

For the Hearing Instrument Specialist:

Otoscopy Demystified

Otoscopy is a useful clinical procedure to determine the status of external auditory canal (EAC) and tympanic membrane (TM).

Hearing Instrument Specialists (HIS) routinely use an otoscope for the purpose. The commercially available otoscopes have a magnification range between x2 to x4. It is advisable to have an otoscope with higher magnification as it provides a better view of deeper part of EAC and TM. Video Oscopes provide a much enlarged as well as brighter view, we will discuss separately.

The otoscopes either work on changeable or chargeable batteries. These batteries should be routinely changed or charged to get a bright light which provides clearer view of the deep EAC and TM.

You should also remember to observe standard guidelines on disinfection, sterilization, and cleanliness while performing otoscopy.

Inspection of pinna and EAC

While performing otoscopy we are frequently tempted to get hold of otoscope and rush to have a look at TM. It is advisable to pause and have a look at pinna, opening and outer part of EAC by pulling the pinna upwards, backwards, and outwards.

You observe for any visible deformity of pinna and EAC, skin tags, narrowing of EAC (or widening of EAC in previously operated cases), any signs of inflammation such as redness, narrowing of EAC & tenderness (pain on pulling the pinna), drainage, and presence of cerumen.

If you find that patient's ear is draining it is pertinent to have a closer at the ear discharge and look for any element of mucus. If mucus is present it confirms that the discharge is coming from middle ear, whereas the discharge originating from external ear is pus like (purulent) or serous (watery).

It is always a good idea to invert the pinna and look for any scar mark over mastoid, due to a previous surgery

So, before you delve deeper into EAC with the otoscope pause and have a look at the pinna, outer EAC, and mastoid area.

Using the otoscope

The choice of ear speculum can be a crucial factor in outcome of otoscopy procedure. Ear speculums come in different sizes vis-à-vis length and diameter. An undersized speculum will provide insufficient view of deeper EAC and TM whereas an oversized speculum will be difficult to introduce and painful for the patient. The golden rule is to use the largest possible speculum which is comfortable to insert and provides a panoramic view of TM. Remember that the otoscope must emit a bright illumination.

The grip with which you hold the otoscope is also important. The hand which holds the otoscope performs twin functions. The otoscope is held in middle part of handle like a pen with a light grip (to facilitate its free movements). The little and ring fingers are used to brace the head so as avoid injury to EAC due to abrupt head movements by the patient.

The other hand is used to pull the pinna upwards, outwards, and backwards in case of adults and downwards and backwards in case of children.

The procedure

The patient is seated comfortably on a stool or chair and it is always a good idea to explain the steps of the procedure. Following statement may be used for the purpose:

“I am going to examine your ear canal and ear drum with the otoscope. I will pull at your pinna to widen the ear canal and have a view of ear drum. You will not experience any pain and please do not abruptly move your head. If you experience any pain speak out and I will stop the procedure.”

Position your head at the level of the patient's head. Use the otoscope light to inspect the pinna and then pull it as explained earlier to widen the cartilaginous part of EAC. Introduce the otoscope tip gently in the EAC and stop at the first bend look for any occluding wax or any other abnormality. Gradually advance the tip to have a clear view of deep EAC and ear drum. Do not panic if you are unable to get a view in the first attempt. If you are unable to get a view of TM in first instance gently withdraw the otoscope and reintroduce it while pulling at the pinna with optimum force.

Once you can visualize the TM, move it all around to look at various landmarks of TM. On otoscopy TM appears as a pale colored, semi-transparent, glistening structure which is held taut by the handle of malleus. Following landmarks can be seen on normal TM:

- Handle of Malleus, which is directed downwards, backwards, and slightly inwards.
- Umbo, the point of maximum concavity of TM
- The cone of light, which is always placed in antero-inferior quadrant of pars-tensa (at 5 O'clock in right and at 7 O'clock in left TM)
- The anterior and posterior malleolar folds which are attached to lateral process of malleus & divide TM into two parts pars-tensa and pars-flaccida

As one gradually gains experience and confidence you can attach a pneumatic bulb to the otoscope to do [seigelisation](#) to check the mobility of TM.

