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# A Rare Entity of Meckel's Diverticulum at Mesenteric Location : Two Case Reports

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***Authors' contributions***

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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***Case Report***

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## ABSTRACT

A Meckel's Diverticulum is the most common congenital anomaly of the gastrointestinal tract. Meckel's Diverticulum is usually located at the antimesenteric border of the small intestine and it is one of the cardinal finding of Meckel's Diverticulum. The Mesenteric location is an unusual site of Meckel's Diverticulum.

The etiology of the anomaly of Mesenteric Meckel's Diverticulum was due to the persistence of a short vitelline artery that creates a Mesodiverticular band from mesentery to the tip the diverticulum, which diverts the diverticulum away from the antimesenteric border to Mesenteric location during the elongation and growing process. We came across such two cases of mesenteric Meckel's Diverticulum (MMD). After each and every case of appendectomy or laparotomy, we traced 2 feet of small intestine (ileum) and to our surprise, we noticed such rare

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and uncommon location of Mesenteric Meckel's Diverticulum, in two cases admitted in our hospital with classical signs and symptoms of acute appendicitis but after appendectomy we searched for Meckel's diverticulum as per our routine surgical procedure. Herein we are presenting two such rare and interesting cases with Mesenteric location.

*Keywords: Case report; Meckel's diverticulum; mesenteric location; resection and anastomosis.*

## 1. INTRODUCTION

**"**The omphalomesenteric duct persists forming on out pounding diverticulum called Meckel's Diverticulum, which is the most common congenital anomaly of the gastrointestinal tract". [1]

"The classical location of Meckel's Diverticulum is at the antimesenteric border of the bowel. The location of Meckel's Diverticulum in the opposite mesenteric side is extremely rare" [2,3].

"From 1941 to December 2012 only 32 cases of mesenteric Meckel's Diverticulum reported in the literature" [4,5].

"Etiology of the anomaly was due to the 10% persistence of a short vitelline artery that creates a Mesodiverticular band from the mesentery to the tip of the Meckel's Diverticulum which diverts the diverticulum away from the antimesenteric border during the elongation and growing process. Short Mesodiverticular band extending from the mesentery to the tip of the Meckel's Diverticulum, acts as Hamstring action and pulling the Meckel's Diverticulum away from the antimesenteric border of small intestine, which is classically seen in our two cases" [3,5].

"The Mesenteric location of Meckel's Diverticulum may erode mesentery and rupture in to the mesenteric vasculature during the inflammatory process that may cause severe bleeding. Therefore, the surgical decision should be standard resection and anastomosis, even if the lesion is incidentally detected, during appendectomy or laparotomy" [4,5].

## 2. CASE PRESENTATION

### Case I

A 17 years' adolescent boy in the year 1995, admitted in our center with complaints of pain in right lower abdomen, vomiting for 2 days. Abdominal examination revealed tenderness at McBurney's point. Haemotogical investigation show leukocytosis. Ultrasound of abdomen revealed probe tenderness in right iliac fossa, considering the clinical and ultrasonography findings the diagnosis of Acute appendicitis was made. So the abdomen was opened by McBurney's incision, on exploration revealed Acute appendicitis and appendectomy was performed. Routinely traced the terminal 2 feet of ileum proximal to ileo -caecal junction. A diverticulum was found at the Mesenteric border of the small bowel of size 4x2 cm in length (Fig. 1a,1b). The patient recovery uneventful and patient discharged 7$^{th}$ postoperative day. Histopathological report of the specimen shows Meckel's Diverticulitis with no heterotopic tissue.

