

Foreign Body Related Micro-Perforation Managed by Colonoscopy after A Failed Laparoscopic Exploration – A Case Report

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Abstract

Hollow organ perforation is usually resulted from foreign body ingestion or trauma in young patients without systemic disease. Surgery is the traditionally definite therapy for intestinal perforation, but endoscopic removal of foreign bodies is an alternative method in foreign body-related intestinal perforation. An exploratory laparotomy with midline incision is usually performed and provides access to the entire abdomen, but sporadic articles mentioned about perforating foreign body diagnosed and managed by laparoscopy due to its narrow vision and impalpability. We reported a case of a 28-year-old male without systemic disease suffered from intermittent peri-umbilical pain for 7 days. The patient swallowed a toothpick 15 days prior to examination. Although abdominal computed tomography revealed pneumoperitoneum in the left upper quadrant area, laparoscopy showed no evidence of hollow organ perforation. Colonoscopy successfully found and removed a toothpick at the rectosigmoid junction 3 days after laparoscopy. Laparotomy, but not laparoscopy, is the traditionally definitive diagnostic and therapeutic method, and endoscopic therapy could be an alternative and salvage method in foreign body-related intestinal perforation. (J Intern Med Taiwan 2015; 26: 35-38)

Key words: Colonoscopy, Intestinal perforation, Laparoscopy, Toothpick

Introduction

The patient suffered from intestinal perforation usually had symptoms and signs of peritonitis, such as pain and local tenderness with muscular rigidity. The peritonitis may progress into diffuse peritonitis without adequate treatment^{1,2}. A thoughtful medical history is optimal, and the history of foreign body ingestion or trauma is important to diagnose hollow organ perforation in young patients without systemic disease. Beside fluid resuscitation and antibiotics, source control is the most important therapy².

Traditionally, source control is made by surgery via midline laparotomy², but endoscopic removal of foreign bodies has some roles in this condition³. Sporadic articles^{4,5} mentioned about perforating foreign body diagnosed and treated by laparoscopy because of narrow view and impalpability. Here, we reported a young male with intestinal perforation because of a swallowed toothpick. Although laparoscopy showed no evidence of hollow organ perforation, colonoscopy successfully found and removed a toothpick at the rectosigmoid junction 3 days later.

Case report

A 28-year-old male patient without systemic disease had suffered from intermittent peri-umbilical pain for 7 days, followed by bloody stool passage for one day. Upon physical examination, his vital signs were as follows: body temperature, 36.7°C; respiratory rate, 20 times per min; heart rate, 81 beats per min; and blood pressure, 95/56 mm Hg. Physical examination revealed rebounding tenderness over whole abdomen, and his bowel sound was hypoactive. Other physical examinations were not remarkable. Laboratory data revealed leukocytosis (white blood cell, $12.58 \times 10^3 /\mu\text{L}$, normal range: $3.80\text{-}10.40 \times 10^3 /\mu\text{L}$) without anemia (hemoglobin, 15 g/dL, normal range: 13.0-17.0 g/dL). The patient denied recent traumatic history. Abdominal computed tomography (CT) revealed pneumoperitoneum in the left upper quadrant area (Figure 1, arrows), but it cannot reveal the foreign body.

Laparoscopy was performed and clear ascites without abscess formation was found. No evidence of hollow organ perforation was noted. Because micro-perforation was suspected, esophagogastroduodenoscopy and colonoscopy were suggested by the surgeon to find out possible perforation point instead of laparotomy. Esophagogastroduodenos-

copy revealed reflux esophagitis, gastritis, and duodenal ulcers without foreign body. Colonoscopy 3 days after laparoscopy showed a toothpick about 3 cm in length with one side embedded in the colon wall at the rectosigmoid junction, and it was smoothly removed by forceps (Figure 2A). The toothpick was 6.5 cm in length (Figure 2B). We reviewed his history that the patient had swallowed a toothpick 15 days prior to admission. Cephadrine was given since hospitalization. The patient was discharged with Cefaclor 2 days after colonoscopy.

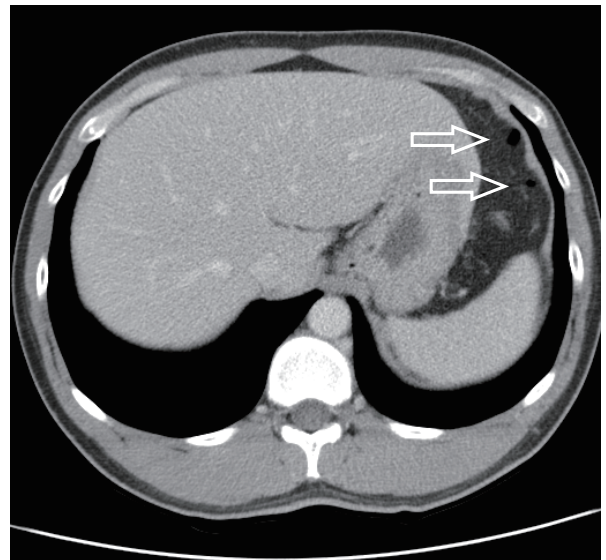


Figure 1. Abdominal computed tomography revealed pneumoperitoneum (arrows).

