



## CROHN'S DISEASE WITHIN MECKEL'S DIVERTICULUM: CASE REPORT

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### ABSTRACT

Meckel's diverticulum has been reported in patients with Crohn's disease with an incidence of 6 to 18.5%. The direct involvement of a Meckel's diverticulum by Crohn's disease is less common and is usually the result of contiguous spread. A 24-year-old male patient with no particular medical history, presented with severe abdominal pain for the past 24 hours. Abdominal examination revealed mild distension with generalized guarding and marked rebound tenderness. Computed tomography scan showed ileal wall thickening with partial obstruction. It also disclosed enlarged mesenteric lymph nodes. The patient underwent ileal resection and mesenteric lymphadenectomy. Grossly, the specimen consisted of a 28-cm segment of thickened ileum with a Meckel's diverticulum measuring 3 cm. Microscopic study revealed typical transmural Crohn's disease involving the ileum as well as Meckel's diverticulum, with narrow ulcerated fissures coated by granulation tissue, fibrin and polymorphonuclear leukocytes. The final pathological diagnosis was Meckel's diverticulum involved by the inflammatory lesions of Crohn's disease. Postoperative course was uneventful.

**KEYWORDS:** Crohn's disease, Meckel's diverticulum, small intestine, pathology.

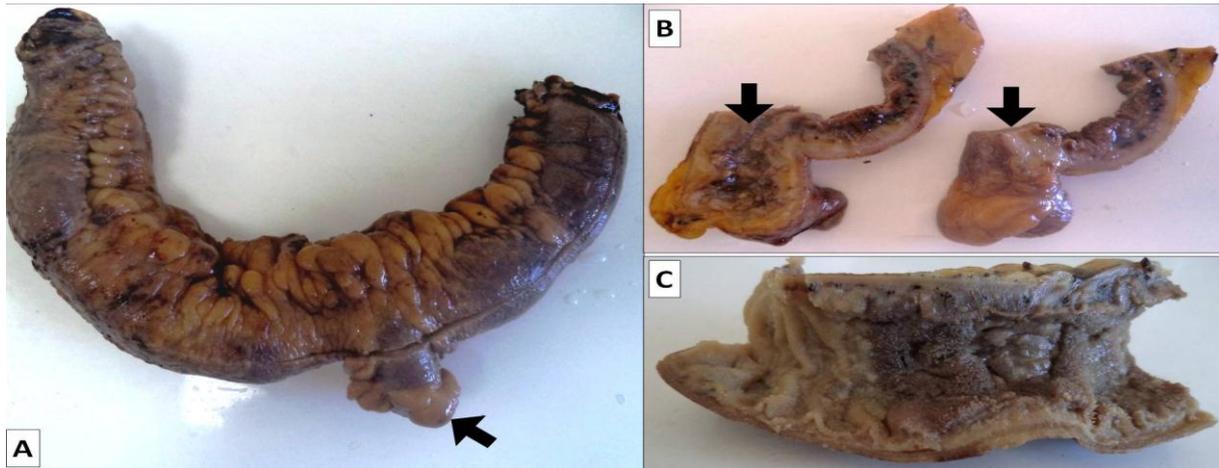
### INTRODUCTION

Meckel's diverticulum is a congenital anomaly of the distal ileum that occurs owing to incomplete closure of the vitelline duct. Meckel's diverticulum has been reported in patients with Crohn's disease with an incidence of 6 to 18.5%.<sup>[1,2]</sup> The involvement of a Meckel's diverticulum by the inflammatory lesions of Crohn's disease is less common and is usually the result of contiguous spread.<sup>[3-6]</sup> In this paper, the authors report the case of a young man who presented with extension of ileal Crohn's disease lesions into adjacent Meckel's diverticulum.

