

ENT SAQ

By: 430 ENT team

Ear lectures+ Deafness +Audiology

Done by: Ayan Hussain

❖Note: please refer to the original lecture given by the doctor

❖These pictures are not EDITED!!!



Ear, Nose & Throat

The pictures were sorted by:
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-Rawabi Saleh Al-Ghamdi
-Hessah Hamad Al-Ammar



Fig. 2.6a, b Gross microtia with a bone-anchored prosthesis and hearing aid. If microtia is gross, a prosthesis rather than reconstruction is to be considered. Prosthetic ears (**b**) have improved greatly in recent years. It is possible for these to be attached to the cranium using screws and plates (*osseo-integrated implants*, see Fig. 1.23) with a bone-anchored hearing aid.

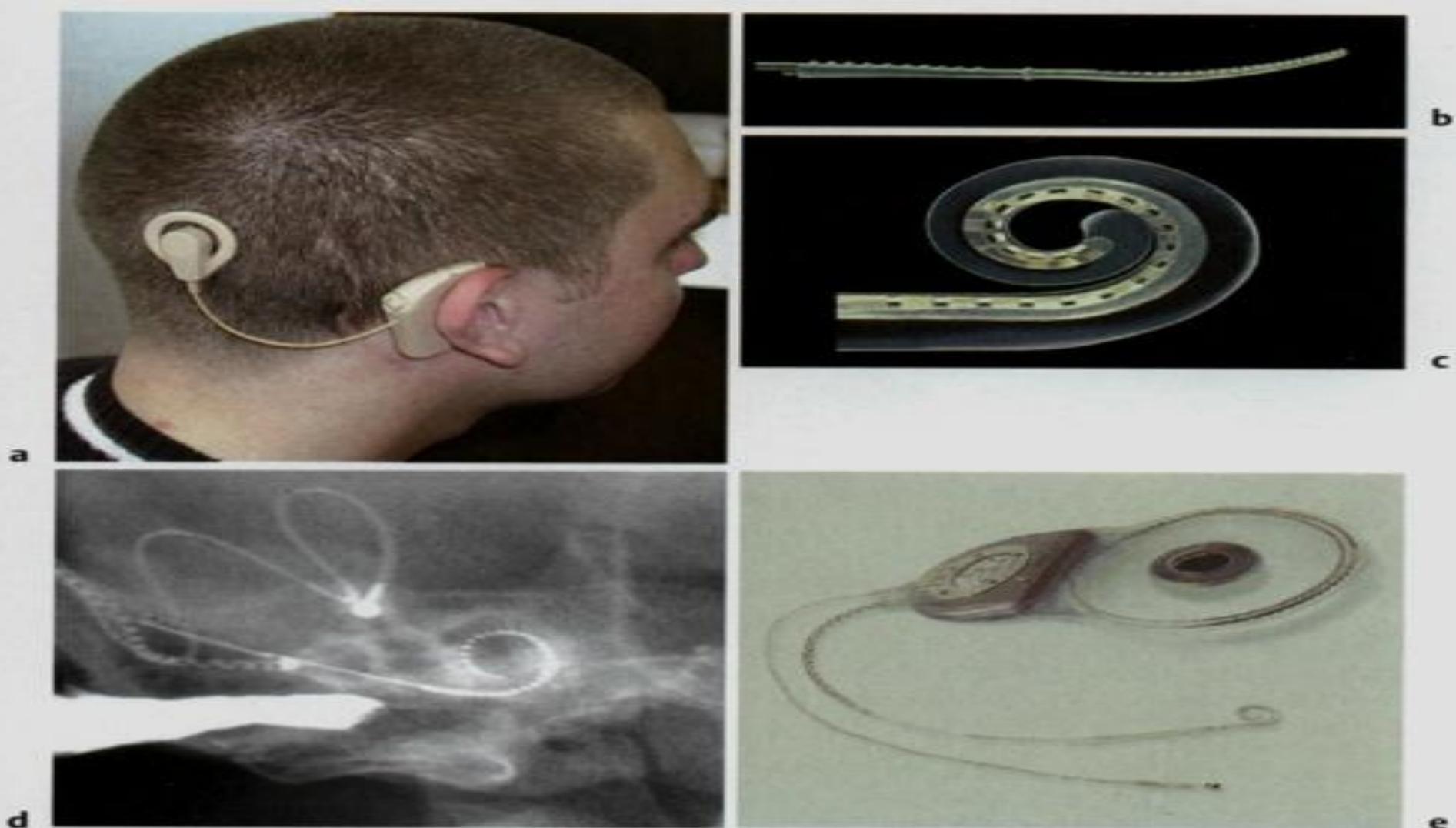


Fig. 1.24 The cochlear implant has proved a great advance in the management of profound hearing loss in children and adults, where conventional aids are ineffective to restore hearing. An ear-level microphone is fitted like a hearing aid. Sound is converted to electric signals to a processor and transmitted to electrodes inserted into the cochlear (**a**). The nuclear contour electrode contains a stylette (**b**). When the stylette is removed, the coil forms a curl which conforms to the cochlear (**c**). The nuclear contour device contains 22 electro-terminals, which can be seen on the radiograph showing the implant in place in the inner ear (**d**). **e** This image shows the complete device with the electrode, reference electrodes, receiver core, and microchip packet.



Fig. 1.18 The Weber test. The tuning fork, when held in the mid-line on the forehead, is heard in the ear with the conductive hearing loss. This test is very sensitive, and if the meatus is occluded with the finger, the tuning fork will be heard in that ear. A conductive loss of as little as 5 dB will result in the Weber test being referred to that ear.

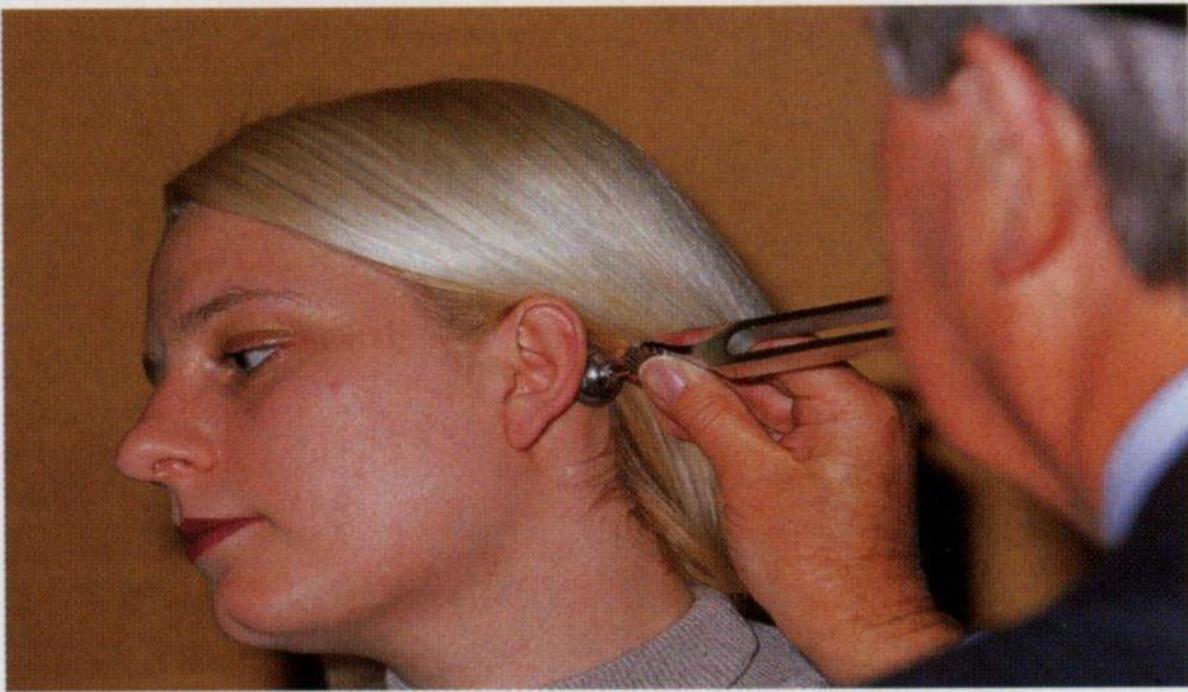
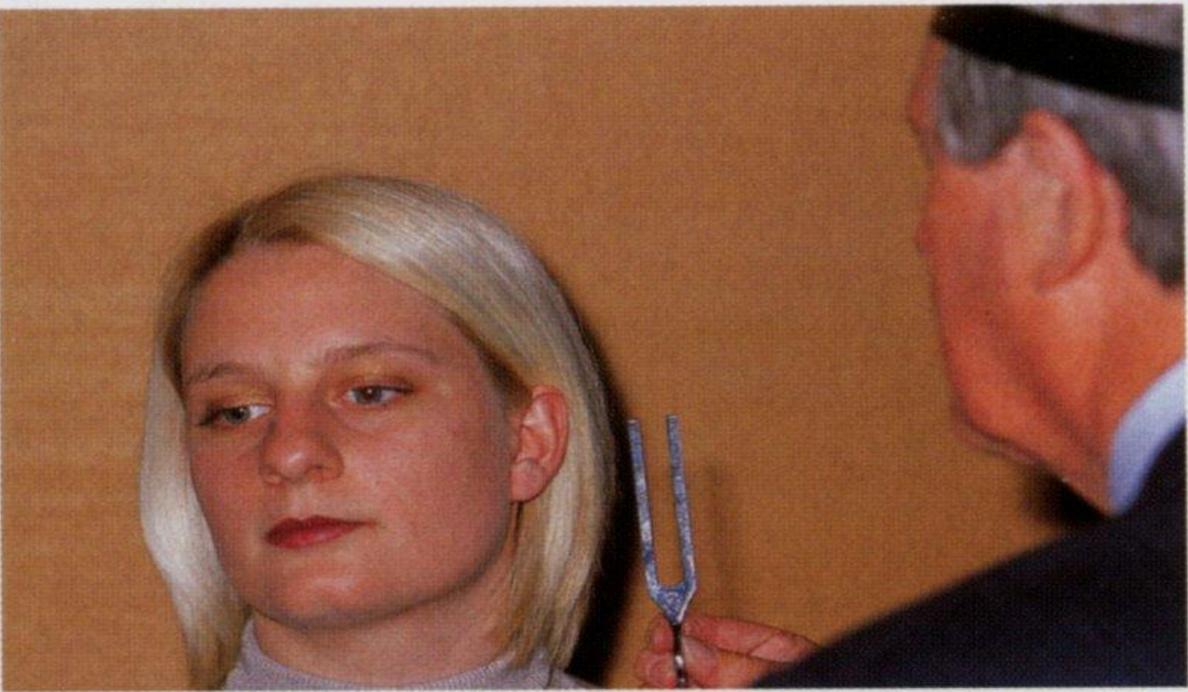


Fig. 1.17 The Rinne test. *Tuning fork tests are essential preliminary tests for the diagnosis of hearing loss.*

The Rinne and Weber tests enable the diagnosis of a conductive or sensorineural hearing loss to be made. If the tuning fork is heard louder on the mastoid process than in front of the ear, the Rinne test is negative, and the hearing loss conductive. If the tuning fork is heard better in front of the ear, the Rinne test is positive, and the hearing is either normal or there is sensorineural hearing loss.

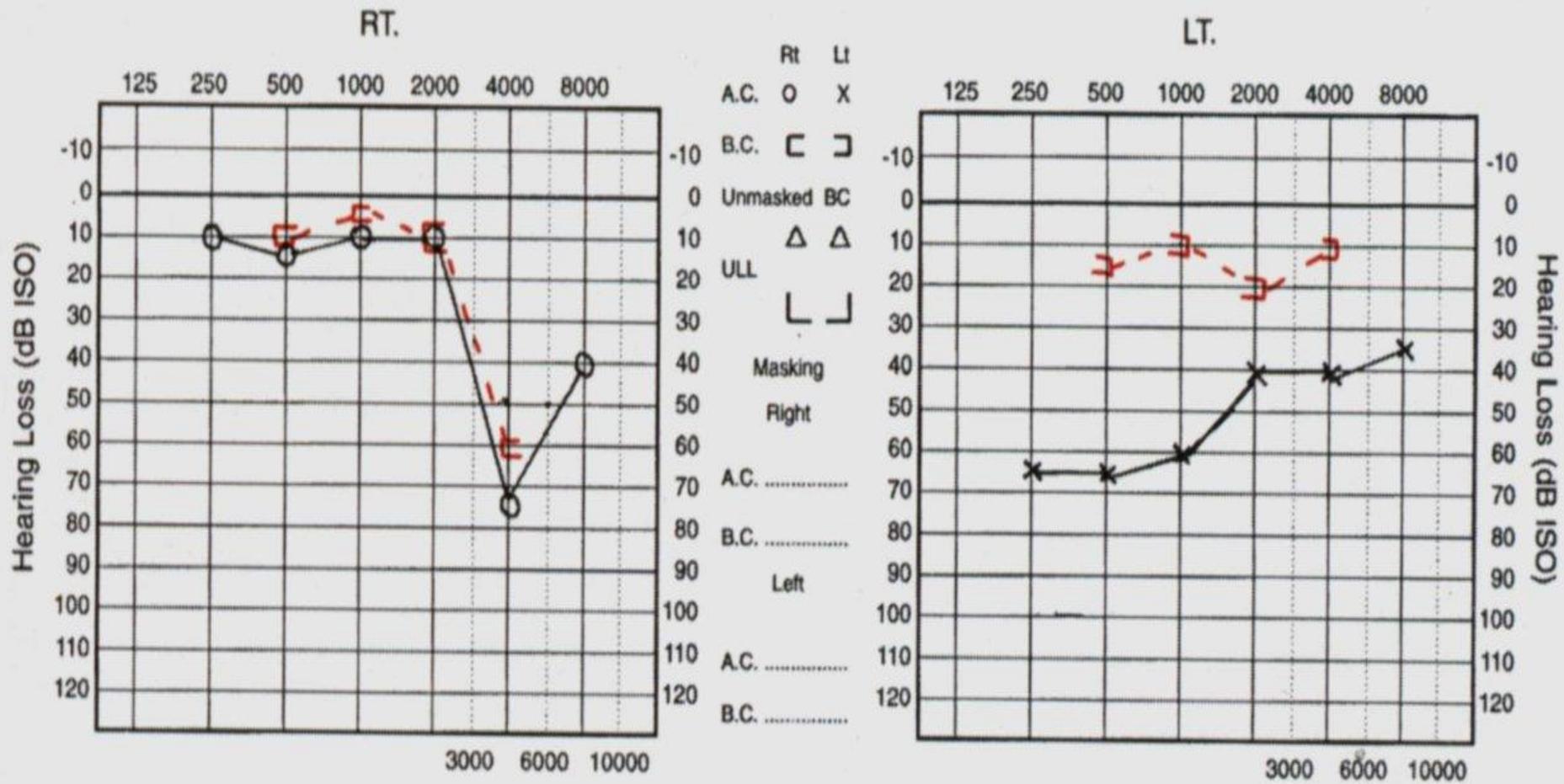


Fig. 1.28 **Audiogram.** The audiogram on the left shows a typical sensorineural hearing loss; a sharp dip at 4000 cps, as on this chart, is typical of inner ear damage due to **noise trauma**. A loss of high frequencies is commonly seen in hearing loss of old age (**presbycusis**). The audiogram on the right shows a conductive hearing loss with the sound heard better on the bone, typical of **otosclerosis** or **otitis media**.

