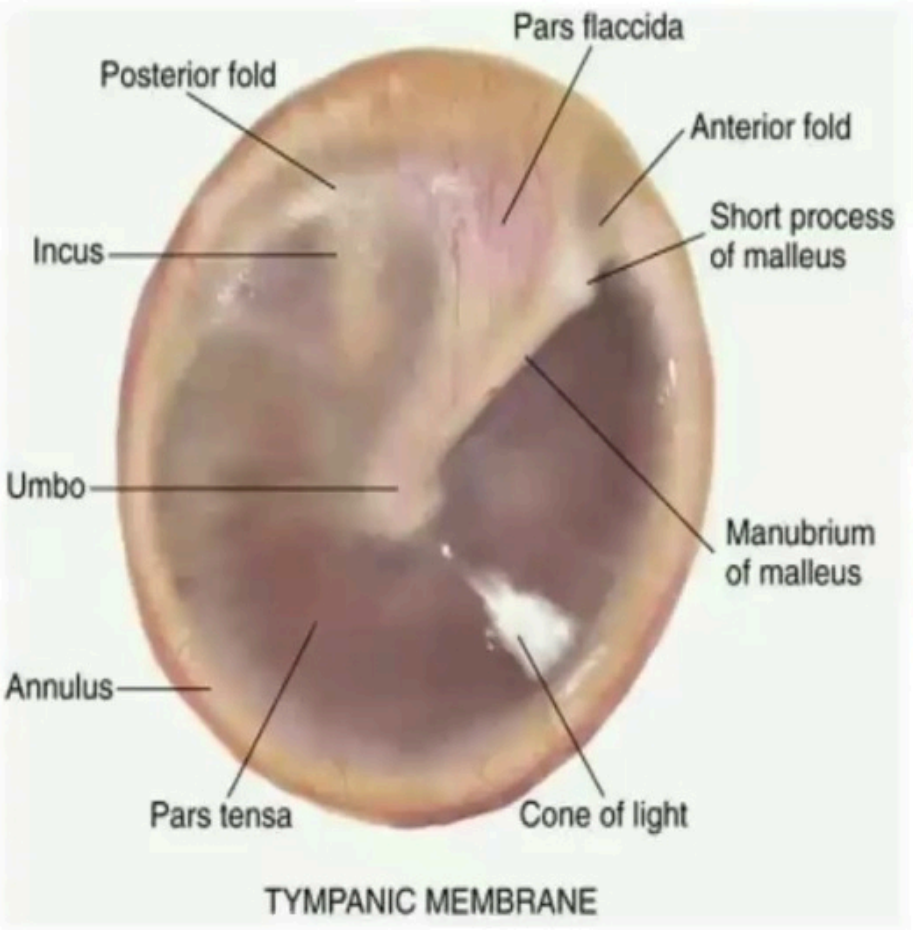
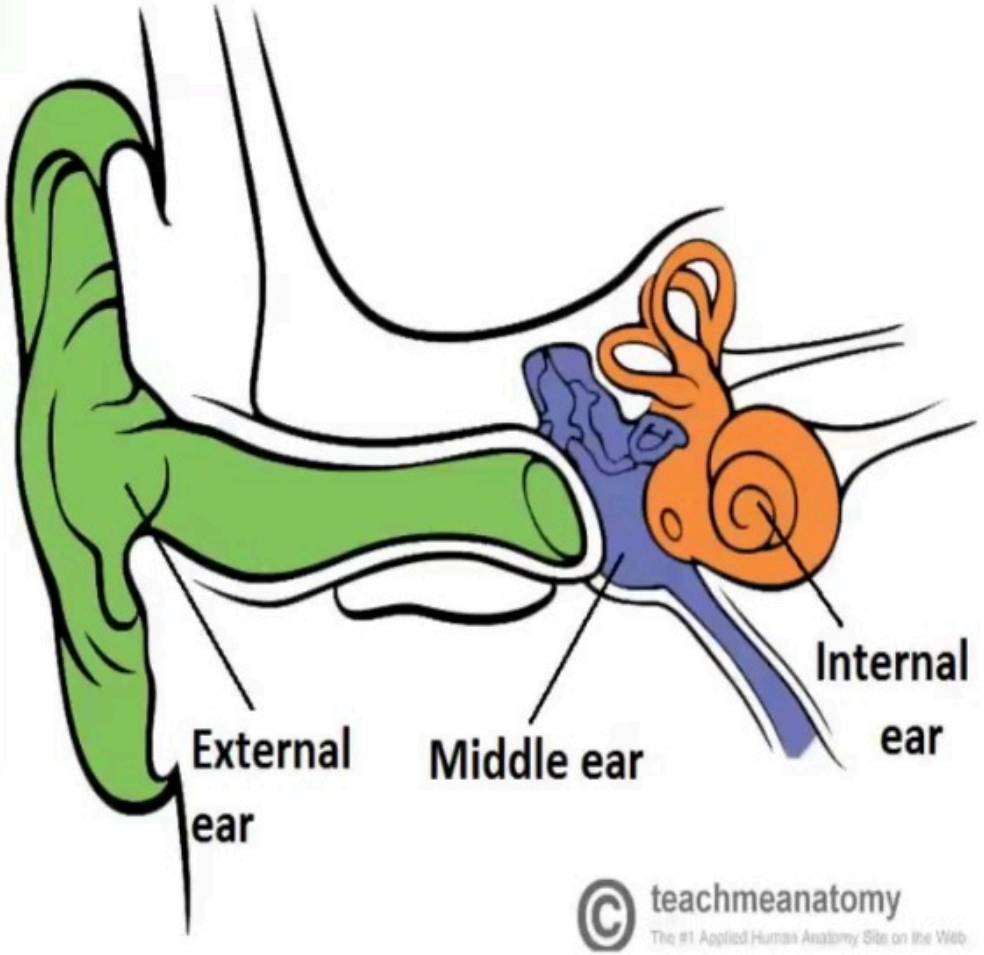
CHRONIC OTITIS MEDIA


