MIDDLE EAR FOREIGN BODIES IN CHILDREN: AN UNUSUAL LOCATION

CORPS ÉTRANGERS DE L'OREILLE MOYENNE CHEZ L'ENFANT: UNE LOCALISATION INHABITUELLE

I. Zoghlami, D. Chiboub, R. Omri, MW. Trabelsi, S. Nefzaoui, E. Rejeb, N. Romdhane, I. Hariga, C. Mbarek
ENT department. Habib Thameur hospital. Tunis

ABSTRACT

Introduction: Middle ear (ME) foreign bodies are uncommon and often detected belatedly because of their variable clinical presentation. The diagnosis of ME foreign bodies require careful clinical evaluation with a meticulous otoscopic examination and imaging studies. Appropriate surgical assessment allows safe extraction and protects against functional and infectious complications.
Case Report: We report two cases involving a 5-year-old girl and 7-year-old boy, both presenting with otalgia, in whom surgical exploration revealed a middle ear foreign body. Surgical extraction was performed under general anesthesia via a retroauricular approach with myringoplasty for both patients. The postoperative course was favorable, with an almost complete hearing recovery and no complications during follow-up.
Discussion: Although relatively rare, ME foreign bodies are a rare condition whose diagnosis must be known for the right therapeutic management to prevent serious complications.
Keywords: Foreign body: Tympanic perforation; Ear surgery; Myringoplasty;

RÉSUMÉ

Introduction: Les corps étrangers de l'oreille moyenne sont rares et souvent diagnostiqués tardivement en raison de leur présentation clinique variable. Leur identification nécessite une évaluation clinique rigoureuse, incluant un examen otoscopique minutieux et des explorations radiologiques. Une prise en charge chirurgicale adaptée permet une extraction sécurisée et prévient les complications fonctionnelles et infectieuses.
Cas clinique: Nous rapportons deux cas: une fillette de 5 ans et un garçon de 7 ans, tous deux admis pour otalgie, chez qui l'exploration chirurgicale a mis en évidence un corps étranger dans l'oreille moyenne. L'extraction a été réalisée sous anesthésie générale par voie rétro-auriculaire avec myringoplastie chez les deux patients. Les suites postopératoires ont été favorables, avec une récupération auditive quasi complète et l'absence de complications au cours du suivi.
Discussion: Bien que relativement rares, les corps étrangers de l'oreille moyenne constituent une entité clinique dont le diagnostic doit être connu afin de permettre une prise en charge thérapeutique appropriée et d'éviter des complications potentiellement graves.
Mots-clés: Corps étranger; Perforation tympanique; Chirurgie de l'oreille; Myringoplastie.

INTRODUCTION:

Ear-located foreign bodies represent a frequent situation in ENT, affecting mostly children compared to adults [1].
The most prevalent location is the external auditory canal, whereas involvement of the middle ear remains atypical [1,2]. Foreign bodies of the ME are mainly observed in the presence of a pre-existing tympanic perforation, following trauma or iatrogenic procedure, alternatively but more rarely, by migration from external auditory canal to tympanic cavity [2].

The clinical presentation can be various: it may be clinically manifest with otalgia, hypoacusis, tinnitus or otorrhea [1]. Oppositely, it can be incidentally discovered during a routine physical or imaging examination.
Although several publications have described foreign bodies in the external auditory canal, reports concerning localization in ME remain infrequent. This work seeks to highlight the mechanisms of introduction of foreign bodies, diagnostic methods, and surgical extraction approaches.

Corresponding author: Imen Zoghlami
E-Mail: zoghlamiimen48@gmail.com

CASE PRESENTATION:

Case presentation 1:

A 5-year-old girl was referred to the ENT emergency department after introducing a vegetative foreign body into her left ear. Attempts at removal by her parents had been unsuccessful. On clinical examination, the patient presented with severe otalgia. Inspection of the external auditory canal was difficult because of pain and otorrhagia but revealed an inflamed canal containing an obstructive foreign body completely masking the tympanic membrane. Pure-tone audiometry demonstrated a 50-dB conductive hearing loss. Temporal bone CT imaging confirmed the presence of a foreign body within the tympanic cavity, associated with incudomalleolar and incudostapedial dislocation (Figure 1). The patient was started on antibiotic therapy.

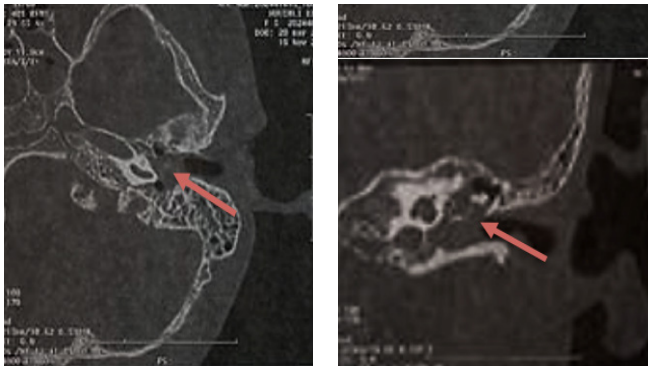

Figure1: Axial and coronal Temporal bone CT scan: foreign body in the middle ear associated with incudomalleolar and incudostapedial dislocation

An initial attempt at removal under general anesthesia via a transmeatal approach was unsuccessful, requiring conversion to a retroauricular approach. Surgical exploration revealed a large vegetative foreign body impacted in the middle ear through a wide tympanic membrane perforation. An inflammatory and shredded tympanic membrane remnant was also observed, together with dislocation of the malleus. Careful extraction was achieved after partial drilling of the foreign body to reduce its volume. Tympanic membrane reconstruction was performed using superficial temporalis fascia. Postoperative follow-up showed satisfactory healing of the tympanic membrane, although conductive hearing loss persisted.

