

Foreign Bodies in Ear, Nose, Throat and Maxillofacial Region: A Study on Their Clinical Profile and ComplicationsPrince Kumar¹, Mridul Rathi², Sandeep Bansal³¹Senior Resident, Department of Ear, Nose & Throat, Post Graduate Institute of Medical Education & Research, Chandigarh, Punjab, India²Junior Resident, Department of Ear, Nose & Throat, Post Graduate Institute of Medical Education & Research, Chandigarh, Punjab, India³Professor, Department of Ear, Nose & Throat, Post Graduate Institute of Medical Education & Research, Chandigarh, Punjab, India

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Abstract:**Background:** Foreign bodies (FBs) in the ear, nose, throat (ENT), and maxillofacial regions are common clinical challenges, especially among pediatric patients. While these cases are generally benign, they can lead to significant complications if not addressed promptly. The management of foreign bodies varies depending on the anatomical site, type of object, and timing of presentation.**Aim:** This study aims to evaluate the clinical profile, anatomical distribution, management approaches, complications, and the role of early intervention in patients with foreign bodies in the ear, nose, throat, and maxillofacial region.**Methods:** A retrospective study was conducted at the Post Graduate Institute of Medical Education & Research (PGIMER), Chandigarh, Punjab, involving 75 patients who presented with foreign bodies in the ENT and maxillofacial regions between January 1, 2022, and December 31, 2022. Patient demographics, type and site of foreign body, management strategies, and complications were analyzed. Statistical analysis was performed using SPSS version 23.0.**Results:** Among the 75 patients, 60% were male, and 56% were children under 10 years. The most common site of foreign body insertion was the ear (40%), followed by the nose (26.7%). Inorganic foreign bodies (57.3%) were more common than organic ones (42.7%). Delayed presentation (beyond 3 days) was associated with a higher rate of complications, including otitis externa (6.7%), nasal mucosal ulceration (5.3%), and airway obstruction (4%). Early intervention significantly reduced complication rates.**Conclusion:** Prompt diagnosis and timely removal of foreign bodies are crucial in preventing complications, especially in pediatric cases. Organic foreign bodies were more likely to cause complications compared to inorganic ones. This study emphasizes the importance of early medical intervention to minimize morbidity.**Recommendations:** Early referral and prompt intervention are essential to minimize complications. Public awareness campaigns and parental education about the dangers of foreign body insertion, especially in children, should be prioritized. Clinicians should consider using appropriate imaging techniques for difficult-to-visualize foreign bodies.**Keywords:** Foreign Bodies, Ear, Nose, Throat, Maxillofacial, Pediatric Cases.This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Foreign body (FB) insertion in the ear, nose, throat, and maxillofacial region is a frequently encountered emergency in otorhinolaryngology and maxillofacial practice, particularly in the pediatric population. Children, due to their natural curiosity and behavioral tendencies, are more prone to insert objects into bodily orifices, making up a significant proportion of such cases [1]. However, adults may also be affected, often due to accidental ingestion or trauma, as seen in cases involving the throat or maxillofacial area [2].

The anatomical complexity and functional significance of the ear, nose, and throat make foreign body impaction a potential cause of serious complications such as mucosal injury, infections, septal perforation, tympanic membrane rupture, or even airway obstruction [3]. In the maxillofacial region, foreign bodies may result from penetrating trauma or iatrogenic causes such as dental procedures and can present diagnostic and therapeutic challenges [4].

Various factors influence the clinical outcome of these cases, including the type and size of the foreign body, anatomical site, duration of impaction, and the timeliness of medical intervention. Organic foreign bodies, such as seeds or food particles, tend to absorb moisture and swell, increasing the risk of inflammation and secondary infection [5]. In contrast, inorganic foreign bodies, though less reactive, may still pose a mechanical threat and complicate removal, especially if lodged deeply or for prolonged periods [6].

Recent studies have highlighted an upward trend in cases involving hazardous objects like button batteries and magnets, which require urgent removal due to their corrosive and compressive effects on surrounding tissues [7]. Furthermore, delayed presentation, often due to a lack of awareness or misdiagnosis, remains a significant contributor to morbidity, particularly in low-resource settings [8].

Although several regional and site-specific studies exist, there remains a lack of comprehensive data analyzing foreign bodies across all major ENT and maxillofacial zones within a defined clinical cohort. This study aims to evaluate the clinical profile, anatomical distribution, management strategies, and complications of foreign bodies encountered in the ear, nose, throat, and maxillofacial region. Understanding these patterns will aid in improving early diagnosis, timely intervention, and preventive strategies in both pediatric and adult populations. This study aims to evaluate the clinical profile, anatomical distribution, management approaches, complications, and the role of early intervention in patients with foreign bodies in the ear, nose, throat, and maxillofacial region.

Methodology

Study Design: This was a hospital-based, prospective observational study.

