

# OMÜ SHMYO ANATOMİ



## İŞİTME VE DENGİ ORGANI KULAK (ORGANUM VESTIBULOCOCHLEARE)

Öğr. Gör. Dr. GÜRSEL AK GÜVEN



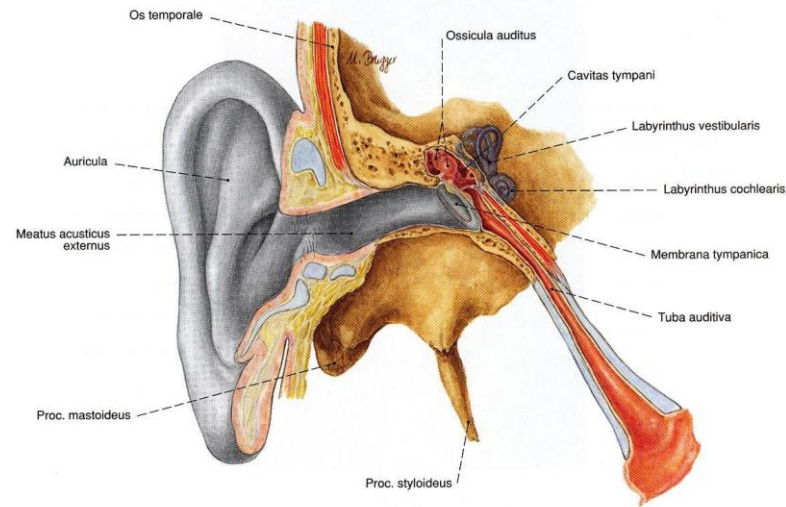


Fig. 660 Ear, Auris;  
semi-schematic drawing; the external acoustic meatus,  
the tympanic cavity, the auditory tube and parts of the  
temporal bone have been exposed;  
ventral view (r., 110%).

### Parts of the ear, Auris

#### Auris externa

Auricula  
Meatus acusticus externus

#### Auris media

Cavitas tympani  
Membrana tympanica  
Ossicula auditus  
Tuba auditiva

#### Auris interna

Labyrinthus membranaceus  
- Labyrinthus vestibularis  
- Labyrinthus cochlearis  
Labyrinthus osseus  
- Vestibulum  
- Canales semicirculares ossei  
- Cochlea  
- Meatus acusticus internus

### Parts of the membranous labyrinth, Labyrinthus membranaceus (Figs. 694, 695)

#### Labyrinthus vestibularis

Spatium perilymphaticum  
Utriculus  
Ductus semicirculares  
- Ductus semicircularis anterior  
- Ductus semicircularis posterior  
- Ductus semicircularis lateralis  
Ductus utriculosaccularis  
Ductus endolymphaticus  
Saccus endolymphaticus  
Sacculus  
Ductus reuniens

#### Labyrinthus cochlearis

Spatium perilymphaticum  
- Scala tympani  
- Scala vestibuli  
Aqueductus vestibuli  
Aqueductus cochleae  
Ductus cochlearis

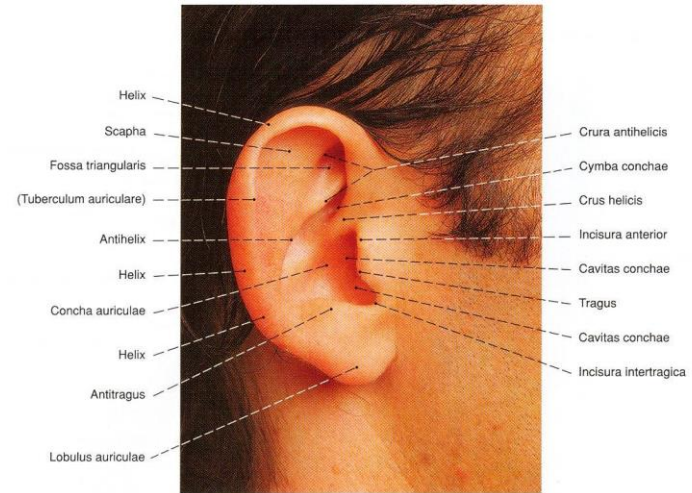


Fig. 661 Auricle, Auricula; lateral view (r.).

