

THE PRACTICE OF A STUDY OF FOREIGN BODIES IN OTORHINOLARYNGOLOGY - A TERTIARY CARE CENTRE EXPERIENCE

Shradha Agarwal¹, Probal Chatterji², Akshay Jain³

¹Junior Resident, Department of Otorhinology, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India

²Professor and Head of the Department, Department of Otorhinology, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India

³Associate professor Department of Otorhinology, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India

Received : 19/02/2023
Received in revised form : 23/03/2023
Accepted : 06/04/2023

Keywords:

Foreign Body, Ear, Nose, Aerodigestive tract.

Corresponding Author:

Dr. Akshay Jain,

Email: meetakshayjain@gmail.com

DOI: 10.47009/jamp.2023.5.3.223

Source of Support: Nil,

Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (3); 1087-1092



Abstract

Background: To conduct a study on foreign bodies in the practice of otorhinology in a tertiary care centre. **Materials and Methods:** It was a prospective observational type of study carried among patients who presented with foreign bodies in the ENT department at Teerthanker Mahaveer Hospital and Research Centre, Moradabad. The detailed history was taken followed by complete ENT and neck examination. The history was taken regarding the Presenting complaints (whether a true emergency or not), History of present illness: enquiry was made regarding definite history of FB insertion, duration and types of complaints etc. **Result:** Majority (36.5%) of subjects presented within 24 hours of insertion/ ingestion of FB; 31% in 1 to 3 days and 10.8% in 3 to 7 days and 3.4% after 7 days, 18.2% subjects had no idea about foreign body insertion. 6 subjects who presented with maggots in the ear or nose required HRCT Temporal Bone or NCCT Nose and PNS along with endoscopy. X-ray neck AP and lateral view was done in all the upper aerodigestive tract FBs except for 1 subject who presented with fish bone in the tonsil. Maximum patients came with ear FB (n=64) followed by FB in the upper aero digestive tract (n=51) and then in the nose (n=33). 11.5% subjects showed complications. **Conclusion:** FBs of head-neck region are a commonly seen in our discipline and has a huge patient burden. Otolaryngologic emergencies very commonly constitute FBs. A substantial number of FBs (especially in airway) may lead to death if left undiagnosed. Treatment results are extremely good if early management is initiated.

INTRODUCTION

In medical science, a foreign body (FB) is defined as “any object that is present in a region where it is not meant to be, and where it can cause harm by its mere presence if immediate medical attention is not sought”.^[1] On certain instances, FBs may be detected on routine clinical examination in the out-patient department without any history of insertion.^[2]

FBs may be non-living (inanimate) or living (animate). The non-living FBs can be further subdivided into inorganic/organic & hydrophilic/hydrophobic categories. Attempted removal of the FB of ear may result in severe pain and/or trauma to the ear drum.^[3] Nasal & pharyngeal FBs can be most life threatening as they may accidentally enter the oesophagus or the airway leading to serious complications like GI perforation or stridor.^[4,5]

Organic FBs have a tendency to evoke a severe localised inflammatory reaction.^[6] In the ear, the impacted FB may lead to otitis externa, CSOM and loss of hearing.^[7] Impacted nasal FB predisposes to conditions like granuloma formation, rhinosinusitis and septal perforation. In throat, the penetrating FBs may lead to infections of the neck spaces, dysphagia and sometimes acute obstruction of the upper airway.

According to the literature, about 11% of ENT emergencies are comprised of foreign bodies.^[8] However, FB are most commonly seen among young age-groups because of several reasons such as playfulness, lack of maturity and in some cases insanity/mental retardation and also the easy accessibility of objects and non-availability of the caregivers.^[2]

The frequent FBs seen are particles of food, toys & their parts, coins, small items used in household, dentures etc. There is sometimes a delay in the

diagnosis because of the unobserved causative event and the non-specific symptoms especially in the ear and the nose. This may lead to the initial misdiagnosis of the condition in such patients.^[9]

