***Case study***

# An extremely rare case of small bowel strangulation due to Meckel's Diverticulum


## Abstract

Meckel's diverticulum is the most common congenital gastrointestinal anomaly. Intestinal obstruction is the common presenting symptom in the adult population, due to complications like intussusception, Incarceration, adhesion and torsion around a fibrous band attached to the umbilicus. The life time risk of complication is 4-9%. It is an uncommon cause of acute intestinal obstruction in adults. Strangulation of small bowel with an encircling Meckel's diverticulum around the base of the mesentery or loop formation of Meckel's diverticulum leading to small bowel obstruction is an extremely rare event causing strangulation of small bowel and high mortality if the treatment is delayed.

We present a case report of a 15 years-old boy, who present with small bowel obstruction, requiring an emergency laparotomy. He was found a strangulated loop of small bowel with an encircling Meckel's diverticulum around the base of the mesentery. So five feet of gangrenous small bowel along with Meckel's diverticulum is resected and end to end anastomosis done.



## Key words

Small bowel obstruction, Meckel's diverticulum, explorative laparotomy.


## Introduction

"Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract and has been reported in 2% of population, 2 feet away from the ileocecal junction and 2 inches in length. It is common in males than in females with a ratio of 2:1" [3]. Most Meckel's diverticulum cases are asymptomatic which are diagnosed incidentally during diagnostic imaging or at the time of surgical exploration.

"Obstruction of the small intestine, lower Gastrointestinal bleeding and inflammation of Meckel's diverticulum are some presenting complications in the symptomatic patient. 21.8% of all acute surgical emergency are related to intestinal obstruction". [1,2,3]

"Meckel's diverticulum causing intestinal obstruction is due to inverted Meckel's diverticulum, intussusception or a volvulus around an attached fibrous band to the umbilicus, Mesodiverticular band with small bowel obstruction, Littre's hernia and axial torsion of Meckel's diverticulum is considered a rare complication". [3,4,5]

## Case Report

A 15 years -old boy was admitted at our centre on 23/05/2010, with complaints of Severe abdominal pain, distention of abdomen, vomiting and constipation last 2 days. On clinical examination there was abdominal distension along with tenderness all over the abdomen. His vital signs were within normal limits but signs of dehydration were present. Total leukocyte count was 17,500 cmm. Renal function tests were normal. Abdominal Plain x-ray revealed multiple air-fluid levels which suggestive of small bowel obstruction.

Explorative laparotomy was planned. Intraoperative Meckel's diverticulum was found attached to mesentery by its distal end, thus forming a loop. To our surprise we found a pedunculated Meckel's diverticulum having a stalk of 3 cm in length causing looping around the small bowel, leading to strangulation and gangrene. A five feet segment of the ileum was gangrenous, En-bloc resection of the gangrenous segment of bowel along with Meckel's diverticulum was performed and end to end anastomosis done in two layers. The patient had uneventful postoperative recovery and discharged

home on 8th postoperative day. The histopathological report of resected specimen was Meckel's diverticulum without any ectopic tissue. (Figure 1,2,3,4)

