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MESODIVERTICULAR BAND OF MECKEL'S DIVERTICULUM, A RARE CAUSE OF STRANGULATED SMALL BOWEL OBSTRUCTION IN AN ADULT: A CASE REPORT

General Surgery

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ABSTRACT

Mesodiverticular band (believed to be remnant of a vitelline artery) causing gangrene of Meckel's diverticulum (MD) with simultaneous mechanical small bowel obstruction is the rarest complication of Meckel's Diverticulum. We report a case of 34 year female, who presented with acute small bowel obstruction caused by Mesodiverticular band of MD. She presented with severe abdominal pain, distension and vomiting. Laparotomy revealed gangrene of Meckel's diverticulum along with adjacent ileal segment caused by a Mesodiverticular band of MD. The mesodiverticular band was released from the ileal mesentery and the gangrenous ileal segment with MD was resected and an end to end ileoileal anastomosis was performed. The postoperative period was uneventful and the patient was discharged after 6 days. Because of the rarity of this anatomic anomaly in adults, we find this case of interest.

KEYWORDS

Mesodiverticular Band, Meckel's Diverticulum, Gangrene, Intestinal Obstruction.

INTRODUCTION:

Meckel's Diverticulum (MD) is the most common congenital anomaly of the gastrointestinal tract, affecting 2% of the general population due to incomplete obliteration of the proximal portion of the omphalomesenteric duct in the 7th week of gestation. [1] It is the true diverticulum of the small intestine, containing all layers of the small bowel wall, located on the antimesenteric border of the ileum, 45 to 60 cm proximal to ileocaecal valve. MD is mostly clinically silent. Complications associated with a Meckel's diverticulum include bleeding, obstruction, inflammation, and in rare scenarios presents as a perforation. Obstruction related to MD is most commonly reported secondary to intussusception or a volvulus around an attachment to the abdominal wall. Involvement of a mesodiverticular band of MD in small bowel obstruction is uncommon and has been reported only four times in literature. [2,3] Our case report presents the intricate diagnosis and management of a small bowel obstruction due to mesodiverticular band of a MD.

CASE REPORT

A 34 year old female patient presented with complaints of pain in the periumbilical region since 4 days. It was initially mild but progressively worsened in the last 48 hrs and was associated with generalized abdominal distension, constipation and multiple episodes of bilious vomiting. No history of previous abdominal surgeries or co-morbid diseases.

On physical examination, she was febrile (38.5°C) and dehydrated with tachycardia (110/min) and blood pressure measuring 100/70 mm hg, Spo2 98%. Per abdomen examination revealed distension, tenderness and guarding with exaggerated bowel sounds. Rectum was empty and roomy.

Laboratory investigations revealed leukocytosis (17,800 cells/mm3), 84% neutrophils and raised ESR.

Plain erect X-ray, ultrasonography and Contrast-Enhanced Computed Tomography (CECT) of the abdomen confirmed our diagnosis of acute intestinal obstruction mostly secondary to infective or inflammatory pathology.

Patient was resuscitated and shifted to operating room. Midline laparotomy incision was taken and 100 cc foul smelling, blackish free fluid was aspirated. On inspecting the bowel, there was strangulation of the ileal segment with gangrenous Meckel's diverticulum 65 cm proximal to the ileocecal junction with MD measuring 7 cm in length and 3 cm at base. It was observed that the cause of this internal herniation and strangulation was a mesodiverticular band of Meckel's diverticulum (Figure. 1).

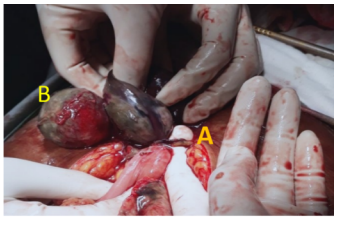

FIGURE 1. Intraoperative picture depicting A) Mesodiverticular band B) Gangrenous bowel secondary to internal herniation and strangulation.

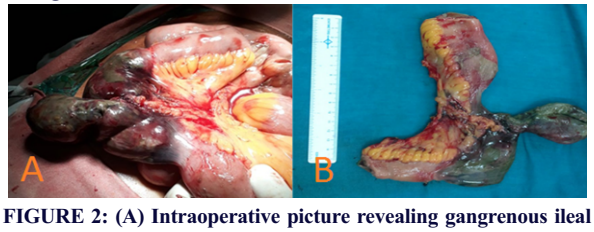

FIGURE 2: (A) Intraoperative picture revealing gangrenous ileal segment with Meckel's diverticulum. (B) Showing the eventual resected specimen.

The mesodiverticular band, which extended from the Meckel's diverticulum to the ileal mesentery was separated and the ileal loop was released (Figure 2 A). Resection of the MD along with the adjacent unhealthy ileal part with 2 cm margin of healthy ileal tissue (Figure 2B) with a hand sewn 2 layered end to end anastomosis of the bowel was performed.

The diverticulum was confirmed as gangrenous MD with serositis on histopathology. The postoperative period was uneventful. After 6 days, the patient was discharged. At the 3 month follow-up, the patient showed no evidence of complications.

DISCUSSION:

MD was originally described by Fabricius Hildanus in 1598. However,

it is named after Johann Friedrich Meckel, who established its embryonic origin in 1809.[4]

Meckel's diverticulum represents a lifetime risk of 4-6% of developing a complication. Hemorrhage is most common below 2 years of age, while intestinal obstruction is a more common presentation among adults. [5]

There are various mechanisms by which it can cause intestinal obstruction,

i) Volvulus of small intestine around a fibrous band extending from Meckel's diverticulum to the umbilicus
ii) Intussusception in which Meckel's diverticulum serves as a leading point to allow telescoping of the small intestine, causing ileoileal and ileocolic type of intussusception
iii) Littré's hernia, i.e. incarceration of the diverticulum in the hernia
iv) Entrapment of small bowel beneath the blood supply of the diverticulum, also known as a mesodiverticular band
v) Stricture secondary to chronic diverticulitis
vi) Enteroliths
vii) Tumors[2]

The correct diagnosis of Meckel's diverticulum before surgery is often difficult because a complicated form of this condition may be clinically indistinguishable from a variety of other intraabdominal diseases such as acute appendicitis, inflammatory bowel disease, or other causes of small bowel obstruction [6]

Delay in the diagnosis of a complicated MD can lead to significant morbidity and mortality. The management of symptomatic Meckel's diverticulum comprises surgical resection. A wedge resection of the Meckel's diverticulum is generally carried out, and occasionally adjacent ileum is resected with ileoileal anastomosis. The results of surgical excision of complicated MD are generally excellent.

Small bowel entrapment by mesodiverticular band as presented in our case represents a rare cause of intestinal obstruction by MD. In adults with symptomatic MD, the challenge presents itself in early diagnosis and prompt surgical treatment. Due to its rarity, high index suspicion is necessary as clinical presentation is variable, differential diagnosis is not straightforward and imaging techniques may not be useful.MD and its complication should be kept in mind in patients with atypical presentations and in differential diagnosis of small bowel obstruction.

CONSENT OF PATIENT

The patient signed the informed consent for surgery and the publication of this case before the intervention.

CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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