



مدينة الملك فهد الطبية
King Fahad Medical City



Hearing Loss

Parts of the Ear:

The ear can be divided into three main parts

The outer ear, consists of Pinna and Ear canal



The middle ear, consists of Eardrum and Three tiny bones called ossicles.



The internal ear, consists of Cochlea, Hearing nerve and Semicircular Canals which help with balance



How Normal Hearing Works:

Sound travels through the outer, middle, and internal ear. All parts of the hearing system need to work properly in order for us to hear:

1. The pinna picks up sound waves and sends them through the ear canal to the eardrum.

2. The sound waves cause the eardrum to vibrate, which sets the ossicles in motion.
3. The vibrations are transferred to the fluid-filled cochlea.
4. The movement of the fluids in the cochlea cause the tiny sensory cells to bend, creating neural signals which are picked up by the hearing nerve.
5. The hearing nerve send these signals to the brain, which interprets them as sound.

Types of Hearing Loss:

Hearing loss happens when any part of the hearing system is not working properly. There are generally **three** types of hearing loss, depending on where the problem occurs.

a) Conductive Hearing Loss

- Occurs when there is a problem in the outer ear and/or middle ear.

- This prevents sounds from being properly conducted to the internal ear.
- This type of hearing loss is usually temporary, but may be permanent in some cases. Depending on the cause, it may be treated with medicine or surgery. If that is not an option, amplification may be used.

Causes for Conductive Hearing Loss include:

- Malformation of the outer ear or middle ear structures
- Otitis media (i.e. middle ear infection)
- Fluid in the middle ear (e.g. from colds or allergies)
- Perforated eardrum
- Wax build-up in the ear canal
- Foreign body in the ear canal

- Otosclerosis (overgrowth of bone in the internal ear).
- Eustachian tube dysfunction

b) Sensorineural Hearing Loss:

- Occurs when there is a problem in the internal ear (cochlea and/or hearing nerve).



This affects the proper transmission of sounds through

- This type of hearing loss is usually permanent. In most cases, it can be managed with hearing aids, cochlear implants, or other hearing devices depending on the degree of loss.

Causes for Sensorineural Hearing Loss include:

**Genetic/hereditary
factors**

**Exposure to
excessively loud noise**

Head trauma

**Some autoimmune
diseases**

**Hearing loss that runs
in the family**

**Age related hearing
loss (presbycusis)**

**Malformation of the
inner ear**

Meniere's Disease

**Tumors affecting the
hearing nerve**

Ototoxic medication

c) Mixed Hearing Loss:

- Occurs when there is a problem in the outer and/or middle ear as well as in the internal ear. It is a combination of both conductive and sensorineural hearing loss.
- The sensorineural component is usually permanent, while the conductive component may be temporary.

For example:

a mixed hearing loss can occur if someone has sensorineural hearing loss (e.g. age-related) as well as a conduction hearing loss (e.g. due to a middle ear infection). In this case, the age-related hearing loss is permanent, but the effect of the ear infection may resolve with treatment.

لأن الوعي وقاية ..

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