



**ORIGINAL RESEARCH PAPER**

**General Surgery**

**PARADUODENAL HERNIA- A CASE REPORT**

**KEY WORDS:** Para duodenal hernia, intestinal obstruction.

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**ABSTRACT** A 32-year-old male came with complaints of pain in abdomen for the last 12 hours. The pain was associated with three episodes of vomiting, which contained food particles. Left Para duodenal hernia was diagnosed on CT Abdomen. He underwent emergency exploratory laparotomy with hernia repair. The purpose of this paper is to review the etiology, pathology, diagnosis and treatment of Para duodenal hernia and to heighten the awareness of this rare but significant disease

**Introduction**

Para duodenal hernia is the most common form of congenital internal hernia and is defined as protrusion of bowel into the retro-peritoneal space through peritoneal defects near the third and fourth portion of the duodenum. There is a lifetime risk of obstruction and bowel strangulation is around 50% with a mortality of 20% and higher. Despite the rarity of the disease, it poses a serious surgical problem. The high risk of obstruction and the associated mortality mandate repair once the diagnosis is established. We report an interesting case of a 32-year-old man with a left Para duodenal hernia who underwent emergency exploratory laparotomy with hernia repair. The purpose of this paper is to review the etiology, pathology, diagnosis and treatment of Para duodenal hernia and to heighten the awareness of this rare but significant disease

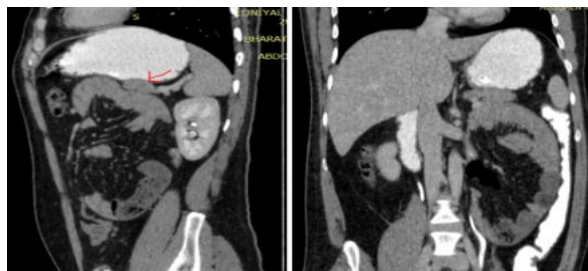
**Case Report**

A 32 yr old male, presented with complaints of pain in abdomen for the last 12 hours. The pain was insidious in onset and gradually progressive in nature and was associated with three episodes of vomiting, which contained food particles. He is also a known tobacco chewer for the last 10 years. On Admission, he had tachycardia with pulse of 110/min. On per abdominal examination, abdomen was soft, severe tenderness in left iliac fossa and lumbar region. Voluntary guarding was also present. There was hyper peristalsis in the upper quadrant. Blood investigations showed Hb 13.4, Tlc - 9800, Platelet - 3.23. Sr. Bilirubin - total 1.5. USG (A+P) showed Clumped Small Bowel Loops in left hypochondriac region with marked probe tenderness however no obvious bowel dilatation or sluggish peristalsis noted. CT Abdomen - patient was diagnosed with a rare entity called left paraduodenal hernia.

- **Fig 1**-There is abnormal clustering of proximal jejunal loops noted in the left hypochondriac and lumbar region adjacent to the duodeno-jejunal junction.



- **Fig 2**- The clumped bowel is related to body and tail of pancreas posteriorly, descending colon left laterally



- **Fig 3**- small-bowel obstruction of herniated contents as multiple loops of dilated small bowel (arrow) with fluid-fluid levels noted.



An emergency exploratory laparotomy was conducted. The hernia was identified repaired and patient was shifted to ICU for a day with a 32 no. Abdominal drain in situ. The drain was removed on postoperative day4 and patient was discharged on postoperative day7.

Internal small bowel Hernial site aft  
hernia reducing the hernia Mesentery sutured



**Discussion**

PARADUODENAL hernia is a rare congenital anomaly, which arises from an error of rotation of the midgut. It may be discovered as an incidental finding at laparotomy or may be the cause of acute small bowel obstruction, which can go on to strangulation and perforation. Its presence may also lead to confusion and errors in

the performance of other abdominal operations, although itself not the cause of any symptoms. Much attention had been given in the earlier surgical literature to internal hernia involving the various intra-abdominal fossae, but it was not until the report of Andrews in 1923, that the true embryological abnormality involved in the production of paraduodenal hernia was clearly recognized. Zimmerman and Laufman added 4 cases in 1953, again giving an excellent description of the condition. Five cases from the Massachusetts General Hospital since 1941 have been mentioned in a previous report.

