



ELSEVIER

<http://intl.elsevierhealth.com/journals/ijid>

CASE REPORT

Intra-abdominal abscess caused by toothpick injury

Yu-Jang Su^{a,b,c,*}, Yen-Chun Lai^{b,d}, Chang-Chih Chen^{a,e}, Chin Tang^f^a Department of Emergency Medicine, Mackay Memorial Hospital, Taipei 10449, Taiwan^b Mackay Medicine, Nursing and Management College, Taipei 112, Taiwan^c College of Continuing Education, Aletheia University, Taipei 251, Taiwan^d Department of Anesthesiology, Mackay Memorial Hospital, Taipei 10449, Taiwan^e School of Dentistry, College of Oral Medicine, Taipei Medical University, Taipei 110, Taiwan^f Department of Internal Medicine, University of Massachusetts-Memorial Medical Center, Worcester, MA, USA

Received 17 October 2008; accepted 21 October 2008

Corresponding Editor: William Cameron

KEYWORDSToothpick;
Duodenal perforation;
Pneumoperitoneum;
Intra-abdominal abscess

Summary We present the case of a 42-year-old female who presented to our emergency department (ED) complaining of epigastric pain for four days. She had been seen in the outpatient department and ED previously for evaluation, but continued to experience epigastric pain with fever. Emergency panendoscopy was performed and a toothpick was discovered impacted in the duodenal bulb. The gastroenterologist was unable to remove the toothpick endoscopically. Computed tomography of the abdomen revealed a long and straight hyperdense foreign body, and intra-abdominal abscess formation. An emergency laparotomy was performed. The patient recovered gradually and was discharged 11 days later. She could not remember when she swallowed the wooden toothpick, but guessed that it was while out drinking. There is an old wives' tale in Taiwan that putting a toothpick in the cup while drinking beer reduces the likelihood of abdominal distention from the carbonation of the beer.

© 2008 International Society for Infectious Diseases. Published by Elsevier Ltd. All rights reserved.

Introduction

Epigastralgia is one of the commonly seen symptoms in the emergency department (ED) everyday. We presented a case of 42-year-old lady who suffered from epigastralgia for four days. Although she ever visited outpatient department of gastroenterology and ED earlier, persistent epigastric pain and eventual fever bothered her. Finally intra-abdominal

abscess caused by toothpick injury was found by panendoscopy (PES) and computed tomography (CT). Only a small part of patients can recall swallowing the toothpick. Herein we reviewed the variable presentation of toothpick injuries, and discuss how to diagnose, treat, and estimation of prognosis.

Case report

A 42-year-old female presented to our ED complaining of epigastric abdominal pain accompanied by fever. Vital signs on arrival to the ED were a temperature of 38.7 °C, heart rate of 109 bpm, respiratory rate of 20 breaths per minute and blood pressure of 93/61. She had initially been seen as an

* Corresponding author. Department of Emergency Medicine, Mackay Memorial Hospital, No. 92, Sec. 2, Chung-Shan N. Road, Taipei, Taiwan. Tel.: +886 2 25433535x3126; fax: +886 2 27621403.

E-mail address: yjsu@ms1.mmh.org.tw (Y.-J. Su).

outpatient in the department of gastroenterology for epigastric pain four days earlier. Her symptoms at that time included nausea, anorexia and heartburn with chest tightness. Outpatient panendoscopy was recommended and scheduled to be carried out several days later. Strocaine (oxetacaine) and bentlyl (dicyclomine) were prescribed. Two days later, she continued to have discomfort and presented to ED. She described her abdominal pain as epigastric, gradually worsening and constant for hours, without associated nausea, vomiting, diarrhea, constipation, radiation or fever. She denied the pain was associated with oral intake, and had not noticed any melena or hematochezia. Physical examination revealed epigastric tenderness, but no guarding of the abdominal muscles and no rebound tenderness. Laboratory tests showed a white blood cell (WBC) count of $10.1 \times 10^9/l$ and a C-reactive protein (CRP) of 2.52 mg/dl. Other laboratory results were unremarkable. Ketolorac 30 mg intramuscularly and oral acetaminophen, magnesium laxatives, metoclopramide and strocaine were administered with relief and she was discharged home. Two days later, the patient began to have fever, the epigastric pain migrated to the lower abdomen and she returned to the ED. Diffuse abdominal tenderness and rebounding tenderness were noted at that time. Blood tests showed a WBC count of $14.3 \times 10^9/l$ and a CRP of 7.24 mg/dl. Plain abdominal film revealed no significant roentgenological abnormality. No evidence of pneumoperitoneum or foreign body was seen (Figure 1). Emergency PES was performed and a toothpick was found to be impacted in the duodenal bulb with an adjacent ulcer (Figure 2). The gastroenterologist tried to remove the toothpick endoscopically with forceps, but was unsuccessful. The toothpick was lodged firmly in the duodenal bulb and surgical intervention was indicated. A computed tomography (CT) of the abdomen was performed; it revealed