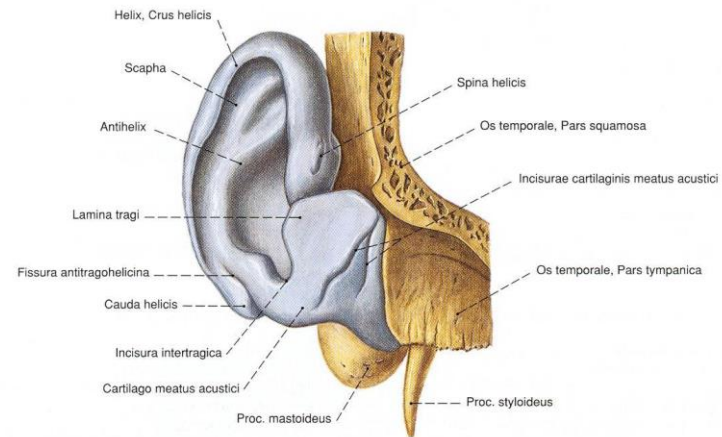


Fig. 662 Auricular cartilage, Cartilago auricularis, with parts of the temporal bone; all soft tissues have been removed; oblique ventral view (r.).

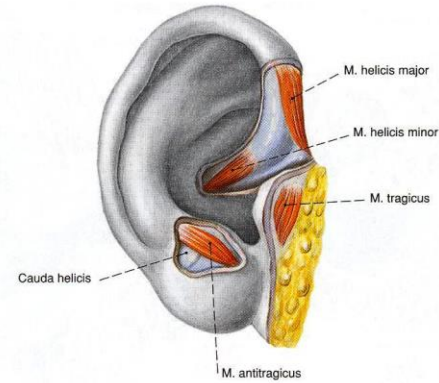


Fig. 663 Auricular muscles; *Mm. auriculares*;  
ventral view (r.).

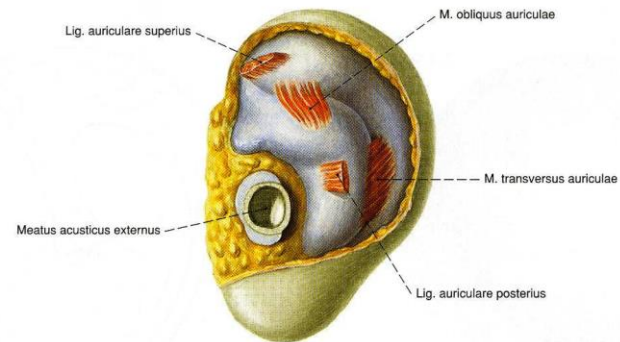


Fig. 664 Auricular muscles; *Mm. auriculares*;  
dorsal view (r.).

#### Sensory nerve supply of the auricle, Auricula

**N. vagus [X], R. auricularis:**

base of the external acoustic meatus and posterior sickle-shaped part of the external surface of the tympanic membrane

**N. auricularis magnus, R. posterior (C2/C3):**

posterior surface of the auricle

**N. auricularis magnus, R. anterior (C2/C3):**

anterior surface of the auricle

**N. mandibularis [V/3], N. auriculotemporalis, N. meatus acustici externi and Rr. membranæ tympani:**

anterior root of the auricle, floor, anterior wall and roof of the external acoustic meatus, as well as a large part of the tympanic membrane

**N. facialis [VII], N. auricularis posterior, R. auricularis:**

all auricular muscles



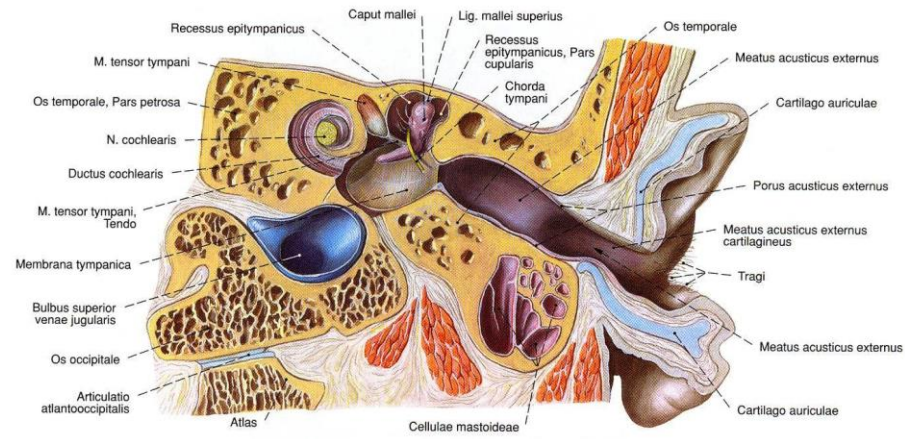


Fig. 665 External acoustic meatus, Meatus acusticus externus; tympanic cavity, Cavitas tympani, and cochlea, Cochlea; frontal section; dorsal view (r.).

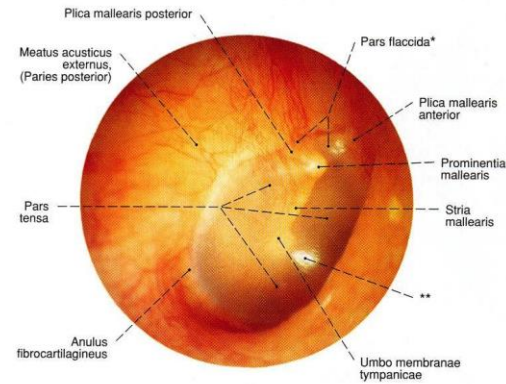


Fig. 666 Tympanic membrane, Membrana tympanica; otoscopic image; oblique lateral view (r., 600%).

