



## An interesting case of left paraduodenal hernia.

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**ABSTRACT...** Paraduodenal fossa hernias (PDFHs) represent 53% of all congenital internal hernias and 0.2-0.9% of all small bowel obstructions. Most of these hernias are diagnosed incidentally on laparotomy, and carry up to 50% lifetime risk of development of small bowel obstruction. We present our experience in diagnosing and treating a case of a massive left paraduodenal fossa hernia in a 17 year male, containing over 30% of the small bowel (jejunum and ileum), presenting with a history of recurrent incomplete small bowel obstruction. Plain abdominal radiography showed distended loops of jejunum and few air fluid levels. At laparotomy and identification of hernia, small gut was reduced and examined, which was found to be structurally and functionally intact with normal vascularity. The defect was closed with continuous absorbable suture (Vicryl 2-0) sparing the inferior mesenteric vessels. Patient's post-operative recovery remained uneventful and he was discharged on 4<sup>th</sup> post-operative day.

**Key words:** General Surgery, Hernia Surgery, Paraduodenal Fossa Hernia, Small Bowel Obstruction.

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### INTRODUCTION

Internal intestinal hernias are classified as congenital or acquired and cause as much as 5.8% of all small bowel obstructions.<sup>1,2</sup> Paraduodenal fossa hernias (PDFHs) represent 53% of all congenital internal hernias and 0.2-0.9% of all small bowel obstructions.<sup>3</sup> Patients with a PDFH have a 50% life-time risk of developing small bowel obstruction with a mortality rate of 20-50% for acute presentation.<sup>2,4</sup> Establishing the correct diagnosis in these patients can be difficult as they often present with vague chronic abdominal symptoms. Indeed, most are discovered incidentally at laparotomy, or during autopsy.

We present our experience in diagnosing and treating a case of a massive left paraduodenal fossa hernia, containing over 30% of the small bowel, presenting with a history of recurrent incomplete small bowel obstruction.

### CASE HISTORY

A 17 years old boy presented with 2 days history of colicky abdominal pain, more in left upper

abdomen, associated with bilious vomiting and absolute constipation. He had similar episodes of abdominal pain since childhood which resolved spontaneously or with oral medications by general physician. His pulse was 98/min, BP 100/60 mmHg, respiratory rate 24/min and temperature 98.6° F. Physical examination revealed tenderness and guarding in both upper quadrants with mild abdominal distention, but no visible external hernias. Bowel sounds were absent. Rest of the examination was unremarkable.

Plain abdominal radiography showed distended loops of jejunum and few air fluid levels (Figure-1). Patient was resuscitated in the emergency department for 10 hours but his signs and symptoms worsened, therefore the plan of exploratory laparotomy was made for acute intestinal obstruction with no definitive diagnosis. On opening the peritoneal cavity, there was 400 ml of reactionary fluid and distended proximal 2 feet of jejunum. Rest of the jejunum and almost whole of the ileum was present in a sac of paraduodenal fossa which was present in between two layers of

mesentery of the left colon, going upwards to left of the 4<sup>th</sup> part of duodenum. Inferior mesenteric vessels (IMV) were present in the free margin of this peritoneal sac. Small gut was reduced and examined, which was found to be structurally and functionally intact with normal vascularity. The defect was closed with continuous absorbable suture (Vicryl 2-0) sparing IMV. Drain was placed in the pelvic cavity. Patient's post-operative recovery remained uneventful and he was discharged on 4<sup>th</sup> post-operative day.



Figure-1. X-ray abdomen and pelvis findings

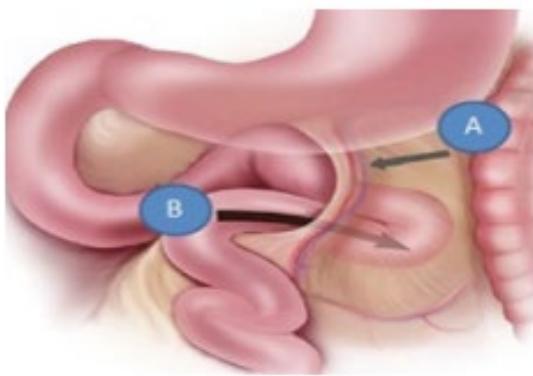


Figure-2. Schematic representation of left paraduodenal hernia in Landzert's fossa (A), sequestration of small intestine between mesocolon and posterior peritoneal wall (B).

