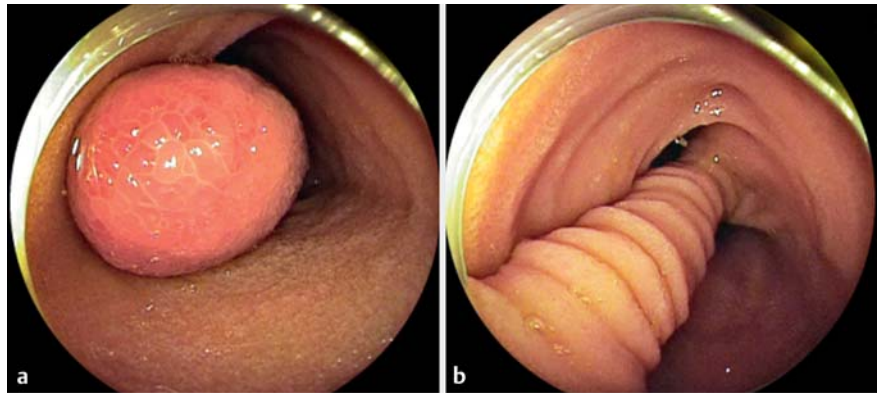


Endoscopic full-thickness resection for inverted Meckel's diverticulum using double-balloon enteroscopy

Meckel's diverticulum contains all layers of the small bowel wall and is usually treated by surgery [1, 2]. Inverted Meckel's diverticulum is rare, with only two reports of endoscopic resection [3, 4]. As preoperative diagnosis of an inverted Meckel's diverticulum is difficult [5], it was not diagnosed prior to resection in either case, and consequently perforation due to endoscopic resection was reported in one case [3]. In the current case, we diagnosed the condition preoperatively, and subsequently used two detachable snares prior to resection to prevent hemorrhage or perforation. We then safely treated the inverted Meckel's diverticulum using endoscopic full-thickness resection with double-balloon enteroscopy (DBE).

A 78-year-old man was admitted to our institution because of anemia and a positive fecal occult blood test. Abdominal ultrasound identified a hypoechoic polypoid lesion, with a hyperechoic head (▶ **Video 1**). A contrasted abdominal computed tomography scan also identified an elongated pedunculated polypoid lesion, with fat tissue in its center, in the distal ileum (▶ **Video 1**). Capsule endoscopy demonstrated a submucosal tumor-like lesion (▶ **Video 1**), and selective contrast-enhanced radiography indicated an elongated intraluminal polypoid lesion that was approximately 8 cm in size (▶ **Video 1**). Retrograde DBE indicated that the polypoid lesion exhibited intestinal villous mucosa on the surface at the head and typical mucosal features at the stalk of the antimesenteric attachment (▶ **Fig. 1**). This indicated that the lesion was an inverted Meckel's diverticulum, and endoscopic full-thickness resection with DBE was attempted.

First, the stem of the polyp was closed with two detachable snares before resection to prevent hemorrhage or perforation. Then, conventional polypectomy with DBE was performed. The resection



▶ **Fig. 1** Retrograde double-balloon enteroscopy for an inverted Meckel's diverticulum. **a** The polypoid lesion exhibited intestinal villous mucosa on the surface at the head. **b** The polypoid lesion exhibited typical mucosal features, such as Kerckring's folds, at the stalk of the antimesenteric attachment.

surface was closed with four clips after the polypectomy (▶ **Fig. 2**, ▶ **Video 1**). Histopathological analysis revealed an 80 × 10 mm inverted Meckel's diverticulum without ectopic tissue (▶ **Video 1**). The patient was discharged 2 days later without adverse events.

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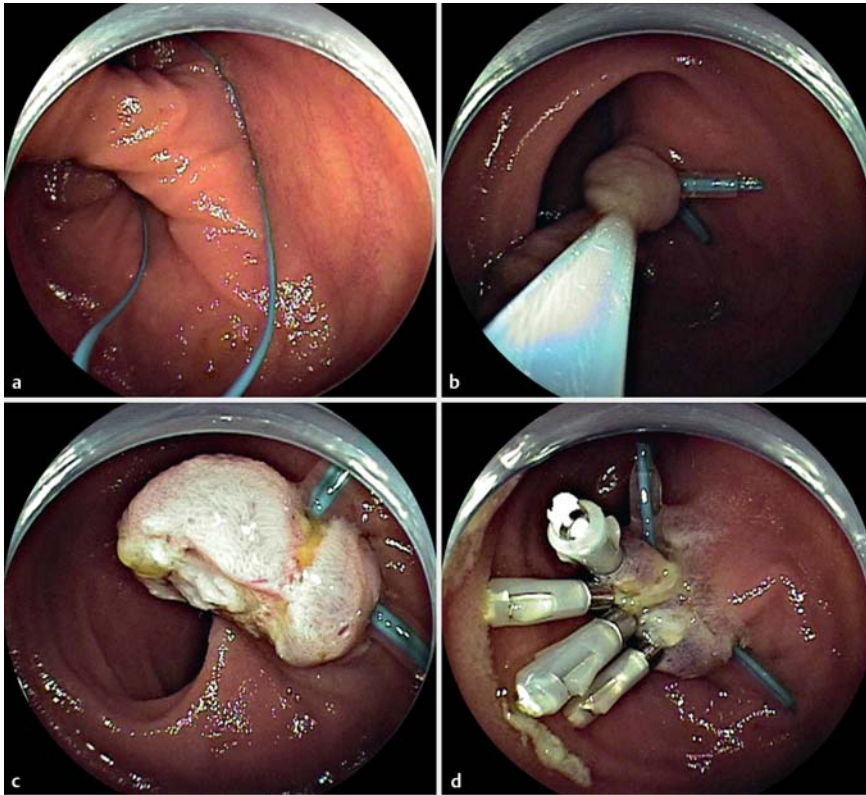
Competing interests

None

▶ VIDEO 1



▶ **Video 1:** According to clinical findings, we diagnosed the lesion as an inverted Meckel's diverticulum preoperatively. Therefore, using two detachable snares before resection to prevent hemorrhage or perforation, we safely treated the condition using endoscopic full-thickness resection with double-balloon enteroscopy.



► **Fig. 2** Endoscopic resection of an inverted Meckel's diverticulum. **a** First, the stem of the polyp was closed with two detachable snares before resection to prevent hemorrhage or perforation. **b** Conventional polypectomy with double-balloon enteroscopy was then performed safely without acute adverse events. **c, d** The resection surface was closed with four clips after the polypectomy.

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