

Case Report

Left Para duodenal Hernia: Case Report of Rare Cause of Small Bowel Obstruction

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Abstract: Para duodenal hernia [PDH], a rare congenital anomaly, is a type of internal hernia which occurs due to a defect in the reduction and rotation of the midgut. We present the case of a 32-year-old female patient presented with a seven-day history of generalized intermittent colicky abdominal pain accompanied by multiple episodes of bilious vomiting. She was otherwise healthy and had no history of previous abdominal operations. Computed tomography scan of the abdomen demonstrated sac-like clustered small bowel loops noted in the left upper quadrant, in the anterior para-renal space, consistent with the diagnosis of left Para duodenal hernia. Exploratory Laparotomy for the repair of the hernia was planned. The jejunal loops had herniated through the fossa of Waldeyer. Reduction of hernia contents and excision of the hernia sac was carried out. The patient tolerated the procedure without complications, and she was asymptomatic in the follow-up visit. This case sheds light on the importance of considering the diagnosis of left Para duodenal hernia in patients with recurrent abdominal pain, particularly among those who have not undergone abdominal surgery previously.

Keywords: Internal hernia, intestinal obstruction, para duodenal hernia.

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INTRODUCTION

Internal hernia is an abnormal protrusion of abdominal viscera through a defect, which may be congenital or acquired, within the peritoneum or mesentery. Internal hernia is a relatively uncommon condition accounting for less than 1% of the abdominal hernias, furthermore it's a rare cause of intestinal obstructions. The types of internal hernia are Para duodenal, pericecal, foramen of Winslow, transmesenteric and transmesocolic, pelvic, intersigmoid, retroanastomotic, and transomental hernia [1].

Para duodenal hernia [PDH] makes up nearly 50% of all internal hernias. Para duodenal hernia is a rare congenital anomaly that occurs due to an error in the rotation of the midgut, through a normal or

abnormal opening in the colonic mesentery [2, 3]. Para duodenal hernia is difficult to diagnose because of variable clinical presentation which may include acute intestinal obstruction and recurrent abdominal pain [4].

Para duodenal hernia can be classified as either right- or left-sided, depending on anatomical features and embryological origins. In Right Para duodenal hernia, the viscus herniates into the fossa of Waldeyer. In Left Para duodenal hernia, the herniation occurs in the para duodenal Landzert's fossa (Figure 1). Left Para duodenal hernia is three times as common as the right counterpart. Right Para duodenal hernia is seen more in the male sex, with a 3:1 male-female ratio, whereas Left Paraduodenal hernia does not have a gender bias [5, 6].

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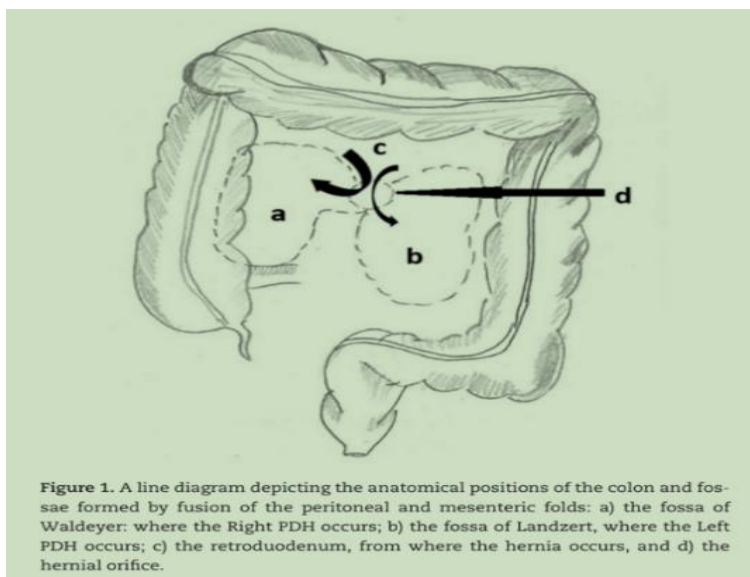


Figure 1. A line diagram depicting the anatomical positions of the colon and fossae formed by fusion of the peritoneal and mesenteric folds: a) the fossa of Waldeyer; where the Right PDH occurs; b) the fossa of Landzert, where the Left PDH occurs; c) the retroduodenum, from where the hernia occurs, and d) the hernial orifice.