The midgut is that portion of the intestinal tract receiving its blood supply from the superior mesenteric artery and includes the distal duodenum, jejunum, ileum, cecum, ascending colon and the proximal half of the transverse colon. It is divided into two segments. The portion cephalic to the vitello-mesenteric duct is called the pre arterial segment and that caudal is called the post-arterial segment. The former comprises the distal duodenum and the entire small bowel to the distal ileum, and the latter the distal ileum, ascending and transverse colon. In the normal sequence of events the midgut, suspended in the midline by its dorsal mesentery, passes through an orderly pattern of rotation. This process is divided into 3 stages. The first stage begins at fifth week of life of the embryo. Rapid growth of the abdominal viscera forces a great portion of the elongating midgut out of the abdominal cavity into the umbilical or yolk sac. By the tenth week the abdominal cavity has increased in size and the midgut has gradually returned within it, beginning the second stage of rotation. The midgut has rotated 90 degrees in a counter clockwise direction on the axis of the superior mesenteric artery. The pre arterial segment occupies the right side, and the post-arterial segment the left side of the abdominal cavity. Arrest at this point of rotation produces the relatively common picture of "non-rotation of the intestine," where the small bowel, including the duodenum, lies entirely to the right, and the colon to the left of the midline of the abdominal cavity. Normally, the pre arterial segment continues to rotate through an additional arc of 180 degrees counterclockwise, first behind and then to the left of the superior mesenteric artery, so that it comes to lie to the left of the midline in the abdominal cavity. The post-arterial segment also rotates, led by the cecum, which passes counterclockwise anterior to the superior mesenteric artery into the right upper quadrant, where it remains for a time. The entire second stage is a rapid process and takes place between the tenth and eleventh week, but the cecum may not complete its descent to its normal position in the right lower quadrant until about the end of the fifth month of the life of the embryo. This second stage is a very important one in which many of the anomalies of rotation arise. The third stage is one of fusion of the mesenteries and fixation of the midgut. The leaf of the mesentery of the colonic portion of the midgut, which has come to be in a posterior position, fuses with the peritoneum of the posterior abdominal wall and the space between them is obliterated. The mesentery of the small bowel remains fixed to the posterior abdominal wall and the mesentery of the duodenum fuses with the posterior parietal peritoneum. If the pre-arterial segment fails to rotate properly, it may become trapped under the mesentery of the rotating colon forming an internal hernia, which, because of its proximity to the duodenum, has been called a paraduodenal hernia. This then consists of a sac lined by peritoneum containing small intestine with a small opening through which the distal ileum passes into the free peritoneal cavity to join the cecum. This may occur on either the right or left side of the abdomen, depending on the exact nature of the error of rotation. The mechanism of production of the right paraduodenal hernia is quite simple. As the midgut returns from the yolk sac to the abdominal cavity, the small bowel has rotated 90 degrees counterclockwise and lies on the right side of the abdomen. It does not participate further, however, in the second stage of rotation, remaining on the right side, so that as the terminal ileum, cecum and colon proceed with their normal course of rotation across to the right they come to lie anterior to the distal duodenum and small bowel of the pre-arterial segment. Fixation of the cecum and colon to the posterior parietal peritoneum occurs but leaves the small bowel trapped in a sac, lined by the peritoneum, which lies

behind the mesentery of the post arterial segment, in the anterior wall of which are the ileocolic, right and midcolic vessels. The terminal ileum emerges from the sac through a small opening into the free peritoneal cavity to reach the cecum. The process of formation of a left paraduodenal hernia is somewhat more complicated. A clear description of the mechanism was given by Callander et al in 1935, which best explains the pre-arterial segment of the midgut rotates in the normal pattern, first behind and then to the left of the superior mesenteric artery, and comes to lie in the left side of the abdomen, it invaginates into an unsupported area of descending mesocolon, the anterior margin of which is formed by the ascending branch of the inferior mesenteric artery and the inferior mesenteric vein as it ascends to join the splenic vein (vascular arch of Treitz). The small bowel thus comes to lie in a sac, lined by peritoneum, behind the mesentery of the descending colon as this structure undergoes its normal posterior fixation. The inferior mesenteric artery, with its ascending branch, and the inferior mesenteric vein are in the margin of the neck of this sac, and the blood supply of the descending colon is in the wall of the sac. The terminal ileum comes into the free peritoneal cavity through the neck of the sac to reach the cecum.

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