

Chicken Bone in the Oesophagus: A Diagnostic and Therapeutic Challenge

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ABSTRACT

Foreign body ingestion is a frequently encountered medical emergency that requires prompt evaluation and intervention. While many ingested objects pass through the gastrointestinal tract without complications, sharp foreign bodies, such as chicken bones, pose a high risk of perforation. This can lead to severe complications, including mediastinitis and abscess formation, making early diagnosis and a multidisciplinary approach essential for safe removal and improved patient outcomes. In the present case, a 49-year-old male presented to the Otorhinolaryngology {Ear, Nose and Throat (ENT)} Outpatient Department (OPD) with dysphagia, throat pain and changes in voice for two weeks. He was diagnosed with a retropharyngeal abscess, which was managed conservatively with intravenous (i.v.) antibiotics. The patient reported a history of consuming chicken before the onset of symptoms. On examination, he was haemodynamically stable. A Computed Tomography (CT) scan revealed an inverted V-shaped hyperdense foreign body penetrating the right lateral oesophageal wall and extending into the apical segment of the right upper lung lobe. A multidisciplinary team, including a pulmonologist, anaesthesiologist, ENT surgeon and gastroenterologist, opted for endoscopic removal under general anaesthesia. During the procedure, the foreign body slipped into the hypopharynx, posing an airway risk. The anaesthesiologist successfully removed the intact chicken bone using a laryngoscope and Magill's forceps. Postoperatively, the patient was conservatively managed by ENT, kept nil per oral and discharged a week later in stable condition. The present case underscores the significance of multidisciplinary coordination in managing airway emergencies during foreign body removal.

Keywords: Airway management, Laryngoscopy, Magill's forceps, Obstruction, Perforation, Pulmonary complications, Retropharyngeal abscess

CASE REPORT

A 49-year-old male presented to the ENT OPD with complaints of dysphagia, throat pain and changes in voice for the past two weeks. On examination, the patient's vitals were stable. Oropharyngeal examination showed a congested posterior pharyngeal wall with a visible bulge [Table/Fig-1]. Poor oral hygiene was noted and no visible neck swelling was observed. Laryngeal crepitus was absent. Upon sending Glycated Haemoglobin (HbA1c) for testing, the patient was diagnosed as a de novo diabetic, with no prior history. Other systemic examinations and blood parameters were normal. He had a history of chicken consumption two weeks prior, following which the pain began. The patient was haemodynamically stable upon presentation, with a blood pressure of 126/76 mmHg, a pulse of

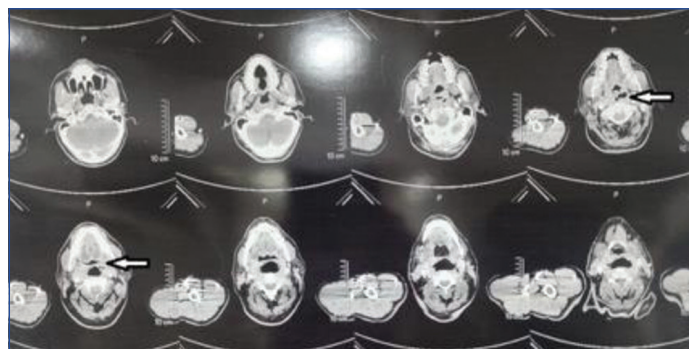
68/min, a respiratory rate of 16 breaths per minute and maintaining a saturation of 98% on room air.

An emergency Ultrasonography (USG) of the neck revealed a well-defined and an ill-defined hypoechoic collection with dense internal echoes and multiple septations within the right and left parapharyngeal spaces, respectively, medial to the common carotid artery. The right collection measured approximately 7.9×1.1×1.9 cm {Craniocaudal × Anteroposterior × Transverse (CC×AP×TR)} with a volume of 8-10 cc. Bilaterally, the entire extent of the collection could not be assessed, likely suggestive of an abscess.

Emergency Contrast Enhanced Computed Tomography (CECT) of the neck and chest showed an extensive ill-defined predominantly emphysematous, peripherally enhancing hypodense collection bilaterally in the pharyngeal mucosal space and visceral space, posterolateral to the oesophagus [Table/Fig-2]. The collection extended from the odontoid process in the oropharynx, just below the adenoids, down to the 2nd thoracic vertebra.



