

# Ear, Nose and Throat Foreign Bodies Removed under General Anaesthesia: A Retrospective Study

NEIZEKHOTUO BRIAN SHUNYU<sup>1</sup>, HANIFA AKHTAR<sup>2</sup>, HABIB MD REZAUL KARIM<sup>3</sup>,  
NARI M LYNGDOH<sup>4</sup>, MD. YUNUS<sup>5</sup>, MD. JAMIL<sup>6</sup>

## ABSTRACT

**Introduction:** For Otorhinolaryngologist, removal of Foreign Bodies (FB) from the ear, nose and throat is one of the common emergency procedures done. Most of the cases especially of the ear and nose can be managed without General Anaesthesia (GA). But in some cases GA may be needed. There are very few studies that address the scenario of ear, nose and throat foreign body that required GA for its removal and the complications associated with it.

**Aim:** This study was conducted with the aim to study the patient's profile, types and distribution of FB removed under GA, and the associated complications.

**Materials and Methods:** The present study is a hospital based retrospective, cross-sectional study conducted in the Department of Otorhinolaryngology in association with Department of Anaesthesiology and Critical Care in North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong, Meghalaya, India from year 2009 to 2014. Information was collected from indoor patient file and operation

record book. Those patients where foreign body was not found after examination under GA were excluded.

**Results:** A total of 112 cases of foreign body in ear, nose and throat removed under GA were selected. There was variation of age from youngest case being 11 months to 74 years with a slight male predominance. Two third of the patients belonged to paediatric age group. Most of the FB were inanimate with high number of inorganic type found in majority. Foreign body in food passage was found in most cases. Coin and meat bone were the common FB in children and adults respectively. We found no complications related to removal of foreign body from the food passage and nose. But some complications were seen in foreign body of ear and tracheo-bronchial tree.

**Conclusion:** Ear, nose and throat FB that required GA were seen in all age groups. FB of food passage constitute the majority. Type of foreign body varies between children and adults. In children most common types were related to toys and their part and food materials. In adults, food materials were most common.

**Keywords:** Complications, Foreign body, General anaesthesia, Otorhinolaryngology

## INTRODUCTION

Foreign Bodies (FB) in the ear, nose and throat (ENT) are one of the commonest Otorhinolaryngology emergency encountered in emergency department [1]. Although it is common in children, it can affect any age group [2]. Nature of the FB varies among different age group, in children common FB include things with which they used to play like bead, toy parts, coin etc, while in adults common FB are food materials like fish bone, meat bone, or artificial denture etc., [3,4]. As majority of the cases have FBs in nose and external ear canal which is quite easily accessible, most of the time it can be removed in emergency department by simple manoeuvre and do not require any assistance from anaesthesia department [3]. But in many, depending upon the site of FB and age of the patient may require General Anaesthesia (GA) for its removal and, in some may be associated with life threatening complication. Though studies on FB in relation to ENT are available in literature but very few studies address the types of ENT FB that required GA for its removal and complications associated with it. The present study was done on those ENT FB where GA was needed for their removal with the following aims and objectives: To study the patient's profile, types of foreign bodies and its distribution, and to study the complications associated with FB and its removal.

## MATERIALS AND METHODS

The present study is a hospital based retrospective study conducted

in the Department of Otorhinolaryngology in association with Department of Anaesthesiology and Critical Care in a tertiary care centre from North Eastern India. Study includes patients admitted for ENT FB from year 2009 to 2014.

### Inclusion criteria

Patients of all ages admitted with history of ENT FB that required GA for its removal. Those patients with no history of FB but where FB was retrieved during surgery were also included.

### Exclusion criteria

Patients with history of suspected FB but where no FB was found after examination under GA were excluded.

Data was collected from indoor patient record file and operation record book and anaesthesia management chart. Information were collected for the following parameter: Patient's age and sex, location of FB, types of FB, history of prior instrumentation, presenting complaints, investigation finding, complications related to FB, complications due to GA or operative procedure.

Data was assembled in Microsoft Excel spread sheet for analysis and p-value of less than 0.05 was taken as significant.