Pars flaccida
Posterior fold
Anterior fold
Short process of malleus
Incus
Umbo
Manubrium of malleus
Annulus
Pars tensa
Cone of light
TYMPANIC MEMBRANE


External ear
Middle ear
Internal ear
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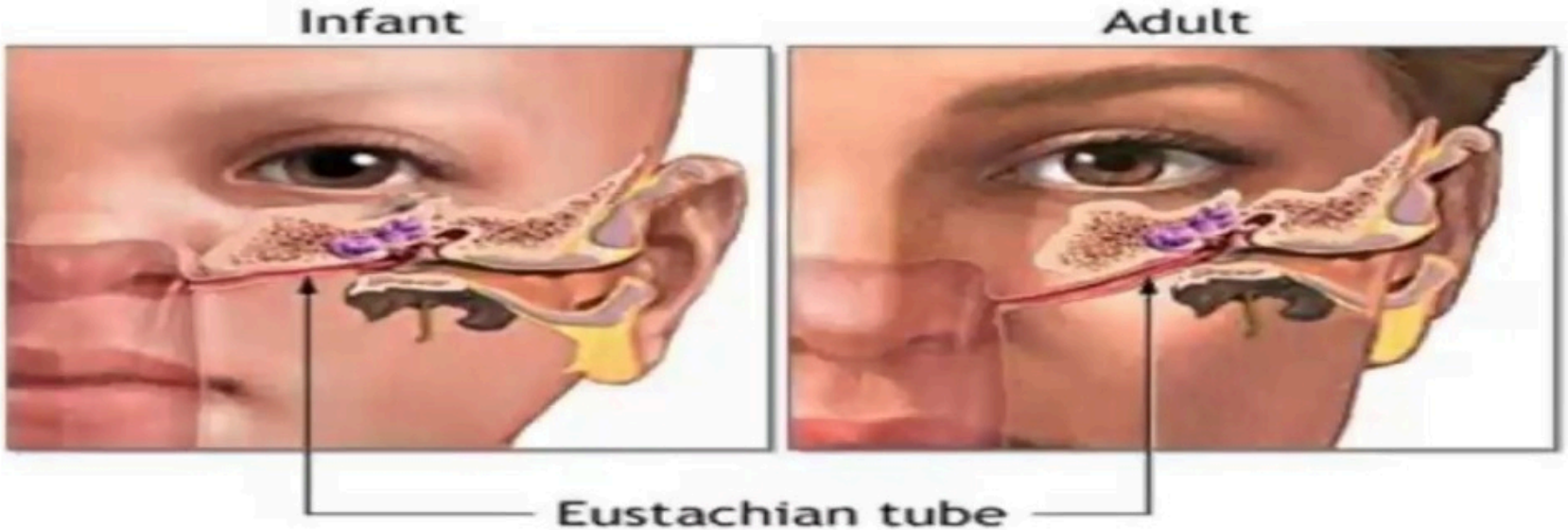
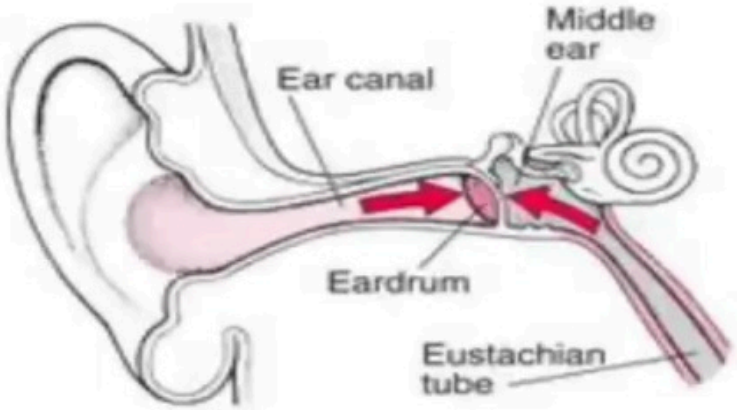
DEFINITION

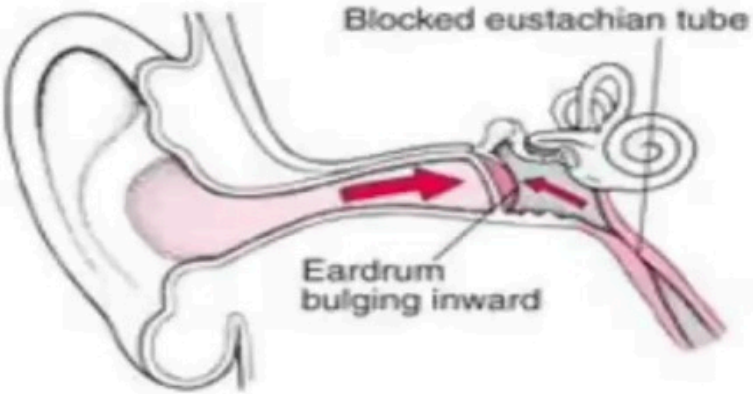
- **C**hronic infection of the mucoperiosteum of the middle ear cleft (Eustachian tube,tympanic cavity, attic, antrum and mastoid air cell system).
- More than 2 weeks (WHO)
- Caused by an ongoing inflammatory response within the middle ear (with granulation), and is typically associated with unresolved and resistant bacterial infections.
- +/- intermittent mucopurulent discharge, tympanic membrane perforation
- Around 0.9% of children and 0.5% of adults have chronic otitis media – and approximately half will develop an associated **hearing impairment**.

