Middle ear atlas

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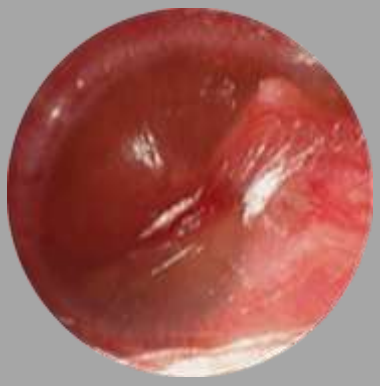
Otitis media with effusion (OME)

Inflammation of the middle ear cleft that results in cytokine production and a protein rich exudate. The associated vasodilation causes an increase in gaseous exchange via diffusion and a pressure drop in the middle ear. Obstruction of the Eustachian tube prevents pressure equalization. Prolonged inflammation may result in cell differentiation and an increase in the number of mucous cells. Although there is no active infection, bacteria have been observed in the fluid and biofilm is thought to be linked to the condition.

Notice the prominent annulus. This allows the examiner to appreciate the retracted tympanic membrane (TM). The sclerotic white patches on the TM are referred to as chalk patches and are scarring. Notice the bubbles from the effusion behind the TM.

The tympanic membrane appears dull and there is serous fluid behind the TM. Diagnosis of OME can be difficult and pneumatic otoscopy greatly improves diagnostic accuracy. The TM will be hypomobile or not mobile in OME.

Notice the prominent annulus, and slight orange-yellow colour anterior to the



The TM is dull and there is evidence of serous fluid behind the TM.

handle of malleus. This is from the serous fluid. The malleus is medialized. Although it appears red – this is not an acute otitis media and should not be managed with antibiotics. Children with OME are apyrexial, although they may complain of ear pain (otalgia).

Profuse serous fluid behind TM.

Adhesive otitis media

Patients with long-standing Eustachian tube dysfunction and OME may develop gradual atelectasis of the middle ear. The TM becomes more and more medialized until it is draped on the middle ear structures. It may look like a perforation through the otoscope. These patients should be referred for hearing tests and if ever they develop a discharge or hearing loss – to an ENT specialist. If uncertain – refer to an ENT specialist.

Localised retractions

Prolonged Eustachian tube dysfunction may also result in localized retraction pockets. In some patients this may reverse or stabilize, but in some patients the retraction pockets may progress. Deep retraction pockets start accumulating keratin and eventually form cholesteatomas.

Attic retraction

The attic, or pars flaccida usually blends into the posterior canal wall. The neck of the malleus should not be visible. If you are able to see the neck of the malleus or if you see a hollow or “hole” superiorly on the TM – this may be a retraction pocket. These patients should be referred to an ENT specialist.

Posterior quadrant retraction

Posterior quadrant retractions can be difficult to appreciate. The often look like posterior perforations during otoscopy. These patients should be referred to an ENT specialist.

Cholesteatoma

Posterior quadrant or attic retractions or perforations should be referred to an ENT specialist because cholesteatomas can be difficult to diagnose during otoscopy, particularly if there is an ear discharge. If the discharge is not profuse it may appear as a crust or “wax” on the deepest part of the canal or on the TM. These patients should be referred to an ENT specialist.

Acute otitis media (AOM)

Patients with AOM are pyrexial, in pain and generally miserable. The TM is inflamed and pus may be seen behind the TM. Sometimes a small hole and a purulent discharge may be seen.

Tympanic membrane perforations

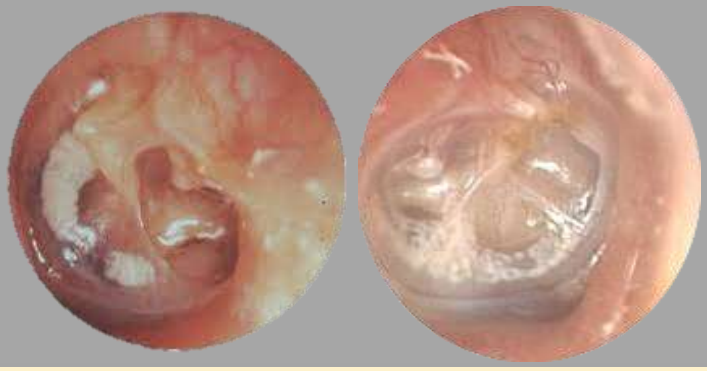
Some patients may develop persistent perforations (holes) in their TM's. These can vary in size and position on the TM. The larger the perforation, the larger the associated hearing loss. Once patients have persistent perforations, they may cycle between periods of discharging ears and dry ears.

If a patient has a discharging ear and it is treated appropriately with topical antibiotic drops and it continues to discharge, with no period of resolution – refer to an ENT surgeon.

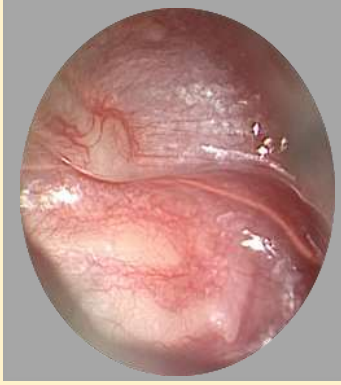
If it dries but the patient has a persistent perforation. Review them in 3 months and arrange an audiology appointment for them. If they have hearing loss – refer them to an ENT specialist. If their hearing is normal, counsel the patient about water precautions and ask them to return if the discharge returns. It is only necessary to refer to an ENT surgeon if the patient develops a hearing loss or if they have a recurrent discharge.

Scarring of the tympanic membrane

Both perforations and inflammation may result in sclerosis or atrophy (thinning) of the TM.



Featureless tympanic membrane



Occasionally the parts of the TM are difficult to appreciate. This can be due to thickening or inflammation. It may also be the result of surgery to repair the eardrum.