Left para-duodenal hernia is a congenital defect with an occurrence of approximately 2% of the population. It is posterior to the inferior mesenteric vein and left branches of middle colic artery and is situated to the left of the fourth part of the duodenum. It arises from the fossa of Landzert [7-9]. The fossa to the left of the fourth part of the duodenum is the area where the small bowel loops prolapse through and into the left portion of the transverse mesocolon. The herniated small bowel loops may therefore become trapped within the mesenteric sac [1, 9]. The initial rotation of the midgut behind and then left to the superior mesenteric artery and comes to lie in the left side of the abdomen behind the mesentery of the descending colon leads to development of Left Para duodenal hernia [10]. Clinical diagnosis of Para duodenal hernia is a challenge as symptoms are entirely non-specific [11, 12]. Most patients are diagnosed between the 4th and 6th decades of life and the mean age of diagnosis is 38.5 years [6].

CASE PRESENTATION

A 32-year-old female patient presented with a seven-day history of generalized intermittent colicky abdominal pain accompanied by multiple episodes of bilious vomiting. The pain worsened after meals. His last bowel motion was three days before the presentation; however, she continued to pass flatus. She had multiple similar episodes of this pain over the last two months that resolved spontaneously. He was otherwise healthy and had no history of previous abdominal operations.

On examination, she was in pain and her vital signs were as follows: pulse rate as 90 bpm, blood pressure of 124/74 mm Hg, and respiratory rate of 18 bpm, and she was afebrile. Abdominal examination revealed a distended abdomen, with no tenderness or guarding. There was hyperactive bowel sounds all over the abdomen. No palpable masses or organomegaly and no external hernias were noted. The Per Vaginal

examination and digital rectal examination was unremarkable.

Laboratory studies showed haemoglobin of 13 g/dL, white blood cell count of 8,000 /mL, and platelet count of 144,000/mL. Serum electrolytes, urea, creatinine, and liver function tests were all within normal limits. The chest X-ray did not reveal any abnormalities with no free air under the diaphragm. CT scan of the abdomen was performed (Figure 1), which demonstrated sac-like clustered small bowel loops noted in the left upper quadrant, in the anterior pararenal space. The remainder of the large bowel is completely collapsed. These findings were suggestive of the diagnosis of left para duodenal hernia.

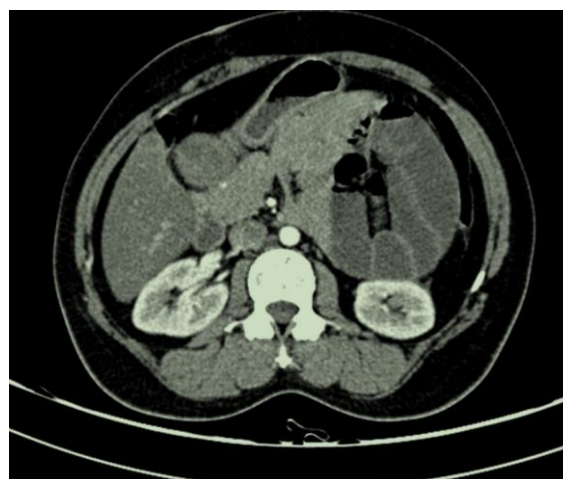


Figure 2: Coronal section of computed tomography scan showing bowel loops in a sac (typical bag of bowel appearance)

Treatment

An exploratory laparotomy revealed an abnormal anatomy, with dilated loops of small bowel within a hernial sac in the left upper abdomen. The left paraduodenal hernia with incarceration of small bowel

loops was found appeared to protrude through the mesentery of the large bowel and incorporated a large segment of bowel from the duodenum to mid jejunum. A tight adhesive band close to the neck of the hernia sac along the mesentery of the small bowel was found and removed as shown in Figure 3. Once this was performed, it became possible to reduce the contents of

the hernia and the hernial sac was excised. The mesenteric defect was then closed with a running Vicryl stitch. The abdomen was closed using two running polydioxone (PDS) sutures and the skin closed with staples. The patient's postoperative course was uneventful.

