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**Clinical report**

# Lower left lung abscess from combined stomach and left diaphragm perforation by an intragastric foreign body

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***Background:*** Usually children mistakenly swallow foreign bodies, and most objects are spontaneously discharged through the digestive tract without consequence. However, sometimes the objects can cause gastrointestinal perforation, with serious complications.
***Objective:*** To report the case of a 26-year-old male patient, who mistakenly swallowed a bamboo chopstick 14 years ago. The chopstick eventually perforated the gastric fundus and left diaphragm, pierced the lower left lobe of the lung, and caused a lower left lung abscess.
***Method:*** A thoracotomy was conducted to remove the foreign body and the lower left lobe of the lung, followed by a patch fundoplication.
***Result:*** The object was removed and the patient's lesions healed after surgery.
***Conclusion:*** The ingestion of foreign bodies rarely causes serious problems, but we should be vigilant to the occurrence of complications, and close follow-up should be conducted. This follow-up should include confirmation that the foreign body has passed through the alimentary tract.

***Keywords:*** Foreign body, gastric perforation, lung abscess, mistakenly swallow

Usually only children, mental patients, or prisoners mistakenly swallow foreign bodies [1]. Swallowed foreign bodies are most often spontaneously discharged through the alimentary tract, and do not cause any complications. However, very sharp or pointed objects may cause gastrointestinal perforation [2], and result in serious complications. Most objects do not cause damage to the alimentary tract, and conservative treatment is generally recommended. However, about 10%–20% of patients will need nonsurgical treatment, such as endoscopy, and about 1% will require surgery [3]. More than 80% of foreign bodies can reach the stomach through the gastrointestinal tract without injury [4]. Those bodies with a thickness of more than 2 cm, or a length of more than 5 cm tend to stay in the stomach [5]. Foreign bodies retained in the stomach can remain in the stomach cavity and may not cause any problems for a long time [6]. However, this article reports the case of a foreign body that remains in the stomach for up to 14 years, with no obvious abdominal symptoms or signs. The patient presented at our hospital because of respiratory symptoms as the initial symptom.

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## Case report

*Patient information and history*

A 26-year-old man mistakenly swallowed a bamboo chopstick 14 years ago and was unconcerned. He was not sure whether the bamboo chopstick had passed through his alimentary tract. During course of the disease, the patient had upper abdominal pain only after a huge meal, and other abdominal symptoms and signs had never emerged. Four years before presenting to us, the patient had intermittent fever, cough and expectoration, and coughed up yellow pus, foul-smelling sputum, and sometimes bloody sputum. Self-actuated anti-infection and symptomatic treatment improved the symptoms, but no systematic diagnosis or treatment were performed. Four months earlier, the symptoms became worse, the patient went to a local tuberculosis hospital, and was diagnosed with tuberculosis in his lower left lung. Anti-tuberculosis treatment was commenced, but his symptoms did not improve.

*Diagnosis*

The patient had no history of mental illness, or food addiction. He was admitted to our hospital on June 12, 2013. An examination on admission showed that the tactile fremitus of his lower left chest was weak, percussion was dull, auscultation found attenuated breath sounds; there was slight pressing pain in the upper left abdomen, no rebound pains, or no other obvious positive signs. Chest and upper abdominal CT showed a hole in the lower left lobe of the lung with a point-like high density shade down to the stomach (**Figure 1a–1d**). Endoscopy showed a black bamboo chopstick had pierced the gastric fundus (**Figure 1e**). However, endoscopy could not be used to remove the chopstick.

*Operation*

A thoracotomy was performed. During the surgery, tight adhesions were seen in the chest cavity. The adhesions were separated revealing stomach tissue had partially invaded the chest cavity by a left diaphragmatic hernia with a hernial sac of about 2 $cm^3$ and a hernial ring diameter of about 1.5 cm. The chopstick pierced the fundus into the lower left lobe of the lung, and there was a palpable cystic lesion on the lower left lobe (**Figure 1f**). A lower left lobectomy was performed to remove the bamboo chopstick (about 20 cm in length, see **Figure 1g**), the hernial sac cut, and the fundus repaired. Abdominal exploration showed no further adhesions, abscesses, or other foreign body, and then the diaphragm was sutured. Pathology after surgery showed a lower left lobe abscess and a bamboo chopstick. The patient was discharged from hospital. The patient provided written informed consent for the surgery and publication of this case report.

