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Case Report

Laparoscopic left paraduodenal hernia repair: A case report ☆,☆☆

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ABSTRACT

Paraduodenal hernias (PDH) pose a diagnostic challenge due to their varied presentations and rarity. We report a rare case report illustrating the clinical course, diagnostic approach, and management of PDH in a 19-year-old female patient with a history of neonatal laparotomy for intestinal atresia. The patient initially presented with chronic, diffuse abdominal pain, which had progressively worsened over 2 years. Physical examination revealed no palpable mass, with normal bowel sounds and vital signs. Imaging studies, including computed tomography of the abdomen, demonstrated protrusion of small bowel loops in the left upper abdominal quadrant consistent with a left paraduodenal hernia. Following laparoscopic exploration, a large defect was identified, and successful repair was performed, resulting in resolution of symptoms and a smooth postoperative recovery. Our case highlights the importance of maintaining a high index of suspicion for PDH in patients with chronic abdominal pain, particularly those with a history of abdominal surgeries. Prompt diagnosis and timely surgical intervention, preferably laparoscopic, can lead to favorable outcomes and improved quality of life for affected individuals.

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Introduction

Internal hernias are described as the protrusion of internal organ segments, notably portions of the small intestine, through various types of defects. These defects, whether mesenteric or peritoneal in nature, may be classified as normal openings, such as the foramen of Winslow; paranormal configurations, including the ileocecal and paraduodenal fossa; or abnormal, such as transomental defects. Such defects could arise from acquired conditions such as trauma, increased intra-abdominal pressure, abdominal surgeries, ischemic, or infectious processes. Additionally, they could have congenital origins arising from embryonic malformations such as intestinal malrotation or paraduodenal hernias. Paraduodenal hernia (PDH), standing as the most prevalent form, represents 53% of all internal hernias and contributes to 0.2%-0.9% of intestinal obstruction [1]. Left paraduodenal hernia accounts for 75% of all PDH. PDH is considered a complex and challenging diagnosis due to its diverse spectrum of symptom manifestations, spanning from persistent postprandial pain to symptoms suggesting intestinal obstruction [1,2]. The diagnosis of paraduodenal hernia is established by a thorough assessment through a comprehensive medical and surgical history, along with clinical findings and computed tomography. However, it is imperative to note that surgical exploration remains the definitive modality to confirm the diagnosis. The management of PDH requires open or laparoscopic surgical intervention [1,2]. The forthcoming case reports a 19-year-old female patient who presented for an incidentally discovered paraduodenal hernia during a previous operation and was operated due to chronic abdominal pain escalating in severity and intensity. This manuscript was prepared following the CARE guidelines (https://www.care-statement.org).

Case presentation

Here, we present a 19-year-old female patient, whose medical history includes neonatal laparotomy due to intestinal atresia. This patient presented before 2 years for appendicitis and a partial obstruction of the small bowel related to previous adhesions. She underwent a laparoscopic appendectomy and adhesiolysis. During the aforementioned procedure, the observation of a loop of small bowel protruding through Landzert's fossa, situated posterior to the inferior mesenteric vein and ascending left colic artery, confirmed the presence of a left paraduodenal hernia. However, the hernia defect was not addressed at that time due to the dilation of the small bowel, and the patient was advised to be scheduled for an elective paraduodenal hernia repair at a later time.

The patient was lost to follow-up and returned after 2 years with chronic abdominal pain attributed to her paraduodenal hernia. She characterized the pain as diffuse and dull in nature, devoid of radiation. The pain was occasionally exacerbated by meals; it manifested as continuous discomfort throughout the day, accompanied by intermittent episodes of nausea without vomiting. It was not associated with weight loss or changes in bowel habits.

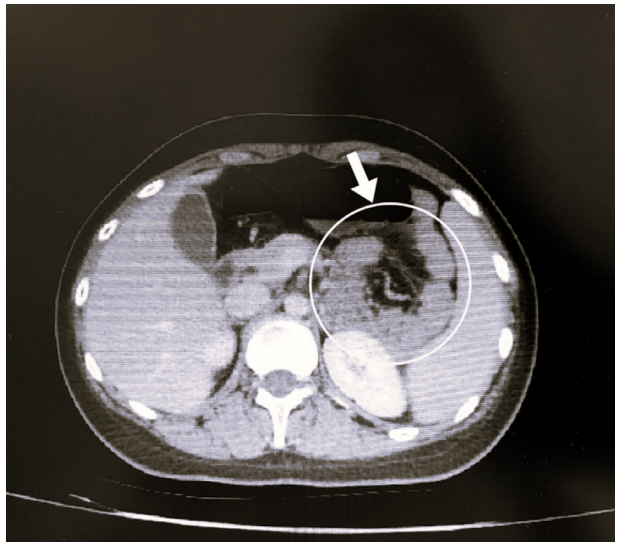

Fig. 1 – CT scan of the abdomen showing the presence of the proximal small bowel loops in the left upper quadrant in the lesser sac.