The FBs in ear may not cause any symptoms or may not evoke any inflammatory response. Patients presents with a variety of complaints which may include purulent discharge from the U/L ear, pain in the ear, ear bleed, conductive hearing loss, tinnitus, itching in the ear etc.^[10] FB of the nose should be considered if any child comes with unilateral foul smelling nasal discharge. The common complications seen are rhinosinusitis, septal abscess or perforation. In the cases of prolonged ingrained FB, a rhinolith may develop.^[11] Another common site of FB impaction is the oesophagus. Infants and toddlers often accidentally swallow a variety of inedible objects like coins, batteries etc.^[12]

Bones may be swallowed accidentally by both adults as well as children. FB entry in the airway is usually an immediate emergency and may even lead to sudden death. Throat FBs causes anxiety to both the subject & their family members which often results in numerous attempts of removal by self that leads to mucosal trauma.^[13]

Most of the ear and the nose FBs removal can be done with minimal risk of complications by a trained clinician in the OPD itself. On the basis of the type and site of FB, the common methods for removal of ear FB are by forceps, water irrigation, suction catheter.^[11] At times, it is not be possible to remove the FB in the emergency room or the OPD if the patient is not cooperative at all. Removal under GA may be needed in such situations.

The presence of most FBs is usually not a threat to life but can cause complications in long term or even death if they get displaced into the respiratory tract. Other rare life-threatening complications which are seen include vascular trauma, pseudoaneurysm, abscess of the para-oesophageal space and tracheoesophageal and aorto-oesophageal fistula. The shape and dimensions of FB, its chemical composition and anatomical site involved are responsible for the immediate and long term consequences and also guide the clinician on the method that is adopted to remove them.^[14]

There are many established protocols for the management of FBs and they are also evolving regularly in developed countries whereas such protocols are not present in the countries which are developing. Moreover, due to poor awareness and/or poor access to health care facilities, a lot of people make attempts at self-removal or go to local quacks and unqualified personnel leading to complications.^[15]

This study has been done to establish the data related to otorhinolaryngological FBs in local population in terms of distribution of cases among various subjects, its types, different locations & their various presentations, the laterality of the FBs etc.

MATERIALS AND METHODS

It was a prospective observational type of study carried among patients who presented with foreign bodies regardless of their age and gender in the ENT department at Teerthanker Mahaveer Hospital and Research Centre, Moradabad. It was a time bound study done for 18 months.

Study population

The present study included all patients who presented with foreign bodies in the head-neck region irrespective of age and sex. The study excluded Patients who did not give consent for the study and/or declined to undergo any suggested investigation/procedure when indicated.

Methods of collection of data

The detailed history was taken followed by complete ENT and neck examination. The history was taken regarding the presenting complaints (whether a true emergency or not), History of present illness, History of past illness, the method of removal of FB, Personal history, Family history and Treatment history (whether any manipulation/attempt of removal has been done elsewhere).

Investigations required according to clinical suspicion such as the X-ray PNS (OM view), X-ray neck soft tissue (AP & lateral view) and X-ray chest (PA view). CT scan of nose & PNS, neck and scan of thorax. Any other investigation like USG, MRI scan was also done as per clinical suspicion.

Treatment plan

The apparent foreign body in nose and ear was removed in the OPD or the emergency department with or without the use of the local anesthesia. If the foreign body was not apparent or the attempts in removal of the foreign body were unsuccessful, the patient were advised admission and further investigations were performed and the removal was attempted in the operation theatre. FB removal was done in the operation theatre under general anaesthesia. After successfully removing the FB the patient was observed for a 24 hours period before discharging.

Statistical analysis

SPSS version 25.0 analyzed the Excel data when it was loaded. Quantitative (numerical variables) data was given as mean and standard deviation, whereas qualitative (categorical variables) data was provided as frequency and percentage.

RESULTS

The patients age varied from 6 months to 90 years. Most cases (56.8%) were seen in ages of 0- 20 years and 16 (10.8%) patients presented above the age of 50 years. Majority (60.1%) of the cases were males and 59 (39.9%) were females with Male: female (M:F) ratio of 1.5:1. Majority of the patients presented within 24 hours of FB insertion. 12 (8.1%) patients in the study population came with

the previous history of FB insertion/ ingestion. Mental illness was seen among 3.4% cases. 121

(81.8%) patients in the study gave the history of foreign body ingestion or insertion.

