

Foreign Bodies in Ear and Upper Aero-digestive Tract in Tertiary Level Hospital

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Abstract

Background: Foreign Bodies (FBs) are the commonest emergencies in Otorhinolaryngology. The most common incidences are in nasal cavity, ears and oropharynx. The most commonly swallowed foreign bodies in children are coins. It was aimed to describe the nature, types, and location of FB impaction in addition to procedure of anesthesia & management of patients as well.

Methods: All patients with history and clinical features of foreign body in otorhinolaryngology in both sexes during the 6 months study period constituted the study population. This was a descriptive type of cross-sectional study done in a tertiary level hospital (Faridpur Medical College Hospital, Faridpur, Bangladesh).

Results: The study was included 58 patients aged 6 months to 72 years were seen (mean: 22.46 years) with 33 males and 25 females and a male: female ratio of 1.4: 1. Most common site of impaction were nasal cavity 19 cases (52.6%) then ear 13 cases (22.4%), hypopharynx 9 cases (8.6%), oropharynx 6 cases (10.3%), esophagus 5 cases (8.6%), soft tissue neck 4 cases (6.9%) and larynx 2 cases (3.4%). In this study most common FB was Fish bone 8 (13.79%) then coin 5 (8.62%). Most of the oropharyngeal FBs and nasal FBs were removed directly 33 (56.90%) by naked eye with forceps or FB hook. Only 2 cases (3.40%) nasal FBs were removed by endoscope. Esophagoscopy was done in 14 cases (24.1%). Foreign body soft tissue neck was removed with external approach in 4 patients (6.9%). Only in 3 cases microscope was needed to remove foreign body from ear (5.3%). Only in 2 cases (3.4%) laryngoscopy was needed to remove foreign body. FBs from nose & oropharynx mostly removed without anaesthesia 25 (43.10%) though some FBs from nose & oro-pharynx were removed under local anaesthesia by using 10% Xylocaine spray.

Conclusion: The study findings felt the need for parental health education on object placements, and a high index of suspicion among practitioners to facilitate early referral and avoid preventable complications.

Key Words: Foreign body, otorhinolaryngology, children, coins.

Introduction

Foreign bodies (FB) are the commonest emergencies in Otorhinolaryngology¹. A foreign body in an endogenous or exogenous substance in congruence with anatomy of the site of implication². The most common incidences are in the nasal cavity, ears and oropharynx^{1,3}. For clinical purposes foreign bodies are grouped into those that require immediate removal and those that could wait for ideal

operative procedure. The type, shape, size and location of the foreign body will help determining the necessity of an emergency removal².

FB in the nose, ears and oropharynx have characteristic symptoms and their removal does not represent a great difficulty to the otorhinolaryngologist unless the FB is in the trachea-bronchial tree^{1,3}. The FB inoculation may be voluntary or accidental^{1,3}.

The symptoms caused by foreign bodies depend on the nature of the object and the situation and duration of lodgment.³

All the FB in nose, ears and pharynx presents with a specific group of symptoms and are rarely asymptomatic^{1,3}. In the nasal cavities, the symptoms start with sneezes, watery discharge and nasal obstruction later evolves within some days into unilateral foetid and purulent rhinorrhoea. In the oropharynx, the main symptom is odynophagia, in the trachea and bronchus they manifest as stridor^{1,3}.

No age group is exempted from this condition but more common in children under 10 years age group^{4,5}. Foreign body aspiration is more common in young children than adults since they explore the world with their hands and mouths and have immature judgment. Adult's may aspirate

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when alcohol, sedatives or head trauma alter their judgment or mental status, with cervico-facial trauma or when neurogenic disease or physical conditions, such as dentures, impair sensation or control of the food bolus⁶.

The foreign bodies may lodge in nose, nasopharynx, paranasal sinuses, pharynx, larynx, trachea, bronchi or oesophagus. Foreign body in nose is associated with less danger, cause less trouble in neighbourhood³.

Type of foreign body put into nose, inhaled or ingested depends on age, food habits and occupation of patients. A fish bone or a mutton piece in food passage of non-vegetarians particularly in those who wear dentures is a frequent occurrence. A tailor with a swallowed button or a sewing needle is not a vanity. Loss of sensation, motor disturbances of pharynx, larynx or oesophagus sometime act as predisposing factors⁷.

