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CORRESPONDING AUTHOR:

Sandarva Giri

Department of otorhinolaryngology
Birat Medical College teaching Hospital
Contact: +9779868331988
Email: sandarva_giri@yahoo.com

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An Observational Study of Foreign Bodies in Ear, Nose and Throat at ENT-HNS OPD AND Emergency Department of Birat Medical College and Teaching Hospital

Sandarva Giri¹, Rajeev Shah¹, Aahana Pokharel¹, Rajat Agarwal², Anila Kirti³, Sajjad Ahmed Khan²

¹ Department of otorhinolaryngology, Birat Medical College Teaching Hospital, Morang, Nepal.

² Birat Medical College Teaching Hospital, Morang, Nepal.

³ Department of Dermatology, Birat Medical College Teaching Hospital, Morang, Nepal.

ABSTRACT

Introduction: Foreign bodies in the ear, nose and throat is the most common problem encountered in outpatient clinic of Ear, Nose and Throat (ENT) and the emergency departments, and their prompt diagnosis is imperative for preventing life-threatening complications.

Objectives: The aim of this study was to evaluate the types of foreign bodies impacted in the ENT and to describe the socio-demographic profiles of the presenting patients.

Methodology: In a descriptive cross-sectional study conducted at the ENT outpatient clinic and the emergency department of Birat Medical College and Teaching Hospital, Tankisinuwari, Morang, Nepal, 72 patients presenting with impacted foreign bodies in their ENT regions were evaluated for their socio-demographic characteristics, types of foreign bodies and the treatment modality.

Results: Of the total of 72 participants, males were 72.2%; age ranging from 2 years to 64 years with the mean age of 22.6; Indo-Aryans (70.8%), and residents around Biratnagar and nearby were 51.4%. Throat was the most commonly involved anatomical site (61.1%). Of the various impacted foreign bodies, the most common were non-living (organic) (58.3%). Specifically, chicken bones (25.0%) followed by coin (12.5%), fish bone (9.7%), mutton bone and cotton (8.3% each) were the most frequently impacted foreign bodies, most cases of which were removed under general anesthesia (55.6%).

Conclusion: Males were more commonly involved than females and adults more than the pediatric age groups. Throat was the most commonly involved region and the most common foreign bodies impacted were non-living (organic) in nature, and most of the cases were operated under general anesthesia.

INTRODUCTION

Foreign body is an object or substance foreign to the location where it is found.¹ Foreign bodies in ear, nose and throat is the most common problem encountered in outpatient clinic of otorhinolaryngology department and the emergency department. It is commonly seen in children who have the habit of inserting nearby objects in their nose, ear or mouth.² Foreign body is an object or substance foreign to the location where it is found.¹ Foreign bodies in ear, nose and throat is the most common problem encountered in outpatient clinic of otorhinolaryngology department and the emergency department. It is commonly seen in children who have the habit of inserting nearby objects in their nose, ear or mouth.²

Globally, foreign bodies in the ear used to be reported as the most common.³⁻⁶ Contrary to this, at the regional level, foreign bodies impacted in the nose has been reported to be common.⁷ In one study done in the Central part of Nepal, foreign bodies in the ear and nose were found more frequently in children, and the throat was the most common site of foreign bodies in adults and elderly people.¹ Likewise, in another study conducted in the Western part of Nepal, nose, followed by ear were the predominant sites of involvement.²

If not diagnosed timely, impacted foreign bodies in the ear, nose and throat may lead to severe complications, including life threatening situations. Thus, the proper recognition, study and management of foreign bodies are required to prevent such mishaps.⁸ Moreover, judicious evaluation of types of foreign bodies and their common locations of impaction are of utmost importance for management by treating surgeons.

Even though many studies are conducted regarding foreign bodies in ENT, there are only few studies done in Eastern part of Nepal. So, this study will help to provide useful information for the early diagnosis and management of foreign body in ENT. To this end, the present study was designed to evaluate the different types of foreign bodies in the ear, nose and throat and to describe the socio-demographic profiles of patients presenting with such foreign bodies.

