

# Paraduodenal Hernia: A Rare Cause Of Intestinal Obstruction. Case Report And Review Of The Literature.

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## Abstract

Paraduodenal hernia is an uncommon cause of intestinal obstruction. However it happens to be one of the common forms of internal herniation. The number of these cases reported in literature is sparse making it a rare form of hernia necessitating detailed study. Understanding the anatomical features of the paraduodenal region in such patients is pivotal in the safe surgical management. Both open and laparoscopic methods can be used. A case of left paraduodenal hernia is reported along with a review of literature.

## INTRODUCTION

Para duodenal hernia is an uncommon cause of intestinal obstruction. But it happens to be the most common type of internal abdominal hernias. There are not many cases of this type of hernia reported in literature. Hence elaborate studies pertaining to this type of hernia are lacking. Anatomic considerations are very important in planning of surgical management of these hernias. Clinical features are elusive; hence a high degree of suspicion should be exercised in diagnosing patients with intestinal obstruction. Radiological investigations such as CT scan can be of help in the diagnosis only in the early stages, when complications have yet not supervened. But once complications such as obstruction and strangulation supervene, exploratory laparotomy is indicated.

A case of left paraduodenal hernia diagnosed at laparotomy in a patient presenting with features of intestinal obstruction is presented along with a review of literature.

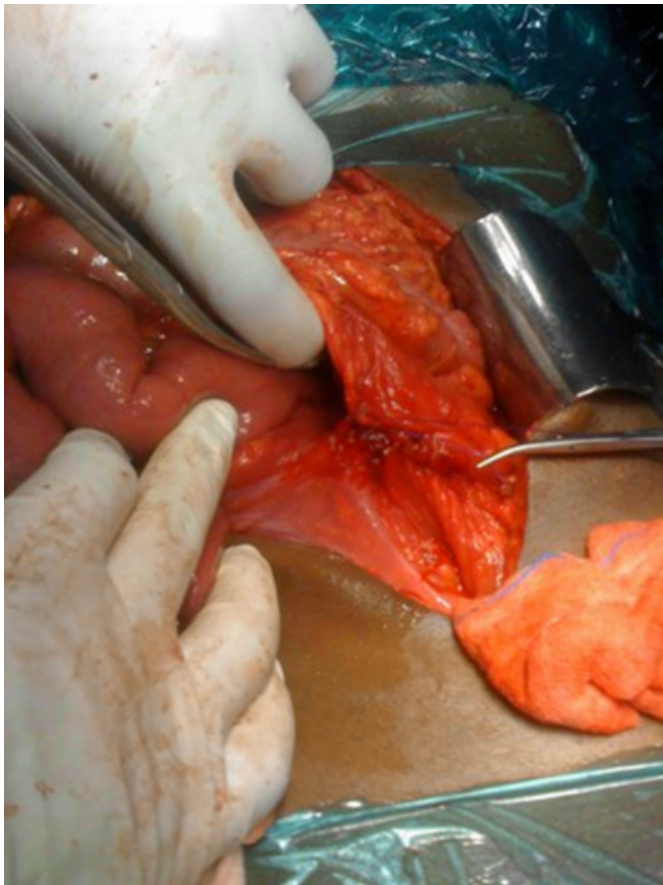
## CASE REPORT

A 42 year old male patient presented with complaints of abdominal pain which was colicky in nature, predominantly in the supraumbilical region. It was accompanied by vomiting which was bilious in nature. The duration of these symptoms was 3 days. The patient had tachycardia but normal blood pressure. Physical examination of the abdomen revealed severe tenderness and guarding in the supraumbilical region. Per rectal examination revealed an empty rectum. Hematological investigations were within

normal limits. Abdominal x ray in standing position revealed multiple air fluid levels. Abdominal USG findings were equivocal. The patient was resuscitated as a part of initial conservative treatment. Nasogastric tube aspirate continued to be copious and feculent in nature with no improvement of abdominal signs. Hence decision to perform exploratory laparotomy was made. Findings were suggestive of internal herniation into the left paraduodenal fossa. (Figure 1) The bowel loops trapped within the hernia were carefully reduced. They were congested, but retained their viability. (Figure 2) The wide gap created by the loose and redundant fold of peritoneum containing the inferior mesenteric vein was identified and obliterated with multiple interrupted sutures of 2-0 prolene taking utmost care not to damage the inferior mesenteric vein. (Figure 3) The patient tolerated the procedure well and was discharged from hospital on the 7<sup>th</sup> postoperative day. The patient has been following up for the last 2 months and continues to be asymptomatic.

**Figure 1**

Figure 1: Left paraduodenal hernial opening.



**Figure 2**

Figure 2: Congested bowel loops reduced from the hernial sac.



