Acute Suppurative Otitis Media &
Otitis media with effusion

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Definition

- Acute inflammation of the muco-periosteal lining of the middle ear cleft commonly seen in children and usually consequent to an upper respiratory tract infection

Etiology

- Eustachian tube dysfunction- MOST COMMON
  - Viral rhinitis
  - Any form of rhinitis/ sinusitis
  - Other causes of ET dysfunction
- Traumatic perforation of tympanic membrane
- Barotraumatic otitis media
- Hematogenous

More common in children-Reasons

- Upper respiratory tract infections are more common
- Eustachian tube is more short, wide and horizontal in children compared to adults
- Adenoid tends to hypertrophy and obstruct the ET orifice in the nasopharynx
- Feeding habits in an infant- nasopaharyngeal reflux more common

Predisposing factors

- Recurrent URTI
- Tonsils and adenoid infection
- Chr rhinitis and sinusitis
- Nasal allergy
- Cleft palate
- Tumours of nasopharynx

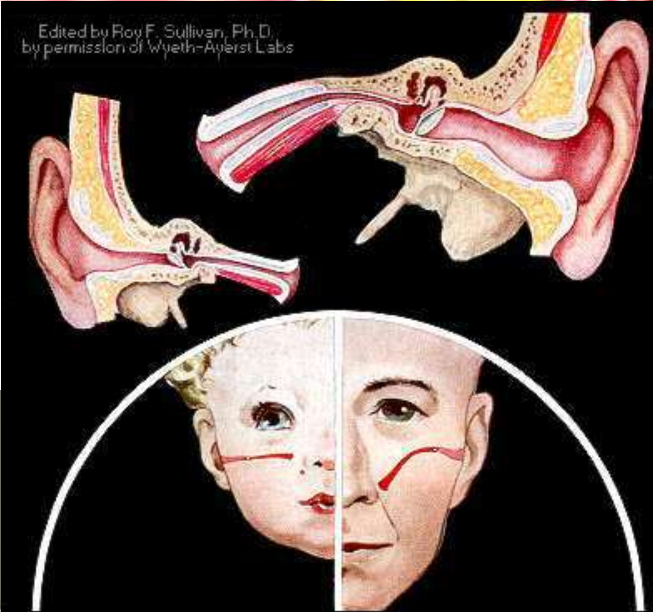
Normal Anatomy of a Child's Ear

Middle Ear

Inner Ear

Back of Throat

A Child's Eustachian Tube
is shorter and more horizontal than an adult's, making it easier for bacteria to travel from the throat to the middle ear.



