

Introduction to Foreign Body Removal

This lesson is an extension of the cerumen management guide and will provide important information regarding foreign body (FB) removal and is followed by a step-by-step, hands-on guide called *Foreign Body Removal*.

Learning Outcomes

- Understand the various techniques used to extract foreign bodies
- Know which technique to use based on the foreign body's characteristics
- Identify contraindications
- Recognize when a referral is warranted

Cerumen is not the only material that can be found in ears and this is why it is crucial to not only possess the skills necessary to remove foreign objects successfully but to also understand when it is beyond your skill set so that you can refer your client for medical care.

Removing foreign bodies is well within an audiologist's scope of practice and involves objects typically found within their practice such as domes, cotton swabs, and ear impression material (College of Audiologists and Speech-Language Pathologists of Ontario [CASLPO], 2018). Most foreign body cases involve children under 8 years old and include beads, popcorn kernels, and toys and are asymptomatic. Other cases, however, may present with pain, aural fullness, or hearing loss (Heim, 2007). Objects that are graspable tend to have higher rates of success and fewer complications (Dance, 2009).

Similarly to cerumen removal, the proper removal of a foreign object depends on its characteristics and determining the risks and contraindications prior to removal. Removal should not be attempted if it is beyond your professional competency.

A referral is required with unsuccessful removal after a few attempts, too difficult to remove (i.e. close or against tympanic membrane), an uncooperative patient, lack of instrumentation (i.e. illumination), type of object (i.e. piece of glass), trauma to ear canal and/or tympanic membrane, extreme pain, and suspicion of foreign bodies in other areas such as the nose (Alrobaian, 2020; Heim, 2007; Lotterman, 2021). A note of caution regarding hearing aid batteries; these require



urgent removal. If the battery cannot be removed easily, the client should be referred immediately to otolaryngology

Case History

Ensure to gather relevant case history information prior to attempting to remove the foreign body such as any symptoms, previous ear surgery, myringotomy tubes, outer ear lesions, tympanic membrane perforation, health conditions such as diabetes, immunocompromised, or use of blood thinners (CASLPO, 2018).

Obtaining Informed Consent

As with all procedures, you must obtain informed consent prior to foreign body removal. In order to obtain consent you must present information regarding the nature of the service, risks and benefits, alternative options, and consequences for refusing treatment. For more information on informed consent, consult your regulatory body.

In regards to foreign body removal, some of the complications that may arise include:

- Injury to ear canal or middle ear
- Tympanic membrane perforation
- Infection due to procedure or remaining organic material (Dinces, 2020)

Uncommon complications include:

- Sensorineural hearing loss
- Vertigo
- Meningitis
- Facial nerve paralysis (Dance, 2009)

Hearing Testing

A pre- and post-hearing test is suggested by Dince (2020). This could provide valuable information regarding the status of the tympanic membrane and if there is a suspected perforation or middle ear involvement.



Piece of a metal paperclip in CARL's ear

Foreign Body Removal Techniques & Object Characteristics

Below you will find a detailed table that outlines the techniques that can be employed depending on the foreign body, as well as any contraindications.

Technique	Characteristics	Examples	Contraindications
Irrigation	<ul style="list-style-type: none"> • Small, loose object (< 2mm) • Non-graspable • Friable • Round and smooth 	<ul style="list-style-type: none"> • Dirt • Small insect • Small bead 	<ul style="list-style-type: none"> • Tympanic membrane perforation • Tympanostomy tube • Food or other matter that may expand when exposed to water • Do not use irrigation to remove a battery since this can cause liquefactive necrosis (Heim, 2007) • Do not use if object is a magnet • Pain during irrigation may indicate a tympanic membrane perforation or ear canal laceration
Manual Removal (Billeau ear loop)	<ul style="list-style-type: none"> • Variety of objects • Non-graspable • Hard • Round and smooth • Free-floating 	<ul style="list-style-type: none"> • Insect • Cotton tip • Bean • Bead 	<ul style="list-style-type: none"> • Edema • Infection • Impacted object
Manual Removal (right-angle hooks)	<ul style="list-style-type: none"> • Round and smooth • Spherical • Hard 	<ul style="list-style-type: none"> • Bead • Hearing aid battery 	<ul style="list-style-type: none"> • Edema • Infection • Impacted object
Manual Removal (forceps)	<ul style="list-style-type: none"> • Graspable 	<ul style="list-style-type: none"> • Insect • Foam • Felt • Cotton • Paper 	<ul style="list-style-type: none"> • Edema • Infection • Impacted object

