

### **Axial torsion and gangrene of a giant Meckel's diverticulum causing small bowel obstruction.**

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**Key words:** Meckel's diverticulum; torsion; gangrene; small bowel obstruction

#### **Introduction**

Meckel's diverticulum is the most prevalent congenital anomaly of the gastrointestinal tract, affecting approximately 2% of the general population [1]. It results from incomplete obliteration of the most proximal portion of the vitelline or omphalo-mesenteric duct [2]. Bleeding, obstruction, and inflammation are the three most common complications of Meckel's diverticulum [3]. Here, we report a case of axial torsion and gangrene of Meckel's diverticulum which is the rarest complication.

#### **Case history**

A 13-year-old girl presented with abdominal pain, vomiting, distension and constipation of 2 days duration. On physical examination her abdomen was distended, tender and guarding was present. There was no history of previous abdominal surgery. Per rectal examination was unremarkable. Plain abdominal radiograph depicted multiple air-fluid levels suggesting small bowel obstruction. All the laboratory parameters were within normal limits except elevated leucocyte count. Emergency exploratory laparotomy was performed. At exploration the loop of the ileum was found entrapped due to axially torsed gangrenous Meckel's diverticulum leading to small bowel obstruction (Figure 1). The tip of the Meckel's diverticulum was found adherent to the umbilicus (Figure 2). Simple diverticulectomy was performed. The diverticulum measured 8cm x 1.5cm. Postoperative course was uneventful. Histopathological examination confirmed acute Meckel's diverticulitis with focal gangrenous change.

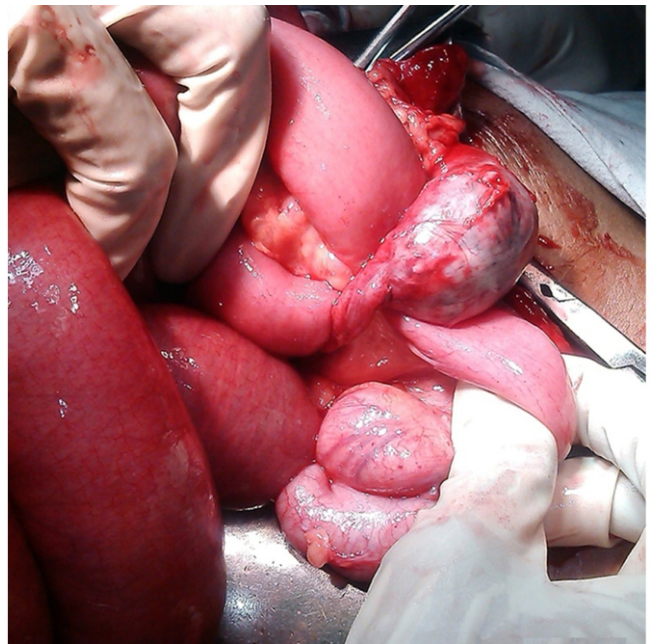


Figure 1. Ileal loop entrapped by axially torsed gangrenous Meckel's diverticulum.



Figure 2. Gangrenous Meckel's diverticulum with tip adherent to the umbilicus.

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## Discussion

Meckel's diverticulum was first described by Fabricius Hildanus in 1598 and later named after Johann Friedrich Meckel, a German comparative anatomist who first recognized its developmental origin in 1809 [3]. It is a true diverticulum containing all the layers of the small bowel wall [3]. It is invariably found on the anti-mesenteric border of the ileum, with 90% located within 90 cm of the ileocaecal valve [2]. Meckel's Diverticula are called giant when they are longer than 5cm [4].

Majority of Meckel's diverticula are clinically silent and are incidentally identified at surgery or at autopsy. The lifetime risk of complications is estimated to be 4% with most of the complications occurring in adults [2]. Gangrene due to axial torsion of a Meckel's diverticulum is the rarest of the complications that have been reported, particularly in children [5]. Predisposing factors for axial torsion include, presence of mesodiverticular bands, a narrow base, excessive length, and associated neoplastic growth or inflammation of the diverticulum [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 intra-abdominal diseases such as acute appendicitis, inflammatory bowel disease, or other causes of small bowel obstruction [3]. Therefore high index of suspicion is warranted to correct and

expeditious diagnosis especially in patients with atypical presentation [5].

The management of incidentally found (asymptomatic) Meckel's diverticulum is controversial [1]. Treatment of complicated Meckel's diverticulum is always surgical and includes simple diverticulectomy or ileal resection either by open or laparoscopic approach [3]. Segmental ileal resection may be necessary if the diverticulum contains tumour or if the base of the diverticulum is inflamed or perforated [1].

## References

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### Key Points:

- Axial torsion and gangrene of a Meckel's diverticulum is a rare complication.
- It can rarely account for small bowel obstruction.
- Treatment of complicated Meckel's diverticulum is always surgical and includes simple diverticulectomy or ileal resection.