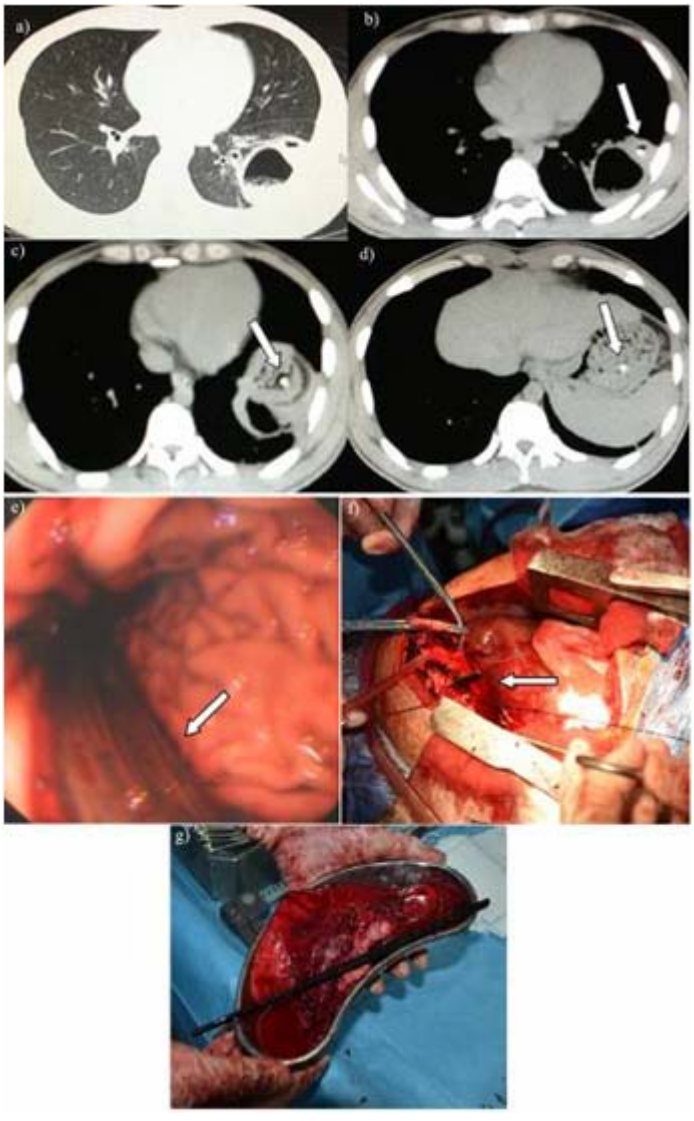


**Figure 1.** Chest CT shows a hole in the lower left lobe with a point-like calcification focus down to the stomach (**a–d**). Endoscopy revealed a black bamboo chopstick in the stomach (**e**). A black bamboo chopstick pierces the chest cavity as seen during surgery (**f**). The bamboo chopstick and lower left lobe removed (**g**).

## Discussion

Interestingly, the bamboo chopstick pierced the fundus, but did not cause severe peritonitis for we did not see any abnormality in the abdominal cavity during surgery, neither did it cause acute empyema in the chest cavity. We considered that the chopstick pierced the stomach and the diaphragm at the same time. After puncturing the diaphragm, the perforation of the stomach probably occurred together immediately, with bamboo chopstick herniated into the chest cavity because of the pressure difference between the thoracic and abdominal cavities. These events might have happened quickly, so that gastric juice did not leak into the abdominal cavity massively. To explain why the patient did not have an acute chest infection, we considered that when the gastric perforation herniated into the chest cavity, the hernia ring was small and the chopstick plugged the fistula, so no substantial drainage of gastric juice into the chest cavity occurred.

The case of a foreign body was misdiagnosed as tuberculosis of the lower lobe of the left lung, mainly because the medical history was not detailed and a detailed analysis by chest CT neglected.

## Conclusion

Usually children mistakenly swallow foreign bodies, and most objects are spontaneously discharged through the digestive tract without consequence. However, sometimes the objects can cause gastrointestinal perforation, with serious complications. The ingestion of foreign bodies rarely causes serious problems, but we should be vigilant to the occurrence of complications that may be seen through close follow-up. This follow-up should include confirmation that the foreign body has passed through the alimentary tract.

There is no conflict of interest to declare.

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