Management Strategies for Ingestion of Foreign Objects in the Laryngopharynx

Chin-Lung Kuo 1,2,3

1 Department of Otolaryngology, HsinChu Armed Forces General Hospital, Taipei, Taiwan
2 Institute of Brain Science, National Yang-Ming University, Taipei, Taiwan
3 Department of Otolaryngology, Taoyuan Armed Forces General Hospital, Taiwan

Introduction

Unintentional ingestion of foreign bodies is a common occurrence in clinical practice. A potentially fatal event can increase morbidity and occasionally even cause disastrous consequences [1]. Despite the possibly fatal consequences, however, our literature review revealed no available documented flowchart to guide management of foreign body ingestion in the laryngopharynx. Hence, we propose a flowchart illustrating suggested management strategies for ingestion of foreign objects in the laryngopharynx. In addition, we also report an extremely rare case of a dramatically developing huge epiglottic abscess with airway compromise in a patient who accidentally ingested a fish bone.

Unintentional foreign body ingestion

The unintentional ingestion of foreign bodies is a common clinical problem, especially in the pediatric population. In adults, incidents of accidental foreign body ingestion are more common in certain vulnerable groups, such as prison inmates and patients suffering from psychiatric disorders, developmental delays, old age, or alcohol intoxication [2-4]. The types of foreign bodies most commonly ingested by children are fish bones and coins, and the types of foreign bodies most commonly ingested by adults are fish bones and chicken bones [5,6]. Most ingested foreign bodies pass through the gastrointestinal tract within one week [7]. In certain cases, however, ingestion of foreign bodies can pose potentially lethal risks, which require surgical exploration. In spite of the possibly fatal consequences, a flowchart to guide management of foreign body ingestion in the laryngopharynx is not available yet in the literature. Here, we propose a flowchart illustrating suggested management strategies for ingestion of foreign objects in the laryngopharynx. Prior to the detailed description of the management strategies, the author reports an extremely rare case of a dramatically developing huge epiglottic abscess with airway compromise in a patient who accidentally ingested a fish bone.

A dramatically developing huge epiglottic abscess

A 32-year-old man accidentally ingested a fish bone two days before visiting our clinic. He experienced a constant stabbing pain in his throat and progressive odynophagia. He had asked for medical advice at a primary health care facility, where an endoscopic examination revealed no remarkable findings. However, the symptoms increased in severity and were accompanied by progressive hoarseness. On examination he had muffled voice and mild dyspnea. An endoscopic examination showed a diffusely swollen epiglottis (Figure 1). CT scan of neck revealed an epiglottic abscess (Figure 2). The patient underwent an emergent incision and drainage of the abscess with postoperative antibiotic therapy. One week later, the abscess completely subsided.

Clinical Presentations

The presentation of an impacted foreign body in the laryngopharynx varies according to size and site of impaction [8]. Patients may be asymptomatic or may present with respiratory distress, voice change, frequent choking when swallowing, dysphagia, and odynophagia [1,9]. In general, history of foreign
Body ingestion, acute onset of dysphagia, drooling, and the inability to swallow saliva are key symptoms in diagnosing the accidental ingestion of foreign bodies [5]. However, infants, children, and the mentally impaired do not necessarily complain of any symptoms; therefore, caregivers and clinicians should be aware of these risks and include appropriate preventive measures as part of their routine daily practice.

Evidence shows that more than 80% of foreign objects are passed uneventfully, with surgical intervention rates only ranging from 12% to 16% [2,10,11]. A compilation of results from multiple studies indicated that mortality is a rare outcome, with an estimated rate of 0.033% (no deaths in 852 adults and 1 death in 2206 children) [2,3,12-19]. Nevertheless, it is the low rates of morbidity and mortality that underline the value of the rare case report. To our knowledge, no similar cases with dramatically developing huge epiglottic abscess have been reported in the literature. This case suggests that the possibility of a rapidly developing epiglottic abscess (e.g., within two days as seen in this case) should always be considered as a potentially fatal complication of a fish bone. A missed or delayed diagnosis can lead to respiratory distress and even complete airway obstruction or death.

**Management strategies for foreign body ingestion in the laryngopharynx**

A flowchart for management of ingestion of foreign objects in the laryngopharynx is shown in figure 3. First and most importantly, stridor or cyanosis may indicate airway obstruction and constitute a medical emergency requiring immediate assessment and treatment. It is important that patients undergo a thorough examination of the oral cavity and oropharynx under good illumination given that impaction of foreign bodies, particularly fish bones, typically occurs in the tonsils or the base of the tongue [5]. If the ingested foreign body is visible, it can be retrieved with forceps or high-volume suction [20].

When an oral examination fails to detect the location of foreign bodies in patients with persistent symptoms, flexible endoscopes may be used to examine the laryngopharynx. Prior to endoscopic examination; however, plain lateral radiographs of the neck may be useful to identify the location, size, shape, type, and number of ingested foreign bodies as well as potential cervical complications caused by impaction [2,21]. Radiopaque foreign bodies are easy to diagnose using radiographs; however, radiographs have limited usefulness in the detection of radiolucent foreign bodies, such as fish bones, chicken bones, wood, plastic, glass, and thin metal objects [2]. Additionally, a chest x-ray, although not required, may be useful in determining whether the foreign body has been aspirated into the tracheobronchial tree [20]. A CT scan of neck may also be helpful when plain lateral radiographs fail to detect the foreign body, although CT scans may also be unable to detect radiolucent objects [6,22].