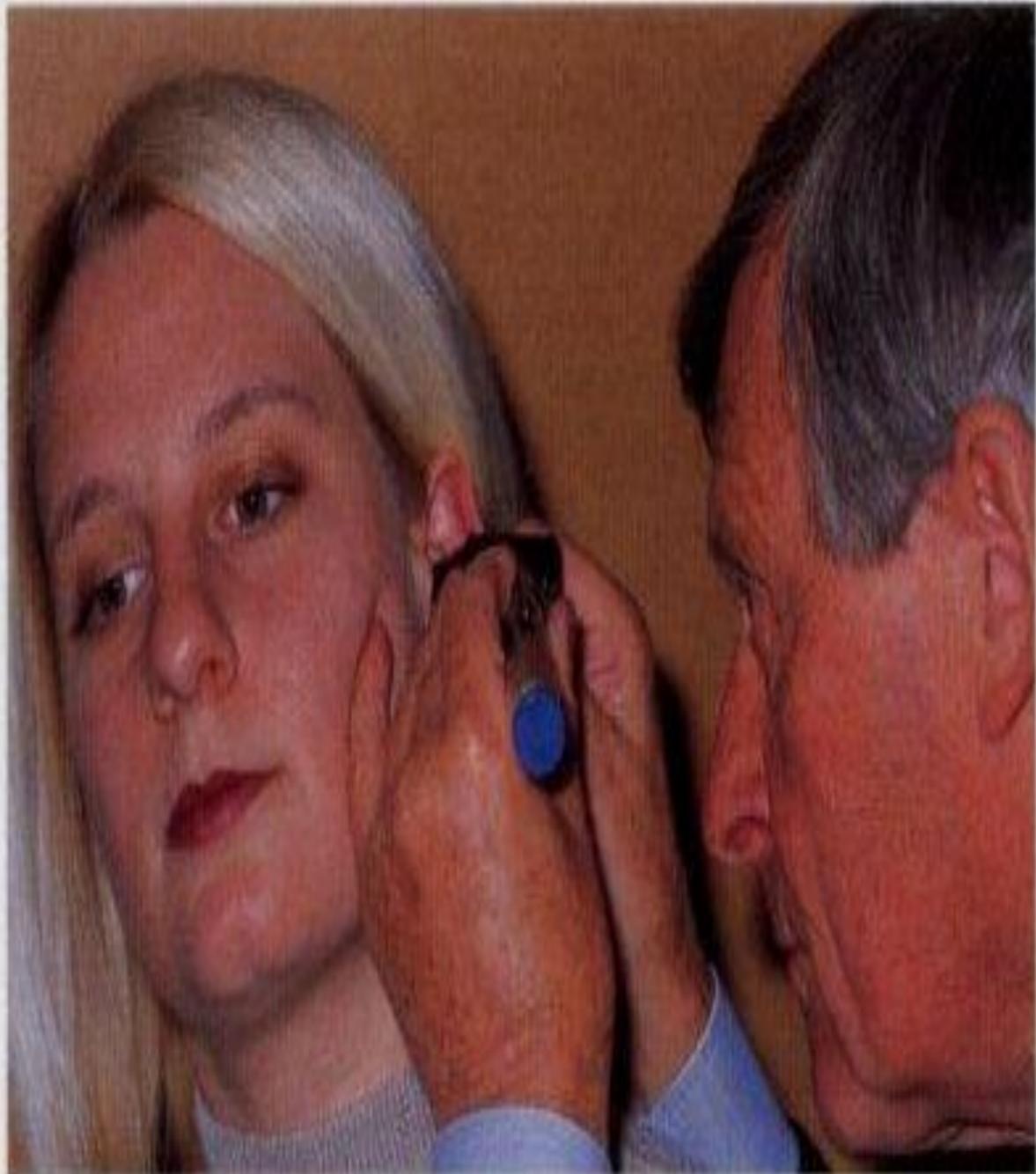
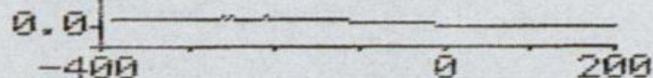


Fig. 1.6 **The auriscope.** This is *best held like a pen*. In this way, the examiner's little finger can rest on the patient's cheek; if the patient's head moves, the position of the ear speculum is maintained in the meatus.

TYMP: Sweep Right

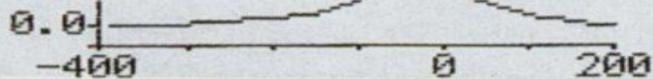
ECV: 0.64 ml 3.0 ml
MEP: N/A daP
SC: N/A ml
Grad: N/A 2.0
TW: N/A daP
Speed: 400 dP/S 1.0
Dir: Nes



Flat tracing of middle-ear fluid.

TYMP: Sweep Right

ECV: 1.35 ml 3.0 ml
MEP: -30 daP
SC: 0.65 ml
Grad: 0.47 2.0
TW: 111 daP
Speed: 400 dP/S 1.0
Dir: Nes



Normal tracing.

Fig. 1.31 Impedance measurements are particularly helpful in the differential diagnosis of conductive and sensorineural hearing losses, as they give information about middle-ear pressure, eustachian tube function, middle-ear reflexes, and the level of a lower motor neuron facial nerve palsy. **Impedance testing is**

widely used to confirm the presence of middle-ear fluid, and the "flat" tracing is characteristic. A "glue ear" may be diagnosed in babies and younger children using impedance measurements when the cooperation required for a pure-tone audiogram is not possible.



Fig. 2.50 Osteomas. White, bony, hard swellings in the deep meatus are a common finding during routine examination. They usually remain small and symptom free, and tend to be symmetrical in both ears.

Swimmers are susceptible to these lesions, which are sometimes called "**swimmer's osteomas.**" There is experimental evidence to show that irrigation of the bony meatus with cold water produces a periostitis that leads to osteoma formation. Histologically, these bony lesions are hyperostosis, rather than a bony tumor, so that the term "osteoma," although established, is not strictly correct.

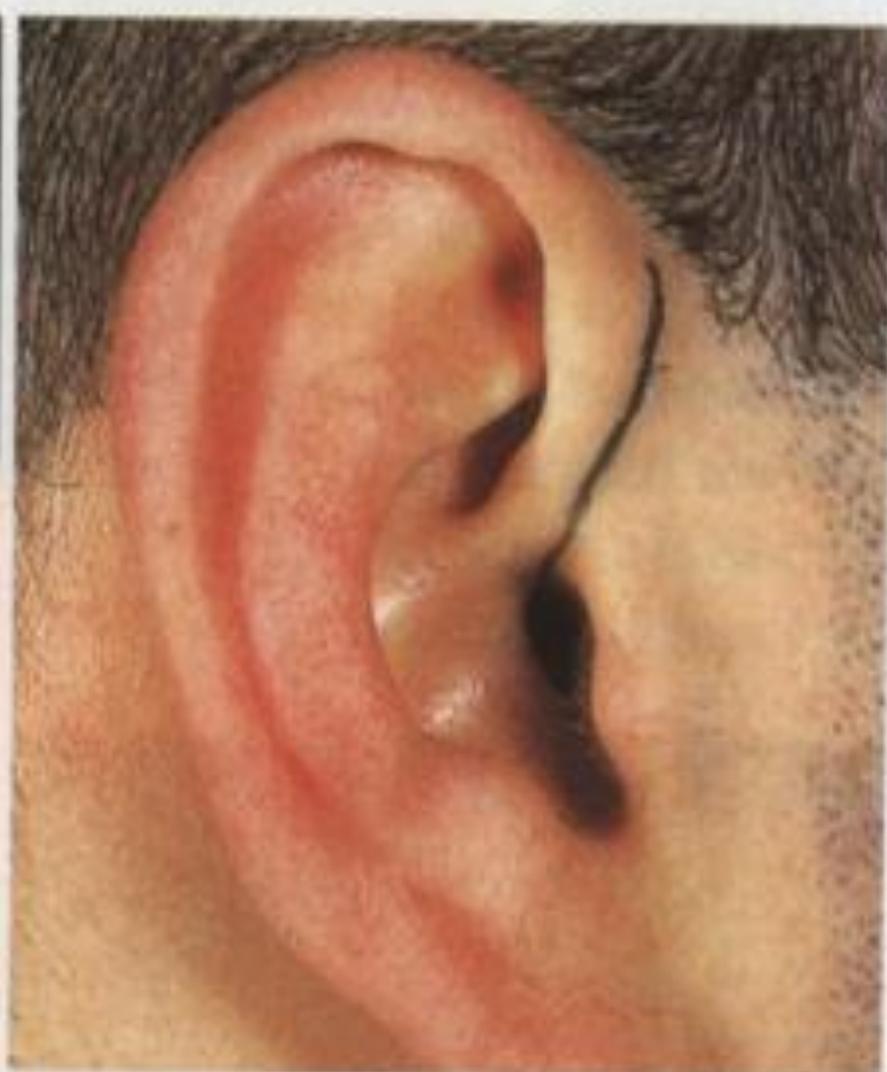
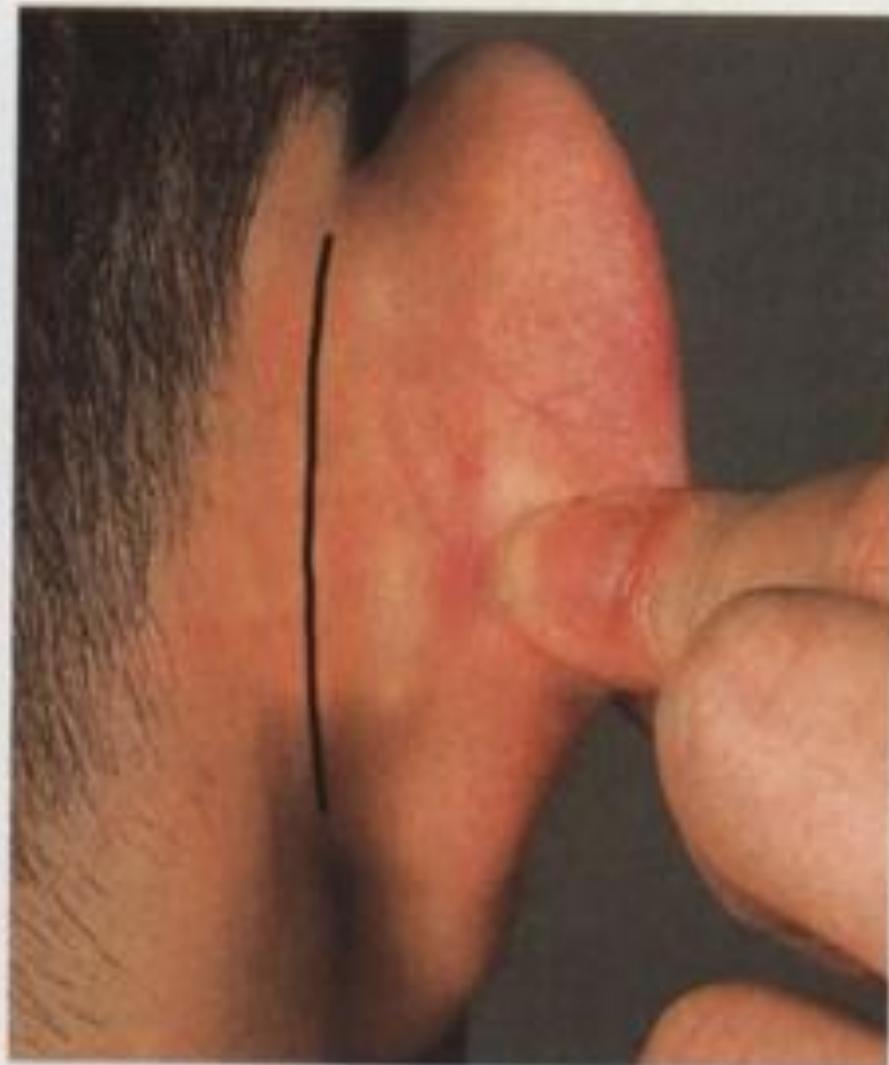


Fig. 2.71a, b Postaural and endaural incisions. These are two commonly used incisions for access to the middle ear and mastoid. The postaural incision (**a**) is preferred if extensive mastoid exenteration is planned. The incision lines are delineated here, but in these sites the scars are imperceptible.