METHODOLOGY

It was a quantitative, prospective, descriptive cross-sectional study conducted in the ENT – HNS (Ear, Nose and Throat – Head and Neck Surgery) outpatient department (OPD) and Emergency department at Birat Medical College and Teaching Hospital (BMCTH), Tankisinuwari, Morang Nepal from July 2022 to December 2022 (a duration of six months). BMCTH is a tertiary care center with inpatient services catering to the healthcare needs of a significant mass of population within Biratnagar, whole of Morang and outside, representing eastern Nepal. After obtaining ethical clearance from the Institutional Review Committee (IRC BMCTH), research data was collected from the selected study participants from July 2022 to December 2022 with a total duration of six months. The study population comprised of all patients visiting ENT-HNS and Emergency departments of BMCTH with foreign bodies in ear, nose and throat (the sampling frame being all patients from the study population with a confirmed diagnosis of foreign bodies in ear, nose and throat and the sample unit being an individual patient from the sampling frame).

All patients, irrespective of age, who presented in the Emergency or ENT out-patient department of BMCTH with any types of foreign bodies in ear, nose and throat, were included in the study, excluding those patients not willing to participate. A non-probability (purposive) type of sampling was employed for the selection of the eligible participants, wherein, all patients visiting the ENT-HNS and Emergency departments of BMCTH, irrespective of age, gender, and other socio-demographic profiles and treatment modalities, with foreign bodies in the ear, nose and throat regions were enrolled. The sample size was determined using the census method. A sample size of 72 was obtained after all the above considerations.

Data was collected from the detailed history and clinical examination of the patients. After obtaining verbal and written informed consent, socio-demographic and clinical characteristics of the study participants were recorded in a preformed specific and specially developed proforma compatible with the objectives of our study. The socio-demographic characteristics included age (in years), gender (female/male), ethnicity and address of

the study participants. The clinical characteristics, on the other hand, included anatomical sites of foreign body impaction (ear/nose/throat), types of impacted foreign bodies and the types of anesthesia under which the foreign bodies were removed (local anesthesia/general anesthesia). The principal investigator was himself involved in the acquisition of the research data.

The data collected in the proforma was first entered in the spreadsheet software (Microsoft Excel) for preliminary data management including, data cleaning, data analysis and appropriate coding. The age was recoded as age-groups (pediatric, <16 years old vs adult, >= 16 years old) and age-categories (<10, 10–20, 20–30, 30–40 and >=40 years). Using the surnames of the study participants, the ethnicity was categorized as Indo-Aryans and Others and the address as (Biratnagar and nearby vs outside of Biratnagar). Subsequently, data entry was done in the Statistical Package for Social Sciences (SPSS) version 23 for final data analysis. The analyzed data was presented in tables using appropriate statistical parameters. For continuous variable (age), mean with standard deviation, minimum, maximum and range were used and for categorical variables (gender, age-groups, age-categories, ethnicity, address, anatomical sites and types of anesthesia), frequency with percentage were used for describing the data.

RESULTS

A total of 72 participants were enrolled in the study and employed for final data analysis. The mean (standard deviation) age these participants were 22.6 (13.9) years, with the minimum age of 2 years and maximum of 64 years (range: 62 years). Male participants constituted the majority gender group (72.2%; n=52). The mean (standard deviation) age of female participants was 26.5 (10.6) years and that of male participants was 21.1 (14.7) years. Likewise, 33.3% (n=24) of the total participants were in the pediatric age-group. Among the different age-categories, 20–30 years old (n = 22; 30.6%) and <10 years old (n = 20; 27.8%) constituted the majority. Regarding ethnicity, Indo-Aryans were the predominant ethnic groups (n=51; 70.8%). The participants visiting the research site were almost equally divided as those within Biratnagar and nearby (51.4%; n=37) and those residing outside of Biratnagar (48.6%; n=35). (Table 1)