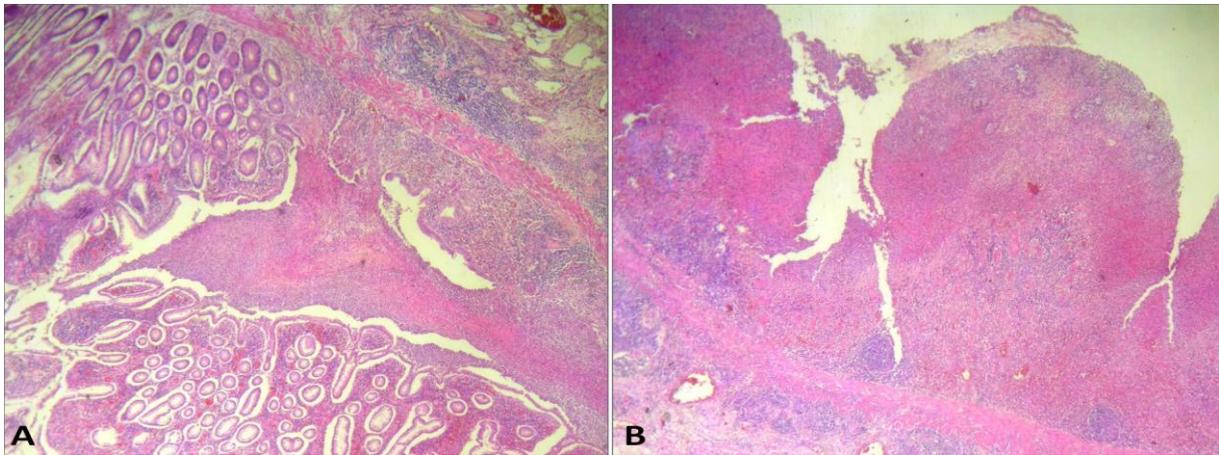
### CASE REPORT

A 24-year-old male patient with no particular medical history, presented with severe abdominal pain for the past 24 hours. On examination, the patient was febrile 38,5°C with altered general health. Abdominal examination revealed mild distension with generalized guarding and marked rebound tenderness. There were no palpable masses and bowel sounds were absent. Abdominal and chest radiographs were normal however, abdominal ultrasonography revealed free fluid throughout the abdomen. Computed tomography scan showed wall thickening within the ileum with partial obstruction. It also disclosed enlarged mesenteric lymph nodes. Based on his vital signs and physical examination, the patient was resuscitated with intravenous fluids and taken urgently to theatre for an exploratory laparotomy. Peroperatively, a peritoneal effusion was encountered

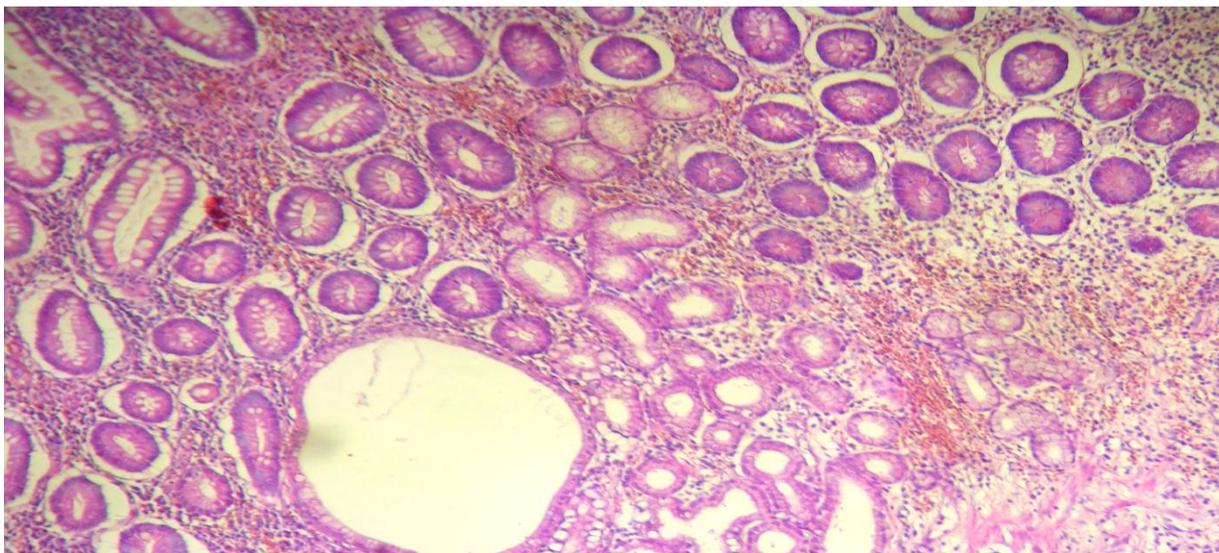
and evacuated. There was a thickening within the ileum with focal stenosis, partial dilation and presence of a 3 cm pouch extending from the anti-mesenteric side of the ileum. The patient underwent ileal resection and mesenteric lymphadenectomy. Grossly, the specimen consisted of a 28-cm segment of thickened ileum with a 3 cm pouch extending from the anti-mesenteric side of the ileum corresponding to Meckel's diverticulum (Figure 1A). On cut section, the latter as well as the small intestine showed ulceration of the mucosa (Figure 1B and 1C). The mesentery was also thickened (Figure 1A) and contained several firm lymph nodes of various sizes. Microscopic study revealed typical transmural Crohn's disease of the ileum, with narrow ulcerated fissures coated by granulation tissue, fibrin and polymorphonuclear leukocytes (Figure 2A and 2B) surrounded by a diffuse plasma cell infiltrate and lymphocytic nodules. However, non caseating granulomas were not seen. Histologically, Meckel's diverticulum demonstrated ileal mucosa with narrow ulcerated fissures with associated gastric metaplasia (Figure 3). In the subserosa, there were polymorphonuclear leukocytes with edema and vascular congestion. The mesenteric lymph node showed reactive adenitis with no granulomas. The final pathological diagnosis was Meckel's diverticulum involved by the inflammatory lesions of Crohn's disease associated with peritonitis. Postoperative course was uneventful and the patient is still being followed-up.



