Large Enterolith in a Meckels Diverticulum Causing Perforation and Bowel Obstruction: An Interesting Case with Review of Literature

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Abstract Enteroliths are a rare complication of Meckel's diverticula, with perforation of the diverticulum being an even rarer occurrence. Bowel obstruction secondary to a Meckel's enterolith, albeit uncommon, occurs due to inflammation, intussusception, or impaction after extrusion from the diverticulum. We report an unusual case of Meckel's enterolithiasis causing perforation and bowel obstruction.

Keywords Meckel's diverticulum · Enterolith · Perforation · Obstruction

Introduction

Diverticula are commonest sites for enterolith formation; occurrence in Meckel's diverticula is 3–10 % [1]. In 27 patients with Meckel's diverticula reviewed, 2 cases of enterolithiasis were found [2]. Although enteroliths are rare, knowledge of their presentations, complications, and treatment is important to surgeons handling such cases.

Case Report

A 55-year-old man presented with 2 weeks of lower abdominal pain, distension, nausea, and obstipation for 2 days.

Examination revealed a hemodynamically stable patient with a soft distended abdomen, right iliac fossa tenderness, and borborygmi. The clinical diagnosis was acute intestinal obstruction.

The leukocyte count was $16.7 \times 10^9/l$ and CRP was 380 mg/l. X-rays revealed dilated small bowel loops with air-fluid levels, absence of gas in the colon and rectum, and a radio-opaque density in the pelvis (Fig. 1). CT scans revealed a partial small bowel obstruction, thickened ileal loops, and evidence of a high-density (metallic 1,000–1,200 Hounsfield units) well-defined structure 2.6 cm $\times$ 2.3 cm in size seen in an inflamed blind pouch from a mid small bowel loop, suggestive of Meckel's enterolith. Although the transition point was hard to define, the terminal ileal loops were collapsed (Figs. 2 and 3).

On laparotomy within 24 h of admission, multiple loops of ileum were found adherent in the pelvis, surrounded by nonpurulent fluid. Mobilization of these loops revealed dense adhesions to a 6 mm perforated apex of an inflamed Meckel's diverticulum measuring 6 cm $\times$ 2.5 cm with a large enterolith within. Resection and anastomosis of the segment of ileum containing the Meckel's diverticulum was done and the patient had an uneventful recovery. Histology confirmed a Meckel's diverticulum.

Discussion

Enteroliths, a rare complication of Meckel's diverticula, are formed in situations of stasis of intestinal contents in blind pouches, side-to-side anastomosis, proximal to a stricture and/or presence of enteric alkaline environment [3]. Though Meckel's diverticula have wide necks, and the wall is capable of peristalsis, enteroliths are formed in narrow neck

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Fig. 1 Plain X-ray of the Abdomen showing small bowel obstruction and a radio-opaque shadow in the pelvis

diverticula with absent ectopic tissues, which usually create an acid environment and precipitate calcium salts [3–5]. The presence of stones in Meckel's diverticula predisposes to intestinal obstruction by promoting local inflammation of the diverticulum [6], external compression of other loops of bowel [7], and intussusception or impaction following

Fig. 2 Axial CT scan images showing a solitary enterolith in a thick wall small bowel diverticulum with surrounding inflammation

Fig. 3 Coronal CT scan image showing the solitary enterolith in the small bowel diverticulum with proximal small bowel obstruction

extrusion from the diverticulum; they might be multiple in 65 % of the instances [8].

Calcifications at abdominal radiography may be due to biliary and urinary calculi, calcified lymph nodes, mesenteric teratoma, fat necrosis, calcified fibroids, and enteroliths [3]. In our case, CT demonstrated that the calcification was within a structure connected to the small bowel. The possible location of an enteric enterolith could be in a blind pouch after a side-to-side anastomosis [8], urinary calculi in an ileal conduit, areas of dilated, and the chronically obstructed small bowel above a site of stricture as in Crohn disease or tuberculosis [3]. The presence of distended bowel loops and associated chronic inflammatory changes did not exclude these possibilities in our case.

Generally, operative management includes enterolith fragmentation, milking into the proximal colon, and removal through an enterotomy [3]. The Meckel's diverticulum also has to be resected to prevent recurrent complications. Segmental bowel resection with primary anastomosis is indicated in cases of inflammation, perforation, and necrotic bowel as in our case.

Conclusion

Enterolith in adult Meckel's diverticula causing perforation and obstruction has not been previously reported. A calcified density when detected in the lower abdomen on a plain film should raise the possibility of Meckel's enteroliths. Surgery remains the mainstay of treatment.

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