

**CASE REPORT****SMALL BOWEL OBSTRUCTION DUE TO MECKEL'S DIVERTICULUM FORMING A KNOT AROUND THE ILEUM: UNUSUAL PRESENTATION**Zelalem Chimdesa, M.D<sup>1\*</sup>**ABSTRACT**

*Meckel's diverticulum is an embryologic residue resulting from an incomplete obliteration of viteline duct during the early weeks of gestation. Often times it is small in size of about two inches, but occasionally it can acquire a very long length. This paper deals with a rare case on a 25 years old previously healthy male patient from Bona woreda, Sidama Ethnic group, who presented to our hospital with typical signs and symptoms of small bowel obstruction, which was managed with emergency surgery. It was noticed that the cause of the obstruction was an exceptionally rare presentation of Meckel's diverticulum which is a knot formed by the diverticulum over the adjacent small bowel.*

**Key words:** Meckel's diverticulum, Knotting, Small bowel obstruction

**INTRODUCTION**

Meckel's diverticulum was named after Friedrich Meckel who established its embryologic origin in 1809 (1). It is a blind diverticular pouch arising from the distal ileum and is situated on the antimesenteric border of the ileum. It is the most prevalent congenital anomaly of the gastro intestinal tract affecting about 2% of the general population (2). Its location varies among individuals but it is most commonly found within 100 cm from ileocecal valve. Generally Meckel's diverticula are asymptomatic in most individuals and only become symptomatic in 4% (1,2). The most common presentation of Meckel's diverticulum is small bowel obstruction in adults and bleeding in children (2). Small bowel obstruction occurring due to a knot formed by a long Meckel's diverticulum is a very unusual phenomenon; hence the case is presented herein with a review of literature.

**CASE REPORT**

The patient is a 25 years old male, ethnic Sidama, presented to our hospital with two days history of abdominal cramp associated with persistent projectile billous vomiting. He had also abdominal distension and obstipation. He had no previous abdominal surgery and had no history of chronic medical illness. On examination, the patient was tachycardic with pulse rate of 102 per minute, afebrile and his blood pressure was 100/70 mmHg.

The abdomen was grossly distended, non-tender, hyper-tympanic to percussion and had hyperactive bowel sounds. On digital rectal examination, the rectum was empty. He was investigated with plain abdominal film, which revealed distended small bowel loops with multiple air fluid level and paucity of air in the colon and rectum.



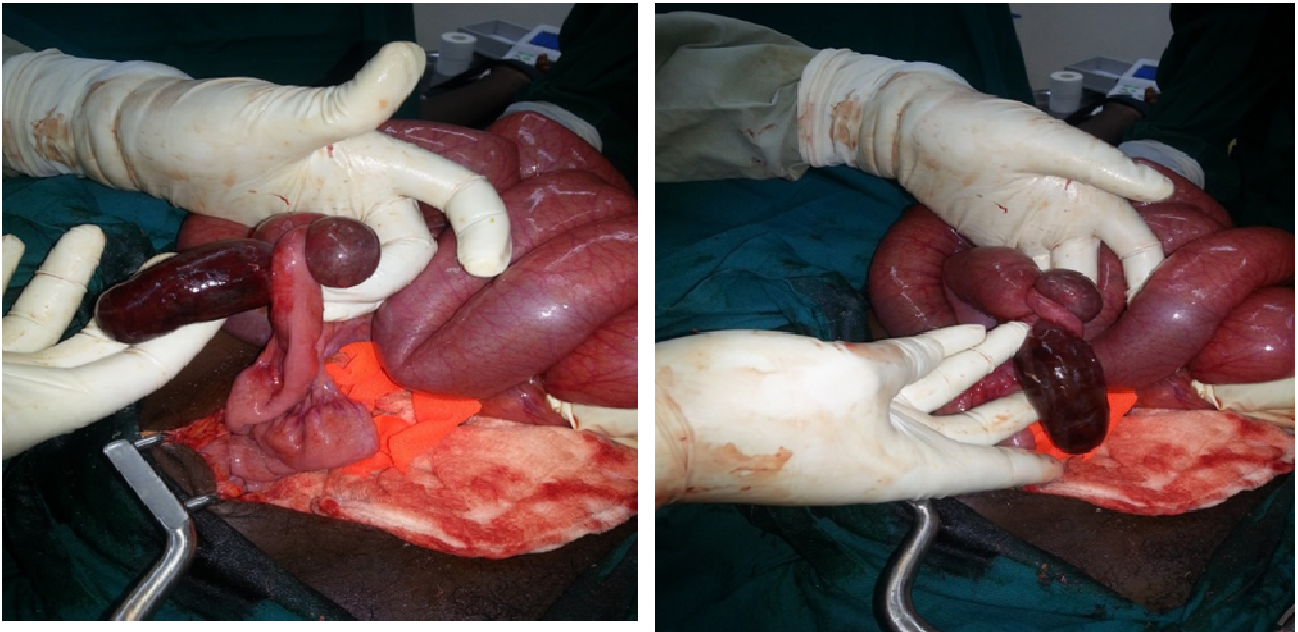
**Figure1:** Erect plain abdominal film showing distended small bowel loops with multiple air fluid level and paucity of air in the colon and rectum

