International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Paraduodenal Hernia (PDH): A Rare Cause of Abdominal Pain

Brahmjeet Atrish[1], Naveen Thakur[2], Vipan Sharma[3]

[1]Junior Resident, IGMC
[2]Senior Resident, IGMC
[3]Associate Professor, IGMC

Abstract

An internal hernia is the protrusion of a viscus through a normal or abnormal opening within the confines of the abdominal cavity. Paraduodenal hernias result from incomplete rotation of the midgut, with part of the small intestine trapped posterior to the mesocolon. Right and left paraduodenal hernias are distinct and separate entities, varying not only in anatomic structure but also in embryological origin. Symptoms are often vague, and a high index of suspicion is required to make the diagnosis. This entity should be considered whenever atypical abdominal symptoms are present. A CT scan or barium upper gastrointestinal radiography provides the best preoperative evidence of this condition, although ultrasonography and plain films are also useful. Elective repair of such a hernia should always be performed to avoid bowel incarceration or strangulation. An understanding of the anatomy of these hernias facilitates the surgery and is necessary in decreasing the likelihood of complications. Careful reduction of the hernia and surgical repair will avoid injury to the major mesenteric vessels juxtaposed to the hernial orifice. The surgical management of the patient, who were diagnosed preoperatively with this condition, is described with a review of its pathogenesis and present surgical treatment.

Keywords: Hernia, Internal, Mesocolic, Obstruction, Paraduodenal.

Introduction

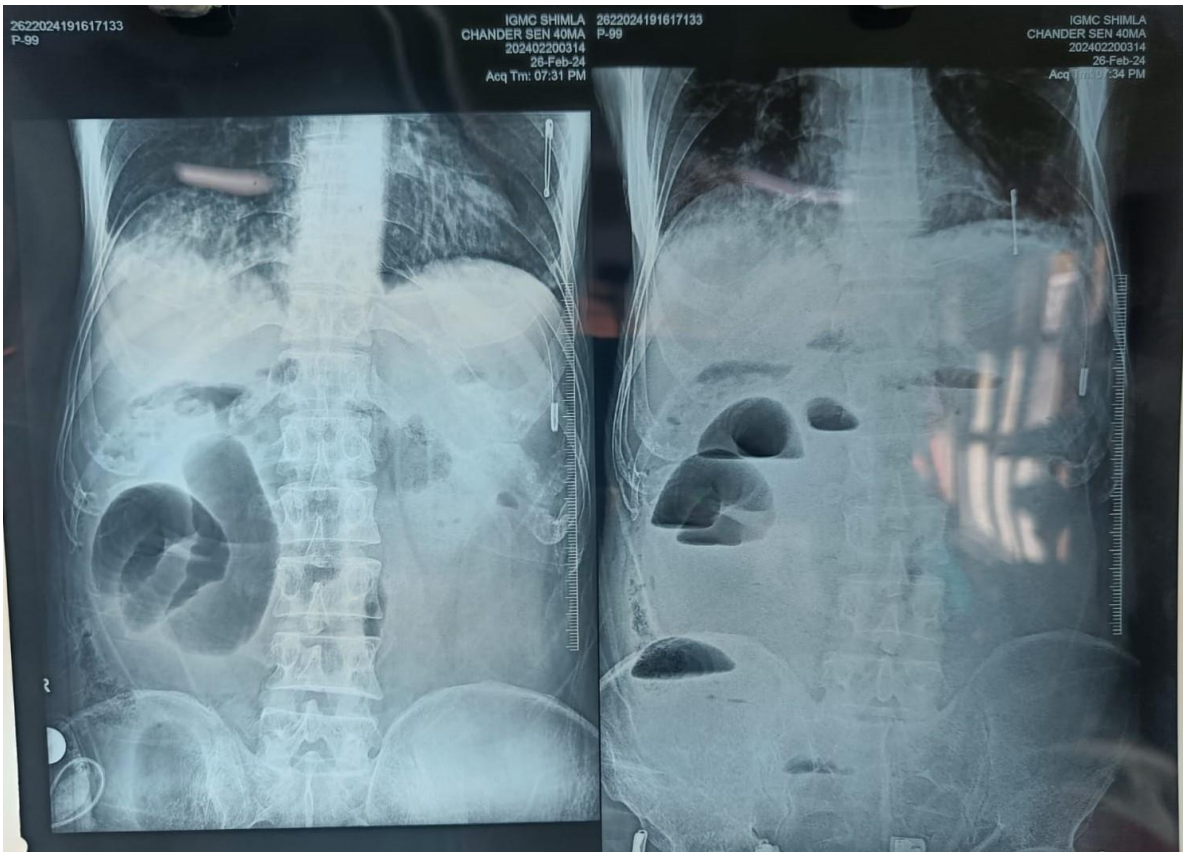
Para-duodenal hernias (PDH) have traditionally been considered the most frequent type of congenital internal hernia[1]. Left para-duodenal hernia (hernia of Lanzert) is about three times more common than the right counterpart (Waldayer's hernia)[2]. Left para-duodenal hernia (LPDH) is a congenital defect 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[3,4,5]. The fossa to the left of the fourth part of the duodenum is the area where the small bowel loops (usually jejunum) prolapse through and into the left portion of the transverse mesocolon. The herniated small bowel loops may therefore become trapped within the mesenteric sac [5, 6]. 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 LPDH[7]. The right para-duodenal hernia (RPDH) occurs when the small bowel herniates through a defect in the first part of the jejunal mesentery in the so called Waldeyer's fossa. At autopsy, the Waldeyer's fossa was found in about 1% of the population[8]. The malrotation of the midgut and failure of fusion of mesentery to parietal peritoneum create a hernial defect called RPDH. PDH can

