

Midgut Malrotation as a Rare Cause of Chronic Abdominal Pain in an Adolescent: A Case Report and Review of Literature

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Abstract: Abnormalities in the rotation of midgut occur during physiological herniation of the midgut between the 5th and 10th week of gestation, typically presents early in life, but sometimes it can present later. 90% of cases become clinically evident during the first year of life. We report a case of a 15-year-old male who presented with a history of non-specific gastro-intestinal symptoms such as intermittent and recurrent bilious vomiting, chronic intermittent abdominal pain since last two years. The patient was thoroughly investigated. An upper GI barium study and contrast enhanced CT scan of the abdomen suggested midgut malrotation along the axis of the superior mesenteric artery. On basis of imaging studies, pre-operative diagnosis of midgut malrotation was made. The patient underwent a laparotomy. Ladd's procedure was performed. The postoperative period was uneventful. The patient was successfully discharge on day 10 and subjected to follow up.

Keywords: Midgut Malrotation, Adolescent, Ladd's procedure, Chronic abdominal pain, Recurrent bilious vomiting.

INTRODUCTION

Abnormalities in the rotation of midgut occur during the physiological herniation of the midgut between the 5th and 10th week of gestation, typically presents early in life, but sometimes it can present later causing difficulty and error in diagnosis. 90% of cases become clinically evident during the first year of life [1], estimated to be ranging from 1:200 to 1:6000 live births [2]. It is rare for malrotation to present in adulthood [5], the incidence is 0.2% [3, 12]. Approximately 15% of all patients with confirmed diagnosis remain asymptomatic throughout life. Thus, diagnosis is part of day-to-day of pediatric surgery, but this diagnosis is often overlooked in cases of abdominal pain in adult [4] and the latter group that represents a diagnostic challenge.

Indeed, most adult patients are asymptomatic and discovered incidentally later in life at surgery for other conditions [5]. However, some adults may present acutely with bowel obstruction and intestinal ischemia due to midgut or cecal volvulus, or chronically with symptoms of intermittent bowel obstruction or vague abdominal complaints. Clinical diagnosis is not considered in initial evaluation, as presentation is nonspecific and the index of suspicion for malrotation decreases progressively in adult. Several modalities such as barium studies, computed tomography (CT) scans, angiography are used for diagnosis [6].

Ladd procedure is used for the treatment, originally introduced Dr. Ladd in 1936 [7].

We present a case of midgut malrotation in an adolescent who presented with recurrent and intermittent vomiting since last two years, a cramping right abdominal pain and underwent laparotomy.

CASE REPORT

A 15 year male was admitted to hospital with complaints of recurrent bilious vomiting and chronic pain abdomen on and off for last 2 year. There was no associated comorbidity, but history of a similar episode three years back, which resolved spontaneously with some drugs. On physical examination he was average built, afebrile with normal vitals no abdominal distention, guarding, rigidity, rebound tenderness, constipation. The abdomen was slightly painful on palpation of the epigastrium, but no signs of peritoneal irritation. Routine investigations were within normal limits, upper GI barium study which showed classical corkscrew appearance of small intestine (Fig. 1). The findings were further confirmed on Contrast enhanced scan of abdomen, which show dilated duodenum with swirling of distal parts of duodenum and proximal jejunum. The classical sign of whirlpooling of Superior Mesenteric vein over Superior Mesenteric artery was also evident (Fig. 2).



