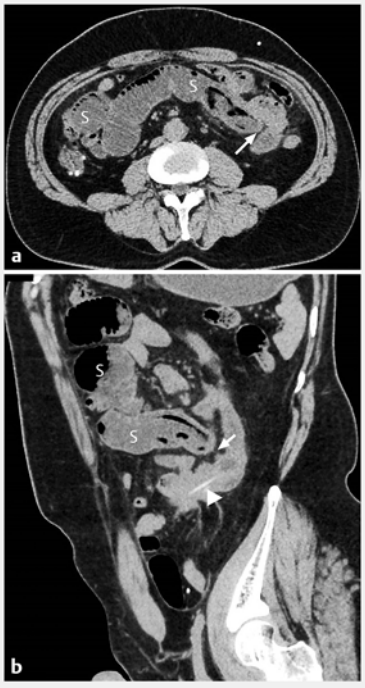
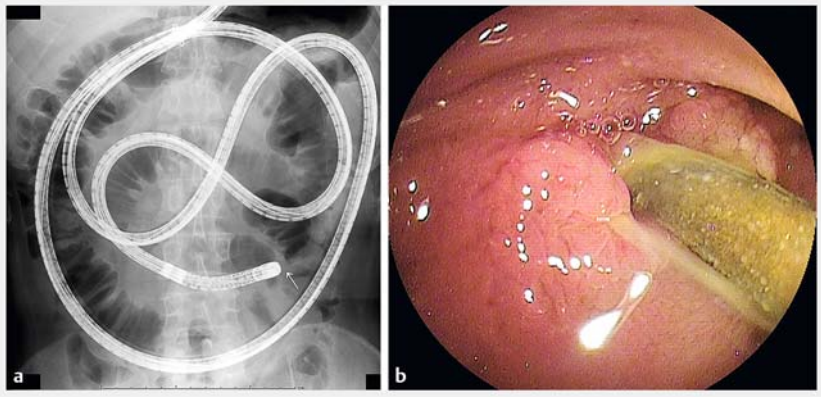
Successful endoscopic retrieval of a toothpick stuck in the small intestine using double-balloon enteroscopy



▶ **Fig. 1** Abdominopelvic computed tomography scan showing the distended and fluid-filled small bowel (S) and caliber change (arrow) in the proximal part of the small intestine, which is consistent with small bowel obstruction, on: **a** axial view; **b** reconstructed sagittal image, which also shows a high-density needle-shaped structure inside the small intestine (arrowhead).



▶ **Fig. 2** Double-balloon enteroscopy (DBE) via the oral route showing: **a** on radiographic imaging, the position of the stuck toothpick in the small intestine (arrow); **b** on endoscopic view, the ingested toothpick stuck in the small intestine wall.

▶ **Fig. 3** Photograph of the removed 6.5-cm toothpick (arrow). For comparison, an unused toothpick (arrowhead) is also shown.

A 59-year-old man was admitted to our hospital with nausea and vomiting. Laboratory test results demonstrated an elevated white blood cell count of 10 540/μL (normal range 3200 – 8000/μL) and his C-reactive protein (CRP) level was 2.82 mg/dL (normal < 0.30 mg/dL). He had a history of appendectomy for appendicitis and ventriculoperitoneal shunting for subarachnoid hemorrhage. Abdominal computed tomography (CT) showed a small-bowel obstruction (SBO) with dilatation, fluid collection, and caliber change in the proximal part of the small intestine (▶ **Fig. 1 a**). Ascites, abscesses, and free air were not observed; however, a high-density needle-shaped structure was noted incidentally inside the proximal part of the small intestine with minimal surrounding inflammation (▶ **Fig. 1 b**).

A transnasal ileal tube was placed to decompress the SBO; after 4 days, the SBO had improved, so the tube was removed. In order to remove the foreign body from the small intestine, we performed double-balloon enteroscopy (DBE) via the oral route (▶ **Fig. 2 a**). DBE revealed a wooden toothpick that was stuck in the proximal part of the small intestine (▶ **Fig. 2 b**), and we successfully removed the toothpick using grasping forceps without any complications (▶ **Fig. 3**; ▶ **Video 1**). A follow-up CT scan immediately after the DBE revealed no free air surrounding the small intestine.

The patient had no memory of ingesting the toothpick. His clinical course was uneventful, and he was discharged 9 days after the DBE.

According to previous reports, toothpick perforation of the duodenum can be treated with endoscopic removal [1 – 3]. However, toothpick perforation of the small intestine, which often exists with other complications, such as abscess formation, has previously been treated by laparotomy [4, 5]. To the best of our knowledge, this is the first English case report of the successful endoscopic removal of a toothpick stuck in the small intestine using DBE. We suggest that DBE may offer a nonsurgical alternative for the removal of a toothpick stuck in the small intestine.

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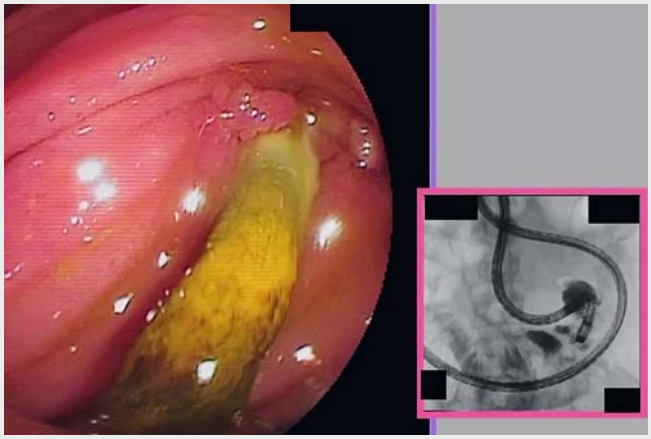
Competing interests

None



Video 1 Endoscopic retrieval of a toothpick stuck in the small intestine using double-balloon enteroscopy via the oral route and grasping forceps.

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