

Otorhinolaryngology

KEYWORDS: Foreign bodies, aerodigestive tract, retropharyngeal abscess, button battery

FOREIGN BODIES OF AERODIGESTIVE TRACT AND DISTINCTNESS IN THEIR MANAGEMENT: A CASE SERIES



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OF PURE MEDICAL RESEARCH**ABSTRACT****Introduction**

A foreign body (FB) is an object or a substance which is foreign to the location where it is found. FBs in the aerodigestive tract are frequently encountered in both adults and children. Their consequences are greatly variable, from mild disturbances that may not require hospitalization to life threatening complications.

Background

This is a case series of 6 cases of FB involving aerodigestive tract and their diagnosis and management. The cases are patients who came to the Otorhinolaryngology outpatient department and emergency room of our hospital.

Results

Our study includes cases of FB in the nose, nasopharynx, supraglottic region, post cricoid region, esophagus and trachea. Each case was approached in a unique manner depending upon the location and time of presentation. One case was managed under local anesthesia while the other five cases were managed under general anesthesia.

Conclusion

FB of aerodigestive tract is a common emergency in ENT which needs timely management and each case requires distinct way of management based upon the type of foreign body, the location and the time of presentation, in order to avoid further complications.

INTRODUCTION

Foreign body (FB) of aerodigestive tract is a common emergency presenting to Otorhinolaryngology outpatient department as well as emergency department. Timely recognition and management are critical factors to avoid further complications. Most common foreign bodies encountered in pediatric age group include coin, seeds, button batteries whereas adult cases usually present with ingestion of fish bone, chicken bone. Management of these cases varies depending upon the type of FB, location of FB and the time of presentation. This study comprises of six cases of aerodigestive FB which presented to Department of E.N.T., Mysore Medical College & Research Institute and the distinctness with which each case was approached.

MATERIALS AND METHODS

This is a retrospective study of six cases of aerodigestive foreign bodies that attended the Department of Otorhinolaryngology in a tertiary care teaching hospital. The age, presenting clinical features,

imaging location, type of FB, interval between presentation, type of anesthesia and distinctness with which each case was approached and treated was studied.

Brief clinical profiles of the six cases have been discussed below.

Case 1: FB nose

A 5-year-old boy came with complaints of accidental insertion of a known FB (button battery) in his right nasal cavity 1 day back. On examination, the child was conscious, oriented and afebrile. His vitals were normal. On anterior rhinoscopy, there was blood-stained discharge present in right nasal cavity. Left nasal cavity was free. The child was not cooperative for probing. X-ray nasal bone lateral view was taken which showed a coin shaped radio opaque FB in the right nasal cavity (Fig.1). The child was taken up for emergency endoscopic removal of FB under general anesthesia (GA), and the FB was confirmed to be a button battery. There was ulceration of the adjacent septum and inferior turbinate. Antibiotics, analgesics and saline drops were prescribed and patient was discharged after 24 hours. Follow up after 1 week showed intact septum and normal inferior turbinate on the right side.

Case 2: FB nasopharynx

A 1-year-old girl was brought to our emergency unit with history of insertion of a screw into her nasal cavity. The child was stable. On examination, there was no FB visualized in bilateral nasal cavities. X-ray nasopharynx lateral view, X-ray chest and neck were done which revealed an irregular shaped radio opaque FB in the nasopharynx (Fig.2). The child was taken up for emergency removal of the FB under GA. Considering the location of the FB and to avoid further injury of the nasal cavity during endoscopic removal via trans-nasal approach, the FB was removed by oral route by placing the child in Rose position and application of Boyle-Davis mouth gag. The FB was confirmed to be a screw. The child was discharged the following day.



Fig.1: X-ray nasal bone lateral view showing a radiopaque FB in the right nasal cavity. Note the double rim appearance – significant of button battery.

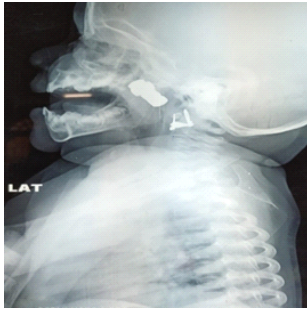


Fig.2: X-ray nasopharynx lateral view showing radio opaque FB (screw) in the nasopharynx.

Case 3: FB supraglottic region

2-year-old boy was brought to the emergency unit with history of metallic FB ingestion. However, the child did not have any respiratory distress. X-ray neck lateral view and X-ray chest revealed a radio opaque FB in the supraglottic region (Fig.3a,b). In order to prevent dislodgement or aspiration of the FB during shifting the child to OT, the FB was removed in the emergency unit using a pediatric laryngoscope after wrapping the child in a bedsheet to secure the arms and legs (Fig.3c) and the patient was discharged after observation for 24 hours.