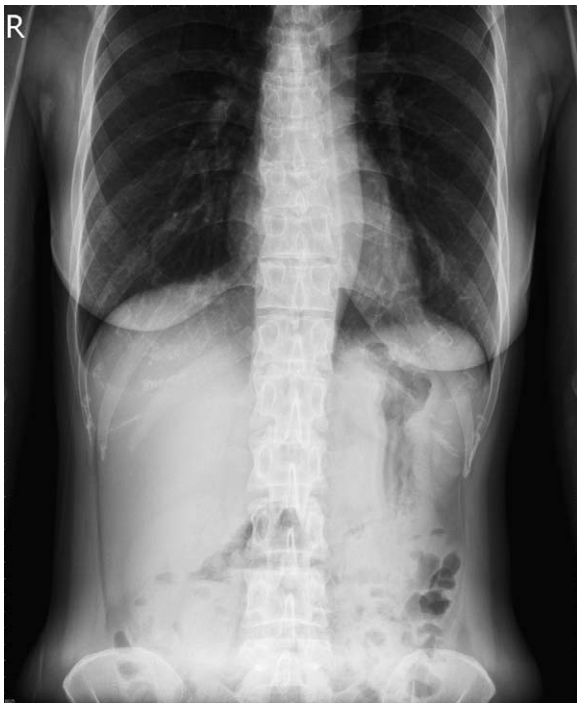


Figure 1 Plain abdominal film reveals no evidence of a foreign body or pneumoperitoneum.

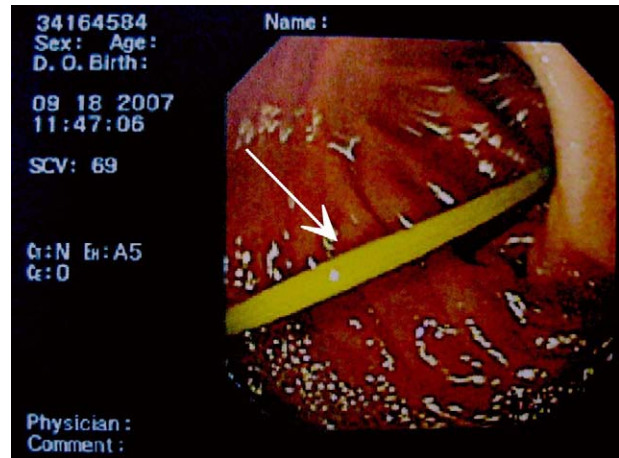


Figure 2 PES showed a wooden toothpick impacted in the duodenal bulb and a small round ulcer near this foreign body (white arrow).

a long and straight hyperdense lesion in the duodenum (Figure 3A). An intra-abdominal abscess was also found (Figure 3B). Emergency laparotomy was performed. The duodenal bulb had been perforated by the toothpick and a small amount of turbid ascites were found in Morrison’s pouch. The toothpick was removed, the injured tissue was