Table 1: Socio-demographic characteristics of the study participants

S.N.	Variables	Frequency	Percentage
01	Gender		
	Female	20	27.8 %
	Male	52	72.2 %
02	Age group		
	Pediatric	24	33.3 %
	Adult	48	66.7 %
	< 10 years	20	27.8 %
	10 – 20 years	9	12.5 %
	20 – 30 years	22	30.6 %
	30 – 40 years	14	19.4 %
	40 years and above	7	9.7 %
03	Ethnic group		
	Indo-Aryans	51	70.8 %
	Others	21	29.2 %
04	Address		
	Biratnagar and nearby	37	51.4%
	Outside of Biratnagar	35	48.6%

Table 2 depicts the clinical characteristics of the study participants. As delineated, throat was the commonest anatomical site of foreign body impaction (n=44; 61.1%). Of the various impacted foreign bodies, the most frequent were non-living (organic) foreign bodies (n=42; 58.3%). Specifically, chicken bones (n=18; 25.0%) followed by coin (n=9; 12.5%), fish bone (n=7; 9.7%), mutton bone and cotton (n=6; 8.3% each) were the foreign bodies that were most frequently impacted in the ENT regions. These impacted foreign bodies were removed under general anaesthesia for most of the participants (n=40; 55.6%).

Table 2: Clinical characteristics of the study participants

S.N.	Variables	Frequency	Percentage
01	Anatomical site of foreign body impaction		
	Ear	16	22.2%
	Nose	12	16.7%
	Throat	44	61.1%
02	Impacted foreign body		
	Living	3	4.2%
	Non-living (inorganic)	27	37.5%
	Non-living (organic)	42	58.3%
	Battery	4	5.6%
	Chicken bone	18	25.0%
	Coin	9	12.5%
	Cotton	6	8.3%
	Ear bud	1	1.4%
	Ear ring	1	1.4%
	Eraser	2	2.8%
	Feather	1	1.4%
	Fish bone	7	9.7%
	Grain	1	1.4%
	Gram	3	4.2%
	Insect	3	4.2%
	Meat bolus	2	2.8%
	Meat ball	1	1.4%
	Metal ring	1	1.4%
	Mutton bone	6	8.3%
	Plastic foil	1	1.4%
	Rhinolith	3	4.2%
	Toy	1	1.4%
	Vegetable shoot	1	1.4%
03	Impacted foreign bodies removed under (anaesthesia)		
	Local anaesthesia	32	44.4 %
	General anaesthesia	40	55.6 %

Table 3: Impacted foreign bodies in the ENT regions, according to socio-demographic characteristics of the study participants

S.N.	Variables	Impacted foreign body			Total
		Living	Non-living (Inorganic)	Non-living (Organic)	
01	Gender				
	Female	3 (15.0%)	4 (20.0%)	13 (65.0%)	20
	Male	0 (0.0%)	23 (44.2%)	29 (55.8%)	52
02	Age group				
	Pediatric population	0 (0.0%)	20 (83.3%)	4 (16.7%)	24
	Adult population	3 (6.3%)	7 (14.6%)	38 (79.2%)	48
	Age categories				
	< 10 years	0 (0.0%)	17 (85.0%)	3 (15.0%)	20
	10 – 20 years	1 (11.1%)	3 (33.3%)	5 (55.6%)	9
	20 – 30 years	2 (9.1%)	2 (9.1%)	18 (81.8%)	22
	30 – 40 years	0 (0.0%)	2 (9.1%)	12 (85.7%)	14
	>= 40 years	0 (0.0%)	3 (42.9%)	4 (57.1%)	7
03	Ethnic group				
	Indo-Aryans	3 (5.9%)	16 (31.4%)	32 (62.7%)	51
	Others	0 (0.0%)	11 (52.4%)	10 (47.6%)	21
04	Address				

	<i>Biratnagar and nearby</i>	1 (2.7%)	14 (37.8%)	22 (59.5%)	37
	<i>Outside of Biratnagar</i>	2 (5.7%)	13 (37.1%)	20 (57.1%)	35

