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Left Paraduodenal Hernias : A Surgical Rarity

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Abstract
Paraduodenal hernias are rare hernias that result from error of rotation of the mid-gut. This congenital anomaly is present only in 2% of total population. These hernias are discovered incidentally or rarely cause small bowel obstruction. We report three cases of Para-duodenal hernia, two male and one female. Patients presented with varied manifestations of gastro-intestinal obstruction such as abdominal pain, vomiting, constipation, etc. radiological images showed cluster of dilated bowel segments with displaced mesenteric vessels. Open surgical approach was adopted for all and the patients were discharged about a week later without further complications. These cases have been reported as the mortality of symptomatic patients is near 100% if not treated timely and adequately and to highlight the methods adopted to surgically treat these patients.

Keywords
Paraduodenal hernia, Intestinal obstruction, Abdominal pain, CT images, Laparoscopic surgery

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I. Introduction

An internal hernia can be defined as the protrusion of parts of internal organs (most commonly the meander of the small intestine) through normal (foramen of Winslow), paranormal (ileocecal, supravesical, paraduodenal fossa) or abnormal (transomental) mesenteric or peritoneal defects into various sections of either the abdominal or the pelvic cavity.[8] These defects can be categorized into two groups based on their development. The acquired causes comprises of defects caused by abdominal surgery, trauma, peritoneal infection or increase in intra-abdominal pressure and consequent dilatation of the Winslow opening. The other group comprises congenital causes of embryonic malformations such as intestinal malrotation, absence of retroperitoneal attachments-ileocecal. [8] Para-duodenal hernias (PDH) have traditionally been considered the most frequent type of congenital internal hernia . Left para-duodenal hernia (hernia of Lanzert) is about three times more common than the right counterpart (Waldayer's hernia).

PDH is three times more frequent in males and usually present around the third or fourth decades of life with the average age of diagnosis at 38.5 years. Asymptomatic PDH may be incidentally discovered at laparotomy during surgical procedures for some other condition. Symptomatic PDH usually presents with vague nonspecific symptoms and is therefore difficult to diagnose hence the definitive treatment may be delayed.

The diagnosis is established by medical history, clinical examination of the patient, laboratory diagnostics, and preoperative computed tomography. Despite the stated diagnostic possibilities, the final diagnosis is often made during surgery. Treatment consists of surgery, either in the form of open surgery or laparoscopy. Anatomically, in LPDH, small bowel loops enter postero inferiorly through the mesocolic defect and remain trapped in Landzert's fossa, further spreading into the descending mesocolon and the left half of the transverse mesocolon.

In medical literature, para-duodenal hernias causing intestinal obstruction are few and report no evidence of long lasting postoperative ileus after surgery. We report herein three cases of PDH presenting as small bowel obstruction and their management based on a review of literatures.

CASE 1:

A 30 year-old man complained generalized abdominal pain for 3 days. The pain was paroxysmal in nature and associated with bilious, non projectile vomiting. It got worse after meals. Abdominal examination revealed distended abdomen with generalized tenderness accompanied with abdominal guarding and rigidity. Abdominal radiography shows multiple air fluid levels and abdominal ultra-sonography suggests multiple dilated fecal loaded bowel loops with mild sluggish to and fro peristalsis and transit point at distal ileum. Initial set of investigations points towards acute small bowel obstruction. Furthermore his abdominal CT scan showed dilatation of small bowel loops with maximum diameter of 35mm and abrupt transition point of lumen in distal ileum (Fig. 1). His CT Arteriography reveals vessel of the small intestine to converge on left upper abdomen. The patient was diagnosed with acute small bowel obstruction and midline exploratory laparotomy surgery was done. During the surgery, a gap defect of 15x10 cm found in mesocolon just lateral to second part of duodenum (Fig 2). Inferior mesenteric vein and left colic artery were found at lateral border to defect. A thick band from the lower edge of the sac to the distal ileum causing ileal obstruction and ileal stricture at that site was discovered. Distal jejuna loops found within a sac projecting to the left of the midline. The entrapped loop was reduced, and the defect was repaired. Stricturoplasty was done for ileal stricture. He was diagnosed with left paraduodenal hernia and was discharged on 8th post-operative day. No abnormal presentation was found during follow-up.

