

Original Article

Aural Foreign Bodies in Children

Adekanye Abiola Grace¹, P. M. Francis¹, R. B. Mgbe¹, M. E. Offiong¹, C. O. A. Enyuma², A. N. Umana¹Departments of ¹Otorhinolaryngology and ²Paediatrics, University of Calabar Teaching Hospital, Calabar, Nigeria

Abstract

Background: Pediatric aural foreign bodies (FB) are relative medical emergencies. Primary care physicians, pediatricians, and otorhinolaryngologists commonly encounter them. **Objective:** The objective was to carry out a retrospective analysis of pediatric aural FB managed in otorhinolaryngology department of the University of Calabar Teaching Hospital, Nigeria. **Materials and Methods:** A total of 157 children with aural FB managed at the Department of Otorhinolaryngology, University of Calabar Teaching Hospital, Nigeria, from January 2015 to December 2018 were reviewed with regard to the type of FB, location, in the ear, methods of removal, complications, age, and sex. **Results:** Of the 157 children, 54.1% were males and 45.9% females. Male: female ratio was 1.2:1. Ninety-five (60.5%) were below the age of 5 years, 46 (29.3%) were 6–10 years of age, and 16 (10.2%) were in the age group of 11–15 years. The most common objects were beads, papers, and cotton. Most presentations (86%) were within 24 h. Seven patients (4.5%) required surgical removal under general anesthesia. Most of the patients (92.4%) had no complications. Morbidities include bleeding from the ear canal 6 (3.8%), canal abrasions/lacerations 4 (2.5%), and tympanic membrane perforations 2 (1.3%). **Conclusion:** Aural FBs are common conditions in children in our environment. Most of these can be successfully removed by skillful personnel, adequate immobilization, and proper instrumentation. Pediatricians, family physicians, and other health workers should not hesitate to refer to otorhinolaryngologists, uncooperative/apprehensive children, those with a history of attempted removal by their parents or caregivers, or FB whose contour, composition and position in the canal cannot be fully assessed.

Keywords: Aural, children, foreign bodies

INTRODUCTION

Aural foreign bodies (FBs) in children are common worldwide. They are often encountered by family physicians, pediatricians, and otorhinolaryngologists.^[1-3] Children with aural FBs have different ways of presentation. Caregivers or parents may witness the event. It may be an accidental finding on routine examination or unusual symptoms such as cough and hiccup as reported by Lossos and Breuer^[4] and Wagner and Stapczynski.^[5]

Diagnosis is often delayed because the event that leads to the insertion is usually unobserved, the symptoms not specific, and patients often misdiagnosed initially by the family physician or pediatrician.^[6] Children, because of their curiosity and experimental nature, explore their orifices and often insert FB into their ears without the knowledge of their parents or caregivers. Other causes of FB in the ear include playful insertion of objects into others' body parts, accidental entry of FB, a preexisting disease in the ear was causing irritation and habitual cleaning of the ear with objects like earbuds.^[1,7]

FB in the ear is usually asymptomatic and often an incidental finding in children.^[6] It can also present with otalgia, otorrhea, hearing loss, sense of ear fullness, or tinnitus.^[6-9]

Aural FB can be classified according to their nature into organic or inorganic, animate or inanimate, metallic or nonmetallic, hygroscopic or nonhygroscopic, regular or irregular, hard or soft, graspable or ungraspable, and so forth.^[1,7,10] Live insects in the ear, commonly small cockroaches, are annoying due to the discomfort created by the loud noise and movement.^[1,11] Insects are more common in children older than 10 years.^[6] The most common FB include beads, plastic toys, pebbles and popcorn kernels, paper, eraser, and vegetable materials.^[12-14]

Address for correspondence: Dr. Adekanye Abiola Grace, Department of Otorhinolaryngology, University of Calabar Teaching Hospital, Calabar, Nigeria.
E-mail: abiolaadekanye@yahoo.com