- **Mucosal COM** – chronic inflammation
  - Initial perforation: infective, iatrogenic (e.g. grommet insertion), or trauma
  - Discharge from the perforation: active mucosal CSOM
  - Dry perforation: inactive mucosal COM
  - Safe perforations: tubotympanic (anteroinferior) part of the tympanic membrane, as they carry a low risk of cholesteatoma
  - 'Unsafe' perforations: atticoantral (posterosuperior) tympanic membrane; high risk of cholesteatoma
- **Squamous COM** – discharge due to a cholesteatoma
- Chronic serous otitis media: middle ear effusion without perforation for more than 1-3 months.





Normal Eustachian Tube

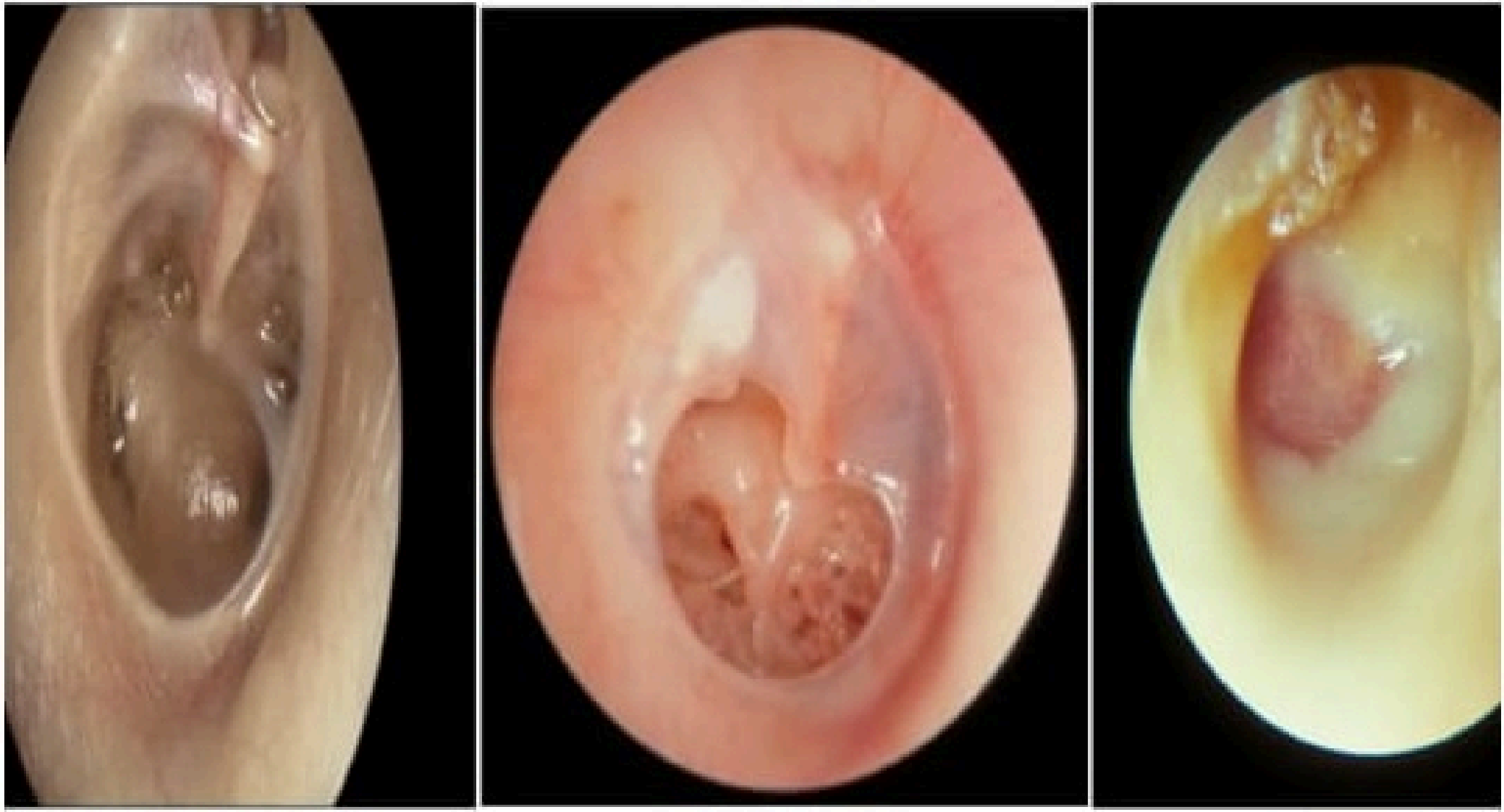


Eustachian Tube Dysfunction

Serous Otitis Media

Note that the light reflex is not in the expected position due to a change in tympanic membrane shape from air bubbles