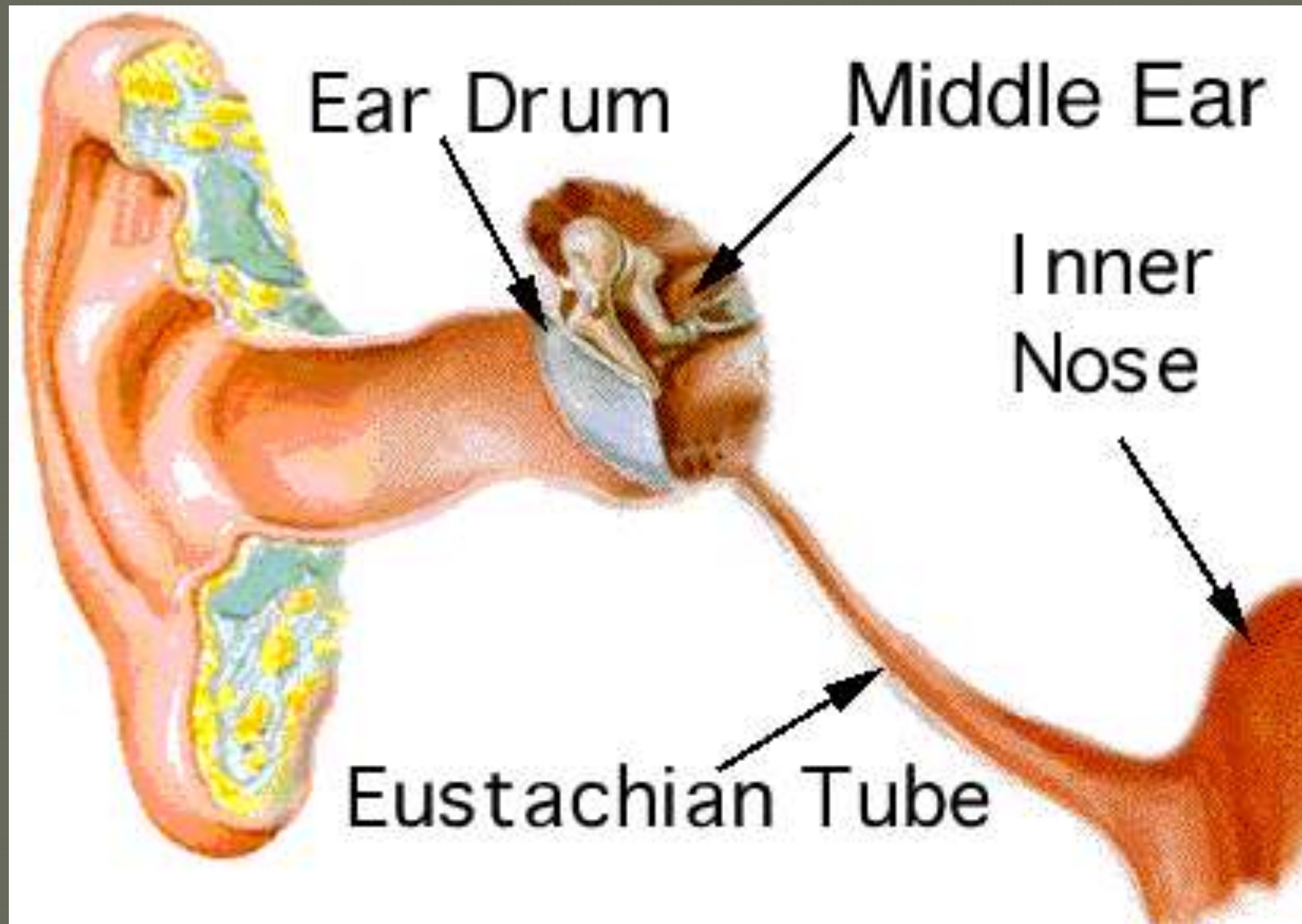
Incidence

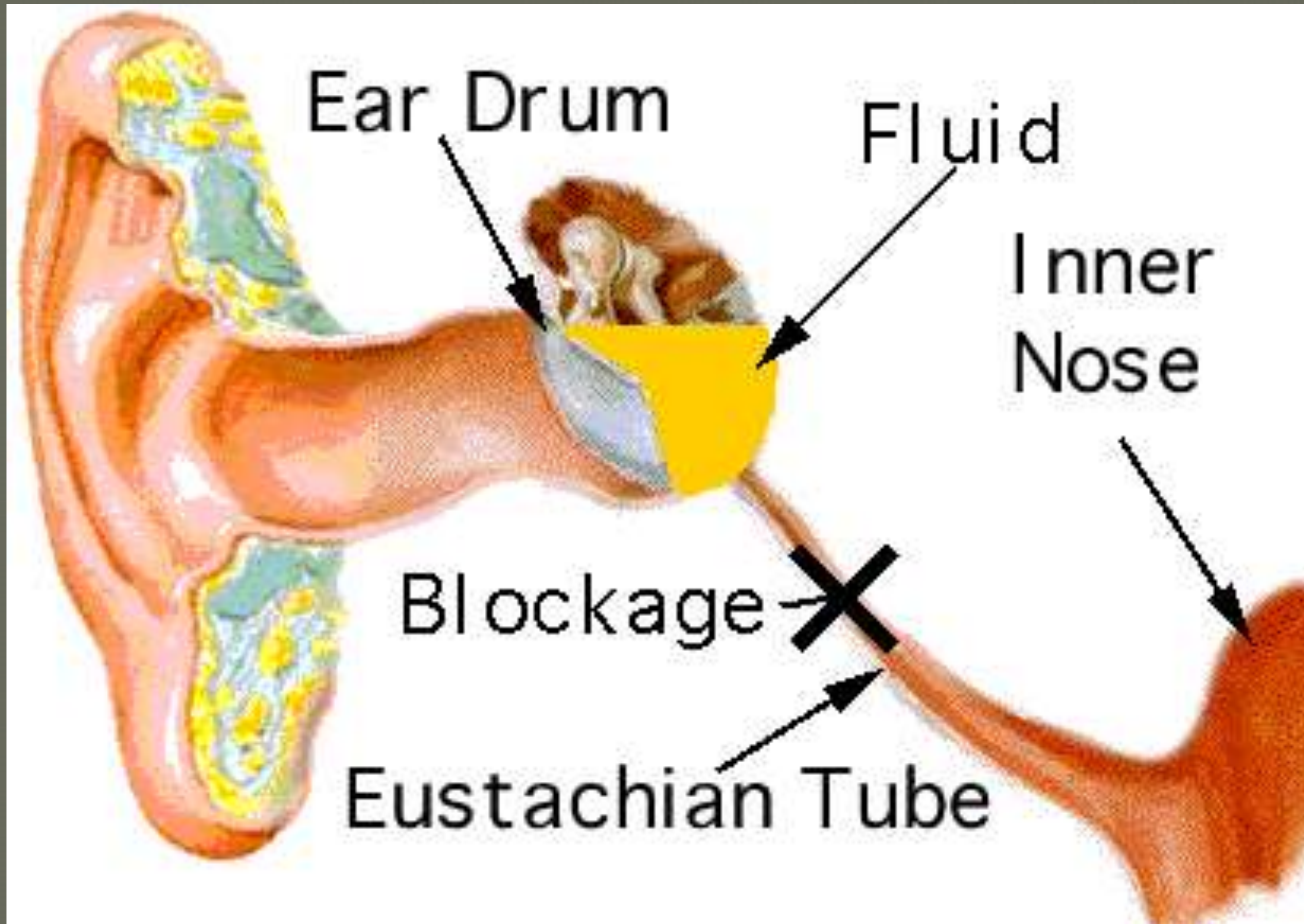
- Peak incidence at the age of 3-18 months
- 60% of children below 1 year of age- variable severity
- 80% of children below 3 years of age
- Boys>girls
- Native Americans> African Americans
- Rural>Urban: Reason?

Microbiology

- Usually starts as a viral infection. Ex: *RSV, Rhinovirus, CMV, measles, EBV.*
- *Streptococcus pneumoniae* (30-50%)
- *H. influenzae* (20-30%)
- *Moraxiella catarrhalis* (10-20%)
- *Streptococcus pyogenes*

Pathology




Ear Drum
Fluid
Inner
Nose
Blockage
Eustachian Tube

Clinico-pathologial stages of ASOM

- Tubal occlusion (hyperemia)
- Pre-suppuration
- Suppuration
- Resolution or
- Complications

Stage of tubal occlusion (hyperemia)

Pathology

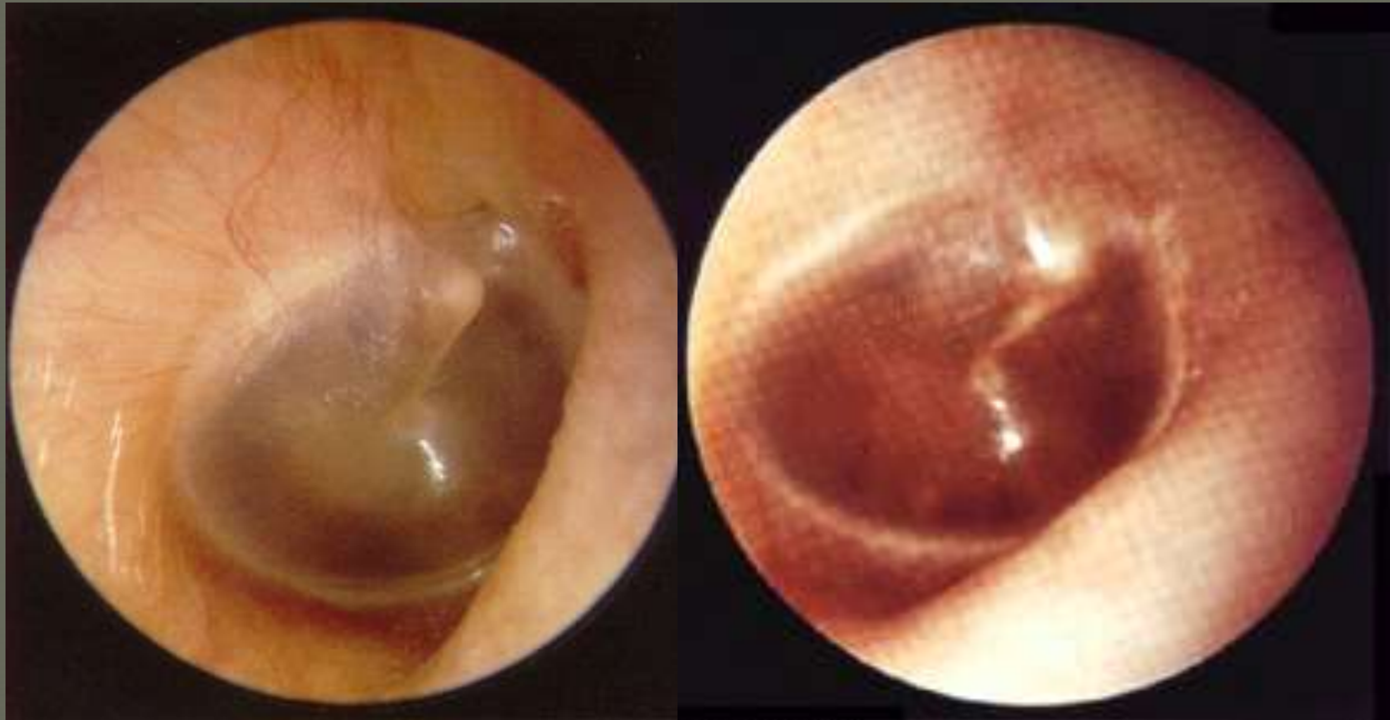
- URTI leads to ET mucosal edema
- ET gets occluded
- Air in the middle ear cleft gets absorbed
- Vacuum (negative pressure in middle ear)
- Transudation