\* clinical: SHRAPNELL'S membrane  
\*\* typical light reflex

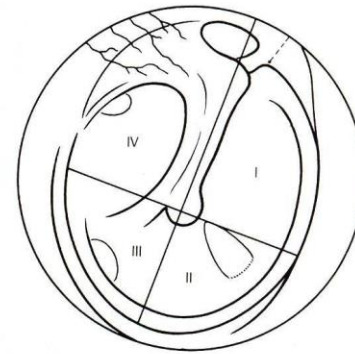


Fig. 667 Tympanic membrane, Membrana tympanica; diagram showing its quadrants; lateral view (r.).

To inspect the whole surface of the tympanic membrane with a speculum (otoscope) the external acoustic meatus has to be straightened by pulling the auricle upwards and dorsally. The tympanic membrane is normally divided into quadrants (I-IV)

for better orientation. The longer diameter is 10–11 mm and the shorter diameter about 9 mm in the adult. A bright triangular “cone of light” reflected from the otoscope is usually seen in the anteroinferior quadrant (II).

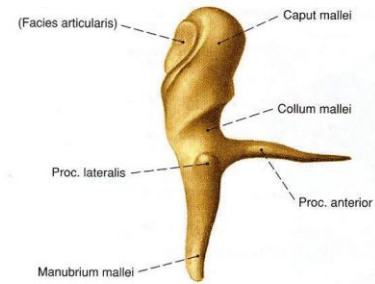


Fig. 668 Malleus, Malleus;  
lateral view (r., 700%).

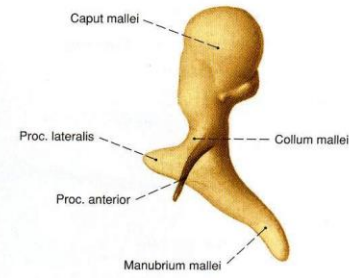


Fig. 669 Malleus, Malleus;  
ventral view (r., 700%).

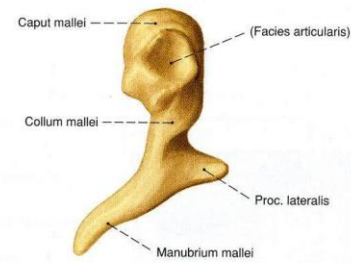


Fig. 670 Malleus, Malleus;  
dorsal view (r., 700%).

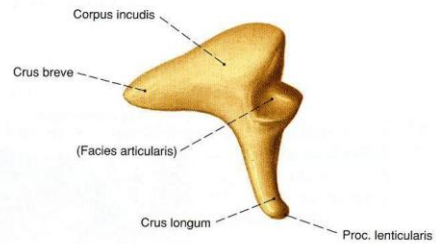


Fig. 671 Incus, Incus;  
lateral view (r., 700%).

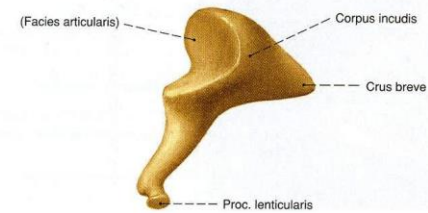


Fig. 672 Incus, Incus;  
medial view (r., 700%).

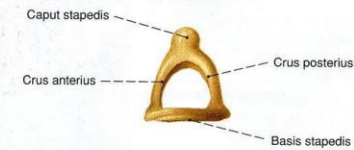
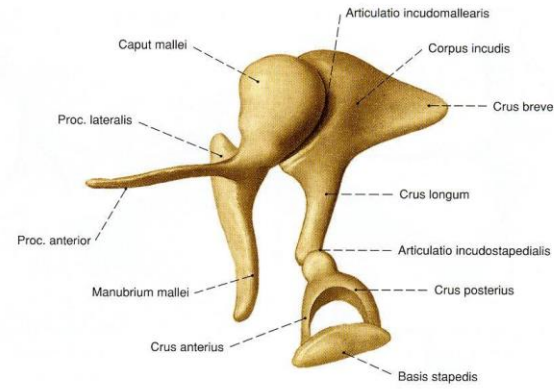
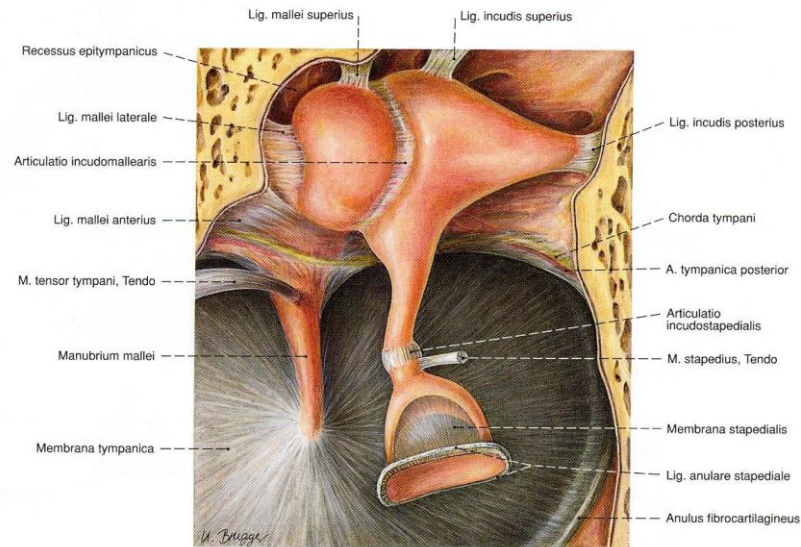