## RESULTS

During the study period from 2009 to 2014, 113 numbers of patients were admitted with history of ENT FB for removal under GA and

out of 113 patients, four were excluded as nothing was found after examination under GA. In three patients admitted with diseases of ear and nose, FB was found during mastoidectomy and endoscopic sinus surgery. So, for our study total 112 patients were selected of which, 69(61.6%) and 43(38.4%) were male and female respectively. Male to female ratio was 1.6. In our study the youngest patient was 11-month-old and the oldest was 74-year-old with mean age of 13.6 years. Paediatric (up to 18 years of age) and adult patients represented 85(75.9%) and 27(24.1%) respectively. Majority (68.7%) of patients belonged to the 0-10 years age group as shown in [Table/Fig-1]. Food passage (58.9%) was the most common site followed by ear (21.4%), tracheobronchial tree (8.9%), nose (8%) and soft tissue of head and neck (2.7%). Distribution of FB in different anatomical location is shown in [Table/Fig-2]. [Table/Fig-3] showed the distribution of different types of FB in different anatomical location. Distribution of different types of FB along with location in different age groups is shown in [Table/Fig-4a,b,c]. In our study FB were divided into animate and inanimate. Animate and inanimate were present in 2(1.8%) and 110(98.2%) patients respectively. Out of 110 inanimate FB, 36(32.8%) were organic and 74(67.2%) were inorganic. Laterality was calculated for FB located in ear and nose. It was found on right, left and bilateral in 24(72.8%), 8(24.2%),

Age Groups (no/%) Site	0-10 yrs (77/ 68.7%)	11-20 yrs (9/8%)	21-30 yrs (5/4.5%)	31-40 yrs (10/8.9%)	41-50 yrs (8/7.1%)	51-75 yrs (3/2 .7%)
Ear	18	3	0	1	2	0
Nose	8	0	1	0	0	0
Tracheo-bronchial Tree	8	2	0	0	0	0
Food passage	41	3	4	9	6	3
Soft tissue of head & neck	2	1	0	0	0	0

[Table/Fig-1]: Showing distributions of foreign bodies in different age groups.

EAR (24/21.4%)		NOSE (9/8%)		TRACHEOBRONCHIAL TREE (10/8.9%)		FOOD PASSAGE (66/58.9%)		SOFT TISSUE OF HEAD AND NECK (3/2.7%)	
SUBSITE	No	SUBSITE	No	SUBSITE	No	SUBSITE	No	SUBSITE	No
External ear	21	Anterior to middle turbinate	7	Right bronchus Left bronchus	9 1	Oropharynx (6) Vallecula Base tongue Oropharynx	4 1 1	Face	2
Middle ear	1	Posterior nasal cavity	2	Trachea	1	Oesophagus (60) Hypopharynx Cervical oesophagus Mid oesophagus	1 40 19	Temporal scalp	1
Mastoid	2								

[Table/Fig-2]: Showing distribution of foreign bodies as per anatomical location.

EAR		NOSE		TRACHEOBRONCHIAL TREE		FOOD PASSAGE		SOFT TISSUE OF HEAD AND NECK	
Type	No	Type	No	Type	No	Type	No	Type	No
Pulses/seed	3	Pulses/seed	4	Pulses/seed	3	Coin	37	Wooden stick	2
Bead/plastic toy	9	Plastic toy	2	Bead	2	Safety pin	1	Glass	1
Wooden stick	1	Ornament (ear ring)	1	Whistle	1	Ornament (ear ring)	1		
Cotton wool	1	Cotton wool	2	Tracheostomy Tube (broken)	1	Iron rod	1		
Pencil/rubber/Crayons	6			Coin	1	Meat bone	16		
Insect	2			Wall pin	1	Meat bolus	3		
Stone	2			Torch bulb	1	Fish bone	6		
						Corn	1		

[Table/Fig-3]: Distribution of type of foreign bodies in different anatomical location.

EAR							
0-5 years (13 no)		6-10 years (5 no)		11-15 years (3 no)		>16 years (3 no)	
Bead/plastic toy	7	Bead	1	Pulses/seed	1	Insect	1
Pulses/seed	2	Pencil/rubber/Crayons	3	Pencil	1	Wooden stick	1
Pencil/rubber	2	Insect	1	Bead	1	Cotton wool	1
Stone	2						

[Table/Fig-4a]: Distribution of types foreign bodies in different location and age groups.