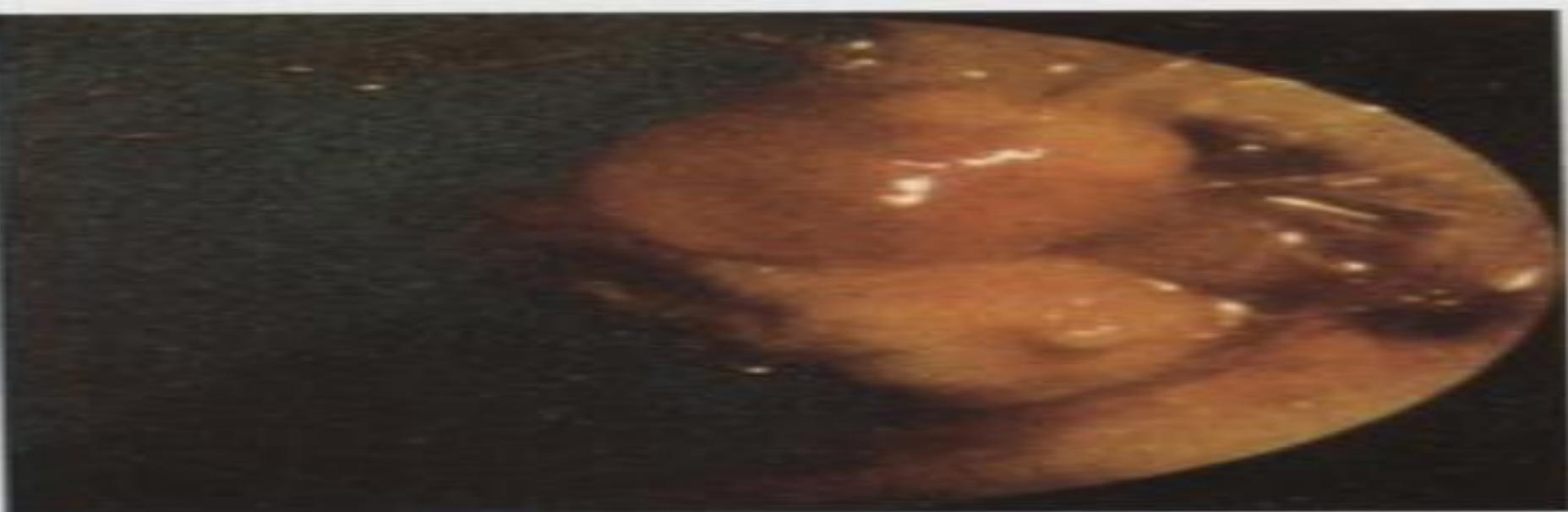


Fig. 2.46 "Malignant" otitis externa is a rare and serious form of otitis externa to which elderly diabetics are particularly susceptible. Granulation tissue is found in the meatus infected with *Pseudomonas* and anaerobic organisms. This granulation tissue tends to erode deeply, involving the middle and inner ear, the bone of the skull base with extension to the brain, and also the great vessels of the neck. If uncontrolled, the condition may be fatal.

Intense antibiotic therapy sometimes associated with surgical drainage of the affected areas is necessary. It is not a "malignant" condition in the histological sense, for the biopsies of granulation tissue show inflammatory changes only. "Necrotizing" otitis externa may be more accurate, but "malignant" indicates the serious clinical nature.



Fig. 2.44 Chronic otitis externa persisting for years may eventually lead to meatal stenosis and rarely to closure of the ear canal.



Fig. 2.43 Furunculosis. This is a generalized infection of the meatal skin. Pain is severe and the canal is narrowed or occluded so that examination with the auriscope is extremely painful and no view of the deep meatus is possible. A swab of the pus should be taken, and treatment is with systemic antibiotics and a meatal dressing (e.g., glycerine and ichthyol, or a corticosteroid cream with an antibiotic).

The organism may be transferred by the patient's finger from the nasal vestibules, and a nasal swab is a relevant investigation, particularly with recurrent furuncles. The lymph nodes adjacent to the pinna are enlarged with a furuncle or furunculosis, and a tender mastoid node may mimic a cortical mastoid abscess.



Fig. 2.41 Eczematous otitis externa. Eardrop sensitivity may worsen an otitis externa. Chloramphenicol drops caused this condition. Neomycin less commonly causes similar reactions. ***Patients should be advised to discontinue eardrops that cause an increase in irritation or that are painful.***



Fig. 2.9 Preauricular sinus excision. A furuncle or skin inflammation, which may be quite extensive in this preauricular site, is invariably related to a preauricular sinus. Careful examination for the sinus must be made. Excision when the infection is quiescent is necessary and this, although minor surgery, is not easy.

A long-branched and lobular structure must be excised. Incomplete excision of the tract leads to further infection and the need for revision surgery. To ensure complete excision of the preauricular sinus, the extension of an endaural incision as shown is needed, with reflection of the skin anteriorly down to the temporal facia. If the sac is injected with a dye it is better defined, and it is possible to be certain of complete excision. The sac is dissected from its deep aspect towards the sinus puncture, which is excised with an ellipse of skin.



Fig. 2.42 A **furuncle** in the meatus is the other common type of otitis externa. It is characterized by pain; pain on movement of the pinna or on inserting the auriscope is diagnostic of a furuncle. ***Diabetes mellitus*** must be excluded with recurrent furuncles.



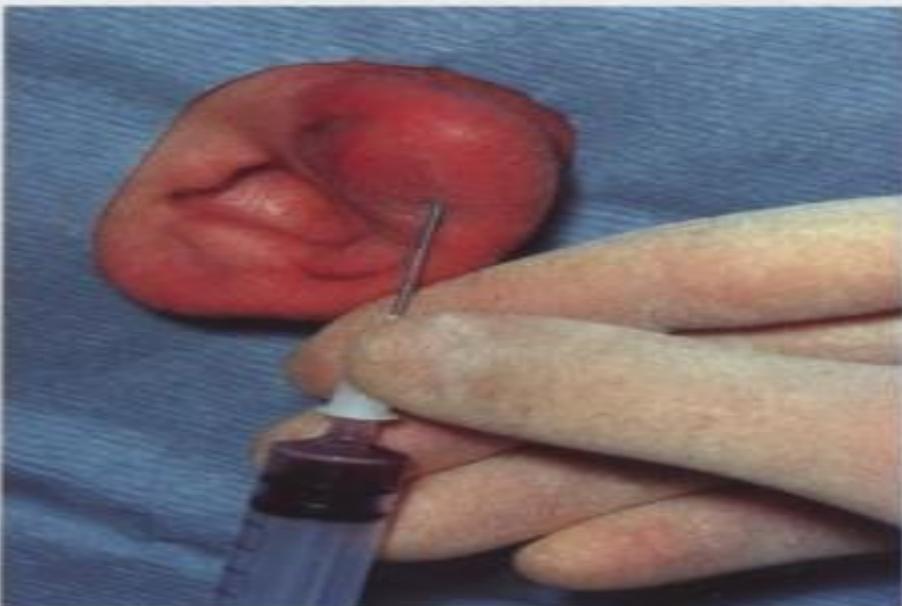
Fig. 2.24 Collapse of the pinna cartilage following perichondritis. This happened prior to the availability of effective antibiotics. However, perichondritis is still a worrying complication which requires intensive antibiotic treatment. Collapsing or alteration of the shape of the pinna cartilage may also occur in relapsing polycondritis.



Fig. 2.21 A sebaceous cyst near the site of an earring puncture. The punctum is just apparent and is diagnostic. Sebaceous cysts are common behind the ear, particularly in the postaural sulcus.



Fig. 2.22 Hematomas of the pinna following trauma. Bruising with minimal swelling settles (a). A hematoma or collection of serous fluid, however, is common, and these, particularly if recurrent from frequent injury and left untreated, will result in a "cauliflower ear." The fluid, if aspirated with a syringe (b, c), usually recurs, and incision and drainage may be necessary. Some thickening, however, of the underlying cartilage invariably takes place, and a return to a completely normal-shaped pinna is not usual.



b



Fig. 2.8 An infected preauricular sinus. A furuncle or skin ulceration in this site is diagnostic of an underlying infected preauricular sinus. Quite extensive skin loss can occur in this site with recurrent infection of a preauricular sinus. The variation in the appearance of an infected preauricular sinus is striking—but the site in the preauricular region is constant.



Fig. 2.7 **Preauricular sinuses**, which are closely related to the anterior crus of the helix, cause many problems. Discharge with recurrent swelling and inflammation may occur. The ***small opening of the sinus*** (arrow) ***is easily missed on examination***, particularly when it is concealed, as may rarely be the case, behind the fold of the helix, rather than in the more obvious anterior site.

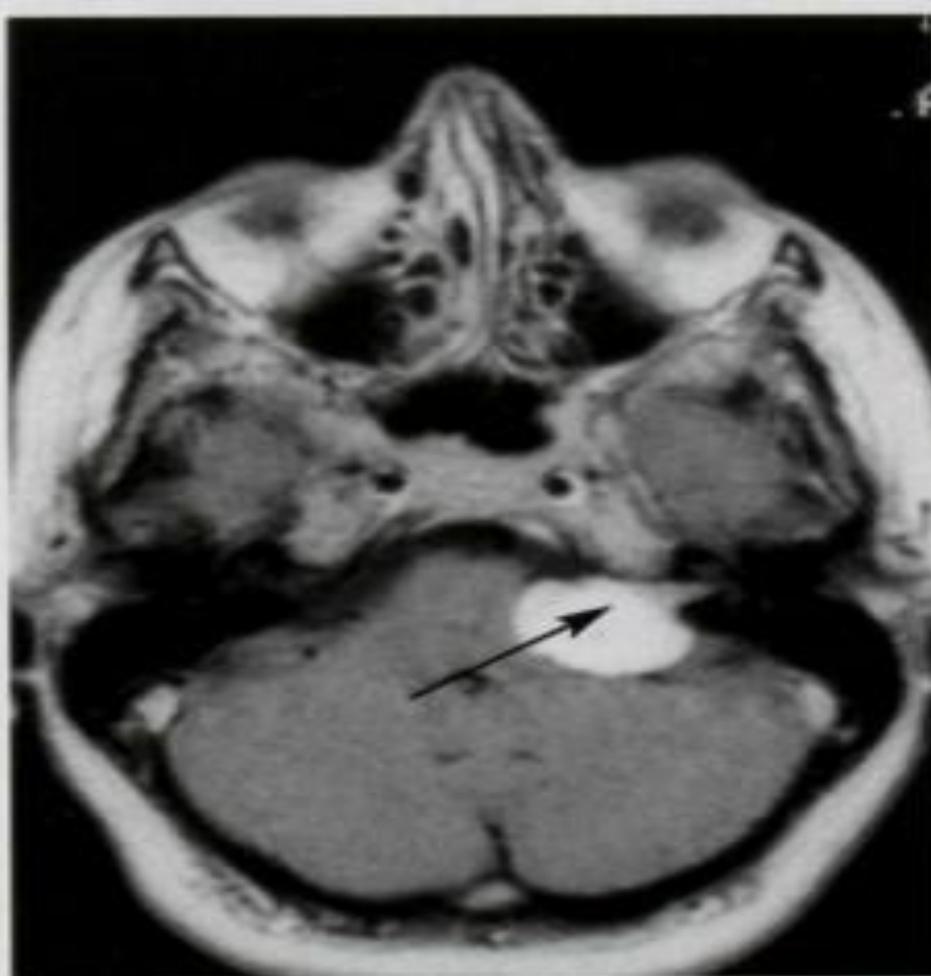


Fig. 1.25 Acoustic neuroma. The most common early presentation of an acoustic neuroma is a unilateral sensorineural hearing loss. An MRI scan is an essential investigation to exclude this tumor in all cases of unilateral sensorineural hearing loss unless there is a certain other cause, e.g., trauma, mumps, meningitis. There is now a ►



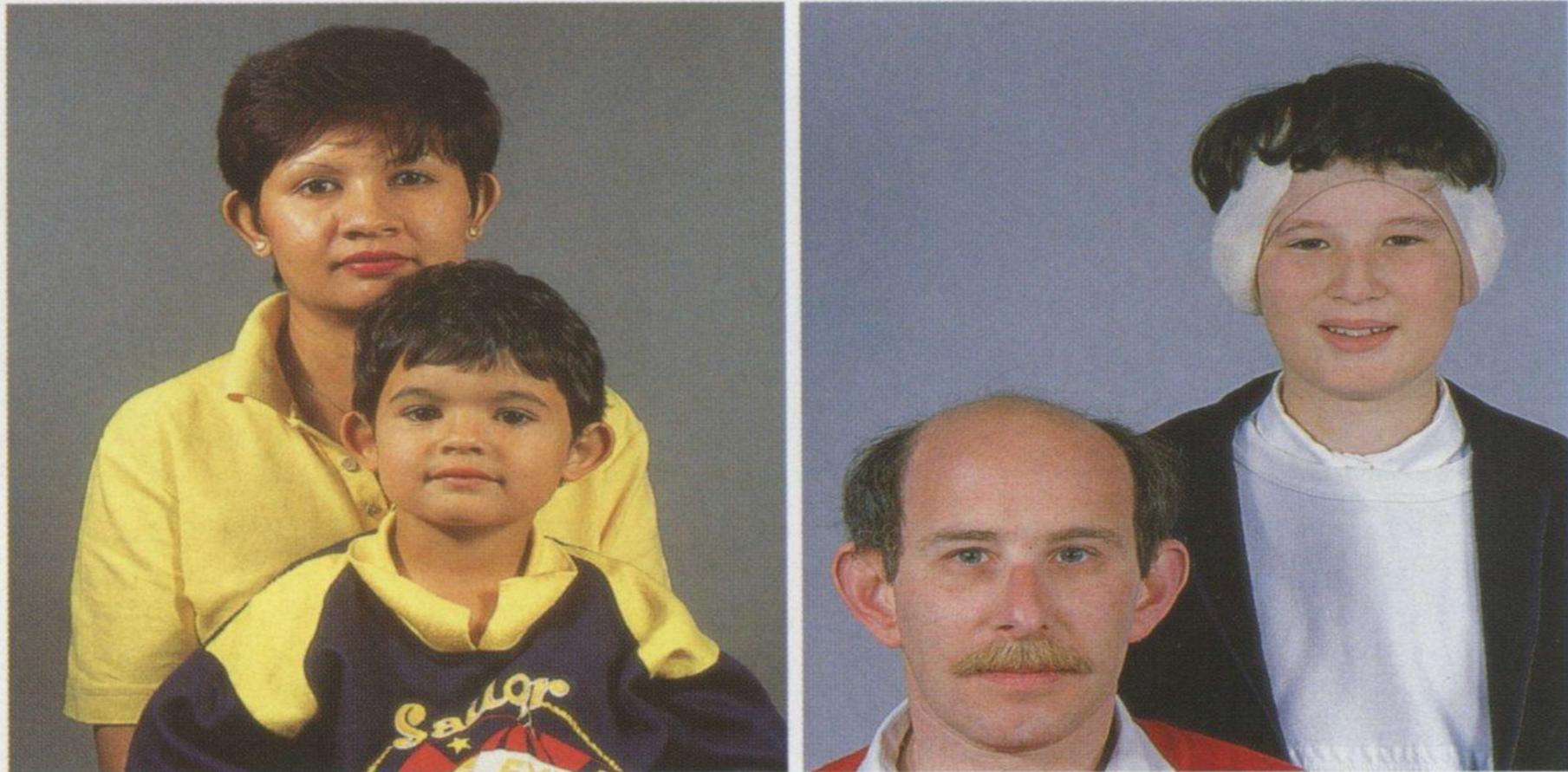
Fig. 1.26 The MRI and CT scan are two important radiograph innovations developed in Great Britain. The MRI scan gives the diagnosis of acoustic neuroma (arrows).

marked awareness that sensorineural loss, particularly if unilateral and even if minimal, requires investigation to exclude an acoustic neuroma.



