

Case Report

Concurrent intestinal malrotation and Meckel's diverticulum presenting as acute intestinal obstruction in an adult

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Received: 04 April 2021

Revised: 09 May 2021

Accepted: 11 May 2021

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ABSTRACT

Intestinal malrotation is the partial or complete failure of rotation of midgut around the superior mesenteric artery, while Meckel's diverticulum is the remnant of vitellointestinal duct and concurrence of these congenital abnormalities in an adult is considered a rarity. Till date only 3 cases of concurrent intestinal malrotation and Meckel's diverticulum have been reported. We report a 18 years male who presented with a 3 day history of abdominal pain, bilious vomiting, obstipation and chronic abdominal pain on and off since 3 years of age. During the last episode which occurred 1 year back, he was diagnosed with intestinal malrotation with subacute intestinal obstruction and was treated conservatively. Examination revealed the presence of signs of peritonitis. After resuscitation, CECT abdomen was taken which showed dilated small bowel loops in the subhepatic region associated with malrotation. Emergency laparotomy revealed a Ladd's band below which the gangrenous small bowel loops 150 cm from the duodenojejunal (flexure until 5 cm proximal to the ileocecal junction) were found herniating into the subhepatic region with a Meckel's diverticulum and a right sided DJ flexure. We proceeded with the band release and resection of gangrenous bowel followed by proximal jejunostomy with distal ileostomy. HPE was consistent with Meckel's diverticulitis without any ectopic gastric or pancreatic mucosa. Ostomy reversal was done after 8 weeks. Patient had an uneventful postoperative recovery during both the admissions and he is on regular follow-up now.

Keywords: Intestinal malrotation, Meckel's diverticulum, Adult, Ladd's band

INTRODUCTION

Intestinal malrotation is a spectrum of congenital midgut abnormalities due to failure of proper rotation of the gut around the superior mesenteric artery (SMA). Meckel's diverticulum is another congenital abnormality that represents the remnant of the omphalomesenteric duct at the antimesenteric border of the distal ileum.¹ Usually concurrence of these abnormalities is rare and most importantly its presentation in an adult is worth mentioning. Here we described a case of concurrent intestinal malrotation with Meckel's diverticulum presenting as an emergency in an adult.

CASE REPORT

An 18 years male presented to our emergency department with a 3 days history of diffuse, colicky abdominal pain, bilious vomiting, and inability to pass stools and flatus. He had history of such chronic abdominal pain on and off since 3 years of age. Last episode happened a year back, during which he was hospitalized, diagnosed as a case of intestinal malrotation with subacute intestinal obstruction and was treated conservatively.

On examination, he had tachycardia, mild dehydration, and diffuse guarding and rigidity of the abdomen. A

provisional diagnosis of acute intestinal obstruction was made and patient was immediately resuscitated with intravenous fluids, analgesics and higher antibiotics. A plain radiograph of abdomen showed multiple dilated small bowel loops with air fluid levels. An urgent CECT (contrast enhanced computed tomography) scan of the abdomen and pelvis revealed dilated small bowel loops in the subhepatic region associated with malrotation suggested by the reversal of superior mesenteric artery and vein positioning. Patient was immediately taken up for emergency laparotomy. Intraoperatively there was a Ladd's band (Figure 1) arising from the right lateral parietal wall extending upto the ascending colon below which the gangrenous small bowel loops, starting 150cm from the duodeno-jejunal (DJ) flexure until 5 cm proximal to the ileocecal junction were found herniating into the subhepatic region with a Meckel's diverticulum (Figure 2) and a right sided DJ flexure (Figure 3). We proceeded with the band release and resection of gangrenous bowel loops (Figure 4) followed by double barrel proximal jejunostomy with distal ileostomy.

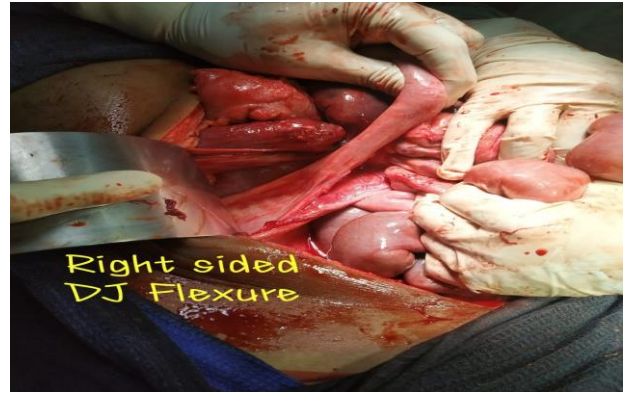


Figure 3: Right sided duodeno-jejunal flexure.