NOSE				TRACHEOBRONCHIAL TREE					
0-5 years (8 no)		>16 years (1 no)		0-5 years (3 no)		6-10 years (5 no)		11-15 years (2 no)	
Pulses/seed	4	Cotton wool	1	Broken tracheostomy tube	1	Pulses	2	Wall pin	1
Plastic toy	2			Betel nut	1	coin	1	whistle	1
Ornament (ear ring)	1			Torch bulb	1	Bead	1		
Cotton wool	1					whistle	1		

[Table/Fig-4b]: Distribution of types foreign bodies in different location and age groups.

FOOD PASSAGE							
0-5 years (26 no.)		6-10 years (15 no)		Years (3 no)		>20 years (22 no)	
Coin	24	Coin	12	Coin	1	Meat bone	12
Ear ring	1	Meat bone	2	Meat bone	2	Fish bone	6
Iron rod	1	Safety pin	1			Meat bolus	3
						Corn	1

[Table/Fig-4c]: Distribution of types foreign bodies in different location and age groups.

1(3%) respectively. The frequency of FBs in the right side of ear and nose is significantly higher than the left side ( $p < 0.05$ ). Factors like time lapse at presentation, history of previous instrumentation and complications related to FB removal is shown in [Table/Fig-5].

## DISCUSSION

As Otorhinolaryngologists deal with maximum number of natural orifices of body that are habitually exposed, so is the high rate of encountering FB as emergency cases. Individual from infancy to elderly may present with ENT FB, but the frequency, anatomical distribution and types of FBs differs between extremities of ages. Male predominance was seen in our study similar to study by Shrestha I et al., [5]. As our study includes only those cases where GA was required for FBs removal, the distribution pattern of ENT FBs is different from other studies [5,6]. Generally most of the ENT FBs are located in ear and nose and majority of them can be easily removed without any complication as reported in different studies [3-5,7]. Ear and nose FBs are more common in right than left side as reported by previous studies, similar finding was observed in present study [8]. Otolaryngology FB is most prevalent in paediatric age group, especially in small children below 5 years [6,9,10]. In our study majority (68.7%) of patients were below 10 years of age. This may be due to gradual development of milestones, application of five senses, increased inquisitiveness, habit of playing and eating at same time and sometimes due to negligence of guardians.

Complications Site (No)	Time of Presentation		H/O Instrumentation	Complications	
	<24 Hrs	>24 Hrs			
Ear (24)	9(37.5%)	15(62.5%)	3(12.5%)	Post aurial approach	1
				TM perforation	1
				EAC laceration	2
Nose (9)	3(33.3%)	6(66.6%)	7(77.7%)	Complication	0
Tracheo-bronchial Tree (10)	4(40%)	6(60%)	1(10%)	Open thoracotomy	2
Food passage (66)	6 (92.4%)	5(7.6%)	5(7.6%)	Complication	0
Soft tissue of head & neck (3)	2(66.6%)	1(33.3%)	0(0%)	Abscess	1

[Table/Fig-5]: Showing co-morbidities and complications with foreign bodies of different sites.

FB may be classified into animate and inanimate. Inanimate FB may be organic and inorganic. In our study majority (98.2%) of FB were inanimate with predominance of inorganic objects (60.7%) in all anatomical sites except nose. Among organic FB, meat bone (44.4%) were commonest followed by pulses and seeds (27.8%). Coin (51.4%) ranked highest among inorganic FB followed by plastic beads and toys in 16.2% of cases. This pattern of type of FB is due to selection criteria of our study and because of predominance of FB in food passage. Our observation on types of FB in different anatomical sites varies from other studies [1-3]. It may be due to difference in profile of patients and local customs in different regions [11].

Majority of FB in present study were located in food passage in both paediatric and adult age groups, which represented 50.6% and 82.7% respectively in each age group. Other sites in decreasing order of frequency in paediatric age group were ear (25.3%), tracheobronchial tree (12%), nose (9.6%) and soft tissue of head and neck region (2.4%). While in adults other anatomical sites involved were ear (10.3%), nose (3.4%) and soft tissue (3.4%). Our findings reflect pattern of FB requiring GA for removal and varies from most studies [1,2,4], as both in patients and out patients were included in

their study and moreover most FB of ear and nose can be removed as outpatient department procedures without need of GA [12].