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The goal of the aural FB removal is to preserve the ear integrity while the FB is being removed. The first attempt at removal is critical because success rates decrease the following failed first attempt.^[8,14] The methods of aural FB removal depend on the type, its position, and the cooperation of the patient.^[2,15] Therefore, good preparation is essential for the removal of FB from the ear, especially in children. Having examined the child and known the type and shape of FB, the choice of instrument should be made before approaching the child for removal. The first attempt at removal is always the best. Therefore, attending doctor must ascertain the history of attempted removal by the parents, caregivers, or unskilled health personnel. A child is best examined on the lap of the parent with the legs in between the parent's legs and parent's feet crossed at the ankles and the upper limbs of the child against the torso and held in place by the parent's upper limbs. The apprehensive child or the one with a history of attempted removal would require examination under general anesthesia and removal by the otorhinolaryngologists. Waddling is a widely practiced technique and is a safe way to immobilize a young child by wrapping their upper limbs against the torso and enveloping the legs, leaving the head free. Evidence shows it can reduce motor response and startle.^[8] An assistant may be required to support the child head to prevent unexpected movement during the removal.

Aural FB are not life-threatening but could cause significant morbidity as well as cost management if inappropriately treated from the onset.^[2,12] Hence, skilled personnel must be the ones to remove FB from a child's ear. This is to prevent unwanted complications such as bleeding, pain, failed attempted removal, tympanic membrane perforation, pushing the FB into the middle ear with damage to the ossicular chain, and consequently hearing loss. Pediatrician or family physicians could remove obvious or visible FB in the ear; however, cases with obvious infection, disc battery, or vegetative matter FB need immediate referral to the otorhinolaryngologist. Disc battery is notorious because of its intense liquefaction necrosis when it gets in contact with a moist tissue or irrigated with water. The vegetable matter may expand with moisture or when irrigated with water.^[12]

The following are indications for referral to the otorhinolaryngologists: aural FB that are not visible, objects wedged against the tympanic membrane, objects with sharp edges, insects, disc battery, attempted removal elsewhere, and nonavailability of appropriate equipment or skilled personnel.

MATERIALS AND METHODS

The study was a retrospective analysis of medical records of children with FB in the ear managed at the Department of Otorhinolaryngology of the University of Calabar Teaching Hospital, Nigeria from January 2015 to December 2018. The case notes of these children were retrieved, and those who met the inclusion criteria were recruited into the study. Cases were reviewed for age, sex, type of FB, duration of the FB in the

ear, method of removal, and complications. Simple descriptive analyses of relevant demographic data were done.

RESULTS

A total of 167 children were recruited into this study. One hundred and fifty-seven cases had their data analyzed. The remaining ten patients were excluded because of incomplete data. There were 85 males and 72 females, with a male: female ratio of 1.2:1. Ninety-five patients (60.5%) were in the age group of 0–5 years, 46 (29.3%) were 6–10 years, and 16 (10.2%) were 11–15 years [Figure 1].

The types of FB extracted from the children in the order of frequency were beads 59 (37.6%), papers 25 (15.9%), cotton wool 20 (12.7%), seeds 17 (10.8%), stones 14 (8.9%) chalk 10 (6.4%), insects 6 (3.8%), broomstick 3 (2.0%), earring 2 (1.3%), and screw nail 1 (0.6%) [Table 1].

The majority (65%) of the cases were self-inserted, while 35% had the FB inserted by other children. About 64.3% of the FB were in the right ear while 35.7% were in the left ear. The parents noticed the FB in 70% of the cases while cleaning them up, while verbal admission by the child was observed in 20% of the cases. The remaining 10% were incidental findings.

