

Foreign bodies of the external auditory canal in children

Ravinder Raja K.^{1*}, Basha Shaik F.²


DOI: <https://doi.org/10.17511/jooo.2020.i04.01>

^{1*} Khetawat Ravinder Raja, Assistant Professor, ENT Department, Mahavir Institute of Medical Sciences, Vikarabad, Telangana, India.

² Feroz Basha Shaik, Assistant Professor, ENT Department, Mahavir Institute of Medical Sciences, Vikarabad, Telangana, India.

Objective: To carry out a retrospective analysis of children with foreign bodies of the external auditory canal (EAC). **Patients and Methods:** A total of 120 children up to the age of 14 years with foreign bodies of the external auditory canal. Demographic data recorded included the patient's age and gender, the type of foreign body encountered, and how the object was successfully removed. The duration of the foreign bodies present in the EAC was also recorded when available. **Results:** The commonest objects were beads and insects. The commonest presentation was local pain, found in 49% of cases. Other means of presentation include verbal admission by the child (31.3%), an incident witnessed by the caregiver (7%), bleeding from the ear (4%), ear discharge (2.8%), fever (1.4%), tinnitus (1.1%), and others (3.4%). 34 patients (28.3%) required surgical removal under general anaesthesia. Of these 34 patients, 20 (70.6%) were below the age of 5 years. Morbidity included 7 canal lacerations and abrasions, 4 tympanic membrane perforation, 3 trauma-induced cases of otitis externa. **Conclusion:** Adequate immobilization of the child and proper use of instruments provides an uncomplicated removal of many of these foreign bodies in the age group. General anaesthesia is considered in very young children and in children of any age with certain foreign bodies whose contour, composition, or location within the external ear canal can lead to traumatic removal in the ambulatory setting.

Keywords: External auditory canal, Foreign bodies, Children

Corresponding Author	How to Cite this Article	To Browse
Khetawat Ravinder Raja, Assistant Professor, ENT Department, Mahavir Institute of Medical Sciences, Vikarabad, Telangana, India. Email: ravindersolid@gmail.com	Raja KR, Shaik FB. Foreign bodies of the external auditory canal in children. Trop J Ophthalmol Otolaryngol. 2020;5(4):84-88. Available From https://ophthalmology.medresearch.in/index.php/jooo/article/view/123	

Manuscript Received
2019-04-10

Review Round 1
2019-04-20

Review Round 2
2019-04-25

Review Round 3

Accepted
2019-04-30

Conflict of Interest
No

Funding
Nil

Ethical Approval
Yes

Plagiarism X-checker
7%

Note



© 2020 by Khetawat Ravinder Raja, Feroz Basha Shaik and Published by Siddharth Health Research and Social Welfare Society. This is an Open Access article licensed under a Creative Commons Attribution 4.0 International License <https://creativecommons.org/licenses/by/4.0/> unported [CC BY 4.0].



Introduction

Aural foreign bodies are generally accepted to be a common problem in children [1,2]. The ease in dealing with the FB depends on its location as well as the child's co-operation.

The emergency physicians may easily manage most FB, but some may benefit from early referral to the otorhinolaryngologist. However, it is impossible to mandate the speciality-trained physicians to remove all foreign bodies (FB) in the ear of children presenting to the children's emergency department (ED).

External auditory canal FB may be triaged by its type and location to allow for successful removal with low complication rates while avoiding unnecessary referrals. Non-urgent ENT referrals may be made for the "difficult to remove category" of foreign bodies except for cases with obvious infection, presence of disc battery or vegetative matter.

The disc battery is notorious because the alkaline battery may produce intense liquefaction necrosis on contact with moist tissue or irrigation with water. The vegetable matter may expand with moisture [3,4]. These are indications for immediate ENT referral at the emergency department.

Our aim of this study was to carry out a retrospective analysis of children with different types of foreign bodies of the external auditory canal.

Material and Methods

The study was done in the department of ENT at Mahavir institute of medical sciences, Vikarabad, Telangana.

The sample of this retrospective study was carried out from April 2017 to April 2019. The study was done by a simple random sampling method. It includes the study of 120 children.

Inclusion criteria

01. Child below 14 years
02. History of foreign body in the ear

Exclusion criteria

01. Wax
02. Fungal debris
03. External auditory canal masses

Data was collected by documentation and record of the patients coming to the ENT department. The surgical procedure was done in cases where foreign bodies were impacted and on uncooperative patients. The number of children was 95 and is comprised of 59 males (62%) and 36 females (38%). 48 (40%) children were below the age of 5 years, 54 (45%) were 6-10 years of age and 18 (15%) in the age group of 11-14 years.

The commonest objects were beads and insects. The commonest presentation was local pain, found in 49% of cases. Other means of presentation include verbal admission by the child (31.3%), an incident witnessed by the caregiver (7%), bleeding from the ear (4%), ear discharge (1.1%), fever (2.8%), tinnitus (1.4%), and others (3.4%).

Demographic data recorded included the patient's age and gender, type of foreign body encountered, and how and in what setting the object was successfully extracted from the EAC. The duration of the foreign body presence in the external auditory canal was also recorded when available.

