OTITIS MEDIA WITH EFFUSION (GLUE EAR)
Detail of the Eustachian tube, cartilaginous to the Rt, bony Lt, demonstrating dimensions. The bony tube is passive, but the cartilaginous is normally shut, opening with palatal muscular action during yawning, deglutition, etc.
Middle ear cleft: Endoscopic view of the drum and chain within the normally aerated chamber. Denial of air supply results in the chamber filling with fluid.
Function of the Eustachian tube (et). Deglutition produces elevation of the palate and simultaneous tubal opening.
Simultaneous palatal contraction and tubal opening. The combination shields the ear from autophony and soiling.
OTITIS MEDIA WITH EFFUSION

OME, SOM Serous/Secretroy otitis media, Glue ear
OME
Pathogenesis

- Tubal insufficiency
  - Oedema: infection / allergy
  - Palatal muscular failure
  - Other e.g. malignancy invasion

- Middle ear vacuum

- Effusion formation

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Normal tubal function. Upon deglutition, yawning or other palatal muscle contractions, the Eustachian tube is opened, air enters the middle ear and is then absorbed into the bloodstream.
The tubal orifice may become occluded by oedema or malignancy, or the muscular action may fail. As the middle ear air resorbs without replenishment, a partial vacuum forms in the middle ear cleft.
Continual negative middle ear pressure results in an effusion of serous fluid into the middle ear cleft. With time, a goblet cell metaplasia occurs and the effusion becomes more mucoid.
OME may be triggered by AOM. Retained endotoxins in the middle ear cause persistent oedema, occluding the tube and resulting in an ongoing effusion, often mucoid.
Repaiored cleft lip. Beware OME.
Bifid uvula. This may be accompanied by palatal malfunction and OME.
Cleft palate. Absence of the midline raphe prevents muscular traction, causing failed tubal opening.
OME

Symptoms

- Possible URTI
- Pain – barotrauma, AOM
- Prior otorrhoea (AOM)
- Deafness, blocked, full
- Tinnitus – pulsatile, in quiet
- Unsteadiness (children)
OME

Signs

- Drum discolouration
- Conductive loss
- ? URTI
- Palatal abnormalities
- Complications – longer term
Serous OME. A honey or yellow drum discolouration is typical.
Resolving serous OME. Bubbles behind the drum. Yellow fluid evident inferiorly.
Sterile purulent effusion after AOM. Retained endotoxins may retard resolution of the effusion.
A blackened drum indicates the breakdown products of blood within the middle ear, and may indicate a cholesterol granuloma formation.
Longer-term effusions frequently develop “cartwheel vasculature” radiating from the umbo.
Long term mucoid effusions display a waxy opaque drum. This may indicate chronic insufficiency, and may be evident in muco-ciliary disease with a poor hearing prognosis.
OME
Investigations

- Pure tone audiology
- Tympanometry
- Microscope inspection
- Diagnostic myringotomy
  (opaque / scarred drum)
Typical OME audiology and tympanometry. A bilateral mild conductive loss is present, coupled with Type B flat tympanograms. In a child, OME until shown to be otherwise.
The “goldfish” syndrome. Chronic mouth breathing due to nasal congestion. Occluding adenoids.
If the tonsils are oversized, the adenoids are probably likewise. Check for OME.
Adenoid hypertrophy occluding the post-nasal space.
Carcinoma of the post-nasal space, prevalent in people of southern Chinese ancestry. Check the PNS if an ethnic patient of this area presents with OME.
OME
Management

- Vent tube insertion
- Adenoidectomy
- URT surgery
- Tubal dilatation (experimental)
- Other (palate repair, malignancy)
The ubiquitous “grommet”. Vent tubes eliminate deafness and limit pain by preventing effusions under pressure.
OME
Complications

- Adhesive otitis
- COM
- Cholesteatoma
- Tympanosclerosis
- Cholesterol granuloma
- Obliterative fibrosis
Adhesive Otitis

- Drum collapse due to chronic negative pressure
- Usually initially posterior pars tensa
- May progress: Severe collapse, chain damage, cholesteatoma
Advanced adhesive otitis (Black type III*). Substantial posterior collapse with resultant necrosis of the long process of the incus and a deep attic pocket. Concurrent OME.
Chronic Otitis Media (COM)

- Chronically perforated eardrum
- May result from chronic tubal failure causing drum weakening
- Possible associated chain damage, infection
- Generally requires surgery
Chronic otitis media (COM) secondary to tubal insufficiency. A weakened pars tensa has perforated and the incus has eroded.
Cholesteatoma

- Invagination of drum skin into the middle ear cleft
- Commonly results from chronic tubal insufficiency
- Possible infection and OME
- Multiple complications - dangerous
Pars tensa pattern cholesteatoma. Substantial retraction of the posterior drum has led to invagination and loss of self-cleaning ability. Keratin is accumulating and complications may ensue.

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Tympanosclerosis

Deposits of calcific material in the drum or middle ear

Results from vent tube insertion or repeated infection

Often asymptomatic

May cause major ossicular fixation

Common after OME
Tympanosclerosis as a result of prior OME. The drum is aerated. Classic “horse shoe” pattern.
Severe drum tympanosclerotic calcification. Probable substantial conductive loss. Previous grommet insertion, causing an atrophic anterior pocket.
Cholesterol Granuloma

- Granulations secondary to breakdown of blood in the middle ear cleft
- Commonly results from tubal failure
- Persistent, difficult to eradicate
- Progressive scarring, chain fixation
Haemotympanum, the black discolouration due to old blood debris. Possible cholesterol granuloma.
Cholesterol Granuloma filling the left mastoid. The blackish granulations often show glistening cholesterol crystals.
Obliterative Fibrosis

- Scarring, filling the middle ear
- Eradication of mucosal lining
- Chain fixation, conductive deafness
- Difficult to repair hearing
Obliterative fibrosis and extensive tympanosclerosis. The chronic OME has been followed by fibrosis filling the middle ear, and heavy calcific deposits in the drum and around the stapes.
OME

Summary

- Middle ear filled with fluid
- The fluid is variable in origin, colour, consistency, viscosity, implications
- May occur at all ages
- Major cause of deafness in infants
- Associated with a range of complications