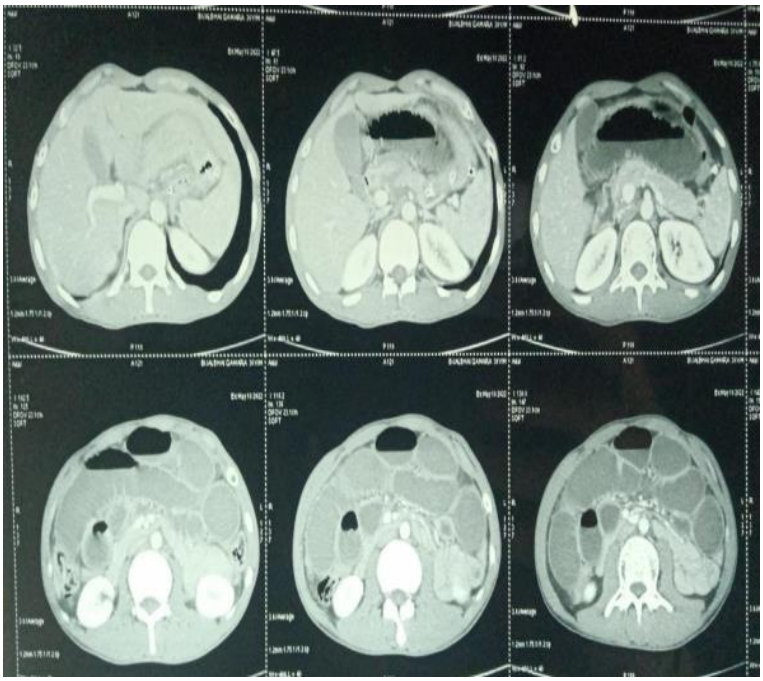

Fig 1: Dilatation of small bowel loops

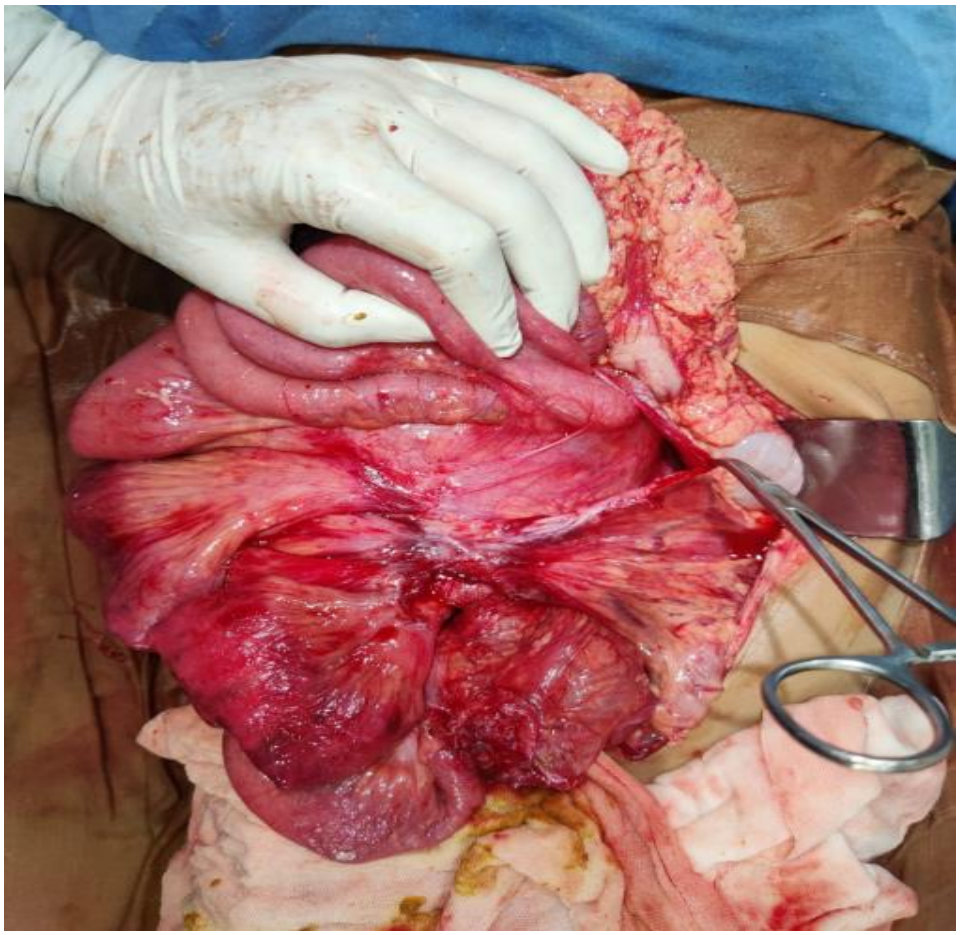

Fig 2: Gap defect of 15x10 cm found in mesocolon

CASE 2

A 90-year-old woman complained about abdominal distention and pain for 15 hours. The pain was paraumbilical accompanied with nausea and vomiting. She passed stool 2 days prior. She had no history of abdominal surgery. On physical examination, she was moderately dehydrated with mild tachycardia but normal blood pressure. The abdomen was soft and she had generalized tenderness with epigastric predominance. She had guarding and tenderness but no bowel sounds. Blood analysis, urine analysis, and a plain abdominal radiograph showed no abnormalities, except for Leucocytosis. Her abdominal CT imaging showed small bowel loops were displaced to left side with sac like configuration. There was dilatation of bowel loops with abrupt transition in distal ileum. She was diagnosed with small bowel obstruction and midline exploratory laparotomy surgery was done. During the surgery small bowel loops were found entrapped in a sac on to left side of abdomen. The entrapped bowel was reduced and defect was primarily closed. Patient was discharged on 14th post-operative day. No abnormal presentation was found during follow-up.

CASE 3

A 35-year-old man complained about left upper abdominal pain along with abdominal distention for 24 h. The pain was paroxysmal accompanied with vomiting. His abdominal CT scan showed focal clumping of proximal jejunal loops with distal jejunal loops distal to duodenojejunal junction in left paramedian location. Superior mesenteric vein lying anterior to superior mesenteric artery. Subsequent laparoscopy found a loop of jejunum was entrapped in the left side of mesocolon