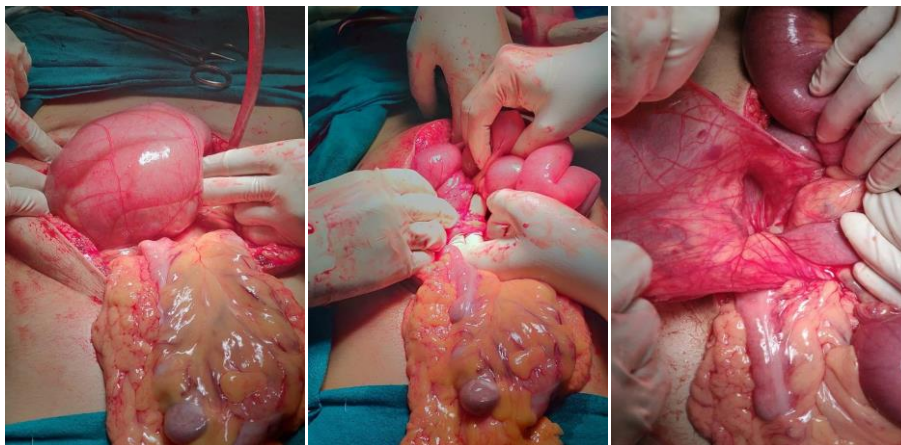


Figure 3: Figures showing hernial sac with adhesive band and hernia defect

DISCUSSION

Paraduodenal hernia, also known as mesocolic hernia, was first described at autopsy by Neubauer in 1786. Later, an accurate scientific description of the condition was provided by Treitz in 1857, who considered it a retroperitoneal protrusion of abdominal viscera [13]. In 1889, the classification of hernia into the distinct left and right types was made by Jonnesco [14]. Treitz described the peritoneal folds and fossae, through which the hernia retroperitonealis develops. Over these years, several theories on the development of Paraduodenal hernia were formulated and discarded.

The two theories that have stood the test of time are: i. Moynihan's Theory: he attributed Paraduodenal hernia to a condition known as 'physiological adhesions', which arise at the time of return of the bowel back to the abdomen and fusion of the common dorsal mesentery with the posterior abdominal wall. This leads to the formation of fusion folds and fossae (Nine such fossae were described by him). Gradual enlargement of such fossae often leads to development of Paraduodenal hernia. The two most important fossae implicated are the fossa of Landzert (for Left Paraduodenal hernia) and fossa of Waldeyer (for Right Paraduodenal hernia). ii. Andrews' Theory: Andrews respected Moynihan's concept of fusion folds and fossae but doubted the gradual enlargement of the fossae. He ascribed the condition to the developmental fusion defects of peritoneum, which incarcerated the small bowel beneath the developing colon [15, 16].

The rare prevalence and the variable symptoms make the clinical diagnosis of paraduodenal hernia a diagnostic challenge. The clinical presentation is

entirely non-specific. It ranges from being completely asymptomatic and found incidentally during surgery or autopsy to acute intestinal obstruction seen in 50% cases with the risk of gangrene and perforation [17, 18]. Such a myriad of clinical features often lead physicians to misdiagnose paraduodenal hernia as biliary disease or peptic ulcer resulting in patients receiving unnecessary therapeutic interventions. The first case of paraduodenal hernia that had a correct preoperative diagnosis was made by Kummer in 1921 by the barium study [19]. Currently, the CT scans superseded the upper gastrointestinal contrast studies as the abdominal CT scan became the diagnostic modality of choice. The CT findings show a smooth encapsulated sac-like mass of the small intestinal loops between the stomach and the pancreas at the level of the ligament of Treitz. Additionally, the displacement of mesenteric vessels may be apparent [20]. Once diagnosed, the surgical treatment of paraduodenal hernia is indicated because the lifetime risk of incarceration or strangulation is over 50% with a mortality risk of 20%-50% [21].