Fig. 2.23 Perichondritis. A painful red, tender, and swollen pinna accompanied by fever, following trauma or surgery, suggests an infection of the cartilage. The organism is frequently *Pseudomonas pyocyanea*.

Prominent ears are best corrected between the ages of four and six years at the beginning of school. There is, however, no additional surgical problem in correcting adult ears. Youngsters may be the subject of considerable ridicule in early years because of bat ears and, therefore, surgical correction is not to be deferred.



a

Fig. 2.12 **Bat ears** are often familial (a).

The son (b) has the firm ear dressing required for five to ten days after operation for prominent ears.



Fig. 2.25 Relapsing polychondritis.

This is a rare inflammatory condition involving destruction and replacement with fibrous tissue of body cartilage. The elastic aural cartilage is replaced by fibrous tissue so that the ear has an unusual "felty" feel and does not have any "spring" on palpation.

The larynx cartilage also may be affected, causing hoarseness which may proceed to stridor. The nasal septum may collapse with a nasal saddle deformity (Figs. 3.23a-d). One or more of the lower limb joints are usually swollen and painful.

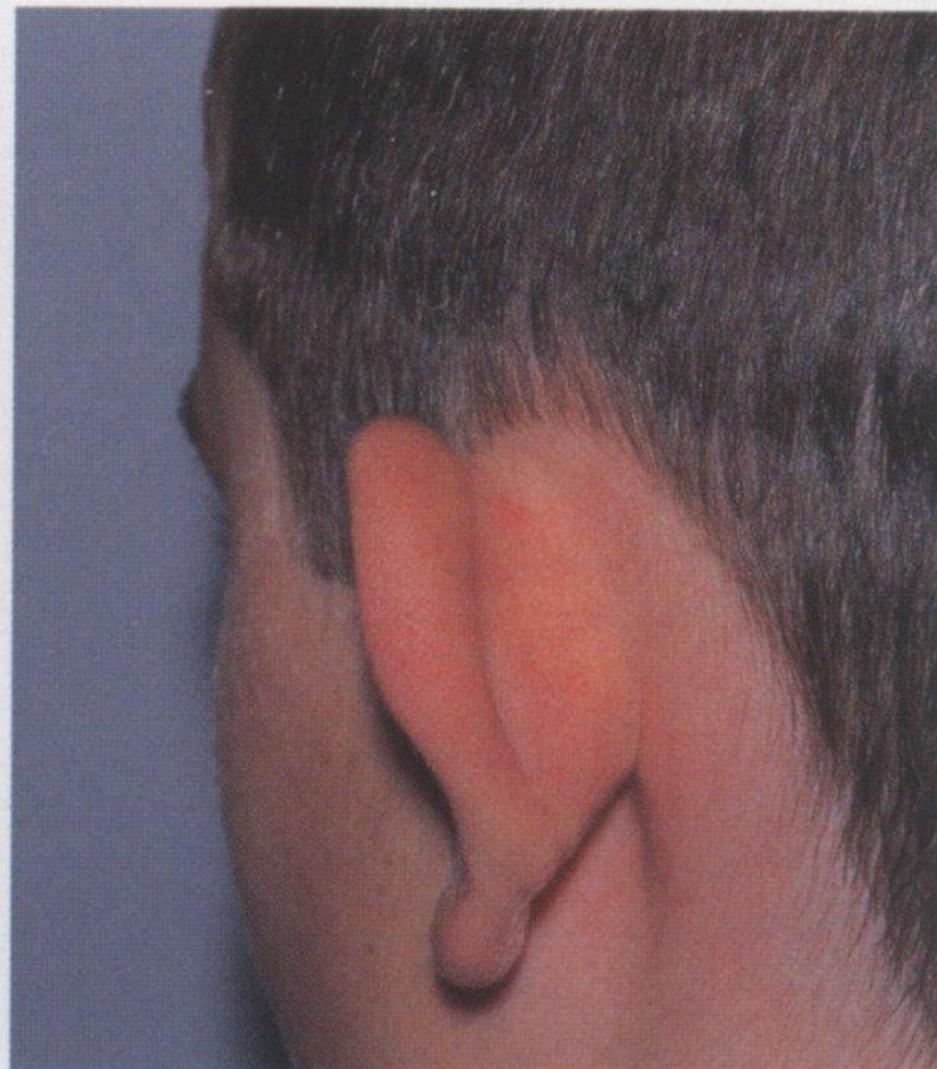


Fig. 2.10 Prominent ears. The fold of the antihelix is either absent or poorly formed in a prominent ear; it is not simply that the angle between the posterior surface of the conchal cartilage and the cranium is more “open.” Parents and child may be offended by the diagnosis of “bat or lop” ears, although these terms are commonly used.

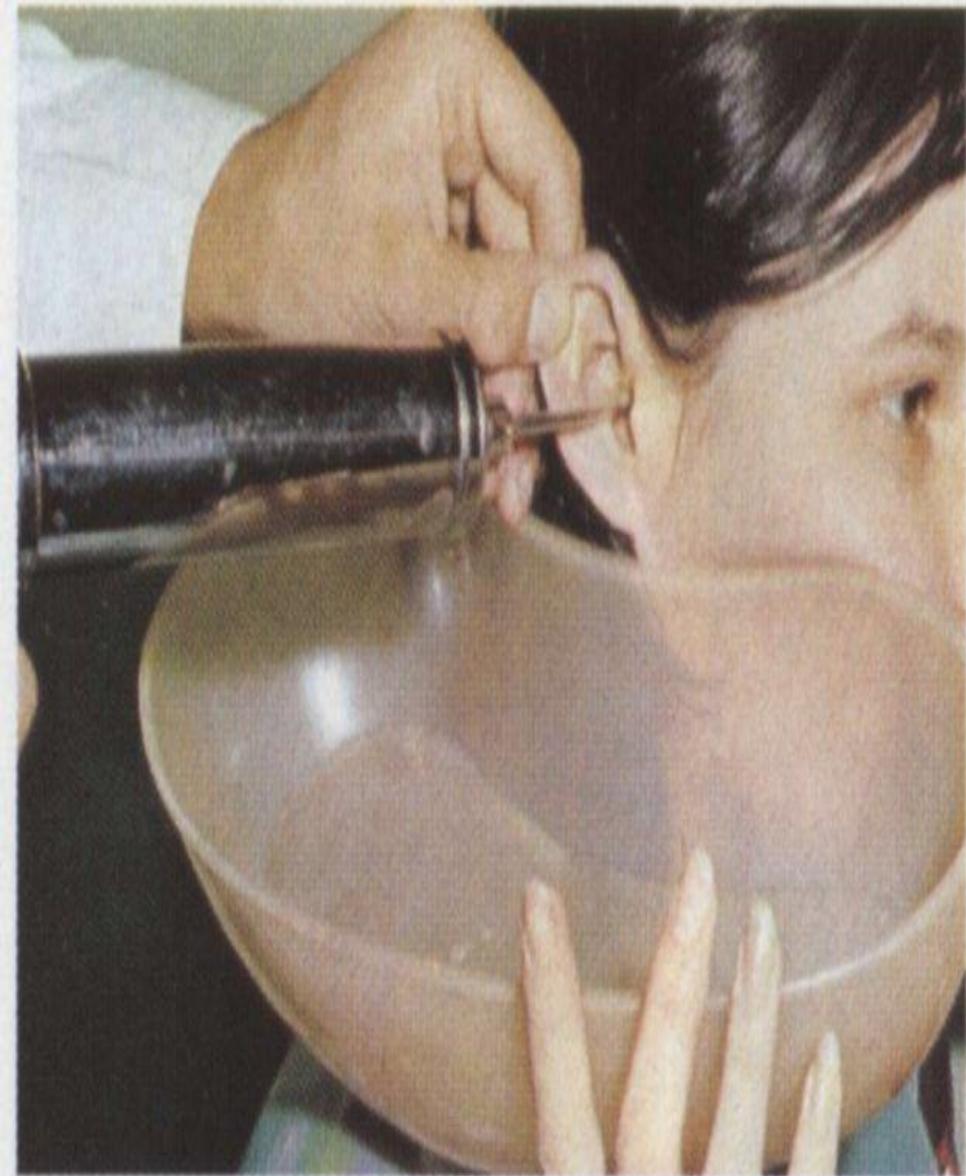
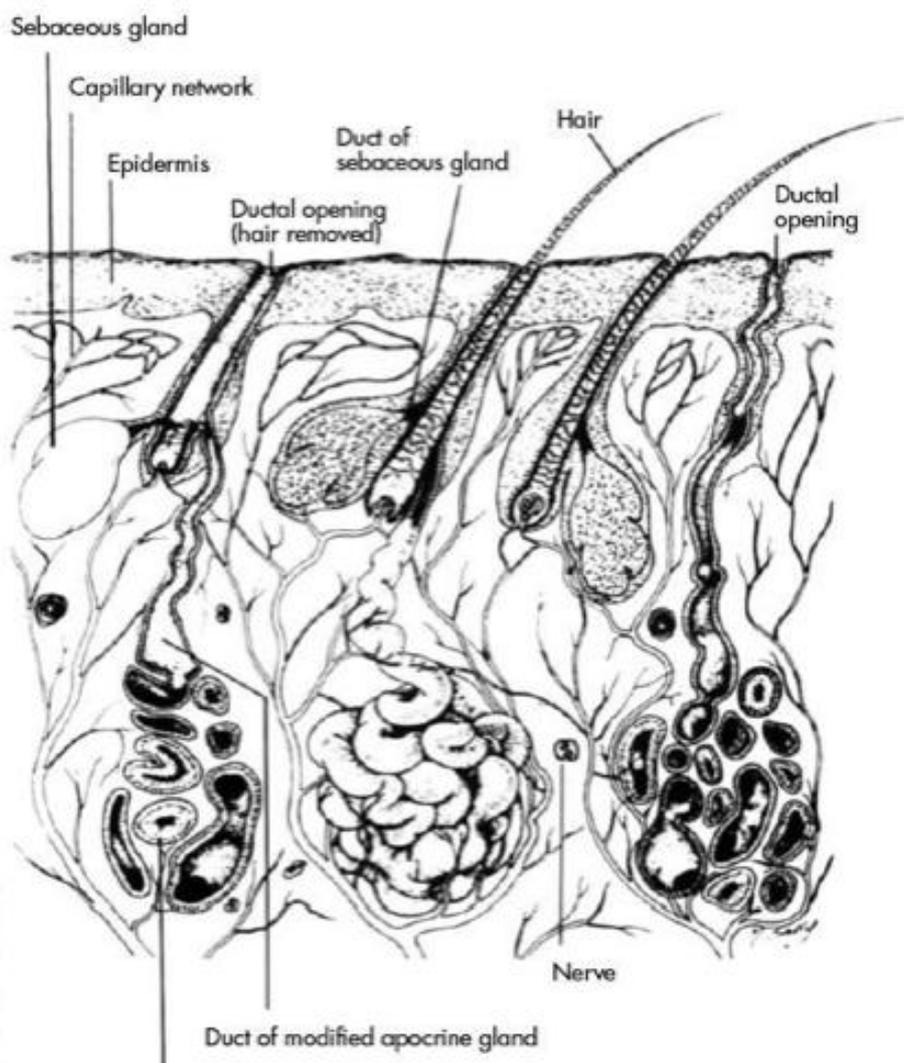


Fig. 2.36 Syringing. The rather large syringe of old-fashioned appearance has changed little in the past 100 years, and remains a simple and effective treatment for wax impaction. The pinna is pulled outwards and backwards to straighten the meatus, and water at body temperature is irrigated along the posterior wall of the ear. The water finds a passage past the wax, rebounds off the drum and pushes the wax outwards. Hard wax may require the use of softening oily drops before syringing.