Fig. 1: Corkscrew appearance of small intestine

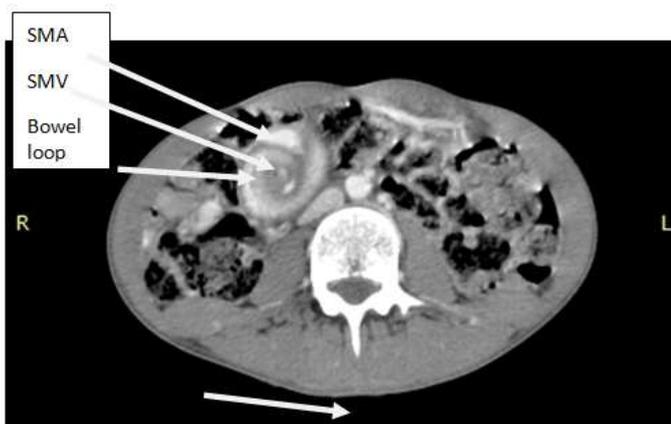


Fig. 2: Whirlpooling of Superior Mesenteric vein over Superior Mesenteric artery

The patient was taken for laparotomy. Intraoperatively the small bowel loops were predominantly on the right side of the abdomen and the colon predominantly on the left, but caecum and appendix were found in right upper quadrant. The caecum and appendix were attached to the posterolateral abdominal wall with a Ladd's band. The first and second parts of the duodenum were dilated and

the third part did not cross aorta. The proximal jejunum showed a rotation around the axis of the superior mesenteric artery with whirlpooling of Superior mesenteric Vein over around Superior mesenteric Artery (Fig. 3).

The patient recovered well and was discharged on the 10 day after the surgery.

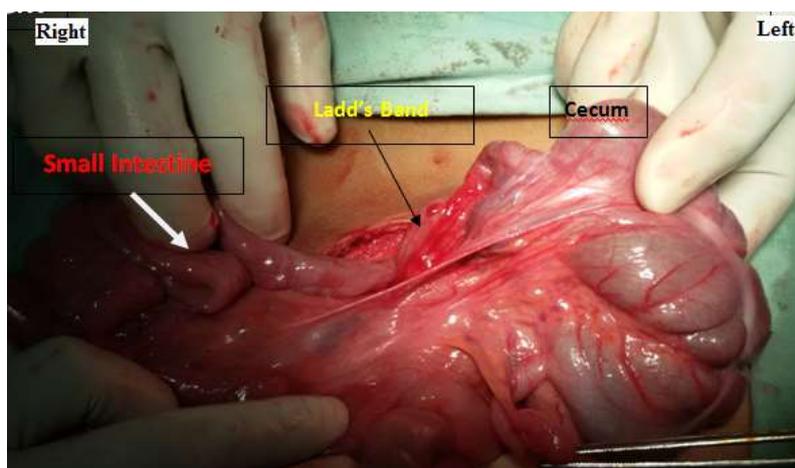


Fig. 3: Showing Ladd's band.

DISCUSSION

It is reported that in adults, majority of cases of intestinal malrotation are asymptomatic [1-3]. In adults who develop symptoms, it may occur as an acute or chronic form. The acute form with abdominal pain and vomiting without distention (obstruction is high)

can lead to intestinal ischemia and necrosis with peritonitis, caused by intestinal obstruction by the volvulus [3]. In chronic form symptoms are nonspecific, such as abdominal pain and intermittent and recurrent vomiting, cause being incorrect setting of the small intestine that cause narrowing of the pedicle

of superior mesenteric vessels. They form bundles of peritoneum to try to fix the caecum in the abdominal wall. The bundles that cross malpositioned duodenum can cause obstruction or create spaces for formation of internal hernias [3, 8].

In this case, evolution was recurrent bilious vomiting, with chronic abdominal pain.

The diagnosis was first made by barium meal follow through study which showed classical corkscrew appearance of proximal small intestine. Another important finding to note was the position duodenojejunal junction, which did not cross the midline and was located to the right of the spine [2, 4, 8]. According to many authors, it is the gold standard for diagnosis of intestinal malrotation [4] with accuracy exceeding 80% [8] and in some studies reaching 100% [3]. The findings were further reinforced by contrast enhanced CT of abdomen. It showed characteristic changes of anatomical parameters, such as inverse relationship between the superior mesenteric vessels (vein is located to the left of the artery) [2, 9], and malpositioning of the bowel [2].

Other diagnostic examinations include ultrasound of the abdomen (also evaluating the inverse relationship between the mesenteric vessels) [1, 8-10], angiography [8, 10] and laparoscopy [11]. In acute cases, however, mostly laparotomy is still followed for the diagnosis [10].

CONCLUSION

Intestinal malrotation in adults has difficult diagnosis because initially the surgeons do not think on it in medical assistance. So is wise to consider its possibility when a prolonged undiagnosed abdominal pain is presenting in adult.

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