Paraduodenal hernia has unique characteristics under radiography, which can help in formulating a definitive diagnosis: these have not changed since 1921, when Kummer first described them as "total absence of small intestine in the true pelvis in the upright position; the small bowel is confined in a smooth, sharply circumscribed mass"—the 'classical empty abdominal sign' [22]. Currently, the CT scans superseded the upper gastrointestinal contrast studies as the abdominal CT scan became the diagnostic modality of choice. The CT findings show a smooth encapsulated sac-like mass of the small intestinal loops between the stomach and the pancreas at the level of the ligament of Treitz. Additionally, the displacement of mesenteric vessels

may be apparent [20]. Once diagnosed, the surgical treatment of paraduodenal hernia is indicated because the lifetime risk of incarceration or strangulation is over 50% with a mortality risk of 20%-50% [21]. The same principles of hernia surgery apply in treatment of paraduodenal hernia including reduction of the hernia content, resection of the necrotic intestinal segment, if any, and repair of hernial orifice by closure or wide opening, by performing an incision along the avascular plane of mesocolon or doing division of the inferior mesenteric vein, so that the hernia sac becomes part of the peritoneal cavity.

There are few case reports covering the herniation of the small bowel through the lesser sac, leading to incarceration, with presentations akin to Paraduodenal hernia. Surgical widening of the hernial orifice and resection of the strangulated bowel, if any, with primary anastomosis, has been reported in the literature [23]. Because internal hernias are not detectable on physical examination, imaging is relied upon for preoperative diagnosis. Since herniation is often intermittent, the radiographic diagnosis therefore depends on the time of imaging. Plain film radiographic findings are usually nonspecific. UGI-small bowel follow-through, CT scan and occasionally ultrasound may make the diagnosis by identifying isolated bowel, "a bag of bowel", in the hernia sac. Radiographically, left paraduodenal hernias present as an ovoid conglomeration of jejunal loops in the left upper quadrant, often displacing the stomach superiorly and the transverse colon inferiorly [24]. Treatment of left paraduodenal hernia requires surgery. The typical appearance during surgery is that of an "empty abdomen" with only the last segment of the ileum present in the abdominal cavity while other small bowel loops are entrapped in the hernia sac [25]. The herniated small bowel loops should be reduced and the hernia orifice closed with non-absorbable sutures. A different technique is to widen the hernia orifice to prevent future incarceration of bowel loops. Often, there is a close anatomical relationship between the inferior mesenteric vessels which bound the hernia anteriorly, and the hernia orifice and care should be taken not to injure these vessels. Although Bartlett indicated that these vessels can be divided without compromising blood supply to the colon, they should be preserved whenever possible [26].

Studies have revealed that when the diagnosis is made preoperatively, a laparoscopic approach is possible. Since the first laparoscopic repair by Uematsu in 1998, the laparoscopic approach has been a way of diagnosis and repair for paraduodenal hernias [27]. Intestinal resection is needed in cases of strangulation and gangrene. In our patient, we performed a laparotomy because of lack of experience with paraduodenal hernias and their treatment. A high index of suspicion along with excellent imaging like CT scan helps in arriving at a correct preoperative diagnosis.

Early surgical intervention is critical in avoiding the morbidity and mortality associated with paraduodenal hernias.

Disclosures

Human subjects: Consent was obtained by all participants in this study.

Conflicts of interest: all authors declare the following:

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Other relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

REFERENCES

1. Martin, L. C., Merkle, E. M., & Thompson, W. M. (2006). Review of internal hernias: radiographic and clinical findings. *American Journal of Roentgenology*, 186(3), 703-717.
2. Moran, J. M., Salas, J., Sanjuán, S., Amaya, J. L., Rincón, P., Serrano, A., & Tallo, E. M. (2004). Paramesocolic hernias: consequences of delayed diagnosis. Report of three new cases. *Journal of pediatric surgery*, 39(1), 112-116.
3. Brigham, R. A. (1995). Paraduodenal hernia. In: Nyhus, L. M., Condon, R. E. (ed.) *Hernia*. 4th ed. Philadelphia: Lippincott Williams and Wilkins.
4. Yun, M. Y., Choi, Y. M., Choi, S. K., Kim, S. J., Ahn, S. I., & Kim, K. R. (2010). Left paraduodenal hernia presenting with atypical symptoms. *Yonsei medical journal*, 51(5), 787-789.
5. Desjardins, A. U. (1918). Left paraduodenal hernia. *Ann Surg*, 67, 195-201.
6. Khan, M. A., Lo, A. Y., & Vande Maele, D. M. (1998). Paraduodenal hernia, *Am Surg*, 64, 1218-1222.
7. Husain, A., Bhat, S., Roy, A. K., Sharma, V., Dubey, S. A., & Faridi, M. S. (2012). Internal hernia through paraduodenal recess with acute intestinal obstruction: a case report. *Indian Journal of Surgery*, 74(4), 354-355.
8. Zonca, P., Maly, T., Mole, D. J., & Stigler, J. (2008). Treitz's hernia. *Hernia*, 12(5), 531-534.
9. Armstrong, O., Hamel, A., Grignon, B., Peltier, J., Hamel, O., Letessier, E., ... & Rogez, J. M. (2007). Internal hernias: anatomical basis and clinical relevance. *Surgical and Radiologic Anatomy*, 29(4), 333-337.
10. Bartlett, M. K., Wang, C. A., & Williams, W. H. (1968). The surgical management of paraduodenal hernia. *Annals of surgery*, 168(2), 249.