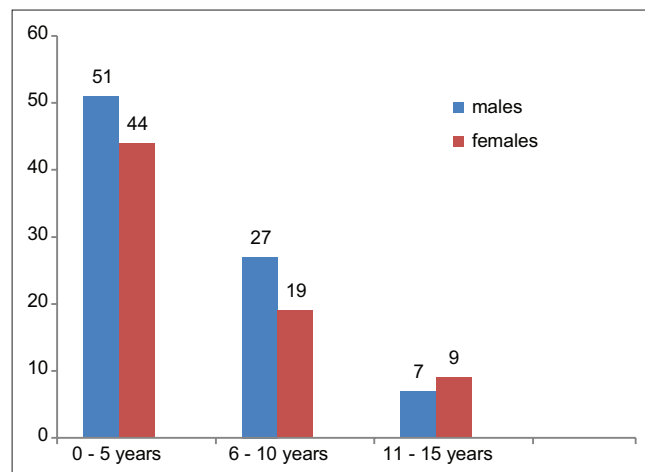


Figure 1: Age and sex distribution of children with aural foreign bodies

Table 1: Types of aural foreign body

Type	Frequency (%)
1. Bead	59 (37.60)
2. Paper	25 (15.90)
3. Cotton wool	20 (12.70)
4. Seed	17 (10.80)
5. Stone	14 (8.90)
6. Chalk	10 (6.40)
7. Insect	6 (3.80)
8. Broomstick	3 (2.00)
9. Earring	2 (1.30)
10. Screw nail	1 (0.60)
Total	157 (100)

Most of the children (85%) were asymptomatic on presentation. Others presented with otalgia (14%). Eighty-six percent presented within the first 24 h of FB insertion. While 9.5% presented after about 1 week, 3.2% within 1 month, and 1.3% presented after 1 month [Table 2].

Nearly 95.5% of the FBs were removed without general anesthesia. Jobson Horne probes or aural forceps were used to extract FB under direct vision in 37.5%, while 58% was by aural syringing. Almost 4.5% were removed in the operating theater under general anesthesia. These were those who were apprehensive or had experienced attempted removal before the presentation or failed removal at presentation [Figure 2].

Most of the patients (92.4%) had no complications following the insertion or removal of FB in the ear. The complications observed in our study include abrasion/lacerations (2.5%), bleeding from the canal (3.8%), and tympanic membrane perforations (1.3%) [Table 3].

DISCUSSION

Aural FBs are common in children between the ages of 0–5 years in our region. This is similar to the reports of studies conducted by Yuca *et al.*,^[3] in the United States, Ngo

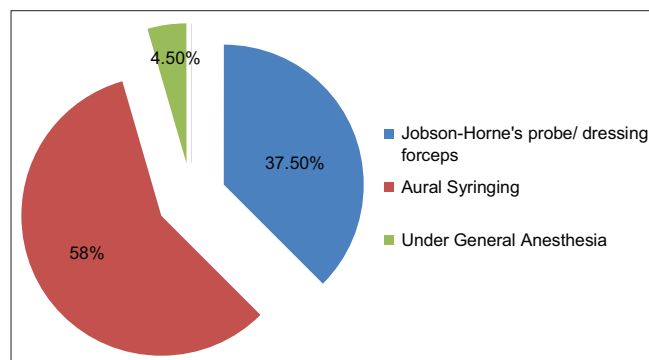


Figure 2: Modalities of removal

Time	Frequency (%)
1. Within 24 h	135 (86)
2. Within 1 week	15 (9.50)
3. Within 1 month	5 (3.20)
4. More than 1 month	2 (1.30)
Total	157 (100)

Complications	Frequency (%)
1. Abrasions/lacerations	4 (2.50)
2. Bleeding from the canal	6 (3.80)
3. Tympanic membrane perforations	2 (1.30)
4. No complications	145 (92.40)
Total	157 (100)

et al.,^[16] in Singapore, and Mishra *et al.*,^[17] in India. The peak incidence of aural FB in our series is 0–5 years of age, followed by children between 6 and 10 years. Chai *et al.*,^[18] in Sarawak General Hospital, Malaysia, have reported the peak incidence. However, it contrasted with the study of Baker^[19] in the United States, who recorded aural FBs predominantly in children within the age range of 2–8 years. Most of our children were males (54.1%) and of low socioeconomic class. This is consistent with the studies done by Ologe *et al.*,^[13] in South West Nigeria, Fritz *et al.*,^[20] at Johns Hopkins University Baltimore, Maryland, and Khalid *et al.*,^[21] in Amman-Jordan.

