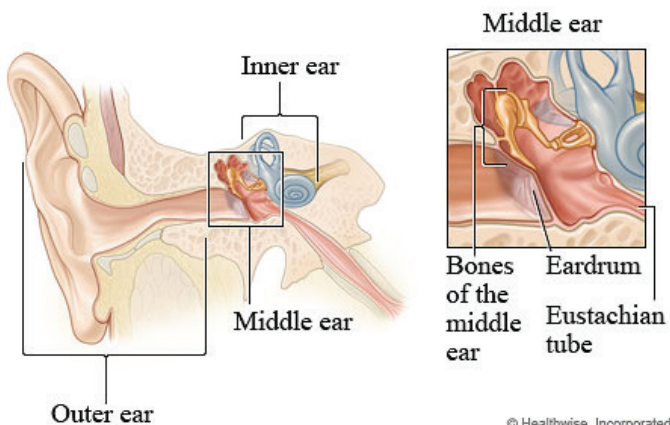


# Middle Ear Pathologies

## Function of the middle ear

The middle ear consists of the tympanic membrane (eardrum), and an air-filled chamber containing a chain of three bones (ossicles). The middle ear acts as an amplifier of sound, whereas the inner ear (cochlea) acts as a transducer of sound, changing mechanical sound waves into an electrical signal that is then sent to the brain via the auditory nerve. A functioning middle ear system is important in the general hearing process.



Structure of the middle ear<sup>1</sup>

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## Types of middle ear pathologies

- **Otitis media:** is an ear infection or middle ear inflammation which occurs in one or both ears. It occurs more often in children than in adults. There is a feeling of fullness or having 'blocked' ears and symptoms can either be silent (not aware of any problems) or acute (obvious signs that there is a problem, e.g. pain) in presentation.
- **Otosclerosis:** ossification of the stapes (the small, stirrup-shaped bone in the middle ear).
- **Cholesteatoma:** a destructive and expanding growth of skin cells growing on the eardrum or the mastoid process (located behind the ear canal).
- **Ossicular chain dislocation:** a dislocation in the chain of the three tiny bones in the middle ear space.
- **Direct trauma:** trauma to the ear canal or middle ear due to an object being inserted into the ear canal.
- **Temporal bone trauma:** may be a fracture to a part of the skull causing conductive hearing loss.
- **Congenital malformation of the ossicles:** This can be an isolated phenomenon or can occur as part of a syndrome such as Goldenhar syndrome, Treacher Collins syndrome and branchio-otorenal syndrome.
- **Superior canal dehiscence:** caused by a thinning or complete absence of bone overlying the superior semicircular canal of the inner ear.

## Symptoms of a middle ear pathology

- Blocked sensation in one or both ears
- Discharge of fluid from the ear canals
- Pain in one or both ears
- High temperature or fever
- Tinnitus

## Diagnosis of middle ear pathologies

Diagnosis of middle ear pathologies is done by an Ear, Nose and Throat (ENT) specialist, a GP or an Audiologist. You will usually be required to complete a hearing assessment to measure the level of hearing loss (if any), and tympanometry, which is a measurement of ear drum mobility, middle ear pressure, and middle ear volume. This assessment will help diagnose the specific type of middle ear pathology.

## Treatment of middle ear pathologies

Most middle ear pathologies are treatable whereby the associated hearing loss (if any) may be recovered back to pre-hearing loss levels.

You will need to consult with your ENT specialist or GP to decide the most suitable course of treatment for your specific middle ear issue.

Mild cases of otitis media may be treatable with paracetamol, however, you should always first seek advice from your GP. More severe cases of otitis media may require antibiotic treatment or surgery to insert pressure releasing tubes into the eardrum.

Other middle ear pathologies such as otosclerosis, cholesteatoma, or an ossicular chain dislocation may require more complex surgeries to prevent further deterioration of hearing. Not all middle ear pathologies require medical intervention, and the fitting of a pair of hearing aids may be recommended on the advice of an ENT specialist.

## Who to contact?

- Your GP
- Audiologist
- Ear, Nose and Throat specialist

## Reference

1. MyHealth.Alberta.ca. Middle Ear. [Image on internet]. [updated 2016 July 29; cited 2017 Nov 2]. Available from: <https://myhealth.alberta.ca/Pages/default.aspx>