

# Removal of ear, nose and throat foreign bodies

## *A review*

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### Background

Patients with foreign bodies in their ear, nose or throat typically present to general practitioners. The safe and timely removal of foreign bodies ensures good patient outcomes and limits complications.

### Objectives

The aim of this paper is to outline common foreign objects and review the associated anatomy that may make removal difficult. A description of instruments and indications for use is provided, along with circumstances where specialist referral is warranted.

### Discussion

The use of appropriate techniques for removal of foreign bodies reduces the complications of removal and associated distress, and limits the number of cases that require surgical input.

**OTORHINOLARYNGOLOGY** complaints represent a significant number of presentations to general practitioners (GPs) and emergency departments. Particularly in paediatric patients, foreign bodies in the ear, nose and throat (ENT) present a unique clinical challenge. For GPs, especially those in rural settings without ready access to tertiary centres, this article reviews several techniques including microscopy and direct visualisation for removal of such objects, and outlines referral indications for timing of specialist intervention.

### Preparation

Good preparation of patients is essential; we recommend having all necessary equipment readily available prior to commencing removal. Ideally, the choice of instrument should be made before approaching the child. The first attempt at removal of a foreign body is always the best attempt. A child is best examined with all limbs wrapped in a sheet on a parent's

lap for removal of ear and nasal foreign bodies, or lying flat on a bed for ear foreign bodies.<sup>1</sup> Swaddling is a widely practised technique and is a safe way to immobilise a 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 (Figure 1).<sup>2</sup> An assistant may be required to gently hold the child's head steady so there is no unexpected movement during instrumentation. Distraction can be offered in the form of incentive items, and showing older children the medical equipment can be useful, depending on temperament of the child. A planning discussion with the parents prior to beginning is beneficial. Use of a headlight, leaving hands free for instruments, is essential; either a medical-grade or camping torch can be used.<sup>3</sup>

### Aural foreign bodies

Foreign bodies in the ear are usually asymptomatic and often an incidental



**Figure 1.** The process of swaddling an infant/young child in preparation for examination and removal of foreign bodies

A. Lying flat on a sheet ready to be swaddled. B. Swaddled with the head supported and turned to the side.

finding.<sup>4</sup> Common objects include beads, small plastic toys, cotton fragments, stones and popcorn kernels.<sup>5-7</sup> Symptoms consistent with otitis media or aural fullness may also be associated. The majority of patients are younger than eight years of age.<sup>6,7</sup> The external auditory canal (EAC) has a natural narrowing where the bony and cartilaginous portions join; this is where objects may become wedged. The skin of the canal approaching the tympanic membrane is tightly adherent, and therefore any manipulation of, or trauma to, this skin results in significant discomfort.<sup>5</sup>

EAC foreign bodies can be removed via either direct visualisation or with microscopy. Objects that are graspable have higher removal success rates under direct visualisation, which is freely available in the primary care setting.<sup>8</sup> Apart from batteries and vegetable matter

that may expand with moisture, most ear foreign bodies do not need to be removed immediately.<sup>9</sup> The most appropriate technique for foreign body removal under direct visualisation is largely dictated by the nature of the foreign body (Table 1). With direct vision, several instruments are available for use, including a right angle hook (Figure 2), which can be used to manoeuvre behind the foreign body and then pull forward with the foreign body in its path. A wax loop/curette relies on good visualisation of the ear canal and can be used in the same fashion as a right angle hook, and to clear wax that may be occluding the ear canal. Irrigation is another useful technique that can be used in general practice clinics; using a small syringe, butterfly needle tubing and lukewarm water, a stream of water can be directed along the posterosuperior margin of the EAC to flush out non-occlusive

objects.<sup>5</sup> Live insects can be killed by instilling alcohol or an oil, such as sesame or olive oil, into the canal prior to removal.<sup>4</sup> Any attempts at irrigation or flushing should be done after ensuring there is an intact tympanic membrane.

Previous studies have outlined indications for referral to ENT specialist review with microscopy techniques. A foreign body that is more medial or approaching the tympanic membrane is far less likely to be removed with direct visualisation; in the proximal two thirds of the EAC, only 33% were removed with direct visualisation as opposed to 77% with microscopy.<sup>10</sup> Complications have been shown to arise with repeated failed attempts; therefore, previously unsuccessful attempts should be referred immediately.<sup>11</sup> Small batteries, such as those found in hearing aids and toys, can also be inserted into the EAC. These should be removed within hours of presentation using specialist involvement, as there is a risk of erosion of EAC skin and tympanic membrane perforation, depending on location.

**Table 1. Instruments and indications for ear foreign body removal**

Irrigation	<p>DO use for</p> <ul style="list-style-type: none"> <li>• insects</li> <li>• loose, inorganic, small objects such as small beads, popcorn kernels</li> </ul> <p>DO NOT use for</p> <ul style="list-style-type: none"> <li>• <b>batteries</b></li> <li>• vegetable matter</li> <li>• grommets in situ/tympanic membrane perforation/patients with known or suspected cholesteatoma</li> <li>• polystyrene ('bean bag') balls               <ul style="list-style-type: none"> <li>– will absorb and partially degrade leaving fragmented pieces for future removal if unsuccessful</li> </ul> </li> </ul>
Alligator forceps	<p>DO use for</p> <ul style="list-style-type: none"> <li>• insects</li> <li>• soft graspable items such as paper</li> </ul> <p>DO NOT use for</p> <ul style="list-style-type: none"> <li>• <b>round objects</b> <ul style="list-style-type: none"> <li>– can push object in further</li> </ul> </li> </ul>
Right angle hook	<p>DO use for</p> <ul style="list-style-type: none"> <li>• round objects without a leading edge</li> </ul> <p>DO NOT use for</p> <ul style="list-style-type: none"> <li>• friable objects</li> <li>• <b>objects deep in the canal without proper visualisation</b></li> </ul>
Wax loop/curette	<p>DO use for</p> <ul style="list-style-type: none"> <li>• removing wax</li> <li>• small round objects</li> </ul>