On physical exam, the abdomen was normal in appearance with no evidence of protruding mass. Bowel sounds were audible, and the abdomen was soft without tenderness. Vital signs were normal. Laboratory findings were all within the normal range. Computed tomography of the abdomen demonstrated protrusion of small bowel loops in the left upper abdominal quadrant in the lesser sac (Fig. 1).

The patient underwent a laparoscopic left paraduodenal hernia repair. Exploration of the abdomen revealed a left paraduodenal hernia. There was a large defect, and most of the small bowel herniated through the defect up to the lesser sac. The small bowels were reduced completely to the lower abdomen. The duodenum adhesions were released at the ligaments of Treitz to untwist the proximal bowel (Figs. 2-4). The hernia defect was closed by running non-absorbable polyethylene terephthalate sutures between the duodenum and the edge of the mesenteric defect (Fig. 5). The postoperative period was smooth, with progressive relief of abdominal pain. The diet was resumed without any complications, and the patient was discharged home on the first postoperative day. A follow-up was scheduled after one month of the operation, and the outcome was satisfying.

Discussion

Internal hernias consistently fall within the spectrum of factors contributing to intestinal obstruction, among which 53% are classified as paraduodenal hernias [1,3]. Paraduodenal hernias are specifically considered a rare and infrequent factor leading to intestinal obstruction. Left paraduodenal hernias are three times more frequent than right-sided hernias, a condition aligning with the clinical scenario described in our case [3,4]. This condition is described anatomically by the protrusion of small bowel loops through a paraduodenal fossa sit-

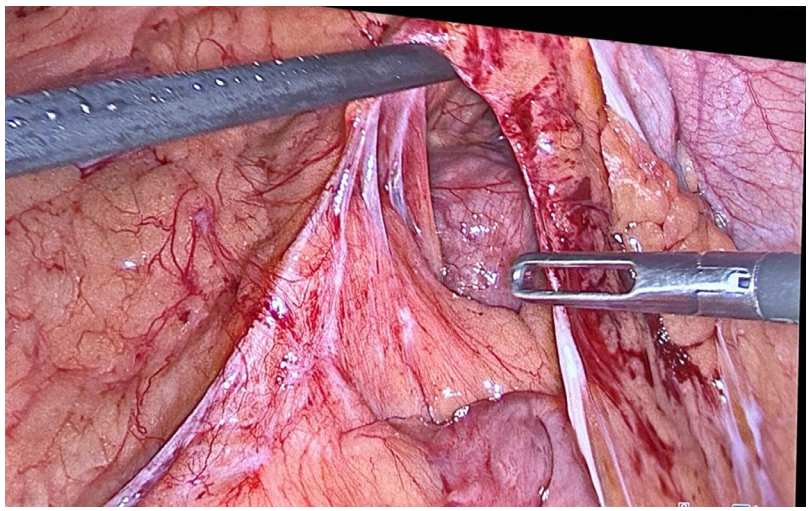

Fig. 2 – The left paraduodenal hernia before the reduction of the small bowel.

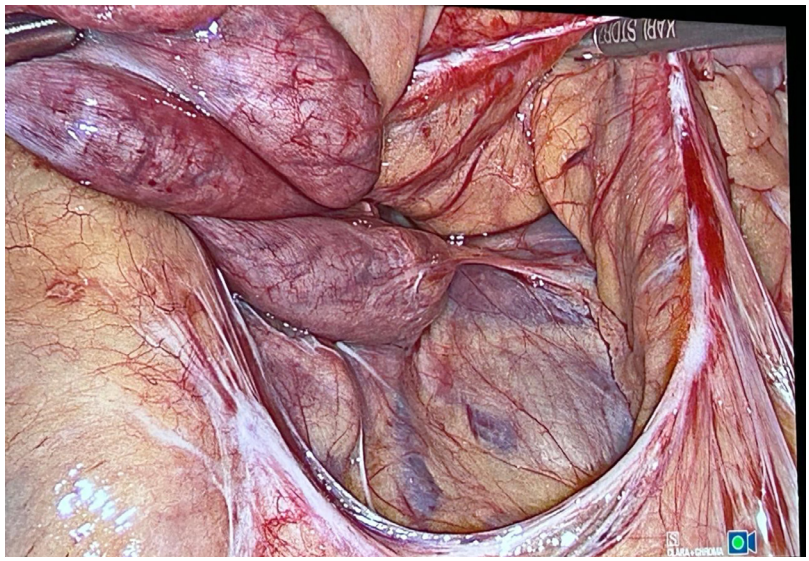

Fig. 3 – Complete reduction of small bowel, the duodeno-jejunal junction seems twisted.

uated posteroinferiorly to the left of the fourth part of the duodenum, entering the left region of the transversal and descending mesocolon [4].