Symptoms

- Blocked feeling in the ear following URTI
- Mild ache/ discomfort

Signs

- Retracted drum
- Hyperemia



Stage of pre-suppuration

Pathology

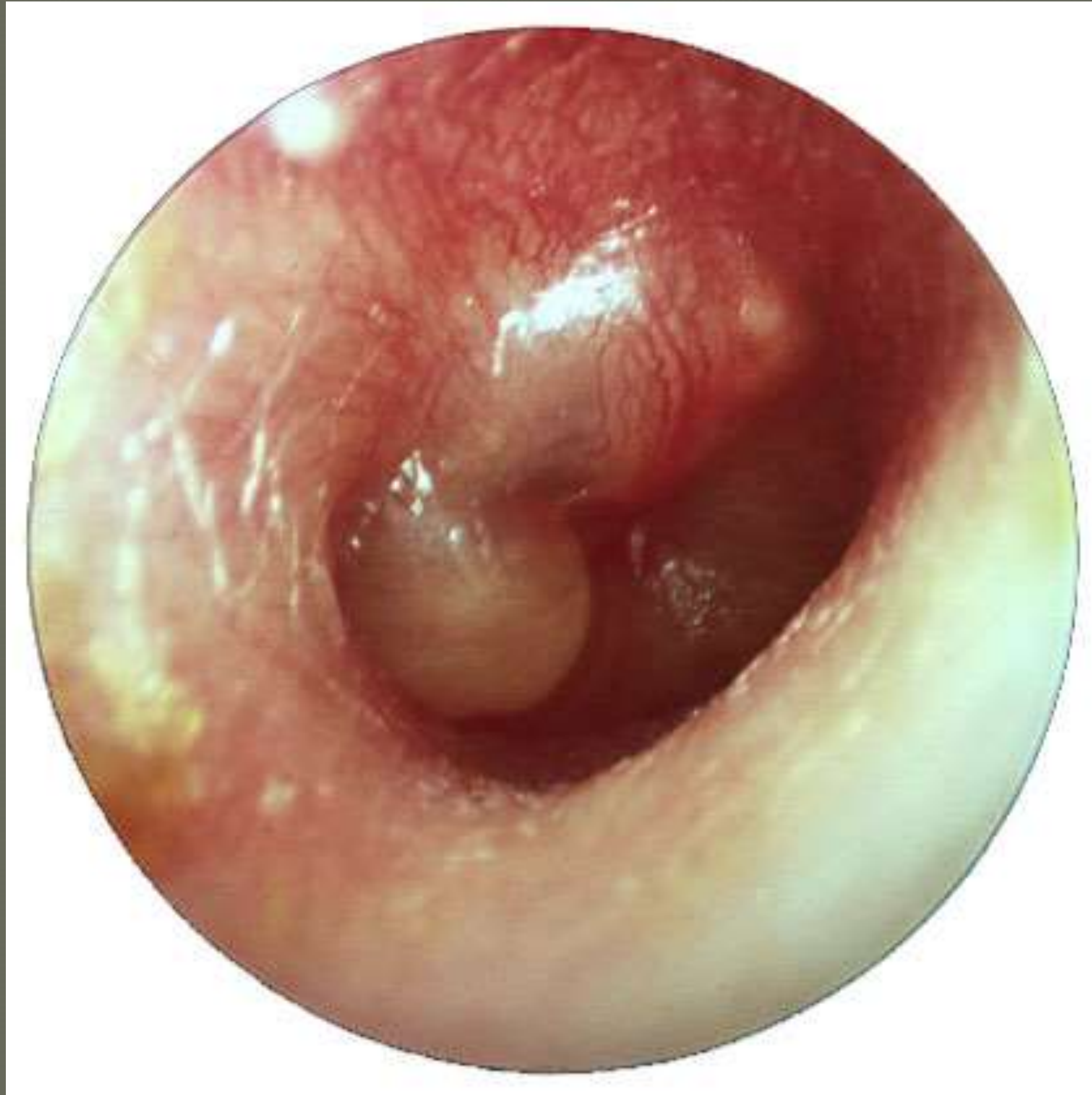
- Bacterial infection
- Exudation of fluid
- Increased mucus secretion and decreased drainage
- Accumulation of non-purulent fluid in middle ear
- Increased congestion

