnormality. Contrast-enhanced computed tomography (CECT) scan was performed, which showed that the jejunum and its mesentery were clumped together on the left side of the abdomen via a small defect on the left side of the fourth part of the duodenum (►Fig. 1A,B). On maximum intensity projection (MIP) images, inferior mesenteric vein (IMV) and ascending colic branch (ACB) of the left colic could be seen anterior to the neck of the hernia (►Fig. 1C,D). There were no abnormally dilated bowel loops, and enhancement of bowel loops was normal. The patient was diagnosed with left paraduodenal hernia (LPDH), and laparoscopic surgery was done. It showed herniation of jejunal loops for a length of approximately 3 feet via the defect in the transverse mesocolon (►Video 1). The bowel loops were reduced and the defect was repaired. He was discharged on postoperative day 7. The patient is doing well currently and is free of any abdominal complaints.



**Fig. 1** (A,B) Axial and coronal reformatted images show clustering of bowel loops in the left side of the abdomen (red arrows). Hernial orifice is seen as green arrow. Maximum intensity projection (MIP) coronal images show (C) faintly opacified ascending colic branch of the left colic artery (yellow arrow) and (D) inferior mesenteric vein (blue arrow) along the anterior margin of hernial sac.

## Video 1

Intraoperative video during laparoscopy in which herniated bowel is retracted back from the orifice in the mesentery. Later, this hernial defect was closed with interrupted sutures and transverse mesocolon was fixed (not shown in video). Online content including video sequences viewable at: <https://www.thieme-connect.com/products/ejournals/html/10.1055/s-0043-1771195>.

Abdominal hernias are divided into two types, external and internal. Internal hernias occur via congenital or acquired defects in the mesentery and account for 1% of all

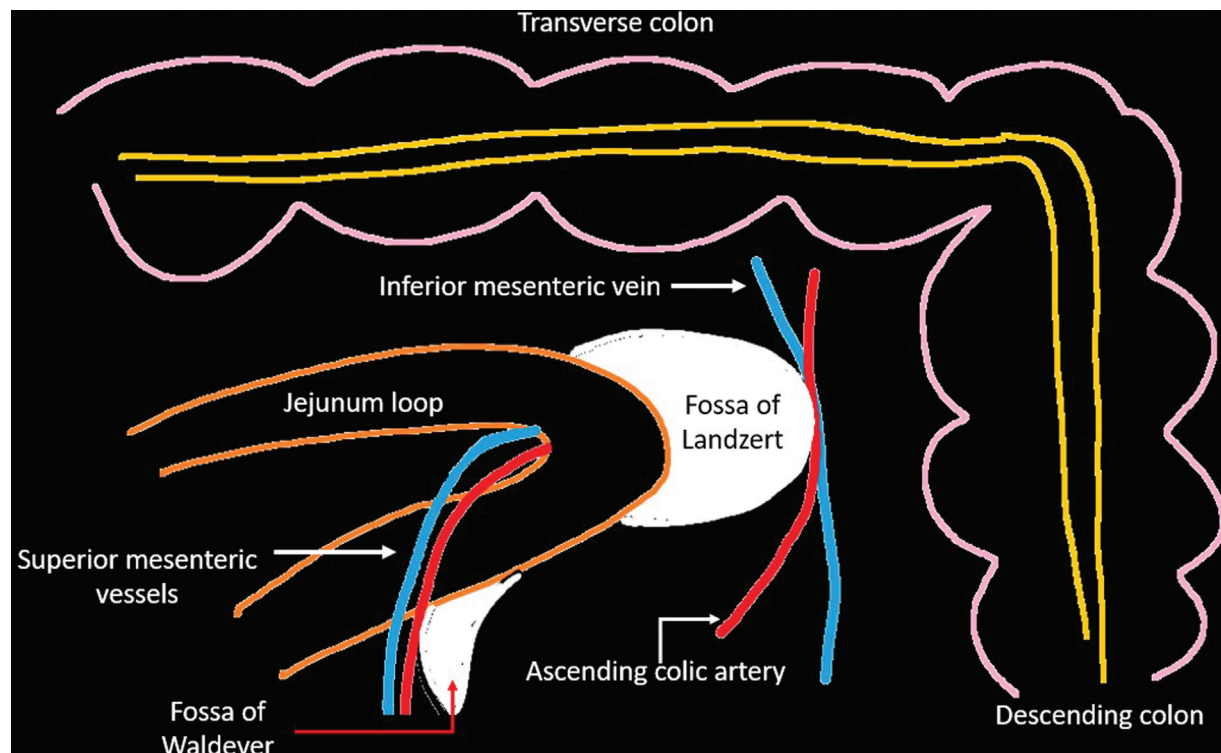
cases of hernia.<sup>1,2</sup> Paraduodenal hernias (PDH) are the most common type of internal hernia, and left LPDH account for 75% of all cases of PDH. In LPDH, there is herniation of the bowel loops via the fossa of Landzert, situated to the left of the fourth part of the duodenum. It is posterior to the IMV and ACB of the left colic artery (→Fig. 2). The small bowel loops, commonly the jejunum, prolapse into the transverse mesocolon via the defect. Embryologically, initial rotation of the midgut behind and to the left of the superior mesenteric artery positions the small bowel in the left side of the abdomen and behind the mesentery of the descending colon leading to the development of LPDH. If the bowel loops can get trapped, it can lead to obstruction, causing ischemia or perforation. Clinically making a diagnosis of PDH is difficult as the complaints are often nonspecific. There are only two previous reports demonstrating the spontaneous reduction of PDH on CT.<sup>3</sup> Multidetector CT scan is essential for diagnosis of LPDH as it can accurately detect the pathology as well as the complications associated with it and hence is always performed in the preoperative period, which is necessary for treatment planning. The classical imaging in LPDH shows clustering of the bowel loops, commonly the jejunum, in the left side of the abdomen with its mesentery clumped at the hernial orifice as seen in our case.