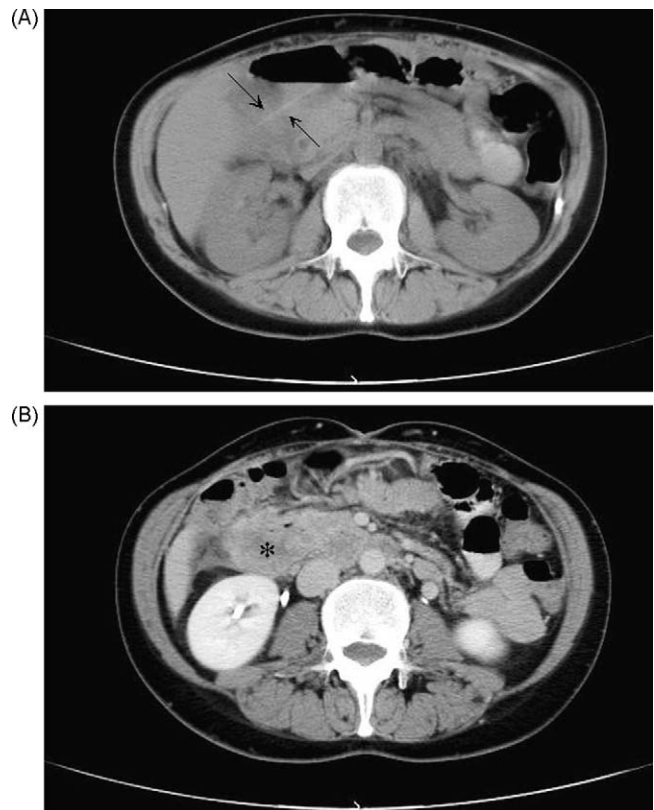


Figure 3 (A) In the non-enhanced abdominal CT, a long, straight, slightly hyperdense lesion was seen in the duodenum, indicating a foreign body such as a toothpick (black arrows). (B) In the enhanced abdominal CT, intra-abdominal abscess formation was noted (asterisk).

debrided and repaired, and a drain was inserted. The post-operative course was uneventful and she was discharged 11 days later. Parenteral antibiotics with cefoxitin 2 g every six hours were administered for one week. She surmised that she might have accidentally swallowed the toothpick while drinking beer.

Discussion

Unintentional ingestion of a foreign body is commonly seen in daily life. Ingestion of toothpicks can lead to symptoms of variable severity, organ damage and even death. The characteristics of toothpicks – long, sharp, slender, hard and indigestible – make them ideal objects to lead to potentially life-threatening complications if ingested. Their frequent use in the oral cavity and the difficulty in identifying them on plain film X-ray heighten their potential for harm. Toothpicks most frequently cause damage at the duodenum and the sigmoid colon.¹ There are many case reports describing toothpick-related injuries of the gastrointestinal (GI) tract.^{2–9} More sinister is the damage that can occur to nearby organs after penetration of the GI tract, including pericardial effusions and cardiac tamponade^{10–12}, liver abscesses,^{13–15} and duodenorenal fistulas,⁸ as well as to adjacent vascular structures.^{16,17} Systemic sepsis only adds insult to injury. Such a diagnosis can be called ‘traveling toothpick’ or ‘disease imitators’.¹⁸

The patient could not recall accidentally ingesting the toothpick. There is an old wives’ tale in Taiwan that the gaseous distention associated with drinking beer can be reduced if one puts a toothpick in the same cup as the beer. This patient suffered a duodenal perforation as a result. Only 12% of patients actually recall swallowing a toothpick, so many cases of ingested toothpicks do not seek medical attention, allowing the offending toothpick to travel down the GI tract, even to extra-intestinal organs or vessels, causing additional damage.¹ Toothpick injury is more commonly seen in the male (88%), according to a literature review. The mean age of incidence is 54.6 years old, ranging from 31 to 80 years old. Most patients (70%) presented with abdominal pain. The onset of symptoms ranged from less than 1 day to 15 years after ingestion.¹

With imaging techniques, toothpicks were apparent in 14% of cases.¹ In this case, we cannot see the toothpick in the plain film, but the hyperdense, long and slender foreign body was visualized by non-contrast CT of the abdomen. In some cases, the toothpicks are detected by sonography.^{6,16} CT images are useful to acquire clinical information, such as the location of the toothpick and the area of tissue damage.²

The definitive diagnosis was most commonly made by laparotomy (53%), followed by endoscopy (19%).¹ Wichmann et al. even reported laparoscopic management of a small-bowel perforation caused by a toothpick.⁹ In our case, intra-abdominal abscess formation was noted in the enhanced CT scan, so laparotomy is better than laparoscopic management for complete debridement. A small amount of turbid ascites

accumulated in Morrison’s pouch and some adhesions were carefully dissected by surgical intervention.