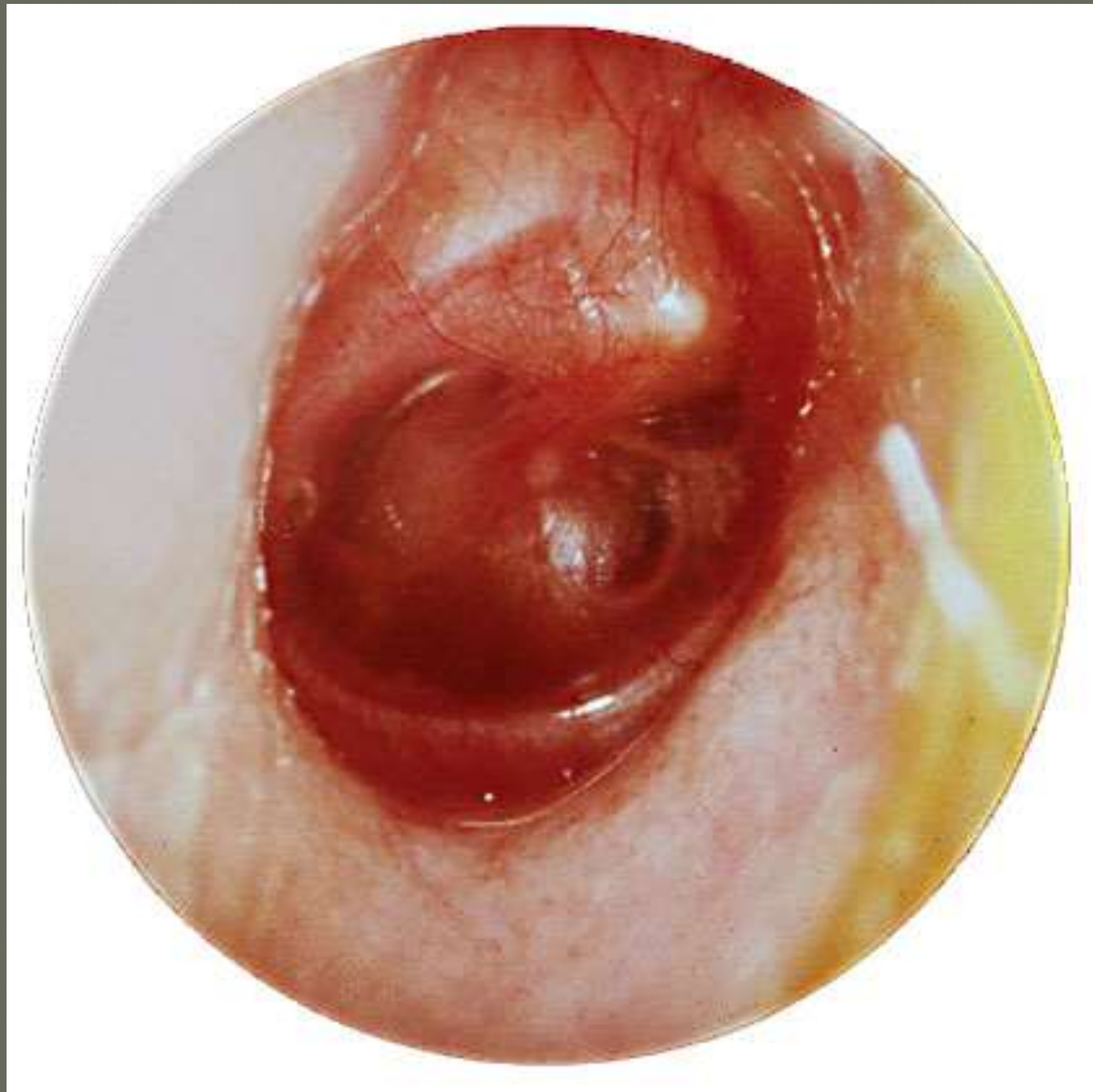
Symptoms

- Irritable child
- Increasing ear-ache and deafness
- Autophony

Signs

- Cart-wheel appearance of the TM
- Bulging drum
- Fluid level/ air bubbles seen through TM





Stage of suppuration -Before perforation

Pathology

- Suppuration
- Accumulation of pus in the middle ear under tension

Complications

- Acute coalescent/ masked mastoiditis
- Non resolved AOM- if no resolution by one month
- Recurrent ASOM
- CSOM- tubotympanic disease (TM perforation persists > 3 months)

