



Duodenal Perforation Caused by Eyeglass Temples: A Case Report

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Abstract

Background: While some foreign bodies in the digestive system can be egested spontaneously or after ingesting lubricants, generally long, large, sharp, irregularly shaped, hardened and/or toxic foreign bodies frequently remain in the digestive system. These foreign bodies may cause obstruction or damage the gastrointestinal mucosa leading to bleeding, perforation, and/or acute peritonitis, and may even cause local abscess, fistula formation, or organ damage.

Case Report: A 30-year-old Chinese man was presented with acute abdominal pain while intoxicated with alcohol and swallowed two eyeglass temples. Conservative measures including ingesting lubricants to egest the foreign bodies failed. He underwent two exploratory laparotomy that showed a duodenal perforation and eventually the two eyeglass temples retrieved.

Conclusion: This is the first report describing a patient who had swallowed eyeglass temples. Patients who swallow such objects must be promptly examined and diagnosed by ultrasound, X-ray, and/or CT, and foreign bodies removed by laparoscopy or laparotomy.

Keywords: Duodenal perforation; Foreign body; Exploratory laparotomy

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Introduction

The effects of foreign bodies in the digestive system depend on their texture, shape, size, toxicity, retention site, and duration [1]. Report of foreign bodies includes dentures, glass beads, coins, pens, fish bones [2]. Some foreign bodies can be egested spontaneously or after ingesting lubricants. However, long, large, sharp, irregularly shaped, hardened and/or toxic foreign bodies frequently remain in the digestive system where they may cause obstruction or damage the gastrointestinal mucosa. This can lead to bleeding, perforation, and/or acute peritonitis, and may even cause local abscess, fistula formation, or organ damage [3-5]. This report describes a patient who was diagnosed by X-ray with a duodenal perforation caused by having ingested two eyeglass temples and was treated by exploratory laparotomy.

Case Presentation

A 30-year-old Chinese man was admitted to the First Affiliated Hospital of Jinan University for Abdominal Pain for 18 h duration. Twelve days earlier, while intoxicated on alcohol, he had swallowed two eye glass temples. After experiencing a sudden knife-like pain in the upper abdomen, he visited a local community hospital. Abdominal X-rays showed two long foreign bodies in his abdomen (Figure 1). Conservative treatment, including fasting, antibiotics, gastrointestinal decompression, and hydration was unsuccessful, and he continued to experience severe abdominal pain. The patient could not egest them both spontaneously and after administration of lubricants, and it was difficult to alter their position in the digestive tract. An exploratory laparotomy showed a duodenal perforation with foreign bodies and he was transferred to tertiary care hospital for definitive treatment.

The patient has a 5-year smoking history of 20 cigarettes per day, was an occasional alcohol drinker, and had no history of allergy. Upon admission to our hospital, he had a body temperature of 38.8°C, a pulse of 85 beats/min, a respiratory rate of 23 breaths/min, and a blood pressure of 130/80 mmHg. He was conscious, appeared sickly, and in acute pain. His heart and lung examinations were normal. A fresh, 15-cm long longitudinal incision was present on the ventral midline. He showed



Figure 1: Abdominal X-ray demonstrating two cylinder shaped metallic foreign bodies in the stomach and duodenum.

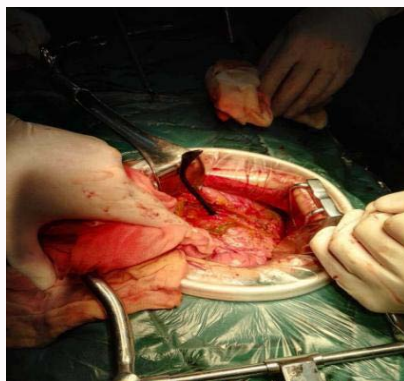


Figure 2: Laparotomy demonstrating the first eyeglass temple, about 14 cm in length, embedded in the lateral wall of the descending duodenum, along with an approximately 1-cm perforation of the duodenum.



