



ORIGINAL RESEARCH PAPER

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CHANGING PATTERN OF FOREIGN BODY IN THE AERODIGESTIVE TRACT- A CLINICAL PROFILE OF 80 PATIENTS

KEY WORDS: foreign body, aerodigestive tract, changing patterns, bronchoscopy, esophagoscopy

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ABSTRACT

BACKGROUND- Foreign body in the aerodigestive tract are a major challenge faced by every ENT surgeon in day to day practice. Aspirated and ingested foreign bodies are often emergencies. They may cause minimal disturbance of function, severe morbidity or even sudden death. The aim of this study is to observe the changing trend in the nature of distribution of foreign bodies impacted in aerodigestive tract.

METHOD- It was a Prospective and Retrospective Study at MGM medical college Indore, total 80 patients were studied removal of the foreign body were carried out with the help of specific endoscopes. All patients were followed up and evaluated for the results.

RESULTS- The maximum foreign body in air passage was upto 5 years and in food passage it was between 2-10 years. the male/female ratio was 2:1 in case of oesophageal foreign body). The nature of the foreign body constituted the in animal group (90%) then animate (01%) among the in animal group non-vegetable foreign body were more in general (73%) than vegetable foreign body (18%). foreign body in 51% of cases were metallic and it was predominantly in food passage (51%), groundnut and tamarind seeds constitute half of vegetable foreign body.

CONCLUSION- Aerodigestive tract foreign bodies are among the most common causes of surgical emergencies. Rigid endoscopies with forceps removal under general anesthesia are preferred management modality. Parents should be educated to keep close eye on their children and keep objects which can be foreign bodies away from children's reach.

INTRODUCTION-

Foreign body in digestive or respiratory passage is almost always accidental without discrimination of age or sex. An accidentally ingested foreign body usually lodges in the pharynx. It can enter the bronchus or esophagus(1). Most commonly foreign body are aspirated during the toddler years(2). There is bimodal age distribution adding the first peak between 1 to 3 years of age and a second peak between 10 and 11 years of age. Boys are affected more frequently than girls.(3)

The majority of foreign body in infant and in adult become lodged in the upper third of esophagus. Certain professional habits also favour the entry of foreign body e.g. carpenters, upholsters, dressmaker, cobblers. Coins are the most common foreign body seen in children especially under 3 years of age-(4). 95 percent of paediatric oesophageal foreign body lodge is cervical oesophagus, majority of them lodge at the level of cricopharynx. Meat impaction is the most common esophageal obstruction in adult(5). Usually foreign body of digestive tract are not visible during routine ENT examination, Indirect Laryngoscopic finding (Chevelier Jackson Sign), pooling of secretion in pyriform sinus because patient unable to swallow food even saliva may be only physical finding of foreign body circopharynx or below.

In case of foreign body in air passage the most common incorrect initial diagnosis were obstructive bronchitis, infection, and allergic or exogenous asthma.(6) The foreign body mainly localized in right bronchial system (52%) and left bronchial system (35%). Radiopaque foreign body can be identified and localized on the radiograph taken in both posteroanterior and lateral view. Indirect radiological sign, air trapping on the affected side of a lung as a result of a valve mechanism caused by foreign body (obstructive emphysema)(7), resorptional atelectasis of pulmonary parts blocked from the air supply by the foreign body. Compensatory emphysema of contralateral side of lung, pneumothorax, pneumonia. In fluoroscopy showed the Holzknecht-Jacobson phenomena ("swinging mediastinum").

The purpose of this study is to determine the changing trend of foreign body in aerodigestive tract, distribution in relation to age ,sex ,site of lodgement ,types. To correlate the clinical and investigational finding in establishing the diagnosis of foreign body.

MATERIALS AND METHODS

This study consisted of clinical evaluation of **changing patterns of foreign body in Aero-digestive Tract** in 80 cases. It was a **Prospective and Retrospective Study**. Removal of the foreign body were carried out with the help of specific endoscopes i.e. nasal endoscope, laryngoscope, oesophagoscope, bronchoscope. All patients were followed up and evaluated for the results.