Fig. 673 Stapes, Stapes;  
superior view (r., 700%).



**Fig. 674** Auditory ossicles, *Ossicula auditus*; natural position; superomedial view (r, 600%).



**Fig. 675** Joints and ligaments of the auditory ossicles, *Articulationes et Ligamenta ossiculorum auditus*; covered by a mucous membrane in situ; superomedial view (r, 800%).



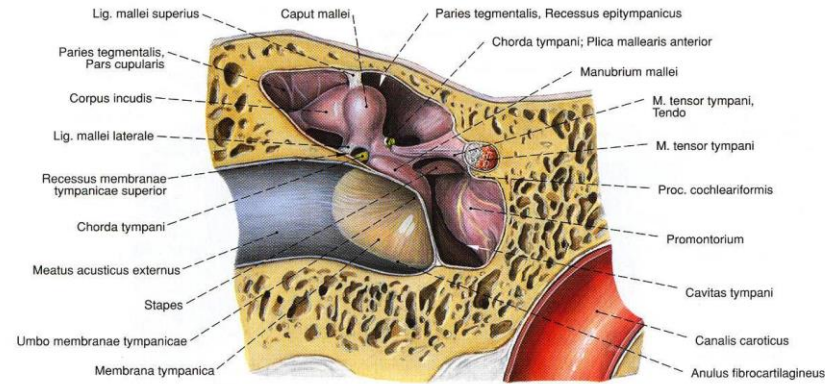


Fig. 676 Tympanic cavity, Cavitas tympani;  
frontal section;  
ventral view (r.).

#### Boundaries of the tympanic cavity, Cavitas tympani

Name	Constituents	Neighbouring organs	Special features	Clinical complications
<b>Paries tegmentalis</b> (roof)	Recessus epitympanicus, Tegmen tympani (Os temporale), Sutura petrosquamosa	Fossa cranii media, Meninges, Lobus temporalis	Vascular canaliculi in the Tegmen and in the suture: route of infection	Meningitis, abscess of the temporal lobe
<b>Paries jugularis</b> (floor)	Prominentia styloidea	Fossa jugularis, Bulbus superior venae jugularis	Variable form and size of the Cellulae tympanicae, bony laminae may be partially absent	Septic thrombosis of the V. jugularis interna (pyaemia)
<b>Paries labyrinthicus</b> (medial wall)	Promontorium, Fenestra cochleae, Fenestra vestibuli, Prominentia canalis facialis, Membrana tympanica secundaria	Labyrinthus membranaceus, N. facialis [VII]		Infection of the labyrinth (deafness), facial paresis
<b>Paries membranaceus</b> (lateral wall)	Membrana tympanica, Manubrium mallei (Chorda tympani)	Meatus acusticus externus, Articulatio temporomandibularis		tympanic membrane (e.g. by overzealous cleaning)
<b>Paries mastoideus</b> (posterior wall)	Antrum mastoideum, Cellulae mastoideae, Prominentia canalis semicircularis lateralis, Prominentia canalis facialis	N. facialis [VII], Sinus sigmoideus, Fossa cranii posterior, cerebellum	Variable pneumatization of the Cellulae mastoideae	Mastoiditis, sinus thrombosis, meningitis, cerebellar abscess, facial paresis
<b>Paries caroticus</b> (anterior wall)	Ostium tympanicum tubae auditivae, Canalis musculotubarius	Canalis caroticus, Sinus cavernosus, N. abducens [VI], Ganglion trigeminale	Apical pneumatization of the pyramids (Cellulae tympanicae)	Auditory tube: route of infection of the apical Cellulae pneumaticae, abducens paresis, otitis media