lead to bowel obstruction, ischemia, and perforation with a high mortality [6]. Clinical diagnosis of PDH is a challenge as symptoms are entirely non-specific. They usually affect males more than females (3:1) [9, 10]. Most patients are diagnosed between the 4th and 6th decades of life and the mean age of diagnosis is 38.5 years[2]. In medical literature, para-duodenal hernias causing intestinal obstruction are few and report no evidence of long lasting postoperative ileus after surgery.

Case presentation

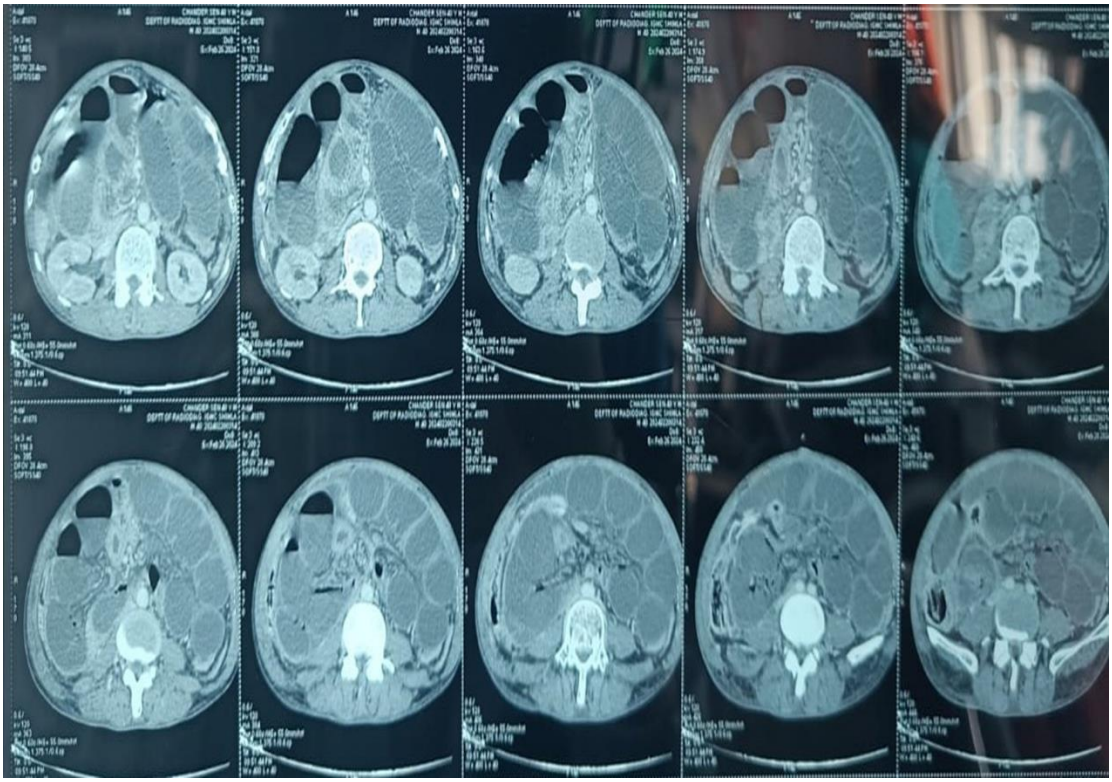
A 40-year-old male deaf and mute since birth presented with middle abdominal pain for 5 days. The pain was paroxysmal without nausea and vomiting. It got worse after meals. He has a past medical history of chronic gastritis treated with regular proton pump inhibitor. Vitals are : pulse rate - 110/min, BP- 104/74mmHg, Spo2- 89% on RA. He is dehydrated- emaciated . Respiratory System- tachypnea +++, B/L air entry decreased in lower lobes, Per Abdomen- gross Distension +++, tympanic, bowel sounds absent. His parameters are

