

# Toothpick Perforation of the Duodenum: A Case Report

Hsin-Hui Chiu, Chan-Ming Chen<sup>1</sup>, and Lein-Ray Mo<sup>1</sup>

Division of Gastroenterology, Department of Medicine, Kuo General Hospital

Division of Gastroenterology, Department of Medicine,

<sup>1</sup>Tainan Municipal Hospital, Tainan, Taiwan, R.O.C.

## Abstract

Toothpicks are an uncommon form of ingested foreign bodies, and swallowed toothpicks resulting in perforation of the gastrointestinal tract are infrequently reported. Early diagnosis and immediate retrieval of ingested toothpicks associated with gastrointestinal perforation is important for reducing morbidity and mortality. We report a case of 43 year-old male presenting with epigastric pain of one-week duration, caused by a double-pointed toothpick perforating the second portion of the duodenum. The toothpick was successfully removed by using a polypectomy snare via endoscopy. The patient was symptom-free after two weeks of follow-up. ( *J Intern Med Taiwan* 2004; 15: 219-222 )

**Key Words :** Toothpick, Gastrointestinal perforation, Duodenum

## Introduction

Ingestion of foreign bodies is usually an accidental or intentional event, often occurring in the young children, people with dentures or retarded mentality, and psychologically disturbed persons. Most of swallowed foreign objects uneventfully pass through the gastrointestinal tract, while those with sharply pointed ends such as toothpicks, fish bones and chicken bones, have a high risk of perforating the gastrointestinal tract, especially in the duodenum and the sigmoid colon<sup>1</sup>. We report a 43 year-old male presenting with epigastric pain of one-week duration, caused by a double-pointed toothpick perforating the second portion of the duodenum. The toothpick was successfully removed endoscopically without complications.

## Case Report

A 43 year-old male complained of epigastric discomfort after he accidentally swallowed a wooden toothpick, while drinking a cup of tea, 7 days prior to calling at the outpatient department. Physical examination was unremarkable except for epigastric tenderness. Upper gastrointestinal endoscopy was immediately performed and showed a long wooden toothpick located in the duodenum (Fig. 1) with one end of a toothpick embedded in the medial wall of the second portion of the duodenum (Fig. 2). The toothpick had penetrated the duodenal wall for approximately 1.5 cm. There was mild hyperemic and swelling mucosa around the penetrating wound, but no evidence of hemorrhage was found. The stomach was normal. The narrow lumen, limited space and fixed position of the duodenum make maneuvering difficult in this area. So, the toothpick had to be removed endoscopically with a polypectomy snare holding the free end of the toothpick, turning it around, so that the free end faced upwards, then carefully retracting and dislodging it from the penetration site. The removed toothpick with double-sharped ends measured 6.5 cm in length. Subsequently, he was admitted to our hospital with normal laboratory

examination. Chest film and abdominal radiography after removing the swallowed toothpick revealed no free air. Abdominal ultrasound showed no ascites and no fluid accumulation in the retroperitoneal area. The patient was placed on nothing per ore and parenteral fluids, without use of antibiotics. No abdominal pain, nor gastrointestinal bleeding were noted afterwards. Oral feeding was started on the third day and the patient was discharged with uncomplicated clinical course up to 2 weeks' follow-up.

#### Discussion

Toothpicks used as a tooth-clearing instrument and eating utensil are an uncommon cause of ingested foreign bodies, which usually have predisposing factors including carelessness, rapid bolting of food, and decreased sensitivity of the palatal surface, i.e., dentures, ingestion of very cold liquids, or excessive ethanol use. Ingested toothpicks have a high potential for causing gastrointestinal complications, such as bleeding<sup>2</sup>, perforation<sup>3</sup>, obstruction<sup>4</sup>, sepsis<sup>3</sup> and death<sup>5</sup>. Foreign bodies in the gastrointestinal tract have a tendency to lodge in location where there is an anatomic sphincter, acute angulation, physical narrowing, prior surgery, or congenital gut malformation<sup>6</sup>. Toothpick-related gastrointestinal injury most frequently occurs at the duodenum, followed by the sigmoid colon<sup>1</sup>. In rare instances, swallowed toothpicks could migrate to the adjacent structures<sup>7</sup> or to distant locations including pleura<sup>8</sup>, leg<sup>9</sup>, inferior vena cava<sup>10</sup> and heart<sup>11</sup>.

Clinical presentations of gastrointestinal injuries associated with ingested toothpicks include abdominal pain, gastrointestinal bleeding and obstruction. Diagnosis of toothpick-related injury is difficult because patients are usually unaware of having ingested toothpicks. The definitive diagnosis was most commonly made at laparotomy (53%), followed by endoscopy (19%), imaging studies (14%), and autopsy (12%)<sup>1</sup>. Imaging studies including X-ray and computed tomography usually have a low sensitivity to identify the presence of swallowed toothpicks<sup>1</sup>. Conventional X-ray studies are of little help in the diagnosis because wooden toothpicks are not radiopaque<sup>12</sup>. Abdominal ultrasound has been reported to demonstrate swallowed toothpicks frequently showing a hyperechoic, thin, straight line or a hyperechoic dot<sup>13</sup>. Early diagnosis and retrieval of ingested toothpicks with gastrointestinal perforation is critical because perforating toothpick is often associated with considerable morbidity. Delayed diagnosis can result in mortality<sup>5</sup> and overall mortality associated with ingested toothpicks is 18%, especially in patients presenting in shock or with enteric-vascular fistulas<sup>1</sup>. While perforating toothpicks are encountered, endoscopic extraction using a polypectomy snare<sup>14</sup>, grasping forceps or biopsy forceps<sup>15</sup>, should be tried first before subjecting the patient to operation<sup>16</sup>. Surgical intervention is indicated to those cases with complications such as intractable bleeding<sup>2</sup>, peritonitis<sup>3</sup>, abscess<sup>17</sup> or fistulas<sup>18</sup>. Surgery is also indicated when swallowed toothpicks can't be retrieved endoscopically. With the advent of laparoscopic surgery, laparoscopic exploration has been reported as a new modality in the management of ingested toothpicks with gastrointestinal perforation<sup>19-20</sup>.