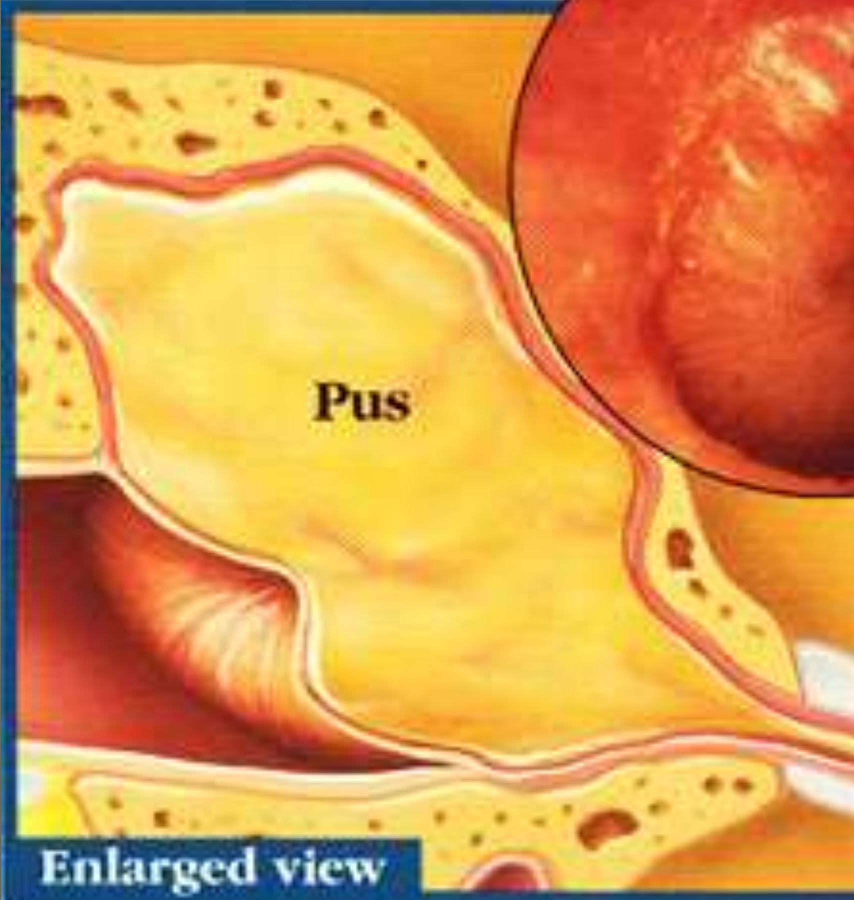
Symptoms

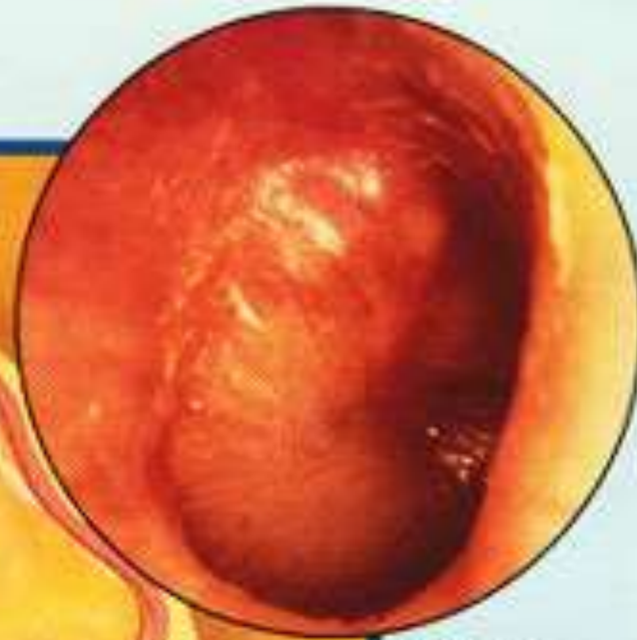
- Unexplained cause of crying in a child
- Fever, toxic symptoms
- Severe otalgia
- Deafness

Signs

- Grossly congested and edematous TM
- Bulging of TM- >posteriorly
- Pus pointing +/-

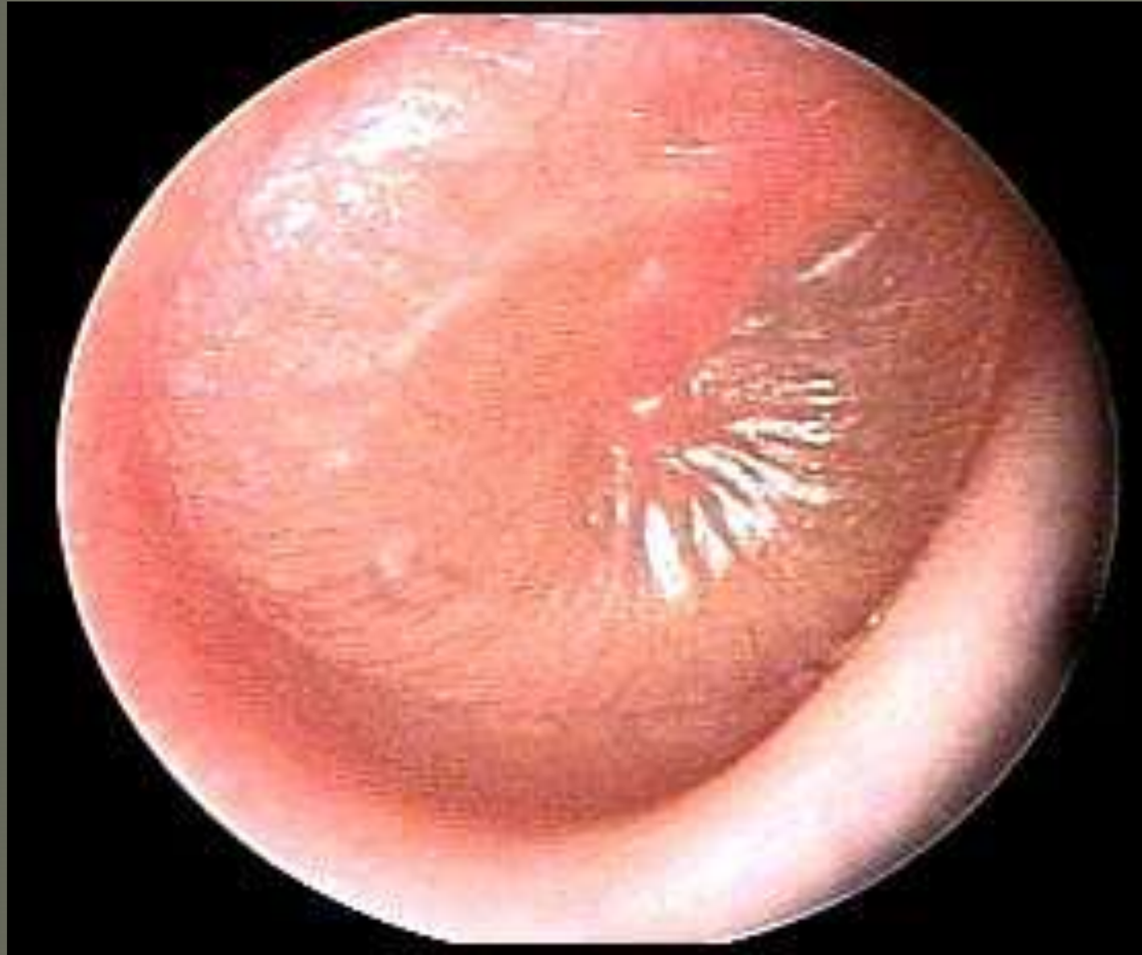
Acute Otitis Media





View of acute otitis media

Eustachian tube may become blocked, and the middle ear may fill with pus.



Pathology

- Infection fails to resolve due to
  - Pneumatised mastoid with infection extending
  - Organism- virulent
  - Resistance of host- poor
  - Treatment- inadequate
- Or if the TM fails to perforate
- Acute mastoiditis