Case presentation 2:

A 7-year-old boy presented with left-sided otalgia and otorrhea, seven days after the accidental insertion of a vegetative foreign body into his ear. An extraction attempt made by his parents had been unsuccessful. On initial examination, the patient presented with left otitis externa, with a foreign body obstructing the external auditory canal beyond marked edema. Medical treatment was initiated, including analgesics, systemic antibiotics, topical antibiotics, and topical corticosteroids.

A CT scan of the temporal bones revealed a vegetative foreign body within the tympanic cavity, with no associated injury to the ossicular chain, which appeared intact (Figure 2).

Figure 2: Coronal Temporal bone CT scan: foreign body in the middle ear

Pure-tone audiometry demonstrated a 35-dB conductive hearing loss. After the resolution of edema and improvement in the patency of the external auditory canal, the foreign body was removed under general anesthesia. An initial transmeatal extraction attempt proved unsuccessful, requiring conversion to a retroauricular approach. Subsequent exploration of the middle ear confirmed the integrity of the ossicular chain.

A simple myringoplasty was performed using a conchal cartilage graft. The postoperative course was favorable, with complete tympanic membrane healing at one-month follow-up. Audiometric testing demonstrated near-complete hearing recovery, and no complications were observed.

DISCUSSION:

Aural foreign bodies are most commonly located in the external auditory canal, whereas their presence in the middle ear is rare, accounting for approximately 1% of ENT emergency cases [3]. Vegetable foreign bodies, such as those reported in our cases, are infrequently described in the literature [1,2]. Most documented middle ear foreign bodies consist of silicone material from ear mold impressions, while others include metallic fragments from welding injuries or live insects entering through a pre-existing tympanic membrane perforation [2]. Previous studies suggest that external objects may reach the middle ear either through a perforated tympanic membrane or via a pathological Eustachian tube [1,2].

If left in the tympanic cavity, foreign bodies may cause discomfort and symptoms such as otalgia, hearing loss, otorrhagia, tinnitus, ear fullness, or vertigo [2]. They may also induce otitis externa or otitis media, which can be aggravated by manipulation or unsuccessful extraction attempts, as observed in our second case, thereby complicating subsequent otoscopic examination. Initiating treatment with antibiotics and corticosteroid ear drops may reduce external auditory canal edema and improve conditions for optimal follow-up evaluation [1]. Nevertheless, persistent unilateral otorrhea despite appropriate medical therapy, particularly when associated with hearing loss, should raise suspicion of a retained foreign body, especially in pediatric patients [3].

Foreign bodies are generally visible through a tympanic membrane perforation [1]. In rare instances, however, the tympanic membrane may heal, leaving the foreign body visible through the translucent membrane, which highlights the essential role of imaging in confirming the diagnosis [1,7,9]. Imaging studies are therefore useful for characterizing the nature and location of the foreign body, assessing ossicular chain integrity, and guiding the surgical approach [1,3,6,9]. In some cases, middle ear foreign bodies are discovered incidentally during imaging when clinical symptoms are absent.

Once a middle ear foreign body is confirmed, blind removal should be avoided to prevent iatrogenic injury and reduce complications such as ossicular disruption and long-term hearing loss. The choice of surgical approach depends primarily on the characteristics and location of the foreign body, as well as on any associated complications [5]. Minimally invasive trans-canal endoscopic approaches allow precise visualization and removal while preserving anatomical structures. However, in cases involving extensive middle ear extension, posterior canal erosion, or mastoid inflammation, a post-auricular approach with tympanomastoidectomy is recommended [5], particularly when dealing with impression-material foreign bodies.

In a second stage, tympanoplasty should be performed to repair the tympanic membrane, with ossiculoplasty considered when ossicular chain damage is identified [5,8].

Recent reviews in pediatric otorhinolaryngology emphasize that foreign bodies represent a significant proportion of emergency department cases in children, particularly those under five years of age, due to their exploratory behaviour and curiosity [1,3,10]. This reinforces that although middle ear foreign bodies are rare, clinicians should maintain a high index of suspicion in pediatric cases presenting with persistent otologic symptoms not responding to standard therapy. The pediatric literature also highlights that the nature and location of the object strongly influence both clinical presentation and the choice of removal technique, as organic materials like seeds or plant matter may expand with moisture and elicit more pronounced inflammatory reactions than inert objects, complicating extraction and increasing the risk of local tissue damage [11]. More comprehensive diagnostic strategies, including early imaging when clinical findings are atypical or persistent, are therefore supported to prevent delays in identification and to optimally plan surgical management in complex cases.

CONCLUSION:

The present report highlights the clinical relevance of these two rare cases of middle ear foreign bodies. Beyond the unusual vegetal nature of the foreign bodies identified in the middle ear, the mechanism of insertion is particularly noteworthy, as it resulted from voluntary introduction in a pediatric context followed by attempted manipulation. Furthermore, the extraction technique used, involving partial drilling of the foreign body, is rarely described in the literature, which further underscores the originality and scientific value of our contribution.

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Conflict of interest:

The are no conflict of interest.

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