

Meckel's diverticulum: A rare etiology of ileal volvulus**Dr. Vijay Haralgat Seetharamaiah***, Dr. Mahesh Joshi, Dr. Mohammed Salim

Department of General Surgery, S.P.M.C Bikaner, Bikaner, Rajasthan -334001, India

***Corresponding author**

Dr. Vijay. H.S

Email: vijayharalgat@gmail.com

Abstract: Meckel's diverticulum (MD) is a congenital diverticulum, arising from anti-mesenteric side of small bowel. It is true diverticulum containing all the three layers of bowel and the commonest congenital malformation of GI system, seen in 2% of population. MD is most commonly asymptomatic in nature, incidentally found at laparotomy. In symptomatic patients, it can present as painless rectal bleeding, pain abdomen, fever, nausea mimicking acute appendicitis, intestinal obstruction and intussusception. Here by reporting a case of 35 year male presenting with volvulus and gangrene of terminal ileum with high up caecum due to MD and vitelline band.**Keywords:** Meckel's diverticulum, ileal volvulus.

INTRODUCTION

MD is the commonest malformation of GI system. It is a true diverticulum of small intestine, made up of all the layers of GI tract and a remnant of omphalo-mesenteric duct arising from anti-mesenteric border of small intestine [1]. Vitello intestinal duct, a congenital structure connecting midgut with the developing umbilicus usually disappears completely in normal individuals. If the intestinal part of vitello intestinal duct persists with connection to lumen of bowel then it forms MD. If the both the ends of remnant are patent it forms umbilical fistula [2]. Since the MD is derivation from vitello-intestinal duct, which contains pluripotential cells in them, cells can get differentiated into heterotopic mucosa of duodenum, jejunum. The most common heterotopic mucosa is of gastric mucosa (60%) and pancreatic mucosa just accounts for 6% [3]. MD features can be remembered by the formula of "2".

- Usually seen in 2% of population. (1-3%)
- Seen 2 feet proximal to ileo-cecal junction. (30-60cm)
- Usually measures 2 inch in length (maximum length reported 100cm)
- Male to female ratio of 2:1
- Commonly seen children below 2 years of age
- Histologically composed with 2 types of ectopic mucosa (pancreatic and gastric mucosa).

Silent MD is incidental diagnosis in laparotomies. In symptomatic patients, painless rectal bleeding is the most common symptom (toddlers). Pain abdomen with the features of acute appendicitis can be the presenting features of Meckel's diverticulitis. Intestinal obstruction (most common) and intussusceptions are the few other complications [4].

Contrast enhanced CT scan and Technetium-99m pertechnetate scan may be needed for the diagnosis of MD.

CASE REPORT:

A 35 year male presented with pain abdomen of 3 days, acute onset, diffuse in nature and moderate degree of pain, associated with absolute constipation for 3 days. History of an episode of vomiting preceded with nausea was present. No other gastrointestinal complaints were there. Patient's past history was insignificant except history of tobacco chewing for 15 years.

At admission, patient was vitally stable. Local examination showed soft, grossly distended abdomen, diffuse tenderness without signs of guarding or rigidity, no organomegaly or any intra abdominal mass was palpated. Abdomen was free of fluid with sluggish bowel sounds.

Patient's initial investigations were normal except a mild increase in total leucocyte count. Ultrasound abdomen had dilated bowel loops with minimal inter bowel loop fluid. X ray erect abdomen showed few dilated bowel loops with multiple air fluid levels shadows. Patient was on standard conservative management and planned for CECT abdomen on the coming day. Overnight patient condition worsened, patient developed unstable vitals with the features of acute abdomen. Patient was taken for exploratory laparotomy on emergency basis. On exploration abdomen revealed:

- Gangrenous MD extending from the anti-mesenteric border of ileum, almost one and half

feet proximal to I.C junction with distal Blind end of MD, connected to umbilicus by thick, fibrosed, vitelline band (remnant of omphelo-mesentric duct).

- Volvulus ileal loop of almost one and half foot proximal from the I.C junction. A clockwise rotation of two and half turn on the axis of MD and vitelline band.

- Volvulus bowel loop, was completely gangrenous, extending from 1cm proximal of I.C junction to proximally up to MD including the diverticulum itself.
- Peritoneal cavity had brownish black foul smelling toxic peritoneal fluid of about 800ml without any faecal or bile contamination.