Study Setting: The study was conducted at the Department of Otorhinolaryngology and Head & Neck Surgery, Post Graduate Institute of Medical Education & Research (PGIMER), Chandigarh, Punjab, India.

Participants: A total of 75 patients presenting with foreign bodies in the ear, nose, throat, and maxillofacial region were included in the study. These patients attended the ENT outpatient department or emergency services of PGIMER between 1st January 2022 and 31st December 2022.

Inclusion Criteria: Patients of all age groups and both sexes presenting with confirmed or suspected foreign bodies in the ear, nose, throat, or maxillofacial region during the study period were included. Only those patients who provided

informed consent for participation were enrolled in the study.

Exclusion Criteria: Patients with a history of surgical interventions in the affected area, those with known anatomical deformities complicating FB retrieval, or patients lost to follow-up were excluded from the study.

Bias: To minimize selection bias, all consecutive patients presenting with relevant clinical findings were enrolled during the study period. Information bias was reduced through the use of a structured proforma for data collection and assessment. Observer bias was minimized by having the same team of experienced ENT specialists conduct examinations and procedures.

Data Collection: Data were collected using a pre-designed and pre-tested data collection form. It included patient demographics (age, sex), type and site of foreign body, presenting symptoms, time since insertion, method of removal, and complications encountered. Data were recorded at the time of presentation, during management, and at follow-up visits.

Procedure: Clinical examination and history-taking were performed on all patients. Depending on the site and nature of the foreign body, appropriate diagnostic tools such as otoscopy, anterior rhinoscopy, indirect laryngoscopy, and radiographic imaging were used. Foreign body removal was performed using suitable instruments under local or general anesthesia as required. Complications during or after removal were noted and managed accordingly.

Statistical Analysis

All data were compiled and analyzed using IBM SPSS Statistics version 23.0. Descriptive statistics were used to summarize the demographic and clinical data. Categorical variables were expressed as frequencies and percentages, while continuous variables were presented as means and standard deviations. Chi-square test or Fisher's exact test was used to assess associations between categorical variables, with a p-value of <0.05 considered statistically significant.

Results

Out of the 75 patients included in the study, 45 (60%) were male and 30 (40%) were female, with a male-to-female ratio of 1.5:1. The age of patients ranged from 1 to 65 years, with a mean age of 16.4 ± 13.2 years. The majority of the cases were children under 10 years of age (n=42, 56%), followed by the age group 11–20 years (n=12, 16%).

Table 1: Age and Gender Distribution

Age Group (years)	Male (n=45)	Female (n=30)	Total (n=75)	Percentage (%)
0–10	24	18	42	56.0%
11–20	8	4	12	16.0%
21–40	10	5	15	20.0%
>40	3	3	6	8.0%
Total	45	30	75	100%

The highest incidence was observed in children under 10, suggesting that foreign body insertion is predominantly a pediatric issue.

Anatomical Location of Foreign Bodies: The most common site of foreign body insertion was the ear (n=30, 40%), followed by the nose (n=20, 26.7%), throat/pharynx (n=15, 20%), and maxillofacial region (n=10, 13.3%).

Table 2: Distribution by Anatomical Site

Site of FB Insertion	Number of Cases (n)	Percentage (%)
Ear	30	40.0%
Nose	20	26.7%
Throat/Pharynx	15	20.0%
Maxillofacial Region	10	13.3%
Total	75	100%

The ear was the most commonly involved site, particularly in younger children, where curiosity-driven insertion of objects is common.

Type of Foreign Bodies: Foreign bodies were classified as organic (e.g., seeds, food items, insects) and inorganic (e.g., plastic beads, metal, batteries). Organic FBs accounted for 42.7% (n=32) of cases, while inorganic FBs were found in 57.3% (n=43).

Table 3: Types of Foreign Bodies by Location

Type of FB	Ear (n=30)	Nose (n=20)	Throat (n=15)	Maxillofacial (n=10)	Total (n=75)
Organic	6	12	10	4	32 (42.7%)
Inorganic	24	8	5	6	43 (57.3%)

Inorganic objects such as beads and buttons were commonly found in the ear and nose. Organic FBs like food particles and seeds predominated in the nose and throat.

Duration Before Presentation

- <24 hours: 39 patients (52%)
- 1–3 days: 21 patients (28%)
- >3 days: 15 patients (20%)

Patients who presented later (>3 days) were more likely to develop complications ($p < 0.01$).

Complications Observed: A total of 18 patients (24%) developed complications. The most common complications were otitis externa (n=5), nasal mucosal ulceration (n=4), foreign body granuloma (n=3), bleeding (n=3), and airway obstruction (n=3). Complications were more frequent in cases with delayed presentation.

