Endoscopic Removal of a Toothpick Impacted in the Stomach Wall by Mucosal Incision

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Toothpicks are not uncommonly swallowed, and subsequently, may be impacted into gastrointestinal wall and cause morbidities, and even mortality. Therefore, the early diagnosis and immediate retrieval of an ingested toothpick is important. In many cases, endoscopic removal is attempted initially, but if this fails or a complication is encountered, surgery should be considered. The authors experienced a case of ingested toothpick penetrating the gastric wall. A 51-year-old woman visited our hospital with epigastric pain of one-week duration. Upper endoscopy revealed that the sharp end of a toothpick had been impacted into the distal antrum. Endoscopic removal using an alligator jaw forceps failed because the toothpick broke during removal and our continued attempts to extract the remnant resulted in it becoming more embedded in the stomach wall. In such circumstances, surgical treatment should be considered. However, we incised the mucosa to expose the remnant toothpick, and fortunately, we were then able to grasp and remove the toothpick using an alligator jaw forceps. We report this unusual case of a toothpick impacted in the gastric wall that was resolved endoscopically by mucosal incision.

Key Words: Foreign bodies; Endoscopy

INTRODUCTION

Toothpicks appear benign, but when swallowed toothpick that can be impacted into the gut and cause morbidities and in extreme cases even mortality. Therefore, toothpick ingestion should be considered potentially dangerous and prompt detection and removal should be instituted. However, early detection is often not easy because often patients do not recall the event and the symptoms related to toothpick ingestion are variable and nonspecific. Even though a surgical approach is needed in many cases with a delayed diagnosis, endoscopic retrieval is possible and can result in rapid symptom relief. Here, we describe a case of a toothpick impacted in the gastric wall that was removed endoscopically.

CASE REPORT

A 51-year-old woman visited our hospital with epigastric pain of one week’s duration. The patient remembered swallowing a toothpick accidentally 1 month earlier, but did not seek medical attention because she believed the toothpick would be excreted. She had no previous medical history. Her physical examination was unremarkable, except for mild epigastric tenderness. Laboratory tests were within normal limits, and abdominal CT depicted the toothpick penetrating obliquely into the gastric wall with no evidence of inflammation in the abdominal cavity (Fig. 1). Upper endoscopy revealed that one end of the toothpick had

Fig. 1. CT findings. Abdominal CT showed linear hyperattenuated lesion in the antrum (arrow).
penetrated the lesser curvature of the distal antrum (Fig. 2). During an attempt to remove the toothpick from the gastric wall with an alligator forceps (Fig. 3A), the toothpick broke (Fig. 3B), and attempts to grasp the remnant toothpick made it to travel deeper into the mucosa, to the extent that it could no longer be visualized (Fig. 3C). Endosonography was conducted to determine the depth and location of the remnant, and showed a well-defined linear hyperechoic structure forming a posterior acoustic shadow penetrating the gastric wall with a small amount of fluid collection (Fig. 4). After administering a submucosal saline injection, the mucosa was incised along the direction of the remnant (Fig. 5A) using a Flex knife (Olympus Medical Systems, Tokyo, Japan) and an insulation-tipped knife (Olympus Medical Systems). We were then able to grasp and remove the remnant using an alligator forceps despite a lack of visualization (Fig. 5B, C). The epigastric pain subsided promptly after removal, and the patient was discharged the day after the procedure without complications. At her one-week follow-up the patient was doing well.

**DISCUSSION**

The majority of swallowed foreign bodies pass through the entire gastrointestinal tract without complications. However, sharp, long, narrow bodies, like toothpicks, in around 30% of presentations perforate the gut; the duodenum is most frequently affected followed by the sigmoid colon. Early diagnosis and retrieval are important because delayed diagnosis can result in serious complications or mortality in up to...
Fig. 5. Esophagogastroduodenoscopy findings of mucosal incision (A) and removal (B) and gross finding of removed toothpick (C). (A) A flexible knife was used to dissect mucosa overlying the toothpick. (B) The broken toothpick was removed using an alligator forceps. (C) The removed bamboo toothpick measured 6.5 cm. The right fragment (arrow) was removed first and left fragment (arrowhead) was extracted after mucosal incision.

18% of cases. Furthermore, perforation or penetration by a toothpick can be asymptomatic, and causing later complications in adjacent structures, such as, fistula involving a major blood vessel, constrictive pericarditis, or a liver abscess.

However, it is difficult to diagnose toothpick ingestion because patients are usually ignorant of having swallowed a toothpick. In one study, it was found that only 12% of patients recalled swallowing a toothpick. Clinical presentations of toothpick related injuries are also diverse and nonspecific, and therefore, careful history taking is important. Definitive diagnoses are made by laparotomy (53%), endoscopy (19%), imaging (14%), or by autopsy (12%). Simple abdominal radiographic studies are unhelpful because wooden toothpicks are radiotransparent. In the described case, computed tomography was found to be very useful for detecting and locating the toothpick and for determining the presence of adjacent organ injury and abscess formation.

When an endoscopic approach is possible, a polypectomy snare and grasping forceps should be tried initially before considering an operation. Furthermore, endoscopists should take care when removing an imbedded toothpick, because they can easily break.

Surgical treatment can be considered when a toothpick fragment penetrates the gastrointestinal wall and is difficult to retrieve endoscopically. However, in the described case, we successfully removed the remnant endoscopically using a mucosal incision. Usually, this incision is made to separate a lesion from surrounding normal mucosa during endoscopic submucosal dissection or to expose a submucosal tumor. However, in the described case, it was used (after obtaining patient consent) to perform mucosal incision to expose the embedded toothpick. Successful removal of the remnant, avoided laparoscopic surgery, and the patient recovered rapidly. Accordingly, we recommend that endoscopic removal of an impacted foreign body after mucosal incision be considered in selected cases before adopting a surgical option.

REFERENCES

9. Guber MD, Suarez CA, Greve J. Toothpick perforation of the in-