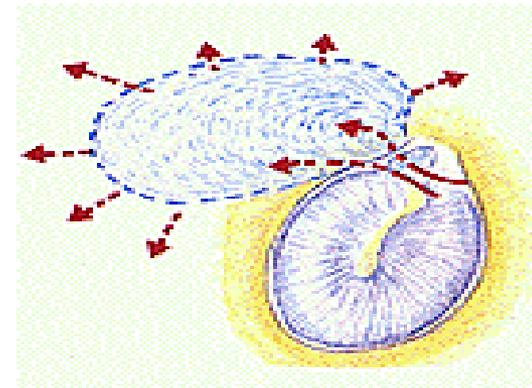
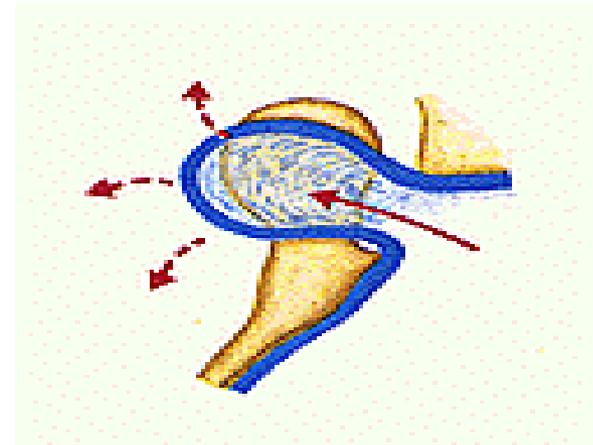
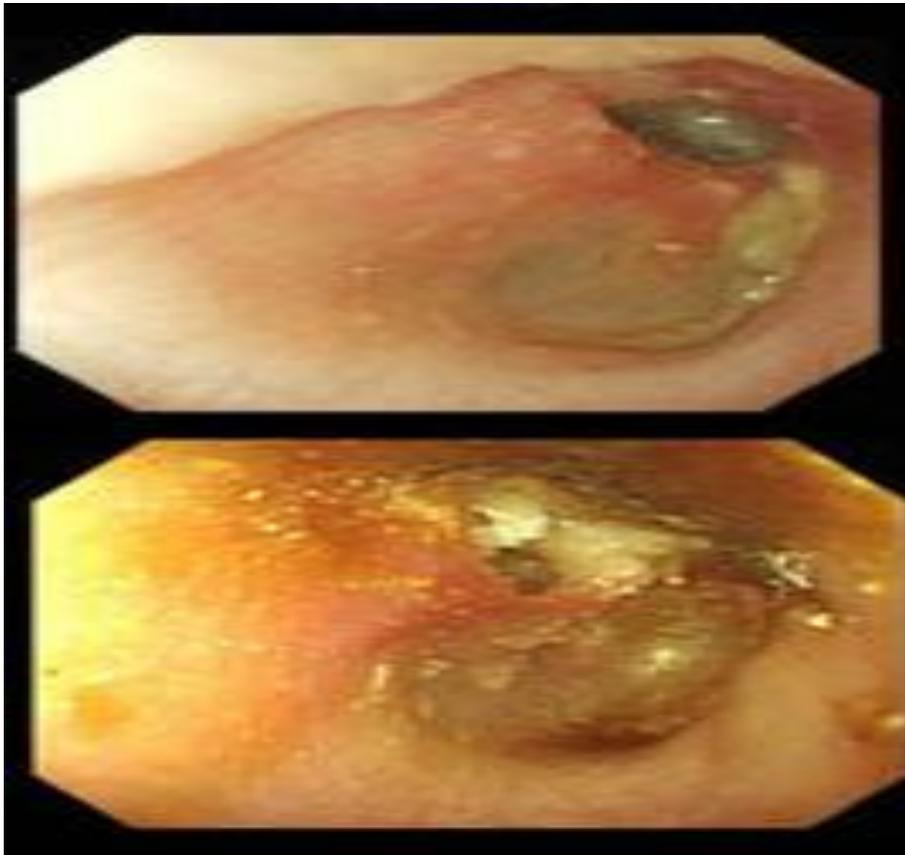




Wax
Amount + color may vary
from Patient to Patient

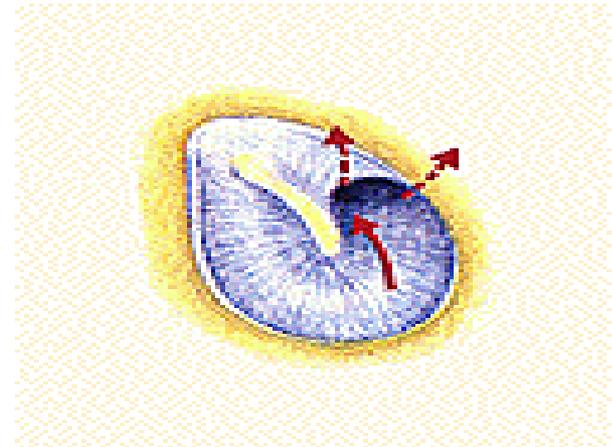
Skin of outer third of the external canal

Cholastatoma with attic perforation

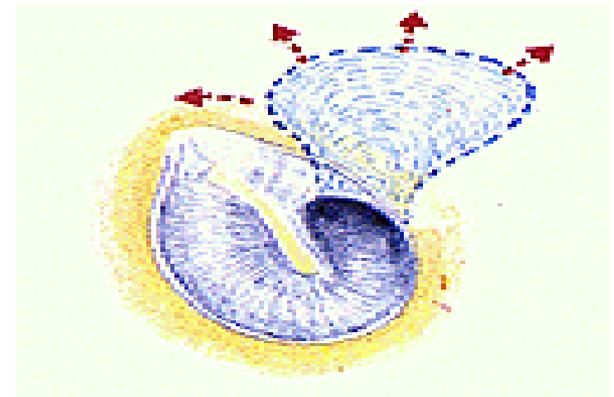




Retracted tympanic membrane •

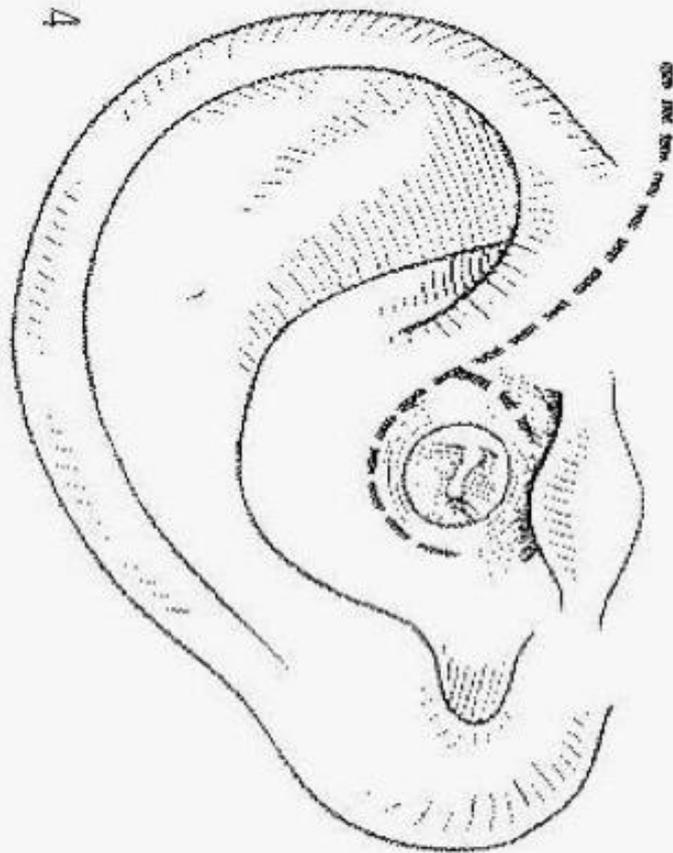


Central perforation



ATTIC PERFORATION





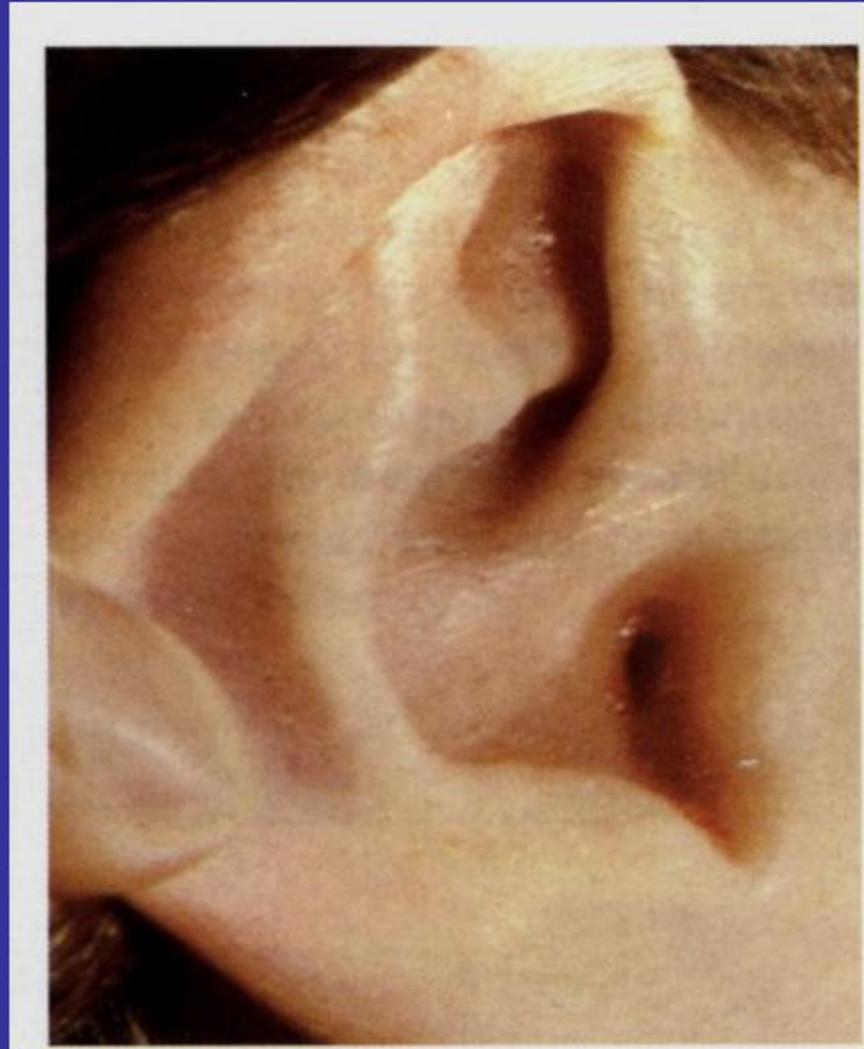
Postauricular incision for external and middle ear surgery

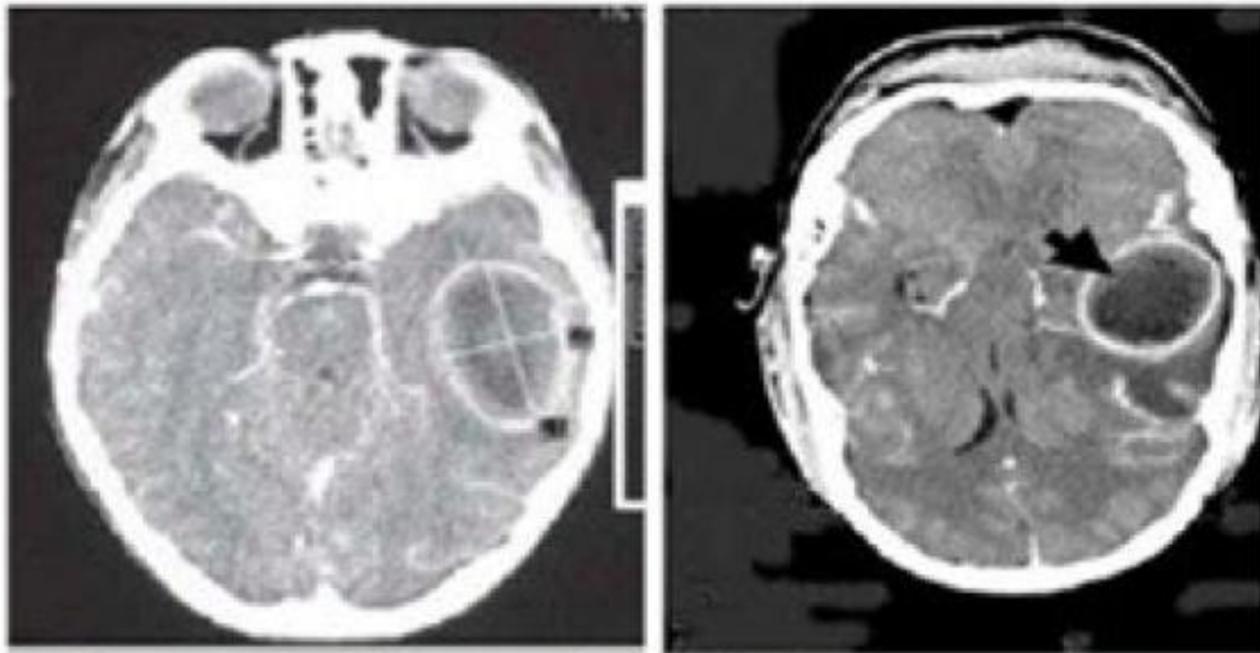


Postauricular incision for external and middle ear surgery , why ?

- 1- Less blood supply to that area**
- 2- The skin is looser in that area**

2.43 Chronic otitis externa (p. 67)





Cerebral Abscess

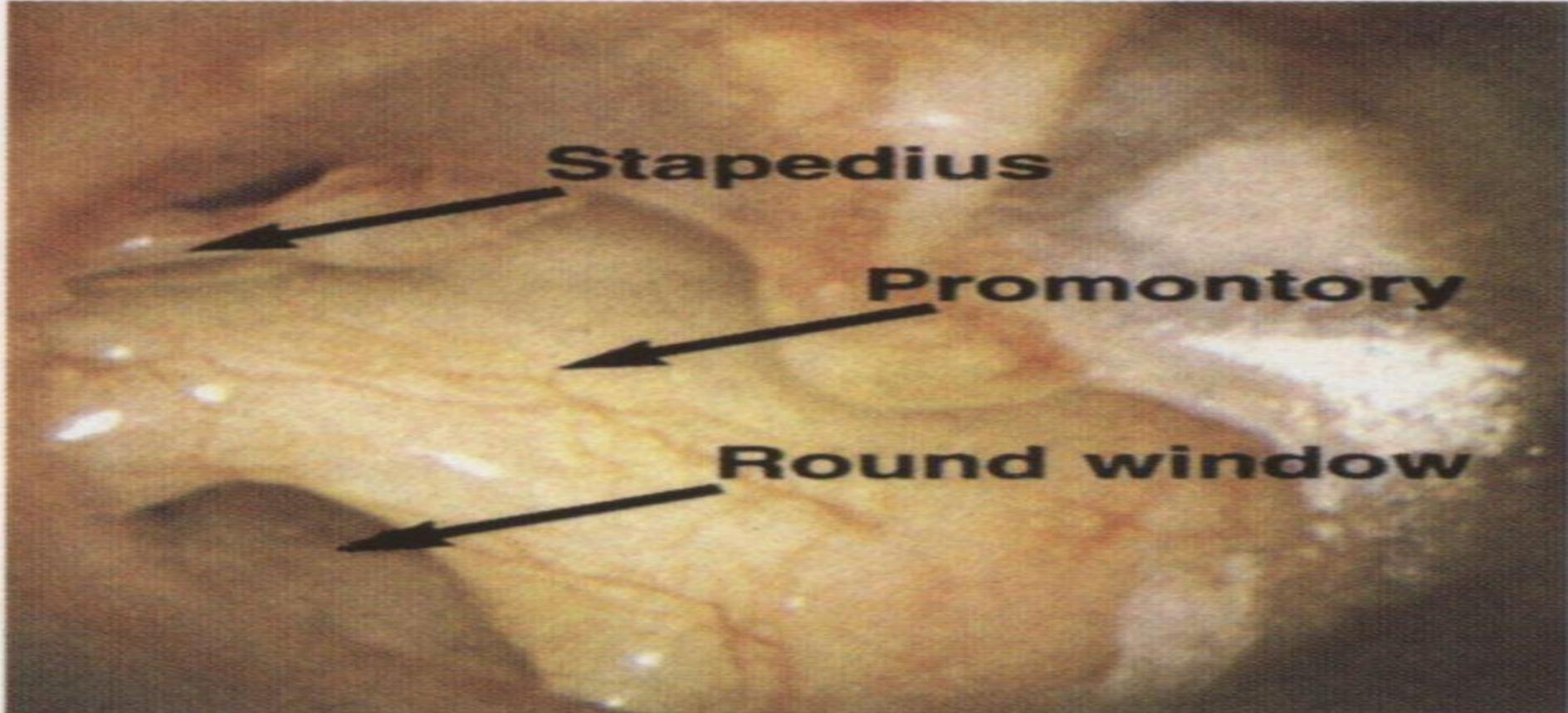


Fig. 2.59 Marginal perforation. A perforation may reach the annulus posteriorly and is called marginal. The middle-ear structures are frequently seen through the perforation.

