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Perforated Meckel's diverticulum in an adult due to faecolith: A case report and review of literature



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ABSTRACT

Meckel's diverticulum (MD) is a persistent remnant of the vitelointestinal duct and is present in 2% of population [1]. It is the most common congenital malformation of the gastrointestinal tract. It can present clinically as haemorrhage, diverticulitis, intussusception, chronic ulceration, intestinal obstruction and perforation. Complicated presentation, especially bleeding, tends to be more common in the paediatric group, whereas intestinal obstruction is more common in adults [2]. Patients with a perforation of Meckel's diverticulum by an enterolith are rare and may present with right iliac fossa pain, which mimics acute appendicitis.

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We report a case of perforated Meckel's diverticulum due to faecolith in 48 year old patient with features of localized peritonism, preceded by a history of epigastric pain. The preoperative CT scan showed MD, features of peritonitis with and a calcification seen in the MD. Patient underwent emergency laparoscopy which revealed features of peritonitis with strands of fibrin and purulent peritoneal fluid. MD was perforated at the tip and appeared to be adherent to the right tube in the Douglas cavity. The MD was successfully resected by laparoscopic stapling of its base and retrieved by endocatch.

This is a rare case report of perforated MD due to a faecolith in an elderly patient, and the second case encountered with the faecolith in situ, with photographic evidence. A review of the literature has yielded only a few previous incidence of a faecolith causing a perforated Meckel's diverticulum.

1. Introduction

German anatomist Johann Friedrich Meckel first described the embryological and pathological features in 1809 [3]. The incidence of Meckel's diverticulum (MD) varies between 1 and 2% and carries the lifetime risk of 4–6% to become symptomatic [2].

A commonly quoted “rule of twos” also applies: 2% of the population have the anomaly, it is approximately 2 inches in length, it is usually found within 2 feet proximal to the ileocaecal valve, it is often found in children under 2 years of age, it contains 2 types

of common ectopic tissue (gastric and pancreatic) and the male:female ratio is 2 [4].

As in acute appendicitis, Meckel's diverticular obstruction results in distal inflammation, necrosis, or even perforation, leading to abscess or peritonitis. Other various pathologies leading to perforation are ulceration of ectopic gastric tissue, ingestion of foreign bodies, Littre's hernia, tumours such as leiomyosarcoma, lymphatic sarcoma, and poorly differentiated stromal tumour [5]. Less than 10% of symptomatic MD is diagnosed preoperatively [6].

2. Presentation of case

A 48 year old female presents with 3 day history of epigastric and periumbilical lower abdominal pain. The history was typical for appendicitis, being generalized central abdominal pain gradually worsening, migrating to the lower abdomen/suprapubic area along with nausea, vomiting, and anorexia. This typical history was however obscured by menorrhagia ongoing for six weeks and having an appendectomy performed 30 years ago. Her other past surgical history would include a previous thyroidectomy and tubal ligation.

On examination, significant tenderness was found on palpation of her right iliac fossa along with localized peritonism including voluntary guarding and rebound tenderness. Vital signs maintained within normal range and patient was sub febrile at 37.8 degree celsius. Laboratory data revealed normal electrolytes with normal liver and renal functions. She had normal lactate of 1.1 units and a normal coagulation profile. She did have white cell count of $27 \times 10^9/l$ with predominance of neutrophils and an elevated C-reactive protein to 76 mg/l.

A CT scan of abdomen and pelvis was performed to differentiate between gynaecological and intestinal origin of the pain, revealing oedematous bowel loops with a diverticulum of 18 mm, likely to

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Fig. 1. CT Scan showing Meckel's diverticulum with faecolith.

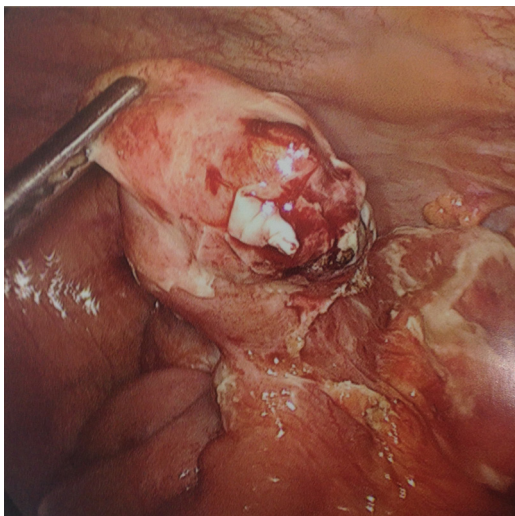


Fig. 2. Perforated Meckel's diverticulum with faecolith in-situ.

be Meckel's diverticulum with a 4 mm inlaying calcification in it (Fig. 1). The scan also showed a thickened endometrial wall.