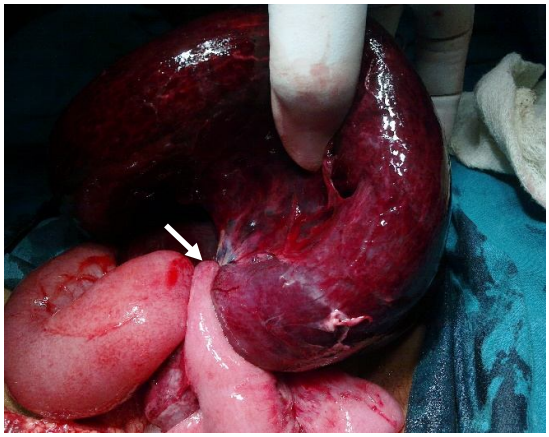

**Fig-1 Intra operative photographs**
**Showing obstruction of the ileal segment and a loop formed by the MD**

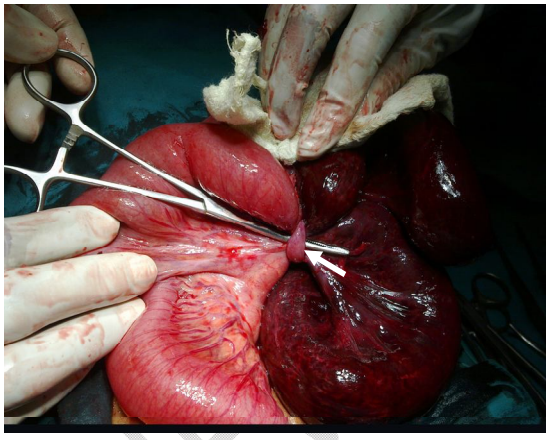

**Fig-2 Intra operative photographs**
**Showing pedunculated Meckel's diverticulum having a stalk**

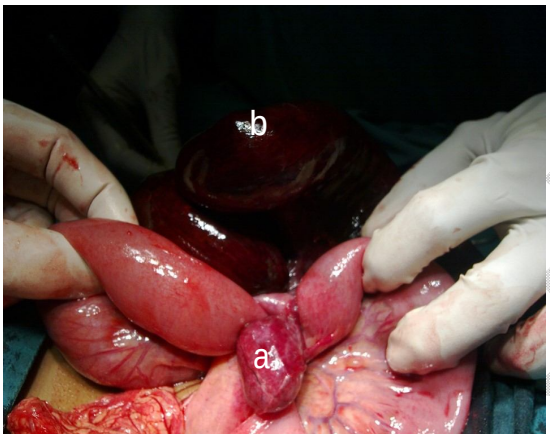


**Fig-3 Intra operative photographs**
**Showing a- looping of MD on small bowel and tip attached to mesentery, b- Small bowel gangrene**

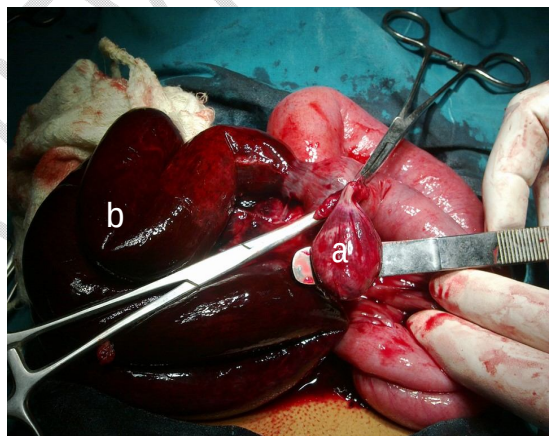


**Fig-4 Intra operative photographs**
**Showing a- pedunculated Meckel's diverticulum size 3x2 cm. b- small bowel gangrene**

## Discussion

Meckel's diverticulum is the most common congenital anomaly of gastrointestinal tract. First recognized by Johann Fedrich Meckel and its developmental origin in 1809. "It is a true diverticulum composed of all three layers of intestine. Meckel's diverticulum is located on the antimesenteric border of the ileum, its typically found within 30 cm to 100 cm proximal to ileocecal junction" [3].

"Only about 4-9% of the Meckel's diverticulum patient becomes symptomatic, while other remains asymptomatic for life. Small bowel obstruction, lower gastrointestinal bleeding and diverticulitis are the most common presentations of symptomatic Meckel's diverticulum" [3]. Salzer discovered "the ectopic gastric mucosa in Meckel's diverticulum and lower gastrointestinal bleeding is usually encountered secondary to the ectopic gastric mucosa and diverticulitis commonly occurs due to acid secretion from the ectopic gastric mucosa" [3].

"Abdominal pain, abdominal distension, constipation and vomiting are the salient features of acute intestinal obstruction. Multiple air-fluid levels in diagnostic imaging in x-ray abdomen and CT abdomen of small bowel obstruction" [3,6,7].

In our case we found strangulated loop of small bowel with gangrene, due to encircling of Meckel's diverticulum around the base of the mesentery. So resection of gangrenous segment of small

intestine along with Meckel's diverticulum and ileo-ileal anastomosis was done. "Intestinal obstruction is frequent complication and is observed in 20-25% of all symptomatic Meckel's diverticulum in adults". [1,2,3,8]. To our best of knowledge only 4-5 similar cases have been reported in the literature.

**Conclusion**

Surgical resection has always been the treatment of choice in symptomatic Meckel's diverticulum. The stranded treatment is definitive surgery, including diverticulectomy or ileal resection. Early surgery is required in order to prevent strangulation and gangrene, which reduces the morbidity and mortality.

**Ethical Approval:**

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

**Consent**

As per international standard or university standard, patient(s) written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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