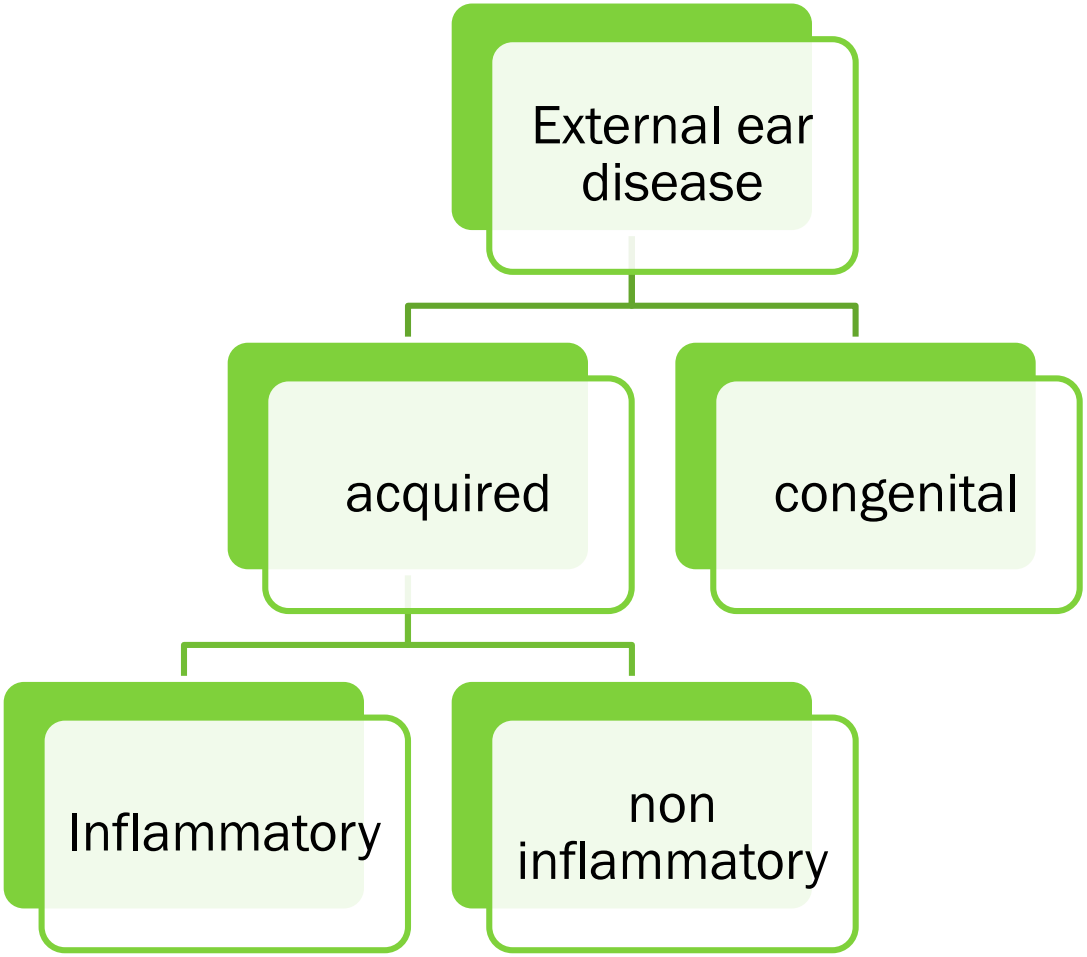