Table 3 illustrates the cross-tabulation of impacted foreign bodies in the ENT regions according to various socio-demographic characteristics of the study participants. Gender-wise comparison shows that the prevalence of impacted living and non-living (organic) foreign bodies was greater in female participants (15.0% and 65.0% respectively), whereas the rate for non-living (inorganic) foreign bodies was greater in the male participants (44.2%). Comparison across age-groups shows that the prevalence of impacted living and non-living (organic) foreign bodies was greater in the adult population (6.3% and 79.2% respectively), whereas the rate for non-living (inorganic) foreign bodies was greater in the pediatric population (83.3%). Likewise, comparison across different age-categories shows that the occurrence of impacted living foreign bodies was the greatest in the 10–20 years old participants (11.1%), followed by 20 – 30 years old participants (9.1%); the rate for non-living (inorganic) foreign bodies was the greatest in the <10 years old participants (85.0%), followed by ≥40 years old (42.9%) participants and the rate for non-living (organic) foreign bodies was the greatest in the 30–40 years old participants (85.7%), followed by 20–30 years old participants (81.8%). Comparison between ethnic groups shows that occurrence of impacted living and non-living (organic) foreign bodies was greater in Indo-Aryans than other ethnic groups combined (5.9% and 62.7% respectively), whereas

the rate for non-living (inorganic) foreign bodies was greater in the combined groups other than the Indo-Aryan groups (52.4%). Finally, comparison across the places of residence of the participants shows that the occurrence of impacted living foreign bodies was greater in participants residing outside of Biratnagar (5.7%), whereas the rates for non-living (inorganic and organic) foreign bodies were greater in participants residing in Biratnagar and nearby (37.8% and 59.5% respectively).

Table 4 describes the cross-tabulation of impacted foreign bodies in the ENT regions according to various clinical characteristics of the study participants. Comparison across the anatomical locations shows that the occurrence rates of impacted living and non-living (inorganic) foreign bodies were the highest in the ear region (18.8% and 68.8% respectively), whereas the rate for impacted non-living (organic) foreign bodies was the highest in the throat region (77.3%). Finally, as for the use of anesthesia during the removal of the impacted foreign bodies, the frequency of use of local anesthesia was the highest for impacted living foreign bodies (100.0%), followed by non-living (inorganic) foreign bodies (48.1%), whereas, the frequency of use of general anesthesia was the highest for impacted non-living (organic) foreign bodies (61.9%), followed by impacted (inorganic) foreign bodies (51.9%).

Table 4: Impacted foreign bodies in the ENT regions, according to clinical characteristics of the study participants

S.N.	Variables				Total
		Living	Non-living (Inorganic)	Non-living (Organic)	
01	Anatomical site of foreign body impaction				
	<i>Ear</i>	3 (18.8%)	11 (68.8%)	2 (12.5%)	16
	<i>Nose</i>	0 (0.0%)	6 (50.0%)	6 (50.0%)	12
	<i>Throat</i>	0 (0.0%)	10 (22.7%)	34 (77.3%)	44
02	Impacted foreign bodies removed under (anaesthesia)				
	<i>Local anaesthesia</i>	3 (100.0%)*	13 (48.1%)*	16 (38.1%)*	32
	<i>General anaesthesia</i>	0 (0.0%)*	14 (51.9%)*	26 (61.9%)*	40
* - Comparison done along the columns					
Total		3	27	42	72

DISCUSSION

The importance of timely diagnosis and management of the foreign bodies lodged in the ear, nose and throat regions and the relative paucity of the research studies conducted in this domain at the contemporary clinical setting of the Eastern Nepal prompted the design of the present study. This study aims to provide a descriptive overview of the different types of foreign bodies in the ENT and the socio-demographic profiles of the patients presenting with such artifacts.

