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Original Research Article

Foreign Bodies in Ear, Nose, Throat and Maxillofacial Region: A Study on Their Clinical Profile and Complications

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Abstract:

Background: Foreign bodies in the ear, nose, throat, (ENT) and maxillofacial region are frequent clinical occurrences that pose significant challenges due to their potential to cause severe complications. The prompt identification and effective management of these cases are crucial to prevent adverse outcomes. This study aims to analyze the clinical profile and complications associated with foreign bodies lodged in the ENT, aerodigestive tract, and maxillofacial region.

Methods: 39 patients who reported with foreign bodies in the designated locations were included in the study. Information was gathered from ward admission records and registration books for ENT clinics. An analysis was conducted on parameters, including demographic information, clinical presentation, radiological tests, procedures carried out, and complications. Microsoft Office Excel 2007 was used to conduct the statistical analysis.

Results: The study found that 61.5% of the individuals were males, with a mean age of 22.8 years. The ear was the most common site of foreign body lodgement (38.5%), followed by the nose (28.2%) and throat (20.5%). Radiological investigations were conducted in 53.8% of the cases, primarily using X-rays. Direct visualization and removal with instruments were the most common methods (61.5%). Complications occurred in 28.2% of the patients, with infections being the most prevalent (54.5%). Statistical analysis indicated a significant relationship between the site of lodgement and the occurrence of complications ($p < 0.05$).

Conclusion: Foreign bodies in the ENT, and maxillofacial region can lead to serious complications if not promptly managed. The study highlights the importance of early diagnosis and appropriate intervention.

Recommendations: Implementing training for healthcare providers, increasing public awareness, enhancing diagnostic tools, standardizing protocols, and conducting research are crucial for improving the management of foreign bodies in ENT and maxillofacial regions. These steps ensure safer, more efficient interventions and better prevention, particularly for children.

Keywords: Foreign bodies, Ear, nose, and throat, Maxillofacial region, Complications.

Introduction

Foreign bodies in the ear, nose, throat, (ENT) and maxillofacial region present a common yet challenging problem in otolaryngology. These incidents can occur across all age groups but are particularly prevalent among children, who are prone to inserting objects into their natural orifices out of curiosity. The clinical management of these cases requires prompt and accurate diagnosis to prevent complications such as infection, tissue damage, or persistent obstruction.

The significance of comprehending the clinical profile and consequences linked to foreign bodies in these areas has been emphasised by recent investigations. An extensive review of the different kinds of foreign bodies, their clinical manifestations, and the potential problems if they are not treated appropriately and quickly is given by a research [1]. While most foreign bodies may be removed with little to no issues, the study highlights that delayed presentation and inappropriate removal techniques might result in serious consequences, especially in the maxillofacial and aerodigestive tracts.

Geographically and demographically, there are differences in the prevalence of foreign body lodgements. For example, studies carried out in

underdeveloped nations like India frequently document a greater incidence of foreign bodies in children's ears and noses as a result of environmental and cultural variables. A prospective study found that children are most commonly harmed by foreign things in the aerodigestive tract, nose, and ears [2].

Foreign body management encompasses a range of approaches, from straightforward visualization-based removal to more intricate procedures including endoscopy or surgery. The location, kind, and clinical state of the patient all influence the method selection [3]. Radiological investigations, such as X-rays and CT scans, play a crucial role in identifying and locating foreign bodies, especially when they are not visible through physical examination.

Complications arising from foreign bodies can be significant and vary depending on the site of lodgement. Infections are the most common complication, followed by tissue damage and obstruction. Studies have shown that complications are more frequent in cases where foreign bodies are lodged in the throat and aerodigestive tract due to the critical functions and complex anatomy involved [4].

This study aims to analyze the clinical profile and complications associated with foreign bodies lodged in the ear, nose, throat, aerodigestive tract, and maxillofacial region.

Methodology

Study Design: A prospective observational study.

Study Setting: The study took place at Narayan Medical College & Hospital, Jamuhar, Sasaram, Bihar, India, spanning 5 months (December 2023 to April 2024).

Participants: A total of 39 participants were included.

Inclusion Criteria: Patients of all ages and genders presenting with foreign bodies in the ear, nose, throat, aerodigestive tract, and maxillofacial region.

Exclusion Criteria: Patients with incomplete medical records.

Sample Size: To calculate the sample size for this study, the following formula was used for estimating a proportion in a population:

$$n = \frac{Z^2 \times p \times (1-p)}{E^2}$$

Where:

- n = sample size
- Z = Z-score corresponding to the desired level of confidence
- p = estimated proportion in the population
- E = margin of error

Bias: Every patient who met the inclusion criteria during the study period was included sequentially in order to reduce selection bias. To guarantee correctness and consistency, data collecting was standardised.