Foreign bodies are of grave concern to the surgeon as their removal notably demands a great skill but there is unpredictability in the degree of difficulty of the procedure⁸.

All the foreign bodies need to be removed as they cause acute and chronic complications such as laryngeal spasm, foreign body granuloma, mediastinitis, pericarditis, pneumothorax, pneumo-mediastinitis and vascular injury caused by perforating foreign bodies.⁹ Complications in the ear is due to the small spaces of external auditory canal and vicinity of middle ear structures^{2,10}. Tympanic membrane perforation can occur while removal if the FB is very near to the membrane and other complications like laceration of canal, otitis externa are also seen^{1,3}.

The removal of foreign body has been facilitated by technical improvement with the rod lens telescope, video endoscopy and varieties of forceps and safer anaesthesia¹¹. Hippocrates in 460 B.C conceived the intubation idea; Verduin in ad 1717 used bronchotomy to remove a bone¹².

The first esophagoscopy was attempted by Bonzini in 1795 and the first laryngoscopy was performed by Kirstein in 1895. Jackson in 1905 reported removal of foreign bodies by the O'Dwyer technique with the patient sitting. Penta AQ in 1948 suggested the use of electromagnets in foreign body removal¹³. But it was the revolutionary works of Chevalier Jackson and Chevalier L. Jackson in 1949 through 1957 that broncho-esophagology got its individuality as a medical science¹⁴.

Materials and Methods

It was a descriptive cross-sectional study conducted at the Dept. of Otolaryngology and Head-Neck Surgery, Faridpur Medical College & Hospital, Faridpur. The study was carried out from 22nd August 2014 to 22nd February, 2015. All children with history and clinical features of foreign body in otorhinolaryngology in both sexes during the study period constituted the study population. Non probability convenient and purposive sampling technique was used for collecting samples. Total number 58 patients with history and clinical features of foreign body were included in this study.

Results

Table 1: Nature of FB according to different age groups (n=58)

Age groups (Yrs)	Type of Foreign Body			Total f(%)
	Metallic f(%)	Non-metallic f(%)	Living f(%)	
0-10	11(34.38)	21(65.62)	0(0)	32(100.0)
11-20	0(0)	3(100)	0(0)	3(100.0)
21-30	1(25)	3(75)	0(0)	4(100.0)
31-40	2(40)	2(40)	1(20)	5(100)
41-50	1(25)	1(25)	2(50)	4(100)
51-60	0(0)	1(25)	3(75)	4(100)
61-70	0(0)	2(50)	2(50)	4(100)
71+	0(0)	2(100.0)	0(0)	2(100.0)
Total	15(25.86)	35(60.34)	8(13.79)	58(100.0)

Table 1 shows that most of the cases respondents were less than 10 years age group and the nature of FB is no-metallic (65.62%) and metallic (34.38%).

Table 2: Type of Foreign Body Impaction (n=58)

Name of Foreign body	No of Patients	Percentage
Coin	5	8.62
Fish bone	8	13.79
Parts of Toy	2	3.45
Bead	3	5.17
Button	3	5.17
Safety Pin	1	1.72
Pin	1	1.72
Maggot	4	6.89
Sponge	1	1.72
Hair Pin	1	1.72
Insect	4	6.89
Paper	1	1.72
Stick	1	1.72
Eraser	2	3.45
Cotton	2	3.45
Key	1	1.72
Battery	2	3.45
Paddy	3	5.17
Peanut	2	3.45
Ornaments	2	3.45
Foam	2	3.45
Denture	4	6.89
Bullete	2	3.45
Splinter	2	3.45

Table 2 shows that common foreign bodies are Coin, Fish bone, Parts of Toy, Bead, Button, Safety Pin, Pin, Maggot, Sponge, Hair Pin, Insect, Paper, Stick, Eraser, Cotton, Key,

Battery, Paddy, Peanut, Ornaments, Foam, Denture, Bullete, Splinter.