In our study FBs of ear and nose showed marked similarity in age distribution, types of FB and time of presentation. Most of the patients with FB ear and nose were children less than ten years of age. But type of FB and presentation of patients differed between young and old. In children, FB of ear, nose were related to food items, toys, stationery goods and others and all of them gave history of FB insertion [6,13]. FB of nose is very uncommon in adults. In our study, FB of ear and nose in adults was discovered while doing other surgeries (mastoidectomy for chronic otitis media and endoscopic sinus surgery for chronic sinusitis) and majority did not have any preoperative history of FB and it was found to be either wooden stick or cotton for cleaning ear and nose [14]. Generally inert FB may remain for years without producing any symptoms but organic FB like cotton, wooden stick as in our study induces inflammation and sometimes may cause complications like sinusitis, otitis media and tetanus [14-16].

Unlike the pattern of distribution in ear and nose, FB of food passage was found across all age groups. Coin was most commonly encountered in children and meat bone was seen in majority of adults. Majority of them were located in cervical oesophagus and were removed without any complications [17,18].

Most of the tracheobronchial tree FBs were inorganic unlike findings of other studies [3,19]. We have witnessed certain unusual inorganic FB like broken tracheostomy tube and torch bulb [20]. FBs tracheobronchial tree in most of the cases were removed with rigid bronchoscope but two patients required open thoracotomy due to inaccessible location of the FBs in terminal bronchiole.

In our study only FB of food passage presented early within 24 hours. This may be due to the pain and difficulty in swallowing. But FB of other sites presented late due to delayed onset of symptoms, negligence by guardians, painless clinical picture and remote location of villages [19].

The reason for requirement of GA for removal of FBs in ear and nose was either due to spherical or cylindrical shape, impacted and deep seated location, small age, uncooperative patients or previous attempt of removal. As previous history of instrumentation was present in ear and nose in 62.5% and 66.6% cases respectively, GA was required in these cases for proper visualisation, atraumatic removal and to avoid further complications related to instrumentation. In our study, ear FB were removed under microscope without any major complications except in one case where FB (bead) perforated the tympanic membrane and was seen to be lodged in the middle ear which was eventually removed by post-auricular approach.

## CONCLUSION

Foreign bodies of ENT that require GA for removal is encountered in all age group with majority in the small children less than 10-year-old. Majority of the cases had FB in the food passage followed by ear, nose and tracheobronchial tree. In children common FB are either play things or food items while in adult most are food materials. Ear and nose FB that needed GA for removal is mostly due to uncooperative nature of the patients, prior instrumentation, spherical shape of FB, or impacted and deep seated location. Tracheobronchial or food passage FB depending upon the shape and location of FB may require open thoracotomy for removal with major complications.

## REFERENCES

- [1] Yojana S, Mehta K, Girish M. Epidemiological profile of otorhinolaryngological emergencies at a medical college, in rural area of Gujarat. *Indian Journal of Otolaryngology and Head & Neck Surgery*. 2012;64(3):218-24.
- [2] Ray R, Dutta M, Mukherjee M, Gayen GC. Foreign body in ear, nose and throat: experience in a tertiary hospital. *Indian Journal of Otolaryngology and Head & Neck Surgery*. 2014;66(1):13-16.
- [3] Chiun KC, Tang IP, Tan TY, Jong DE. Review of ear, nose and throat foreign bodies in Sarawak General Hospital. A five year experience. *Med J Malaysia*.

