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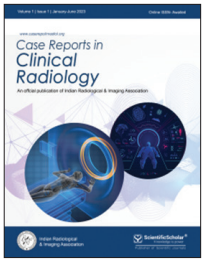

Case Report

Torsed gangrenous Meckel's diverticulum presenting as acute abdomen

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ABSTRACT

Meckel's diverticulum is the most commonly encountered congenital anomaly of the gastrointestinal tract. It usually arises from the antimesenteric border of the ileum. We report an unusual imaging finding of complicated Meckel's and atypical imaging appearance of intussusception in which telescoping of segments is not evident on imaging.

Keywords: Meckel's, Torsion, Gangrene, Diverticulum, Acute abdomen

INTRODUCTION

Meckel's diverticulum is the most common congenital variant of the gastrointestinal tract. It arises from the omphalomesenteric duct/vitelline duct.[1] Normally, it regresses at the 7–8th week of gestation.[2] However, failure of its regression can cause complications. It was first described by John Fredrich Meckel in 1809, hence given the name Meckel's diverticulum.[3] The possible common complications associated with it include hemorrhage, obstruction, diverticulitis, hernia, and inflammation.[4] Rarely, Meckel's diverticulum can also cause intussusception.

CASE REPORT

A 10-year-old child presented to the emergency with complaints of acute abdominal pain and obstipation for 2 days. Physical examination revealed tenderness in the right upper and lower quadrant of the abdomen. No similar previous history, no known comorbidities, and no history of any past surgery were present. The patient underwent routine laboratory investigations. C-reactive protein of the patient was raised (43 mg/dL). Total leukocyte counts were elevated and were 14,000/uL. The patient underwent an x-ray abdomen which revealed multiple air-fluid levels within the small bowel which was suggestive of intestinal obstruction [Figure 1]. Ultrasound was done thereafter which revealed dilated small bowel loops. CECT was advised in view of abdominal tenderness. Computed tomography (CT) showed features of small bowel obstruction with two transition points in terminal and mid ileal loops. Fat-density lesion was seen within the bowel loops which we initially thought to be a benign bowel wall lipoma. Blind-ending tubular structure was also seen at the mesenteric border adjacent to the site of transition [Figure 2]. Clear-cut intussusception was not evident on imaging to explain the cause

of symptoms. Based on the imaging, we made a differential diagnosis of closed-loop obstruction due to thick adhesion/thick band or a remote possibility of internal hernia as the cause of intestinal obstruction.

The patient underwent laparoscopic-assisted surgery for the same, 5 h after the CT scan. Intraoperative findings revealed ileo-ileal intussusception with the lead point as Meckel's diverticulum. Gangrenous changes were also noted in the ileum. Laparoscopy-assisted intussusception reduction and resection anastomosis of gangrenous bowel and Meckel's diverticulum were done. The biopsy specimens from Meckel's diverticulum area showed transmural hemorrhagic necrosis. The nodule was entirely necrotic with the suggestion of gastric heterotopia as shown in [Figure 3]. However, no evidence of any viable gastric mucosa was seen.

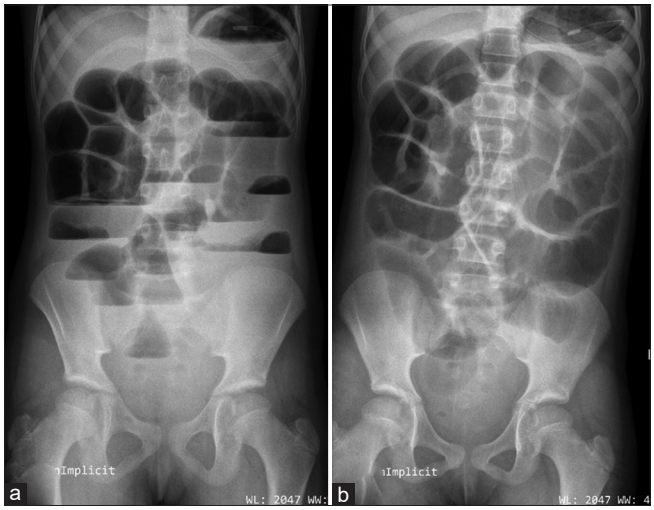

Figure 1: (a) X-ray abdomen erect view shows dilated small bowel loops with multiple air fluid levels suggestive of intestinal obstruction and (b) supine radiograph of the abdomen shows dilated small bowel loops with absence of rectal gas shadow.

The patient made an uneventful post-operative recovery and was discharged after 48 h of admission. Complete recovery and resolution of symptoms were seen at 6-week follow-up.

DISCUSSION

Meckel's diverticulum is a true diverticulum and arises as an out pouching of all three layers of the gastrointestinal mucosa caused by failure of regression of the omphalomesenteric duct.[1] Mostly, it remains asymptomatic. Around 2–4% of the patients with Meckel's diverticulum become symptomatic.[4] The common symptoms associated with Meckel's diverticulum are pain abdomen, gastrointestinal hemorrhage, and features of intestinal obstruction, which are secondary to the complications associated with Meckel's diverticulum, that is, diverticulitis, perforation, hemorrhage in ectopic mucosa, and intussusception leading to obstruction. Intussusception is a rare complication of Meckel's diverticulum as was seen in our case of a child who presented in emergency with features of acute intestinal obstruction.