11. Assenza, M., Rossi, D., Rossi, G., Reale, C., Simonelli, L., Romeo, V., ... & Modini, C. (2014). Laparoscopic management of left paraduodenal hernia. Case report and review of literature. *Il Giornale di chirurgia*, 35(7-8), 185-189.
12. Palanivelu, C., Rangarajan, M., Jategaonkar, P. A., Anand, N. V., & Senthilkumar, K. (2008). Laparoscopic management of paraduodenal hernias: mesh and mesh-less repairs. A report of four cases. *Hernia*, 12(6), 649-653.
13. Fitzgibbons, R. J., Greenburg, A. G., & Nyhus, L. M. (2002). Nyhus and Condon's Hernia. Lippincott Williams & Wilkins, Philadelphia, PA.
14. Jannesco, T. (1889). *Anatomie topographique du duodenum et hernies duodenales*. Progrès médical.
15. Moynihan, G. B. A. (1906). On retroperitoneal hernia. New York: William Wood and Co.
16. Andrews, E. (1923). Duodenal Hernia: a misnomer. *Surg Gynecol Obstet*, 37, 740.
17. Brunner, W. C., Sierra, R., Dunne, J. B., Simmang, C. L., & Scott, D. J. (2004). Incidental paraduodenal hernia found during laparoscopic colectomy. *Hernia*, 8(3), 268-270.
18. Kim, J. C., Kim, M. D., Jeong, B. G., Kang, S. W., & Lim, B. I. (2001). CT findings of right paraduodenal hernia presenting as acute small bowel obstruction. *Journal of the Korean Radiological Society*, 44(1), 85-88.
19. Assenza, M., Rossi, D., Rossi, G., Reale, C., Simonelli, L., Romeo, V., ... & Modini, C. (2014). Laparoscopic management of left paraduodenal hernia. Case report and review of literature. *Il Giornale di chirurgia*, 35(7-8), 185-189.
20. Martin, L. C., Merkle, E. M., & Thompson, W. M. (2006). Review of internal hernias: radiographic and clinical findings. *American Journal of Roentgenology*, 186(3), 703-717.
21. Tong, R. S., Sengupta, S., & Tjandra, J. J. (2002). Left paraduodenal hernia: case report and review of the literature. *ANZ journal of surgery*, 72(1), 69-71.
22. Kummer, E. (1921). Signes radiologiques de la hernie duodenojejunale. *J Radiol Electro*, 5, 362-367.
23. Min, J. S., Lee, J. H., Jin, S. H., Bang, H. Y., & Lee, J. I. (2010). Difficult diagnosis of a double omental hernia that led to extensive small bowel infarction. *Hernia*, 14(5), 523-525.
24. Donnelly, L. F., Rencken, I. O., DeLorimier, A. A., & Gooding, C. A. (1996). Left paraduodenal hernia leading to ileal obstruction. *Pediatric radiology*, 26(8), 534-536.
25. Brigham, R. A., Fallon, W. F., Saunders, J. R., Harmon, J. W., & d'Avis, J. C. (1984). Paraduodenal hernia: diagnosis and surgical management. *Surgery*, 96(3), 498-502.
26. Bartlett, M. K., Wang, C. A., & Williams, W. H. (1968). The surgical management of paraduodenal hernia. *Annals of surgery*, 168(2), 249-254.
27. Uematsu, T., Kitamura, H., Iwase, M., Yamashita, K., Ogura, H., Nakamura, T., & Oguri, H. (1998). Laparoscopic repair of a paraduodenal hernia. *Surgical endoscopy*, 12(1), 50-52.

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