A detailed history regarding presenting complaints, history of present illness, past history and family history was taken. Examination of Nose, Ear and Throat along with general physical and systemic examination was carried out. Auscultation of chest for air entry and added sounds were carried out. Routine hematological test were done. Patients were undergone a detailed radiological investigation to assess site of foreign body and to rule out other abnormalities. In each case of foreign body in aerodigestive tract these were radiological investigation which were carried out are:

a) Foreign body oesophagus-

- X-ray ST neck lateral view
- X-ray ST neck A-P view
- X-ray chest P-A view
- Barium swallow
- CT Thorax (If required)

b) Foreign body bronchus-

- X-ray ST neck lateral view
- X-ray ST neck A-P view
- X-ray chest P-A view
- CT Thorax (If required)
- Virtual bronchoscopy

The patient presenting either themselves or by their relative:

- With definitive history accidentally ingestion or inhalation of foreign body by him or herself or by other are included in this study.
- With vague, ill-defined symptoms, which are highly suspicious of foreign body in aerodigestive tract included in this study.

All the cases, therefore, were thoroughly examined and investigated before taking them for surgery either by esophagoscopy or bronchoscopy or laryngoscopy.

RESULTS

This study consisted of clinical evaluation of **changing patterns of foreign body in Aero-digestive Tract** in 80 cases. Various exogenous objects had been removed from time to time from aerodigestive tract. It is one of the common problems met in day-to-day ENT practice and the victims are mainly children.

The maximum incidence (81%) of foreign bodies in aero-digestive tract was found in children between 0 to 10 years of age and less common age group is above the 50 years.(table no. 1), male (60%) & female (40%)(table no.2). This feature of male predominance was common to all site except in case of nasal foreign body where female sex was predominant.

The foreign bodies are more common in food passage (81%) as compared to air passage (18%) in air passage most of the foreign bodies are of vegetable nature (79%) and less are non-vegetable nature (21%). While in esophagus majority of them is non-vegetable nature (96%)(table no.3).Most of the patients of foreign bodies belong to low socioeconomic status and higher income group is least affected. Coins are the most common foreign bodies in esophagus (72%)(table no.4). Pain in throat is most common symptoms in food passage foreign body and next most common symptoms vomiting other dysphagia as compared to foreign body in air passage(table no.5).The foreign bodies in food passage commonly found to be arrested in cricopharynx because it is the narrowest part of alimentary canal.

Whenever the patient presented with severe bronchitis and toxemia, foreign body mostly was of organic nature. A symptom usually corresponds with the site of foreign body, whenever cyanosis and suffocation were presenting symptoms, the foreign body was usually found in trachea, whereas in discomfort, breathlessness, stridor the site of foreign body was main bronchus. When initial symptom subsided, the site of lodgement was found to be lower down in the terminal bronchus. Cough is the most common symptom in foreign body in air passage and next most common symptom is dyspnoea in foreign body in air passage. Air passage foreign bodies were more commonly found in the right main bronchus. 52% of patients turned up to the hospital within 24 hours after ingestion or inhalation of foreign bodies. In all cases of suspected foreign body endoscopy is advisable (in majority of cases foreign body was confirmed and removed endoscopically (table no.6) and mortality thus decreased. Some unusual foreign bodies like broken spoon, iron weight, imported fruits, thorny seed (Gokru), broken tracheostomy tube, safety pin, denture, glass piece, mango kernels etc. were found in aerodigestive tract. In air passage, vegetable foreign like coconut, peanut, groundnut is most common.

DISCUSSION

In history It was the work of famous Chevalier Jackson & Chevalier L Jackson in 1949 through 1957 that broncho-oesphogscopy got its individuality as a medical science and surgery. Foreign Bodies in airway and bronchus, the endoscope was first utilized for removal of FB in 1897; prior to this bronchotomy was the procedure used for Management of such patients. This revolutionized by the technique and instruments developed by Chevalier Jackson in 1904. The mortality decreased from more than 20% to 2%(8).

Deshmukh et al(9) at 2010 found in study of number of 37 patients. 28 (75.67%) were males and 9 (24.32%) were females similar to our study. F.B. in food passage in 29 (78.37%) and F.B. in air passage in 8 (21.62%) were found similar to our study.

A Coin seen in 12 cases (41.37%) was the commonest foreign body, in our study coin was commonest foreign body in oesophagus in 72% cases followed by meat bone in 7 (24.13%); stapler pin, betelnut, metallic spring, metal piece, food bolus, seed and common pin similar to our study.