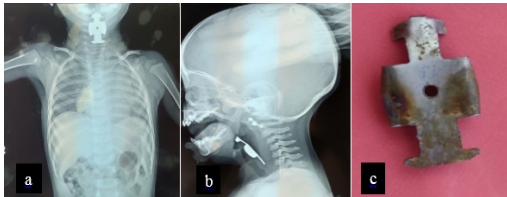


Fig.3: (a,b) Radio opaque FB in the supraglottic region; (c) Retrieved FB (metal).

Case 4: FB post cricoid region

40-year-old female came to our OPD with pricking sensation in the throat for 3 days. She had a history of consuming fish prior to the onset of symptoms. On examination the patient was afebrile and vitals were stable. There was pooling of saliva in bilateral pyriform fossa on indirect laryngoscopy. X-ray lateral view soft tissue of the neck was taken as a preliminary investigation and showed widening of prevertebral soft tissue along with a radio opaque shadow at C4 level (Fig.4a). Further, a Computed Tomography (CT) scan showed presence of collection in the retropharyngeal space and a FB at the level of C5-C6 vertebrae (Fig.4b). Patient was started on broad spectrum IV antibiotics and analgesics and taken up for rigid esophagoscopy under GA. Intraoral drainage of the pus was done but due to presence of edema we failed to trace the FB.

Patient was kept nil per oral for 5 days and under antibiotic coverage, following which CT scan was repeated which showed resolved retropharyngeal abscess with FB visualized at the post cricoid region. Laryngeal telescopes showed fish bone impacted in the post cricoid which was removed using foreign body removal forceps (Fig.4c,d), thus avoiding the risk of displacement of FB during intubation. IV antibiotics were continued for a period of three more days and she was discharged after removal of Ryle's tube on day 4 post FB removal.

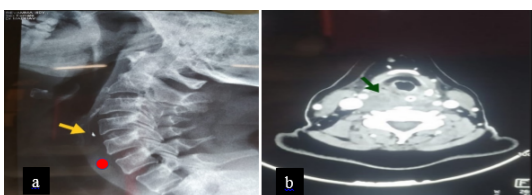


Fig.4: (a) X-ray soft tissue neck lateral view showing prevertebral widening (red dot), FB lodged at C4 level (yellow arrow); (b) CT scan showing collection in the retropharyngeal space (green arrow).

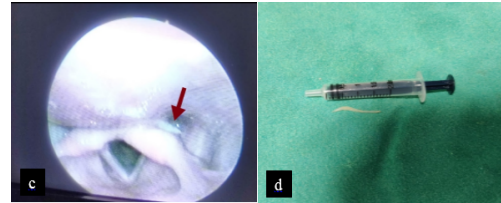


Fig.4: (c) Fish bone impacted in the post cricoid region (red arrow); (d) Extracted FB – fish bone.

Case 5: FB esophagus

A 52-year-old female presented with one day history of throat pain and dysphagia. She also had a history of consuming chicken one day back. X-ray neck lateral view was asked for and showed presence of FB at C6-C7 level (Fig.5a). On examination, patient was afebrile with no respiratory distress. CT scan confirmed the presence of a linear vertical hypodensity present in the cervical oesophagus at the level of C7 vertebrae, no soft tissue oedema was noted (Fig.5b). Patient was taken up for emergency rigid esophagoscopy and FB removal. Due to presence of short neck, the patient had a difficult intubation. Intraoperatively the FB was not located at the level of cervical oesophagus. After multiple attempts the FB was traced impinging into posterior wall of the oesophagus at a much lower level. The FB was a sharp piece of chicken bone (Fig.5c). The patient was started on broad spectrum antibiotics and was discharged after 3 days.

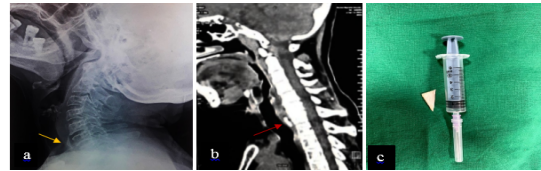


Fig.5: (a) X-ray soft tissue neck lateral view showing presence of radio opaque FB at C6-C7 level (yellow arrow); (b) CT neck showing linear vertical hypodensity present in the cervical oesophagus at the level of C7 vertebrae (red arrow); (c) Chicken bone removed by rigid esophagoscopy.

Case 6: FB trachea

A 3-year-old male was brought to our OPD with history of ingestion of button battery. On examination the child had cough, however the child was not in stridor. On chest auscultation there was reduced air entry into the left lung. Immediately X-ray neck lateral view was done and showed presence of the FB in trachea in sagittal orientation (Fig.6). The child was immediately taken to operation theatre for rigid bronchoscopy under general anaesthesia. The FB was removed successfully from lower trachea without any complications. The patient was given antibiotics and nebulisation. The child was discharged after 24 hours.