Early surgical intervention, open or laparoscopic, is essential to prevent complications in patients with PDH as there is 20 to 50% mortality in patients with acute presentations.<sup>4</sup> A literature search for all operated cases of left paraduodenal hernia shows a total of 38 cases operated on via the laparoscopic approach from January 1998 to January 2023.<sup>2</sup> It was first described by Uematsu et al in 1998<sup>5</sup> and since then various case reports

and metanalysis have been published that describe the surgical approach.<sup>2,6</sup> It has been reported that LPDH are associated with a smaller sac and hence reduction of small bowel loops is easier in such cases. The advantages of the laparoscopic approach include shorter postoperative stay, decreased postoperative pain, reduced morbidity, and resumption of normal food habits postoperatively irrespective of the emergency or elective surgery, type of closure of defect, or the material used.<sup>2,6</sup> It was also found that open laparotomies were commonly performed in complicated cases mostly presenting as acute abdomen and intraoperatively had strangulation at hernial orifice that required resection of the ischemic bowel segment.

At our institute, laparoscopy is the operative procedure of choice in uncomplicated cases due to advantages described by other authors. If excessive adhesions were encountered at the hernial orifice or the bowel appeared gangrenous, such difficult cases at laparoscopy were often secondarily converted to open surgeries if required based on the decision of the operating surgeon. In the cases where the hernial sac is small and prevents spontaneous reduction of the bowel, the orifice is electively enlarged to facilitate easy reduction. It is of utmost importance in such cases to prevent injury to the IMV and ACB of the left colic, which run in the anterior margin of the hernial sac.

Therefore, based on the experience at our institute and recent literature, we suggest that the laparoscopic approach is the optimal treatment strategy for patients with LPDH. A preoperative CT helps immensely in early detection and deciding the operative approach for the patient. The final surgical decision is, however, collectively based on the hemodynamic status of the patient, CT findings, resources available, and the expertise of the operating surgeon.



**Fig. 2** Diagrammatic illustration of the mesenteric defects in the left and right paraduodenal hernia via the fossa of Landzert and fossa of Waldeyer, respectively.

**Conflict of Interest**

None declared.

**References**

- 1 Newsom BD, Kukora JS. Congenital and acquired internal hernias: unusual causes of small bowel obstruction. *Am J Surg* 1986;152(03):279–285
- 2 Shadhu K, Ramlagun D, Ping X. Para-duodenal hernia: a report of five cases and review of literature. *BMC Surg* 2018;18(01):32
- 3 Maheshwari S, Khadka A, Bhattacharjee S, Rajesh U, Maria V. A case report of left paraduodenal hernia with a spontaneous reduction on follow-up: the rare demonstration on computed tomography. *Egypt J Radiol Nucl Med* 2020;51:224
- 4 Al-Khyatt W, Aggarwal S, Birchall J, Rowlands TE. Acute intestinal obstruction secondary to left paraduodenal hernia: a case report and literature review. *World J Emerg Surg* 2013 8(01):5
- 5 Uematsu T, Kitamura H, Iwase M, et al. Laparoscopic repair of a paraduodenal hernia. *Surg Endosc* 1998;12(01):50–52
- 6 Schizas D, Apostolou K, Krivan S, et al. Paraduodenal hernias: a systematic review of the literature. *Hernia* 2019;23(06): 1187–1197