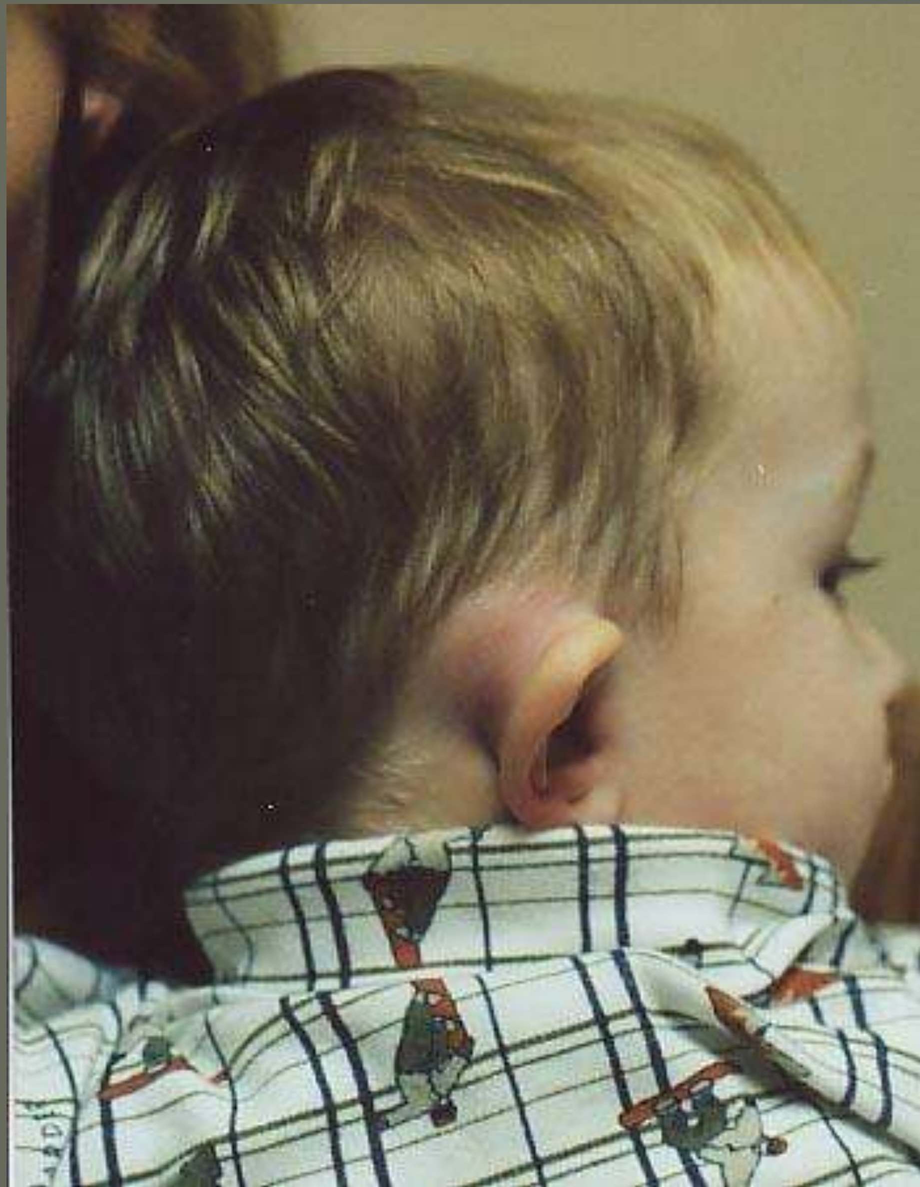
Stage of complications

Symptoms

- Ear symptoms persist or increase
- Spiky temperature
- Swelling post-auricular region

Signs

- Persistent ear discharge and congestion
- Mastoid tenderness and swelling



Investigations

- Treatment usually started with clinical diagnosis
- Investigate if not resolving or if impending complications suspected
- ✓ Ear swab for C/S
- ✓ X-ray mastoids
- ✓ X-ray PNS/ nasopharynx
- ✓ Audiological assessment
- ✓ CT scan of temporal bone and intracranium- with contrast

Treatment- Medical

- Treat URTI
- Broad spectrum antibiotics like amoxycillin/ ampicillin/ augmentin/ erythromycin etc.- Orally as syrup/ tablets
- High dose (meningitic dose) and parenteral if complications suspected
- Nasal decongestants
- Analgesics
- No role for topical antibiotics