Table 1: shows the basic information about the study population

		Number	Percentage
Age groups	0-10 years	60	40.6%
	11-20 years	24	16.2%
	21-30 years	15	10.1%
	31-40 years	13	8.8%
	41-50 years	20	13.5%
	51-60 years	8	5.4%
	Above 60 years	8	5.4%
Gender	Male	89	60.1%
	Female	59	39.9%
History of any Previous Foreign Body Insertion/ Ingestion	No	136	91.9%
	Yes	12	8.1%
Any mental illness	No	143	96.6%
	Yes	5	3.4%
Known History of Foreign Body Insertion / Ingestion	No	27	18.2%
	Yes	121	81.8%
Duration	< 1 day	54	36.5%
	1-3 days	46	31.0%
	3-7 days	16	10.8%
	> 7 days	5	3.4%
	not known	27	18.2%
Site of lodgment	Ear	64	43.2%
	Nose	33	22.3%
	Oropharynx / hypopharynx	9	6.1%
	Oesophagus	38	25.7%
	Trachea/ bronchi	4	2.7%

Table 2: showing the different types of foreign body at different sites

	Type	Frequency	Percent
Foreign body ear	Small eraser	1	1.6%
	Bead	5	7.8%
	Button battery	1	1.6%
	Cotton	28	43.8%
	Crayon	1	1.6%
	Hair	4	6.3%
	Insect/Maggots	7	10.9%
	Matchstick	3	4.7%
	Peanut	1	1.6%
	Pearl	1	1.7%
	Pebble	2	3.1%
	Pencil tip	2	3.1%
	Plastic toy part	2	3.1%
	Rice	1	1.7%
	Seed	4	6.3%
Side of Ear	Electronic device part	1	1.7%
	Left	32	50.0%
Foreign Body Nose	Right	32	50.0%
	Bead	2	6.1%
	Button	8	24.2%
	Vegetable matter	10	30.3%
	Eraser	1	3.0%
	Maggots	5	15.15.0%
	Nose Pin	1	3.0%
	Pea	2	6.1%
	Pebble	2	6.1%
	Small Plastic Toy Part	1	3.0%
Wooden Stick	1	3.0%	
Side of Nostril	Bilateral	5	15.2%
	Left	16	48.5%
	Right	12	36.4%
Foreign body Oropharynx/ hypopharynx	Fish bone in base of tongue	1	11.1%
	Chicken bone in PFS	2	22.2%
	Fish bone in PFS	5	55.6%
	Plastic bristle of toothbrush in right tonsil	1	11.1%
FB Oesophagus	Metal pin	1	2.6%
	Plastic Ball	1	2.6%
	Coin	14	38.8%
	Dental cap	1	2.6%

	Denture without wire	1	2.6%
	Denture with wire	1	2.6%
	Fish bone	2	5.3%
	Magnet	1	2.6%
	Seed	3	7.9%
	Meat bolus	5	13.2%
	Meat bone	6	15.8%
	Metallic button	1	2.6%
	Needle	1	2.6%
FB Trachea/ Bronchus	Chicken bone	1	25.0%
	Corn seed	1	25.0%
	Pin	1	25.0%
	Plastic whistle	1	25.0%

Cotton (n=28) was the most common FB seen and it was most commonly seen in the adults whereas in younger children small plastic objects, vegetable seed, small ornaments were the common FBs seen. The study population showed an equal distribution of ear FB on right and the left side.

The commonly encountered FB in the oropharynx/ hypopharynx were bones of fish (n=6). coin (n=14) was the most common FB seen the oesophagus followed by fish and meat bone (n=8). Other objects seen are denture, seed, needle, metallic button, pins etc. Tracheal FB are rarely seen (4 cases out of 148). FB encountered were chicken bone, seed, pin and plastic whistle.