The well-defined margin of the round window is particularly obvious, and the promontory, incudostapedial joint, and stapedius are also apparent.

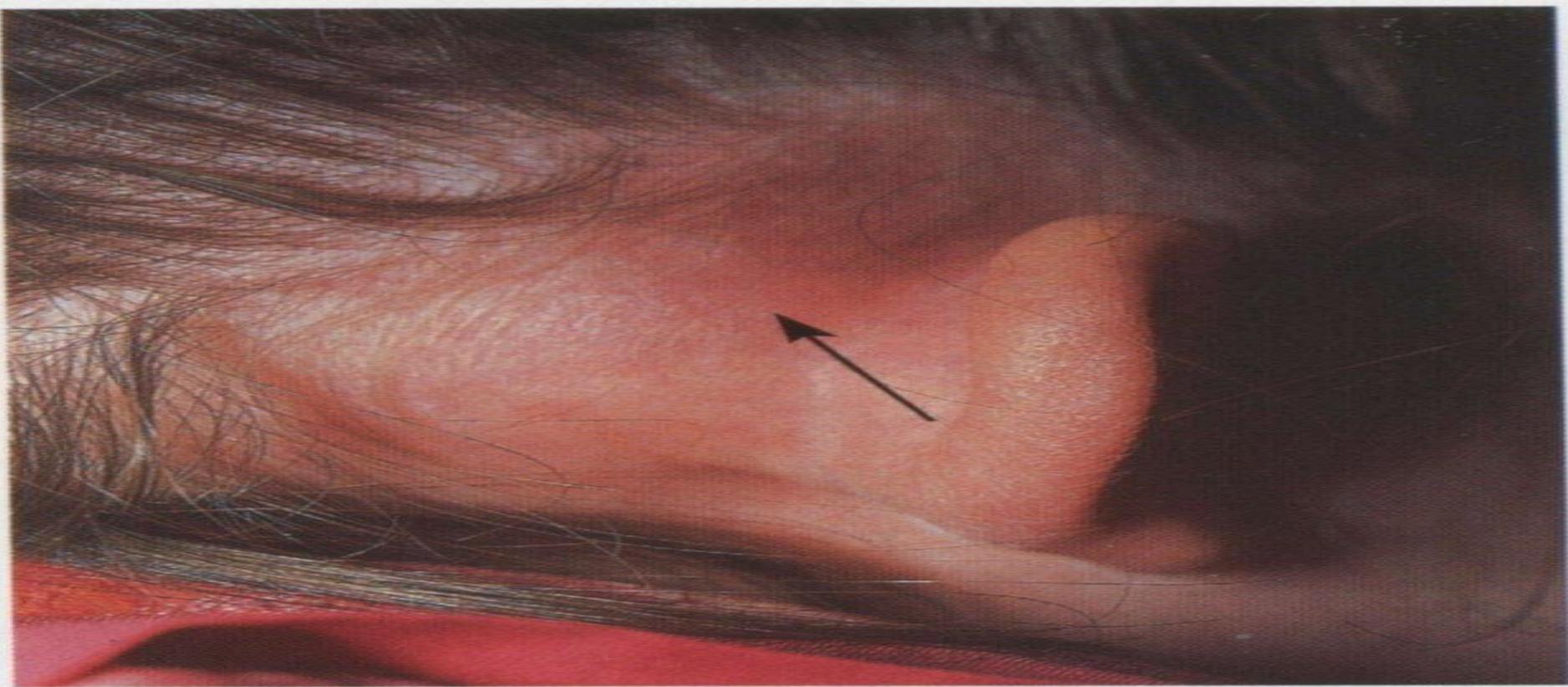


Fig. 2.68 Mastoid abscess. A red, acutely tender swelling filling the postauricular sulcus (arrow), and pushing the pinna conspicuously forwards and outwards, is characteristic of a mastoid abscess.

In the past, mastoidectomy was needed for an acute mastoid abscess complicating acute otitis media. This was extremely common in the preantibiotic era, and required exenteration of the mastoid air cells (**cortical mastoidectomy**). The operation is now rarely performed in countries where antibiotics are available.



a

Fig. 2.72 Otitis media with effusion with minimal drum change. The drum may look only slightly different, with a brown color and some hyperemia. A confident diagnosis of middle-ear fluid can only be made if reduced mobility is demonstrated and impedance audiometry (Figs. 1.30, 1.31) is needed for confirmation.

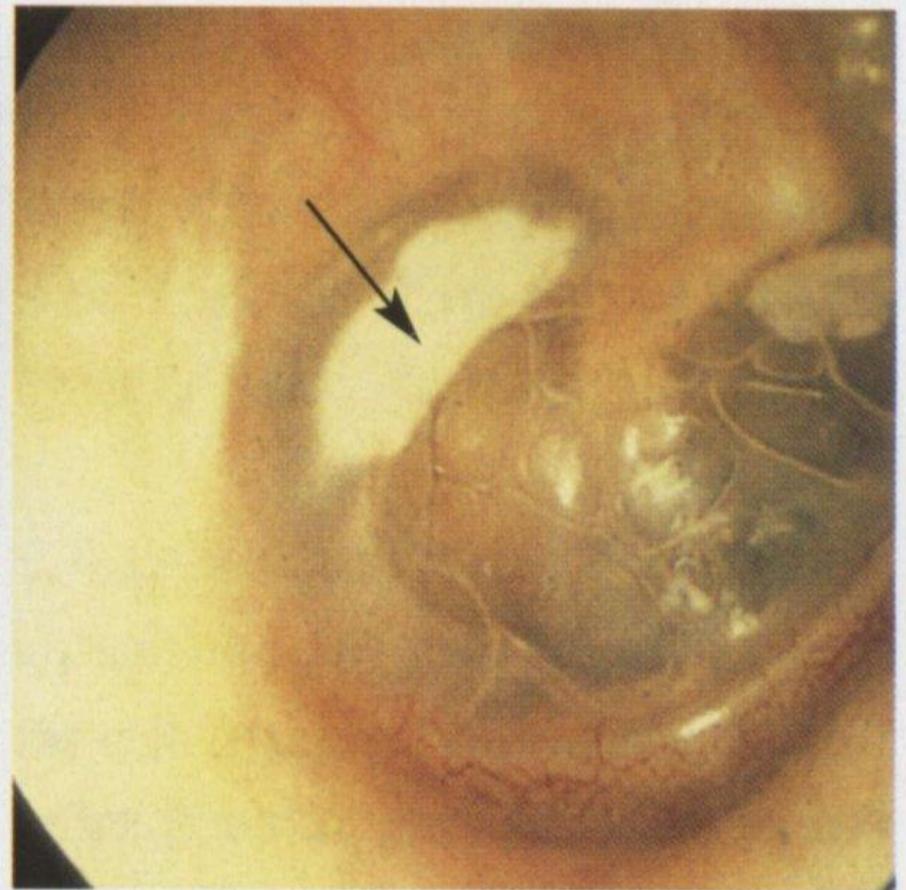


Fig. 2.73 Otitis media with effusion (“glue ear”). **a** The color change in this condition is often diagnostic, as well as the reduced mobility. The golden-brown color showing through the translucent drum is readily apparent in the inferior part of the tympanic membrane.

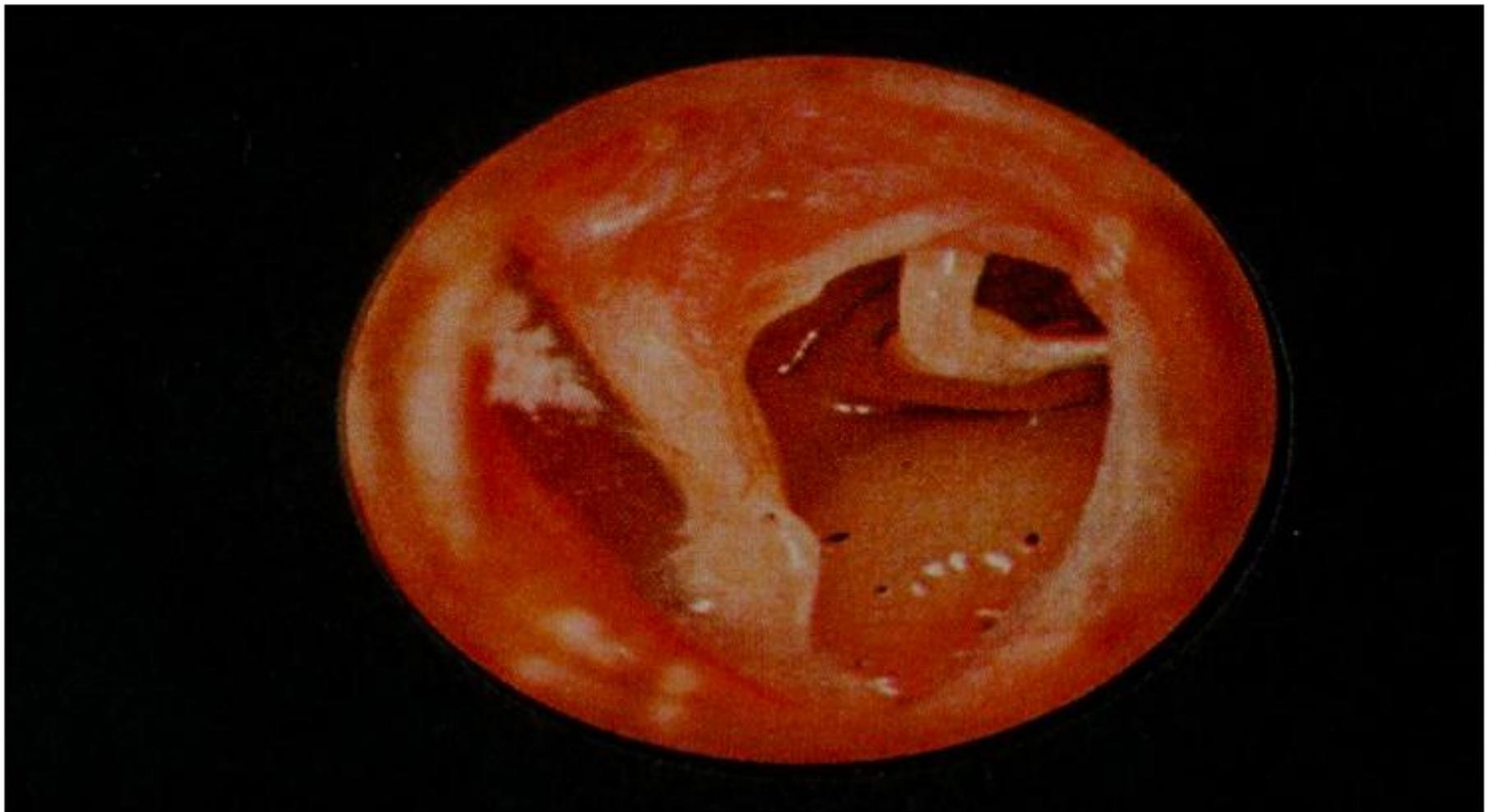
b A photograph with a fiberoptic camera gives a panoramic view of the deep meatus and membrane. Bubbles within the fluid and levels appearing as a hairline in the drum may be seen. A “chalk” patch is also seen (arrow).



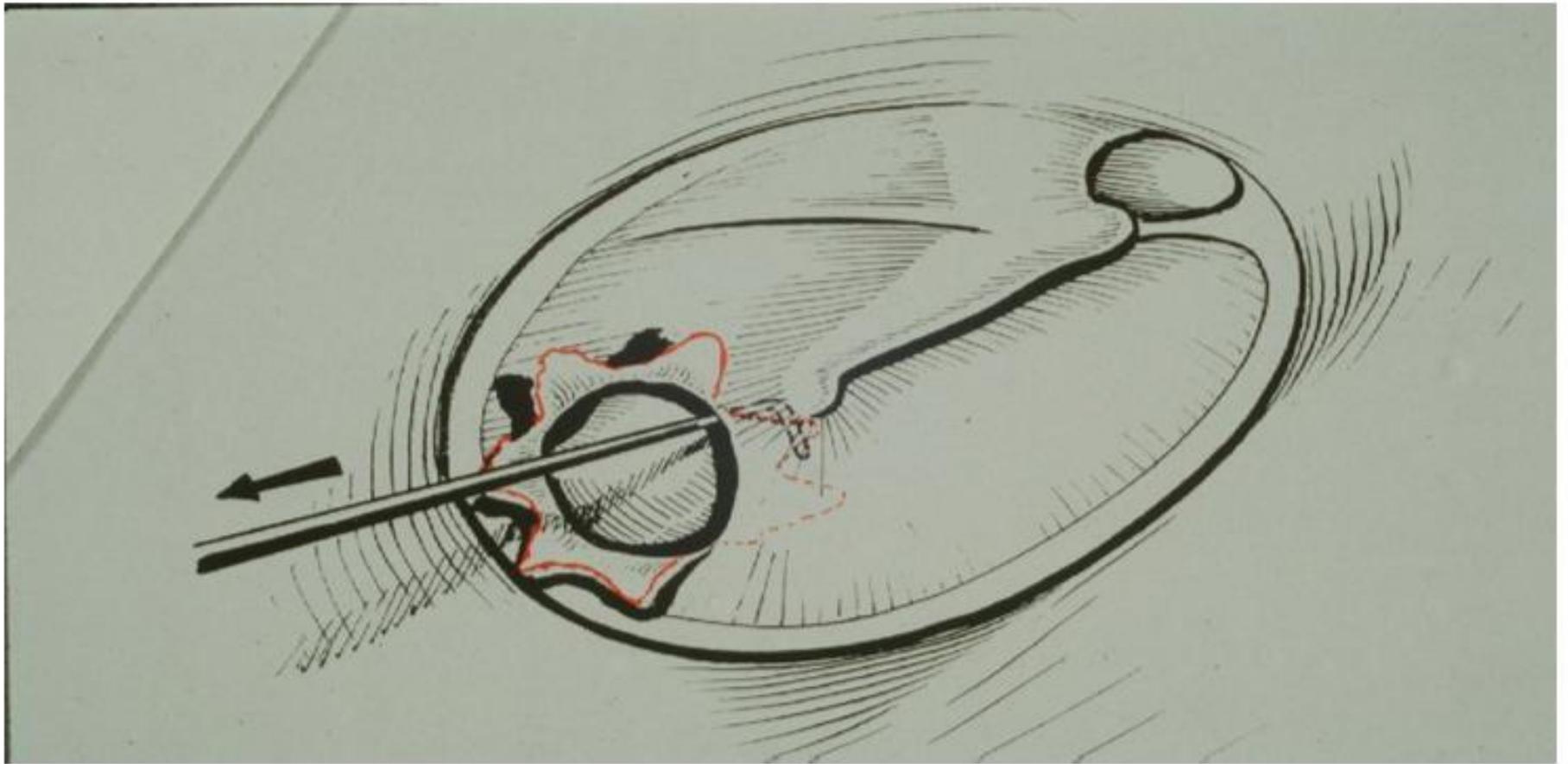
Fig. 2.80 A grommet in place. The grommet tube ventilates the middle ear and acts instead of the eustachian tube. Hearing and the appearance of the drum both return to normal.