Note effusion on otoscopy by fluid line and air bubbles




Cholesteatoma
Early cholesteatoma cyst
Retracted and perforated eardrum
Cholesteatoma

RISKS

Recurrent AOM
Frequent URTIs, nasal disease, Eustachian tube dysfunction
Inadequate antibiotic treatment
Traumatic perforation of the TM, insertion of grommets,
Craniofacial abnormalities: cleft palate, downs etc
Poor living conditions, immunosupression
Day care facilities
Bottle feeding
Passive smoking

Microbiology

Pathogenic organism are mostly normal flora of external auditor canal

aerobes: pseudomonas aeriginosa(greenish discharge with distinct smell, proteus, escherechia coli, staph aureus

Anaerobes: bacteriodes fragilis, anaeorobic streptococci

Mycobacteria TB

Fungal species: esp with topical antibiotic use

Clinical features

Hearing loss: commonly CHL or mixed

Ear discharge

Otalgia if concomitant otitis externa, esp on pulling pinna

Fever, vertigo, and pain:r/o intratemporal or intracranial complications

Persistent CSOM after appropriate medical treatment R/O cholesteatoma.

The external auditory canal may or may not be edematous and is nc typically tender.

The discharge varies from fetid, purulent, and cheeselike to clear and serous.

Middle ear mucosa edematous or even polypoid, pale, or erythematous, +/- granulation tissue

Examination

General exam

Otoscopy, mastoid tenderness, fluctuancy

Tuning fork tests (at least webbers and rhinnes)

Rhinoscopy and oral exam, cervical adenopathy

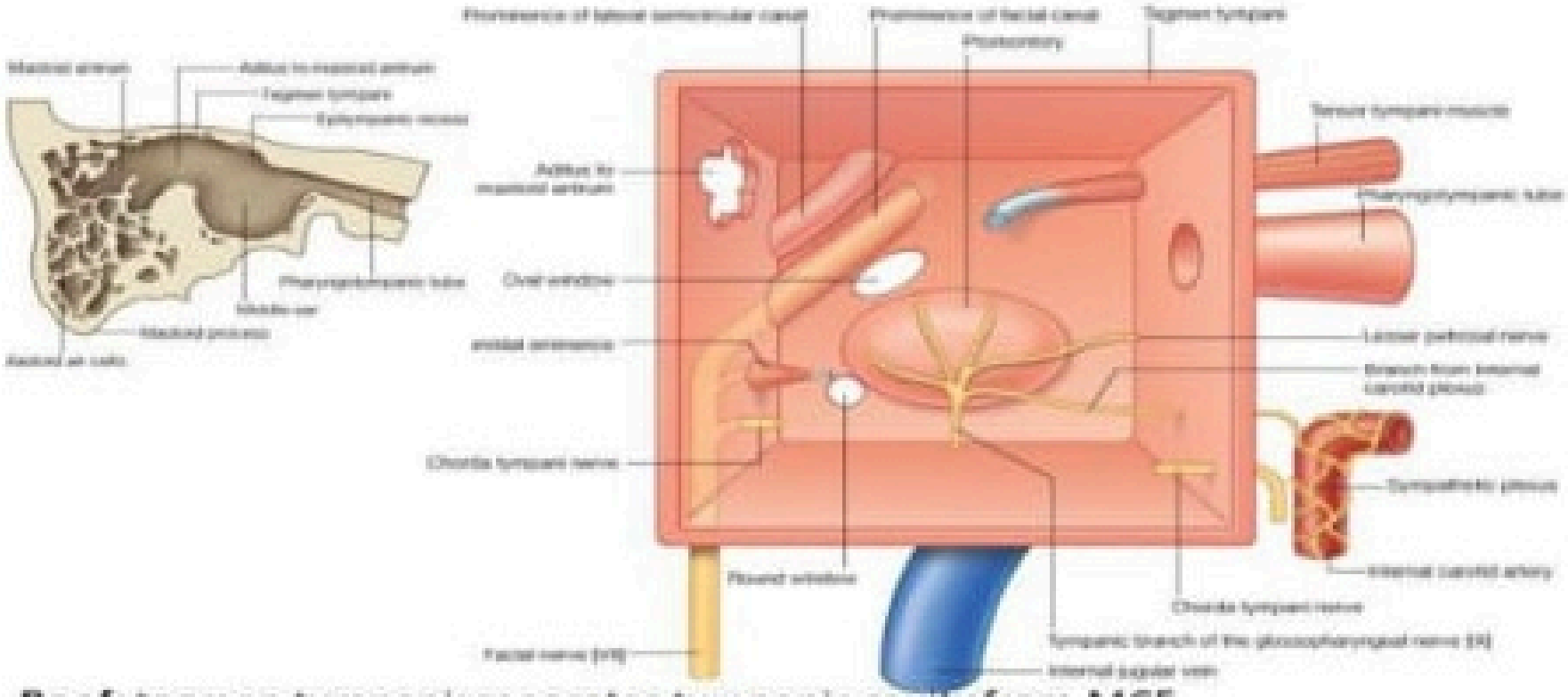
Cranial nerve exam

Cerebellar function tests

Spontaneous nystagmus, *vestibular assessment

*neurological exam

Boundaries of Middle Ear



Roof: tegmen tympani; separates tympanic cavity from MCF.