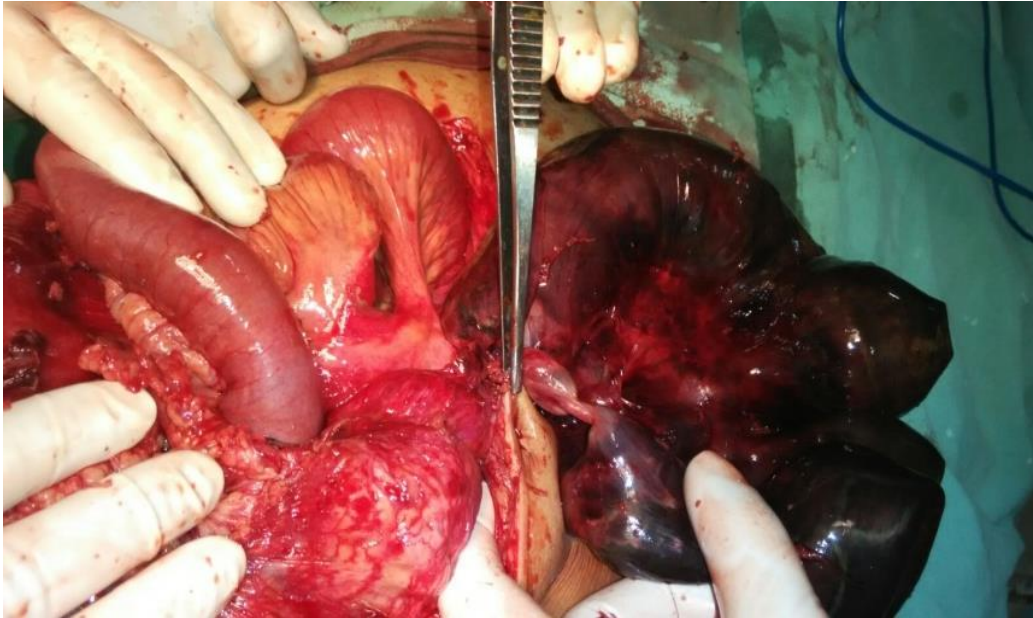


Fig 1: figure showing gangrenous bowel loop (twisted) and vitelline duct with Meckel's diverticulum in relation to umbilicus.



Fig 2: Gangrenous bowel along with vitelline duct (held with forceps) and Meckel's diverticulum attached to umbilicus. Healthy appendix with appendix can also appreciate.

Resection of gangrenous bowel loop and MD with healthy margins of 2cm on both the sides with primary closure of I.C junction with end to side ileo-ascending colon anastomosis with appendectomy of

healthy looking appendix was done. Post operative period was uneventful. Biopsy of resected bowel and fibrous band showed features of infected and inflamed

MD and remnant of vitello-intestinal duct (vitelline duct) with healthy normal appendix.

DISCUSSION:

MD is named on the anatomist name Johann Friedrich Meckel [5, 6]. It is the most common congenital abnormality of G.I system. Incidence of MD in adult population is about 2% (1-3%) [1]. MD is usually seen approximately 2 feet proximal to I.C junction on anti mesenteric border.

MD is silent in most of the patients and it is an incidental intra operative finding. Incidence of silent MD to develop complication is about 4% for whole life [7]. If the MD is inflamed or infected, then it is called Meckel's diverticulitis. Meckel's diverticulitis usually mimics acute appendicitis. Symptomatic MD is usually seen below the age of 2 years as painless lower GI bleeding [7]. Other than diverticulitis and lower G.I bleed, MD can present as intussusception, perforation, peptic ulcer disease (due ectopic gastric mucosa) and intestinal obstruction. The most common presentation of MD in adult is intestinal obstruction, as chronic or acute obstruction [4]. Various mechanism of obstruction has been listed out like intussusceptions, umbilical herniation, Littre's herniation, diverticulitis forming stricture and tumours arising from diverticulum. In the present case, vitelline band and MD caused volvulus of terminal ileal loop leading to gangrene and perforation. In uncomplicated MD, simple diverticulectomy is sufficient as treatment.

In the above case, patient presented with sub acute intestinal obstruction initially. As in regular cases, ultra sound abdomen was unable to pick up the MD. Due to failure of conservative management patient underwent emergency laparotomy before other specific investigations. In complicated cases like above, demands resection of the unhealthy bowel loop along with the MD and ileo colonic anastomosis.

CONCLUSION:

MD is the commonest congenital abnormality of GI system. Majority of patients are asymptomatic. The diagnosis of MD by routine investigation is difficult. In absence of significant specific history, clinical findings and negative initial investigations in the search of etiology of bowel obstruction, the treating surgeon should keep a high suspicion of MD.

BIBLIOGRAPHY:

1. Elsayes KM, Menias CO, Harvin HJ, Francis IR; "Imaging manifestations of Meckel's diverticulum". *AJR Am J Roentgenol* 2007; 189 (1): 81–8.
2. Moore KL, Persaud TVN, Torchia MG; *The developing human: Clinically oriented embryology* (9th Ed.). Philadelphia: Elsevier/Saunders, 2013.
3. Mattei P; *Fundamentals of Pediatric Surgery*. New York, NY: Springer Science+Business Media, LLC, 2011.
4. Altaf A, Aref H; A case report: Cecal volvulus caused by Meckel's diverticulum. *International journal of surgery case reports*, 2014; 5(12):1200-1202.
5. Meckel JF; Über die Divertikel am Darmkanal. *Archiv für die Physiologie, Halle*, 1809; 9: 421–453.
6. Al Jabri K.A, El Sherbini A; Small Bowel Obstruction due to Meckel's Diverticulum: A Case Report. *Oman Medical Journal*, 2012; 27(1).