Table 3: Location of the FB impaction according to different age groups (n=58)

Age groups	Nose f(%)	Ear f(%)	Oro pharynx f(%)	Hypo pharynx f(%)	Larynx f(%)	Esophagus f(%)	Soft tissue neck f(%)	Total f(%)
0-10	14(43.8)	7(21.9)	1(3.1)	6(18.8)	2(6.25)	2(6.3)	0(0)	32(100)
11-20	1(33.3)	0(0)	1(33.3)	1(33.3)	0(0)	0(0)	0(0)	3(100)
21-30	0(0)	1(25)	1(25)	1(25)	0(0)	0(0)	1(25)	4(100)
31-40	0(0)	2(40)	1(20)	0(0)	0(0)	0(0)	2(40)	5(100)
41-50	1(25)	1(25)	1(25)	0(0)	0(0)	0(0)	1(25)	4(100)
51-60	2(50)	1(25)	0(0)	0(0)	0(0)	1(25)	0(0)	4(100)
61-70	1(25)	1(25)	0(0)	1(25)	0(0)	1(25)	0(0)	4(100)
71+	0(0)	0(0)	1(50)	0(0)	0(0)	1(50)	0(0)	2(100)
Total	19(32.8)	13(22.4)	6(10.3)	9(15.5)	2(3.4)	5(8.6)	4(6.9)	58(100)

Table 3 shows that most of the cases foreign bodies are embedded in nose (32.8%) followed by ear(22.4%).

Figure1: Bar chart showing management of the patients (n=58)

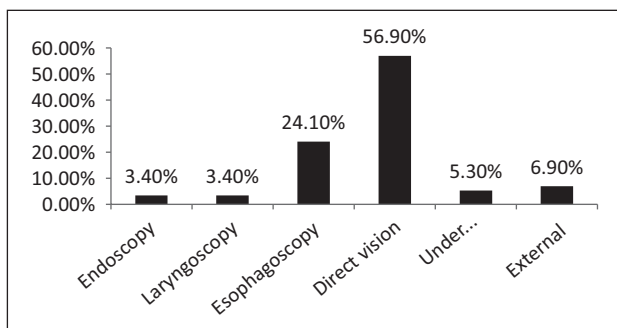


Figure1 shows that most of the cases foreign bodies are removed by direct visionOrnaments, Foam, Denture, Bullete, Splinter.

Table 4: Procedure of anesthesia to the patient (n=58)

Procedure	No. of Patients	Percentage
Local anaesthesia	14	24.14
General anaesthesia	19	32.8
Without anaesthesia	25	43.10
Total	58	100

Table- 4 shows that 43.10% cases anaesthesia is not required and 32.8% General anaesthesia needed

Discussion

A total of 58 cases with history suggestive of FB were included in this study, evaluated with patients age range 6 months to 72 years with mean age 22.46 years, most of the patients were in between 0 to 10 years (55.2%) which is

similar to Steven C et al (between 2 months to 3 yrs.)¹⁵, Panieri et al (less than 6 yrs.)¹⁶, Mallick Mohammed Saquib et al (average age 3.28 years)¹⁷, Santanu Banerjee et al (below 10 yrs)⁴; with male 56.89% and female 43.11% which is similar to findings by Mallick Mohammed Saquib et al¹⁷ while in the study of Steven C reported an even gender distribution¹⁵. The reasons adduced for included lack of molars needed for proper grinding of food, less-controlled coordination of pharyngeal muscles during swallowing and immaturity of laryngeal elevation and glottic closure. Also an age related tendency to explore the environment by placing objects in the orifices and they are often running or playing at the time of feeding¹⁸. This study showed that the occurrence of foreign body in the nasal fossa is related with age, but disappearing as child goes older.

In our study, 22.4% were ear foreign body and among them most common were insect(6.89%), foam(3.45%), cotton (3.45%), peanut (3.45%), ornaments(1.72%), foam(1.72%). Most common symptom of ear foreign body was hearing impairment (22.4%) followed by earache (17.2%) which were similar to study done by Breno at all were most common symptom hypacusis (39.53%) and earache(24.41%). In this study most common ear foreign body was cotton (43.02%) followed by plastic artifact (18.60%). 32.8% foreign bodies are in nose, 10.3% in oropharynx, 15.5% in hypopharynx, 8.6% in oesophagus and 3.4% in larynx which were similar to report from Panduranga et al¹³, Mackle T¹⁹, Hung & Lin²⁰ and Jackson et al²¹. Swallowed FBs in children may pass through the gastrointestinal tract without problems but occasionally become impacted in the esophagus due to its size or shape, in areas of physiological oesophageal narrowing or extrinsic compression or congenital anatomic abnormalities. Most esophageal foreign body impactions occur in the cervical esophagus distal to the cricopharyngeus²²⁻²⁴. This was similar

to the finding in this report. Some study has reported oesophageal foreign body impactions above an esophageal stricture site²⁴.