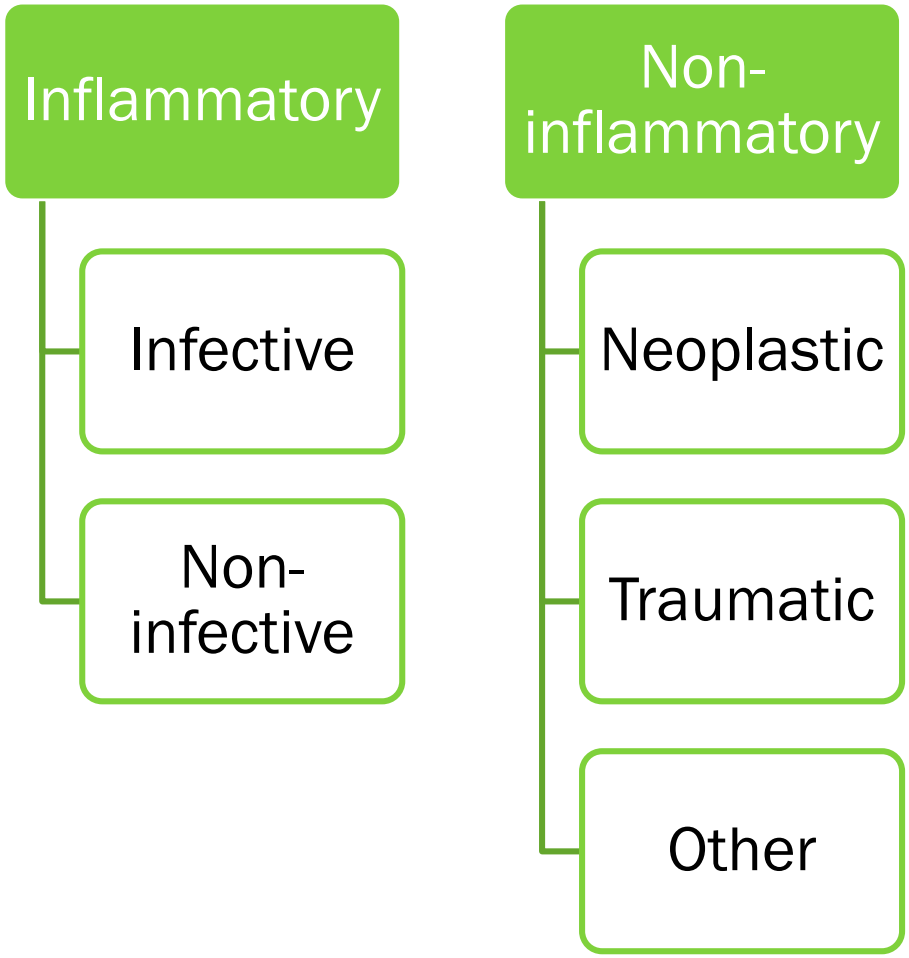
External ear disease