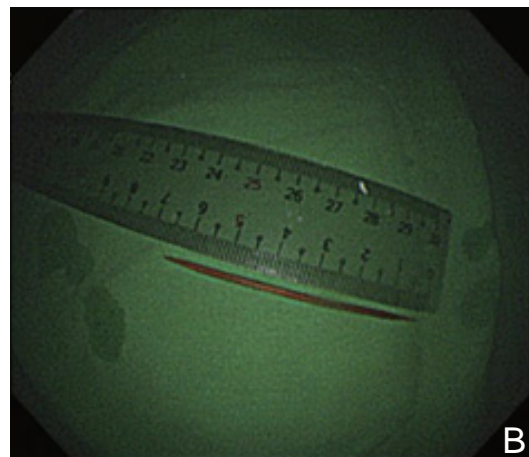
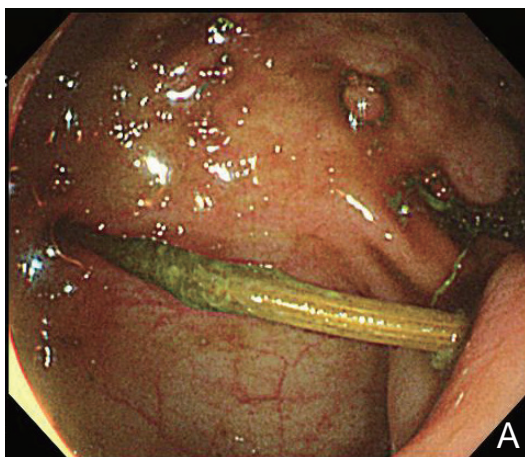


Figure 2. Colonoscopy revealed a toothpick about 3 cm in length with one side embedded in the colon wall at the rectosigmoid colon (A). The total length of the toothpick was 6.5 cm after removal by forceps (B).

Discussion

This article presented an uncommon case of hollow organ perforation because of ingested toothpick, and the perforation was difficult to diagnose by laparoscopy. Several abdominal surgeries via laparoscopy have been replaced by laparoscopy, such as laparoscopic cholecystectomy⁶, laparoscopic colorectal surgery, and laparoscopic liver surgery. Laparoscopic surgery has advantage of shorter recovery, less postoperative pain, and lower risk⁶. But limited literatures^{4,5} mentioned about foreign body-related intestinal perforation diagnosed and treated by laparoscopy, and the reasons may be narrow view and impalpability. It should be reminded that preoperative CT did not reveal the foreign body in this patient, and the condition may increase the difficulty in identification and removal of a swallowed toothpick.

Between 80% to 93% of ingested foreign bodies pass through the gastrointestinal tract spontaneously without complications⁷. But sharp, long, narrow, or pointed objects, such as a toothpick, have high risk of impaction, localized inflammation, and perforation of the gastrointestinal wall, with surgical intervention being required in 15-30% of cases^{3,8}. It may even result in death. Patients may manifest symptoms due to bowel wall penetration, peritonitis, or an obstructive process⁹.

Complications usually occur at sites of angulation or physiologic narrowing of the gastrointestinal

tract, such as the pylorus, the ligament of Treitz, the ileocecal valve, or the rectosigmoid junction³. Toothpicks were only apparent on imaging studies in 14% of the cases. The definitive diagnosis and therapy was commonly made at laparotomy via a midline incision (53%), followed by endoscopy (19%)¹⁰.

In summary, endoscopic management could be an alternative method in foreign body-related micro-intestinal perforation.

References

1. Silen W, Cope Z. Cope's early diagnosis of the acute abdomen. 22nd ed. Oxford ; New York: Oxford University Press; 2010.
2. Langel JT, Mulvihill SJ. Gastrointestinal perforation and the acute abdomen. *Med Clin North Am* 2008; 92: 599-625, viii-ix.
3. Reddy SK, Griffith GS, Goldstein JA, Stollman NH. Toothpick impaction with localized sigmoid perforation: successful colonoscopic management. *Gastrointest Endosc* 1999; 50: 708-9.
4. Owen HA, Srikandarajah N, Aurangabadkar A, Downey K, Melville D. Laparoscopic management of foreign body perforation in diverticular disease. *Ann R Coll Surg Engl* 2010; 92: W24-5.
5. Fantola G, Cenedese A, Barth X, Monneuse O. Laparoscopic diagnosis and treatment of small bowel perforation by fish bone. *ANZ J Surg* 2011; 81: 205-6.
6. Tompkins RK. Laparoscopic cholecystectomy. Threat or opportunity? *Arch Surg* 1990; 125: 1245.
7. Henderson CT, Engel J, Schlesinger P. Foreign body ingestion: review and suggested guidelines for management. *Endoscopy* 1987; 19: 68-71.
8. Webb WA. Management of foreign bodies of the upper gastrointestinal tract. *Gastroenterology* 1988; 94: 204-16.
9. Goshtasby P, Henriksen D, Lynd C, Fielding LP. Recurrent aortoenteric fistula: case report and review. *Curr Surg* 2005; 62: 638-43.
10. Li SF, Ender K. Toothpick injury mimicking renal colic: case report and systematic review. *J Emerg Med* 2002; 23: 35-8.

利用大腸鏡來處置腹腔鏡探查失敗的異物所引起之 細微腸穿孔

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摘 要

腸穿孔在沒有其他系統性疾病的年輕人常導源於異物吞食或外傷。傳統上，手術是腸穿孔的標準治療，但是吞食異物導致的腸穿孔內視鏡異物移除有它治療上的角色。一般的手術方式是腹部中線切開的剖腹探查，因為這種手術方式可以提供較好的視野；到目前為止，提到使用腹腔鏡診斷與治療異物導致腸穿孔的文獻有限，可能與腹腔鏡的視野較小與外科醫師不能用雙手觸摸有關。我們報告一位28歲男性病人間歇性肚臍四周疼痛7天，同時患者曾於15天前誤食牙籤。雖然腹部電腦斷層顯示左上腹有腹腔積氣，但是腹腔鏡手術卻沒有發現腸穿孔的證據。在腹腔鏡手術後3天，大腸鏡發現牙籤在直腸乙狀結腸交界處並且成功取出異物。在異物導致的細微腸穿孔，內視鏡異物取出是另一種治療方式。