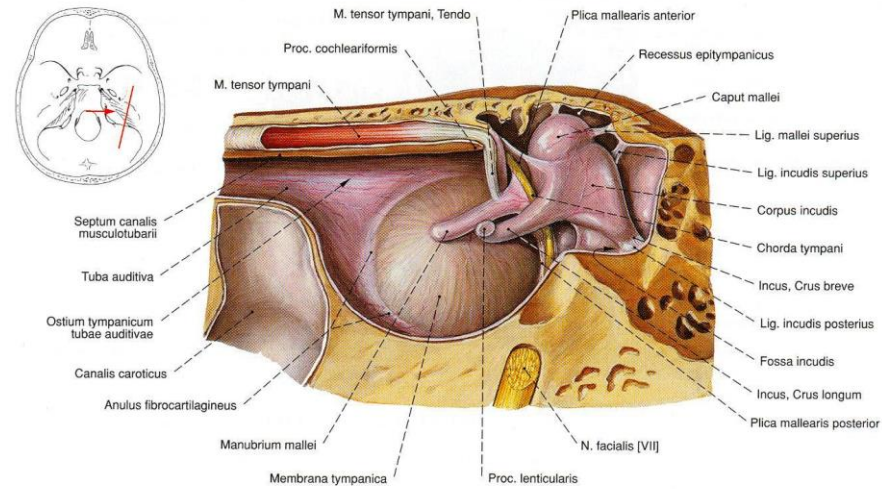


Fig. 677 Lateral wall, Pares membranaceus, of the tympanic cavity, Cavitas tympani; sagittal section; most of the auditory tube and the fascia of the tensor muscle of the tympanon have been removed; medial view (r., 400%).

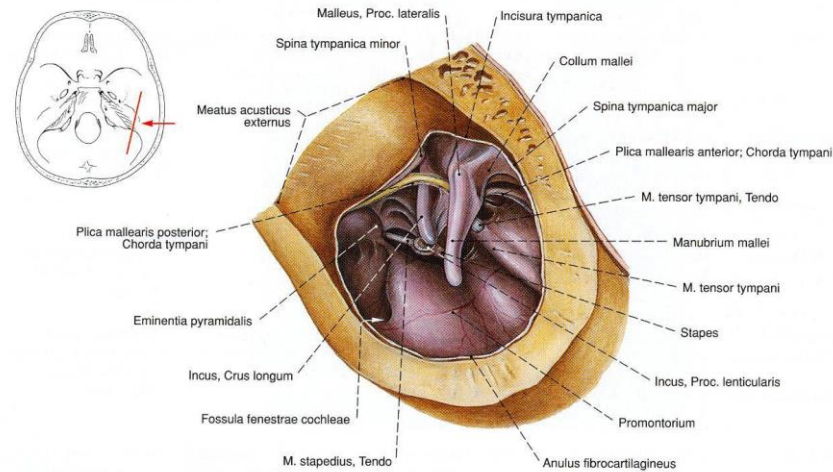


Fig. 678 Tympanic cavity, Cavitas tympani; the tympanic membrane has been removed; lateral view (r., 400%).

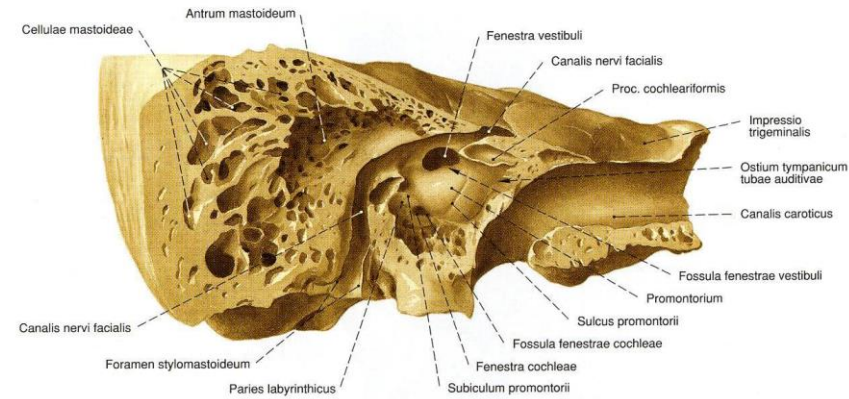


Fig. 679 Medial wall, Paries labyrinthicus, of the tympanic cavity, Cavitas tympani; the lateral wall and the adjacent parts of the ventral and superior walls have been removed; the Canalis nervi facialis and Canalis caroticus have been exposed; ventrolateral view (r., 170%).