through a defect on the left side of the ascending part of duodenum. For the ease of surgical procedure it was converted to an open procedure and after the reduction of the small intestine, the hernia orifice was opened large enough to prevent further herniation. Post-operative recovery was uneventful, and the patient was discharged on 2nd post-operative day. No abnormalities were found during follow-up so far.

SUMMARY

	CASE 1	CASE 2	CASE 3
AGE/SEX	30 YRS/ MALE	90 YRS/ FEMALE	35 YRS/ MALE
PRESENTING SYMPTOMS	ABDOMINAL PAIN VOMITTING	ABDOMINAL PAIN VOMITTING CONSTIPATION	ABDOMINAL PAIN ABD. DISTENSION VOMITTING
IMAGING MODALITY	CT	CT	CT
RADIOLOGICAL SIGN	• DILATATION OF BOWEL LOOPS • ABRUPT TRANSITION POINT OF LUMEN IN DISTAL ILEUM • SMA,SMV SHIFTED TOWARDS LEFT SIDE • UNDERLYING ADHESION/ BAND	• DISPLACED PROXIMAL SMALL BOWEL LOOPS TO LEFT SIDE WITH SAC LIKE CONFIGURATION • DILATATION OF BOWEL LOOPS • ABRUPT TRANSITION IN DISTAL ILEUM • UNDERLYING ADHESIONS OR BAND PRESENT	• FOCAL CLUMPING OF PROXIMAL JEJUNAL LOOPS DISTAL JEJUNAL LOOPS DISTAL TO DJ JUNCTION IN LEFT PARAMEDIAL LOCATION, SUPRA-UMBILICAL • SMV LYING ANTERIOR O SMA
TYPE OF SURGERY	OPEN	OPEN	LAPAROSCOPY CONVERTED TO OPEN
DISCHARGE (N^{TH} POD)	8	14	2
POST-OPERATIVE COMPLICATIONS	NONE	NONE	NONE

II. DISCUSSION

Internal hernias are caused by three general mechanisms whereby developmental abnormalities result in the formation of internal hernias; a) abnormal retroperitoneal fixation of the mesentery resulting in anomalous positioning of the intestine (e.g. mesocolic or paraduodenal hernia), b) abnormally large internal foramina or fossa (e.g. foramen winslow, supravesical hernia), c) incomplete mesenteric surfaces with the presence of an abnormal opening through which the intestine herniates).

