

# Aural Foreign Bodies and Their Management – A Retrospective Study

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## Abstract

**Introduction:** Accidental insertion of foreign bodies in the external auditory canal continues to be a common problem in children and also nowadays common in adults due to overusage of earbuds. It is a relative medical emergency.

**Aim:** This study aims to study the clinical presentation of foreign bodies and their complications and management.

**Materials and Methods:** This is a retrospective study of 225 patients both adults and children who attended ENT Department at Institute of Child Health and Hospital for Children (ICH) and Rajiv Gandhi Government General Hospital (RGGGH) attached to Madras Medical College, Chennai.

**Results:** A total of 225 patients with aural foreign bodies were evaluated. In our series, the most common age group was between 0 and 4 years, particularly males were affected. Majority of them gave the history of foreign body insertion. The most common foreign body was seeds in the children and cotton buds in the adults. Majority cases managed without anesthesia.

**Conclusion:** Aural foreign bodies are very common presentation, particularly in children. The study aimed to diagnose the underlying cause for the foreign body insertion and to prevent dreaded middle ear complications using proper technique with appropriate instruments and if needed general anesthesia.

**Key words:** Ear, Foreign body, Management

## INTRODUCTION

Aural foreign bodies are very common presentation at the ENT outpatient department. They are most common in the pediatric age group. Children put objects in their ears because they are curious or copying other children or during play, a whim to explore orifices, preexisting disease in ear causing irritation, and habitual cleaning of ear with objects like earbuds.<sup>[1,2]</sup> In adults, itching is one of the main reasons for the usage of different objects such as cotton buds match stick, pins to clean, or scratch the ear canal.<sup>[3]</sup>

Aural foreign bodies can be either inert or irritant, organic or non-organic, or hydrophobic or hydrophilic.<sup>[4]</sup> The most common inanimate foreign bodies are cotton bud, pins,

beads, seeds, small stones, match stick, piece of paper, and small plastic objects. Among the animate foreign bodies, insects such as ants, bugs flies, and cockroaches are common. Insects will create a sense of constant irritation and some insects will damage the tympanic membrane. In discharging ears, flies are attracted to the foul smell and lay eggs which hatch out into larvae called maggots.<sup>[5]</sup>

In infants and younger children, aural foreign bodies will be an incidental finding. Some present with pain and discharge. Older children will give a clear history of insertion of a foreign body into the ear and give information about the foreign body type. Adults often present with a cotton bud or broken matchsticks used to clean the ear canal. They will have ear pain and mild serous ear discharge.

The ear and external auditory canal are richly supplied by the vagus nerve (Arnold's nerve), the auriculotemporal branch of the mandibular nerve, and a small facial nerve branch. This is why some patients will have severe ear pain and facial palsy occasionally.<sup>[6]</sup>

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Aural foreign bodies can be removed commonly and safely by irrigation with lukewarm water or aural forceps, and suctioning. Aural foreign bodies can be removed under direct visualization with proper light and with the good cooperation of the patient. In the pediatric age group, child cooperation is very important, or the attendee should hold the child properly throughout the procedure; otherwise, the foreign body can be removed under general anesthesia. Majority of aural foreign bodies can be removed by aural syringing. Cotton wool, large live insects, can be removed using aural forceps. Button batteries should be removed immediately as an emergency procedure.<sup>[7]</sup> Aural foreign bodies if not handled properly, it may lead to edema and lacerations in the external auditory canal, tympanic membrane perforation, injury to middle ear structure causing hearing loss, membranous labyrinth damage, and even facial palsy.

**Aim**

This study aims to study the clinical presentations and management of aural foreign bodies.