The grommet usually extrudes spontaneously between 6–18 months to leave an intact drum, and is found in wax in the meatus. With recurrent middle-ear fluid, repeated grommet insertion may be needed. If normal eustachian tube function has not returned and otitis media with effusion recurs, the grommet is replaced.

Tympanosclerosis and drum scarring ensue. This complication is also seen in untreated “glue ear.” Minimal surgical trauma during grommet insertion is advisable. However, with a narrow ear canal, grommet insertion is not always technically easy.



**Total perforation in chronic
suppurative otitis media**



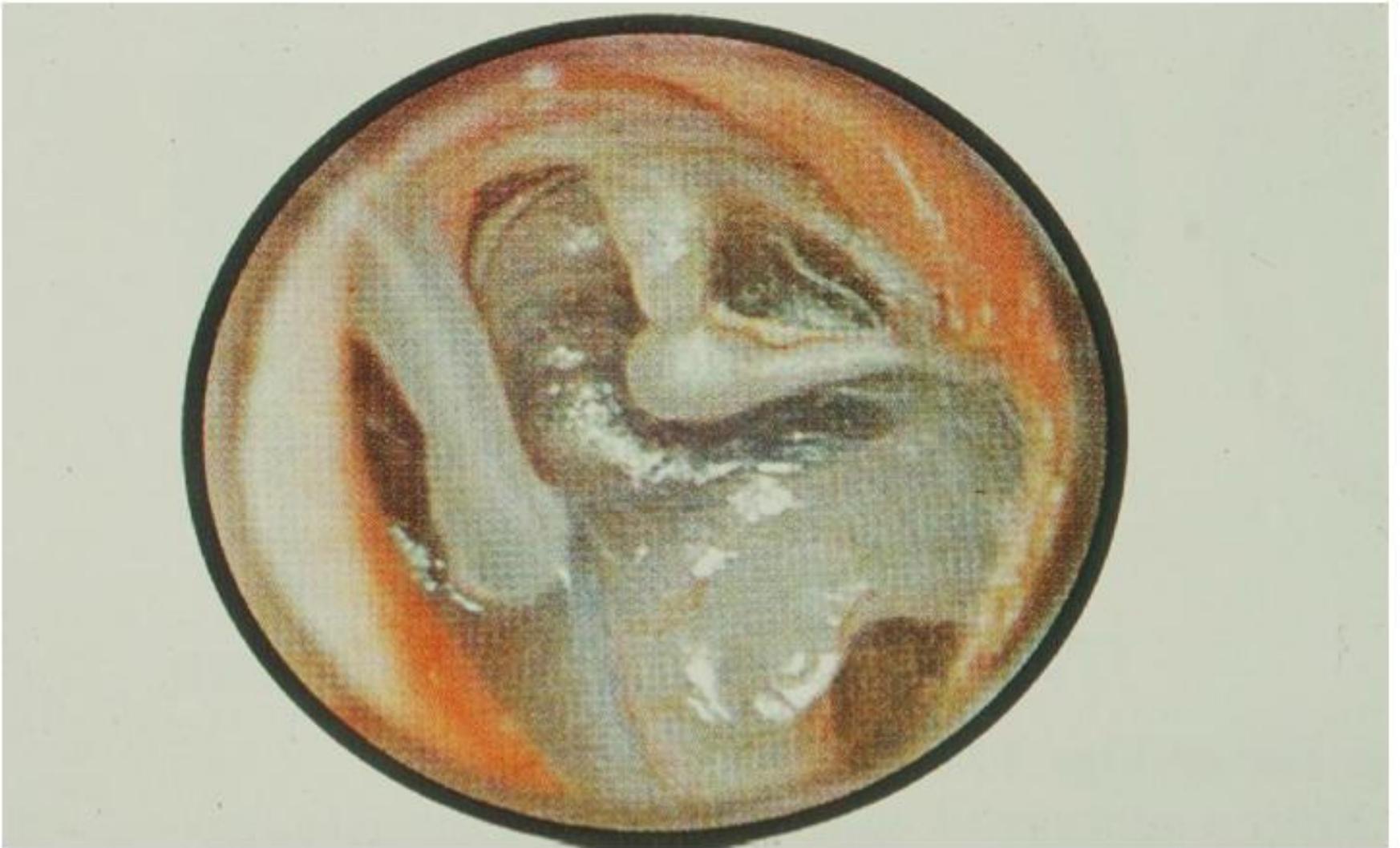
**Safe and Unsafe perforation
in chronic otitis media**



**Mastoidectomy operation
as the possible operation in
chronic suppurative otitis media**



**Healed Tympanic Membrane
with tympanosclerosis**



Adhesive otitis media (end stage)

mastoiditis



ACQUIRED CHOLESTEATOMA



←cholesteatoma

Eardrum intact,

cholesteatoma has

eroded through

bone of ear canal

exposing the

bones of hearing

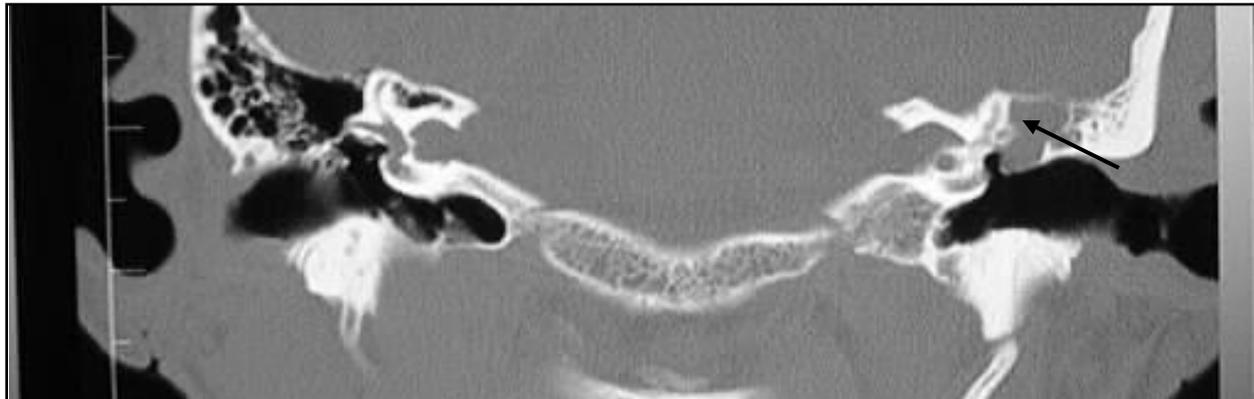
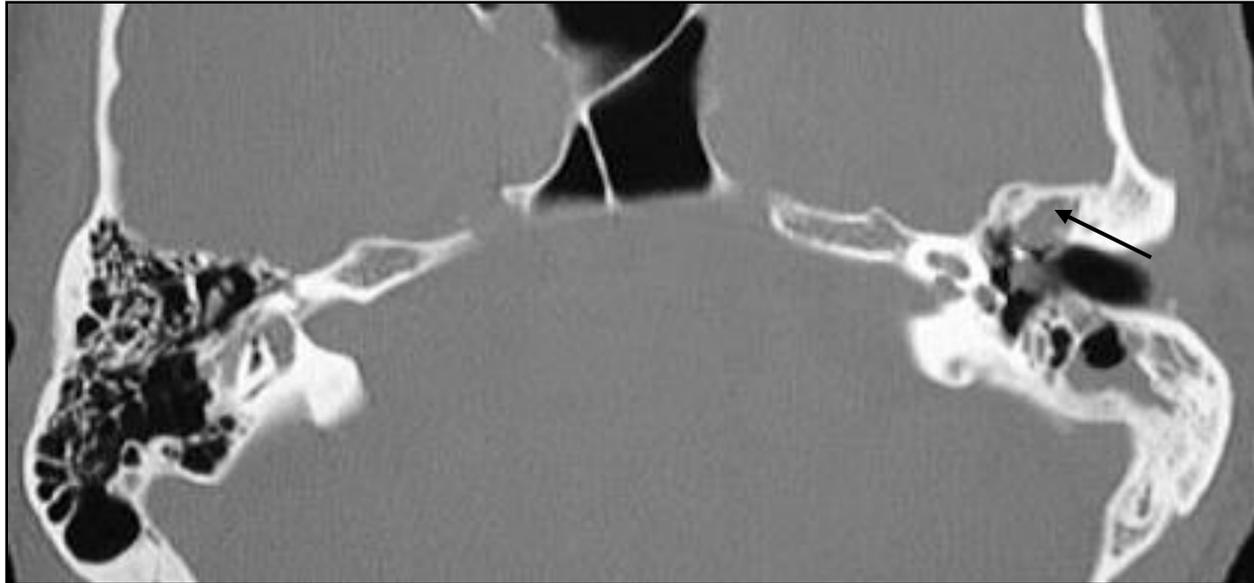
Tympanic perforation



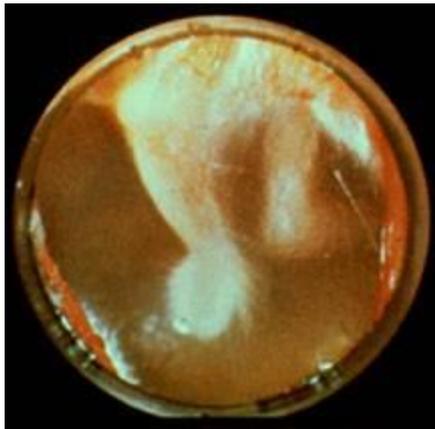
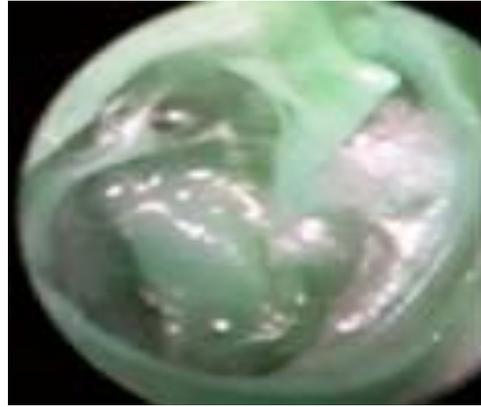
Acute Otitis Media



Cholesteatoma Imaging



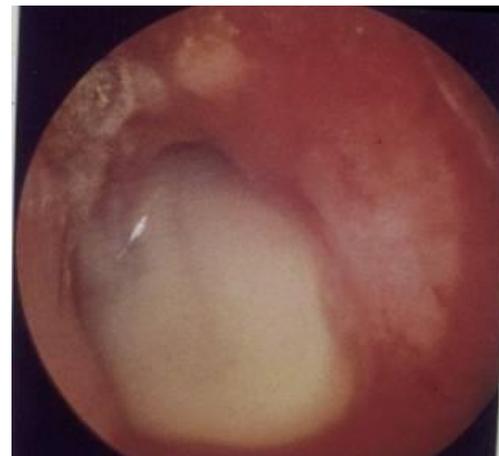
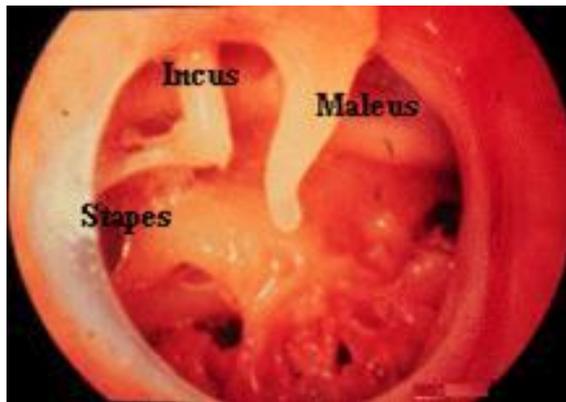
Otitis Media with effusion