Hung W and Lin P(10) found, 76% and 24.7% FBs in food passage and air passage respectively while Brooks et al(11) found it 80% and 20% respectively. In another large study 86.2% of FBs were in the pharyngo oesophageal region, while 13.7% in tracheobronchial region1. Amongst the cases of FB in the food passage, age ranged from 1 year to 65 years; however FB has also been reported4. in the literature, amongst infants oesophageal FBs are common especially in children. Most are ingested by children younger than 5 year with the peak incidence between 6 months to 3 years as a sequel to natural proclivity to put things in their mouth(3) in our study maximum percentage for (36%) patients were found in age group 2-5 years followed by 32% in 6-10 years.

In our study Coins are the most common foreign bodies in esophagus (72%) Kamath et al(8) found fish bone (39%) as the commonest FB. Geographical factors involved in the study (coastal area) may account for this difference in findings.

Vegetable foreign bodies were uncommon but 81.2 % of foreign bodies in air way were vegetable. 75 % of all foreign bodies were non vegetable.(table 3)

In this clinical study of foreign body in aerodigestive tract following observations have been made on the basis of follow-up recording:

Table no. 1: Age Incidence

Age Group	No. of Patients with FB		Total number of patients	Percentage
	In Air Passage	In Food Passage		
0-1 years	04	06	10	13
2-5 years	08	21	28	36
6-10 years	04	21	25	32
11-20 years	02	05	07	09
21-30 years	00	02	02	03
31-40 years	00	02	02	03
41-50 years	00	02	02	03
50 years onwards	00	01	01	01

Table no. 2: Sex Incidence

Sex	No. of Patients with FB		Total number of patients	Percentage
	In Air Passage	In Food Passage		
Male	12	37	49	60
Female	05	26	31	40
Total	17	63	80	

Table no. 3 Nature of Foreign Body

Nature	In air passage	In food passage	Total	Percentage
In animate	13	1	14	18
Vegetable	3	55	58	75
Non-vegetable				
Animate	-	1	1	1

Table No. 4: Type of Foreign Body

Type	In air passage	In food passage	Total	Percentage
Metallic coin	-	6	6	8
¥ 50 paise	-	27	27	35
¥ Re. 1 coin	-	6	6	8
¥ Rs. 2 coin				
Vegetable seed	14	1	15	19
Other metal object	-	5	5	6
Plastic object	4	-	4	5
Denture	1	3	4	5
Meat / fish bone	-	4	4	5
Others	4	2	6	8

Table No. 5: Symptoms

Symptoms	Air passage	Food passage	Percentage
Cough	15	5	26
Dysphagia	3	16	24
Pain in throat	3	32	45
Dyspnoea	11	2	17
Vomiting	2	22	31
Fever	3	1	5
Pain in epigastrium	0	0	0
Change in voice	0	1	1
Stridor	4	0	9
Distress	2	00	3

Table No. 6: Endoscopic Removal of Foreign Body

Procedure	No. of Cases	Successful Removal	Complication
Laryngoscopy	5	5	0
Ÿ Direct	0	0	0
Ÿ Indirect			
Bronchoscopy	12	12	0
Tracheostomy with bronchoscopy	4	4	0
Oesophagoscopy	49	0	0
Other surgical	0	0	0

Case 1-Dheeraj 2yrs/male radiopaque F.B. Cricopharynx (safety pin)



Figure .1 to 1.4 showing safety pin in cricopharynx

Case 3-Raja 10 yrs/male F.B. (Tamarind seed) RMB.



**Raja 10 yrs/male
Pre-operative X-ray showing collapse consolidation and mediastinal shift
24 hrs Post operative x-ray showing re-inflation of lung**



Virtual Bronchoscopy showing F.B. in RMB with consolidation

Virtual Bronchoscopy axial view showing F.B. in RMB



Figure .1-2.6 showing tamarind seed in right main bronchus.

Case 2- Thakur 7yr/male foreign body plastic cap in subglottis



Figure .1-3.1-3.4 showing FB (plastic cap) in subglottis

CONCLUSION-

Early detection by meticulous history, imaging modality & prompt management remains basis for favourable outcome and prevents fatal complications. -Aerodigestive tract foreign bodies are among the most common causes of surgical emergencies. Rigid endoscopies with forceps removal under general anesthesia are preferred management modality. Parents should be educated to keep close eye on their children and keep objects which can be foreign bodies away from children's reach.

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