Figure 3: Removal of the second eyeglass temple from the perforation site.

tense abdominal muscle, tenderness to light and deep palpation, and generalized rebound tenderness. Abdominal ultrasound showed a small amount of peritoneal fluid. Blood tests showed a White Blood Cell (WBC) count of $14.71 \times 10^9/L$. Coagulation, liver function, and renal function test were normal. He was diagnosed with a duodenal perforation. Because it was considered an emergency condition, laparotomy under general anesthesia was performed. Reopening of the previous abdominal incision showed a 10-mm perforation on the wall of the descending portion of the duodenum. Two eyeglass temples, about 11 cm in length were present (Figure 2). Large deposits of exudate were present around the perforation, including in the lesser omentum, gallbladder, and duodenum. The perforation was



Figure 4: Photograph showing the two surgically extracted eyeglass temples, each about 14 cm long.



Figure 5: After the perforation site was flushed with saline, a T-drainage tube was inserted. A double drainage tube was placed around the perforation, and a drainage tube was inserted into the pelvis.

leaking a small amount of green fluid when the intestine was pulled. The first temple, 13.8 cm in length and of maximum diameter 1.0 cm, was removed. A second temple, of the same size, was palpable near the pylorus through the perforation. This stem was also removed from the perforation site (Figure 2-4). These areas were repeatedly lavage with saline and cleaned. A 0.8 cm T-type rubber drainage tube was inserted into the perforation, and a double drainage tube was placed near the perforation for drainage or lavage, if necessary (Figure 5). A second drainage tube was placed in the pelvis, to allow adequate drainage. Following insertion of a nasogastric feeding tube and tube decompression, the abdomen was closed. The patient was managed by drainage, fasting, treatment with antibiotics (cefmetazole and ornidazole), and nutritional fluids. He recovered completely and was discharged from the hospital 14 days after surgery. He was found to be well at a clinical follow-up 3 weeks after discharge.

Discussion

To our knowledge, this is the first report describing a patient who had swallowed eyeglass temples. These temples were both long, curved, hard, and with sharp edges. The patient could not egest them both spontaneously and after administration of lubricants, and it was difficult to alter their position in the digestive tract. The temples entered into the pylorus and duodenum. Anatomic characteristics, including a relatively short and solid mesentery, prevented these long temples from bending or progressing further into the digestive tract. Stimulating the intestinal sphincter, contractions or prolonged indwelling of the temples caused intestinal perforation. Subsequent flow of digestive fluid into the abdominal cavity could lead to diffuse peritonitis and bowel adhesions to surrounding tissue, as well as the

invasion of blood vessels. Secondary infection may be serious and even life-threatening [6].

Findings from this patient indicate the importance of selecting an appropriate diagnostic method for patients who swallow foreign bodies. These diagnostic methods can include X-rays, ultrasound, and CT. Timely treatment of these patients is also essential, with endoscopic or surgical removal depending on the composition of the foreign body [7-9]. A second observation is that if the medical technology of a primary hospital is limited, patients should be promptly transferred to a higher tier hospital. Third, patients with acute abdominal pain and a history of swallowing foreign bodies should be suspected of having a gastrointestinal perforation; if so, an exploratory laparotomy or laparoscopy should be performed promptly [10]. Finally, patients diagnosed with gastrointestinal perforation require surgery for careful probing of involved organs. Drainage tubes should be inserted into the abdomen and pelvis, with lavage performed if necessary until recovery.

Conclusion

Swallowed eyeglass temples and other, similarly long foreign bodies, rarely cause gastrointestinal perforation. Patients who swallow such objects, however, should be promptly examined and diagnosed by ultrasound, X-ray, and/or CT. These foreign bodies should be removed by laparoscopy or laparotomy.

Ethical Approval and Consent to Participate

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Authors' Contribution

Zhiyong Dong, Jin Gong, Juncan Zhang, Wenhui Chen analyzed the patient presentation and collected the data. Hina Mohsin and Cunchuan Wang was major contributors in writing and editing of the manuscript. All authors read and approved the final manuscript.

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