

## Intestinal Obstruction by Meckel's Diverticulum in a 45 Years Old Woman

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### **Abstract**

**INTRODUCTION:** Meckel's diverticulum is a vestigial remnant of the omphalomesenteric duct that in most cases (53%) is diagnosed in the first two years of life. Common complications involving Meckel's diverticulum include bleeding, perforation, intestinal obstruction, and inflammation.

**PRESENTATION OF CASE:** We present a rare case of a Meckel's diverticulum causing small bowel obstruction. A 45-year old woman presented to the emergency department (ED) with vomiting, abdominal distension and abdominal pain. Computed tomography (CT) of the abdomen showed dilated small bowel loops consistent with a small bowel obstruction. The patient was taken to the operating theatre for a laparotomy. Meckel's diverticulum was resected and the patient recovered with no postoperative complications.

**DISCUSSION:** Meckel's diverticulum is the most common congenital anomaly of the small intestine. Diagnosis of Meckel's diverticulum is difficult to confirm preoperatively as most patients are asymptomatic. Frequent complications of Meckel's diverticulum include bleeding, perforation, intestinal obstruction and infection, with intestinal obstruction being the second most common complication.

**CONCLUSION:** Intestinal obstruction because of a Meckel's diverticulum is rare and requires a high attention for diagnosis, and it is almost always discovered by surgery.

## **Key words**

**Obstruction, Meckel's diverticulum, small bowel**

## **Introduction**

Small bowel obstruction accounts for 20% of all acute surgical admissions with the most common cause being postoperative adhesions followed by hernias [1].

Meckel's diverticulum is a true diverticulum that includes all 3 coats of the small intestine. Meckel's diverticulum is a vestigial remnant of the omphalomesenteric duct [2].

Generally, Meckel's diverticulum ranges from 1-12 cm in length and is found 45-90cm proximal to the ileocecal valve [3].

Approximately 3% of patients develop a complication over the course of their lives, typically before the age of 2, but up to 80 years of age.

Most of the Meckel's diverticula are discovered incidentally during a surgical procedure performed for other reasons. Meckel's diverticulum is usually asymptomatic, however, the main clinical manifestations involve gastrointestinal bleeding, intestinal obstruction, perforation and inflammation [4].

Histologically, heterotopic gastric and pancreatic mucosas are frequently observed in the diverticula of symptomatic patients. In children, gastrointestinal bleeding is the most frequent clinical presentation, while in adults, intestinal obstruction is the most frequent clinical presentation [5].

We presented Meckel's diverticulum in a 45-year old woman, although most of them (53%) are diagnosed in the first 2 years of life.

## **Case report**

A 45-year-old woman with no medical or surgical history, presented to the emergency room (ED) with 2 day of vomiting and lower abdominal pain. She had an increase in white blood cell count (WCC) of 18,000 / mL and a C-reactive protein (CRP) of 14.

On clinical examination she presented with abdominal distension, hyper-tympanism, metallic noises. She was then referred to the surgical team for revision.

A simple X-ray of the chest and abdomen showed dilated stomach and air fluid levels, respectively (fig. 1).



**Fig. 1** X-ray of the abdomen

Computed tomography (CT) of the abdomen and pelvis showed that multiple loops of the small intestine are noticeably distended and fluid-filled throughout the abdomen with a transition point within the lower right quadrant indicative of adhesions.



**Fig. 2 TC scan of the abdomen**

He was rushed to the operating room for a diagnosis of adhesive small bowel occlusion (SBO) in a "virgin abdomen". During laparotomy, it was found that she had a 2 cm diverticulum 40 cm from the ileocaecal valve that somehow became adherent to her mesentery (fig. 3);



**Fig. 3 diverticulum**

this meso-diverticular adhesion had caused a knot in the lumen and obstruction of the proximal limb of the small intestine. Sectioning of Meckel's diverticulum was performed without dissecting the adjacent segment of the small intestine (fig. 4).



**Fig. 4 sectioning of Meckel's diverticulum**

The sample was sent for histopathology which confirmed the diagnosis of a true Meckel's diverticulum of the small intestine containing typical villous mucosa with follicular lymphoid hyperplasia. The patient recovered without problems, was discharged home on the 7th day after surgery and had no problems during the outpatient follow-up.



## 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 about 1-3%. It is a true diverticulum containing all layers of the intestinal wall. The average length of a Meckel's diverticulum is 3 cm but can vary between 1 cm and 10 cm. Meckel's diverticulum is usually located within 100 cm of the ileocaecal valve on the antimesenteric border of the ileum. The mean distance from the ileocaecal valve varies with age; the average distance for children under 2 years of age is 34 cm; and for adults 67 cm. Most cases of Meckel's diverticulum are asymptomatic, with the estimated risk of developing complications throughout life being about 4% [6]. The diagnosis of Meckel's diverticulum is difficult to confirm prior to surgery as most patients are asymptomatic. Among symptomatic patients, two types of heterotopic mucosa (gastric and pancreatic) are found histologically within the diverticula. Frequent complications of Meckel's diverticulum include bleeding, intestinal obstruction, and infection (diverticulitis). Bowel obstruction is the second most common complication of Meckel's diverticulum [7]. There are a number of proposed mechanisms for intestinal obstruction resulting from a Meckel's diverticulum. The obstruction can be caused by the entrapment of an intestinal loop by a mesodiverticular band, as in our case; volvulus of the diverticulum around a mesodiverticular fascia; intussusception, as well as from an extension into a hernial sac (Littre's hernia) [1]. Various imaging modalities have been used to diagnose Meckel's diverticulum.

Conventional radiographic examination is of limited value. Ultrasound has some utility in the study of Meckel's diverticulum; with high-resolution sonography that can demonstrate a fluid-filled structure in the right lower quadrant that has the appearance of a thick-walled intestinal loop with a blind end [8]. Computed tomography (CT) has limited use for identifying a Meckel's diverticulum as it is difficult to distinguish from the normal small intestine in uncomplicated cases. However, visualization of a blind-ended fluid or gas-filled structure in continuity with the small intestine on CT may suggest the presence of a Meckel's diverticulum [9]. It remains controversial whether all accidental Meckel's diverticula should be resected in asymptomatic individuals [10]. On the other hand, treatment for symptomatic patients should always include resection of the diverticulum or the segment of the intestine affected by the disease [11]. We performed the simple resection of the diverticulum.

## **Conclusion**

Although Meckel's diverticulum is the most prevalent congenital abnormality of the gastrointestinal tract; it is often difficult to diagnose due to the absence of symptoms in most patients. Meckel's diverticulum occurs in children, and it is rare in the adults. The most important complication of Meckel's diverticulum in adults is intestinal obstruction. It usually remains asymptomatic and is only diagnosed incidentally or when complications occur. The complications of Meckel's diverticulum should be considered in the differential diagnosis of small bowel obstruction. Surgery is a diagnostic and therapeutic method of Meckel's diverticulum presenting with intestinal obstruction. The course depends on early diagnosis.

**Declaration of Competing Interest**

There are no conflicts of interest.

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**Ethical approval**

This case report is not subject to ethics approval at our institution.

**Consent**

Verbal and written consent has been obtained from the patient who has also been de-identified.

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