Hb	13.6 g/dl
HCT	42 %
TLC	6.40
PLT	284
Urea	**140.1mg/dl**
Creatinine	**1.20mg/dl**
LFT	WNL
Na+	134mmol/l
K+	4.4mmol/l
Cl+	101mmol/l
PT	10.7 sec
INR	0.89
T. Protein	6.6
Albumin	3.8

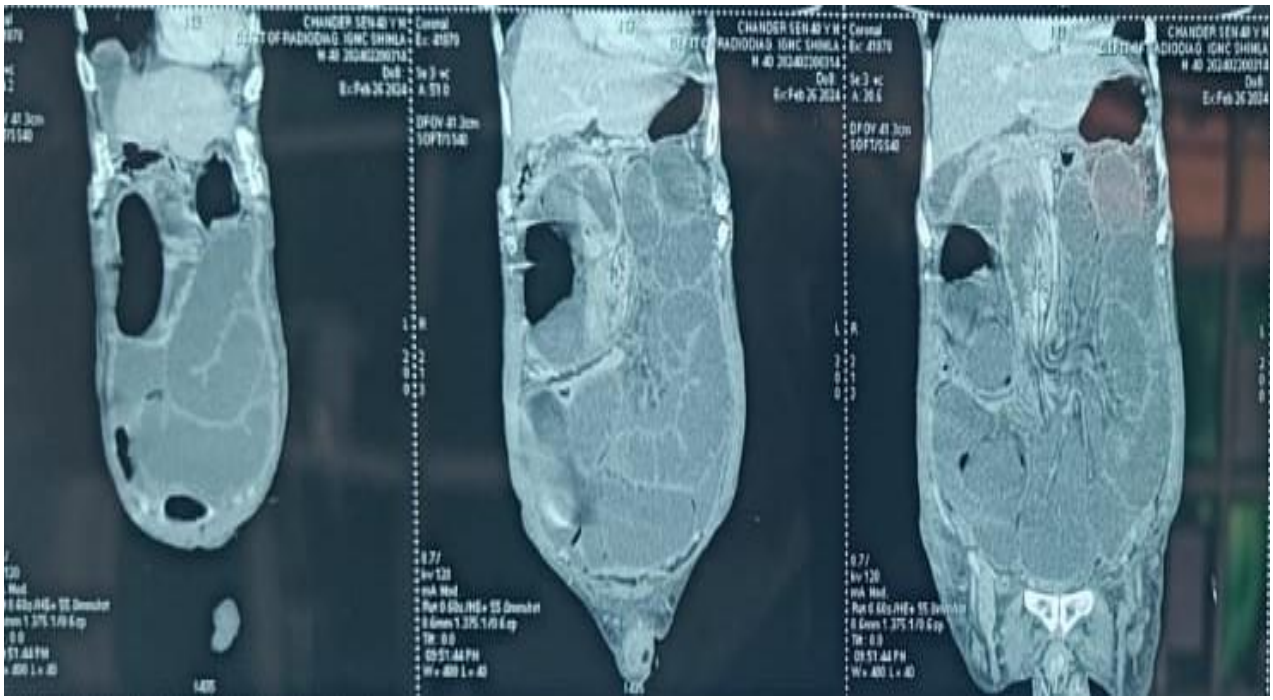


Abdominal x-ray erect and supine shows multiple air fluid levels and dilated small bowel loops On USG Abdomen gut loops are distended measuring up to 3.9 cm . ascites++ features are s/o acute small intestinal obstruction.

