


Case Report

A Rare case of Meckel's diverticulum rupture with a foreign body

 Thilina Rathnasena^{1*} and Christy Denyraj²

Abstract

Introduction: Meckel's Diverticulum (MD) is the most common congenital anomaly of gastrointestinal tract due to incomplete obliteration or persistence of proximal part of the Vitello intestinal tract. Perforation of Meckel's diverticulum could be a rare but life-threatening complication as it can lead to generalized peritonitis which may progress to sepsis. Cases of perforation due to foreign bodies are reported with fish bone being the most common, but a perforation with a sugar cane fiber was not found in the literature reviewed.

Case presentation: Most patients with MD will be asymptomatic however when symptoms occur, they often mimic acute appendicitis. A 36-year-old lady presented with periumbilical and right iliac fossa pain with examination revealing RIF tenderness with normal inflammatory markers and an ultrasound scan finding of a prominent appendix and fluid filled cecum. She underwent a diagnostic laparoscopy which revealed a perforated Meckel's diverticulum with a foreign body which was a sugar cane fiber. The histology revealed dual pathology of appendix with peri appendicitis and Meckel's diverticulum with pancreatic tissue within it.

Conclusion: This case emphasizes on diagnostic difficulty and need of early intervention in cases of complicated Meckel's diverticulum. Perforation of a Meckel's diverticulum with a foreign body is rare but potentially life threatening and requires early recognition to avoid high morbidity. Resection is the main mode of management for complicated MD and that for uncomplicated depend on each case.

Keywords: Meckel's Diverticulum; Perforation; Acute Abdomen; Foreign body; Diagnostic Laparoscopy

Introduction

Meckel's diverticulum is the most common congenital malformation in the gastrointestinal tract due to incomplete obliteration of Vitello intestinal duct [1]. It is considered a true diverticulum as it has all the layers of intestinal wall and usually found in the antimesenteric border of distal ileum [2]. Diagnosis of Meckel's diverticulum is difficult as it mimics many other diagnoses. Most common complications of MD are ulceration, diverticulitis, intestinal obstruction due to adhesions or intussusception. Perforation of a Meckel's diverticulum is a rare but life-threatening complication if diagnosis is delayed [3].

We present a case of perforated MD caused by a sugar cane fiber, which was identified during diagnostic laparoscopy. The clinical presentation, management, and relevant literature are discussed here.

Affiliation:

¹Department of Surgery, DGH Kilinochchi, Sri Lanka

²Departments of Surgery, DGH Mannar, Sri Lanka

*Corresponding author:

Thilina Rathnasena, Department of Surgery, DGH Kilinochchi, Sri Lanka

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Case report

Case history and examination

A 36-year-old previously well lady presented to casualty surgical ward with periumbilical and right iliac fossa pain for few hours duration. She was hemodynamically stable but abdominal examination revealed right iliac fossa tenderness without rebound tenderness. Investigations revealed a leucocyte count of $11.15 \times 10^9/l$ with a neutrophil percentage of 67% and CRP was 2.0 mg/dl. Urine analysis was normal.

Ultrasound scan of abdomen and pelvis revealed prominent appendix with dilated and fluid filled cecum.

Treatment, outcome and follow up

Following the investigations, it was decided to go ahead with a diagnostic laparoscopy the following day of admission. Diagnostic laparoscopy revealed a thin fibrous foreign body, yellowish and approximately 3cm in length and later identified to be a sugar cane fiber, perforating Meckel's diverticulum on the anti-mesenteric border (Figure 1) and a mildly inflamed appendix. Laparoscopy was converted to a mini – laparotomy and affected ileal segment was exteriorized (figure 2), foreign body extracted and Meckel's diverticulum was resected with GIA 60 stapler (figure 3).

2. Patient was followed up in surgical clinic and currently is healthy without any complains related to surgery.



Figure 2: Exteriorized Meckel's Diverticulum along with the ileal segment.



Figure 1: Laparoscopic view of Meckel's diverticulum perforated by sugar cane fiber.

Post operatively patient recovered well and did not have any complications and was discharged on post operative day 3 with oral antibiotics. Suture removal done on post op day 10.

Histopathology report revealed

1. Appendix with peri appendicitis and Meckel's diverticulum with ectopic pancreatic tissue with no evidence of malignancy.



Figure 3: Resected Meckel's diverticulum and appendix.

Discussion

We described a rare case of Meckel's diverticulum perforation with an unusual foreign body which initially presented as acute appendicitis. Histological analysis confirmed the presence of ectopic pancreatic tissue in the diverticulum. Symptomatic Meckel's diverticulum can closely mimic acute appendicitis as seen in this case as well, with right iliac fossa tenderness and raised inflammatory markers.

Meckel's diverticulum follows a general rule of 2 which is, usually seen in 2% population, 2 inches long, 2 feet from the ileocecal valve, common in less than 2 years of age and twice as common in males than females [4].

Meckel's diverticulum is due to the persistence of proximal part of the Vitello intestinal or omphalomesenteric duct. Other pathologies which could result from this are umbilicoileal fistula, umbilical sinuses and enterocystomas. The omphalomesenteric ducts are lined by pluripotent cells and therefore MD's may contain gastric, colonic, pancreatic or duodenal mucosa [5].

Patients with MD usually remain asymptomatic and symptoms may appear when complications develop. The risk of complications is influenced by age, sex and the presence of ectopic tissue. Intestinal obstruction due to adhesions or intussusception is the most common complication in pediatric age group while gastrointestinal bleeding and inflammation along with obstruction in adults. Rare complications are foreign body perforation and malignancies such as neuroendocrine tumors, GIST or adenocarcinomas [6–9].

Diagnosis of MD is often challenging and depends on the clinical presentation and age. Technetium scintigraphy is helpful in pediatric population specially in detecting ectopic gastric mucosa [10] and advanced endoscopic techniques such as capsular endoscopy can be helpful in adults [11] Computed tomography and MRI enterography are also viable options with variable sensitivity.

Perforation of Meckel's diverticulum could be a rare but life-threatening complication as it can lead to generalized peritonitis which may progress to sepsis. Perforation can be due to foreign bodies and few reported foreign bodies are chicken and fish bones, wood splinters, different types of seeds, needles and batteries with fish bone which is considered the most common foreign body leading to perforation of MD's [3,12]. In our case presented here it was perforated by a sugar cane fiber and there was no such reported case in the literature reviewed.

Surgical resection is the mainstay treatment of MD's and that could be achieved with laparoscopic tangential resection with Endo stapler, however surgical resection of

asymptomatic MD remains controversial. Some authors recommend resection of asymptomatic MD due to the risk of bleeding, inflammation, intestinal obstruction and development of malignancies and while some advice against it because of the added morbidity [13].

Several factors have been proposed to guide the resection of asymptomatic MD. These include, (1) age younger than 50 years (2) diverticulum length more than 2cm (3) ectopic or abnormal features or a fibrous band (4) male sex [3].

Management of MD, especially when incidentally found should be individualized and will get more updated more with the advancement of laparoscopic surgery.

Conclusion

A thorough bowel survey should be performed during laparoscopic surgery for acute appendicitis specially when the appendix appears normal or when clinical and biochemical findings are discordant. Although rare, perforation of Meckel's diverticulum by a foreign body can lead to significant morbidity. This case highlights that complicated MD is a differential diagnosis to consider in acute abdomen and the importance of early intervention to minimize the morbidity or potential mortality that it could cause.

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