



Laparoscopic Repair of Right Paraduodenal Hernia: A Rare Case Report.

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ABSTRACT

Introduction-Internal hernia is a rare (0.2% to 5.8 %) cause of intestinal obstruction. Paraduodenal hernia is most common (53%) type of internal hernia. There are only 6 cases are reports, where right sided hernia repaired laparoscopically

Methods- Here we present a 32-year male with intermittent abdominal pain, association of nausea and vomiting. Physical examination and laboratory studies were normal. He was diagnosed on basis of CT findings and successfully managed with laparoscopic repair.

Results- Patient tolerated oral sips on 1st postoperative day and discharge on second postoperative day, he has no complained or sequel at 3, 6 months in postoperative follow up.

Conclusion - Paraduodenal hernia, a rare cause of small bowel obstruction, however, laparoscopic repair is a feasible and its decrease the postoperative pain and hospital stay.

KEYWORDS : Paraduodenal Hernia, Internal hernia repair, Intestinal obstruction

Introduction: Internal hernia is a rare cause of intestinal obstruction, occupies only 0.2% - 5.8 % of all cause of intestinal obstruction (1) and paraduodenal hernia is the most common type of internal (53%) hernia, it's also known as congenital mesocolic hernia Left sided accounts about 75% of all paraduodenal hernia, mainly occurred near Landzedt fossae (2), and right side PDH (25%) usually founds near Waldeyer fossae below the duodenum. Right side PDH mostly occurs in male gender, with (M: F) 3:1 rate of incidence, however, no gender prepotency seen in left sided PDH. Occurrence is more frequent in fourth and sixth decade of life. PDH is difficult to diagnosed, because most of the patients present with vague symptoms, like recurrent abdominal pain with nausea, vomiting or postprandial distension (3), Physical examination and plan radiography does not helps in making the definitive diagnosis however, other imaging investigations such as contrast upper gastrointestinal series, abdominal Ultrasonography, computed tomography, and magnetic resonance may help to reach the correct preoperative diagnosis (4).

There are only 5 reports, described laparoscopic repair of right Paraduodenal hernia. Here we report, a right sided paraduodenal hernia was repaired laparoscopically with satisfactory outcomes

Case Presentation: A 32 year male presented to us with complains of right sided off & on abdomen pain since his childhood. Pain was moderate to severe, colicky, none radiating, increased with meals, and associated with vomiting. No history of hematemesis or melena. On examination, he was average built male, fair nutrition status, Vitals stable, abdomen soft, no organomegaly. On Evaluation USG abdomen revealed, Clumping of bowel loops in RIF with proximal dilatation of bowel loops. CECT abdomen showed, whole of duodenum & proximal jejunal bowel loops in Right lumbar region (Figure 1A), Duodenum was not crossing the midline, encapsulated proximal jejunal loops lying inferolateral to second part of duodenum, SMA lying anterolateral to bowel loops. Stomach & proximal duodenum were distended and cecum was lying normally in right iliac fossa. Impression was made as obstructed right paraduodenal hernia (Figure 1B), malrotation of gut with DJ junction to right of midline.

Operative technique:-Patient was operated under general anesthesia, placed in supine position, slightly head up position. We used open technique create pneumoperitoneum, 14 mmHg pressure was achieved. One 12 mm infraumbilical and three 5 mm additional abdominal trocars were placed. Initial evaluation revealed a right retr-

colic mass of jejunal loops and a defect, from where jejunum loops was herniating in paraduodenal hernia sac (Figure 2), volume of small bowel volume was decreased in left side of abdominal and pelvic cavity, two limbs of jejunum were visualized just posterior to superior mesenteric artery and inferior to third portion of duodenum, proximal segment of small bowel was continuous with ligament of Treitz, while distal bowel segment was free and collapsed. Hernial sac was open and further widen via lateral approach, by mobilizing ascending colon along with white line of Toldt with harmonic scalpel (Figure 3), appendicectomy was performed as a part of the procedure. Whole small bowel was released and examined carefully from ligament of Treitz to ileocecal junction; large colon was also look for any evidence of twisting or iatrogenic injury before abdominal closure. Patient was well tolerated oral diet from 2nd postoperative day onwards. No episode of abdominal distension or vomiting seen, in last 3, 6 months in postoperative follow up.