Considering individual sites of FBs impaction, the nasal cavity was the commonest in 32.8% of cases, similar to BS Alabiet al²⁵ & Higo et al²⁶ who found the common sites among Japanese children as the nose, the pharynx, esophagus in that order. The highest incidence of nasal FB's was among the under 10s' age group similar to that found by Das et al²⁷ and Endicanet al²⁶ among Melanesian children. The common nasal FB was button 5.15%, maggot 6.89%, bead 3.35%, eraser 3.45%, sponge 1.72%, and paper 1.72%. This agrees with the report by Dhillon²⁸ but Atvariance with Higo et al²⁶, who found plastic toys among Japanese children other objects were beans and maize seeds in a quarter of them and stones as well.

The next common site was the hypopharynx 15.5% & oesophagus 8.6% and were exclusively coins 8.62% which is similar to the study of Steven C et al¹⁵, Panduranga K et al¹³, okafor BC²⁹, Okeowo PA³⁰, Khan MA³¹, Edican Set al³² & Alabi BS et al³³. Coins are familiar objects readily found in our environment and are handled by these children especially the unattended as found in previous series from Nigeria³³. Among the food passage the most common site of lodgment is the cervical esophagus which is similar to Hung & Lin²⁰, Jones NS et al³⁴, Nandi P et al³⁵ as the cricopharynx is the narrowest part of the food passages and the relatively weak peristalsis in the upper esophagus makes this site especially vulnerable. They were found distal to the cricopharyngeal sphincter as in other series in children.²²⁻²⁴ The esophagus is a passive organ with inability to retain swallowed FBs³⁵. All had rigid esophagoscopy with removal under GA without any complications, which is dependent on the size and duration of FBs³³.

Next were 10.3% of FBs found in the oropharynx. Fish bones were the commonest 13.79% buried around the tonsils, tongue base, valeculia and pharyngeal mucosa. They were readily visible with adequate illumination and were removed with forceps at the clinic. The relative occurrences of coins and fish bones are similar to findings of Alabi BS et al³³ with findings from among Melanesian children. Miscellaneous FBs included cases of safety pin, battery, key that had to be removed with rigid esophagoscopy under GA in the operation theatre.

In our study laryngeal foreign body was 3.45% peanut and fish bone was found as foreign body. Late presentation was observed among 1 child that necessitated tracheostomy with subsequent DL with extraction under GA. The late presentations were associated to distance from health facility, wrong diagnosis and cost as they were initially being treated for asthma and upper respiratory tract infection at the emergency department. The most common presentations of a foreign body in the airway were respiratory distress, change of voice and cough which are similar to those of Kim et al.³⁶

Conclusion

In this study most common FB was Fish bone 8 (13.79%) then coin 5 (8.62%). In the airway, nose is the common site of impaction and cricopharynx is in the food passage. In the nose maggot were most commonly seen. In the throat coin was the common foreign body. On the other hand only 8 living FBs (13.79%) were found. Most of the oropharyngeal FBs and nasal FBs were removed directly 33 (56.90%) by naked eye with forceps or FB hook. Only 2 cases (3.40%) nasal FBs were removed by 0^oendoscope. Esophagoscopy was done in 14 cases (24.1%). Foreign body soft tissue neck was removed with external approach in 4 patients (6.9%). Only in 3 cases microscope was needed to remove foreign body from ear (5.3%). Only in 2 cases (3.4%) laryngoscopy was needed to remove foreign body. FBs from nose & oropharynx mostly removed without anaesthesia 25 (43.10%) though some FBs from nose & oro-pharynx were removed under local anaesthesia by using 10% Xylocaine spray. Complications were seen only 3 patients (5.17%) and all of them were retro pharyngeal abscess following impaction of FBs in the post. pharyngeal wall mainly for fish bone or pin. They were drained without local or general anesthesia. There is no unusual presentation of foreign body.

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