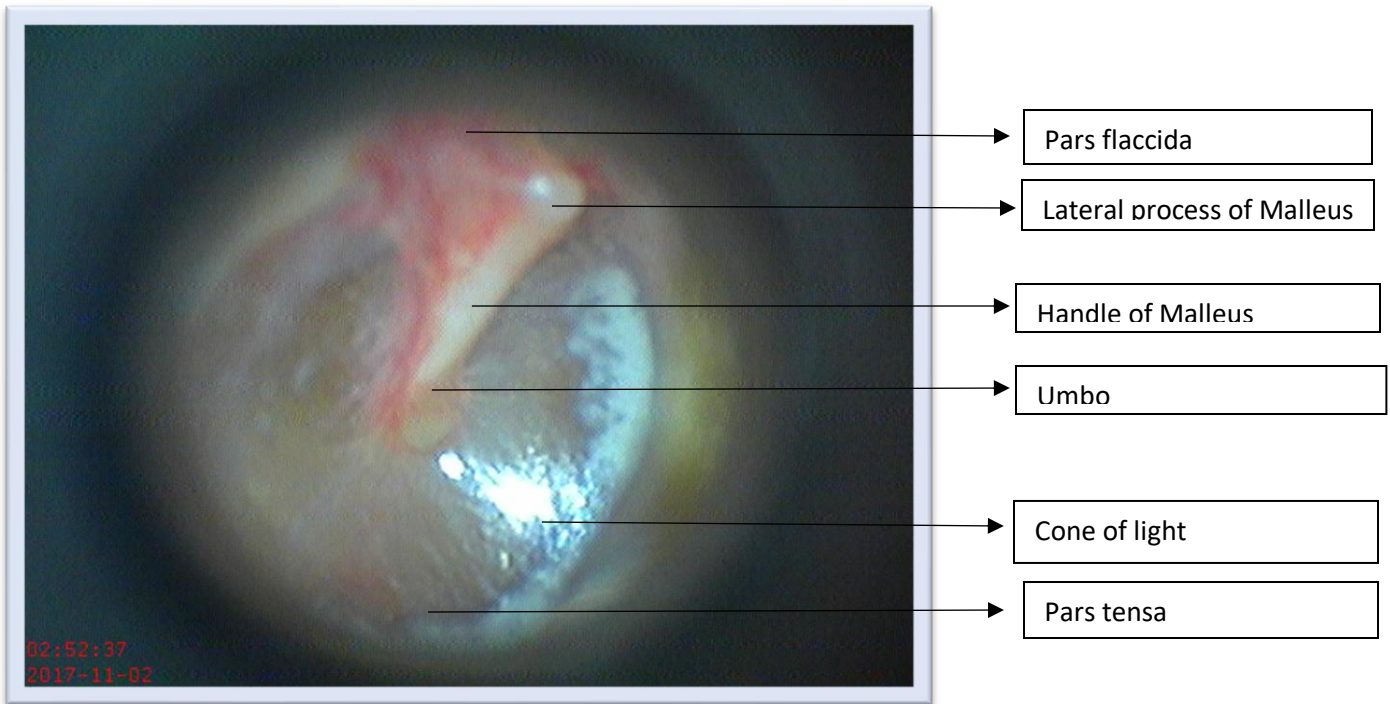


Figure 1 Right Tympanic Membrane

Applied Aspects

Otoscopy provides lots of information which can be used by Hearing Instrument Specialist:

- The inspection may reveal an ill formed, deformed pinna which may be unable to support a 'Behind-the -Ear' instrument, in such a situation the only option may be canal instruments.
- The texture of cartilage of pinna and EAC is one of the factors in determining the choice of ear molds. Soft and flabby cartilages require a hard material such as lucite or acrylic whereas firm, thick, or hardened cartilages require a soft material such as silicone.
- Shallow concha bowl may point towards retention issues.
- The visualization of canal shape, its length, width of its lumen are important points to remember. A narrow canal may limit the choice of canal instruments. The shape of ear canal with not so sharp bends may also point towards retention issues.
- Taking impression in a post-op ear with a wide canal and cavity requires placing multiple otoblocks to avoid difficulties in removal of impression.
- One of the primary objectives of otoscopy to determine integrity of TM.