On CECT Abdomen



- Markedly dilated small bowel loops- upto 4.2cm showing air fluid levels,
- Dilated bowel - linear air foci along their walls at multiple levels – s/o pneumatosis intestinalis.
- Transition point - distal ileum, heterogeneously enhancing short segment stricturous narrowing with small bowel feces sign.
- Enhancing symmetrical circumferential thickening of rectum with maintained mural stratification with mild ascites .? IBD
- Multiple patches of consolidation in B/L lower lobes .

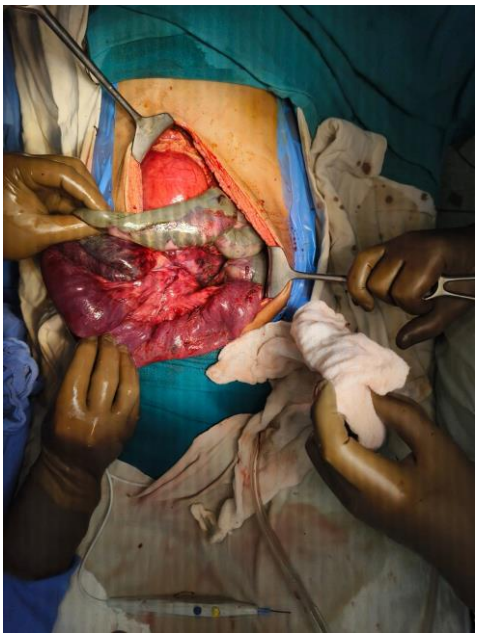


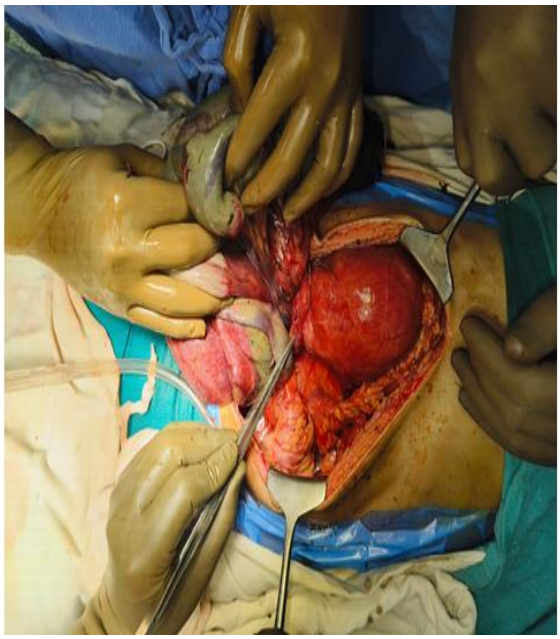
Surgery Done

Exploratory laparotomy with mobilisation of right colon and proximal transverse colon with reduction of hernial contents with resection of gangrenous segment of small bowel with end jejunostomy and distal mucus fistula with peritoneal toileting and peritoneal drainage done.

INTRAOPERATIVE FINDINGS

On opening abdomen pus and altered blood , foul smelling 1 litre fluid aspirated. A swelling behind the hepatic flexure and transverse colon and along transverse colon mesentery in the retroperitoneum s/o large retroperitoneal hernial sac was present.A defect of 4X4 cm present in mesentery of transverse colon , small bowel loops strangulated / gangrenous in the sac. D3-D4 was vertically down in course , absence of dedunojejunal flexure ,with jejunal loops lying in right side of abdomen.





Discussion

An internal hernia is defined as a hernia formed by the protrusion of a viscus through a peritoneal or mesenteric aperture, leading to its encapsulation within a compartment of the abdominal cavity.[12,13,14] Internal hernias account for 0.2%–0.9% of intestinal obstructions.[15] Between 10% and 50% of internal hernias are discovered during unrelated abdominal surgeries or at autopsy.[13,14] Based on an analysis of 467 cases, Hansmann and Morton[16] classified the internal hernias into the following 7 groups, based on location: paraduodenal, foramen of Winslow, pericecal, intersigmoid, transmesenteric, transomental and retroanastomotic. Liew and associates[14] listed at least 25 different anatomic sites of internal hernias.

Paraduodenal hernias are very rare, but they account for about 30%–53% of all internal hernias.[12] They occur 3 times more commonly in the left paraduodenal fossa than in the right, are more common in men[13,14] and are mostly congenital.