		<ul style="list-style-type: none"> • Sticker 	
Suction	<ul style="list-style-type: none"> • Friable • Round and smooth • Non-graspable • Small, light-weight • Mobile 	<ul style="list-style-type: none"> • Molding clay • Small bead • Bean • Battery • Magnet 	<ul style="list-style-type: none"> • Edema • Infection • Impacted object

(Dance, 2009; Dinces, 2020; Friedman, 2006)

Additional Materials & Equipment

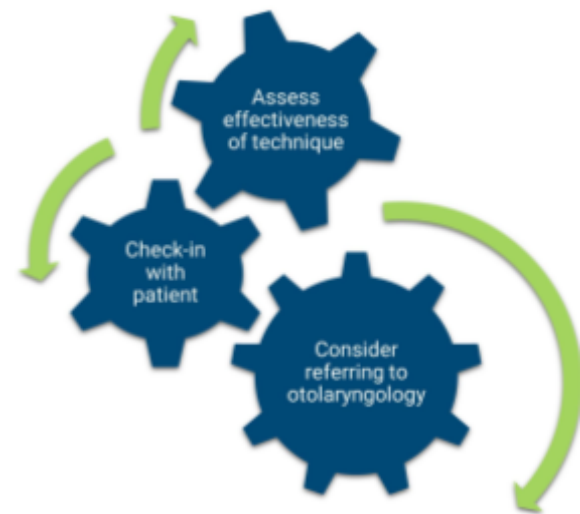
In addition to the equipment that is required to employ each of the techniques listed in the table above, other necessary equipment includes proper illumination, ideally from a headlamp or loupe with magnification.

Mineral oil can be effectively used, unless contraindicated, to kill a live insect prior to removal (Lotterman, 2021)

Important Considerations

Since the success rate for a foreign body removal declines significantly after the first attempt (Heim, 2007), if more attempts are needed, consider whether an alternative technique is required or a referral to otolaryngology. More attempts can cause increased patient anxiety, loss of cooperation, pain, and other complications (Dance, 2009) and may unintentionally push the object in further.

After removal, if there is any sign of injury to the ear canal the patient should return for a follow-up to examine the ear and to determine whether referral to a general practitioner or otolaryngology is necessary.



Next Steps

Proceed to the hands-on guide, *Foreign Body Removal*.

References

- Alrobaian, S. (2020). Ear foreign body removal. <http://sjrhem.ca/ear-foreign-body-removal/>
- College of Audiologists and Speech-Language Pathologists of Ontario. (2018, October). *Practice standards for cerumen management*.
http://caslpo.com/sites/default/uploads/files/PSG_EN_Practice_Standards_for_Cerumen_Management.pdf
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- Friedman EM. Removal of Foreign Bodies from the Ear and Nose. *N Engl J Med*. 2016 Jul 14;375(2):194. doi: 10.1056/NEJMc1603663. PMID: 27410944.
- Heim, S.W., & Maughan, K.L. (2007). Foreign bodies in the ear, nose, and throat. *Am Fam Physician*, 76(8), 1185-1189.
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- Lotterman S, Sohal M. Ear Foreign Body Removal. [Updated 2021 Jan 30]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from:
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Foreign Body Removal

If you are new to cerumen management and foreign body removal, make sure to review the lessons outlined in the prerequisite section below.

