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Management of an Ingested Fish Bone in the Lung Using Video-Assist Thoracic Surgery

A Case Report

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Abstract: We report a case of lung abscess caused by an ingested fish bone that was successfully treated by minimally invasive surgery. Although cases of ingested foreign body abscess are well reported, lung abscess caused by ingested fish bone is extremely rare. To date, less than 10 similar cases have been reported in the literature. To the best of our knowledge, the case presented in this case report is the first report of this kind that was successfully treated by video-assist thoracic surgery (VATS).

A 47-year-old man was admitted to department of thoracic surgery with the complaint of continues dry cough and fever. The patient accidentally swallowed a long sharp-blade–shaped fish bone 20 days before, which perforated the upper thoracic esophagus on the right and embedded in the right upper lobe.

The diagnosis was verified by computed tomography scan and a video-assist thoracic surgery procedure was successfully performed to treat the patient. The patient survived the esophageal perforation fortunately without involvement of great vessel injury and probable mediastinitis.

This report may provide additional experience on lung abscess caused by ingested fish bones. However, it is also important to educate the public of the risks of trying to force an ingested object down into the stomach.

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Abbreviations: CT = computed tomography, VATS = video-assist thoracic surgery.

INTRODUCTION

Swallowing fish bones by accident is common in daily life. Most fish bones stick in the oropharynx and are within the province of the ear–nose–throat surgeon. Thoracic complications due to esophageal penetration by an ingested foreign body are rare, with the reported incidence being 1% to 4%.[1] Incidence of complications by ingested fish bones can be of a more significant rarity because only approximately 9% to 45% ingested foreign bodies are fish bones.[2] Fatal hemorrhage followed by aortoesophageal fistula, aortic pseudoaneurysm, and severe mediastinitis is the most common cause of death. Case reviews show that the overall mortality can approach 20%.[3] Lung abscess caused by ingested fish bones is very rare. To date, less than ten similar cases have been reported in the literature. To our knowledge, there have been no cases reported in which this condition was treated using video-assist thoracic surgery (VATS).

CASE PRESENTATION

In November 2014, a 47-year-old male public official was admitted to the department of thoracic surgery with the complaint of continuous cough and fever. The patient recalled that he had swallowed a bowl of fish soup in a drunken state twenty days before. He felt that a fish bone was impacted in his throat, and he tried several ways to pick it out. He made no gain even after having suffered great pains of trying inducing vomiting with his fingers, drinking a cup of vinegar, chewing gum and swallowing repeatedly. Before deciding to seek medical intervention, he swallowed a compact mass of rice. His sensation of foreign body impaction was relieved at that time by this self-service approach, but several days later, he began to suffer from the throat itching, dry cough, and a feeling of being very ill. He went to see doctor a week later but no abnormalities could be found by endoscopic and barium meal x-ray examinations. The dry cough continued and so did the fever that began fourteen days after the accident. A computed tomography (CT) scan at a local hospital revealed that a lung abscess and a foreign body embedded in his right upper lobe.

After double-lumen intubation and in the lateral position, exploration by VATS was carried out and a dissection of the lung abscess located in the right upper lobe tip section was performed. The 4-cm-long, sharp-blade–shaped fish bone was successfully removed. There was a very small scar visible on the esophagus but no perforation. We spent a bit more time treating hemorrhage of adhesion resulting from the stimulation of inflammation on the posterior chest wall. The surgical exploration revealed that there was no observable mediastinitis and the enlargement of the mediastinum seen in the CT film was proved to be the peripheral lung abscess. The surgical time was 50 minutes, and there was about 50 mL blood loss. Culture of the abscess showed that the patient was infected by *Staphylococcus aureus*. After antibiotic therapy followed by observation, the patient was discharged with an uneventful recovery on the seventh day after surgery. There were no pulmonary or esophageal abnormalities at a follow-up appointment 3 months later.

The case study was approved by the ethics committee of the Second Xiangya Hospital, Central South University,