[Table/Fig-1]: White fill arrow showing bulge in the posterior pharyngeal wall.

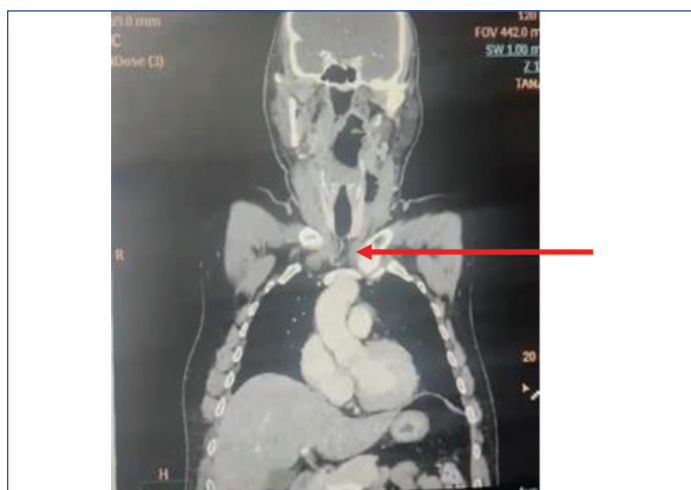


[Table/Fig-2]: White fill arrows showing emphysematous peripherally enhancing hypodense collection, bilaterally in pharyngeal mucosal space and visceral space posterolateral to oesophagus.

At the level of the 2nd thoracic vertebra, a well-defined inverted V-shaped hyperdense foreign body was seen perforating the right lateral wall of the oesophagus and penetrating into the apical segment of the right upper lobe, resulting in a small air-filled thick-walled cavity (2-3 mm thick) measuring approximately 6×6 mm, with passive atelectasis of the surrounding lung [Table/Fig-3,4]. The perforating right lateral limb of the foreign body measured 2.8 cm, with the extraluminal component being 1.7 cm and the intraluminal limb measuring 1.8 cm [Table/Fig-5].



[Table/Fig-3]: CT scan showing foreign body- chicken bone at the level of manubrium sternum in sagittal plane.



[Table/Fig-4]: CT scan showing foreign body- chicken bone at the level of manubrium sternum in coronal plane.



[Table/Fig-5]: White fill arrow showing a well-defined inverted V-shaped hyperdense foreign body at the level of 2nd thoracic vertebra, perforating the right lateral wall of oesophagus.

The CT findings posed a challenge, as the oesophageal perforation required urgent foreign body removal due to the high risk of pneumothorax. The patient was given a course of injectable

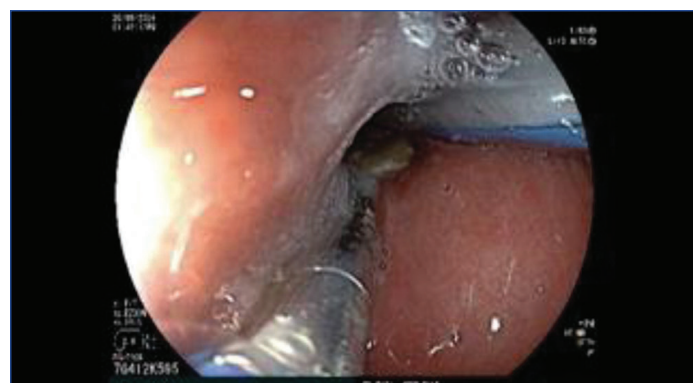
antibiotics and placed under strict glycaemic control. To minimise complications, a pulmonologist was consulted and a plan for Intercostal Drain (ICD) placement was established in case of further complications. A difficult intubation trolley was kept ready, with provisions for front-of-neck access. To ensure the best surgical strategy for the patient, the pulmonologist, anaesthesiologist, ENT surgeon and gastroenterologist adopted a multidisciplinary approach. The preferred method was endoscopic removal under general anaesthesia with a cuffed endotracheal tube.