Introduction




Inflammatory
Infective
Non-infective
Non-inflammatory
Neoplastic
Traumatic
Other

Anatomy

- Ear is divided into three main regions :
- 1) the external ear which collect sound waves and channels them inward
- 2) the middle ear which conveys sounds vibrations to the oval window
- 3) the internal ear which houses the receptors for hearing and equilibrium

Anatomy of external ear

- The external ear consists of :
- 1) auricle (pinna)
- 2)external auditory(acoustic) canal
- 3) tympanic membrane (eardrum)


Helix
Scapha
Antihelical fold
Antihelix
Antitragus
Fossa
Concha
External auditory meatus
Tragus
Lobule
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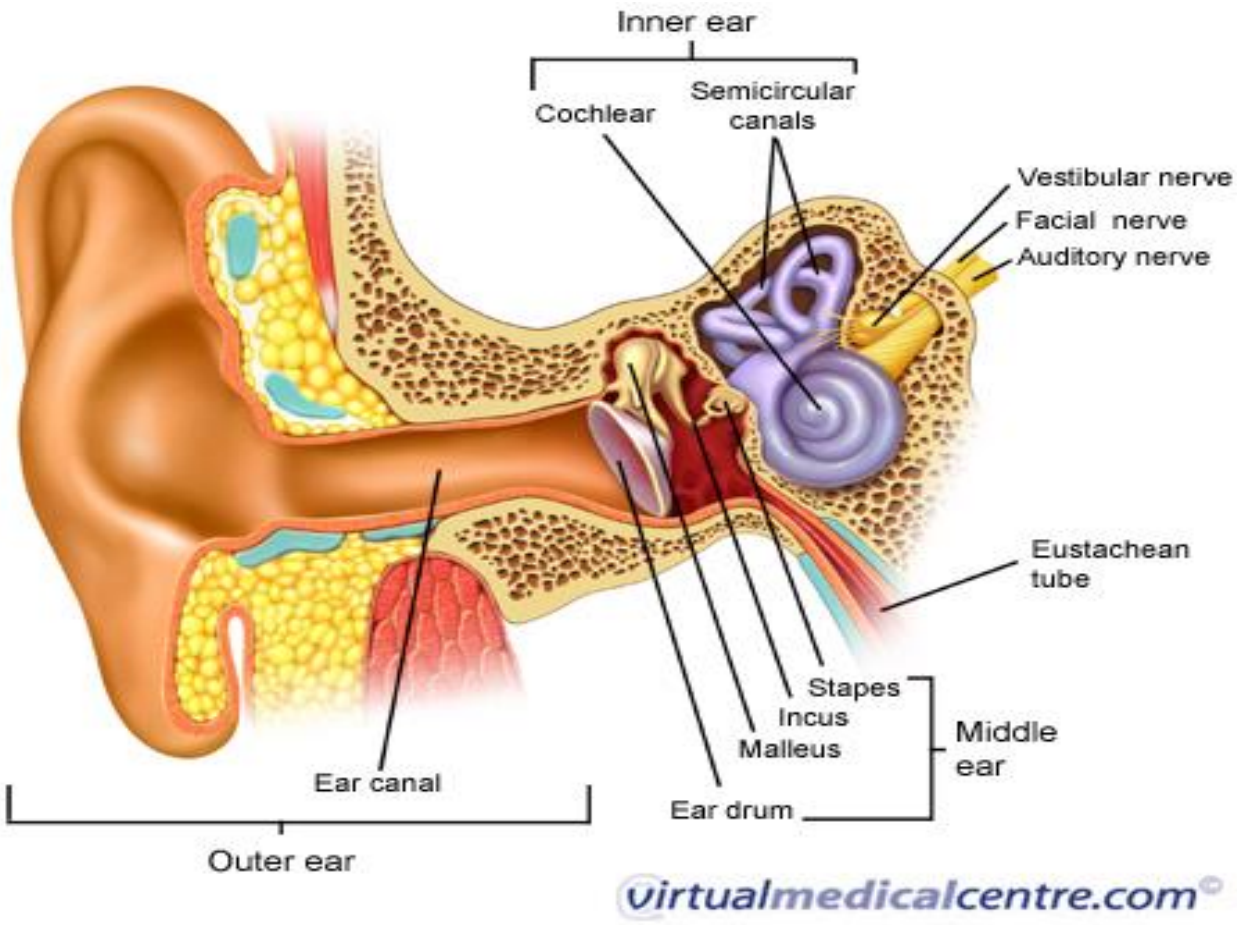
Auricle (pinna)

- are bilaterally symmetric elastic cartilaginous frames that aid in focusing and localizing sound.

- Each pinna is anchored to the cranium by skin, cartilage, the auricular muscles, and extrinsic ligaments.

- It is developed from six tubercles of the first branchial arch.
- Fistulae and accessory auricles result from failure of fusion of these tubercles.


Inner ear
Cochlear
Semicircular canals
Vestibular nerve
Facial nerve
Auditory nerve
Eustachean tube
Stapes
Incus
Malleus
Middle ear
Ear drum
Ear canal
Outer ear
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External auditory canal

- is typically 24 mm in length with a volume of 1–2 mL.
- The lateral third of the canal is made of fibrocartilage, whereas the medial two thirds are osseous (bone) .
- During early childhood, the canal is straight, but takes on an "S" shape by the age of 9.
- The EAC is lined by stratified squamous epithelium that is continuous with the skin of the pinna and the epithelial covering of the tympanic membrane.

EAC

- The subcutaneous layer of the cartilaginous portion of the canal contains hair follicles, sebaceous glands, and ceruminous(Se-Roo-mi-nus) glands.

- The skin of the osseous canal does not have subcutaneous elements and is only 0.2 mm thick

- The epithelium of the EAC has the capacity to migrate laterally, allowing the canal to remain unobstructed by debris. The rate of epithelial migration is 0.07 mm/d and is thought to occur at the basal cell layer.