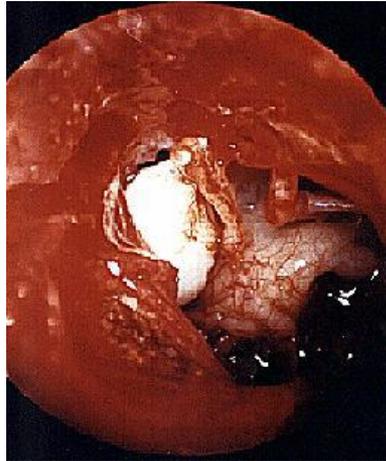
Otitis Media with effusion

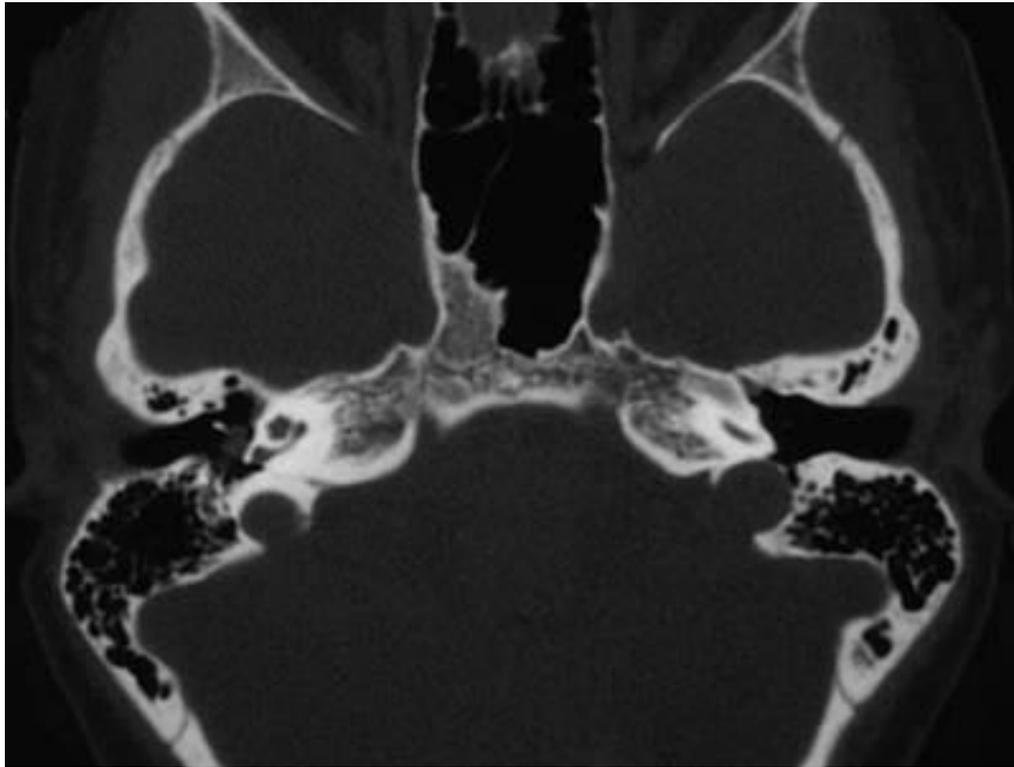


PERFORATION IN TT CSOM



PERFORATION IN AA CSOM





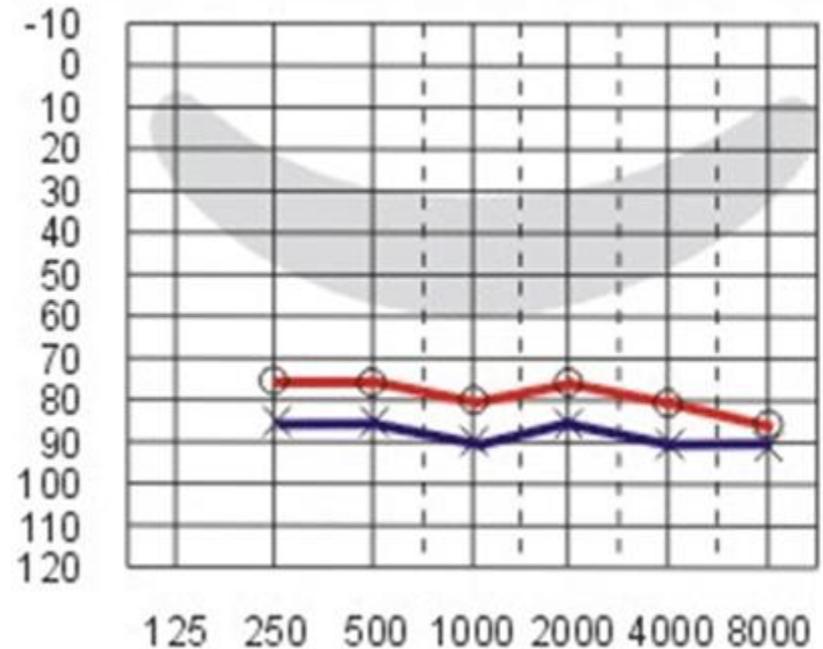
Congenital Cholesteatoma

Q1.mention one cause when this finding is unilateral?

Acoustic neuroma

Q2.mention one cause when this finding is bilateral?

Presbycusis (HL due to aging)



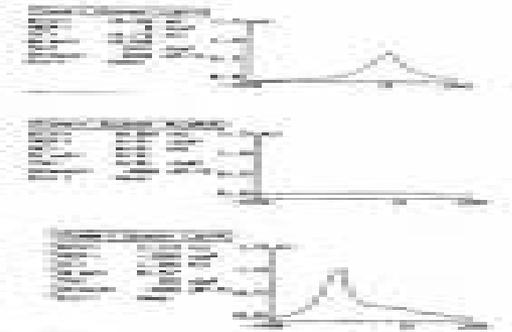
Q 15



Ear

1. Audiogram

- What type of hearing loss in the right ear?
- SNHL
- What is the diagnosis? Acoustic neuroma (Hearing loss to the high frequencies).



2. Tympanometry

- What is the instrument?
- What is the diagnosis? I think it was flat.

3. Diabetic pt. with facial weakness

- Dx? Malignant otitis externa
- Organism? Pseudomonas

4. Positional test (hillbach test)

- What is the test?
- dx if it is positive? BBPP

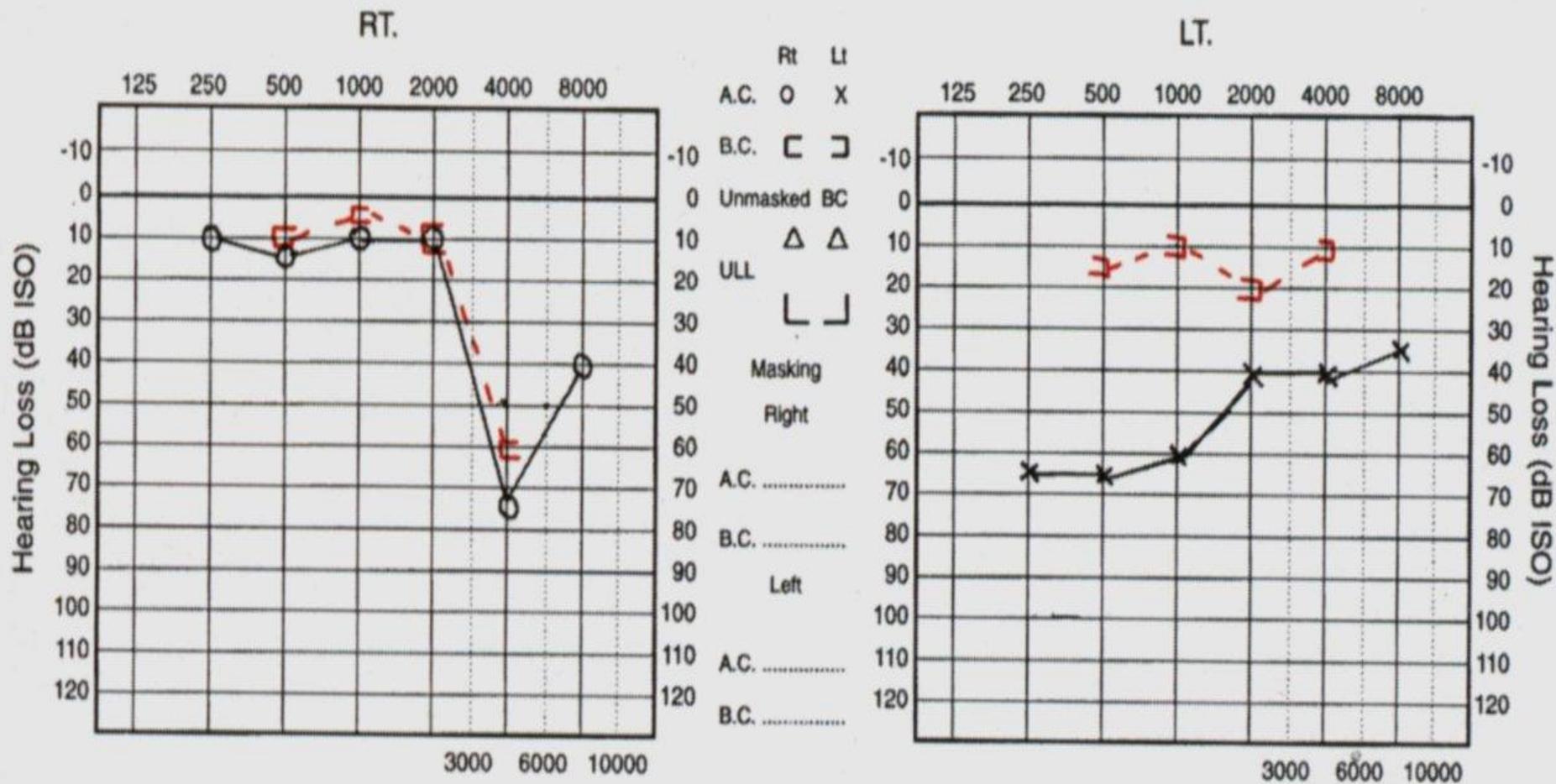


Fig. 1.28 **Audiogram.** The audiogram on the left shows a typical sensorineural hearing loss; a sharp dip at 4000 cps, as on this chart, is typical of inner ear damage due to **noise trauma**. A loss of high frequencies is commonly seen in hearing loss of old age (**presbycusis**). The audiogram on the right shows a conductive hearing loss with the sound heard better on the bone, typical of **otosclerosis** or **otitis media**.

13

❖ Read this Audiogram ?

- Normal hearing in the RT ear.
- Conductive hearing loss in the LT.

❖ In Weber test what will happen ?

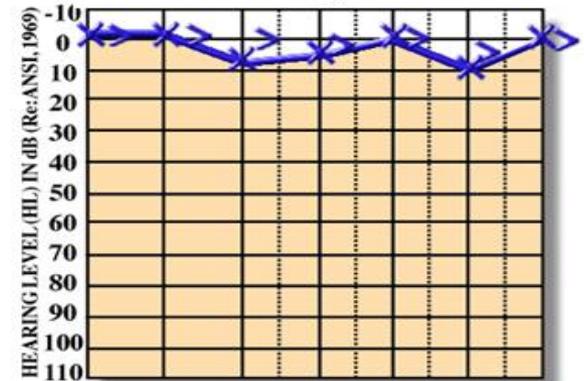
- The sound lateralize to the LT ear.

❖ If we do Rinne test what will happen for each one ?

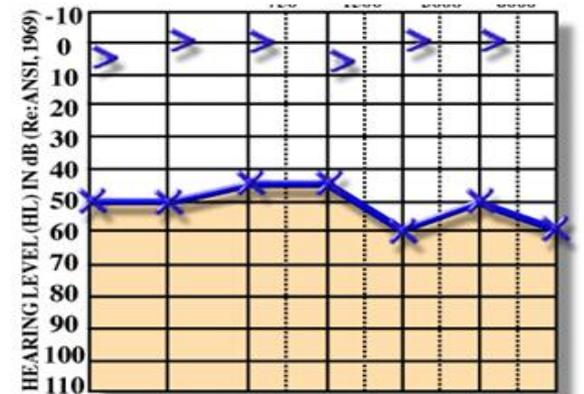
- Ve in the LT.
- +ve in the RT.

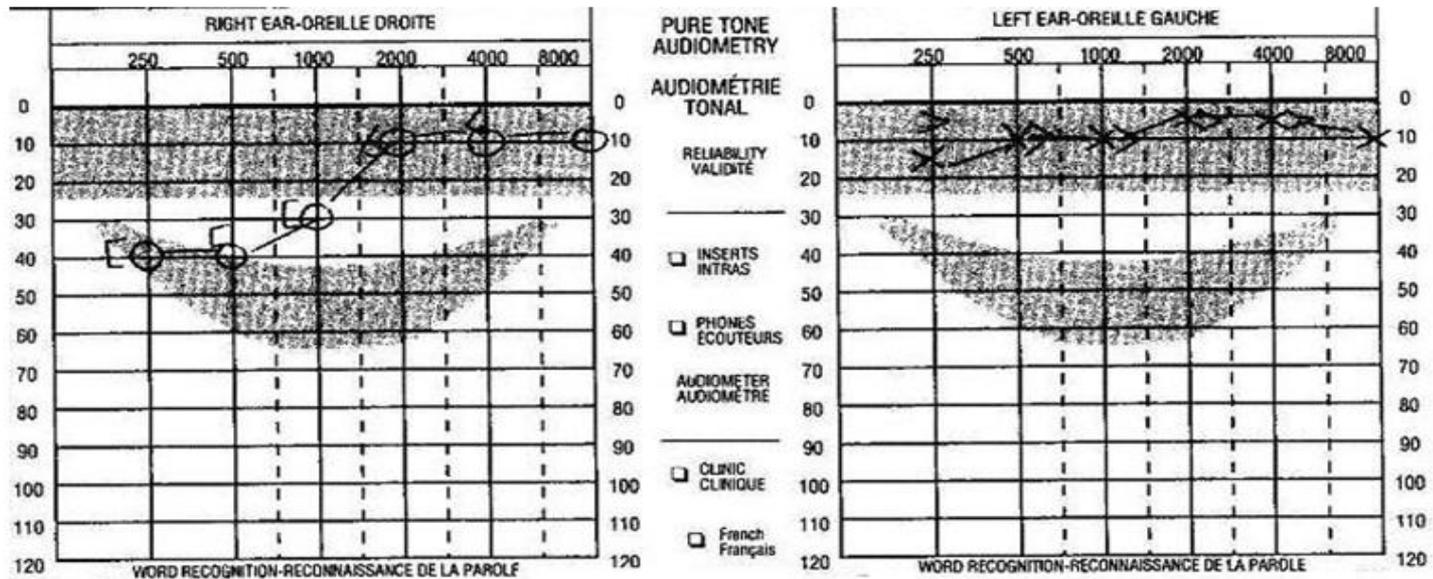


Right



Left





😊 كانت مرسومة بخط اليد . . ولا عزاء للمقاعد الخلفية

❖ **What the condition which may come with this complain ?**

- Meniere's disease (because low-tone sensory neural hearing loss).

❖ **Mention 2 other symptom pt may have ?**

- Fluctuating Vertigo.
- Tinnitus.

Most of us solve it as Unilateral sensory neural hearing loss (acoustic neuroma) 😞 & we don't know if they score it or not