**MATERIALS AND METHODS**

This retrospective study was done in both pediatric department (ICH&HC) and RGGGH both attached to Madras Medical College, Chennai. This study includes 128 pediatric and 97 adults, between January 2018 and December 2020. All patients reported with a history of aural foreign body insertion were included in the study. Those patients with no suggestive history, but were found to have the foreign body are also included in the study. Detailed data of each patient concerning the age, sex, type of foreign body, and presenting symptoms were collected. A thorough examination of the ear was done, and any injuries and scar marks were noted. Any discharge was carefully suctioned out to ascertain the nature and a better view of the foreign body. The other ear, nose, and throat were also examined for any foreign body. Majority aural foreign bodies were removed by aural syringing. Cotton wool, big live insects, was removed by aural forceps. Majority of foreign bodies removed without anesthesia. Very few pediatric cases required local or general anesthesia.

**RESULTS**

In our study, a total of 225 cases presenting with aural foreign bodies were studied. Number of males was 123 while females were 102, less than 12 years are most common age group [Table 1].

In our study, the most common aural foreign body was seeds of various vegetables and fruits seen in 70 cases out of the total 225 cases. The next common was cotton

buds seen in 37 cases not only in children but also adults. Insects were seen in 23 cases. Stones were seen in 12 cases [Table 2 and Figure 1].

In our study, majority of the patients 115 out of 225 presented with the history of foreign body insertion in the ear, either by the patients or by parents in case of infants and young children. The next presenting symptom was foreign body sensation which was seen in 22 cases. Other symptoms were ear pain, ear discharge, ear block, and bleeding [Table 3].

**Table 1: Age and sex distribution of cases**

| Years | Male | Female | Number of cases | Percentage |
|-------|------|--------|-----------------|------------|
| 0-5   | 35   | 30     | 65              | 28.9       |
| 6-12  | 33   | 30     | 63              | 28         |
| 13-20 | 30   | 24     | 54              | 24         |
| 21-40 | 13   | 10     | 23              | 10.2       |
| >40   | 12   | 8      | 20              | 8.9        |
| Total | 123  | 102    | 225             | 100        |

**Table 2: Distribution of foreign bodies**

| Foreign body    | Number of cases | Percentage |
|-----------------|-----------------|------------|
| Seeds           | 70              | 31.1       |
| Cotton buds     | 37              | 16.4       |
| Insects         | 23              | 10.2       |
| Stones          | 12              | 5.3        |
| Eraser pieces   | 9               | 8.4        |
| Plastic objects | 11              | 4.9        |
| Match stick     | 10              | 4.4        |
| Paper           | 9               | 4          |
| Grains          | 7               | 3.1        |
| Metal screws    | 7               | 3.1        |
| Ear rings       | 5               | 2.2        |
| Button battery  | 5               | 2.2        |
| Stickers        | 5               | 2.2        |
| Pins            | 4               | 1.8        |
| Glass pieces    | 3               | 1.3        |
| Metal ball      | 4               | 1.8        |
| Pencil lead     | 4               | 1.8        |
| Total           | 225             | 100        |



**Figure 1: Foreign bodies**

In our study, majority of cases 130 out of 225 aural foreign bodies were removed without any anesthesia. For infants and young children, around 50 cases foreign body removal done by general anesthesia. Adult in cooperative patients under local anesthesia aural foreign bodies removed in 35 cases [Table 4].

Complications which happened were observed due to the presence of foreign body and/or during and after removal.

Most of the cases did not develop complications 86.2%. The main complications were canal abrasions 4.5%, canal lacerations/bleeding 4.5%, otitis externa 3.1%, tympanic membrane perforation 2.2%, otitis media 0.9%, and facial palsy 0.4% [Table 5].

## DISCUSSION

Aural foreign bodies are a common presentation in the ENT department, particularly the pediatric ENT outpatient department. Aural foreign bodies are common in the pediatric age group, as children are curious to explore their ears and thereby lodge objects inside the ear. In our study, the most common age group was under 12 years, constituting

56.9% of cases, 0–5 years constituted 28.9% of the total 225 cases. This observation is similar to the study done by Mazumder *et al.* who had 60% of cases under 14 years.<sup>[8]</sup>

In our study, we observed more male patients 123 compared to female 102 out of the total 225 cases with male-to-female ratio 1.2:1. This observation is similar to the study of Tonga *et al.* who had 1.4:1 ratio.<sup>[9]</sup>

