

Pneumatic otoscopy

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Contraindications

Known tympanic perforation.

Applications

Diagnosis of acute otitis media or other conditions with restricted tympanic mobility, including otitis media with effusion.

Equipment necessary

- Otoscope with pneumatic bulb
- Speculum tips with rubber rings to create proper seal (however, large simple specula might create an adequate seal in infants)

Set-up

This procedure is best carried out in a brightly lit room with the patient sitting up on the examination table.

Procedure

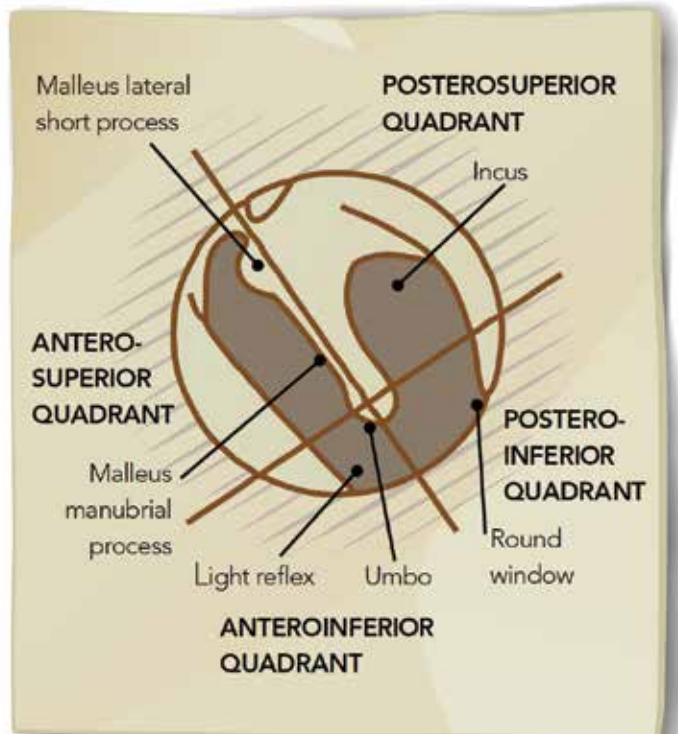
1. Insert the tip of the otoscope into the ear canal, ensuring that a strong seal is made with the canal. If this is difficult, use the speculum tips with rubber tubing to facilitate the seal.
2. Try to visualize the tympanic membrane landmarks, such as the 4 quadrants including the cone light reflex, malleus, and umbo.
3. Assess retraction of the tympanic membrane by noting the position of the lateral process of the malleus. Also note any foreshortening of the long process of the malleus.
4. Assess membrane mobility by gently squeezing the rubber bulb and then releasing. If no fluid is present, the membrane will move briskly. If fluid is present, mobility will be hampered.
5. Another method is to squeeze the bulb before insertion and release it once the seal is made, as it is sometimes easier to observe membrane movement toward rather than away from the practitioner.

Interpretation

Retraction is indicated by change in positioning of the lateral process, usually anteriorly. In the case of retraction, it might be repositioned to point more superiorly. Also, there will be diminished space between the lateral process and the flaccid part of the tympanic membrane. Retraction and decreased mobility indicate inflammation and suggest acute otitis media.


Evidence

A study from the University of Texas at Dallas with



86 children compared tympanometry with otoscopy for the diagnosis of otitis media, compared against the criterion standard of myringotomy. Tympanometry performed by a certified audiologist had a likelihood ratio of 8.14, and pneumatic otoscopy, when results were positive, yielded a likelihood ratio of 2.21.¹

Diagnostic confirmation

Myringotomy is rarely performed and should be undertaken by otolaryngologists only in cases in which it will change the outcome. 

Dr Ponka is Associate Professor in the Department of Family Medicine at the University of Ottawa in Ontario. **Dr Baddar** is a staff hospitalist at Pembroke Regional Hospital and a community preceptor in the Department of Family Medicine at the University of Ottawa.

Reference

1. Finitzo T, Friel-Patti S, Chinn K, Brown O. Tympanometry and otoscopy prior to myringotomy issues in diagnosis of otitis media. *Int J Pediatr Otorhi* 1992;24(2):101-10.



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