Meckel’s diverticulum perforation by a fish bone: A case report

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ABSTRACT

INTRODUCTION: Meckel’s diverticulum is the most common congenital abnormality of the gastrointestinal tract. The perforation of a Meckel’s diverticulum by a foreign body is a very rare complication.

CASE PRESENTATION: A 61-year-old male presented to the Emergency Department with complaints with abdominal pain and fever, and abdominal rebound tenderness on physical examination. An intestinal perforation by a foreign body was diagnosed by CT scan. The patient was submitted to a diagnostic laparoscopy and a perforation of a Meckel’s diverticulum by a foreign body was identified. The foreign body was removed and a stapled diverticulectomy was performed.

DISCUSSION: Meckel’s diverticulum is asymptomatic in most of the affected individuals, with a 4.2–16.9% probability of symptomatic presentations. The clinical presentation ranges from intestinal obstruction, to bleeding, inflammation and perforation. While children with Meckel’s diverticulum present more often with gastrointestinal bleeding, intestinal obstruction is the most common presentation in adults. Foreign body perforation of a Meckel’s diverticulum is an extremely rare event. There is general agreement that a symptomatic Meckel’s diverticulum should be resected. Laparoscopy is a safe diagnostic and therapeutic tool that can decrease diagnostic time and theoretically avoids the morbidity and mortality of a delayed diagnosis.

CONCLUSION: The perforation of a Meckel diverticulum by a foreign body is an extremely rare event and may have a bad prognosis in case of a delayed diagnosis.

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1. Introduction

Meckel’s diverticulum is the most common congenital abnormality of the gastrointestinal tract [1]. Although first described by Fabricius Hildanus in 1558, it was named after Johann Friedrich Meckel, who established its embryological origin in 1809 [2]. Meckel’s diverticulum is caused by the failure of the omphalomesenteric duct to recede during gestational weeks 5–7 [3]. The described incidence is approximately 2% of the population [4]. Most patients are asymptomatic, with only 4–16% presenting complications [5], the three most common being inflammation, haemorrhage, and intestinal obstruction [6].

The perforation of a Meckel’s diverticulum by a foreign body is a very rare complication, with few cases reported in the literature [7]. We present the case of a perforation of a Meckel’s diverticulum by an intact fish bone.

2. Case presentation

A 61-year-old caucasian male presented to the Emergency Department with complaints with a 24-hour evolution of abdominal pain in the right iliac fossa, with insidious onset and increasing severity. There were no associated complaints. On physical examination the patient presented fever (38 °C) and abdominal rebound tenderness located on the right iliac fossa.

His past medical history was relevant for obesity, arterial hypertension, dyslipidemia, type 2 diabetes and hypoacusia, with no previous abdominal surgery.

Initial laboratory workup revealed normal white blood cell count, but increased C-reactive protein level of 22.7 mg/L (Normal range < 3.0 mg/dL). An abdominal CT scan was performed, not confirming the clinical suspicion of acute appendicitis and revealing a linear, 25 mm, hyperdense foreign body inside the ileal lumen, without free abdominal air or fluid (Fig. 1).

A presumed diagnosis of intestinal perforation was then established and the patient was submitted to diagnostic laparoscopy.

Intraoperatively, after dissection of inflammatory ileal loop adhesions to the abdominal wall, a perforation of the tip of a Meckel’s diverticulum by a foreign body was identified. The foreign body was removed and a stapled diverticulectomy was performed, with the endo-stapler applied to the base of the diverticulum, perpendicular to the long axis of the ileum. The foreign body was identified as an intact fish bone. The post-operative course was uneventful, and the patient was discharged on the 4th post-operative day (Figs. 2 and 3).
Histopathology confirmed a Meckel's diverticulum with 3.2 × 2.3 × 2.1 cm, with all layers of intestinal wall and no ectopic mucosa. A thin, long tract from the mucosa to the serosa with associated inflammation was also identified (Fig. 4).

The patient was observed after the first post-operative month with no complaints.

3. Discussion

Meckel's diverticulum is the most common congenital gastrointestinal malformation, with an incidence of 2–4% [5]. It consists of a small outpouching of the gastrointestinal tract due the incomplete obliteration of the omphalomesenteric duct between the 5th to 7th weeks of fetal life [1].

Meckel's diverticulum has been commonly referred to by the “rule of twos”: it is usually located in the 2 ft. proximal to the ileocecal valve, presents more often before the age of 2 years, is seen twice as commonly in men as in women, and is found in about 2% of the population [9]. The classic diagnostic criteria for Meckel's diverticulum, present in 90% of cases, are: the diverticulum has to be located on the antimesenteric border, within 2 ft. proximal to the ileocecal valve, contain the five layers of the small intestine, and have its own blood supply [10].

Meckel's diverticulum is a true diverticulum containing all the layers of the intestinal wall [11]. The position of the Meckel's diver-

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delayed diagnosis while keeping costs at a minimum [19]. A laparoscopic tangential resection with a linear cutter and stapler device across the base of the diverticulum has been demonstrated to be a safe procedure [6].

In the presented case, since the perforation was at the tip of the diverticulum, we performed a laparoscopic stapled diverticulectomy, perpendicular to the long axis of the ileum.

The average mortality from Meckel’s diverticulum reported in several surgical series is around 6%, with a large proportion of deaths occurring in elderly people [10].

4. Conclusion

Meckel’s diverticulum is the most common congenital anomaly affecting the gastrointestinal tract. The perforation of a Meckel diverticulum by a foreign body is an extremely rare event and may have a bad prognosis in case of a delayed diagnosis. Definitive treatment is surgical intervention, and should not be delayed by supplementary radiographic imaging in patients with peritonitis. Laparoscopy is a useful tool not only diagnostic but also therapeu-
tic, and is emerging as the preferred treatment approach to this disease.

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No conflict of interest to declare.

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**Ethical approval**

This paper is a case report, consent was obtained from patient.

**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the editor-in-chief of this journal on request.

**Author contribution**

All authors have been involved in the writing of this paper.

**Guarantor**

Case report.

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