Table 4: Complications Associated with Foreign Bodies

Complication	Number of Cases	Percentage (%)
Otitis externa	5	6.7%
Nasal mucosal ulceration	4	5.3%
Granuloma formation	3	4.0%
Bleeding	3	4.0%
Airway obstruction	3	4.0%
Total	18	24.0%

Statistical Analysis

- A statistically significant association was found between duration of foreign body presence and occurrence of complications ($\chi^2 = 10.74$, $p = 0.004$).

- No statistically significant difference was noted between gender and complication rates ($p = 0.68$).
- Inorganic FBs were more likely to be removed without complications compared to organic FBs ($p = 0.03$).

Discussion

In this study involving 75 patients with foreign bodies in the ear, nose, throat, and maxillofacial region, the majority were males (60%), and the highest incidence was found in children under 10 years of age (56%). This demographic trend underscores the vulnerability of pediatric patients to foreign body insertion, likely due to behavioral curiosity and lack of supervision.

The most frequently affected anatomical site was the ear (40%), followed by the nose (26.7%), throat/pharynx (20%), and maxillofacial region (13.3%). This distribution aligns with existing literature, where the ear and nose are common sites for object insertion in children, while throat and facial FBs are more common in adults and typically accidental in nature (e.g., during eating or trauma).

Regarding the nature of the foreign bodies, inorganic materials such as beads, buttons, and batteries were more prevalent (57.3%) than organic substances like seeds or food particles (42.7%). Organic FBs were predominantly found in the nasal and throat regions, while inorganic objects were commonly lodged in the ears and nose. This pattern reflects both the availability of such objects in the environment and their size/shape, which facilitates insertion or accidental aspiration.

More than half of the patients (52%) presented within 24 hours of foreign body insertion, while 20% reported after more than 3 days. Importantly, late presentation was significantly associated with higher complication rates ($p = 0.004$), emphasizing the importance of early detection and prompt management. Among the 18 patients (24%) who developed complications, otitis externa, nasal mucosal ulceration, granuloma formation, bleeding, and airway obstruction were the most commonly observed.

Statistical analysis also revealed that organic foreign bodies had a higher complication rate compared to inorganic ones ($p = 0.03$), likely due to their potential for decomposition, tissue reaction, or infection. No significant difference was found between gender and the incidence of complications.

These findings highlight the need for public health awareness regarding the risks of foreign body insertion, especially in children. Timely medical intervention can significantly reduce the risk of complications. Furthermore, the data reinforces the importance of proper training and equipment for ENT practitioners in managing such cases efficiently.

Foreign bodies (FBs) in the ear, nose, throat, and maxillofacial region are common ENT emergencies, especially in children. A study by Kekre et al. reviewed 190 cases and found that 58.52% involved

children aged 0–10 years. The aerodigestive tract (40%) was the most frequently affected site, followed by the ear (31%), nose (26%), and maxillofacial region (3%). Insects, vegetable seeds, and coins were the most common FBs in the ear, nose, and throat respectively. Complications were more likely in cases with delayed diagnosis, failed previous removal attempts, or existing comorbidities [9].

Swain et al. analyzed 452 pediatric cases and observed that nasal FBs were the most common (30.5%), followed by ear (28.3%), pharynx (11.7%), esophagus (13.5%), and laryngotracheobronchial tract (15.7%). Most cases occurred in children aged 0–5 years, and over half required general anesthesia for FB removal. Vegetable seeds and coins were the predominant foreign objects [10].

Yılmaz et al. studied 110 pediatric patients and found that 51.8% of FBs were located in the nose, 42.7% in the ear, and 5.5% in the throat. Beads were the most common FBs, and most were inorganic. Only 4.5% of the cases required general anesthesia, but complications increased with delayed diagnosis [11]. In Tanzania, Abraham et al. reported that the most common FB locations were the nose (37.9%) and ear (30.5%), with coins as the predominant FB type. Children under 10 years were most affected, and 30.5% of cases developed complications, particularly when presentation was delayed beyond 24 hours [12].

A Japanese study by Oya et al. revealed a link between FB occurrence and sociocultural patterns. Fish bones in the throat peaked in July and January due to traditional eating customs, while nasal and ear FBs in children increased during rainy weather, likely from increased indoor play and unsupervised activity [13]. Jain et al. conducted a three-year study and reported that nasal FBs were the most prevalent (48.3%), especially among children aged 0–10 years. Food-related FBs were common in both adults and children, and prompt professional removal helped avoid serious complications [14]. Sidibé et al. examined ENT FB cases in Mali and found that most were located in the ear (58.9%) and nose (32.4%), with common items including cotton, pebbles, and food particles. Children made up the majority of cases, highlighting the importance of preventive measures and early intervention [15].

Conclusion

Foreign bodies in the ear, nose, throat, and maxillofacial region are most common in children, with the ear being the most frequently affected site. Inorganic objects were more prevalent, and complications were significantly higher in cases with delayed presentation. Early detection and prompt removal are key to preventing morbidity. Public awareness and caregiver supervision play a

vital role in prevention, while skilled management ensures safe outcomes.

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