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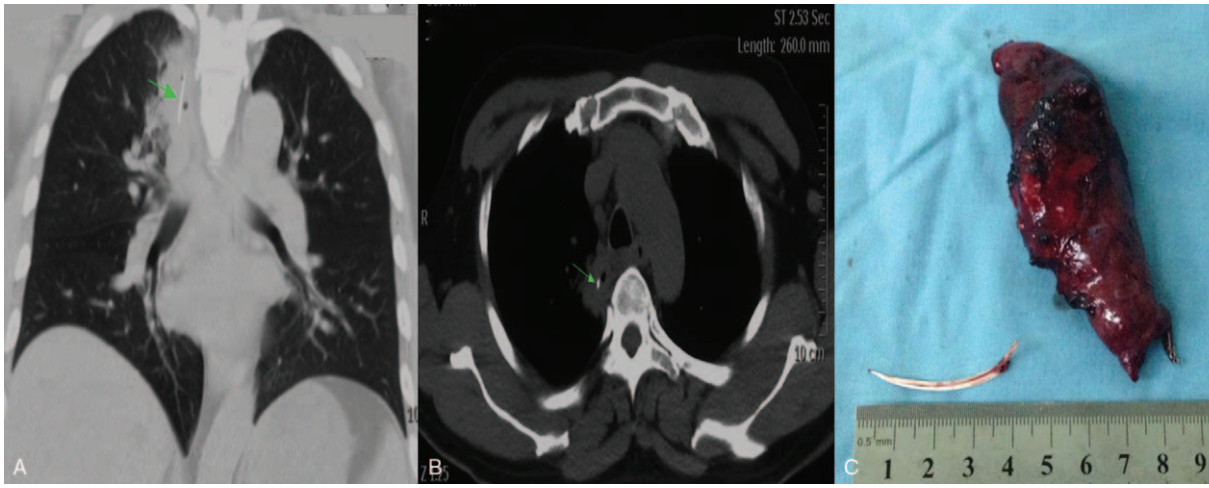

FIGURE 1. (A and B) A 4-cm-long fish bone is shown embedded in the abscess in right upper lobe. (C) the group photo of the fish bone and the lung abscess.

Changsha, Hunan, China. In addition, written informed consent was obtained from the patient before data collection.

DISCUSSION

Esophageal perforation by foreign bodies is a serious condition with a high mortality rate.[3,4] Complications such as aortoesophageal fistula, aortic pseudoaneurysm and mediastinitis are extremely difficult to treat surgically. Strategies using a thoracotomy with or without cardiopulmonary bypass or intravascular stent have been reported in the literature but often the erosion of the walls of the great vessels is too extensive to be repaired.[5]

Lung abscess caused by an ingested foreign body is extremely rare. Potential life-threatening sequela such as severe thorax/mediastinal infection, massive hemoptysis or latent hemorrhage caused by erosion can occur, although these complications are not as urgent as aortic perforation. Fish bones are the common kind of foreign bodies,[6] which are easy to ingest because of their shape and size. When a fish bone stuck in the throat, many people adopt a strategy of swallowing a compact mass of food to press the fish bone downward. However, this approach can backfire if the fish bone has already penetrated the esophageal mucosa. In this patient, we suspect that it was the swallowed rice that forced the sharp blade-shaped fish bone completely into the right upper lobe parenchyma. The process was so quick as the patient complained of no initial esophageal symptoms and it could not be found by the endoscopic or barium x-ray examinations.

Fortunately for the patient there was no great vessel involvement during injury. Although the diagnosis was supported by routine CT scanning, CT angiography before surgery is recommended to clarify the situation of vessel injury so as to reduce the probability to take adventure. The region and extent of the esophageal injury is an important consideration for treatment. There was no evidence of a visible injury to the esophagus based on CT scanning, barium x-ray and endoscopy, although there was a long period of time between the injury and treatment. These factors enable us to choose VATS, which has not been reported before, to treat this patient. The good clinical outcome showed it to be safe, minimally invasive, and feasible (Figure 1).

CONCLUSIONS

In conclusion, VATS procedure can be useful to obtain a good clinical outcome in a case of lung abscess from an ingested fish bone. However, it is also important to educate the public of the risks of trying to force an ingested object down into the stomach.[7]

REFERENCES

1. Scher RL, Tegtmeyer CJ, McLean WC. Vascular injury following foreign body perforation of the esophagus: review of the literature and report of a case. *Ann Otol Rhinol Laryngol.* 1990;99:698–702.
2. Ambe P, Weber SA, Schauer M, et al. Swallowed foreign bodies in adults. *Dtsch Arztebl Int.* 2012;109:869–875.
3. Brinster CJ, Singhal S, Lee L, et al. Evolving options in the management of esophageal perforation. *Ann Thorac Surg.* 2004;77:1475–1483.
4. Sung SH, Jeon SW, Son HS, et al. Factors predictive of risk for complications in patients with oesophageal foreign bodies. *Dig Liver Dis.* 2011;43:632–635.
5. Chen AP, Yu H, Li HM, et al. Aortoesophageal fistula and aortic pseudoaneurysm induced by swallowed fish bone: a report of two cases. *Cardiovasc Intervent Radiol.* 2011;34:S17–S19.
6. Peng A, Li Y, Xiao Z, et al. Study of clinical treatment of esophageal foreign body-induced esophageal perforation with lethal complications. *Eur Arch Otorhinolaryngol.* 2012;269:2027–2036.
7. Bieri FA, Gray DJ, Williams GM, et al. Health-education package to prevent worm infections in Chinese schoolchildren. *N Engl J Med.* 2013;368:1603–1612.