The outcome is related to the extent of damage caused by the ‘traveling toothpick’; overall mortality is 18%.¹ Our patient could not recall swallowing something, so use of endoscopy, sonography and CT is helpful to find the foreign body swallowed.

Conflict of interest: No conflict of interest to declare.

References

- Li SF, Ender K. Toothpick injury mimicking renal colic: case report and systematic review. *J Emerg Med* 2002;**23**:35–8.
- Matsubara M, Hirasaki S, Suzuki S. Gastric penetration by an ingested toothpick successfully managed with computed tomography and endoscopy. *Intern Med* 2007;**46**:971–4.
- Kanazawa S, Ishigaki K, Miyake T, Ishida A, Tabuchi A, Tanemoto K, Tsunoda T. A granulomatous liver abscess which developed after a toothpick penetrated the gastrointestinal tract: report of a case. *Surg Today* 2003;**33**:312–4.
- Steenvoorde P, Moues CM, Viersma JH. Gastric perforation due to the ingestion of a hollow toothpick: report of a case. *Surg Today* 2002;**32**:731–3.
- Porcu A, Dessanti A, Feo CF, Dettori G. Asymptomatic gastric perforation by a toothpick. A case report. *Dig Surg* 1999;**16**:437–8.
- Chiang TH, Liu KL, Lee YC, Chiu HM, Lin JT, Wang HP. Sonographic diagnosis of a toothpick traversing the duodenum and penetrating into the liver. *J Clin Ultrasound* 2006;**34**:237–40.
- Newman B. Duodenorenal fistula. *Pediatr Radiol* 2004;**34**:343–7.
- Wichmann MW, Hüttl TP, Billing A, Jauch KW. Laparoscopic management of a small bowel perforation caused by a toothpick. *Surg Endosc* 2004;**18**:717–8.
- Neumann U, Fielitz J, Ehlert HG. Perforation of the cecum by a toothpick—a rare differential acute appendicitis diagnosis. Case report and review of the literature. *Chirurg* 2000;**71**:1405–8.
- Liu YY, Tseng JH, Yeh CN, Fang JT, Lee HL, Jan YY. Correct diagnosis and successful treatment for pericardial effusion due to toothpick injury: a case report and literature review. *World J Gastroenterol* 2007;**13**:4278–81.
- Braconi L, Pretelli P, Calamai G, Montesi G, Romagnoli S, Gelsomino S, et al. An unusual case of cardiac tamponade. *J Cardiovasc Med (Hagerstown)* 2006;**7**:219–21.
- Gelsomino S, Romagnoli S, Stefano P. Right coronary perforation due to a toothpick ingested at a barbecue. *N Engl J Med* 2005;**352**:2249–50.
- Cerwenka H, Bacher H, Werkgartner G, El-Shabrawi A, Kornprat P, Bernhardt GA, Mischinger HJ. Treatment of patients with pyogenic liver abscess. *Chemotherapy* 2005;**51**:366–9.
- Cheung YC, Ng SH, Tan CF, Ng KK, Wan YL. Hepatic inflammatory mass secondary to toothpick perforation of the stomach: triphasic CT appearances. *Clin Imaging* 2000;**24**:93–5.
- Guglielminetti D, Poddie DB. Liver abscess secondary to ingestion of foreign body. A case report. *G Chir* 1999;**20**:453–5.
- Rioux M, Lacourciere L, Langis P, Rouleau M. Sonographic detection of ingested foreign bodies in the inferior vena cava. *Abdom Imaging* 1997;**22**:108–10.
- Mohanty A, Flannery M, Johnson B, Brady P. A sharp right turn. *N Engl J Med* 2006;**355**:500–5.
- Cockerill 3rd FR, Wilson WR, Van Scoy RE. Traveling toothpicks. *Mayo Clin Proc* 1983;**58**:613–6.