Meckel diverticulum may invert or invaginate into the small intestinal lumen, resulting in the pulling of the mesenteric fat into the center of the diverticulum.[5] Once the diverticulum is inverted into the small intestinal lumen along with its mesentery, it may serve as the site of intestinal obstruction or act as a lead point for an ileoileal or ileocolic intussusception as was seen in our case. Usually, Meckel's diverticulum lies at the antimesenteric border within 100 cm of the ileocecal valve; however, rarely, it can lie on the mesenteric border.

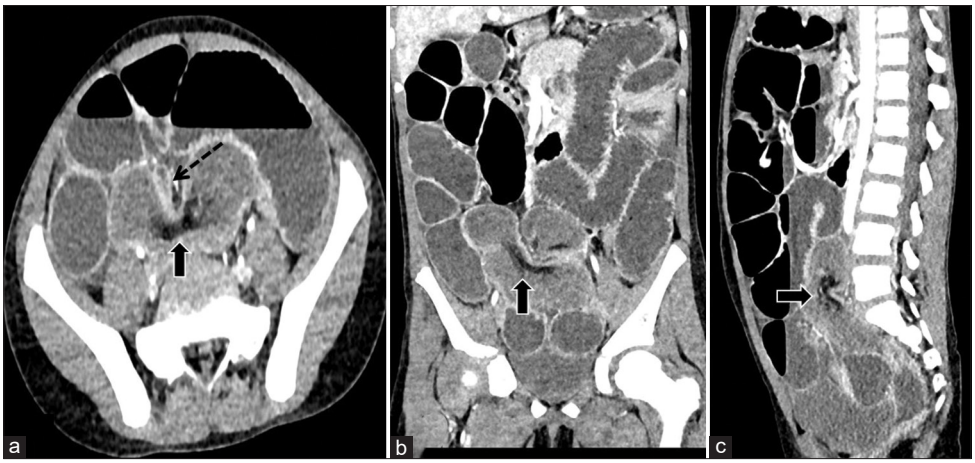

Figure 2: (a-c) Axial, coronal, and sagittal reformatted contrast-enhanced computed tomography abdomen images showing dilated small bowel loops with fat density lesion within the bowel lumen (arrow). Blind ending tubular structure (dashed arrow) is seen at the mesenteric border adjacent to the transition point.

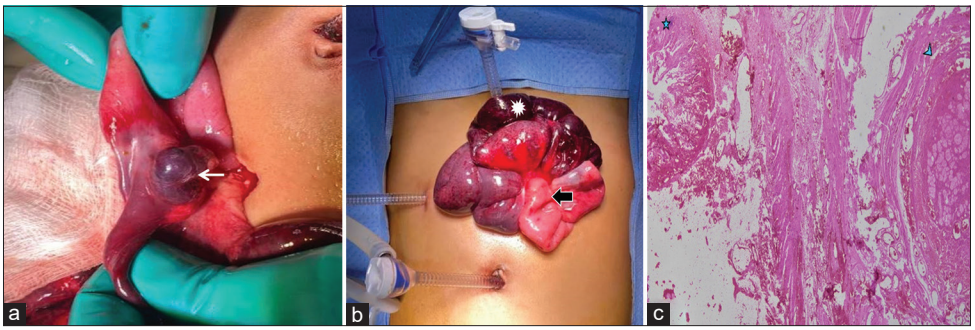

Figure 3: (a and b) Intraoperative images showing broad based Meckel's diverticulum (arrow) arising from the mesenteric border of ileum (b) shows ileoileal intussusception (arrowhead) in the distal ileum with gangrenous intussusception (asterix). (c) Histopathology image showing haemorrhagic small intestinal wall and gangrenous Meckel's, H&E stain, 2x.

CONCLUSION

Meckel's diverticulum is an important differential diagnosis in a pediatric acute abdomen. Rarely, it can lie on the mesenteric border as a blind ending loop.

Teaching points

- In a pediatric patient presenting with acute abdomen, possibility of complications related to Meckel's diverticulum should be kept in mind
- Usually, Meckel's diverticulum lies at the antimesenteric border; however, rarely, it can lie on the mesenteric border
- It is imperative for radiologists to keep a differential of obstructed Meckel's diverticulum in any case of intestinal obstruction in a child
- Atypical imaging appearance of intussusception should be kept as a differential when a fat density lesion is seen in the bowel lumen

MCQs

1. Which of the following statement is true about Meckel's diverticulum?
   a. It commonly occurs at mesenteric border of ileum
   b. Ectopic pancreatic and olfactory mucosa are commonly seen in it
   c. It most commonly occurs within 100 cm of IC valve
   d. It is symptomatic in approximately 50% of cases

Answer Key: c

2. All of the following statements are true about rule of two of Meckel's diverticulum except?
   a. It is present in approximately 2% of population
   b. It is second most common congenital anomaly of gastrointestinal tract
   c. It commonly has two types of ectopic mucosa, that is, gastric and intestinal
   d. It lies approximately 2 feet away from I.C valve

Answer Key: b

3. What is the least common complication of Meckel's diverticulum among the following?
   a. Intussusception
   b. Diverticulitis
   c. Perforation
   d. Obstruction

Answer Key: a

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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