The patient was transferred to the operating theatre and standard American Society of Anaesthesiologists (ASA) monitors were attached. Preoxygenation with 100% oxygen for three minutes was performed and the patient was premedicated with midazolam (0.02 mg/kg), fentanyl (2 µg/kg) and an induction agent, propofol (2 mg/kg). The muscle relaxant, Inj. Atracurium (0.5 mg/kg), was administered intravenously and the patient was intubated with an 8 mm cuffed endotracheal tube. Anaesthesia was maintained on a 50:50 mixture of oxygen and nitrous oxide, along with sevoflurane at a Minimum Alveolar Concentration (MAC) of 2 as the inhalational agent.

The patient was placed in the left lateral position and the endoscope was introduced to visualise the foreign body. The foreign body was located 30 cm from the incisors. Once the foreign body (a chicken bone) was identified, careful attempts were made to remove the fragment without further perforating the oesophageal lining [Table/Fig-6]. The gastroenterologist grasped the chicken bone with alligator forceps and tried to remove it; however, it slipped and became lodged in the hypopharynx. The gastroenterologist attempted to maneuver the endoscope to grasp and remove the chicken bone but was unable to do so. One wing of the chicken bone was positioned parallel to the endotracheal tube [Table/Fig-7] and there was a potential danger of the bone perforating the cuff. After quickly ensuring the haemodynamic stability of the patient, the anaesthesiologist volunteered to remove the chicken bone with the assistance of the laryngoscope and Magill's forceps. The patient's position was changed from left lateral to supine to allow for better visualisation and accessibility. Following this, a



[Table/Fig-6]: Foreign body in oesophagus as seen in oesophagogastroduodenoscopy.



[Table/Fig-7]: Foreign body stuck at the level of the hypopharynx, beside the endotracheal tube.

McIntosh laryngoscope blade size 4 was introduced to visualise the exact location of the chicken bone. After confirming the position, Magill's forceps were inserted and the intact chicken bone was successfully removed [Table/Fig-8]. The patient was extubated with Inj. Neostigmine (0.05 mg/kg) and Inj. Glycopyrrolate (0.008 mg/kg) uneventfully after completing the procedure and was shifted to the recovery room for monitoring. Conservative management was performed postoperatively. The patient was discharged on oral antibiotics and returned for the first follow-up after seven days. There was a significant reduction in the size of the posterior pharyngeal wall bulge and he was symptomatically better. Since then, he has had monthly follow-ups with no complications.



[Table/Fig-8]: Foreign body- chicken bone measuring 3 cm in length after successful removal.

DISCUSSION

Foreign body-induced perforations account for 7% to 14% of oesophageal perforations [1], with fish and chicken bones being the primary culprits. Symptoms can emerge immediately or may be delayed for up to two weeks following perforation [2]. The most common presentation of oesophageal injury is localised chest pain along the oesophagus. If a bone punctures the oesophageal wall, it can damage surrounding structures, potentially causing complications such as bleeding, development of aorto-oesophageal or tracheo-oesophageal fistulas, mediastinitis and abscesses [3,4]. Similar studies have shown the following case presentation, treatment and outcome [Table/Fig-9] [5-7].

Study	Case presentation	Treatment method	Outcome
Schlachterman A et al., (2017) [5]	56-year-old female, oesophageal perforation	Endoscopic cap-assisted removal	No complications, discharged safely
Kim JS et al., (2008) [6]	42-year-old female, bone in prepyloric antrum	Grasping forceps removal+endoclippping	Pain resolved, discharged safely
Luo Q et al., (2025) [7]	57-year-old male, bone embedded in oesophageal wall	Pushed into stomach, retrieved using a condom	No complications, discharged safely
Present case	49-year-old male, contained oesophageal perforation	Laryngoscope+Magill's forceps removal	No complications, discharged safely

[Table/Fig-9]: Comparison of present study with similar studies [5-7].

The variety of removal techniques highlighted in these case reports emphasises the significance of tailored management strategies [5-7]. While the present case was effectively handled using a laryngoscope and Magill's forceps, other methods, such as endoscopic caps, grasping forceps and protective containment techniques, have also proven successful in foreign body retrieval. These findings collectively support the necessity of a case-specific approach to minimise trauma and ensure optimal patient outcomes.