**Figure 3**

Figure 3: Exact size and relations of the defect demonstrated prior to suturing.



**DISCUSSION**

Paraduodenal hernia is a type of internal hernia resulting from abnormal or incomplete midgut rotation that involves one of the paraduodenal spaces. The duodenojejunal flexure is fixed to the left psoas fascia by fibrous tissue and may be further supported by the suspensory muscle of the duodenum. This is a thin band of connective tissue which contains muscle that run from the right crus of the diaphragm to connective tissue around the celiac trunk and smooth muscle fibers that run from here behind the pancreas and in front of the left renal vein to the muscle coat of the flexure.[1,2] In cases where there is abnormality in rotation of the gut, the process of fusion of the mesocolon with the peritoneal lining of the body wall remains deficient giving rise to potential defects for herniation to take place. To the left of the duodenojejunal flexure certain folds of peritoneum may cover recesses or fossa.[2] The paraduodenal recess proper lies behind a fold raised by the upper end of the inferior mesenteric vein. It is also named as left paraduodenal fossa of Landzest. This happens to be the commonest site for internal herniation. Similarly another

area is situated on the right of the duodenojejunal flexure.[3] It is within the first part of mesentery of the jejunum immediately behind the superior mesenteric artery and inferior to the transverse part of the duodenum. This area is called the right paraduodenal fossa of Waldeyer and is less commonly encountered as compared to the left. Right paraduodenal hernias are caused by small bowel entrapment behind the ascending mesocolon and right half of the transverse mesocolon. The superior mesenteric artery and right colic vein lie in the free edge of neck.[3]

Clinical presentation of paraduodenal hernias range from mild abdominal discomfort to acute intestinal obstruction.[4] Postprandial pain with postural variation is a characteristic feature. Compression of the inferior mesenteric vein can lead to hemorrhoids.[4] A high index of suspicion is required while evaluating all patients with acute intestinal obstruction for internal herniation. Abdominal x ray will just reveal multiple air fluid levels and in no way lead to an exact diagnosis. CT scan can help in the diagnosis only in early presentations but not in cases where complications have supervened.[5,6]

CT scan findings in left paraduodenal hernias consists of an abnormal cluster of dilated small bowel loops to the left of the fourth part of the duodenum extending into the descending mesocolon. The mesenteric vessels supplying the affected loop can appear engorged. The inferior mesenteric vein and the ascending left colic artery can be seen above the herniated loop along the anterior aspect. The transverse colon lies anterior to the hernia sac.[3,6,]

In right paraduodenal hernias, the characteristic CT findings are an abnormal cluster of small bowel loops in the ascending mesocolon. The superior mesenteric artery and the right colic vein are located in the anatomical border of the encapsulated small bowel loops. Bowing of the jejunal branches of the superior mesenteric artery and vein to the right and posterior is a corroborative CT finding. The hepatic flexure of the colon is seen anterior to the hernial sac. When herniation is superimposed on malrotation the normal relationship between the superior mesenteric artery and vein is lost.[6,7,8,9]

Treatment of paraduodenal hernias is essentially surgical.[4] Both laparoscopic and open approach can be adopted. In early uncomplicated presentations diagnosed preoperatively, laparoscopic approach is a preferred option.[10] There are many case reports supporting the safety of laparoscopic approach in the treatment of paraduodenal hernias.[10,11]

However if the diagnosis is equivocal and cannot be confirmed preoperatively as encountered in complicated cases presenting as intestinal obstruction then a open approach is the best option.[12]

The essential components of surgical treatment are, 1. Reduction of bowel contents without damaging the vascular structures viz the inferior mesenteric vein I case of left paraduodenal hernias and the superior mesenteric artery in case of right paraduodenal hernias. 2. Obliteration of the hernial defect by simple closure with nonabsorbable sutures or in case of big defects with a composite mesh.

Many a times in longstanding complicated cases reduction may pose difficulties. The constricting ring cannot be divided in paraduodenal hernias due to the presence of an important vessel in the free edge of the fold. In such cases the bowel contents need to be aspirated in order to reduce the volume of their contents to enable reduction. The viability of the reduced bowel loops need to be critically assessed. In case of strangulation resection anastomosis is the only option. This is to be followed by obliteration of the defect by non absorbable sutures or by a prosthetic composite mesh in case of larger defects wherein obliteration cannot be achieved satisfactorily by individual sutures. This part of the operation has to be done with utmost care to prevent damage to the vital vascular structures lying in close vicinity. In case of right paraduodenal hernias the right colon needs to be transpositioned to within the left side of the abdominal cavity to help reduce the contents and close the defect from right side. [4]

## IN CONCLUSION

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