#### References

1. Li SF, Ender K. Toothpick injury mimicking renal colic: case report and systematic review. *J Emerg Med* 2002; 23: 35-8.
2. Diccio BS, Heit HA, Peterson JE, Harshaw WG, Cooper JN. Massive bleeding due to arterial-enteric fistula from an ingested toothpick. *J Clin Gastroenterol* 1985; 7: 292-5.
3. Schwartz Graham DY. Toothpick perforation of the intestines. *Ann Surg* 1977; 185: 64-6.
4. Meltzer SJ, Goldberg MD, Meltzer RM, Claps F. Appendiceal obstruction by a toothpick removed at colonoscopy. *Am J Gastroenterol* 1986; 81: 1107-8.
5. Bee DM, Citron M, Vannix RS, et al. Delayed death from ingestion of a toothpick. *N Engl J Med* 1989;

320: 673.

6. Ginsberg GG. Management of ingested foreign objects and food bolus impactions. *Gastrointest Endosc* 1995; 41: 33-8.
7. Cheung YC, Ng SH, Tan CF, Ng KK, Wan YL. Hepatic inflammatory mass secondary to toothpick perforation of the stomach: triphasic CT appearances. *J Clin Imaging* 2000; 24: 93-5.
8. Jensen AB, Fred HI. Toothpick pleurisy. *JAMA* 1968; 203: 988.
9. Shaffer RD. Subcutaneous emphysema of the legs secondary to toothpick ingestion. *Arch Surg* 1969; 99: 542-5.
10. Cockerill FR III, Wilson WR, Van Scoy RE. Traveling toothpicks. *Mayo Clin Proc* 1983; 58: 613-6.
11. Castleman B, Scully RE, McNeely BU. Case records of Massachusetts General Hospital. *N Engl J Med* 1972; 286: 1309-15.
12. Guber MD, Suarez CA, Greve J. Toothpick perforation of the intestine diagnosed by a small bowel series. *Am J Gastroenterol* 1996; 91: 789-91.
13. Rioux M, Langis P. Sonographic detection of clinically unsuspected swallowed toothpicks and their gastrointestinal complications. *J Clin Ultrasound* 1994; 22: 483-90.
14. Over HH, Tozun N, Avsar E. Toothpick impaction: treatment by colonoscopy. *Endoscopy* 1997; 29: S60-1.
15. Mohr HH, Dierkes-Globisch A. Endoscopic removal of a perforating toothpick. *Endoscopy* 2001; 33: 295.
16. Webb WA. Management of foreign bodies of the upper gastrointestinal tract. *Gastroenterology* 1988; 94: 204-16.
17. Drnovsek V, Fontanez-Garcia F, Wakabayashi MN, Plavsic BM. Gastrointestinal case of the day. *Radiographics* 1999; 19: 820-2.
18. Justiniani FR, Wigoda L, Ortega RS. Duodenocaval fistula due to toothpick perforation. *JAMA* 1974; 227: 788-9.
19. Hebra A, Davidoff AM, Ahmad S, Stockmann PT, Stafford PW. Intestinal perforation due an ingested foreign body: laparoscopic management. *J Laparosc Surg* 1996; 6: 95-8.
20. Wichmann MW, Huttel TP, Billing A, Jauch KW. Laparoscopic management of a small bowel perforation caused by a toothpick. *Surg Endosc* 2004; 18: 717-8.

Fig.1. Endoscopic image showing a wooden toothpick located in the duodenum.

Fig.2. Endoscopic image showing a toothpick embedded in the second portion of the duodenum (arrow) with mild hyperemia and swelling around the penetrating wound, and a polypectomy snare holding the free end of the toothpick.

牙籤造成十二指腸穿孔：一病例報告

邱信輝 陳展銘<sup>1</sup> 牟聯瑞<sup>1</sup>

郭綜合醫院 肝膽胃腸科

<sup>1</sup> 台南市立醫院 肝膽胃腸科

## 摘 要

牙籤是一種不常見被誤吞的異物，且吞下之牙籤造成胃腸道穿孔之病例並不多。然而，對已經造成胃腸道穿孔之牙籤能夠予以早期診斷和即時移除，可以降低其相關的罹病率及死亡率。我們報告一例 43 歲男性患者，以上腹疼痛表現，胃鏡檢查發現一牙籤刺穿十二指腸第二部分腸壁，經由內視鏡成功取出牙籤。之後，病人追蹤兩星期均無症狀。