EAC

- At the medial end of the meatus there is the antero-inferior recess, in which wax, debris or foreign bodies may lodge.
- The EAC has an important relationship with the mastoid segment of the facial nerve, which lies posterior to the EAC as it descends toward the stylomastoid foramen.
- The temporomandibular joint is anterior to the EAC, and disease processes affecting this joint may lead to otalgia

EAC

- The ceruminous glands are modified apocrine sweat glands surrounded by myoepithelial cells.
- Secretes earwax (cerumen)
- Cerumen prevents canal maceration, has antibacterial properties, and has a normally acidic pH, all of which contribute to an inhospitable environment for pathogens.

Tympanic membrane (eardrum)

- The tympanic membrane is composed of three layer—skin, fibrous tissue and mucosa.

- The normal appearance of the membrane is pearly and opaque, with a well-defined light reflex due to its concave shape.

Innervation

- The pinna is innervated laterally, inferiorly, and posteriorly by the great auricular nerve (cervical plexus).
- Arnold's nerve (a branch of the vagus nerve) innervates the inferior bony canal, the posterosuperior cartilaginous canal, and corresponding segments of the tympanic membrane and the cymba concha.
- The posterosuperior bony EAC is innervated by branches of the facial nerve.
- The auriculotemporal branch of V3 supplies the anterior portion of the pinna.

Lymphatic drainage

- The anterior and superior wall of the EAC and tragus are drained by the preauricular lymph nodes.

- The infraauricular lymph nodes drain the helix and the inferior wall of the EAC.

- The concha and antihelix are drained by the mastoid nodes.

Vascular supply

- The posterior auricular artery and the superficial temporal artery arise from the external carotid artery and supply the auricle and lateral EAC.

- The deep auricular branch of the maxillary artery supplies the more medial aspects of the

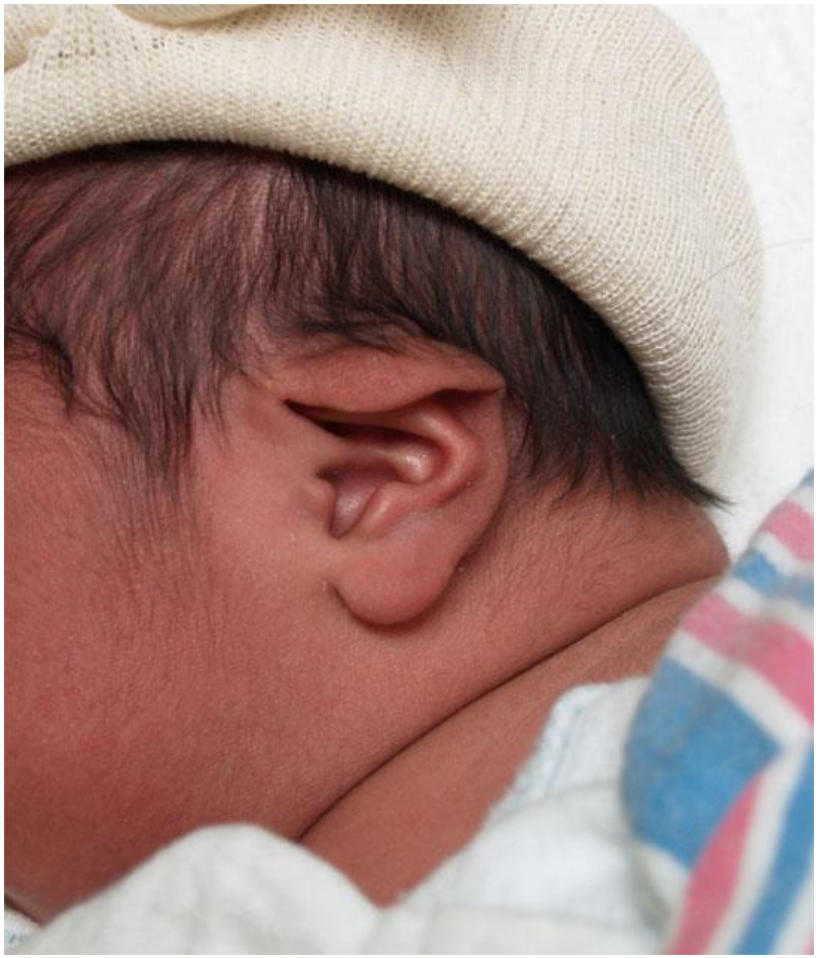
Congenital anomalies of the external ear