In the present study, out of the total 72 enrolled participants (mean age of 22.6±13.9 years), 72.2% were males. Likewise, 33.3% of the total participants were in the pediatric age-group

(<16 years of age). Among the different age-categories, 20–30 years old (30.6%) and <10 years old (27.8%) constituted the majority. Regarding ethnicity, Indo-Aryans were the predominant ethnic groups (70.8%). The resident addresses of the participants were predominantly within the short vicinity of the study site (Biratnagar and nearby, 51.4%). In these participants, throat region was the commonest anatomical site of foreign body impaction (61.1%).

In a recent study conducted by Dhungana et al in Nepal, 16% of all reported emergency cases in ENT were foreign body of ear, nose and throat, majority occurring in the pediatric age group with the most common site being the nasal cavity.⁹ In another study carried out by Raj et al in India, of all the ENT emergencies

reported foreign body ear, nose and throat accounted for 14.25%.¹⁰ In a retrospective chart review study conducted in the Western Nepal, Bhatta et al² evaluated a total 211 recorded cases of foreign bodies impaction in the ENT. They reported 118 (55.9%) male participants. Most of the participants were in the age-groups of less than 5 years. Nose was the most commonly involved site (40.2%), next to which was ear (34.1%). In another retrospective study based on the hospital in Sohag, Egypt, Awad and ElTaher⁸ evaluated 1,013 participants with impacted foreign bodies in the ENT. Of these, majority were males (n=572, 56.5%). Most of the cases were in the age groups of less than 6 years. Throat was the most commonly affected site (53.6%), second to which was ear (24.68%). General anaesthesia was used for the removal of 54.7% of such cases. Parajuli,¹ in a hospital-based, retrospective chart review study in the Central Nepal, analyzed the socio-demographic and clinical characteristics of 134 patients with impacted foreign bodies in the ENT and reported that males were the predominantly affected groups (n=94, 70.1%). The age-groups of less than 10 years was the most commonly affected groups. Other studies have also revealed a greater incidence of foreign bodies in pediatric age groups and more commonly involving the nose.^{11,12} The foreign bodies were removed under local anesthesia or without anesthesia in most of the patients (73.1%). In another hospital-based study conducted in patients from Malaysia, 1084 cases were evaluated for foreign bodies impacted in the ENT.⁶ The results revealed ear to be the commonest site to be involved (44.3%). The predominant age-group to the affected was less than 10 years old (60.1%). In a retrospective study conducted by Al-Qahtani et al¹³ involving 184 patients revealing that the most common site of foreign body was esophagus (52.7%) followed by bronchus (29.9%) with bronchus being the most common sites in children (21%).

Endican et al,³ in their study analyzed the foreign bodies impacted in the ENT regions of 1037 children. Their results showed that ear (external auditory canal) was the most frequently involved site (68.6%). Of the total, 86.2% were removed with simple maneuver with no complications. In another study, Mukherjee et al,⁷ evaluated the socio-demographic and clinical profiles of the children presenting to the outpatient ENT clinic and emergency department in India. Of the total 288 children who were enrolled, the findings showed male predominance (59.7%). Most of the cases were of the age-group of less than 5 years, and nose was the most frequently affected anatomical region (44.4%). Pecorari et al,⁴ in their study in the pediatric population, evaluated the foreign bodies in the ENT presenting to the pediatric healthcare center at Turin, Italy. With an analysis of the clinical records of 338 patients, the results revealed that nose and ear were the most frequently afflicted regions.

In the present study, of the various impacted foreign bodies, the most frequent were non-living (organic) foreign bodies (58.3%). Specifically, chicken bones (25.0%) followed by coin (12.5%), fish bone (9.7%), mutton bone and cotton (8.3% each) were the foreign bodies that were most frequently impacted in the ENT regions. As per the study by Bhatta et al,² the most frequent foreign bodies in ear were grain seeds (41.6%), plastic beads (20.8%) and insects (13.8%), those in the nose were eraser (35.2%), plastic beads (23.5%) and grain seeds (18.8%). Coins

