

# Axial Torsion and Meckel's Diverticulitis: A Diagnostic Conundrum

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## ABSTRACT

**Introduction:** Meckel's diverticulum is one of the most common congenital anomalies of the gastrointestinal tract that mimics acute appendicitis, gastroenteritis, peptic ulcer disease. Complications related to it can be hemorrhage, intestinal obstruction, perforation while axial torsion is one of the rarest complications. **Case:** An 11-year-old boy presented with the history of pain at the peri-umbilical region for four days with 2-3 episodes of vomiting. Abdominal examination revealed tenderness at the suprapubic area with a mass around 5 x 3 cm along the hypogastrium. Ultrasonography of the abdomen revealed an avascular structure in the central area with clumping of bowel and omentum over the lesion while computed tomography scan of the abdomen revealed a blind-ended gas-filled structure at the hypogastrium with thickened enhancing irregular wall associated with adjacent mesenteric fat plane stranding and prominent adjacent axial vessels supplying an inflammatory lesion. Exploratory laparotomy showed axial twisting of the diverticulum about 10 x 5 cm arising from the anti-mesenteric border around 50 cm proximal to the ileo-caecal junction with a fibrous band attached to the fundus of the ileum leading to a gangrenous diverticulum with clumping of bowel loops along with omental covering. De-twisting and adhesiolysis along with excision of the diverticulum was done with two-layered closure of the defect. **Conclusion:** Axial torsion is the rarest of the complications of Meckel's diverticulum and should be managed with utmost caution. Excision of the twisted diverticulum with or without wedge resection of the involved ileum is the procedure of choice.

**Keywords:** Exploratory laparotomy, Intussusception, Meckel's diverticulum

## INTRODUCTION:

Meckel's diverticulum is one of the most common congenital anomalies of the gastrointestinal tract that occurs in about 2 - 4% of the population. The clinical presentation mimics that of acute appendicitis, gastroenteritis, peptic ulcer or pelvic inflammatory disease. Various complications related to Meckel's diverticulum can be hemorrhage, intestinal obstruction and perforation while axial torsion is one of the rarest complications. In most

cases, preoperative diagnosis is often difficult. Radiological investigations include abdominal ultrasonography and computed tomography scans which might reveal features of intussusception along with a cystic avascular tubular structure if there is torsion of the diverticulum. Definitive management includes excision of the diverticulum from the base if the base is narrow whilst wedge resection is warranted for the wide base.

## CASE REPORT:

An 11-year-old boy presented with the history of pain at the peri-umbilical region for four days which was colicky, non-radiating, gradually increasing in severity. It was associated with two to three episodes of vomiting on the first day of illness. Also, there

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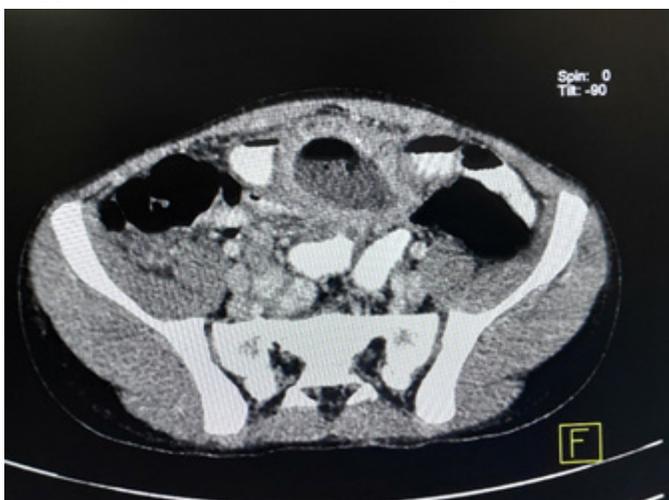
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was a history of constipated stool for the same duration. There was no history of fever, cough, burning micturition, yellowish discoloration of eye, abdominal distention or weight loss. He gave no history of tuberculosis or any surgery in the past.

At presentation, he was ill looking but well oriented to time, place and person. Vitals were stable. Laboratory parameters were within normal limit.

On per abdominal examination, mild tenderness could be elicited at suprapubic area. A mass about 5 x 3 cm was appreciated at suprapubic region. Tenderness was present, however rebound tenderness was absent. Ultrasonography (USG) revealed an avascular structure in central area with clumping of bowel and omentum over the lesion. Contrast enhanced computed tomography (CECT) revealed blind ended gas filled structure at hypogastrium with thickened enhancing irregular wall associated with adjacent mesenteric fat plane stranding and prominent adjacent axial vessels supplying inflammatory lesion (Fig. 1).



