

## Case Report

# Endoscopic Management for Delayed Diagnosis of a Foreign Body Penetrating the Esophagus into the Lung

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## ABSTRACT

A 31-year-old male presented with chest pain started after eating chicken about 2 weeks earlier. Upper endoscopy and Computed tomography scan of the chest revealed a sharp chicken bone penetrating the esophageal wall into the right lung. The foreign body was removed endoscopically using a rat-tooth forceps, followed by prophylactic placement of a metal stent across the esophageal perforation site. Foreign body-induced perforation is one of the common etiologies of benign esophageal perforations. Although the primary treatment is surgery, endoscopic therapy may be appropriate in individualized cases like our patient.

**Key Words:** Endoscopic management, esophageal foreign bodies, esophageal perforation

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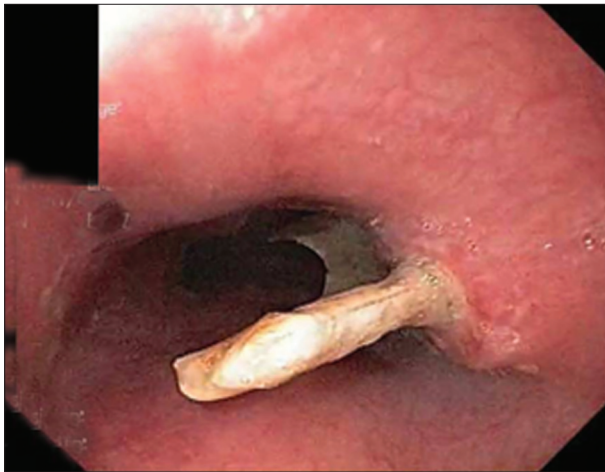
Foreign body-induced esophageal perforation is one of the common etiologies of benign esophageal perforations. Delayed diagnosis and treatment may be associated with respiratory compromise, sepsis, or hemorrhage. The mortality rate of esophageal perforation approaches 21%, especially in cases in which treatment is delayed by more than 24 h.<sup>[1]</sup> Treatment decisions should be individualized depending on the etiology of perforation, degree of mediastinopleural contamination, underlying esophageal disease, and the overall health status of the patient. We report a case of successful endoscopic management of an esophageal perforation secondary to a foreign body with delayed diagnosis.

## CASE REPORT

A 31-year-old man presented to our hospital complaining of 1-week history of lower substernal chest pain, which worsened with eating. The patient sought attention at an outside emergency department 1 week prior for similar chest pain after eating chicken. He was discharged home

after his symptoms improved. A chest X-ray was reported as normal. After discharge he was able to tolerate both solids and liquids, but developed worsening chest pain with food. He self-medicated with ibuprofen 800–1200 mg daily. The patient then presented to our institution with the above-mentioned symptoms. The complete blood count, basic metabolic panel, chest X-ray, and electrocardiogram were all normal. An upper endoscopy was performed; however, it was aborted after visualization of a sharp-edged chicken bone lodged in the midesophagus [Figure 1]. A computed tomography of the chest and neck revealed a wish bone-shaped foreign body perforating the midesophagus with extension into the right lung parenchyma [Figure 2]. There was no evidence of pneumothorax, soft tissue emphysema, or fluid collection. Repeat upper endoscopy was performed under general anesthesia in the presence of a thoracic surgery team. A 25 cm long esophageal overtube (US Endoscopy, Mentor, OH) was placed to protect the upper esophageal sphincter. The chicken bone was gently removed with a rat tooth forceps. About 1.5 cm long midesophageal perforation with friable edges was visualized. Given lack of pulmonary symptoms and no evidence of mediastinitis, the team decided on nonsurgical management. A 10 cm long fully covered self-expandable metal esophageal stent with 23 mm flared ends and an 18 mm mid-body diameter (Wallflex, Boston Scientific, Natick, MA) was deployed across the perforation site. Two endoclips (Resolution clip, Boston Scientific, Natick, MA) were used to anchor the proximal end of the stent to the esophageal wall. The patient was started on antibiotics, antacids, and pain control medications. He was

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**Figure 1:** Upper endoscopy revealed a sharp-edged chicken bone lodged in midesophagus

kept nothing by mouth for next 24 h. A subsequent barium esophagogram showed no evidence of contrast extravasation. The patient was discharged home on oral antibiotics and mechanical soft diet. The esophageal stent was removed on repeat upper endoscopy 3 weeks later. The esophageal perforation site had completely healed.

## DISCUSSION

Foreign body-induced perforation accounts for 7–14% of esophageal perforations.<sup>[2]</sup> Fish and chicken bones are the most common etiologies. Patients may be symptomatic immediately or as late as 2 weeks after the esophageal perforation.<sup>[3]</sup> The most common symptom of an esophageal injury is localized chest pain along the course of esophagus. Chest X-ray may reveal perforation-related complications, such as air, fluid collection, or abscess, in the pleural space, pericardium, or mediastinum. However, chest X-ray may be normal in some cases and is not adequate to detect the retained esophageal foreign body. Upper endoscopy is the most sensitive procedure to examine the retained esophageal foreign body and evaluate the esophageal injury. Computed tomography should also be obtained to assess the complications related to the esophageal perforation. Although the primary treatment for esophageal perforation is surgical, conservative management including endoscopic therapies may be appropriate in individualized cases. Fully covered metal esophageal stenting is a technically feasible and easy



**Figure 2:** Computed tomography of the chest showed a wish bone-shaped foreign body that had perforated the midesophagus with extension into the right lung parenchyma. There was surrounding pulmonary contusion

approach in managing esophageal perforations; and provides a good alternative to surgery.<sup>[4]</sup> However, stent migration can be high (reaching 34%). Application of endoclips by fixing the upper flared end of the stent to the esophageal mucosa may significantly reduce the migration rate.<sup>[5]</sup> Another approach could have been the use of endoclips to close the esophageal perforation site. However, in view of friable mucosa at perforation site we decided to use a prophylactic stent.

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