

Small Bowel Obstruction Due to Mesodiverticular Band of Meckel's Diverticulum: A Rare Presentation

Dr. Mrigendra Singh¹, Dr. Subhash Chawla², Dr. Shivam Sharma³,

Dr. Himanshu Tanwar⁴, Dr. Shobhit Maheswari⁵

Post Graduate Student¹, Professor and Head MIS², Senior Resident³, Post Graduate Student⁴, Post Graduate Student⁵
Department of Minimal Invasive Surgery, M. M. I. M. S. R, Mullana, Ambala, Haryana, India

Abstract: *Meckel's diverticulum is the most common congenital abnormality of the gastrointestinal tract. Most of the Meckel's diverticula are discovered incidentally during a surgical procedure performed for other reasons. Here we present a rare case of small bowel obstruction due to mesodiverticular band of Meckel's diverticulum. 19 Years old male patient presented to emergency with pain abdomen for two days and obstipation for one day was admitted under emergency services of our hospital. CT whole abdomen with contrast revealed dilated small bowel loops with abrupt transition in mid ileum with collapsed distal ileum and colon. Patient underwent emergency exploratory laparotomy intraoperatively mesodiverticular band was seen and separated; the ileal loop was released from the diverticulum. Resection of the Meckel's diverticulum was done and primary closure of the bowel was performed.*

Keywords: Mesodiverticular Band, Meckel's Diverticulum

1. Introduction

Meckel's diverticulum is the most common congenital abnormality of the gastrointestinal tract.¹ It originates from failure of the vitelline duct to obliterate completely, which is usually located on the antimesenteric border of the ileum. Its incidence is between 1% and 3%. Meckel's diverticulum occurs with equal frequency in both sexes, but symptoms from complications are more common in male patients. Most of the Meckel's diverticula are discovered incidentally during a surgical procedure performed for other reasons. Haemorrhage, small bowel obstruction, and diverticulitis are the most frequent complications.²

2. Case Report

19 Years old male patient presented to emergency with pain abdomen for two days and obstipation for one day was admitted under emergency services of our hospital. His past medical history was insignificant with no surgical history.

Examination revealed tender and generalised distended abdomen with hyperactive bowel sounds. At the time of admission, patient had fair general condition with stable vitals.

The laboratory findings showed total leukocyte count of 12, 700/ccmm while haemoglobin and platelet values were 14.2 g/dl and 190, 000/mm³ respectively. Patient had normal renal and liver function tests. Plain X-ray abdomen erect showed multiple air fluid levels predominantly showing dilated jejunal loops with few dilated ileal loops.



Figure 1: X-ray film showing multiple air fluid levels

CT whole abdomen with contrast revealed dilated small bowel loops with abrupt transition in mid ileum with collapsed distal ileum and colon. The diagnosis of mechanical intestinal obstruction was confirmed.

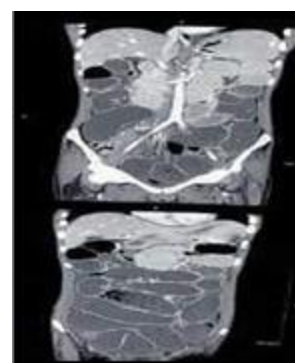


Figure 2: Axial view CT scan showing multiple dilated small bowel loops with specks of air within it.

Patient was planned for laparotomy and upon exploration distended small bowel and collapsed large bowel was identified. The small bowel was subsequently delivered carefully and examined. Loops of distended small bowel were decompressed by gently milking the content into stomach followed by aspiration via nasogastric tube. Small bowel was traced from the duodenojejunal junction

till the part of the ileum which was being markedly compressed by the mesodiverticular band present within an area 40 cm proximal from ileo-cecal junction. Gut loops proximal to the band were edematous while rest of the bowel was normal. Obstruction was caused by a mesodiverticular band which has led to bowel entrapment. After separating the mesodiverticular band, the ileal loop was released from the diverticulum. Resection of the Meckel's diverticulum was done and primary closure of the bowel was performed. The loops of the bowel were then returned into the peritoneal cavity in sequence. Closure of the abdomen was performed using loop sutures. Histological examination confirmed Meckel's diverticulum with focal areas of gastric antral mucosa. The patient recovered without any complications and was discharged after six days of hospitalization.



Figure 3: showing Meckel's Diverticulum after releasing mesodiverticular band.



