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Acute Intestinal Obstruction Secondary to Giant Meckel's Diverticulum

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Abstract | **Case Series**

Meckel's diverticulum is a true intestinal diverticulum created by the incomplete obliteration of the vitellointestinal duct. It is commonly associated with the Fibonacci sequence called the "rule of 2s", occurring in two percent of the population, with a peak at two years of age, located two-feet proximal from the ileocecal valve and two inches in length. It can have two types of heterotopic tissues, mainly gastric and occasionally pancreatic, a twice male preponderance and becoming symptomatic in only 2-4% of individuals. While Meckel's diverticulum range in size from 1-10 cm, cases of giant MD (≥ 5 cm) are relatively rare and associated with more severe forms of the complications, especially for obstruction. We report a 8-year-old male child and 11 years female patient who presented with acute intestinal obstruction due to volvulus secondary to giant meckels diverticulum.

Keywords: Intestinal obstruction, Giant meckels diverticulum, volvulus.

INTRODUCTION

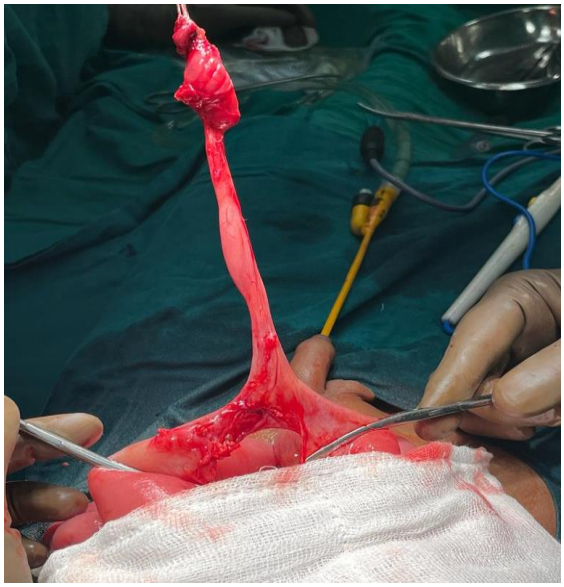
Meckel's diverticulum is the most common congenital gastrointestinal (GI) anomaly, affecting 2% of the population and usually presents in childhood either with hemorrhage or an acute surgical abdomen necessitating emergent operation.

CASE PRESENTATION

Case 1:

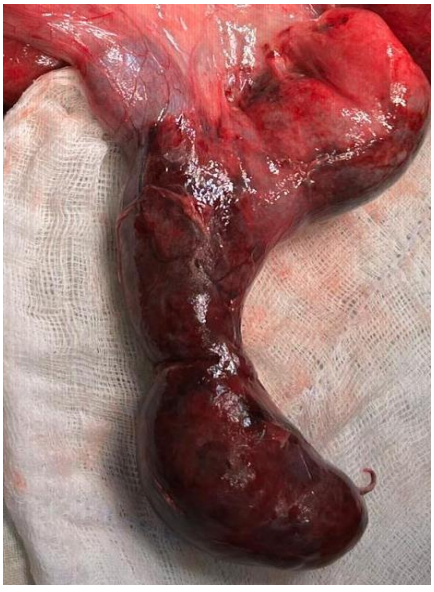
A 8-year-old male child presented with abdominal pain since 4-5 hours, one episode of vomiting. Patient had similar complaints of intermittent abdominal pain 2 months back. Physical examination revealed moderately ill patient, with severe tenderness in Right iliac fossa region. Plain radiograph of chest and abdomen revealed fecal loaded colon. Laboratory findings showed a leucocyte count of 15,690 with haemoglobin of 12.20gm/dl. All other laboratory investigations were within normal limits. Ultrasound examination of abdomen revealed Dilated bowel loops in right lower abdomen with sluggish peristalsis. MDCT abdomen was performed which was suggestive of twisting of mesentry in right paraumbilical region s/o whirlpool sign involving mid-ileal loops with dilatation of loops proximal to it likely Acute intestinal Obstruction. Emergency Exploratory Laparotomy was performed. A giant meckel's diverticulum around 18cm in length causing volvulus with intestinal obstruction was found. Postoperative course was uneventful. Histopathological finding of a true diverticulum consisting of all layers of intestinal wall with inner layer lined by ileal mucosa, wall by submucosa, muscularis and serosa and outer wall showing fibroblastic proliferation was noted.