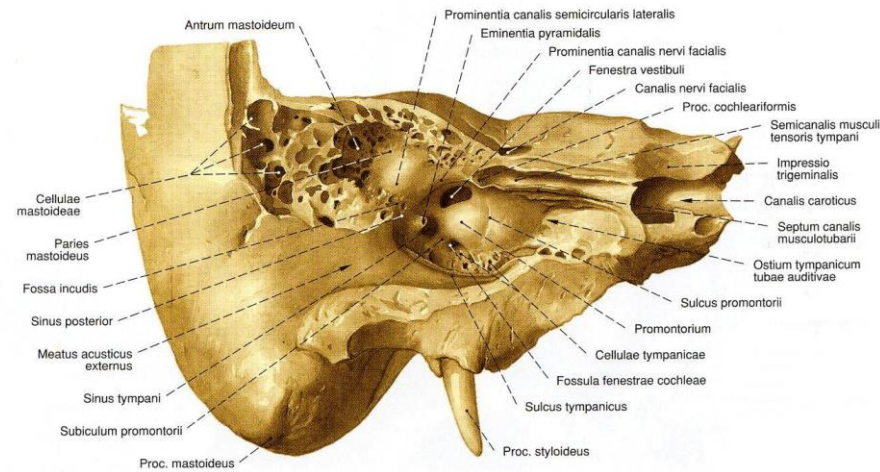


Fig. 680 Medial wall, Paries labyrinthicus, of the tympanic cavity, Cavitas tympani; vertical section through the longitudinal axis of the petrous bone; ventrolateral view (r., 170%).

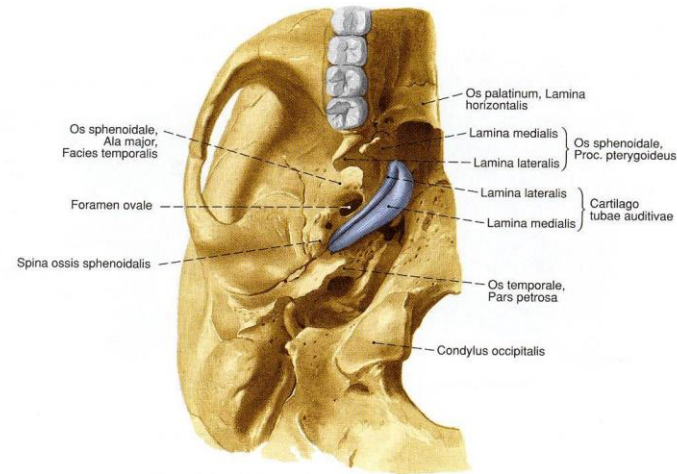


Fig. 681 Cartilage of the auditory tube, *Cartilago tubae auditivae*; exposed at the base of the skull; inferior view (r.).

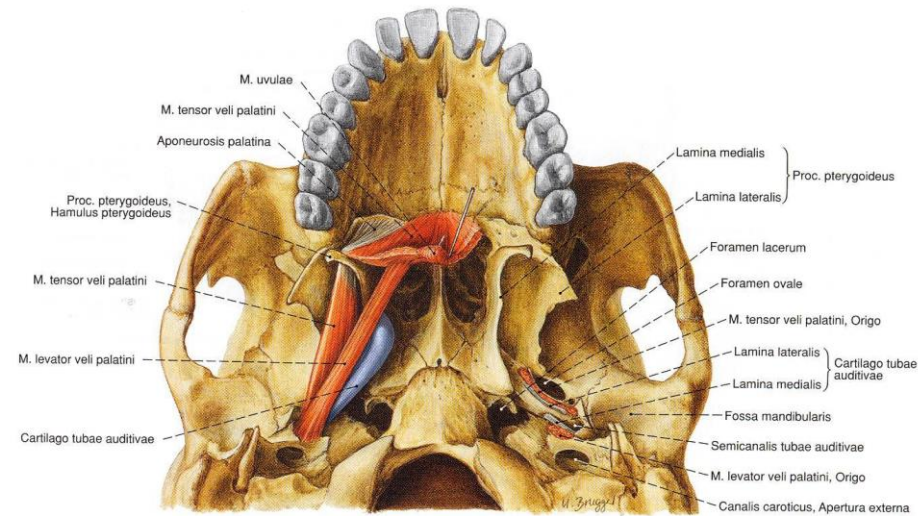


Fig. 682 Palatine muscles, *Mm. levator et tensor veli palatini*, and cartilage of the auditory tube, *Cartilago tubae auditivae*; on the left the muscular origins are shown; the soft palate (*Velum palatinum*) has been pulled forward; inferior view.