## DISCUSSION

Internal hernias result from protrusion of the viscera through an opening in the peritoneum or mesentery, leading to its encapsulation within a compartment of the abdominal cavity.<sup>5,6</sup> They account for <2% of intestinal obstruction<sup>(1)</sup>. Paraduodenal hernias account for 30-50% of all internal hernias, which are also the most common type of congenital internal hernias.<sup>4</sup> Paraduodenal hernias into the left paraduodenal fossa of Landzert are three times more common than those into right paraduodenal fossa of Waldayer.<sup>2</sup> Left paraduodenal fossa hernias (LPDH) result from failure of mesenteric fusion with the parietal peritoneum and malrotation of the midgut resulting in development of a potential space.<sup>3</sup> LPDH occur when small intestine prolapses posteroinferiorly into the fossa (of Landzert), which is bounded by the fourth part of the duodenum, posterior peritoneum, IMV, and left branches of the middle colic artery.<sup>7,8</sup> This may result in small bowel incarceration, obstruction, and subsequent ischemia.

Patients most commonly present in the 4<sup>th</sup> or 5<sup>th</sup> decade of life, and there is a 3:1 male preponderance.<sup>2,9</sup> Presentation is variable depending on the severity of the hernia sequelae and the presence of obstruction.<sup>2</sup> Approximately 50% of patients recall previous recurring abdominal pain of nonspecific nature.<sup>10</sup> As such, the entity poses a diagnostic challenge, with majority of cases identified only at operation.<sup>11</sup> Patients with LPDH have a 50% lifetime risk of hernia incarceration with 20-50% mortality for acute presentations, hence, operative management is recommended regardless of symptoms.<sup>4</sup>

Plain abdominal radiography may reveal distended, fluid filled stomach or dilated small bowel loops.<sup>12</sup> Barium contrast studies may demonstrate small bowel loops jumbled up in left upper quadrant.<sup>13</sup> Ultrasonography may reveal an abdominal mass.<sup>6,12,13</sup> The most effective preoperative diagnostic tool is the computed tomography (CT) scan<sup>14</sup>, which may reveal a cluster of small bowel at the ligaments of Treitz with or without associated findings of small bowel

obstruction.<sup>2</sup> An additional compression on the posterior stomach and distal duodenum results in inferior displacement of transverse colon and shifting of the mesenteric truck to the right.<sup>15</sup> However, instances of acute abdomen warrant omission of preoperative imaging and immediate exploratory laparotomy, which was done in our case. Celiac arteriography can reveal a displaced spleen.<sup>6</sup> Superior mesenteric arteriography can demonstrate jejunal arteries displaced upwards and to the left.<sup>6</sup>

Treatment methods reported in the literature include laparoscopy or laparotomy and repair. However, exploratory laparotomy is more often reported, especially in the setting of an acute complication such as strangulation, perforation, or large distention from obstruction.<sup>16</sup> In addition, laparotomy may be more appropriate in circumstances where laparoscopy may not be possible or dangerous such as significant adhesions, hemodynamic instability, and contraindications to pneumoperitoneum.<sup>16</sup> Nonetheless, the laparoscopic approach to management of this condition has become increasingly prevalent in the literature.<sup>17</sup> Regardless of the approach, basic principles of hernia repair are adopted, namely, reduction of hernia contents and repair of hernial defect.<sup>10</sup> Excision of the hernia sac has been described but is not mandatory given the potential for injury to the colic vessels.<sup>17</sup> Correct identification and preservation of the vascular structures that constitute the hernia neck is essential.<sup>15</sup> Rarely, widening of the hernia neck is required to reduce the contents and may involve incision of constricting peritoneal fold inferiorly and even division of the inferior mesenteric vein in most difficult cases.<sup>18</sup>

## CONCLUSION

Left paraduodenal fossa hernia is a relatively uncommon cause of small bowel obstruction. It should be included in the differential diagnosis in a patient who is relatively young, experiences recurrent episodes of intermittent small bowel obstruction, and without history of previous abdominal surgery. Definitive treatment should not be delayed in an unstable patient as the

mortality can be high. A combination of high index of suspicion and timely diagnosis combined with surgical intervention effectively cure the patient and prevent future complications.

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#### AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Sahar Saeed	Primary surgeon for the case report, contributed to the idea generation and writing of final manuscript.	
2	Abeera Butt	First assistant surgeon for the case report, contributed to the idea generation and writing of final manuscript.	
3	Syed Asghar Naqi	Consultant supervisor for the case, contributed to the writing of final manuscript and review process.	
4	M. Mohsin Ali	Contributed to the writing and review process of final manuscript.	