**Figure 1:** (1A) Gross appearance of Meckel diverticulum: a small pouch extending from the antimesenteric side of the ileum (black arrow). (1B) On cut section, the mucosa of Meckel's diverticulum was ulcerated. (1C) Mucosal ulceration of the ileum alternating with normal mucosa.



**Figure 2:** (A + B) Mucosal ulceration of the ileum coated by fibrin and polymorphonuclear leukocytes with inflammatory cells spreading transmurally (Hematoxylin and eosin, magnification  $\times 40$ ).



**Figure 3:** Pyloric gland metaplasia of the intestinal mucosa (Hematoxylin and eosin, magnification  $\times 400$ ).

#### DISCUSSION

Meckel's diverticulum and Crohn's disease are frequently encountered in the distal small intestine.

Meckel's diverticulum occurs in 2% of the population with a male-to-female ratio of 2:1.<sup>[5]</sup> Crohn's disease may occur in any part of the digestive tract from the mouth to

the anal region. There have been scattered case reports of regional enteritis and Meckel's diverticulum identified in the same patient.<sup>[1]</sup> The association between Crohn's disease and Meckel's diverticulum is unclear. Although there are cases of Meckel's diverticulum being primarily affected by Crohn's disease, the inflammatory process within the diverticulum was independent of the inflammatory bowel disease in many of them.<sup>[1,6]</sup> One large study suggested an increased incidence of Meckel's diverticulum in patients with the disease.<sup>[3]</sup> and another refuted this assertion.<sup>[4]</sup> In their review of 294 patients with Crohn's disease, some authors found the prevalence of Meckel's diverticulum to be up to 3 times above that of the general population.<sup>[3]</sup> Only 1 of 10 patients described by Glick *et al.*,<sup>[1]</sup> had Crohn's disease that affected Meckel's diverticulum and most reports in the literature consist of isolated cases.<sup>[7-9]</sup> In another study, the authors found only 10 (approximately 1%) of 877 patients with Crohn's disease had Meckel's diverticulum. None of these 10 diverticula showed involvement by Crohn's disease.<sup>[4]</sup> The presence of heterotopic tissues in a Meckel's diverticulum affected by Crohn's disease is rare.<sup>[2-4]</sup> and most commonly consists of gastric mucosa as it was the case in our patient.<sup>[1]</sup> Anecdotal reports have suggested that acid secretion from such gastric mucosa may be a rare cause of terminal ileal inflammation.<sup>[3]</sup> It is difficult to determine whether the presence of Crohn's disease with or without involvement of Meckel's diverticulum predisposes these patients to complications specifically relating to Meckel's diverticulum. In one series, four of five patients had perforated Meckel's diverticulum with abscess formation.<sup>[10]</sup> However, there was no evidence of Crohn's disease in any of the diverticula. In 3 other cases in which perforation of the Meckel's diverticulum occurred, there was involvement of the Meckel's diverticulum by Crohn's disease.<sup>[7,11]</sup> In the event of resection of a Meckel's diverticulum in a patient with Crohn's disease, thorough pathologic sampling of the specimen should be performed to detect any microscopic foci of Crohn disease, which could explain the presence of postoperative fistula.<sup>[12]</sup>

Until further information concerning the relationship of these two entities is obtained, simultaneous occurrence of Meckel's diverticulum and Crohn's disease should probably be considered a random event with sufficient frequency to warrant recognition and avoidance of potential diagnostic pitfalls.<sup>[1]</sup>

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