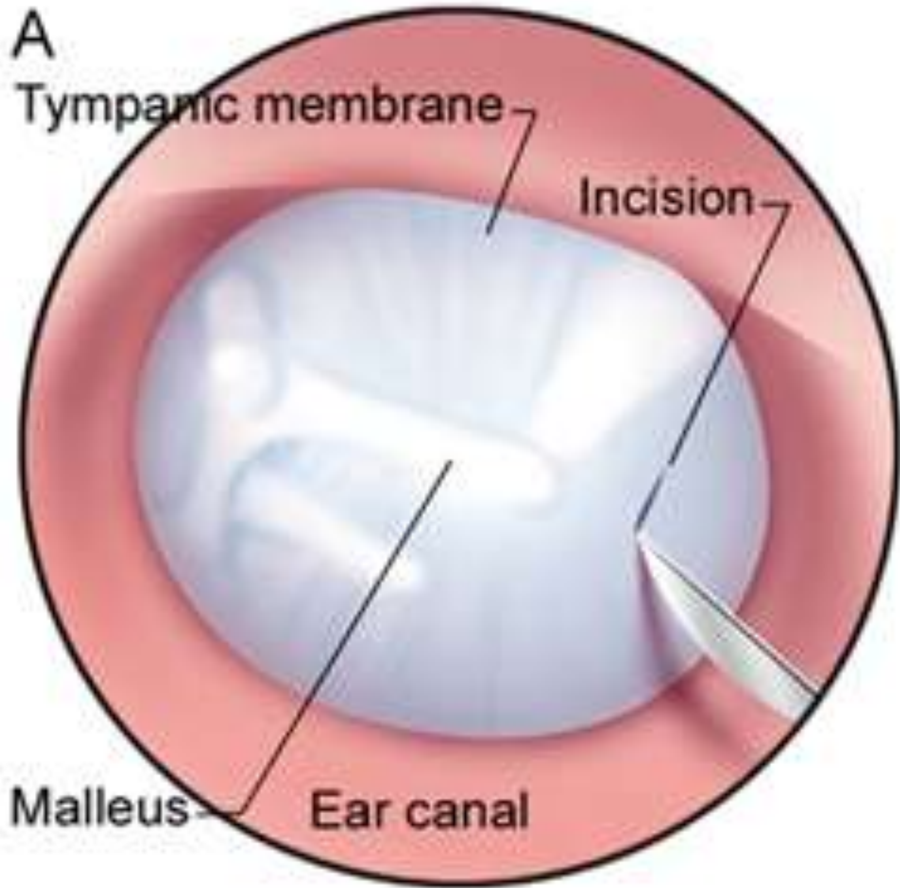
Treatment- Surgical

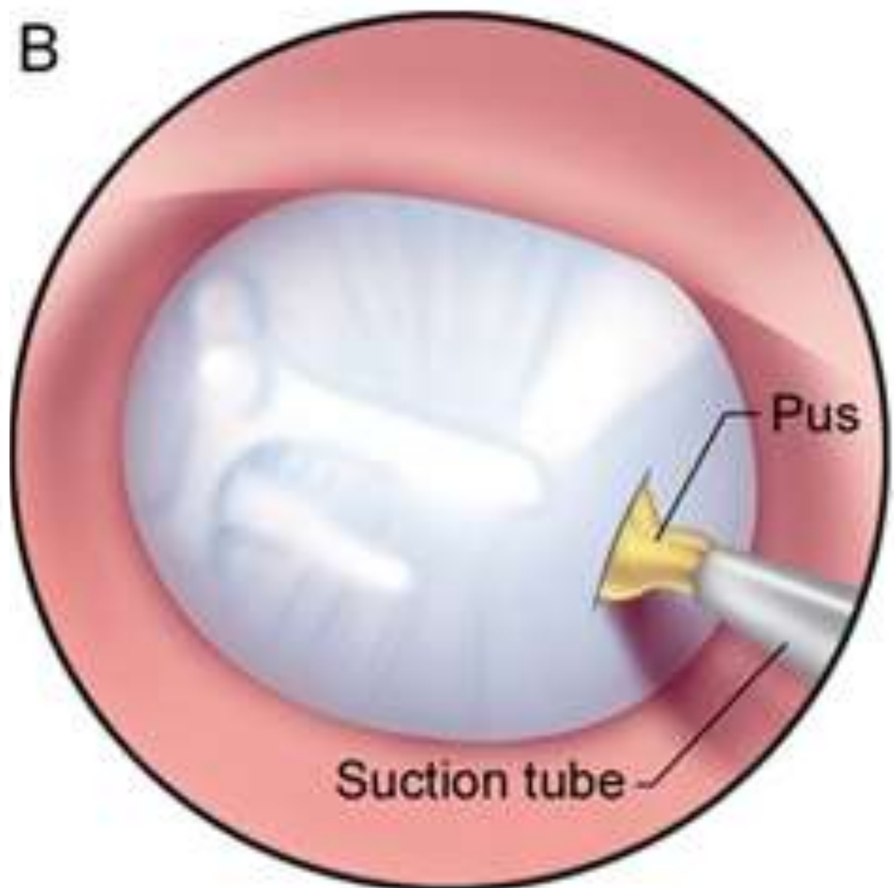
Indications

- TM fails to perforate
- Severe otalgia
- Non-resolving symptoms
- If impending complications suspected

Treatment- Surgical

- Tympanocentesis- Needle aspiration of the fluid
- Myringotomy
  - Curvilinear incision on the TM at the site of most prominent bulge—usually posteriorly—drainage of pus
  - Or widen the pin-hole perforation- better drainage
- Cortical mastoidectomy
  - To eradicate the diseased mucosa in the mastoid antrum and the air cells


A
Tympanic membrane
Incision
Malleus
Ear canal

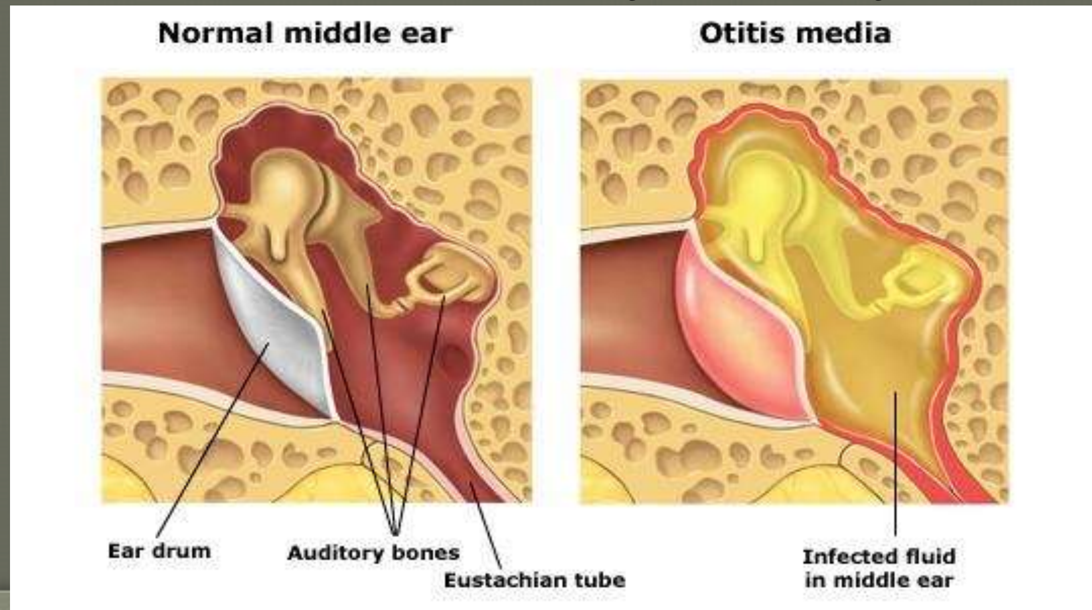

B
Pus
Suction tube

OTITIS MEDIA WITH EFFUSION

- It is an insidious onset inflammation of the middle ear characterized by accumulation of non-purulent effusion in the middle ear cleft
- Incidence -
  - Most commonly seen in school going children (3-8yrs age group)

SECRETORY OTITIS MEDIA

- PATHOGENESIS -
  - Malfunctioning of Eustachian Tube
  - Increased secretory activity of middle



- ET dysfunction
  - Politzer in 1867
  - Eustachian tube fails to aerate middle ear and also unable to drain secretions due to functional ET obstruction (decreased tubal stiffness/inefficient opening mechanism.
  - Results in inadequate ventilation of middle ear with resulting negative middle ear pressure

- ETIOLOGY -
  - ET dysfunction : Adenoid hypertrophy, Chronic rhinitis/sinusitis, Chronic tonsillitis/ Benign/Malignant tumours of oropharynx, palatal defects
  - Allergy
  - Unresolved AOM
  - Viral infections

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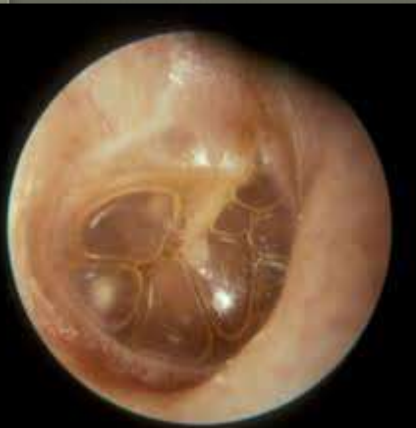
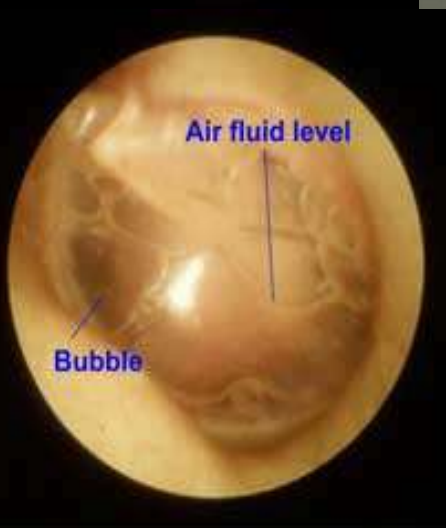
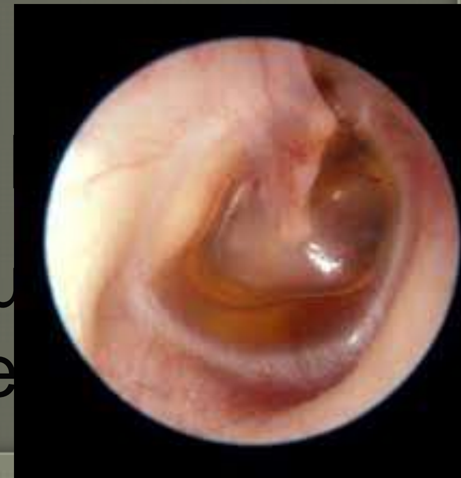
SYMPTOMS -