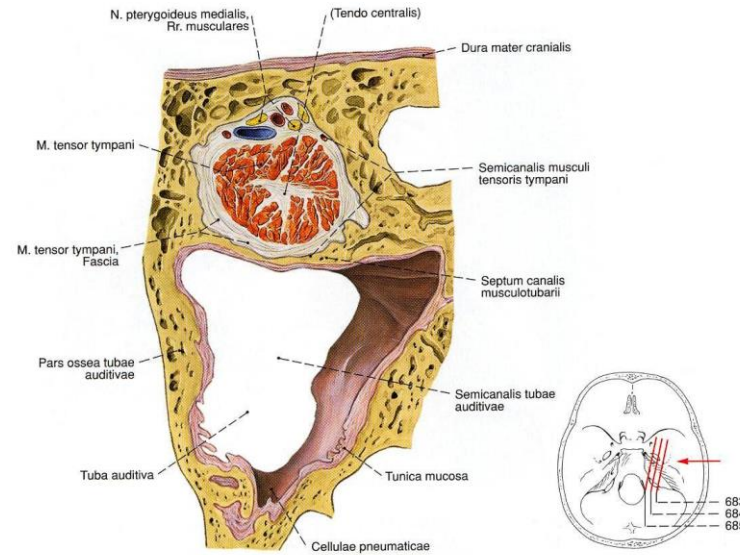


Fig. 683 Auditory (pharyngotympanic) tube,  
Tuba auditiva;  
cross section through its osseous part;  
lateral view (r., 1500%).

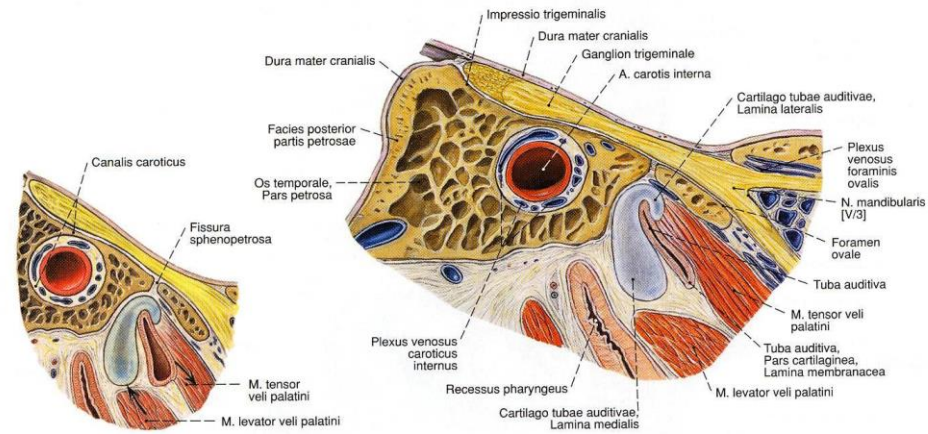
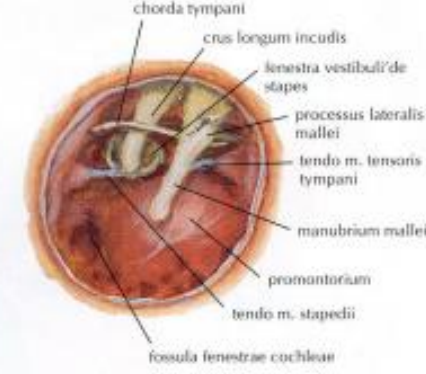
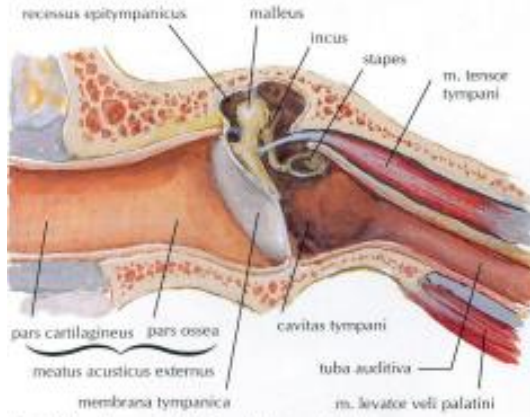


Fig. 684 Auditory (pharyngotympanic) tube,  
Tuba auditiva;  
cross section through its lateral cartilaginous part;  
lateral view (r., 400%).

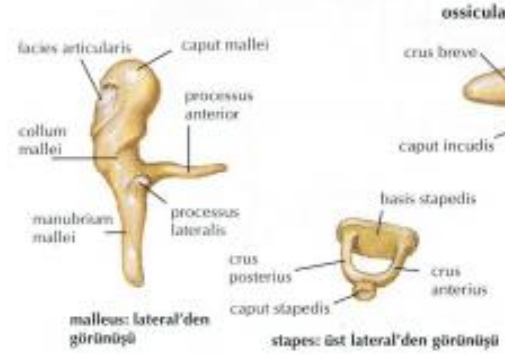
Fig. 685 Auditory (pharyngotympanic) tube,  
Tuba auditiva;  
cross section through its medial cartilaginous part;  
lateral view (r., 400%).