(58.8%), followed by bone (39.2%) were the predominantly impacted foreign bodies in the throat region. In the study by Parajuli et al,¹ the proportion of living foreign bodies in the ear was 40%, in the throat, the non-living foreign bodies were present in all the involved patients, 60% of the patients in the ear and 96.4% patients in the nose. As reported by Endican et al,³ predominantly impacted foreign bodies in the overall patients were stones (39.0%), seeds (20.0%), plastic ornament beads (9.8%) and cotton (6.8%). Most frequent foreign bodies found in the nose were foam (20.9%), seeds (19.8%), stone (10.9%) and ornament beads (9.3%). The lower tracheo-bronchial tree had coffee beans (38.0%), peanuts (23.8%), plant seeds (14.2%) as the proportions of involvement. Similarly, as reported by Pecorari et al,⁴ the most frequently impacted foreign bodies in the ENT regions were balls, beads and toys parts (29.6%), and fish-bones (13.6%).

In the present study, the impacted foreign bodies were removed under general anaesthesia for most of the participants (55.6%). In the study by Awad and ElTaher,⁸ General anaesthesia was used for the removal of 54.7% of the cases of impacted foreign bodies in the ENT. However, in the study by Parajuli,¹ the foreign bodies were removed under local anesthesia or without anesthesia in most of the patients (73.1%). It has also been observed in a study conducted by Singh et al¹⁴ in the management of aural foreign body the complication rate was 77% and general anesthesia was done in 10% cases when performed by other healthcare personal, whereas the complication rate reduced to 19.5% and GA induction to 3.5% when done by otolaryngologist. This also supported by another study which observed a higher rate of complications while removal of foreign body by a non-otorhinolayngologist.¹² Another study revealed a greater incidence of complications was associated with organic foreign bodies pertaining to the fact of local inflammation and infection, also iatrogenic being the most common cause of the complications.¹⁵

In this study, females had the greater prevalence rates of impacted living and non-living (organic) foreign bodies, while males had greater rate of impacted non-living (inorganic) foreign bodies. Adult population had greater rates of impacted living and non-living (organic) foreign bodies, while pediatric population had greater rates of impacted non-living (inorganic) foreign bodies. Similarly, 10–20 years old participants had highest rate of impacted living foreign bodies, <10 years old had highest rate of impacted non-living (inorganic) foreign bodies, and 30–40 years old participants had the highest rate of impacted non-living (organic) foreign bodies. Indo-Aryans had the highest prevalence rates of impacted living and non-living (organic) foreign bodies, while remaining ethnic groups had highest rates of impacted non-living (inorganic) foreign bodies. Further, participants visiting the research site from nearby had the higher prevalence rate of impacted non-living (inorganic and organic) foreign bodies, while those residing outside had greater rate for impacted living foreign bodies.

The prevalence rates of impacted living and non-living (inorganic) foreign bodies were the highest in the ear region, while the rate for impacted non-living (organic) foreign bodies was the highest in the throat region. Furthermore, the frequency of use of local

anesthesia was the highest for impacted living foreign bodies, followed by non-living (inorganic) foreign bodies, whereas, the frequency of use of general anesthesia was the highest for impacted non-living (organic) foreign bodies, followed by impacted non-living (inorganic) foreign bodies.

CONCLUSION

The findings of the present study suggest that males were more commonly involved than females and adults, more than the pediatric age groups. Throat region was the most commonly involved region and the most common foreign bodies impacted were non-living (organic) in nature, and most of the cases were operated under general anesthesia. With the direction set by this study, further multi-centric studies can be planned with considerations of sufficient sample size and optimum clinical variables to capture the holistic picture of this important clinical entity.

RECOMMENDATIONS

Concerned authorities should implement targeted public awareness campaigns, enhancing healthcare provider training on safe removal techniques, and establish standardized protocols for prompt diagnosis and management of ENT foreign bodies to improve patient care outcomes.

LIMITATIONS OF THE STUDY

Limitations of the study include its single-center design, which may limit generalizability to broader populations. Future studies with larger, multi-center cohorts are warranted to validate these findings and explore broader trends in ENT foreign body incidents.

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CONFLICT OF INTEREST:

None.

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