Floor: Thin bone separates tympanic cavity from superior bulb of IJV.

Anterior wall: Thin bone; separates tympanic cavity from ICA and at its upper part are openings into two canals (auditory tube & canal for tensor tympani).

Posterior wall: Aditus to the mastoid antrum superiorly & Pyramid inferiorly (for stapedius)

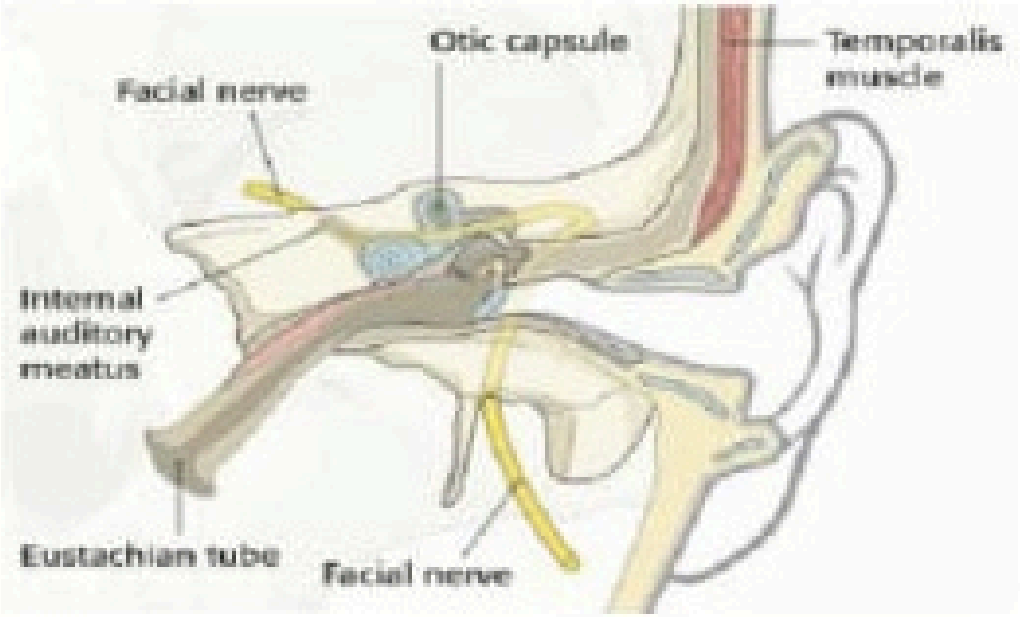
Lateral wall: tympanic membrane inferiorly & Lateral wall of attic superiorly.

Medial wall: Lateral wall of the inner ear.

Complications

Intracranial

- *Meningitis*
- *Extradural abscess*
- *Subdural empyema*
- *Lateral sinus thrombophlebitis*
- *Brain abscess*
- *Otitic hydrocephalus*
- *CSF otorrhoea*



