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# Foreign bodies in upper aero-digestive tract: Our experience

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**Abstract**
**Background:** Foreign bodies in upper aero- digestive tract are a common condition encountered by all ENT surgeons. Ours being a tertiary care hospital located in a densely populated area we come across a varied presentation of this condition on a day to day basis.
**Aim:** To describe the different presentations of aero digestive tract foreign bodies encountered by us and elaborate the different procedures used for removal of upper aero digestive tract foreign bodies.
**Materials and Methods:** A prospective study conducted in the department of ENT, Malabar Medical College, Calicut during the time period of one year.
**Results:** There were a total of 108 patients of which 103 were in upper digestive and 3 were in respiratory tract. The commonest site of impaction in digestive tract foreign bodies was the cricopharynx and right bronchus in case of respiratory tract foreign bodies. A delay in presentation of more than 48 hours was associated with an increased rate of complications. Rigid endoscopy under anaesthesia was the commonest method used for retrieval of upper aero digestive tract foreign bodies.
**Conclusions:** Foreign bodies in the aero digestive tract continue to be a problem affecting all age groups alike. Delay in presentation and management can lead to life threatening complications. Proper and timely interventions optimise the outcome.

**Keywords:** Foreign body, upper aero digestive tract, cricopharynx

## 1. Introduction
Foreign bodies in the upper aero-digestive tract pose major challenges to the otolaryngologist in both diagnosis and management. A large proportion of such foreign bodies can be removed in the outpatient clinic with or without endoscopic guidance. But some of them may require removal under general anaesthesia.
Factors influencing the management of this condition are the age of the patient, nature of foreign body, area of impaction and most importantly the delay in presentation, which may lead to life threatening complications.

## 2. Aim of the Study
To describe the different aero digestive tract foreign bodies in terms of age/sex distribution, time of presentation after onset of symptoms, nature of foreign bodies, site of impaction and to elaborate the different procedures used for removal of upper aero digestive tract foreign bodies.

## 3. Materials and Methods
### 3.1 Study setting
The study was conducted in the department of ENT at Malabar Medical College, Calicut for a period of one year from July 2019 to June 2020.

### 3.2 Study design
A prospective study

### 3.3 Selection criteria
All the patients presenting to our outpatient department and casualty with complaints of upper aero-digestive tract foreign bodies during this time period were included in our study.

### 3.4 Study method
A written informed consent was obtained from all individual participants included in the study. A specially designed questionnaire was used to collect data on each individual patient. The data collected included demographic information and details of time relationship from the initial symptom (ingestion of foreign body) to their presentation at our hospital.
All patients underwent a clinical examination of oral cavity and throat and an endoscopic examination of oropharynx, hypo pharynx and larynx under local anaesthesia. Children below 10 years of age were exempted from this endoscopic examination under local anaesthesia.
Those foreign bodies which were visualised during this examination were removed with appropriate instruments and the site and nature of foreign body was recorded. The remaining patients (including children below 10 years) were advised to undergo radiological evaluation. Either an X-ray soft tissue neck lateral view or a contrast enhanced CT scan of neck was advised. The procedure for removal was planned according to the radiological findings.
The results were analysed and tabulated. The results obtained were compared with similar studies.

## 4. Results
There were a total of 108 patients included in our study, of which 63(58.33%) were males and 45(41.66%) were females. The distribution of cases among different age groups did not show much significance (Table 1), though all three cases of bronchial foreign bodies included in our study were children below 10 years of age.
Most of the patients (72.22%) presented to the casualty within 24 hours of onset of their first symptoms (Table

2).Five patients out of the 9 cases who presented after 48 hours had developed complications (retropharyngeal abscess) at the time of presentation.

The most common site of foreign body lodgement was cricopharynx (56.48%) in case of digestive tract foreign bodies. All three cases of respiratory tract foreign bodies in our study were lodged in right main bronchus (Table 3).

Methods used for foreign body removal included oropharyngoscopic examination (with or without endoscopy) in 19 cases, upper GI endoscopy under general anaesthesia in 86 cases and bronchoscopy in 3 cases. All 5 cases of retropharyngeal abscess underwent an intraoral endoscopic assisted drainage of abscess in addition to foreign body removal.

The nature of foreign bodies removed included both organic and non-organic foreign bodies (Fig 1). The ones removed from digestive tract were mainly organic, which mainly included bone chips and fish bones. Out of the 105 foreign bodies in the digestive tract, 88 (84%) were organic and the remaining 17 were non-organic. On the contrary, of the 3 foreign bodies in the respiratory tract, 2 (67%) were non-organic and one was organic.