Discussion: Paraduodenal hernia is rare, congenital, midgut rotation defect. This is male predominant entity; mean age of onset is 39.5 years (2). Left sided PDH is more common in compare to right side PDH. However, actual prevalence and incidence of specific pathology is unknown (5). Its included 0.2% to 0.9 proportion of small bowel obstruction, these figures are also similar in other autopsy studies (0.2%) (5,6). Before planning the treatment, it is imperative to understand intestinal embryological development. Normal gestational primitive gut development start on 12th days of human embryo, foregut, midgut and hindgut appears on 24th day, on 28th days of gestation prearterial (12, o'clock) and postarterial segments (6 o'clock) are suspended by dorsal mesentery. During 33 to 41 days, intestinal loop rotates 90 degree (counter clockwise) around the superior mesenteric artery, then its begins to extrude through the umbilical cord with herniation of cecal diverticulum, herniated prearterial limb grows longitudinally due to marked elongation, yet the postarterial limb remains straight. On day 51 to 57 days intestinal loop undergoes another 90 degree counter clockwise rotation, before returning to abdominal cavity, prearterial loop reduce inferior to superior mesenteric artery and after return of primitive jejunum, distal ileum and cecum, small intestine makes another 90 degree counter clockwise turn, and this leads to completion of 270 degree rotation of primitive gut. After these changes small bowel comes to left upper quadrant and cecum on right lower quadrant (7). Although exact pathogenesis is debatable, however, the most are agree that, abnormal midgut rotation, that result in failure of mesentery fusion with parietal peritoneum responsible for right PDH.

Counter clockwise rotation of the prearterial limb terminates prior to 9 o'clock position, as such, first part of small bowel mesentery behind the superior mesenteric artery and inferior to third portion of duodenum failed to fuse, result in Waldeyer's fossa formation, as prearterial limb continuous to elongate on right side of abdomen, all the part of jejunum becomes trapped in sac behind the proximal ascending and transverse mesocolones. Ascending border of mesenteric defect is form by superior mesenteric vessels, which may occupy a more ventral and left word position in compare to normal anatomy. Paraduodenal hernia could be an incidental finding during emergency and elective surgery for other indications; however, it is advisable to repair at same time, due high risk of subacute intestinal obstruction (50%) in future. Because of high risks of massive blood loss from superior mesenteric artery and its branch, complete removal of sac is also not advisable. Especially CT scan is very useful tool for preoperative diagnosis of PDH, its may reveals specific findings of small bowel loops clustering on right upper quadrant of abdomen, well circumscribed edge of hernia sac, stretched and engorged mesenteric vessel over the sac (8).

Laparoscopic repair of paraduodenal hernia nowadays is not a new technique, first laparoscopic paraduodenal hernia repair was done in 1998 by Uematsu et al (9) however, right side of paraduodenal laparoscopic hernia is reported very few in literature, here we report a laparoscopic repair of right paraduodenal hernia and we also recommend this procedure for uncomplicated case, where the strangulation or perforation is excluded. Laparoscopic approach definitely reduced the postoperative pain, decrease the hospital stay. Patients can return early to their daily activities. We concluded, right Paraduodenal hernia is a rare cause of small bowel obstruction, till date only 5 cases are reported (10). These mostly remains undiagnosed, however, high index of suspicion and preoperative imaging may be useful tools for early diagnosis, Laparoscopy provides the opportunity to confirm the diagnosis and also permit immediate repair of right PDH with all benefits of decreasing postoperative pain and shorter hospital stay.

Abbreviations- PDH- Paraduodenal hernia, RIF- Right iliac fossa, SMA-Superior mesenteric artery

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Competing interests

We have no conflicts of interest or financial ties to disclose.

Figure 1A



Figure 1B



Figure 1A: Computed tomography (CT) showing a soft tissue mass between the stomach, the ascending colon; **Figure 1B:** The mass proved to be a cluster of intestinal loop on right after ingestion of contrast medium.

Figure 2



Figure 2 Laparoscopic surgery findings: Showing the right sided sac containing small-bowel loops.

Figure 3



Figure 3: Laparoscopic surgery findings: Showing the opened up sac.

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