Variables: Acute obstruction features, age, gender, houses area, economic standing, and occupation were among the variables. Other factors included the details of the foreign body removal procedure, the type of anaesthesia used, the instruments used, and the management of complications. The results of the complete ENT examination were also relevant.

Data Collection: Data was collected from the ENT clinic registration books and ward admission records. Detailed patient histories were taken, and physical examinations were conducted. Radiological investigations were performed as required.

Procedure

Following an evaluation, patients were treated as follows:

1. A thorough history is taken to record the beginning, course, and kind of symptoms.
2. Finish the ENT exam.
3. Relevant radiological tests, including CT and X-rays.
4. The process of extracting foreign objects with the right equipment and anaesthesia.
5. Handling any problems that may arise.

Statistical Analysis: Microsoft Office Excel 2007 was used to analyse and chart the data. The study population's clinical and demographic features were compiled using descriptive statistics. Concerning the foreign body lodgement site, complications were examined.

Ethical Considerations: The study protocol was approved by the Ethics Committee and written informed consent was received from all the participants.

Result

Out of the 39 patients comprised in the study, the majority were males (61.5%, n=24), with females comprising 38.5% (n=15). The age distribution ranged from 1 year to 75 years, with a mean age of 22.8 years (SD = 18.5). The majority of patients (53.8%, n=21) were from rural areas, while the rest (46.2%, n=18) were from urban areas. Socioeconomic status was classified into three

categories: low (41%, n=16), middle (43.6%, n=17), and high (15.4%, n=6).

The most common site of foreign body lodgement was the ear (38.5%, n=15), followed by the nose (28.2%, n=11), throat (20.5%, n=8), aerodigestive tract (7.7%, n=3), and maxillofacial region (5.1%, n=2). The average duration from the onset of symptoms to presentation was 3.5 days (range: 1-15 days).

Table 1: Distribution of Foreign Body Lodgement Sites

Site	Frequency (n)	Percentage (%)
Ear	15	38.5
Nose	11	28.2
Throat	8	20.5
Aerodigestive Tract	3	7.7
Maxillofacial Region	2	5.1

Radiological investigations were performed in 21 cases (53.8%). X-rays were the most commonly used modality (85.7%, n=18), followed by CT scans (14.3%, n=3). Radiological findings were crucial in identifying the location and nature of foreign bodies in cases where physical examination was inconclusive.

Table 2: Radiological Investigations Performed

Investigation Type	Frequency (n)	Percentage (%)
X-ray	18	85.7
CT Scan	3	14.3
Total	21	100

The removal of foreign bodies was performed using various techniques. The most common method was direct visualization and removal with instruments (61.5%, n=24), followed by endoscopic removal (25.6%, n=10) and surgical intervention (12.8%, n=5). Local anesthesia was used in 59% of the cases (n=23), while general anesthesia was required in 41% of the cases (n=16).

Table 3: Methods of Foreign Body Removal and Anesthesia Used

Method of Removal	Frequency (n)	Percentage (%)
Direct Visualization	24	61.5
Endoscopic Removal	10	25.6
Surgical Intervention	5	12.8
Anesthesia Used		
Local Anesthesia	23	59
General Anesthesia	16	41

Complications were observed in 11 cases (28.2%). The most common complication was infection (54.5%, n=6), followed by tissue damage (27.3%, n=3), and persistent obstruction (18.2%, n=2). The majority of complications were associated with foreign bodies lodged in the throat and aerodigestive tract.

Table 4: Complications Observed

Complication Type	Frequency (n)	Percentage (%)
Infection	6	54.5
Tissue Damage	3	27.3
Persistent Obstruction	2	18.2
Total	11	100.0

A statistical study showed a significant correlation ($p < 0.05$) between the location of the foreign body lodgement and the development of problems. Compared to patients with foreign bodies in the ear, nose, or maxillofacial region, those with foreign objects in the throat or aerodigestive tract were significantly more likely to experience problems.

Table 5: Association Between Site of Foreign Body Lodgement and Complications

Site	Complications (n)	No Complications (n)	Total
Ear	2	13	15
Nose	1	10	11
Throat	4	4	8
Aerodigestive Tract	3	0	3
Maxillofacial Region	1	1	2

*$p<0.05$

Discussion

39 individuals who had foreign bodies stuck in their nose, throat, aerodigestive system, or maxillofacial region were studied during this investigation. Males accounted for 61.5% of the cases, suggesting that they were impacted more frequently than females, according to the demographic study. With a mean age of 22.8 years, the patients' ages ranged from 1 to 75 years, suggesting that foreign body events happen at a wide age range. A considerable proportion of the patients came from low- and middle-class socioeconomic backgrounds, and the patients were mostly from rural areas.