Paraduodenal hernias are a rare congenital anomaly present only in 2% of the population. This is the most common internal hernia (>50%). In most of the cases duodenum and small intestine are entrapped in a sac lined by mesentery. Anatomically there are a number of paraduodenal fossae. The most important ones are the left paraduodenal fossa called as fossa of Landzert and the right paraduodenal fossa known as the fossa of Waldeyer.[1,2]The fossa of Landzert is to the left of the fourth part of the duodenum and extends behind the descending mesocolon. It is very important to recognize the inferior mesenteric vein where it joins the splenic vein and the superior mesenteric vein as this marks the duodenojejunal flexure. These borders are also important surgically, because the inferior border of the hernia opening is the safest place to incise to widen the neck and allow reduction without damaging the vital structures. The fossa of Waldeyer extends inferior to the third and fourth part opening being just inferior to the duodenojejunal junction and bound anteriorly by the inferior mesenteric vein and the ascending left colic artery. The most important sign on CT of left paraduodenal hernia is that the inferior mesenteric vein and the left ascending colic artery displaced anteriorly by a cluster of jejunal bowel loops .[1,2] Infrequently, paraduodenal hernia cause intestinal obstruction. These patients usually present with chronic abdominal pain and vomiting with or without signs of intestinal obstruction. [3]

On X-ray, paraduodenal hernias were classically described as a clustering of small-bowel loops in the upper right or left quadrants. CT has become the gold standard modality for diagnosing any internal hernia, but it can also be diagnosed on plain film and barium follow through. With a significant lifetime risk of intestinal obstruction, elective repair is usually recommended. [2,4] In typical CT images, PDH shows a cluster of dilated bowel segments with engorged and displaced mesenteric vessels at the hernial orifice . [5] Early surgical intervention is essential to avoid future complications because patients with PDH have 20–50% mortality for acute presentations. [6,7]

We must not forget that in a certain number of patients, definitive diagnosis is made during surgery or autopsy. During emergency surgery, a strong index of suspicion usually directs to that diagnosis. Due to the fact that these hernias can reduce spontaneously preoperatively, and because all the peritoneal spaces are not always routinely examined intra-operatively, they can go undiagnosed during open surgery. [8] The diagnosis should particularly be borne in mind in the case of an intestinal obstruction in patients who no history of any previous abdominal surgery. Definitive treatment of LPDH involves surgery, which can be performed laparoscopically or openly. [8] The procedure involves releasing the intestinal loops from the hernia sac and repairing the defect by closing or widely opening the hernia orifice, whereby the hernia sac becomes a part of the peritoneal cavity. [8] In all of our cases, LPDH was easily reduced, so the primary closure of the hernia orifice with sutures was sufficient in two cases and in the rest one the hernia orifice was opened large enough to prevent further herniation.

III. CONCLUSION

Paraduodenal hernia is a rare congenital disorders arising out from error of rotation of the midgut. The duodenum and small intestine become trapped in a sac, lined by peritoneum, behind the mesentery of the colon, either to the right or left of the midline. This may be an incidental discovery during laparotomy for a rare cause of small bowel obstruction. Increasingly the diagnosis is made on CT scan in patients with non-specific abdominal pain or imaging for other reasons. The small bowel loops are all on the right or on the left of the midline. Treatment is considered mandatory even in uncomplicated cases. The surgical approach is decided by the nature of the hernia. Careful consideration is required with respect to vasculature and sac contents. Obliterating sac opening is essential. Due to the intensification of abdominal pain, nausea and vomiting after meals as a result of intestinal obstruction, we approached a detailed diagnostic treatment of the patient and arrived at the diagnosis during surgical procedure itself. We performed open surgery, which confirmed the formation of LPDH, and we resolved it in the usual way, by releasing the trapped loops of the small intestine and closing the hernia orifice with sutures. Computed tomography of the abdomen helps us make an accurate diagnosis and perform timely surgery for our patients.

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