
CHAPTER 9

Ear Impression Preparation

Objectives

- To ensure that the candidate is taking hygienic precautions during the ear impression process
- To ensure that the candidate is aware of, and is following, all safety precautions during the ear impression process
- To prepare the candidate to produce a complete and accurate ear impression

OTOSCOPIC EXAMINATION PROCEDURE

One of the most important skills to acquire in order to become a competent hearing aid dispenser is taking good-quality ear impressions. There are two main reasons for becoming comfortable and competent in this area:

1. It determines the fit of the custom ear-mold or hearing aid that you will be fitting on the patient. It determines the experience that your patient has with the first fit and could be the factor in their acceptance of amplification, so you should do everything in your power to get the impression done right the first time the patient is in your office. Remember, you are the professional, and if you take an impression and it is not good, do not be afraid to take another impression. Do not send poor impressions to the manufacturers and expect that they can fix your poor impression,

because they cannot, nor is it their responsibility to do so, it is yours!

2. Taking an ear impression is the most invasive procedure that you will be performing on your patient as a hearing aid dispenser, so precision and accuracy during the process is of the utmost importance when it comes to patient safety. There is a risk of physical harm to the patient if this procedure is not done properly, so states will be very particular when it comes to this section on the exam, as the patient's safety is the number one priority.

EQUIPMENT CHECKLIST

Most states will provide you with an equipment checklist that you are required to bring to your examination. They will also include a list of what they provide as well. Below is a list of what most states require you to bring to the examination. This equipment includes but is not limited to:

- Otoscope
- Specula tips (at least 10)
- Sanitary wipes
- Hand sanitizer
- Impression material (enough for two impressions)
- Impression mixing tools
- Syringes (2)
- Syringe tips (2)
- Otoblocks of various sizes
- Otolight
- Sanitary cloth (white towel)
- Scissors
- Order form
- Manufacturer shipping box

The first thing you need to determine prior to taking an ear impression is what type of impression material you are going to be using when you take your state licensing examination. Do not assume that the impression material that you have been using and practicing with is approved under materials that the state allows. Consult the information on the impression-taking section of your state information *prior* to the exam date so that if you need to change the impression material you are using, you have plenty of time to work with a different type in advance. The main issue that states have with certain impression material is not the actual material that is used but the way in which the material is mixed and/or injected into the ear.

There are two main types of materials for taking ear impressions. The first one is a silicone-based material that can come in either individual packages for individual use or in bulk. The silicone material requires two equal parts: one consisting of silicone, and another, which is a mixing agent that begins to harden once these two parts are mixed together. The main concern with this material is that it can be difficult to mix in a cup or bowl and usually requires that you do it by hand and then insert the material into the syringe. The problem with this method is that it requires you to abide by the utmost sanitary precautions when mixed by hand for the practical examination, and at times gloves may be required. If you do prefer to use silicone, research different types and find one that is available that may offer an alternative to hand mixing.

The other option for mixing silicone material is by using an impression gun. With the impression gun, the impression material comes in a two-part cartridge and mixes together as you “shoot” the gun. Guns can be either manually operated or come equipped with battery operation to assist with speed control. Some guns are strictly manual and require pressure and speed made only by your hand, whereas others are battery operated and can assist



Figure 9–1. An example of an impression gun or pistol is shown. (From Taylor & Mueller, 2011)

with speed and pressure control. Figure 9–1 shows an impression gun. Be sure to check your state information packet before using an impression gun on your state exam, as many states do not allow impression guns during testing. (Note: If your state allows you to use an impression gun, make sure that you are able to properly brace and hold the gun while operating the gun.)

The second type of material is a powder-and-liquid material that comes either individually premeasured and prepackaged or in bulk. Mixing of the powder-and-liquid material is done using a cup or bowl. After proper mixing of the material, it is transferred to the syringe for injection. Figure 9–2 shows such a syringe. Many people find this material very easy to work with for their state exam, due to the ease of mixing, and that it does not harden as fast as silicone allowing you more time to work with this material. Generally, this material does not need to be handled with your hands, as it can be transferred directly from the container after mixing into the syringe, which makes it sanitary to use without concern. (Note: Regardless of which material you decide to use for your exam, make sure that you read the manufacturer’s instructions for the proper mixing procedure as well as setup time of the material.)



Figure 9–2. An example of a standard syringe used to take ear impressions is shown. (From Taylor & Mueller, 2011)

Preparation Tips Prior to the Examination

Preparation tips prior to the examination are as follows:

1. Organize your impression kit.
2. Bring a clean white towel.
3. Place tools in separate clear bags.
4. While unpacking your tools, lay them out in order of use.
5. Sanitize every time you have to touch the patient.
6. Treat your subject as a real patient (i.e., talk to them during the procedure).
7. Time yourself.
8. Quality control your steps before, during, and after the procedure.

EAR IMPRESSION PROCEDURE AND STEPS

Hygiene Technique

The following points regard hygiene:

- It is very important to demonstrate the technique.

- Wash your hands before and after the procedure.
- It is suggested to place all items on a clean white towel (sterile surface).
- Sanitize tools and equipment prior to placing them on the sterile surface.