Table 3: showing management of different foreign bodies

		Frequency	Percent
Place of presentation	Emergency	80	54.1%
	OPD	68	46.0%
Place of removal	Emergency	30	20.3%
	IPD	55	37.2%
	OPD	63	42.6%
Management Mode	Removal using Tilley's forceps, micro-forceps, ET catheter and Suction	98	66.2%
	Removal using bronchoscope	3	2.0%
	Removal using laryngoscope	8	5.4%
	Removal using oesophagoscope	39	26.4%
Investigations	NA	91	61.5%
	HRCT Temporal Bone	1	0.7%
	HRCT Thorax	4	2.7%
	Nasal Endoscopy	6	4.1%
	UGIE	2	1.4%
	NCCT PNS	5	3.4%
	Video Laryngoscopy	9	6.1%
	Neck X-Ray Alone	36	24.3%
	Neck X-Ray along with one or more other investigations	14	9.5%
X-Ray Chest PA View	2	1.4%	

80 patients presented in the emergency room while 68 patients presented in OPD. removal of FB was done in the emergency for 30 (20.3%) patients, in OPD for 63 (42.6%) while 55 (37.2%) patients required admission for removal. The ear and nose FBs removal was done in OPD or ER using instruments like suction catheter, Tilley's forceps, micro-forceps, Jobson-Horne probe, eustachian tube catheter with or without application of local anaesthesia. Only 1 ear foreign body needed admission and removal under general anaesthesia. All upper aerodigestive tract FB needed admission and removal by esophagoscopy or laryngoscopy or bronchoscopy under general anaesthesia except for 1 FB in the tonsil which was removed in the OPD.

DISCUSSION

FBs of the head neck region are very frequent in occurrence and ENT specialists have to deal with them on a regular basis.^[7] In some instances it can lead to life threatening complications if not attended

on time.^[12] Parents and caretakers must keep an eye on the young children attentively and should remove any possible FB from the vicinity.

In our study, the age of the patients presenting to our hospital ranged from 6 months to 90 years. Majority of the cases (56.8%) were in the age between 0.5-20 years with 10.8% patients presented above the age of 50 years. Kwon et al,^[16] in their study stated that maximum patients were in the early childhood group (52.2%). Umar et al,^[17] found that the ages commonly involved were between 2-5 years (78.33%). Agrawal and Velankar,^[18] observed that commonly affected ages were less than 10 years. Davies PH et al,^[19] in the study reported that earliest presentation is likely to be around 9 months of age.

Adedeji et al,^[20] found that children aged 10 and under made up over two-thirds (62.3%) of subjects. Parental neglect, increase in the physical activity and the explorative and curious character of the children are some of the explanations for this discovery.^[18]

In this study, males formed the majority cases (n=89; 60.1%) and 59 (39.9%) were females. Male:

female (M: F) ratio of the study population was 1.5. According to Adedeji et al,^[20] a little male preponderance was seen in their study (M: F = 1.2:1). Most research seem to suggest that boys are more exploratory and active than girls and are more likely to present with FBs. Umar et al,^[17] however found that females were commonly affected (55.75%) than males (44.25%).

In the present study, the duration was < 1 day among 36.5%, 1-3 days among 31%, 3-7 days among 10.8% and > 7 days among 3.4%. 18.2% subjects had no idea about foreign body. Majority of the patients presented within 24 hours of insertion. In another study of 130 subjects by Memis et al,^[22] 92.3% cases presented within 24 hours of insertion of FB and in a study done by Da Silva et al (2009) 69.57.3 % subjects of 128 patients presented within 1 day of insertion.

In present study, most FBs were seen in ear (n=64) followed by upper aero- digestive tract (n=51) and then the nasal cavity (n=33). Adedeji et al,^[20] found that foreign bodies of nose (20.9%) and ear (68.7%) were most prevalent.

In present study, cotton (n=28) was the most common FB seen among the adults and younger children presented with small plastic objects, vegetable seed etc. Adedeji et al,^[20] found that the most prevalent ear FBs were cotton buds and seeds, which can even cause inflammatory reactions. Due to the widespread practice of cleaning the ears with cotton buds, their impaction is very prevalent in adults.

Al-Juboori,^[23] highlighted a new FB, a bluetooth device, which has never been reported before. It was used as a cheating device in exam in Al Fallujah. In this descriptive study of over two years, bluetooth devices were extracted from 3.1% patients. In our study also a part of one such device was extracted.

Our study population showed an equal distribution of ear FB on right and the left side. A study by Bhatta et al,^[12] had however found that in a series of 211 patients, right ear was affected more (62.5%) as has many other authors.

In present study, button and vegetable seed were commonly seen in nasal cavity. Umar et al,^[17] found that small nuts & seeds (35%) were most common. Aksakal,^[23] stated that the most common FB were beads in the nose (30.8%).