Results

The number of children was 95 and is comprised of 59 males (62%) and 36 females (38%). 48 (40%) children were below the age of 5 years, 54 (45%) were 6-10 years of age and 18 (15%) in the age group of 11-14 years. The commonest objects were beads and insects. The commonest presentation was local pain, found in 49% of cases. Other means of presentation include verbal admission by the child (31.3%), an incident witnessed by the caregiver (7%), bleeding from the ear (4%), ear discharge (1.1%), fever (2.8%), tinnitus (1.4%), and others (3.4%).

64 of children presented within 24 hours of having the foreign body enter the external auditory canal. In 28 patients, the foreign body clearly had been present in the external auditory canal greater than 24 hours. In 10 patients, an accurate assessment of the length of time the object was in the external auditory canal could not be determined, and in 18 patients no duration information was available. The objects were removed by different methods including irrigation, suctioning, or instrumentation with or without the aid of an operating microscope. 34 patients (28.3%) required surgical removal under general anaesthesia. Of these 34 patients, 20 (70.6%) were below the age of 5 years.

Morbidity included 7 canal lacerations and abrasions, 4 tympanic membrane perforation, 3 trauma-induced cases of otitis externa.

Table-1: Types of ear foreign bodies.

Type of foreign body	Number of cases	Percentage (%)
Beads	39	32.5
Insects	28	23.3
Seeds	17	14.2
Stones	12	10
Paper	6	5
Cotton plug	5	4.2
Slate pencil	4	3.33
Eraser	4	3.33
Battery	2	1.7
Match stick	2	1.7
Mobile case piece	1	0.8

Discussion

Patients presenting with aural foreign bodies are predominantly children in the 2 to 8 age group [5]. The presentation was seen early around the age of 9 months by which a child start to develop a pincer grip, where he can easily manipulate small objects [6]. Most of the patients were found to be male and of low socioeconomic class [7].

In this report, the current study has found that 65% of children were males, 85% of children were under the age of 10 years. Children with aural foreign bodies have different variety of presentations. Occasionally the placement of the foreign body is a witnessed event or in some instances, the foreign body is an incidental finding on routine examination. The child who is old enough to speak will often report the presence of the foreign body to a supervising adult; this reporting is typical because of secondary irritation or pain.

It is important to be aware that aural foreign bodies in younger children may be heralded solely by otalgia, otorrhea, or other otitis manifestations. Unusual symptomssuch as cough and hiccups were also reported [8,9]. However, in the report, the commonest presentation was local pain, found in 49% of cases.

Other means of presentation include verbal admission by the child (31.3%), an incident witnessed by the caregiver (7%), bleeding from the ear (4%), ear discharge (2.8%), fever (1.4%), tinnitus (1.1%), and others (3.4%). Various theories exist as to why children place foreign bodies into their EACs.

Irritation caused by pre-existing otologic diseases such as cerumen impaction, otitis externa and otitis media were the most significant predisposing etiologic factors in one study; mental retardation, curiosity, accidental placement, and fun-making were of comparatively less importance [1].

Commonest objects in our report were beads, insects and seeds. While beads may be graspable, the current study had less success with smooth and spherical foreign bodies. In some studies, smooth and spherical foreign bodies had the worst outcomes [10,11].

Dimuzio et al found that the complication rates for smooth-surfaced objects were considered higher than those of irregularly-shaped objects: 70% versus 14% ($p < 0.001$), which is understandable as the objects cannot be readily grasped [10]. Schulze et al found that spherical foreign bodies were associated with the least success rates for the removal and the highest complication rate, and the complication rate showed the greatest dependence on the presence or absence of multiple attempts [11].

The removal of an EAC foreign body can be a simple process if the object is in the lateral one-third of the EAC and adequate instrumentation and staff support are available. Because the EAC narrows acutely at the junction of its cartilaginous and osseous portions, objects within the medial two-thirds of the EAC present a greater challenge.

Manipulation of objects in the osseous portion of the ear canal is both potentially painful and traumatic as the skin overlying the periosteum is exquisitely tender and highly vascular. A variety of instrumentation should be available for extraction of aural foreign bodies given the variety of objects encountered. Frazier tip suction, alligator forceps, Hartman forceps, cerumen loops, and right-angle ball hooks constitute the typical armamentarium.

If an aural foreign body is not easily removed or if adequate instrumentation or staffing is not available, a referral to an otolaryngologist is indicated. Multiple attempts at removal serve to decrease cooperation on the part of the child, making the need for anaesthesia more likely. Multiple unsuccessful attempts at foreign body removal also increase the risk of traumatic canal abrasions, lacerations, and bleeding, all which further complicate future extraction attempts by the otolaryngologist.