Extracranial

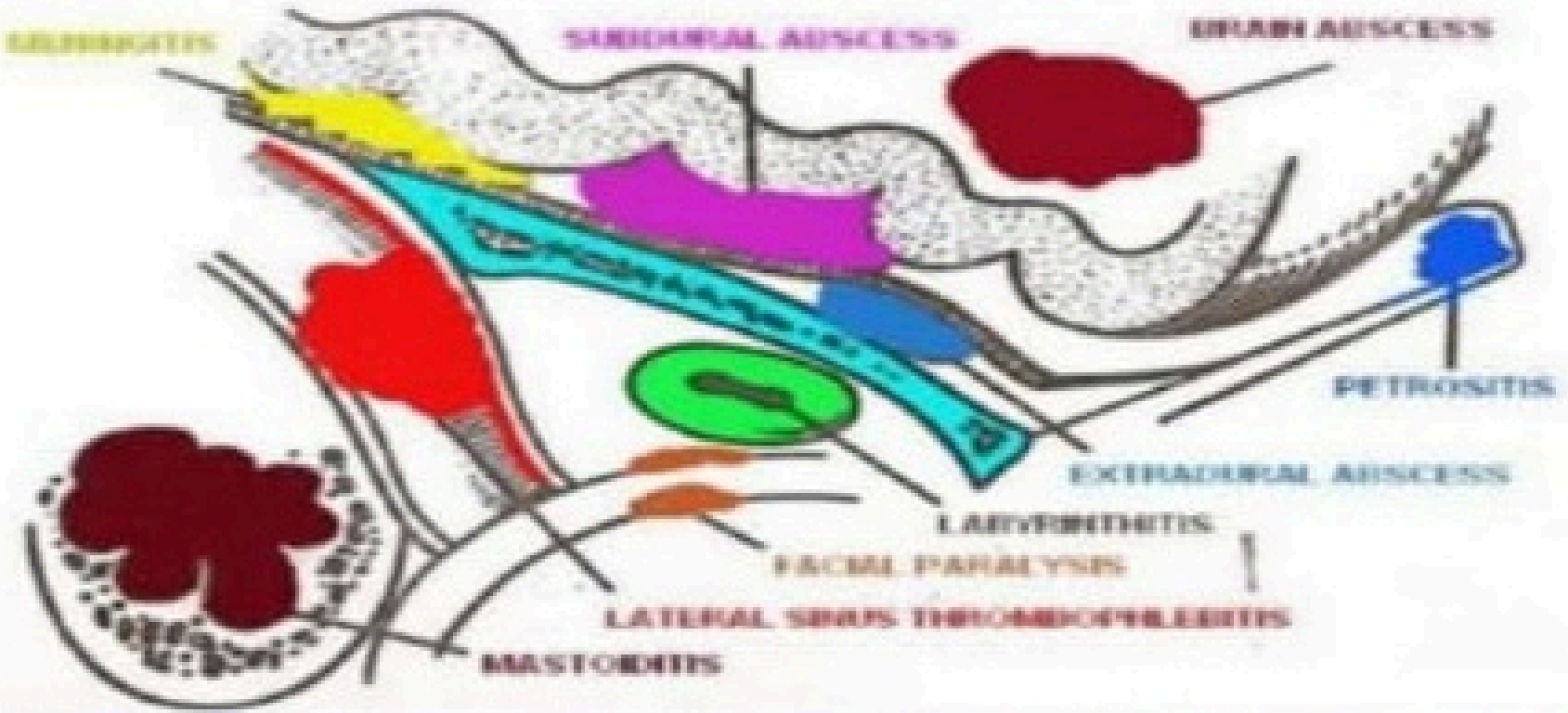
Extratemporal

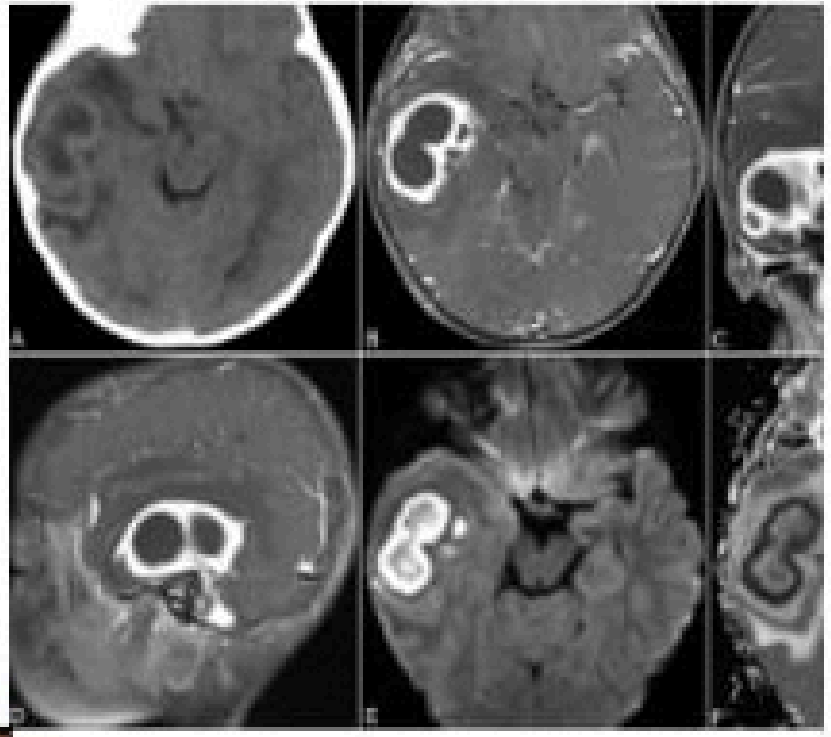
- *Subperiosteal abscesses*

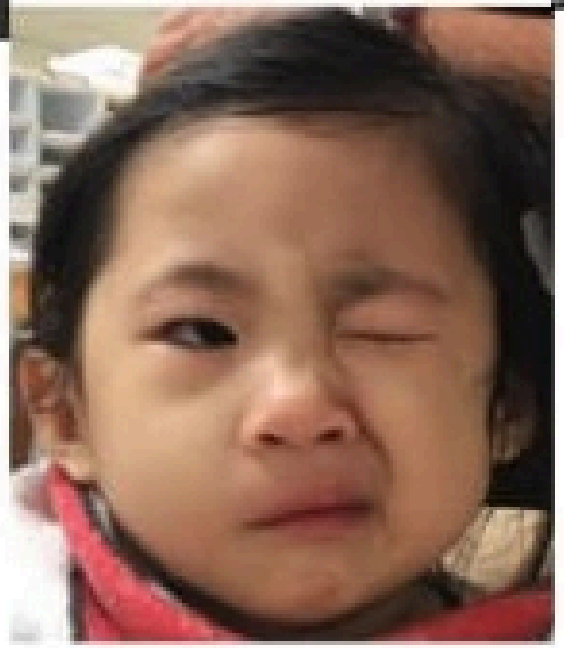
Intratemporal

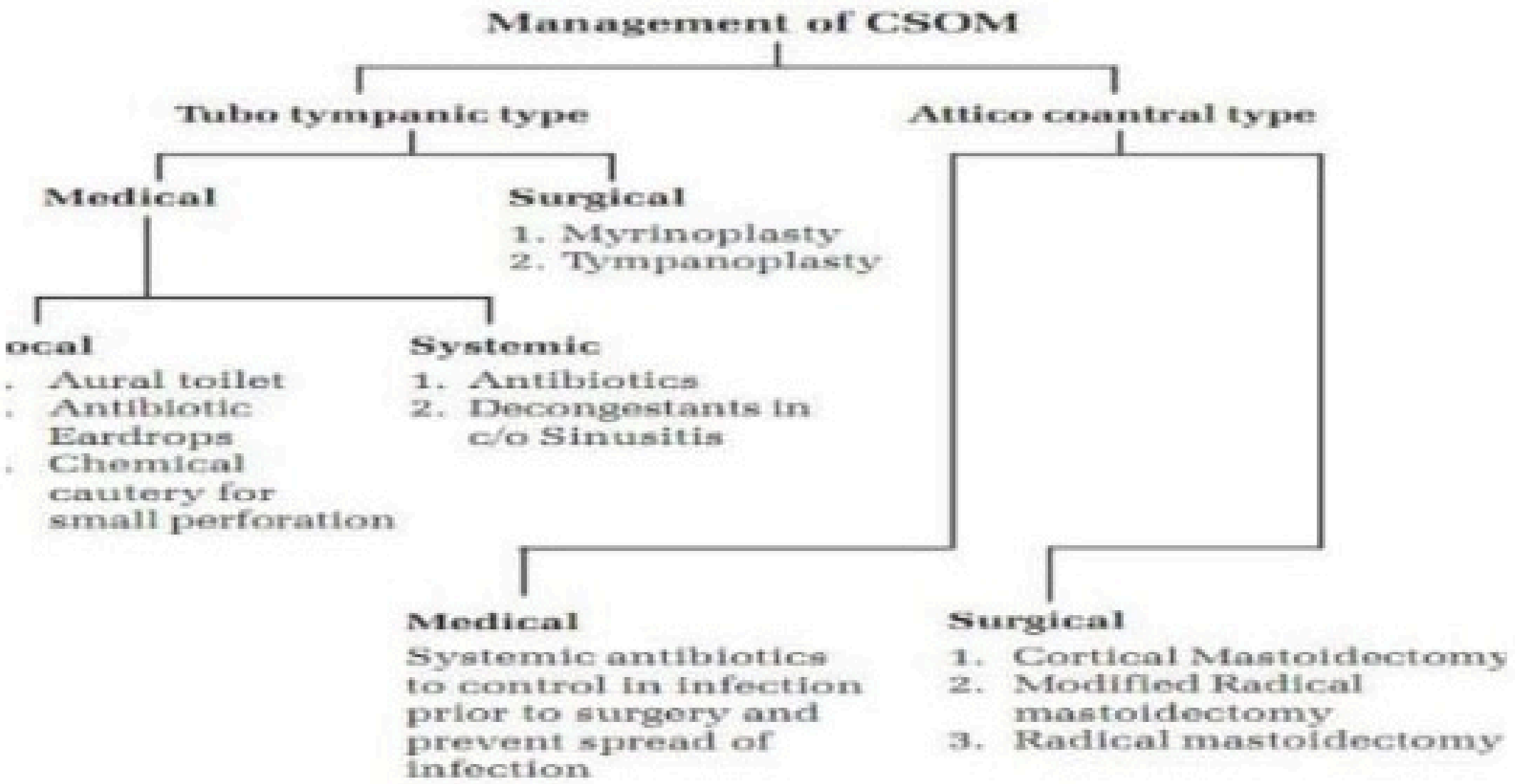
- *Mastoiditis*
- *Labyrinth involvement*
- *Petrous apicitis*
- *Facial nerve paralysis*
- *Sensorineural hearing loss*

Intracranial complications








Management of CSOM
Tubo tympanic type
Attico coantral type
Medical
Surgical
1. Myrinoplasty
2. Tympanoplasty
ocal
. Aural toilet
. Antibiotic Eardrops
. Chemical cautery for small perforation
Systemic
1. Antibiotics
2. Decongestants in c/o Sinusitis
Medical
Systemic antibiotics to control in infection prior to surgery and prevent spread of infection
Surgical
1. Cortical Mastoidectomy
2. Modified Radical mastoidectomy
3. Radical mastoidectomy

OTIC- BASED topical agents	Spectrum of Activity		Adverse Effects
	Gram-Positive Organisms	Gram-Negative Organisms	
in	++	+++ Pseudomonas aeruginosa	Safe
xacin			No ototoxicity
xacin Hydrocortisone xacin dexamethasone			Overuse can lead to fungal inf
cin	+	+++	Ototoxicity potential
/cin	+	+++	Ototoxicity potential
in	+	++	Contact dermatitis
of Neomycin, yxin B, Hydrocortisone			Ototoxicity Pseudomonas sp. resistance
tin-gramicidin-dexamethasone	+	+++	Ototoxicity
in B	–	+++	Renal toxicity if absorbed
phenicol	++ (some staph resistance)	++	Ototoxicity Rare cases of aplastic anemia after use in the eye

cellent activity and spectrum; ++, good activity and spectrum; +, fair activity and spectrum; –, no activity

Pus swab m/c/s

Hemogram

PTA, BERA/ABR/OAE

Tympanometry

High resolution CT temporal bone

Magnetic resonance imaging (MRI) scans of the temporal bone and brain should be obtained if intratemporal or intracranial complications are suspected.