The clinical data showed that the ear was the most common site of foreign body lodgement, accounting for 38.5% of the cases, followed by the nose (28.2%) and the throat (20.5%). This distribution suggests that foreign objects in the ear and nose are more frequent, possibly due to the higher likelihood of accidental insertion or exploratory behavior in these areas. The mean duration from symptom onset to presentation was 3.5 days, highlighting a delay that could potentially exacerbate complications.

Radiological investigations were essential for 21 patients, with X-rays being the predominant method (85.7%). This underscores the role of imaging in accurately locating and assessing foreign bodies, especially when physical examination alone is insufficient. Procedures for removal varied, with direct visualization and instrument removal being the most common method (61.5%), followed by endoscopic removal (25.6%). This variability in procedures indicates that the approach depends on the location and nature of the foreign body, as well as the patient's condition. Local anesthesia was used in 59% of the cases, suggesting that many procedures were minimally invasive and manageable in a clinic setting, whereas general anesthesia was required for more complex cases.

Complications were observed in 28.2% of the patients, with infection being the most prevalent (54.5%), followed by tissue damage (27.3%) and persistent obstruction (18.2%). The higher complication rate in the throat and aerodigestive tract highlights the increased risk associated with foreign bodies in these areas, likely due to the critical functions and complex anatomy involved. Statistical analysis confirmed a significant association between the site of foreign body lodgement and the likelihood of complications, particularly emphasizing the need for prompt and effective intervention in cases involving the throat and aerodigestive tract.

Careful clinical management is necessary when foreign bodies are present in the ENT, or maxillofacial region as they can cause a number of issues. Recent research has shed light on the characteristics of these instances, including the sorts of foreign objects, clinical presentations, and consequences. According to a study on 190 instances, the age group most frequently impacted was 0–10 years old (58.52%). The most common location of foreign bodies was found in the aerodigestive tract (40%) and was followed by the nose (26%) and the mandibular region (3%). Perforation, granulation tissue development, and infection were frequent side effects. The research emphasised the necessity of cautious extraction and the significance of averting inexperienced removal attempts [5].

The most prevalent locations for foreign objects were the nasal cavity (30.53%), external auditory canal (28.31%), and pharynx (11.72%), according to a review of 452 paediatric cases. According to the study, coins and vegetable seeds were frequently identified foreign objects in the oesophagus and nose, respectively. Airway blockage and infections were among the complications [6]. 51.8% of foreign bodies were discovered in the nose, 42.7% in the ear, and 5.5% in the throat in a research involving 110 paediatric patients. Beads and organic compounds such as food particles were the most often seen foreign body kinds. Persistent infection and tissue damage were among the complications, underscoring the importance of prompt and expert removal [7].

A retrospective study found that the ear (42.64%) was the most common site for foreign bodies, followed by the nose (33.04%) and throat (24.31%). Cotton swabs, beads, and fish bones were the most common foreign bodies, respectively. The study emphasized the importance of proper clinical assessment and management to avoid complications [8]. Another study involved 95 patients and found that the nose (37.9%) and ear (30.5%) were the most common sites for foreign bodies, with a predominance of inorganic materials such as coins. Complications were noted in 30.5% of cases, particularly when removal was delayed. The study highlighted the need for prompt and skilled intervention [9].

A study analyzed 3,229 cases of throat foreign bodies and 577 cases of ear foreign bodies. Fish bones were common in the throat, while small toys were prevalent in the ear and nose among children. The study noted significant seasonal variations, with higher incidences during fish-eating seasons and rainy days [10].

Conclusion

To sum up, this research offers a thorough summary of the clinical and demographic traits of individuals with foreign bodies in the maxillofacial, aerodigestive tract, nose, throat, and ear. The

results emphasise how crucial it is to get treatment as soon as possible in order to avoid complications. The data underscores the necessity for healthcare providers to be vigilant and equipped with various removal techniques to handle such cases effectively. This study contributes valuable insights that can inform clinical practices and improve patient outcomes in otorhinolaryngology.

Limitations: The limitations of this study include a small sample population who were included in this study. Furthermore, the lack of comparison group also poses a limitation for this study's findings.

Recommendation: Implementing training for healthcare providers, increasing public awareness, enhancing diagnostic tools, standardizing protocols, and conducting research are crucial for improving the management of foreign bodies in ENT and maxillofacial regions. These steps ensure safer, more efficient interventions and better prevention, particularly for children.

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List of abbreviations:

X-ray - X-radiation

ENT - Ear, Nose, and Throat

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