

## Laparoscopic treatment of hemorrhagic Meckel diverticulum after diagnosis with wireless capsule endoscopy and double-balloon enteroscopy

*Key words:* Endoscopy. Laparoscopy. Meckel diverticulum.

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*Dear Editor,*

Meckel diverticulum (MD), which results from incomplete obliteration of the proximal portion of the omphalomesenteric duct in the 7<sup>th</sup> week of gestation (1), is the most common congenital malformation of the gastrointestinal tract. In recent years, laparoscopy has become the primary approach to diagnose and treat bleeding MD (2-4). However, regardless of the surgical approach, preoperative diagnosis of bleeding MD is very important. Blind surgical treatment can lead to missing a lesion and result in a greater surgical risk. Wireless capsule endoscopy (WCE) in combination with double-balloon enteroscopy (DBE) can be used to determine the etiology of unknown hemorrhage of the alimentary tract, especially MD with hemorrhage.

### Case report

A 17-year-old male presented to the Emergency Room with painless hematochezia during one day. Emergency abdominal computed tomography (CT) and gastroscopy showed no abnormality. A subsequent colonoscopy showed fresh bloody material but no hemorrhage. WCE examination showed a double-duct sign (Fig. 1A) and an ulcer in the local small intestine without hemorrhage (Fig. 1B). To avoid missing any other lesions, the patient underwent a DBE examination, which revealed MD combined with a 0.5-cm-diameter ulceration 1 m proximal to the ileocecal valve (Fig. 1C). Laparoscopic surgery for bleeding MD was performed. Intraoperative exploration showed a diverticulum approximately 5 cm in diameter, 1 cm proximal to the ileocecal valve, in the antimesenteric location (Fig. 1D). The small intestine at the site of the lesion was exteriorized through the umbilical puncture hole (Fig. 1E) and the lesion was resected. The resected specimen contained an ulcer with an exposed vessel in the mucosal surface (Fig. 1F), which was consistent with the diagnosis made with WCE and DBE. Pathologic examination showed erosion and necrosis in the intestinal mucosa and no heterotopic gastric mucosal or heterotopic pancreatic tissue.

### Discussion

The diagnosis of MD with hemorrhage can be challenging. The combination of WCE and DBE can effectively locate and qualitatively diagnose the disease before laparoscopic treatment.

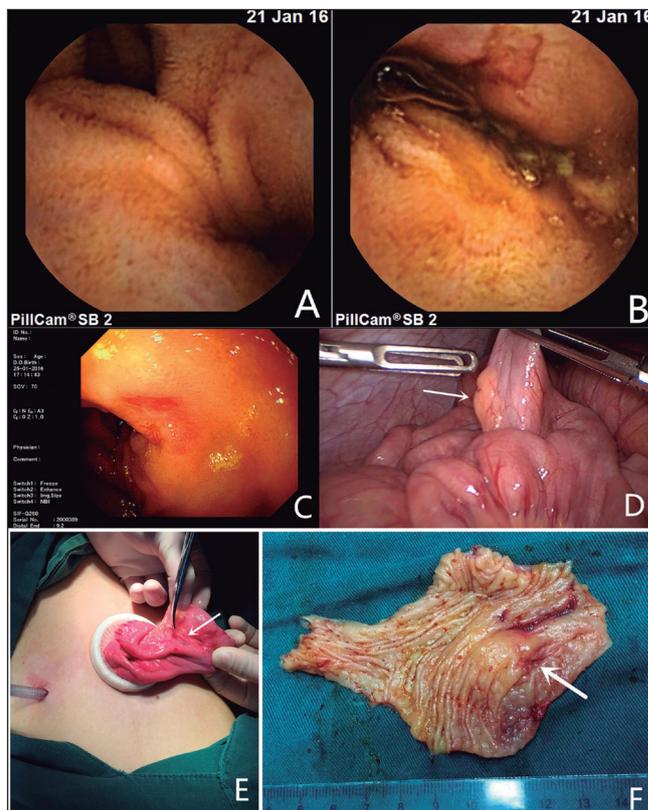


Fig. 1. A. WCE examination showed a double-duct sign. B. An ulcer in the local small intestine without hemorrhage. C. DBE examination revealed MD combined with a 0.5-cm-diameter ulceration. D. Intraoperative exploration showed a diverticulum approximately 5 cm in diameter (arrow). E. MD in the antimesenteric location had a separate blood supply (arrow). F. The resected specimen contained an ulcer with an exposed vessel in the mucosal surface (arrow).

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