In our study, the most common aural foreign body was seeds of fruits and vegetables in 70 out of 225 cases, 31.1%. Next common foreign body was cotton bud in 37 cases. Insects seen in 23 cases. Our study correlates with the study of Chai *et al.*, in which seeds or nuts were the most common ear foreign body found in 47.1%.<sup>[10]</sup>

The majority of the aural foreign bodies 130 out of 225, 57.8% of cases were removed without anesthesia in the ENT outpatient department itself. For infants and young children 60 out of 225, 26.5% of cases general anesthesia was employed. Study conducted by Mazumder *et al.* on 148 cases of aural foreign bodies, 92.89% of cases of foreign bodies removed without anesthesia, and 8.11% of cases removed with general anesthesia.<sup>[8]</sup>

The above study does not correlate with our study. In our children hospital, majority of infants and young uncooperative children, aural foreign bodies removed under general anesthesia as an emergency procedure in our pediatric operation theater functioning round the clock. All our foreign bodies were removed by permeal approach except in one pediatric case with the stone that has lodged through a perforation in the tympanic membrane. We removed by post-aural approach under general anesthesia.

Complication due to the presence of foreign body or extraction was uncommon; no complication was recorded in 86.7% of cases in our study in contrast to Sing *et al.* study, which recorded 77%.<sup>[11]</sup> Adequate immobilization and proper instrumentation allow the uncomplicated removal of many aural foreign bodies in the pediatric age group. The use of general anesthesia is preferred in infants and young children with an aural foreign body whose contour, composition, or location predispose to traumatic removal in the ambulatory setting.

## CONCLUSION

Aural foreign bodies are very common presentations, particularly in the pediatric age group. Although not an emergency, the child with the aural foreign body is often anxious for the parents and should be diligently managed. Majority of the aural foreign bodies can be removed easily and safely with syringing lukewarm water, provided that the patient

**Table 3: Distribution of symptoms**

| Symptoms                                  | Number of cases | Percentage |
|---|-----------------|------------|
| History of foreign body insertion present | 115             | 51.1       |
| Foreign body sensation                    | 22              | 9.8        |
| Pain                                      | 20              | 8.9        |
| Ear discharge                             | 18              | 8          |
| Ear block                                 | 16              | 7.1        |
| Ear bleeding                              | 12              | 5.3        |
| Hearing impairment                        | 12              | 5.3        |
| Incidental finding                        | 10              | 4.5        |
| Total                                     | 225             | 100        |

**Table 4: Type of anesthesia used for foreign body removal**

| Type of anesthesia | Total number of cases | Percentage |
|--------------------|-----------------------|------------|
| No anesthesia      | 130                   | 57.8       |
| General anesthesia | 60                    | 26.7       |
| Local anesthesia   | 35                    | 15.5       |
| Total              | 225                   | 100        |

**Table 5: Complications of aural foreign bodies**

| Complications                 | Number of cases | Percentage |
|-------------------------------|-----------------|------------|
| No complications              | 194             | 86.2       |
| Canal abrasion                | 10              | 4.5        |
| Canal laceration/bleeding     | 6               | 2.7        |
| Otitis externa                | 7               | 3.1        |
| Tympanic membrane perforation | 5               | 2.2        |
| Otitis media                  | 2               | 0.9        |
| Facial palsy                  | 1               | 0.4        |

should not have otitis media with perforation. With the proper illumination, appropriate instrument, and patient cooperation, we can avoid dreaded complications. In the case of infants and cooperative patients, general anesthesia is preferred. The endoscope and microscope role is relevant in medially placed foreign bodies and in case of tympanic membrane perforation. Permeatal approach used to remove the majority of foreign bodies, but post-aural approach should be considered for deep foreign bodies which have lodged through a perforation in the tympanic membrane into the unreachable middle ear space. Adults presenting with aural foreign bodies are less common, and underlying cause like skin allergies in the external canal and psychiatric condition should always be diagnosed. In pediatric age, unresolved persistent ear discharge after giving local antibiotics should look for any forgotten foreign body.

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