Foreign body obstruction presents multiple anaesthesia-related complications that require careful perioperative management. Airway compromise is a primary concern, as impacted foreign bodies can obstruct the airway and complicate ventilation. Therefore, securing the airway before the procedure is crucial. A

thorough preoperative evaluation should assess potential swelling or obstruction and in cases of significant airway distress, awake fiberoptic intubation or rapid sequence intubation may be necessary. Positive pressure ventilation during induction can worsen proximal airway obstruction, potentially leading to complete blockage. To mitigate this risk, inhalational induction via a face mask or intravenous induction with spontaneous ventilation is preferred for proximal foreign bodies [8].

Another critical issue is the risk of aspiration, as oesophageal foreign bodies can become displaced and enter the trachea, increasing the potential for pulmonary complications. Preventive strategies include ensuring that the patient is adequately nil per os before the procedure, using cuffed endotracheal tubes for intubation and applying cricoid pressure during induction [9]. Additionally, complications during retrieval may occur, particularly due to the potential for oesophageal perforation or damage to adjacent structures. Endoscopic procedures can lead to increased bleeding, haemodynamic instability, or even pneumothorax. Therefore, careful monitoring is required and ICDs, as well as an emergency airway trolley, should be kept readily available to address any complications promptly [10]. A well-coordinated, multidisciplinary approach is essential to ensuring patient safety during foreign body removal.

A penetrating foreign body in the throat can occur in both children and adults. Approximately 80-90% of swallowed foreign objects pass through the gastrointestinal tract on their own, while 10-20% require non surgical treatment (such as endoscopy) and around 1% necessitate surgery [11]. The risk of loco-regional complications, such as a retropharyngeal abscess, is rare and largely depends on the type of foreign body and the timeliness of treatment. A retropharyngeal abscess can progress to mediastinitis, which poses a life-threatening risk [12].

Patients may exhibit symptoms like fever, sore throat, dysphagia, dysphonia (hot potato voice), drooling, neck stiffness, respiratory distress and signs of sepsis. Neck movements may cause severe pain, limiting neck extension. Upon examination, visible swelling on the posterior pharyngeal wall, along with congestion, may be observed [13].

Alateral neck X-ray is typically sufficient for diagnosis, with a diagnostic threshold of more than 7 mm of prevertebral soft-tissue extension at C2 and 14 mm at C6 in children. In adults, the thresholds are over 7 mm at C2 and 22 mm at C6. CT scans are useful for identifying infections in their early stages, distinguishing between cellulitis and abscesses and identifying which deep neck spaces are affected [13]. If an abscess is detected, immediate surgical intervention is advised, along with the initiation of intravenous broad-spectrum antibiotics. However, since the patient began responding very early to the antibiotics, we chose to proceed with a medical management approach for the abscess.

The surgical approach depends on the abscess's location and proximity to other neck structures. It is crucial to assess whether intraoral drainage is possible or if external drainage is required. External drainage can be performed through anterior and posterior approaches. Patients suspected of having ingested foreign bodies in their oesophagus or gastrointestinal tract should be referred to a gastroenterologist for further assessment and management. If not removed, these foreign bodies can cause mucosal ulceration, inflammation, or infection, as well as paraoesophageal or retropharyngeal abscesses, mediastinitis, empyema, oesophageal perforation and aorto-oesophageal fistula. Endoscopic removal of ingested batteries is critical due to the risk of pressure necrosis and caustic injuries from electrical currents or alkali leakage in the oesophagus [14].

CONCLUSION(S)

The ingestion of foreign bodies, particularly sharp objects such as chicken bones, presents serious complications, including

oesophageal perforation, retropharyngeal abscess, mediastinitis and airway obstruction. Retropharyngeal abscesses are uncommon in adults and represent a life-threatening emergency. Diagnosis relies on clinical and radiological findings, taking into account any comorbidities. Management involves the use of antibiotics and surgical drainage. A retropharyngeal abscess resulting from a penetrating foreign body, while rare, requires a high index of suspicion. Successful management necessitates a collaborative effort among anaesthesiologists, ENT surgeons and gastroenterologists to ensure timely and safe intervention. Various extraction methods, including endoscopic retrieval, forceps-assisted removal and innovative techniques like condom-assisted extraction, highlight the need for adaptable approaches to optimise patient outcomes. Anaesthesia-related concerns, such as airway obstruction, aspiration risk and procedural complications, require perioperative planning. Ensuring airway security, selecting appropriate induction techniques and having emergency equipment readily available are essential for minimising risks.

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