- Hearing Loss
- Delayed & Defective speech
- Mild ear aches

- SIGNS -
- Otoscopy:
  - Severely retracted TM with foreshortening of HOM / reduced TM mobility
  - TM may be dull/opaque and may have an *amber hue*
  - Thin leash of blood vessels along HOM/ periphery of TM
  - Fluid level/ air bubbles may
  - Severe cases, middle ear flu purplish/blue - haemorrhage







INVESTIGATIONS -

- Audiometry : CHL 20-40 dB,
- may be assoc. with SNHL
- Impedance audiometry : objective test,
- presence of fluids – reduced compliance/ flat curve with shift to negative side
- X-ray mastoids – may show clouding of air cells due to fluid

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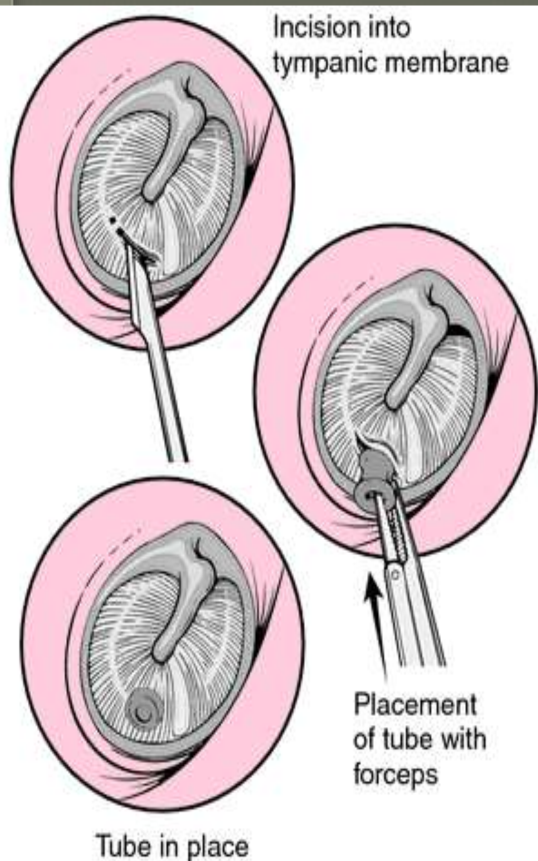
TREATMENT -

- Aim – removal of fluid/ prevention of recurrence
- MEDICAL:
  - Decongestants – topical/systemic
  - Anti allergic measures – antihistamines/steroids
  - Antibiotics – Amoxicillin, Amoxicillin-Clavulanate (30-40mg/kg/day in 3 divided doses) / Cefixime (8-10mg/kg/day in 2 divided doses)
  - Middle ear aeration – Valsalva

- SURGICAL -
  - Myringotomy & aspiration of fluid
  - Ventilation tube/Grommet insertion
  - Surgical treatment of causative factor (adenoidectomy / tonsillectomy)
- Myringotomy with grommet insertion with/without adenoidectomy has become ultimate treatment in chronic SOM.
- Indications for surgery in SOM :
  - Chronic effusion more than 3 months
  - CHL > 15 db
  - Nasopharyngeal neoplasms for which RT may be necessary

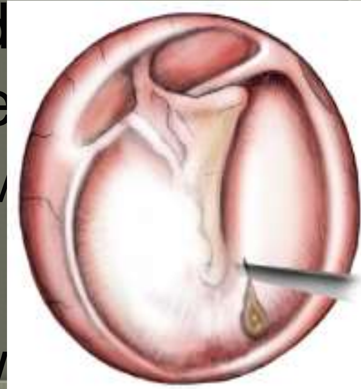
MYRINGOTOMY -

It is a procedure in which incision is made on TM for purpose of draining suppurative/non suppurative effusion of middle ear and/or provide aeration in case of ET dysfunction by inserting ventilation tube (grommet)

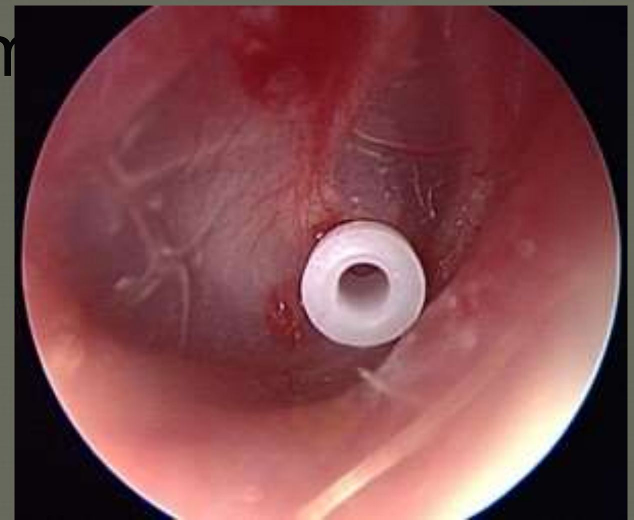


STEPS:

- Pt put under microscope, ear canal cleared of debri/wax
- Using myringotome small rad incision made on postero infe antero inferior quadrant of TM effusion is sucked out
- If aspirate is thick/glue like tw



- Myringotomy – Post OP care :
  - In SOM wad of cotton is left for 24-48hrs
  - TM incision heals rapidly
  - No water entry for atleast 1 week
  - If grommet inserted prevent water entry as long as grom



- Complications -
  - Injury to IS jt
  - Injury to jugular bulb
  - Middle ear infection

COMPLICATIONS -

- Atelectasis of middle ear
- Ossicular necrosis
- Tympanosclerosis
- Retraction pockets & Cholesteatoma
- Cholesterol granuloma

Thank You