- Microtia
- lop ear
- cup ear
- Stahl's ear
- cryptotia
- prominent ear.
- Congenital atresia
- Accessory auricle

Microtia

Anotia

Lop ear



Cup ear

Stahl's ear

cryptotia

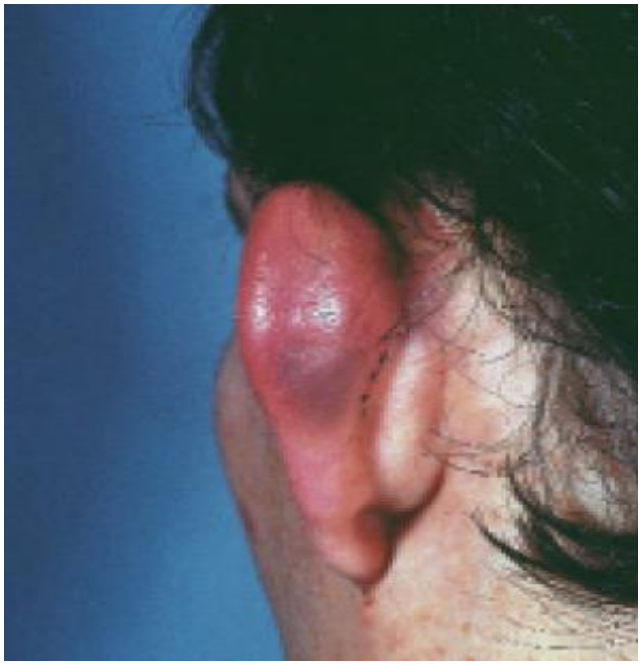
prominent ear

Congenital atresia

Accessory auricle

Auricular hematoma

- Mechanism
- Symptoms and sign
- Diagnosis
- Management
- Complication if untreated



Auricular hematoma

- **General Considerations**

- Auricular hematoma refers to the accumulation of blood in the subperichondrial space, usually secondary to blunt trauma to anterior auricle.

- Shearing forces to the anterior auricle can lead to separation of the anterior auricular perichondrium from the underlying, tightly adherent cartilage. This may lead to tearing of the perichondrial blood vessels and subsequent hematoma formation

Pathogenesis

- **Pathogenesis**
- Cartilage lacks its own blood supply; it relies on the vascularity of the surrounding perichondrium via diffusion.
- Shearing forces secondary to blunt trauma to the pinna lead to an accumulation of blood in the subperichondrial space.
- This creates a barrier for diffusion between the cartilage and the perichondrial vascularity, leading to necrosis of the cartilage and predisposing it to infection and further injury.

Clinical finding

- A patient with an auricular hematoma usually presents with

1) an edematous, fluctuant, and ecchymotic pinna,
2) loss of the normal cartilaginous landmarks.

- failure to evacuate the hematoma may lead to cartilage necrosis and permanent disfigurement known as "cauliflower ear."

cauliflower ear.

Daignosis

- ESSENTIALS OF DIAGNOSIS
- • History of auricular trauma.
- • Edematous, fluctuant, and ecchymotic pinna with loss of normal cartilaginous landmarks.
- • Early diagnosis and treatment necessary to minimize cosmetic deformity.

Management

- The evacuation of hematomas can be performed using a skin incision parallel with the natural auricular skin folds.
- The irrigation of evacuated hematomas with topical antibiotics reduces the likelihood of infection.
- Splinting after drainage prevents the reaccumulation of hematomas, and options include cotton bolsters, plaster molds, silicon putty, and water-resistant thermoplastic splints.