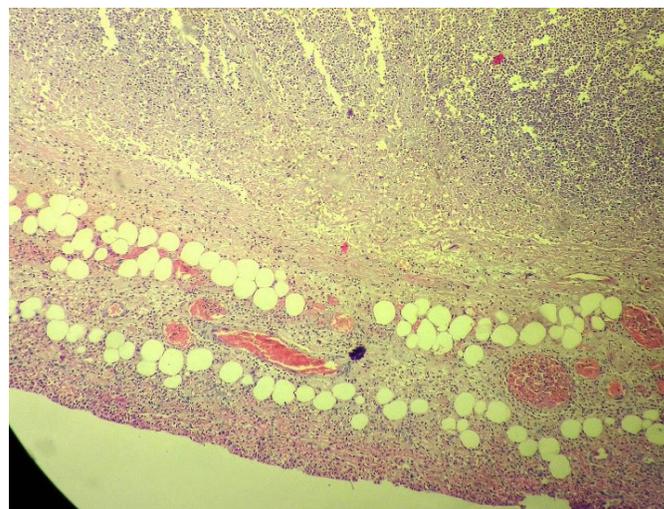
*Fig. 1. Showing blind ended gas-filled structure at hypogastrium with thickened enhancing irregular wall associated with adjacent mesenteric fat plane stranding and prominent adjacent vessels suggesting inflammatory lesion.*

Exploratory laparotomy revealed axial twisting of diverticulum about 10 x 5 cm arising from anti-mesenteric border around 50 cm proximal to ileo-caecal junction with a fibrous band attached to the fundus and ileum leading to gangrenous diverticulum with clumping of bowel loops along with omental covering (Fig. 2). De-twisting and adhesiolysis along with excision of the Meckel's Diverticulum was done with two layered closure of the defect.



*Fig. 2. Axial twisting of diverticulum with a fibrous band attached to the fundus and ileum leading to gangrenous diverticulum.*

Post-operative period went uneventful and the patient got discharged on the seventh post-operative day. Histopathology report revealed Meckel's diverticulum with gangrenous changes (Fig. 3).



*Fig. 3. Sections from the Meckel's diverticulum showing ileal type epithelium lined by tall columnar cells admixed with goblet cells along with presence of all three layers of bowel wall*

#### DISCUSSION:

Meckel's diverticulum is one of the most common congenital anomalies of gastro intestinal tract which is seen in almost 2-4% of the population. Due to presence of ectopic gastric mucosa, most of the patients especially in the younger age group present with features of gastrointestinal bleed, however adults might present with features of obstruction, intussusception, ulceration and hemorrhage.[1] Risk factors for developing symptoms include age <50 years, male sex, size greater than two cm and

the presence of abnormal histology or ectopic tissue (pancreatic and gastric being the most common). [2,3] Axial torsion of the diverticulum is a rare complication which can be seen as rotating of MD along the axis at its base with no involvement of ileal loops and mesentery ultimately leading to compromised vascular supply and gangrene.[4] Various factors have been described for the causes of twisting of diverticulum but the underlying mechanism is still unclear. However, retained fibrous band at umbilicus to the head of the diverticulum might cause rotation if it is followed by larger Meckel's diverticulum and narrow base.[5]

Preoperative diagnosis is often difficult as the clinical condition mimics acute appendicitis, gastroenteritis, peptic ulcer or pelvic inflammatory disease.[6] Features of intussusception may be evident in USG as along with a cystic avascular tubular structure if there is torsion of the diverticulum.[7] Obstructive features may be seen on X-ray abdomen examination if ileal loops are involved. Definitive management includes excision of the diverticulum from the base if the base is narrow whilst wedge resection is warranted for the wide base.

#### CONCLUSION:

Meckel's Diverticulum is one of the most common congenital anomalies of gastrointestinal tract. Common presentations can be features of intussusception, gastro intestinal bleed and features of small bowel obstruction might be evident. Axial torsion is the rarest of the complication and should be managed with utmost caution. Excision of the twisted diverticulum with or without wedge resection of the involved ileum is the procedure of choice.

#### Competing interests:

The authors declare that no competing interest exists.

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