An urgent laparoscopy was performed revealing generalised peritonitis with strands of fibrin and a perforated Meckel's diverticulum (Fig. 2). The diverticle was stapled off at its base by EndoGIA tristaple 45 mm brown load (Fig. 3) and retrieved by endocatch. A thorough washout of the peritoneal cavity was performed.

The specimen was sent for histopathology which showed perforated MD measuring about $40 \times 40 \times 20$ mm, caused by faecolith which measured about 10 mm in diameter. There was no evidence of ectopic tissues in MD.

The patient had slow post operative recovery due to prolonged post operative ileus. There was high drain output with vague abdominal pain. Hence CT scan was organized on day 5 which showed no anastomotic leak or intra abdominal collection. After a slow recovery, patient was discharged on day 7.

3. Discussion

Despite the fact that this condition is relatively common, only about 4–16% of cases will lead to complications [7], which



Fig. 3. Diverticulectomy performed using endoGIA tristaple 45 mm brown load.

include hemorrhage, intussusception, inflammation and, occasionally, perforation, which occurred in our patient. Complications are much more common in males, and the incidence of complications decreases with age, with the majority occurring in the paediatric population.

Perforation is noted to be an occasional consequence of acute Meckel's diverticulitis, but the exact rate of this has not been reported [8]. The overall lifetime complication rate is approximately 4% [9]. The most common presentation associated with symptomatic Meckel's diverticulum is bleeding, followed by intestinal obstruction, diverticulitis, intussusceptions and neoplasm [10]. However, perforation is very rarely seen and, in a review, was reported as being responsible for 0.5% of symptomatic diverticulum [11].

Meckel's diverticulum is notoriously difficult to diagnose both clinically and radiologically as the symptoms and imaging features are non-specific [10]. CT scan and ultrasonography are usually of little value because distinction between a diverticulum and intestinal loops is usually difficult. Radionuclide scans (Meckelscan with 99mTc -pertechnetate) may diagnose MD when uptake occurs in ectopic gastric mucosa or by identifying the site of gastrointestinal bleeding. But accuracy, reported to be around 90% in paediatric series, drops to only 46% in the adult group [12].

Meckel's diverticulum needs to be considered within the differential diagnosis of abdominal calcifications on a plain film, [13] however lithiasis or associated complication from lithiasis within a Meckel's diverticulum can be difficult to diagnose radiologically.

Ferguson et al. reports that in search of Medline and Embase revealed only around 40 case reports of perforated Meckel's diverticulitis reported in the literature of the last 30 years [8]. The first case of perforated MD secondary to faecolith was reported by Loh D. in 2008 [14] and the first case encountered with the faecolith in situ, with photographic evidence was reported by Ferguson et al. [8] Since then, there have been a few cases that have been reported, some with radiological evidence, some with histological evidence, and some with both.

4. Conclusion

Lithiasis of Meckel's diverticulum which may be faecoliths, bezoars, or gallstones [2] is a rare complication and perforation due to faecolith is even rarer. To our knowledge this would be one of the rare case reports of perforated MD due to a faecolith in an adult patient, encountered with faecolith in situ, with photographic evidence. This brings about the question if the advancement of

technology has facilitated us in having a more accurate diagnosis. Regardless, it is very crucial for clinicians to be thorough with examination and appropriately request investigations with having MD as a possible diagnosis in order to facilitate prompt treatment.

Conflicts of interest

There is no conflicts of interest among the authors.

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Ethical approval

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Consent

Have got the valid consent taken from the patient for this publication.

Authors contribution

Sunny Modi – Primary author – collected data about this case from online case reports/ journals. Wrote the main stem of the report.

2nd author – Kishen Kanapathy Pillai – Contributed with data collection, writing up and editing the report.

3rd author – Stefaan De Clercq – proof reading and suggestions to include certain points in the report.

Guarantor

As a primary author, I act as a guarantor.

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