Keep ear dry. Protect ear

Quinolone drops +/- topical steroids. Avoid aminoglycoside drops

Regular aggressive aural toilet, and control of granulation tissue: dilute h202, boric acid, diluted vinegar, suctioning EAC, ear wicking/mopping

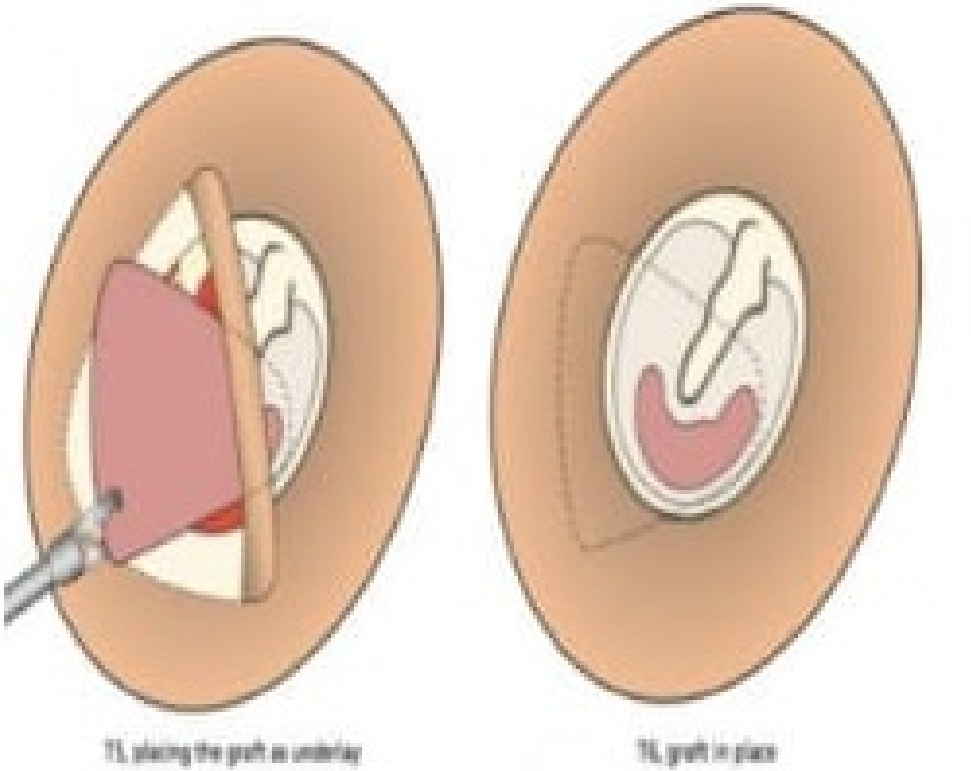
Systemic therapy should be reserved for cases of CSOM that fail to respond to topical therapy.

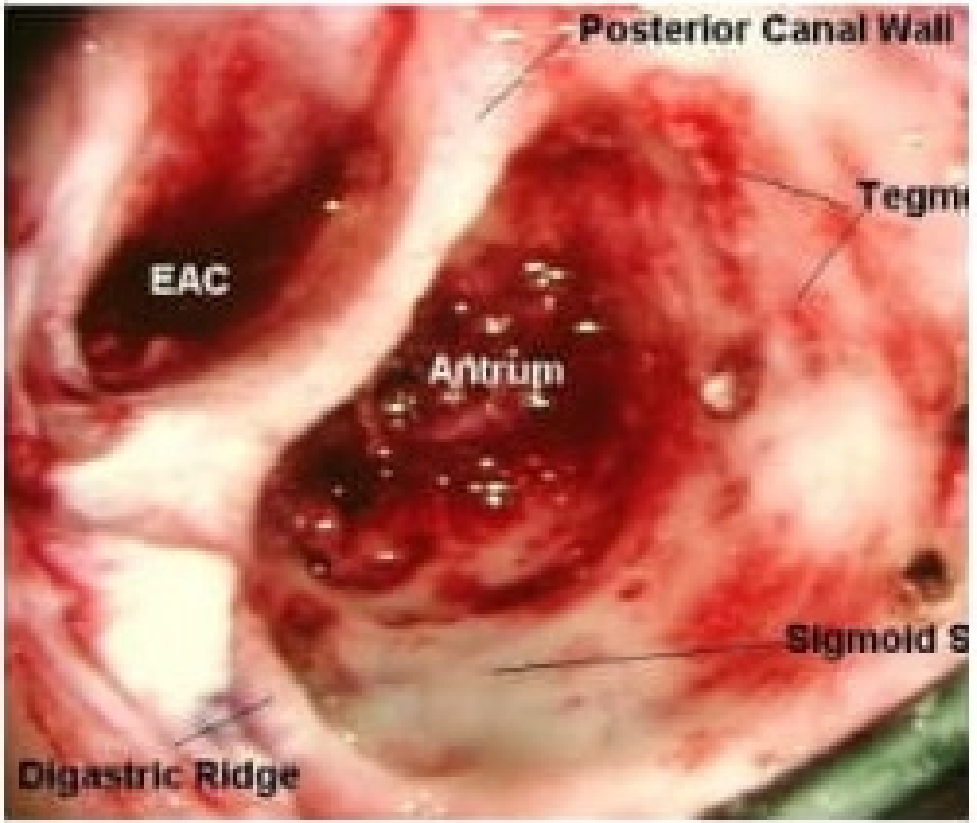
Surgery should be considered if CSOM fails to respond to a combination of topical and systemic therapy. A tympanomastoidectomy can eliminate infection and stop otorrhea in 80% of patients.

Treat nose: adenoidectomy, turbinoplasty

Unilateral Eustachian tube dysfunction: r/o obstructive lesion in nasopharynx : CT BOS TO TI, RNE

Surgical correction of craniofacial anomalies




Posterior Canal Wall
Tegme
EAC
Antrum
Sigmoid S
Digastric Ridge