Complication if untreated

- Perichondritis
- Infection
- Necrosis
- Cauliflower ear : may result from long-standing loss of blood supply to the ear cartilage and formation of neocartilage from disrupted perichondrium.
- Management of cauliflower ear involves excision of deformed cartilage and reshaping of the auricle

Ear Wax

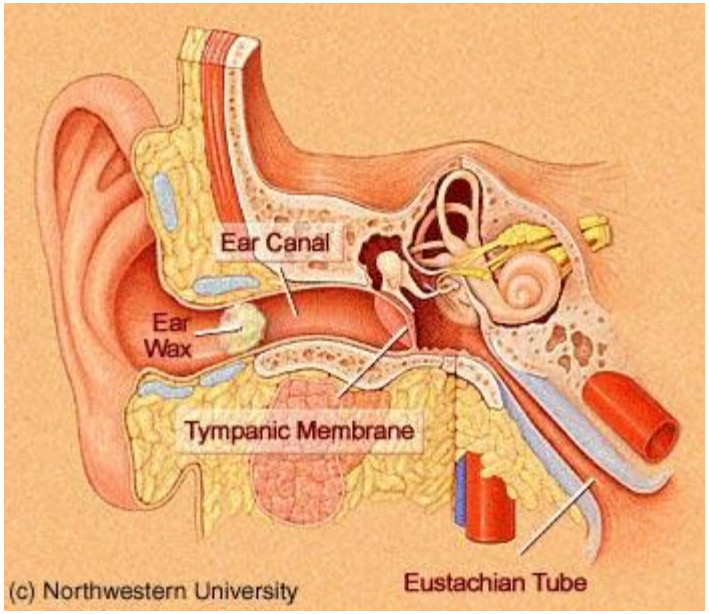
- WAX IN AN EAR IS NORMAL

- Wax or cerumen is produced by the ceruminous glands in the outer meatus and migrates laterally along the meatus.

- Some people produce large amounts of wax but many cases of impacted wax are due to the use of cotton wool buds in a misguided attempt to clean the ears.

- Impacted wax may cause some deafness or irritation of the meatal skin and is most easily removed by syringing.

Ear wax


Ear Canal
Ear Wax
Tympanic Membrane
(c) Northwestern University
Eustachian Tube


Outer ear
Eardrum
Ear canal
Ear wax
Eustachian tube
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Character

- produced by glands that line the ear canal.
- It gradually moves out of the ear, carrying dead skin cells and other debris.
- Most people have one of two types of earwax.
- Wet earwax is sticky and yellowish brown to dark brown in color
- dry earwax is crumbly and gray to tan.
- A small number of people, generally less than 1 percent, have earwax that is intermediate .

Causes

- The most common cause of impactions is the use of Q-tips (and other objects such as bobby pins and rolled napkin corners), which can remove superficial wax but also pushes the rest of the wax deeper into the ear canal.

- Hearing aid and earplug users are also more prone to earwax blockage.

Risk factors

- narrow ear canals or ear canals that aren't fully formed
- a lot of hair in your ear canals
- bony growths in the outer part of your ear canal – these are called osetomata
- a skin condition of your scalp or preauricular area (the area just in front of your earlobe) ??
- hard wax – because it's more likely to become impacted (firmly lodged in your ear canal)
- a history of recurrent impacted earwax
- repeated ear infections.
- Elderly people are more at risk of having earwax problems because earwax becomes drier with age.

Impacted wax

Symptoms and sign

- Decreased hearing
- Dizziness
- Ear pain
- Plugged or fullness sensation
- Ringing in the ear
- Itching or drainage from the ear canal

Management

- Ear syringing procedure
- Instrumental

Ear syringing procedure

- Syringing involves the use of an old fashioned Higginson or a modern electric-pump syringe.

- These direct a jet of warm (body temperature) water along the roof or posterior canal wall so that it passes behind the wax and forces it outwards.

- The procedure is often best preceded by a week or two of ceruminolytic agent use (sodium bicarbonate drops are efficacious, safe and inexpensive).

Ear syringing procedure

- ***History***. *Has the patient had a discharging ear? If any possibility of a dry perforation,* do not syringe. ??