Beads, papers, cotton wool, seeds, and stones formed the predominant aural FBs in our series. This is in accordance with the findings by Al-Juboori,^[7] in Al-Fallujah General Hospital Iraq and Ryan *et al.*,^[22] in Australia. The availability of beads as common hair decorator for female children, prayer rosaries for Muslims, and Catholic faithful as well as cultural practices bear credence to the commonality of the object. Aural FBs are usually common items that are available to children in their environments. This is supported by the studies done by Ngo *et al.*,^[16] and DiMuzio and Deschler,^[23] in Boston, USA. In the study done by Chai *et al.*,^[18] seeds or nuts were the most common ear FB in 47.1%, followed by plastic toys or beads. Likewise, in Ologe *et al.*,^[13] grains and seeds 27.9%, beads 19.7%, cotton wool 13.6%, papers 8.8%, and erasers 8.2% formed the bulk of the canal FB. About 64.3% of the aural FB in our study were in the right ear. This in agreement with other studies conducted by Chai *et al.*,^[18] Ologe *et al.*,^[13] and Al-Juboori.^[7]

In our study, the majority (86%) of the children reported in our facility within the first 24 h of insertion of aural FB, similar to the report by Thompson *et al.*,^[2] Yuca *et al.*,^[3] Ansley and Cunningham,^[12] Mishra *et al.*,^[17] and Chai *et al.*,^[18]

However, it is in contrast with the study of Ologe *et al.*,^[13] where more than 50% presented late (≥ 7 days).

In our series, most of the patients (85%) were asymptomatic. Caregivers noticed the FB in 70% of the cases and verbal admission by the child in 20% of cases. This agreed with the study conducted by Ologe *et al.*,^[13] 64.6% of the patients were asymptomatic. However, it is in contrast with the study of Khalid *et al.*,^[21] where the most common presentation was local pain in 47% of the cases. Others were verbal admission by the child 33.3%, witnessed by caregivers 6.8%, bleeding from the ear 4.3%, ear discharge, etc.

About 95.5% of the patients in our study were managed successfully without general anesthesia. This is in accordance with the results of Ologe *et al.*,^[13] (96%), Barker MD *et al.*,^[19] and Ngo *et al.*,^[16] however, it is in contrast to 70% recorded by Thompson *et al.*,^[2] and Ansley *et al.*,^[12] In our study, 4.5% of the cases were managed in the theater under general anesthesia because patients were very apprehensive, and there was a history of attempted removal with perforation of the tympanic membrane.

Complications can occur either due to the FB itself or from an attempt to remove the FB. In our series, the most common complications were bleeding from the ear canal 3.8% and canal abrasions/lacerations 2.5%. This is comparable to the studies of Chai *et al.*^[18] and Khalid *et al.*,^[21] where abrasions and bleeding due to injuries were the most common complications. Majority of our patients (92.4%) had no complications as in the study of Ahmad *et al.*^[7] (87.5%) but in contrast to Singh *et al.*^[24] that recorded 77% of complications. We recorded low complications in our study comparable to cases managed by Thompson *et al.*,^[2] Ansley and Cunningham,^[12] and Ngo *et al.*^[6] Tympanic membrane perforation rate was 1.3%, similar to the reported rate of 1%–6% by Thompson *et al.*^[2] and Mishra *et al.*^[17]

CONCLUSION

Aural FBs are common in children <5 years in our environment. The caregivers and parents needed to be educated about the risks of using beads to decorate the hairs of their female children below the age of five, the proper keeping of common FB out of the reach of children. We advocate that unskilled health personnel should not attempt to remove FB to prevent complications. However, rather refer them to the otorhinolaryngologists, since the best time to remove FB is the first attempt. Preventions are often time better than cure. By complying with this advocate, unwarranted complications can be prevented.

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Conflicts of interest

There are no conflicts of interest.

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