Prerequisites

- Introduction to Cerumen Management
- Cerumen Management: Curette
- Cerumen Management: Irrigation
- Introduction to Foreign Body Removal

Learning Outcomes

- Understand the process involved in foreign body removal using various techniques

Materials

- CARL
- CARL ears
- Illumination
- Foreign object
- Forceps, right-angle hook, curettes
- Suction machine with #5 or #7 Baron with thumb control valve (Dinces, 2020)
- Irrigation device and basin



Consent

Prior to engaging in any procedure, you must obtain informed consent from the client. For more information, consult with your licensing body.¹

¹ Obtaining consent by the College of Audiologists and Speech-Language Pathologists (CASLPO)
http://www.caslpo.com/sites/default/uploads/files/GU_EN_Obtaining_Consent_for_Services.pdf

Starting Procedure for all Techniques

Step 1: Place a foreign object into CARL's ear canal and perform otoscopy.

Note: You must consider any contraindications for the removal of the object and whether these complications and/or the type of object warrant a referral to a general practitioner or otolaryngology.

Step 2: Determine which piece of equipment can be used to effectively remove the object.

Step 3: Use adequate illumination to view the object such as a loupe with magnification.

Procedure: Irrigation

Step 1: Place the basin directly under the ear and against the head. Put a towel under to absorb any spills.

Step 2: Using warm water, pull the pinna up and back, and direct the water stream superiorly and behind the foreign body.

Tip: Try with a small amount of water (30-60 mL) to start with (Dinces, 2020) and check progress by using otoscopy.

Note: Don't forget to check-in with your client to make sure they are still comfortable. Keeping in mind patient comfort and safety, if after a few attempts the object remains, consider a referral.

Step 3: Repeat the procedure with the next side.

Step 4: Document the procedure as outlined by your licensing body.



Procedure: Manual Removal Currettes & Hooks

Step 1: With proper visualization of the object, gently place the wire loop or right-angle behind the foreign body and rotate the end so that it will come into contact with the object for the next step.

Tip: If the object has a hole in it (i.e. bead), try placing the tip of the hook into the hole (Dance, 2009).

Note: Don't forget to check-in with your client to make sure they are still comfortable. Keeping in mind patient comfort and safety, if after a few attempts the object remains, consider a referral.

Step 2: Carefully withdraw the curette or hook with the object laterally.

Step 3: Repeat the procedure with the next side.

Step 4: Document the procedure as outlined by your licensing body.



Procedure: Manual Removal Forceps

Step 1: With proper visualization of the object, carefully insert the forceps.

Note: Don't forget to check-in with your client to make sure they are still comfortable. Keeping in mind patient comfort and safety, if after a few attempts the object remains, consider a referral.

Step 2: Gently grasp the foreign body and withdraw laterally.

Tip: Do not use too much pressure when grasping an object that can fragment into smaller pieces which may require suction or irrigation to completely remove (Dinces, 2020).

Step 3: Repeat the procedure with the next side.

Step 4: Document the procedure as outlined by your licensing body.



Procedure: Suction

Step 1: With proper visualization of the object, carefully insert the suction tip with the thumb valve open.

Note: Don't forget to check-in with your client to make sure they are still comfortable. Keeping in mind patient comfort and safety, if after a few attempts the object remains, consider a referral.

Step 2: Gently contact the foreign body with the suction tip.

Tip: Alrobaian (2020) recommends using a soft suction tip.

Step 3: Engage suction by covering the thumb valve and slowly withdraw laterally. Do not release the thumb valve while removing the object.

Step 4: Repeat the procedure with the next side.

Step 5: Document the procedure as outlined by your licensing body.

References

Alrobaian, S. (2020). Ear foreign body removal. <http://sjrhem.ca/ear-foreign-body-removal/>

Dance, D., Riley, M., & Ludemann, P. (2009). Removal of ear canal foreign bodies in children: What can go wrong and when to refer. *BC Medical Journal*, 51(1), 20-24.
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Dinces, E. A. (2020). How to remove a foreign body from the external ear canal.
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