Tightly wedged objects, objects sitting against the tympanic membrane, and objects with sharp edges are all indications for otolaryngologic referral and possible operative extraction. Insects, disc batteries, putty, and other unusual objects may also require otolaryngologic consultation for the reasons previously outlined. Bressler and Shelton [3] found that only 6% of their 98 patients required sedation for foreign body extraction. Their population was comparatively older, with 57% of their patients more than 12 years of age. In this study, 28.3% of the patients underwent operative foreign body removal. Age at presentation proved to be the most significant factor associated with the need for general anaesthesia, as 70.6% of these operative patients were less than 5 years of age. Young children will not allow repeated attempts at foreign body removal. In children who are uncooperative and difficult to restrain, it is safer to remove the object in a more controlled setting. Complications can happen either due to the foreign body itself or from the examination or from an attempt to remove the foreign body. The most common complications encountered are abrasions, bleeding due to injury, secondary infection and tympanic membrane perforation [12]. However, in this study, 7 canal lacerations and abrasions, 4 tympanic membrane perforations, 3 trauma-induced cases of otitis externa were reported.

Limitations: Age group under 14 years

Most of the foreign bodies were removed without anaesthesia except for impact foreign bodies and uncooperative children.

Conclusion

Removal of foreign bodies from the ear is considered to be a common problem in children. Adequate immobilization of the child and proper use of instruments provides an uncomplicated removal of many of these foreign bodies in the age group. general anaesthesia is considered in very young children and in children of any age with certain foreign bodies whose contour, composition, or location within the external ear canal can lead to traumatic removal in the ambulatory setting

What does the study add to the existing knowledge?

The outcome of the present study is to give information about

- The type and location of the foreign body in the external auditory canal
- For successful removal of the foreign body requires:

01. Cooperation of the patient
02. The assistance of family members
03. Patient positioning and
04. Well thought out plan to manage Removal of foreign body with least or no complication

Author's Contribution

Dr. Khetawat Ravinder Raja and **Dr. Feroz Basha Shaik** started the study, and both participated in data acquisition and analysis, management of cases and gave critical intellectual contributions to the manuscript. Both authors read and agreed to the final version of the manuscript.

Disclosure: As the current study found that foreign body ear was most common, coming to our ENT department hence the present study took up this topic for studying the common age group, common foreign bodies, type of foreign bodies and also the positioning of foreign body in the external auditory canal. To educate the masses that removal of foreign bodies should be removed by an otolaryngologist and not unqualified persons. Proper instrumentation under proper vision with the headlight, microscope and endoscopy help in smooth removal along with good assistance from staff, will give less or no complications. Post-procedure counselling given to the children and their parents, on how to take care of ear and not to repeat this again to protect the ear as well as their hearing.

Reference

01. Das SK. Aetiological evaluation of foreign bodies in the ear and nose. *J Laryngol Otol.* 1984;98(10):989-991. doi: [Article][Crossref][PubMed][Google Scholar]
02. Walile J. Management of acute ear infections. *Otolaryngol Clin North Am.* 1979;12(2)439-445. doi: [Article][Crossref][PubMed][Google Scholar]
03. Bressler K, Shelton C. Ear foreign-body removal- a review of 98 consecutive cases. *Laryngoscope.* 1993;103(4 pt 1)367-370. doi: 5541030401 [Article][Crossref][PubMed][Google Scholar]

04. Ansley JF, Cunningham MJ. Treatment of aural foreign bodies in children. *Paediatrics*. 1998;101(4 pt 1)638-641. doi: [Article][Crossref][PubMed][Google Scholar]
05. Baker MD. Foreign bodies of the ears and nose in childhood. *Pediatr Emerg Care*. 1987;3(2)67-70. doi: [Article][Crossref][PubMed][Google Scholar]
06. Rosen P, Barkin R. Emergency medicine—concepts and clinical practice. 4th Ed, St Louis-Mosby. 1998. [Crossref][PubMed][Google Scholar]
07. Davies PH, Bengner JR. Foreign bodies in the nose and ear- a review of techniques for removal in the emergency department. *Emerg Med J*. 2000;17(2)91-94. doi: [Article][Crossref][PubMed][Google Scholar]
08. Lossos I, Breuer R A. rare case of hiccups. *N Engl J Med*. 1988;318(11)711-712. doi: [nejm198803173181119](#) [Article][Crossref][PubMed][Google Scholar]
09. Wagner MS, Stapczynski JS. Persistent hiccups. *Ann Emerg Med*. 1982;11(2)24-26. doi: [1016/s0196-0644\(82\)80009-7](#) [Article][Crossref][PubMed][Google Scholar]
10. DiMuzio J Jr, Deschler DG. Emergency department management of foreign bodies of the external ear canal in children. *Otol Neurotol*. 2002;23(4)473-475. doi: [10.1097/00129492-200207000-00014](#) [Crossref][PubMed][Google Scholar]
11. Schulze SL, Kerschner J, Beste D. Pediatric external auditory canal foreign bodies- a review of 698 cases. *Otolaryngol Head Neck Surg*. 2002;127(1)73-78. doi: [Article][Crossref][PubMed][Google Scholar]
12. Votey S, Dudley JP. Emergency ear, nose and throat procedures. *Emerg Med Clin North Am*. 1989;7(2)117-154. [Crossref][PubMed][Google Scholar]