ORIGINAL RESEARCH PAPER

ENT

KEY WORDS: Foreign body impaction, Accidental, Respiratory Distress, Bronchoscopy, Esophagoscopy

A STUDY ON UPPER AERO DIGESTIVE TRACT FOREIGN BODIES IN PATIENTS AT A TERTIARY CARE HOSPITAL IN TAMIL NADU

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ABSTRACT

Introduction : Background: Worldwide Accidental impaction of living or non living material in the lumen of the airway or digestive tract among childrens, adults is a common emergency presentation seeking treatment to Otorhinolaryngologists. Children under 4 years not under vigilant supervision at home are frequently affected. Introduction Accidental ingestion or inhalation of foreign bodies is a common emergency encountered in the practice of Otorhinolaryngology ranging frequently among Paediatric population to less commonly among adult population . It has a wide range of clinical presentation from asymptomatic to presenting with respiratory distress **Materials And Methods:** The following article discuss clinical presentation, diagnostic, radiological evaluation and treatment methods in patients with History of accidental ingestion or inhalation of foreign bodies at a tertiary care hospital at Tamil Nadu. Various parameters were compared. Comprehensive study was conducted for 1 year from January 2024 to December 2024. **Results:** Children 2to7 years of age are more affected that adults. Rigid Upper End Esophagoscopy was the commonly performed procedure to retrieve foreign bodies of the upper digestive tract. Coins in children and Fish Bone in adults are common.

INTRODUCTION

Upper Digestive Tract Foreign Bodies

The foreign bodies encountered most commonly are Coins, button batteries among children to Fish bones , chicken Bones, Meat, vegetable materials among adults. The cricooharynx is identified as the most common site of coin and fish bone impaction/lodgement since it is the narrowest part of Gastrointestinal tract next to Appendix lumen. Anything which crosses the cricopharynx mostly will cross the other narrowest GIT Parts. Young children without well developed teeth and old age people without teeth, since they cant chew properly and having habit of swallowing foods without chewing may get lodged in the upper digestive tract of.

Children ingested foreign bodies in the digestive tract are mostly asymptomatic with the caretaker providing an alleged history of accidental ingestion. Alkaline Button Batteries having tendency to erode surrounding tissues are more dangerous to cause oesophageal perforation and mediastinitis if not removed early. "**Double ring sign**" of chest x ray is not always present in Button Batteries. Button batteries made nowadays may mimic coin like radioopacity in chest x ray without double ring sign so extreme caution to be kept in mind when encountering coin like opacity of chest x rays.

Plummer Wilson syndrome having early post cricoid web and men with early cricopharyngeal malignancy even normal foods can get impacted in the narrowed cricopharynx.

Plain xrays of the soft tissue neck -lateral view may show abnormal radio opaque shadows if they are radio opaque. Indirect xray signs of non radioopaque foreign bodies include pre vertebral soft tissue widening, cricopharynx airpockets. Foreign bodies such as coin are retrieved by Rigid esophagoscopy or Hypopharyngoscopy under general anesthesia without delay. Some children foreign bodies may pass spontaneously into the stomach and mostly they may pass through the faeces.

Airway Foreign Bodies

Foreign Bodies in the airway form the external nares to the main bronchus. Nasal foreign bodies can be removed with or without endoscopic guidance. Common foreign bodies include plastic toys, ground nuts, peas in children. Accidental foreign body choking is common in adults when play with these foreign bodies. Patient on metallic tracheostomy tubes who fail to change these metal tubes for a longer period of time may cause tube to break and impacted inside the airway. ENT Surgeon encountering foreign body impaction in the Trachea or Bronchi presenting with history of choking and coughing, wheezing , respiratory distress, hypoxaemia should act judiciously. Examination reveals stridor biphasic or expiratory in Tracheal foreign bodies , to reduced air entry on the bronchial foreign bodies.