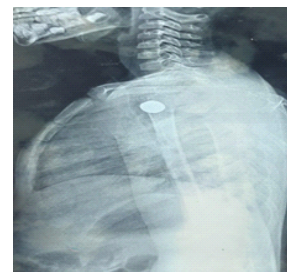


Fig.6: X-ray neck lateral view showing button battery in trachea in sagittal orientation.

RESULTS

Out of six cases in our series, 4 were paediatric cases and 2 were adults; M:F ratio being 1:1. Location of the foreign bodies included nose, nasopharynx, supraglottic region, post cricoid region, oesophagus and trachea. One among these cases (fish bone post cricoid region) had a late presentation i.e., after 3 days, however other cases presented within 24hrs. Five cases were managed under

general anaesthesia, whereas one case i.e., supraglottic FB was handled in the emergency unit.

Mean time of stay in the hospital was 2.5 days, where the case of FB of post cricoid region with retropharyngeal abscess had a longer stay in view of continuation of IV antibiotics, also this case required a second attempt of removal of FB due to failure of tracing it the first time due to oedema. All our cases recovered well. There were no deaths in our series.

DISCUSSION

As per literature, foreign bodies on an average are responsible for 11% of all ENT emergencies.¹ Foreign bodies of aerodigestive tract are common in paediatric age groups, who usually present with ingestion or insertion of inedible substances. However, cases of FB impaction in adults, mainly edentulous individuals are not very rare. Outcome of these cases depends mainly upon the type of the FB, its location and the time of presentation.

In our series two cases involved presence of button batteries. Button battery in aerodigestive tract can lead to devastating complications. Its chemical composition is alkaline corrosive material.² Undiagnosed cases of button battery in the nasal cavity can lead to septal perforation, ulceration of the lateral wall, saddle deformities as early as within 24 hours.³ Ingesting of a button battery has a risk of rapidly progressive damage to oesophagus, due to flow of electrical current from the positive to negative terminals of the battery bridged by the mucosa, pressure necrosis by mucosal compression and caustic injuries due to leakage of alkaline electrolytes and coagulative necrosis.⁴

Imaging plays a major role and the first imaging step in suspected FB ingestion is generally radiograph. CT scan can be considered in cases where there is no FB visualised on radiograph or if there is clinical concern for an abscess.⁵

Decision regarding the time and approach to removal of the FB plays a vital role.

Transnasal Endoscopic approach Vs Transoral route

The first case was managed via endoscopic transnasal approach, however in the second case of nasopharyngeal FB endoscopic transnasal approach would have been difficult considering the diameter of the nasal cavity in the one-year-old and the size of the FB, hence decision of extracting the FB through the transoral route helped in avoiding further mucosal injuries.

General Anaesthesia Vs management in Emergency unit

Location of FB in the supraglottic region (case 3) would pose a challenge for administration of GA as well as impose a potential risk of further dislodgement of the FB with any further delay while shifting the patient. Hence quick action during such scenarios plays a major role.

Immediate Vs Delayed exploration of FB hypopharynx with retropharyngeal abscess

Cases with established retropharyngeal abscess should be treated initially with antibiotics followed by a repeat CT scan to look for resolution of the abscess. However, the FB itself being the sole reason for the formation of the abscess has to be addressed at the earliest once the oedema subsides. The removal of FB in the hypopharynx under direct visualization with a rigid endoscope is one among the most reliable methods enhanced by the recent advancement in endoscopic illumination.⁶

Migration of the FB

FB migration can be a major complication in the management of FB oesophagus as in our case. Therefore, of the FB into the submucosal plane should always be considered when there is difficulty in locating the FB intra-operatively. Lu et al. reported two cases of buried foreign bodies in the oesophagus, managed using

Endoscopic Submucosal Dissection (ESD), which is considered a safe and effective method for managing such cases.⁷

Aspirated or Ingested FB

Aspirated FB can present either immediately or with stridor or can have a late presentation with chronic cough and pneumonia. Detailed history plays a vital role in these cases. Classical teaching states that circular FB in oesophagus is aligned in coronal plane whereas aspirated FB in the trachea assumes a sagittal orientation as in our case. This is due to the presence of rigid spine posterior to the collapsible muscular oesophagus and the longitudinal orientation of the vocal cords respectively.⁸

CONCLUSION

Every case of aerodigestive tract FB is peculiar and calls for a distinct line of approach and management. Therefore, no two cases should be considered to be likewise that can be managed in specific manner. Considering this, each case should be approached with utmost judgement.

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