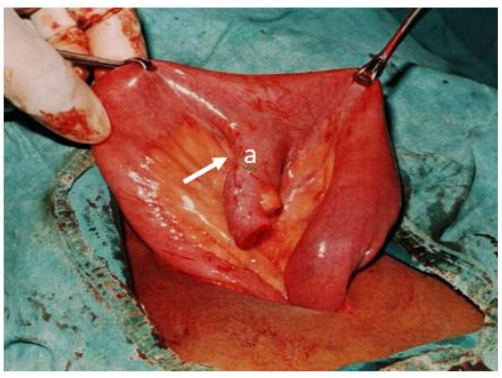


**Fig. 1a. Intra operative photograph Showing a- Mesenteric location of MD of Size 4x2 cm**

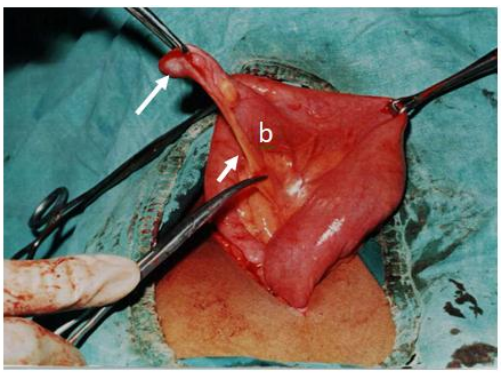


**Fig. 1b. Intra operative photograph Showing a-Mesenteric MD and b-Mesodiverticular band with vitelline artery**

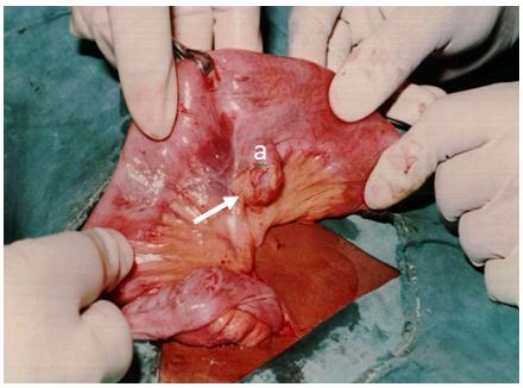


**Fig. 2a. Intra operative photograph Showing a- Mesenteric location of MD of Size 2x1 cm Short and stumpy MD**

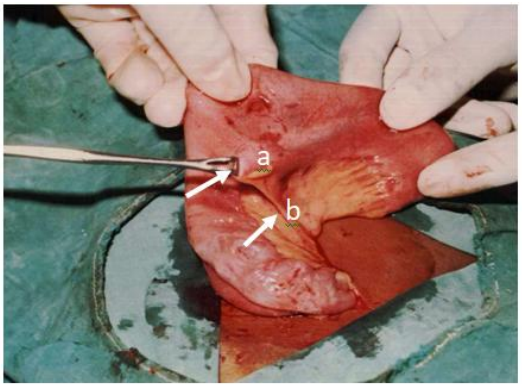


**Fig. 2b. Intra operative photograph Showing a-Mesenteric MD and b-Mesodiverticular band with vitelline artery**

**Case II**

A 27-year adult male in the year 1997, was presented in our center with complaints of pain in right McBunery's point, there was history of pain abdominal two months back. On physical examination revealed similar findings like case one. We searched perioperatively, the Meckel's Diverticulum, traced till the terminal 2 feet's of ileum proximal to ileo -caecal junction. We found a diverticulum along with the Mesenteric border of the terminal ileum, which is very rare entity.

In adult male patient having Mesenteric Meckel's Diverticulum of size 2x1 cm in length, shorts and stumpy. (Fig. 2a, 2b). In this patient there was very short vitelline artery that creates as Mesodiverticular band from the mesentery to the tip of the diverticulum, which diverts away from antimesenteric border to the root of mesentery. So it is a classical picture of Mesenteric Meckel's Diverticulum (MMD). Therefore, even though it is an asymptomatic and incidentally detected Mesenteric Meckel's Diverticulum, the surgical decision should be standard resection and anastomosis was done. The histopathology report confirmed the Meckel's diverticulum without any heterotopic tissue. Post-operative patient recovery was uneventful and patient discharge on 7$^{th}$ post-operative day.

## 3. DISCUSSION

The literature review from 1941 till now revealed 32 cases reports of mesenteric Meckel's Diverticulum. The case was distributed between 14 cases in the pediatric population and 18 cases of the adult population. The first description of a mesenteric-sided MD was reported in 1941 by Chaffin and afterward very few cases have been reported in the surgical literature, without being documented on pre-operative imaging. In particular, Sarioglu-Buke *et al.*, offered "the possible embryological explanation that the etiology of the anomaly was due to the persistence of a short vitelline artery that creates a Mesodiverticular band from the mesentery to the tip of the diverticulum, which diverts the diverticulum away from the antimesenteric border during the elongation and growing process" [6].

Different theory's as proposed for mesenteric location of Meckel's Diverticulum are as follow.

a. Persistence of short vitelline artery which creates a Mesodiverticular band from mesentery to the tip of the diverticulum, thus diverting the diverticulum away from the antimesenteric border during the process of elongation and growing process a described by Sarioglu-Buke.
b. "Adherence of vitelline duct to the ileal mesentery due to congenital or inflammatory adhesions due to diverticulitis and ectopic gastric tissue" [1,2,3,5,6].

In our case, the Meckel's diverticulum was located at the mesenteric location of the ileum. "A possibility is the persistence of a very short vitelline artery that creates a Mesodiverticular band from the mesentery to the tip of the diverticulum, which diverts the diverticulum away from the antimesenteric border during rapid growth. In general, ileal duplications share the wall and the blood supply of the ileum and the Meckel's diverticulum has its own artery. However, this is still not sufficient for a differential

diagnosis because the vitelline artery is present in about 10% of cases. The anomaly presented could have been due to a short vitelline artery that disappeared without leaving a remnant or to an intrauterine adhesion between the mesentery of the ileum and the omphalomesenteric canal" [6]. Thus, during the elongation and growing process, the "stuck" diverticulum might have been diverted from the antimesenteric border of the ileum [7-10].

## 4. CONCLUSION

Surgeons should look for Meckel's Diverticulum not only along antimesenteric border but also seen the mesenteric border to detect the unusual location of Mesenteric Meckel's Diverticulum. Mesenteric location of Meckel's Diverticulum is more alarming because it may erode the Mesentery and its vasculature during diverticulitis causing grave complications. Incidentally detected lesions during appendectomy or laparotomy should be searched and resection anastomosis performed instead of simple wedge resection.

## CONSENT

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

## ETHICAL APPROVAL

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

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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