**Table 1:** Age and sex wise distribution of foreign bodies

| Age in years | Sex | | Total | Percentage (%) |
|---|---|---|---|---|
| | Male | Female | | |
| 0-10 | 8 | 5 | 13 | 12.03 |
| 11-20 | 6 | 3 | 9 | 8.33 |
| 21-30 | 7 | 5 | 12 | 11.11 |
| 31-40 | 11 | 10 | 21 | 19.44 |
| 41-50 | 8 | 12 | 20 | 18.5 |
| 51-60 | 10 | 6 | 16 | 14.8 |
| >60 | 13 | 4 | 17 | 15.74 |

**Table 2:** Time of presentation after onset of first symptom.

| Time of presentation | Number of cases | Percentage (%) |
|---|---|---|
| < 24 hours | 78 | 72.22 |
| 24-48 hours | 21 | 19.44 |
| > 48 hours | 9 | 8.33 |

**Table 3:** Site of foreign body

| Site of foreign body | Number of cases | Percentage (%) |
|---|---|---|
| Oropharynx | 23 | 21.29 |
| Hypopharynx & cricopharynx | 61 | 56.48 |
| Oesophagus | 21 | 19.44 |
| Bronchus | 3 | 2.7 |

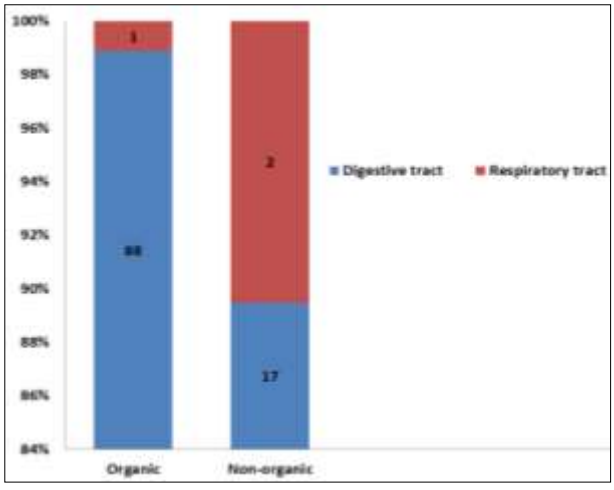


**Fig 1:** Nature of foreign bodies

## 5. Discussion

Management of aero digestive tract foreign bodies was revolutionised by the technique and instruments developed by Chevalier Jackson in 1904.The mortality decreased from more than 20% to 2% [1]. Out of the 108 patients in our study 105 (97.22%) were foreign bodies of food passage, while 3(2.77%) were in the airway. In their study, Hung and Lin [2] found that 76% and 24% foreign bodies in food passage and air passage while Brooks [3] found them to be 80% and 20% respectively. In yet another study by Showkat *et al.* [4] it is 78.04% and 21.95% respectively. The incidence of food passage foreign bodies in our study was slightly higher than in these studies.

Foreign bodies in food passages in our study showed an even distribution among all age groups. Digestive tract foreign bodies were mostly lodged at the cricopharynx in 61 (56.48%) patients in our study. This is owing to the poor peristalsis, sphincteric action and narrow diameter of cricopharynx. In one large series[1] 50.5% foreign bodies in food passage were also seen in cricopharynx. Similarly in yet another study [5], 83.5% of foreign bodies were located at cricopharynx. We observed fish bone to be the commonest foreign body in food passage. Kamat *et al.* [1] has also observed fish bone (39%) as the commonest foreign body. The reason for fish bone to be the commonest foreign body in our study may be owing to the fact that fish is an integral part of food in our region.

All of the respiratory foreign bodies in our study were encountered in the right main bronchus. In most published series, the foreign bodies tend to be localised in the right main bronchus [6].This right sided predominance can be explained by the vertical nature of the right main bronchus, its larger diameter and the greater air flow through it.

Of the 108 patients in our study 9 patients (8.33%) presented after 48 hours of onset of symptoms. Of these late presenters 5 of them (55.5%) had developed the complication of retropharyngeal abscess at the time of presentation. This was in accordance with an earlier study conducted by Bhuvanesh Singh *et al.* [7], where they observed delayed presentation as the only factor associated with an increase in the incidence of complications.

Though many techniques have been described in literature for foreign body removal, in our study rigid endoscopy with forceps under general anaesthesia was the commonest technique used, which confirms with other studies [8, 9, 10].

## 6. Conclusions

Foreign bodies in the aero-digestive tract continue to be a problem affecting children and adults alike. Prompt diagnosis and skilful management is necessary to avoid complications. Delayed presentation after the onset of symptoms was associated with an increased incidence of complications.

Commonest site of foreign body in the upper digestive tract was observed to be cricopharynx and in the respiratory tract it was right bronchus. Commonest foreign body retrieved from upper digestive tract in our study was fish bone. Commonest method of foreign body retrieval was rigid endoscopy with forceps.

## 7. Acknowledgements

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