Figure 4: showing arrows pointing towards released ileal loops after excision of band and forceps pointing towards another band

3. Discussion

Meckel's diverticulum was 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 approximately 1-3%, and is a true diverticulum containing all layers of the bowel wall. The average length of a Meckel's diverticulum is 3 cm, with 90% ranging between 1 cm and 10 cm, and the longest being 100 cm. This diverticulum is usually found within 100 cm of the ileocaecal valve on the antimesenteric border of the ileum. The mean distance from the

ileocaecal valve seems to vary with age, and the average distance for children under 2 years of age is known to be 34 cm. For adults, the average distance of the Meckel's diverticulum from the ileocaecal valve is 67 cm. Most cases of Meckel's diverticulum are asymptomatic, and the estimated risk of developing lifetime complications of Meckel's diverticulum is around 4%.⁷ Most patients are asymptomatic and the diagnosis is difficult to confirm preoperatively. Among the symptomatic patients, two types of heterotopic mucosa (gastric and pancreatic) are found histologically within the diverticula.

Intestinal obstruction is the second most common complication of Meckel's diverticulum.⁸

There are plenty of mechanisms for bowel obstruction arising from a Meckel's diverticulum. Obstruction can be caused by trapping of a bowel loop by a mesodiverticular band, a volvulus of the diverticulum around a mesodiverticular band, and intussusception, as well as by an extension into a hernia sac (Littre's hernia).⁹ Similarly, as in our case; obstruction can be caused by trapping of a bowel loop by a mesodiverticular band. The important aspect of our case is clear demonstration of the mesodiverticular band of a Meckel's diverticulum. Various imaging modalities have been used for diagnosing Meckel's diverticulum. Conventional radiographic examination is of limited value. Although of limited value, sonography has been used for the investigation of Meckel's diverticulum. High-resolution sonography usually shows a fluid-filled structure in the right lower quadrant having the appearance of a blind-ending, thick-walled loop of bowel.⁷ On computed tomography (CT), Meckel's diverticulum is difficult to distinguish from normal small bowel in uncomplicated cases. However, a blind-ending fluid or gas-filled structure in continuity with the small bowel may be revealed.¹⁰ CT can help to confirm the presence of intussusception and distinguish between lead point and non-lead point intussusceptions.

In asymptomatic patients; whether all cases of incidental Meckel's diverticula should be resected or not is an unresolved question. On the other hand, for the symptomatic patients; treatment should always include resection of the diverticulum or the segment of the bowel affected by the pathology.⁷

4. Conclusion

Meckel's diverticulum is the most prevalent congenital abnormality of the gastrointestinal tract; it is often difficult to diagnose. The complications of Meckel's diverticulum should be taken into account in the differential diagnosis of small bowel obstruction. Diagnostic laparoscopy is helpful. Exploratory Laparotomy and surgical excision of diverticulum is the definitive treatment.

References

- [1] Nath DS, Morris TA. Small bowel obstruction in an adolescent: a case of Meckel's diverticulum. *Minn Med.* 2004 Nov; 87 (11): 46-8. PMID: 15615202.

- [2] Gamblin TC, Glenn J, Herring D, McKinney WB. Bowel obstruction caused by a Meckel's diverticulum enterolith: a case report and review of the literature. *Curr Surg* 2003. Jan-Feb; 60 (1): 63-64.10.1016/S0149-7944 (02) 00650-5
- [3] Limas C, Seretis K, Soultanidis C, Anagnostoulis S. Axial torsion and gangrene of a giant Meckel's diverticulum. *J Gastrointestin Liver Dis.*2006 Mar; 15 (1): 67-8. PMID: 16680236.
- [4] Handfield-Jones RM. Retroperitoneal cysts: their pathology, diagnosis, and treatment. *Br J Surg.*1924; 12: 119-134.
- [5] Lee S. Y., Han W. C. Primary retroperitoneal mucinous cystadenoma. *Ann. Coloproctol.*2016; 32 (February (1)): 33-37.
- [6] Pesapane F., Van Renterghem S., Patella F., De Visschere P. A case report and a literature review of primary retroperitoneal mucinous cystadenoma: the importance of imaging in diagnosis and management: case report. *Future Oncol.*2018; 14 (28): 2923-2931.
- [7] Whang EE, Ashley SW, Zimmer MJ. Small intestine. In: F. Charles Brunicaardi, editor. *Schwart's Principles of Surgery.* McGraw-Hill 2005; pp.1017-1054
- [8] Nath DS, Morris TA. Small bowel obstruction in an adolescent: a case of Meckel's diverticulum. *Minn Med* 2004. Nov; 87 (11): 46-48.
- [9] Prall RT, Bannon MP, Bharucha AE. Meckel's diverticulum causing intestinal obstruction. *Am J Gastroenterol* 2001. Dec; 96 (12): 3426-3427.10.1111/j.1572-0241.2001.05344.
- [10] Park JJ, Wolff BG, Tollefson MK, Walsh EE, Larson DR. Meckel diverticulum: the Mayo Clinic experience with 1476 patients (1950-2002). *Ann Surg* 2005. Mar; 241 (3): 529-533.10.1097/01.sla.0000154270.14308.5f