- 2012;67(1):17-20.
- [4] Heim SW, Maughan KL. Foreign bodies in the ear, nose, and throat. *Am Fam Physician*. 2007;76(8):1185-89.
- [5] Shrestha I, Shrestha BL, Amatya RC. Analysis of ear, nose and throat foreign bodies in dhulikhel hospital. *Kathmandu Univ Med J (KUMJ)*. 2012;10(38):4-8.
- [6] Oreh AC, Folorunsho D, Ibekwe TS. Actualities of management of aural, nasal, and throat foreign bodies. *Ann Med Health Sci Res*. 2015;5(2):108-14.
- [7] Davies PH, Bengier JR. Foreign bodies in the nose and ear: a review of techniques for removal in the emergency department. *J Accid Emerg Med*. 2000;17:91-94.
- [8] Hon SK, Izam TM, Koay CB, Razi A. A prospective evaluation of foreign bodies presenting to the Ear, Nose and Throat Clinic, Hospital Kuala Lumpur. *Med J Malaysia*. 2001;56(4):463-70.
- [9] Srinivas Moorthy PN, Srivalli M, Rau GVS, Prasanth C. Study on clinical presentation of ear and nose foreign bodies. *Indian Journal of Otolaryngology and Head & Neck Surgery*. 2012;64(1):31-35.
- [10] Mukherjee A, Haldar D, Dutta S, Dutta M, Saha J, Sinha R. Ear, nose and throat foreign bodies in children: a search for socio-demographic correlates. *Int J Pediatr Otorhinolaryngol*. 2011;75(4):510-12.
- [11] Figueiredo RR, Azevedo AA, Kós AO, Tomita S. Complications of ent foreign bodies: a retrospective study. *Braz J Otorhinolaryngol*. 2008;74(1):7-15.
- [12] Parajuli R. Foreign bodies in the ear, nose and throat: an experience in a tertiary care hospital in central Nepal. *Int Arch Otorhinolaryngol*. 2015; 19(2):121-23.
- [13] Ologe FE, Dunmade AD, Afolabi OA. Aural foreign bodies in children. *Indian J Pediatr*. 2007;74(8):755-58.
- [14] Skandour D, Nouri H, Rochdi Y, Aderdour L, Raji A. Persistent otorrhea revealing a foreign body of the middle ear. *Arch Pediatr*. 2014;21(8):873-75.
- [15] Figueiredo RR, Azevedo AA, Kos AO, Tomita S. Nasal foreign bodies: description of types and complications in 420 cases. *Braz J Otorhinolaryngol*. 2006;72:18-23.
- [16] Kelesidis T, Osman S, Dinerman H. An unusual foreign body as cause of chronic sinusitis: a case report. *Journal of Medical Case Reports*. 2010;4:157.
- [17] Little DC, Shah SR, St Peter SD, Calkins CM, Morrow SE, Murphy JP, et al. Oesophageal foreign bodies in the pediatric population: our first 500 cases. *J Pediatr Surg*. 2006;41(5):914-18.
- [18] Asif M, Haroon T, Khan Z, Muhammad R, Malik S, Khan F. Foreign body oesophagus: types and site of impaction. *Gomal J Med Sci*. 2013;11:163-66.
- [19] Mallick MS. Tracheobronchial foreign body aspiration in children: A continuing diagnostic challenge. *Afr J Paediatr Surg*. 2014;11:225-28.

**PARTICULARS OF CONTRIBUTORS:**

1. Associate Professor, Department of ENT and Head and Neck Surgery, NEIGRIHMS, Shillong, India.
2. Assistant Professor, Department of ENT and Head and Neck Surgery, NEIGRIHMS, Shillong, India.
3. Senior Resident, Department of Anaesthesiology and Critical Care and Emergency Medicine, NEIGRIHMS, Shillong, India.
4. Associate Professor, Department of Anaesthesiology and Critical Care and Emergency Medicine, NEIGRIHMS, Shillong, India.
5. Additional Professor, Department of Anaesthesiology and Critical Care and Emergency Medicine, NEIGRIHMS, Shillong, India.
6. Assistant Professor, Department of General Medicine and Emergency Medicine, NEIGRIHMS, Shillong, India.

**NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Hanifa Akhtar,  
Department of Otorhinolaryngology, North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences,  
Shillong-793018, Meghalaya, India.  
E-mail: hanifaent@gmail.com

Date of Submission: **Jun 15, 2016**  
Date of Peer Review: **Jul 27, 2016**  
Date of Acceptance: **Sep 06, 2016**  
Date of Publishing: **Feb 01, 2017**

**FINANCIAL OR OTHER COMPETING INTERESTS:** None.