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The laboratory results were within the normal limits. Computerized tomography (CT) scan, Abdominal ultrasound and contrast studies were not done as these were not available in the facility. Thus, with the diagnosis of complete small bowel obstruction due to unknown primary etiology, nasogastric tube (NG) tube was inserted, he was catheterized and resuscitation initiated. He was taken to the operation theater and was explored via mid-line laparotomy. The finding was distension of the entire small bowel up to the distal ileum, around 50 cm from the ileocecal valve, remaining distal ileum was collapsed.

There was a knot formed by a 15 cm long Meckel's diverticulum over the adjacent ileum obstructing it completely. The knot was easily untied; the bowel was freed and inspected for viability. The bowel was all normal except for the distal half of the Meckel's diverticulum which was gangrenous. There was no induration or mass within the ileum and hence diverticulectomy was performed. The patient had decent recovery and was discharged on the 6<sup>th</sup> post operation day. He was followed for one year after the operation and had uneventful course.



**Figure 2:** Intraoperative picture of a Meckel's diverticulum that has formed a knot on the adjacent ileum with collapsed ileum distal to the knot



**Figure 3:** Intra-operative picture showing the Meckel's diverticulum, after the knot was untied and a gangrenous distal half of the diverticulum

## DISCUSSION

Knotting of a bowel occurs when part of a bowel snares itself around other part of a bowel to entrap it and cause obstruction. Ileo-sigmoid Knotting and ileo-ileal knotting, where the ileum entangles the sigmoid and the ileum respectively, has been described in literatures (3,4). Since the size of Meckel's diverticulum in most individuals is small, it is very unlikely to cause a knot of any sort except in cases like ours where it is 15 cm in length which therefore is capable to encircle itself around to cause a knot over the ileum.

Whatever the cause of small bowel obstruction the goal is to identify the cause, relieve the obstruction and ensure bowel viability. Often it is illusive and difficult to diagnose the exact cause of the obstruction preoperatively. In one study by Gurleyik *et al* (5) out of the 20 patients who had small bowel obstruction due to complicated Meckel's diverticulum none of the definitive diagnosis was made before laparotomy. However, since the management of small bowel obstruction is universal we have to go ahead and operate without wasting the precious time. This is especially true in resource-limited settings where the management strongly depends on clinical decision. Meckel's diverticulum results in small bowel obstruction through a variety of mechanisms. The common ones are torsion (6), intussusception (7-9) and adhesion (10). Other forms of obstruction include impaction of bezoars (11,12), stool (13) or enterolith (14), internal hernia (15,16) and Litter's Hernia (17), which is a hernia

sac containing Meckel's diverticulum. In our case, the diverticulum formed a knot over the adjacent small bowel. The case was managed with diverticulectomy alone for the reason that we couldn't find any other gross pathology on the adjacent ileum to perform resection of part of the ileum.

Our case illustrates a very rare cause of small bowel obstruction due to Meckel's diverticulum knotting. While complicated Meckel's diverticulum appears to be a rare cause of small bowel obstruction in adults, it should be considered a differential diagnosis especially in those with no previous laparotomy. Besides, in any patient with features of complete small bowel obstruction the management should be urgent to have a good outcome. The absence of sophisticated diagnostic tools should not prohibit the surgeon in a resource-limited facility to make a right decision at the right time.

NB. Written informed consent was obtained from the patient to write the case report including the images.

## ACKNOWLEDGMENT

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