Patients presenting with paraduodenal hernia were aged between all age groups, as mentioned in the literature review of PDH cases between 1980 and 2012 [3]. Left paroduodenal hernia poses an important challenge due to its diverse spectrum of symptoms upon presentation. Patients could be asymptomatic, or they may present with a range of symptoms, ranging from mild, moderate, and potentially sensations of chronic postprandial abdominal pain, associated with nausea and vomiting, to severe symptoms indicating intestinal obstruction that could be even more complicated by strangulation or necrosis. Other symptoms, such as left upper quadrant palpable mass, are rare. This variability in symptomatology underscores the complexity of this medical condition [1,3,4].

The medical literature currently lacks definitive evidence establishing a direct association between paraduodenal hernia and intestinal atresia. Consequently, the question of whether such a relationship exists remains unanswered.

Contrast-enhanced computed tomography is crucial for the diagnosis of a paraduodenal hernia. A CT scan with contrast demonstrates the duodenal blood supply and can identify any evidence of obstruction. Imaging shows protruding segments of the small bowel in the left upper quadrant, displaced between the pancreas and the stomach or behind the transversal colon; the posterior stomach wall may be displaced anteriorly; dilated loops with an air-fluid level can be noticed on computed tomography, indicating small bowel obstruction [4,5].

Surgical repair, whether open or laparoscopic, is the definitive treatment of left paraduodenal hernia, serving as the gold

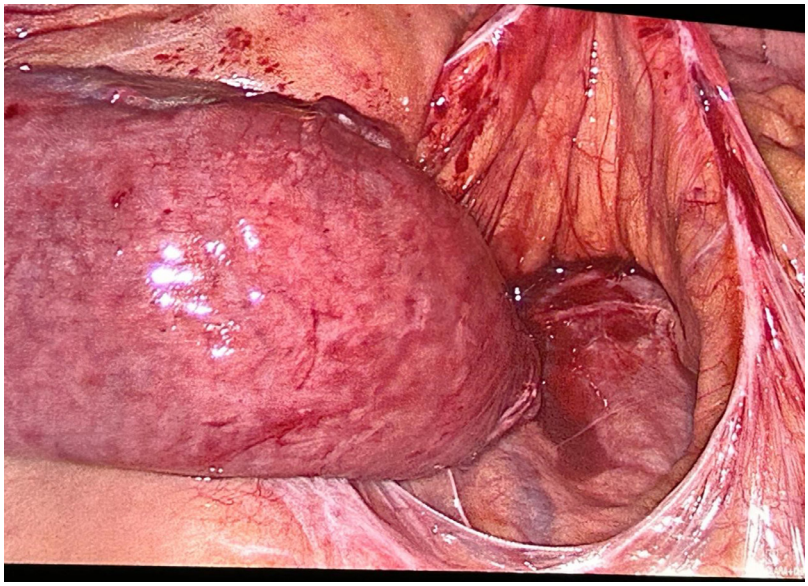

Fig. 4 – The untwisted bowel after release of adhesions and ligament of treitz.

Fig. 5 – Following closure of the defect using running non absorbable polyethylene terephtalate suture.

standard tool for confirming its diagnosis. It consists of freeing the intestinal loops from the hernia sac and integrating them into the peritoneal cavity. The same outcome is noted in both procedures, but laparoscopic repair is associated with faster recovery and a higher risk of bowel injury [1,5]. We have presented a case of successful laparoscopic repair of the LPDH with a length of hospital stay of 1 day and with a satisfactory follow-up appointment scheduled 1 month later.

Conclusion

Left paraduodenal hernia is a rare cause of intestinal obstruction. It is a challenge for both clinicians and radiologists to make this diagnosis due to the variety of presenting symptoms. The diagnosis is made based on the correlation between clinical, radiological, and surgical findings. The only cure for this condition is a laparoscopic or open surgical exploration and reduction of the herniating small bowel loops and closure of the paraduodenal defect, with an expected smooth postoperative period.

Ethical approval

Ethical approval was waived based on the observational nature of the report.

Patient consent

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.radcr.2024.04.073.

REFERENCES

[1] Manojlović D, Čekić N, Palinkaš M. Left paraduodenal hernia: a diagnostic challenge: case report. Int J Surg Case Rep 2021;85:106138. doi:10.1016/j.ijscr.2021.106138.

[2] Gusz JR, Wright LM. Intestinal obstruction secondary to left paraduodenal hernia. J Surg Case Rep 2015;2015(7):rjv090. doi:10.1093/jscr/rjv090.

[3] 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 Emergency Surg 2013;8(1):5. doi:10.1186/1749-7922-8-5.

[4] Martin LC, Merkle EM, Thompson WM. Review of internal hernias: radiographic and clinical findings. AJR Am J Roentgenol 2006;186(3):703–17. doi:10.2214/AJR.05.0644.

[5] Xu H, Nie N, Kong F, Zhong B. Large left paraduodenal hernia with intestinal ischemia: a case report and literature review. J Int Med Res 2020;48(9):300060520955040. doi:10.1177/0300060520955040.