Plain X-rays in earlier stages have **"Check valve Effect"** when foreign bodies obstruct on expiration resulting in hyperinflation of affected side and mediastinal shift to opposite side. In later stages **" Ball valve Effect"** occurs when foreign bodies obstruct on inspiration and disengage on expiration causing collapse of same side and mediastinal shift to same side. In complete obstruction **"Stop-Valve Effect"** occurs leading to consolidation of the lobe. Neglected airway foreign bodies presents as respiratory tract infections not responding to treatment. Earlier for Uncooperative patients and children Xray Bilateral Lateral Decubitus were taken. In this view Dependent lung will collapse partially in normal patient. If there is obstructive foreign body in airway there will be air trapping and hyperlucency of the dependent lung.

Computed Tomography scan of the chest aids in analysing foreign body localization clearly for ENT Surgeons thereby management gets better.

MATERIALS AND METHODS

The following article discuss clinical presentation, diagnostic, radiological evaluation and treatment methods in patients with History of accidental ingestion or inhalation of foreign bodies at a tertiary care hospital at Tamil Nadu. Various parameters were compared. A comprehensive study was conducted for one year from January 2024 to December 2024.

RESULTS

The most commonly affected age group was of children between 2 -4 years of age. Coins in GIT and ground nuts in

airway are most common in children and are retrieved in 60-70 percentage of patients. In adults Fish Bone in cricopharynx is common other adult foreign bodies include chicken bone, meat, Dentures. Bronchus foreign bodies are usually removed piecemeal. The tracheal take- off angle ,wide lumen make the right main bronchus the common side of involvement of foreign body. They are retrieved by rigid per oral endoscopic techniques under general anesthesia .

Chart A showing the Characteristics of foreign body materials

Metallic (coins,pins,batteries)	Non metallic (Bones,flesh,plastics)
35 patients	115 patients

Chart B showing the Sites of impaction of Foreign Bodies in food passage:

Site Of Impaction	No. of Patients
Cricopharynx	21
Esophagus upper part and Middle Part	7
Airway	10
Other sites	112

Chart C showing the Sites of impaction of Airway foreign bodies

Right main bronchus	5 patients
Left main bronchus	2 patients
Tracheal foreign bodies	3 patients

DISCUSSION

When foreign bodies such as fish bones are lodged in the upper digestive tract, they may produce symptoms such as throat discomfort, throat pain, minimal to severe dysphagia and drooling of saliva. Universal forceps and rat toothed forceps are maneuvered through the rigid specula and scopes and are the commonly used surgical instruments of retrieval. Meat, bones impacted in mid to lower esophagus can be difficult sometimes extreme caution should be taken while removing as the procedure may sometimes causes perforation of esophagus leading to pneumothorax, pneumomediastinum to mediastinal infection. Patients are observed in the post operatively for subcutaneous emphysema, pneumothorax signs. In our study no such complications encountered

Post operative plain x-ray chest is routinely carried out after 6 to 12 hours to looks for signs of oesophageal injury before starting oral diet for the patients. Penetrating foreign bodies of the upper digestive tract that are not retrieved immediately are complicated by Acute Retropharyngeal Abscess .Patient with acute retropharyngeal abscess may present with dysphagia to stridor due to compression of trachea by developing abscess. Widening of pre-vertebral soft tissue of neck on xrays in patient with a high index of clinical suspicion ,absent laryngeal crepitus, severe dysphagia are confirmatory for acute retropharyngeal collection. Securing the airway by means of emergency tracheostomy is of paramount significance followed by drainage of abscess and Rigid esophagoscopy for foreign body removal

Sharp,penetrating foreign bodies are impacted submucosally and smooth surfaced rounded foreign bodies such as coins are found lodged in the lumen.Fish bones, mutton flesh,chicken bones and dentures are encountered in decreasing order of frequency in adults .We encountered only one case of accidental coin ingestion in an adult female.

Accidental ingestion of button batteries are another common emergency encountered in children. The adverse effects of delayed removal such as esophageal perforation, mediastinitis and tracheo esophageal fistula must be kept in mind and warrant the need for emergency removal. The double ring sign on radiologcial imaging is not always present and the absence of which should not be considered as evidence to exclude the possibility of button battery. Emergency rigid esophagoscopy and swift action for removal form the mainstay of treatment.