Figure 4: Resected specimen.

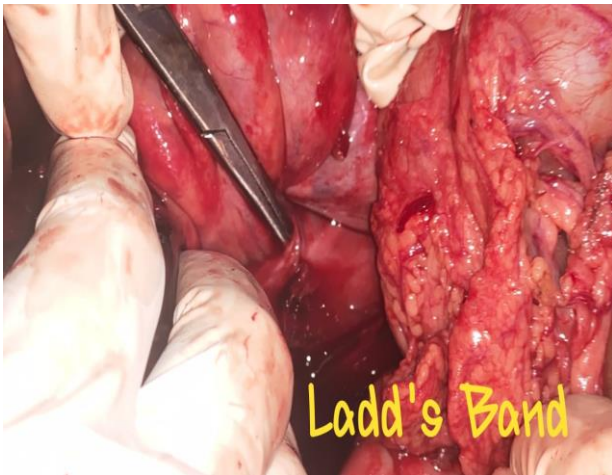


Figure 1: Ladd's band.



Figure 2: Meckel's diverticulum.

Postoperatively patient had uneventful recovery and was discharged on 10th postoperative day after proper advice regarding stoma care, nutrition and early signs of stoma related complications. HPE was consistent with gangrenous small bowel with Meckel's diverticulitis without any ectopic gastric or pancreatic mucosa. After 8 weeks, patient was readmitted and ostomy reversal was done. He is on regular follow-up now for the early identification of complications such as short bowel syndrome, stricture or obstruction at the anastomotic site.

DISCUSSION

Intestinal malrotation represents the partial or complete failure of rotation of midgut around the axis of superior mesenteric artery (SMA) in a 270° counter-clockwise direction during 10-11th week of gestation. The DJ segment rotates beneath and to the right of SMA to get fixed in the left upper quadrant, while the cecocolic (CC) segment gets fixed in the right lower quadrant and the colon becomes fixed to the retroperitoneum.² Any interruption or reversal of these events results in complete nonrotation/malrotation due to non-rotation of either DJ limb or CC limb/ reverse rotation. Of this, non-rotation of DJ limb results in the formation of Ladd's band which extends from the colon across the duodenum to the lateral abdominal wall resulting in duodenal obstruction. Due to broad mesenteric base, they have a less chance of midgut volvulus while other types due to narrow SMA stalk, have

higher incidences of midgut volvulus presenting as subacute or intermittent obstruction in children or adults.

Meckel's diverticulum is the most common congenital abnormality of the gastrointestinal tract with incidence of approximately 2%.³ It represents the failure of normal regression of vitellointestinal duct during 5-7 weeks of gestation.

It is a true diverticulum arising from the antimesenteric border of the distal ileum mostly containing heterotopic gastric mucosa (70%) or pancreatic tissue (20%) in symptomatic patients and is known for its complications like bleeding, obstruction or perforation. Till date only 3 cases of concurrent intestinal malrotation and Meckel's diverticulum have been reported in literature. Of these, one case was reported with perforated Meckel's diverticulum. It is notable that our patient had the presence of a fibrous band compressing the bowel in contrast to all the 3 previous cases where Ladd's band was absent.¹ As in our case, all the 3 cases featured chronic intermittent abdominal pain since childhood, most probably due to intermittent self-limiting subacute intestinal obstruction. Meckel's diverticulum, in addition to intestinal malrotation, has also been associated with broncho-gastric fistula and pulmonary sequestration in two children, and both of them presented within 2 years of age with respiratory complaints.³

It appears that the combination of intestinal malrotation and Meckel's diverticulum might predispose the children to recurrent episodes subacute volvulus prior to an acute event and implies a lower level of obstruction leading to a clinical presentation in adult life.⁴

CONCLUSION

From the few cases reported before, it is prudent that the occurrence of both these congenital abnormalities is a rare phenomenon and is most likely due to chance, but it is

worth mentioning due to its rarity. It is also important to remember that combinations of unusual congenital abnormalities should be kept in mind in any child or an adult presenting with recurrent chronic abdominal pain and should be evaluated properly at the earliest to avoid further complications. Diagnostic laparoscopy should be considered for the early diagnosis and should be treated appropriately at the earliest before the onset of complications which adversely affects the quality of life.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Manohar AE, Kumar MSK, Vijayalakshmi V, Kannan R. Concurrent intestinal malrotation and Meckel's diverticulum presenting as acute intestinal obstruction in an adult. *Int Surg J* 2021;8:1904-6.