Diverticula have been reported up to 100 cm long; therefore, once >5 cm in length, they are classified as giant Meckel's diverticula, with 90% of cases falling between 1 and 10 cm in size [1]. A giant Meckel's diverticulum is more prone to complications [2,3].



Case 2:

A 11-year-old female presented with abdominal pain and lump in lower part of abdomen, vomiting since 1 day. Physical examination revealed tenderness in periumbilical region and lump in lower aspect of abdomen. Laboratory findings were suugestive of leucocyte count of 27200 with a Hemoglobin of 16.1g/dl. Ultrasound of Abdomen and pelvis was suugestive of Moderate ascites with echoes within and focal prominence of bowel loops in Right Iliac fossa. Ultrasound guided ascitic tap was done which revealed a serohemorrhagic aspirate. Decision was taken to proceed further with Exploratory Laparatomy, Intra-operative finding was suggestive of Giant Meckels Diverticulum with gangrenous changes. Diverticulum was 10cm in length, on antimesentric border, 50cm from Ileo-cecal valve. Primary Resection of giant meckels diverticulum with ileo-ileal anastomosis was done. Patient had an uneventful recovery, with total inpatient stay of 7 days. Histopathology of specimen confirmed completely necrosed ileal villi with extensive areas of necrosis and haemorrhage in the remaining layers.



DISCUSSION

Meckel's diverticulum was originally described by Fabricius Hildanus in 1598. However, it is named after Johann Friedrich Meckel, who established its embryonic origin in 1809. Meckel's diverticulum is the most common congenital anomaly of the small intestine, with a prevalence of approximately 1-3%, and is a true diverticulum containing all layers of the bowel wall. The average length of a Meckel's diverticulum is 3 cm, with 90% ranging between 1 cm and 10 cm, and the longest being 100 cm. This diverticulum is usually found within 100 cm of the ileocaecal valve on the antimesenteric border of the ileum. Most cases of Meckel's diverticulum are asymptomatic, and the estimated risk of developing lifetime complications of Meckel's diverticulum is around 4%. Among the symptomatic patients, two types

of heterotopic mucosa (gastric and pancreatic) are found histologically within the diverticula. The frequent complications of Meckel's diverticulum are hemorrhage, intestinal obstruction and diverticulitis. However, diverticula have been reported up to 100 cm long; therefore, once >5 cm in length, they are classified as giant Meckel's diverticula, with 90% of cases falling between 1 and 10 cm in size. A giant Meckel's diverticulum is more prone to complications.

There are plenty of mechanisms for bowel obstruction arising from a Meckel's diverticulum. Obstruction can be caused by trapping of a bowel loop by a mesodiverticular band, a volvulus of the diverticulum around a mesodiverticular band, and intussusception, as well as by an extension into a hernia sac (Littre's hernia). Similarly, as in our case; obstruction can be caused twisting of mesentry in right paraumbilibal region with whirlpool sign involving the mid ileal loop with resultant dilatation of ileal loops proximal to it. Various imaging modalities have been used for diagnosing Meckel's diverticulum. Conventional radiographic examination is of limited value. Although of limited value, sonography has been used for the investigation of Meckel's diverticulum. On computed tomography (CT), Meckel's diverticulum is difficult to distinguish from normal small bowel in uncomplicated cases. However, a blind-ending fluid or gas-filled structure in continuity with the small bowel may be revealed.

In asymptomatic patients; whether all cases of incidental Meckel's diverticula should be resected or not is an unresolved question. On the other hand, for the symptomatic patients; treatment should always include resection of the diverticulum or the segment of the bowel affected by the pathology.

CONCLUSION

In summary, although Meckel's diverticulum is the most prevalent congenital abnormality of the gastrointestinal tract; it is often difficult to diagnose.

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