Explanation of the Procedure

In terms of explaining the procedure, involve the patient and explain while doing the procedure. For example: “We are now going to take an ear impression of your ear. I will be inspecting your outer ear and ear canal with my otoscope. I will be looking for any abnormalities that may stop me from performing this procedure. If all is fine, I will be placing a cotton block inside your ear canal and will then fill your ear cavity with impression material. The material will stay in your ear cavity approximately 12 minutes. Do you have any questions?”

The FDA's Eight Red Flag Questions

It is important to question the patient with regard to the following FDA red flag issues:

1. Visible congenital or traumatic deformity of the ear
2. History of active drainage from the ear in the previous 90 days
3. History of sudden or rapidly progressive hearing loss within the previous 90 days
4. Acute or chronic dizziness
5. Unilateral hearing loss of sudden or recent onset within the previous 90 days
6. Audiometric air-bone gap ≥ 15 dB at 500, 1000, and 2000 Hz
7. Visible evidence of significant cerumen accumulation or a foreign body in the ear canal
8. Pain or discomfort in the ear

Process for Otoscopic Inspection

The process for otoscopic inspection is as follows:

1. Inspect the ear canal. Use proper the bridge-and-brace technique as discussed in Chapter 4.
2. Demonstrate a clean and safe procedure for inspecting the ear structures.
3. Make sure to clean your otoscope specula prior to touching to patient's ear.
4. Describe the entire outer ear.
5. Look for foreign objects, excessive wax, abnormal growths, and so forth, that would prevent you from taking the impression.
6. Describe the ear canal and the tympanic membrane.

Tips for During the Examination

Observe the following points during the examination:

- Talk out loud.
- Inspect each ear. Use a different speculum for each ear and sanitize it prior to placing it in the patient's ear.
- Compare what is normal for this patient's ear canals.
- Your dialog can go something like this: "I see the canal walls, which are clear and free of wax. I can see the first bend and the second bend of the canal. I can see the eardrum and the cone of light reflecting back from the light source."

Insertion of Otoblock

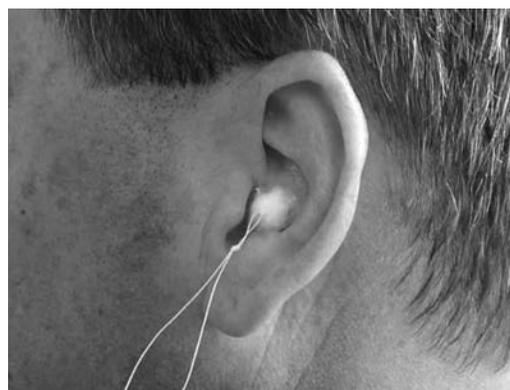
To insert the otoblock, do the following:

1. Select the correct-size otoblock.

2. Always bridge and brace when in contact with the patient.
3. Sanitize the otolight.
4. Gently place a cotton block in the bowl portion of the ear while trying not to touch the cotton-foam portion of the otoblock (Figure 9-3).
5. While bridging and bracing, gently guide the otoblock into the patient's ear canal using your otolight (Figure 9-4).
6. Reinspect block placement with the otoscope.



A



B

Figure 9-3. A. Placement of the otoblock in the bowl portion of the ear while holding the string, making sure not to touch the cotton, is shown. B. Otoblock should be able to stay in the ear without touching it, as shown.



Figure 9–4. Example of bridging and bracing while using the otolight to place the block.

7. After insertion of the otoblock and your reinspection, the proctors for the exam will check your placement as well.
8. If they feel that the placement does not meet quality and safety standards for a proper and safe impression, they will stop you and not allow you to actually take the impression.

Quality Assurance of Otoblock Placement

To ensure that the otoblock has been placed correctly, do the following:

- Make sure there are no gaps around the otoblock.
- Make sure that the block is firmly in place.
- Determine if the placement will yield a safe fill.
- Place the block deeply into the ear canal (must completely block eardrum).
- Do not place the block on the eardrum.
- The block should be a quarter-inch beyond the second bend, just into the bony portion of the canal.
- Placement should yield sufficient canal length.

Ear Impression Preparation

Ear impression preparation should proceed as follows:

1. Mix the impression material and place it inside of the syringe. Use a clean technique here.
2. Wash your hands with a hand sanitizer or use an antibacterial wipe if you have the putty-to-putty mixture.
3. Use a mixing bowl and spatula if using powder/liquid.
4. Transfer the material into the syringe.

When you are ready to perform the procedure, an example explanation for the patient is as follows: “You will soon feel a cool flow in your ear canal as I begin to fill your ear canal with the impression material.” Make sure you describe out loud what you are doing (describe landmarks canal, concha bowl, helix, and tragus area) as you fill the ear.

Ear Impression Procedure

The ear impression procedure is as follows:

1. Insert the syringe inside the ear canal and begin to inject material slowly and evenly into the canal area up to the otoblock using the proper bridge-and-brace technique (Figure 9–5).
2. Once you see the material start to come back out toward the tip of the syringe, start to fill the intertragal notch, then the bowl, then the helix area, then down the tragus area, always keeping the tip of the syringe embedded into the material to avoid air bubbles or voids.
3. Continue the circular fill until the entire ear is filled.
4. Do not touch or smooth the impression with your hands. This will cause the impression to distort.