If a patient continues to suffer from persistent symptoms of foreign body ingestion, despite receiving a negative radiographic evaluation, flexible endoscopes should be used to systematically examine anatomic subsites of the pharynx and larynx, including the tonsillar fossa, vallecula, pyriform sinus, epiglottis, and cricopharyngeus. It should be noted that foreign bodies occasionally drop into the airway whether or not an attempt is made to retrieve it, which can cause airway obstruction during endoscopic
Figure 3. Flowchart for management of ingestion of foreign objects in the laryngopharynx.
examinations. Therefore, medical personnel must be prepared to perform an immediate tracheostomy or cricothyroidotomy if necessary [23].

By using a working channel endoscope, foreign bodies can be carefully removed from the laryngopharynx in an office-based setting. Working channel endoscopes provide physicians with improved orientation when seeking to grasp a foreign body with forceps, particularly when patients suffer from severe trismus. However, this instrument is not available at every hospital [24]. Thus, foreign bodies are usually removed transorally using curved laryngeal forceps under the guidance of flexible endoscopy or flexible laryngeal videoscopy. Specialized training is essential for clinicians who wish to master the transoral, endoscopy-guided technique for foreign body retrieval, as patients are awake during the procedure and are therefore prone to a strong gag reflex, particularly if they have an overhanging epiglottis. Administering adequate local anesthesia to the oropharynx and hypopharynx may help decrease the gag reflex, which in turn increases the likelihood that the foreign body can be successfully retrieved. In clinical practice, failures of transoral, endoscopy-guided techniques to retrieve foreign bodies are usually associated with inexperienced physicians, uncooperative patients, or poor visualization of foreign bodies. In these circumstances, objects can be removed by microlaryngoscopy under general anesthesia [23].

While physical and/or endoscopic assessment and retrieval of ingested foreign bodies plays an important role in relieving patients’ symptoms, the primary objective of these techniques is to avoid secondary complications. In clinical practice, many patients with complaints of foreign body ingestion present no physical and/or radiographic evidence of foreign bodies, in spite of persistent symptoms. In these cases, it may be reasonable to assume that the object has been swallowed, in which case symptoms may be associated with local tissue damage and inflammation. In rare instances, however, the foreign body may have been embedded in the tonsillar base of the tongue, pyriform sinus, or soft tissue in the laryngopharynx. The risk of embedding is particularly high in cases where the foreign body is transversely oriented or sharp. In these cases, serious or even fatal complications may develop, such as deep neck abscesses, mediastinitis, airway obstruction, or vascular complications resulting from penetration of the carotid artery or internal jugular vein [25-27]. These critical complications may require urgent surgical exploration or intervention [28], for instance, microlaryngoscopic incision and drainage of an abscess (as seen in our case), or neck exploration using an external cervical approach. Patients and clinicians should be aware that delayed-onset complications can manifest without warning. For these patients, rigorous follow-up is highly recommended until symptoms are resolved.

Patients suspected of having an ingested foreign body in their esophageal or gastrointestinal tracts should be referred to a gastroenterologist for further evaluation and management. Foreign bodies that are not removed from the esophagus can cause extensive health issues, such as mucosal ulceration, inflammation or infection, para-esophageal or retropharyngeal abscess formation, mediastinitis, empyema, esophageal perforation, and aorto-esophageal fistula formation [29]. Endoscopic retrieval of ingested batteries is particularly urgent as potentially serious complications can arise from (1) direct pressure necrosis and (2) caustic injuries caused by the passage of local electrical currents or alkali leakage in the esophagus [30].

Similarly, pulmonologist referrals are required for patients with a history of suspected foreign body aspirations in the airway. Aspirated foreign bodies may present no symptoms for over a week [31]. When symptoms do manifest, they can include a wide range of clinical presentations. Patients who suffer a sudden onset of coughing with or without wheezing and present absent or decreased breath sounds when examined with a stethoscope may meet diagnostic criteria for foreign body aspiration. A foreign body located in the subglottis may cause a voice change, recurrent or persistent cough, or stridor. Foreign body aspiration in the airway requires a fiberoptic bronchoendoscopic examination as the condition can cause total or near-total occlusion of the airway within a short time, leading to hypoxic brain damage or even sudden death.

Conclusion

The ingestion of foreign bodies in the laryngopharynx is a common emergency in otolaryngological practice. Complications are rare, but when they do arise they can be serious or even fatal. An assessment of medical history and a physical examination are critical to accurate diagnosis. It is important for clinicians to realize that attempts to extract the foreign body can increase the risk of airway obstruction, induce laryngeal spasms or edema, or even result in death [23]. It should also be noted that negative endoscopic and/or radiographic findings do not necessarily indicate the absence of a foreign body. Close observation is needed to exclude the possibility that a foreign body has been swallowed and to identify complications caused by a foreign body that has penetrated or been embedded in the soft tissue of the aerodigestive tract.

References


Complementary Materials

Appendix video 1: A huge epiglottic abscess
https://www.youtube.com/watch?v=gEox5HBICFQ

Appendix video 2: One week after surgery
https://www.youtube.com/watch?v=15irSVC1TC4