Flexible bronchoscopy can be done in localization of foreign bodies and removal can be tried with variety of baskets as they cause less complication during procedures and can be done in patients who are intolerant to General Anaesthesia. Flexible bronchoscopy can be used for peripherally located airway foreign bodies. Rigid bronchoscopy is done for larger, proximally located foreign bodies and for patients under respiratory distress. In Rigid bronchoscopy Fist attempt of removal of bronchial foreign bodies is the best, subsequent attempts injure the airway leading to airway edema. Various types of forceps available a thorough knowledge of them and which one to use should guide for easy removal. Rigid bronchoscopy complications include haemorrhage, bronchospasm, atelectasis, , injury to airway, hypoxemia, hypercarbia, respiratory failure, myocardial dysfunction.

Neglected Organic foreign bodies elicit tissue inflammatory reaction, edema, hyper secretion of mucus making bronchoscopy difficult. If bronchial foreign bodies are not able to retrieve with multiple attempts and if patient is stable its better to wait for a couple of days with steroid therapy letting edema settle followed by second attempts. Rigid bronchoscopy is performed under general anesthesia and the presence of single lung ventilation is beneficial. We encountered a case of penetrating metallic foreign body in right bronchus of a hairpin.. Skilled Anaesthesia team is mandatory during rigid bronchoscopic procedures. . Lobectomy is the surgical treatment of choice for foreign bodies that are located in peripheral airways and cannot be removed by above techniques.

CONCLUSION

"Prevention is better than cure" people should be Health educated about the consequences of AeroDigestive Foreign bodies. All patients presenting with history suggestive of foreign body in upper aero digestive tract must undergo thorough clinical examination, diagnostic and radiological evaluation and emergency Rigid per oral endoscopy for retrieval. Early intervention minimizes complications. Post operative care is of paramount significance.

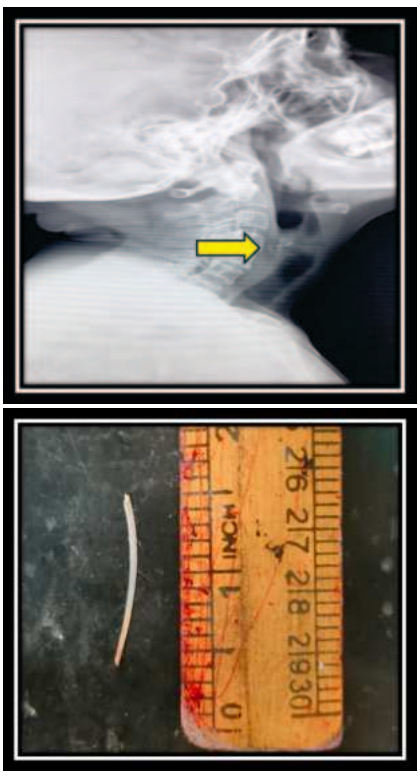
For those foreign bodies that cannot be retrieved by per oral endoscopy necessitating open surgical removal, prompt referral of alimentary foreign bodies to surgical gastroenterology and airway foreign bodies to cardiothoracic surgeons to high center must be carried out .Early intervention in any individual presenting with history and clinical features consistent with accidental foreign body ingestion or aspiration is key to facilitate prompt removal and to reduce the incidence of complications.

Conflict Of Interest :
The authors have declare no conflict of interest.

Acknowledgement: Nil

Picture A: Foreign body coin in plain x – ray chest and STNL and after removal

Picture B: X ray – STNL showing linear radio opaque shadow in cricopharynx probabaly fish bone and after removal



Picture C: Foreign body Button Battery after removal

Picture D: Broken metallic tracheostomy tube removed from Bronchus

Study Methodology

Study Design: Cross sectional study

Study Population: Patients with history suspected of Accidental ingestion or Inhalation of foreign bodies

Study Duration: one year January 2024-December 2024.

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