Items marked as **bold** should be considered for referral for specialist removal; failed attempt at any of the above should be referred on to an ear, nose and throat specialist



**Figure 2.** A disposable right-hand (Wagener) hook; ear speculum is shown for size reference

One case report detailed the use of a magnetic rod to attract the battery.<sup>12</sup> Such instruments are used in laparoscopic surgery to locate lost sutures, and commercially as a key or coin finder; provided there is adequate vision of the ear canal, these instruments, in consultation with the nearest specialist, could be considered as first-line treatments for GPs in remote areas, where there would otherwise be a delay in reaching an ENT specialist.

### Nasal foreign bodies

Intranasal foreign bodies are common among curious young children, with the right nostril favoured by right-hand dominant patients.<sup>13</sup> The nose consists of two vaulted cavities separated by a central septum and divided by turbinates internally; the common sites for foreign bodies are along the floor of the passage, between the inferior turbinate and septum, or abutting the sensitive mucosa of the middle turbinate.<sup>4</sup> Unilateral foul smelling rhinorrhoea is the most common presenting complaint and occurs more often with organic material foreign bodies; other symptoms include chronic sinusitis and, rarely, systemic infections.<sup>14</sup> Common objects include balls, beads and parts of toys.<sup>7</sup>

Examination requires a compliant patient and is often done with the child wrapped, sitting on a parent's lap with the head tilted back slightly. Often a nasal decongestant with an inert flavour, such as 0.25% phenylephrine, can be used to help clear secretions before suctioning. In children over the age of three years, topical lignocaine 10% can be used to help minimise mucosal discomfort. Common foreign bodies and suggestions for removal are listed in Table 2.

A non-invasive technique that can be used to expel nasal foreign bodies is the 'mother's kiss', a positive pressure procedure. With the patient lying down, a parent occludes the non-affected nostril with a finger and provides a puff of forced exhalation into the child's mouth such that the glottis closes over and the air is forced through the nasal cavity along with the foreign body. A review of this practice found that a completely occlusive foreign body was often more easily removed with this technique.<sup>15</sup>

Removal of nasal foreign bodies should be attempted only when an object is well visualised and within reach of available instruments, in a child who can be safely immobilised. If in doubt, patients should be referred to centres that have available sedation and ENT support. Rural emergency departments may provide sedation support, but this should be clarified with the nearest centre. Epistaxis can occur with unsuccessful removal attempts and result in further complication.<sup>14</sup> Nasal foreign bodies should be removed in a timely fashion as the nasal airway is contiguous with the oropharyngeal airway and objects could theoretically dislodge and become an airway risk. For rural centres, a discussion with the nearest ENT department could guide timing and facilitation of intervention.

### Pharyngeal foreign bodies

Airway/pharyngeal foreign bodies are medical emergencies and may present with signs of respiratory distress, including cough, shortness of breath and/or stridor.<sup>4</sup> The larynx is the most common site of blockage, followed by the bronchi and lower airway.<sup>16</sup> If a partial occlusion is present, children will often

have a new cough and/or voice change that can be mistaken for croup if ingestion of the foreign body was not witnessed. In those cases, a history of a choking episode is important to elucidate. Fish bones commonly impact in the vallecula or tongue base.<sup>17</sup> Pharyngeal foreign bodies are difficult to view and remove in the primary care setting and should be referred immediately for specialist input given the need for airway protection with emergency services.

Oesophageal foreign bodies, especially coins, are common in young children, obstructing at the level of cricopharyngeus and resulting in children presenting with drooling and distress.<sup>9</sup> Radiolucent objects can be viewed on anteroposterior and lateral chest X-rays; in cases where the foreign body appears to be a smooth, round circle, prompt distinction must be made between a coin and a small battery. Radiologists can comment on the 'halo' of a disc battery.<sup>18</sup> A disc battery must be removed immediately as it reacts with the oesophageal mucosa as early as 180 minutes post-ingestion, resulting in caustic damage and local electrical burns, which can lead to perforation.<sup>19</sup>

### Indications for referral to ENT specialist

Urgent referral to an ENT specialist should be made for removal of:

- airway or oesophageal foreign bodies
- button battery foreign bodies
- occlusive aural foreign bodies.

Referral is also indicated if:

- previous attempts at removal have been unsuccessful
- there is a concurrent infection (eg otitis externa, sinusitis)
- the patient is likely to need sedation.

### Summary

Foreign bodies in ears, noses and throats are common presentations to GPs in rural and metropolitan areas. Before attempting to remove the object, it is essential to discuss with parents or caregivers what to expect and how their child will be positioned and examined, and to have all instruments at hand, including a headlight.

**Table 2. Instruments and indications for nose foreign body removal**

Irrigation	Not recommended given risk of aspiration <sup>20</sup>
Curved hook, curette	Firm, round objects such as beads, stones
Alligator forceps	Foam, ear plugs, other compressible materials
Suction catheter	Anterior, soft foreign bodies such as paper
Mother's kiss	Occlusive foreign bodies

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