In the present study, FB was more commonly encountered on the left side followed by the right side and bilaterally. In a study by Bhatta et al,^[12] left nostril (56.4%) was affected more than the right one but in contrary, Memis et al,^[21] found that right nostril was affected more (56.9%). Many workers tend to agree that most of the population being right handed, they tend to put in objects preferentially into their right nasal cavities.

In current study, the commonest FB in oropharynx/hypopharynx were bones of fish in PFS. Kwon et al,^[16] found that throat was the most common location of FBs (59.2%) and bone the commonest

FB. Aksakal,^[23] stated that commonest location of impaction was in the oral cavity/tonsil (56.8%).

Adedeji et al,^[20] found that most of the throat's FBs (64%) were impacted in or around the tonsils in the oropharynx. The anatomical position of tonsil makes it the most preferred spot for pharyngeal foreign bodies. Fish bones made up the major part of the FB of oropharynx.

In the current study, the most common FB was coins followed by meat bone, meat bolus and seeds. Anuja et al,^[14] stated that most FBs were organic (62.9%) with bones of mutton & chicken being most frequent (25.4%). Aksakal,^[23] stated that the most common oesophageal FBs were disc batteries and coins (80.7%). Bones of fish were most frequent FB of aerodigestive system (70.5%), coins (6.63%) and impacted meat bones (1.49%) in the oesophagus. Agrawal and Velankar,^[18] also found that fish bones (46%) were the most frequent, coins (33%), safety pins (13%), & chicken bones (8%).

The FBs encountered in the tracheobronchial tree were chicken bone, corn seed, pin and plastic whistle (one case each). Aksakal,^[23] stated that the commonest items were peanuts and nuts (70%) in laryngo-tracheo-bronchial tree. Ibekwe et al,^[24] stated that the most common FB was fish bone.

In current study, 80 patients presented in the emergency room while 68 patients presented in OPD. Removal of FB was done in the emergency for 20.3% patients, OPD for 42.6% while 37.2% patients required admission for removal. Majority of the subjects with FB of ear and nose were managed in the OPD or emergency by removing the FBs using instruments like Tilley's forceps, micro-forceps, suction apparatus with or without local anaesthesia.

Agrawal and Velankar,^[18] observed that the FB removal was with LA in 4%, under GA was in 30 % and 66% did not require anaesthesia. Lee et al,^[25] stated that 58.1% subjects with FBs in the airway needed ICU stay with longest stay in the hospital (10.5 days) & highest death rate (25.8%). Awad et al,^[26] in his study found that throat was the main site for FB lodgement in ENT practice and almost all throat FBs required GA for its removal.

In the present study, 91 patients with the ear and the nose FB cases did not require any radiological investigations. 6 subjects who presented who presented with maggots in the ear or nose, HRCT Temporal Bone or NCCT Nose and PNS along with endoscopy was done. X ray neck AP and lateral view was done in all the upper aero-digestive tract.

Lee et al,^[25] found that most common investigation done for patients with FB in esophagus was X-Ray (44.8%), CT scan for FB of airway (4.3%). Hospitalization rate being high in airway FB subjects (7.4%).

In this study, 11.5% subjects showed complications such as prevertebral abscess, tear of oesophageal mucosa, oesophageal perforation, tympanic membrane perforation, trauma to the EAC and

chemical burn, tear of nasal mucosa and septal perforation.

This study's reported complications are consistent with findings from research from Nigeria, main cause of ENT injuries was ingestion, insertion & aspiration of FB. Subjects whose FB removal was done by professionals with insufficient knowledge in ENT practice are more likely to experience these complications.^[9]

CONCLUSION

FBs of head-neck region are a commonly seen in our discipline and has a huge patient burden. Otolaryngologic emergencies very commonly constitute FBs. FB are most commonly seen among younger age group because of several factors like, boredom, imitation, playing, ADHD, insanity and also the easy accessibility of objects & non-availability of the attentive caregivers. The major issues for this problem are precise diagnosis and timely removal of FB to avoid complications. A substantial number of FBs (especially in airway) may lead to death if left undiagnosed. Hence, these cases need to be identified and managed promptly. Treatment results are extremely good if early management is initiated.

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