- ***Inspection***. *If wax seems very hard, always soften over a period of one week by using* warm olive oil drops nightly.
- In the case of exceedingly stubborn wax, the patient may be advised to use sodium bicarbonate ear drops (BPC), and there are several 'quickacting' ceruminolytic agents on the market. Occasionally, a patient reacts badly to the use of the latter and develops otitis externa.They should certainly not be employed in the case of a patient who is known to suffer from recurrent infections of the meatal

Ear syringing procedure

- **Towels.** Protect the patient well with towels and waterproofs. He will not be amused by having his clothing soaked.

- ***Lighting***. *Use a mirror or lamp*

- ***Solution***. *Sodium bicarbonate, 4–5 g to 500 mL,or normal saline are ideal.Tapwater is* satisfactory.

- ***Solution temperature***. *This is vital. It should be 38 °C (100 °F).Any departure of more* than a few degrees may precipitate the patient onto the floor with vertigo.??

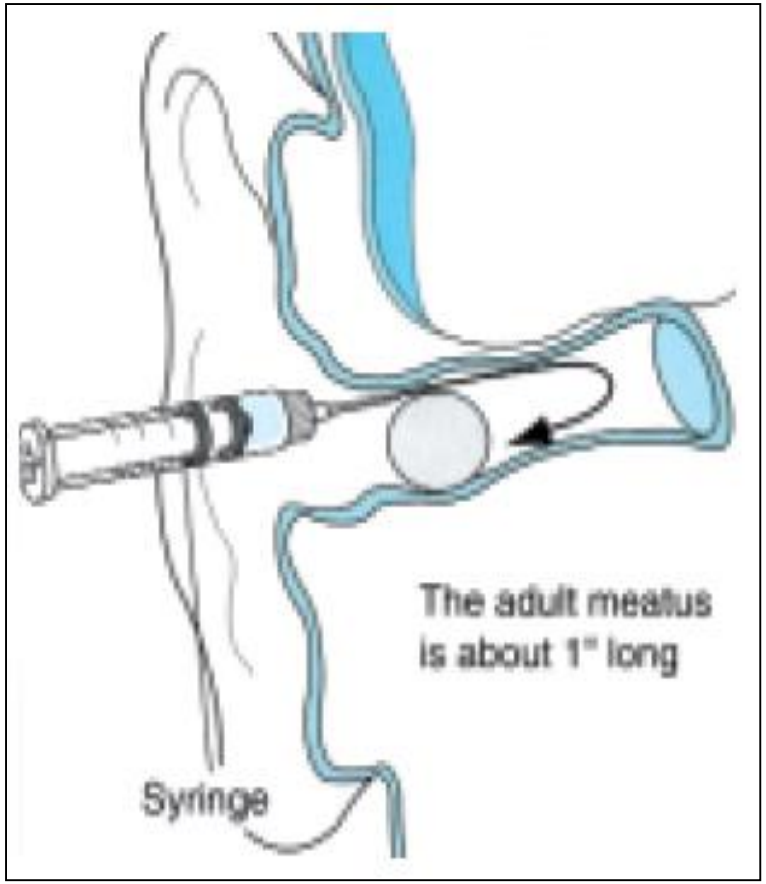
Ear syringing procedure

- ***Tools. :***.The preferred instrument is an electrically driven water pump with a small hand-held nozzle and a foot operated control. It provides an elegant means of ear syringing

- *Direction. Direct stream of solution along roof of auditory canal.*
- *Inspection. After removal of wax, inspect thoroughly to make sure none remains. This* advice might seem superfluous, but is frequently ignored
- *Drying .Mop excess solution from meatal canal. Stagnation predisposes to otitis externa .*

Ear syringing

EAR SYRINGING



Complication

- pain, local trauma
- Cough
- otitis externa
- rarely tympanic membrane perforation and otitis media.

Contraindication

- frequent previous episodes of otitis externa
- a known or suspected perforation
- a difficult ear, often caused by a narrow and/or tortuous external meatus.

- In these cases removal under direct vision with an operating microscope using microsuction or waxhooks is a more appropriate and safer alternative

Instrumental

- Microsuction
- Waxhooks
- Endoscope
- Microscope

Thank you