The majority of presentations occur between the 4th and 5th decades of life.[12,13,14] Internal hernias can be asymptomatic, present as an acute intestinal obstruction or as chronic intermittent abdominal pain, especially after a large meal.[12,13] Findings on physical examination may be normal, unless the hernia produces a mass or causes intestinal obstruction.[12,13,14]

Preoperative diagnosis is difficult.[14] Plain abdominal radiography may demonstrate a distended, fluid-filled stomach or reveal dilated loops of small bowel in an ovoid mass lateral from the midline.[13] Barium-contrast studies may reveal encapsulation of the small bowel within the left upper quadrant.[12] Ultrasonography may demonstrate an abdominal mass or internal tubular cysts that change

shape over time and after ingestion of fluid.[12,13,14] Computed tomography may reveal a cluster of small-bowel loops, mainly at the level of the ligament of Treitz or behind the pancreas.[12,13,14] Celiac arteriography can demonstrate a displaced spleen.[14] Superior mesenteric arteriography can reveal jejunal arteries displaced upward and to the left.

After diagnosis, treatment should be prompt.[13] Obstruction of the entrapped bowel can lead to ischemia and perforation with a high mortality.[15] Exploratory laparotomy is mandatory.[14] The steps of operation include adequate incision, reduction of the hernia content and repair of the defect.[12] Removal of the sac remains controversial as it is part of the mesocolon and may lead to colonic vascular impairment.[12] In our case, the hernia was reduced and its neck closed with continuous absorbable sutures to the posterior abdominal wall. The sac was excised and plicated.

Conclusion

Paraduodenal hernias are extremely rare and difficult to diagnose. Acute awareness is required, since without prompt surgical treatment the mortality can be high. Radiologic investigations are helpful but should not delay definitive treatment in an unwell patients.

References

1. Blachar A, Federle MP, Dodson SF. Internal hernia: clinical and imaging findings in 17 patients with emphasis on CT criteria. Radiology. 2001;218(1):68–74.
2. Khan MA, Lo AY, Vande Maele DM. Paraduodenal hernia. Am Surg. 1998;64(12):1218–22.
3. Husain A, et al. Internal Hernia through Paraduodenal Recess with Acute Intestinal Obstruction: A Case Report. Indian J Surg. 2012;74(4):354–5.
4. Zonca P, et al. Treitz's hernia. Hernia. 2008;12(5):531–4.
5. Armstrong O, et al. Internal hernias: anatomical basis and clinical relevance. Surg Radiol Anat. 2007;29(4):333–7.
6. Martin LC, Merkle EM, Thompson WM. Review of internal hernias: radiographic and clinical findings. AJR Am J Roentgenol. 2006;186(3):703–17.
7. Bartlett MK, Wang C, Williams WH. The surgical management of paraduodenal hernia. Ann Surg. 1968;168(2):249.
8. Hassani KI, et al. Left paraduodenal hernia: A rare cause of acute abdomen. Pan Afr Med J. 2014;17(2):230.
9. Assenza M, et al. Laparoscopic management of left paraduodenal hernia. Case report and review of literature. G Chir. 2014;35(7/8):185–9.
10. Palanivelu C, et al. Laparoscopic management of paraduodenal hernias: mesh and mesh-less repairs. A report of four cases. Hernia. 2008;12(6):649–53.
11. Kannan NS, et al. Congenital middle mesocolic hernia: A case report. Australas Med J. 2014;7(11):432–5.
12. Khan MA, Lo AY, Vande Maele DM. Paraduodenal hernia. *Am Surg* 1998; 64:1218-22. [PubMed]
13. Hirasaki S, Koide N, Shima Y, et al. Unusual variant of left paraduodenal hernia herniated into the mesocolic fossa leading to jejunal strangulation. *J Gastroenterol* 1998;33:734-8. [PubMed]
14. Liew KL, Choong CS, Shiau GF, et al. Descending mesocolon defect herniation: case report. *Changgeng Yi Xue Za Zhi* 1999;22:133-7. [PubMed]

15. Manji R, Warnock GL. Left paraduodenal hernia: an unusual cause of small-bowel obstruction. *Can J Surg* 2001;44:455-7. [PMC free article] [PubMed]
16. Hansmann GH, Morton SA. Intra-abdominal hernia: report of a case and review of the literature. *Arch Surg* 1939; 3:973-86.