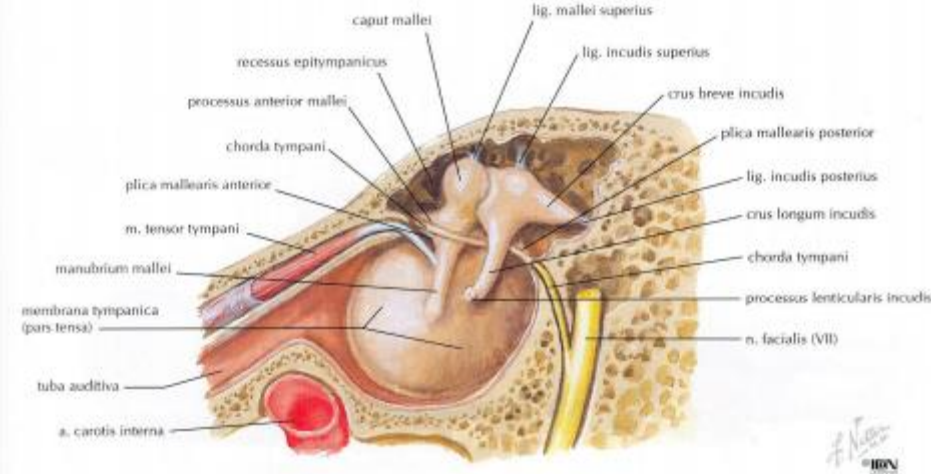
Dış kulak yolu ve orta kulakın oblik koronal kesiti

Kulak zarı uzaklaştırıldıktan sonra orta kulakın görünüşü

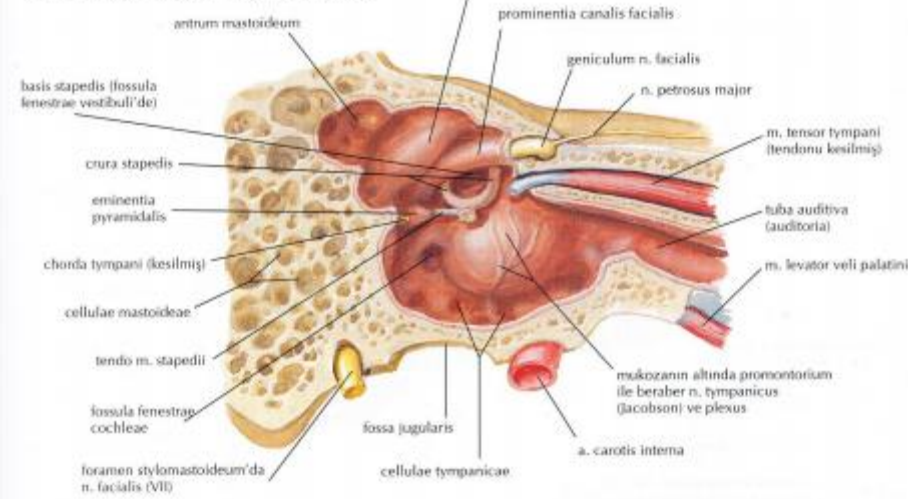


Eklemlenmiş kemikler: medial'den görünüşü

## Orta kulağın lateral duvarı: medial'den görünüşü



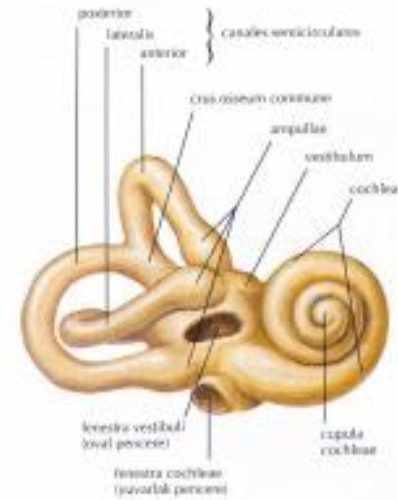
## Orta kulağın medial duvarı: lateral'den görünüşü



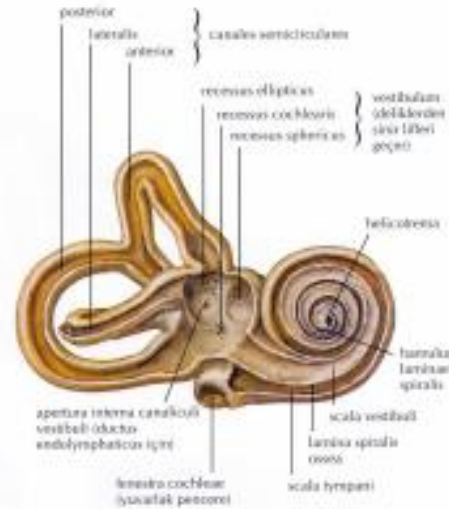
### Kemik ve Zar Labirentler

86Z. SEKM. 170

Sağ kemik labirentin ön-lateral'den görünüşü:  
Çevresindeki süngerimsi kemik çıkarılmış

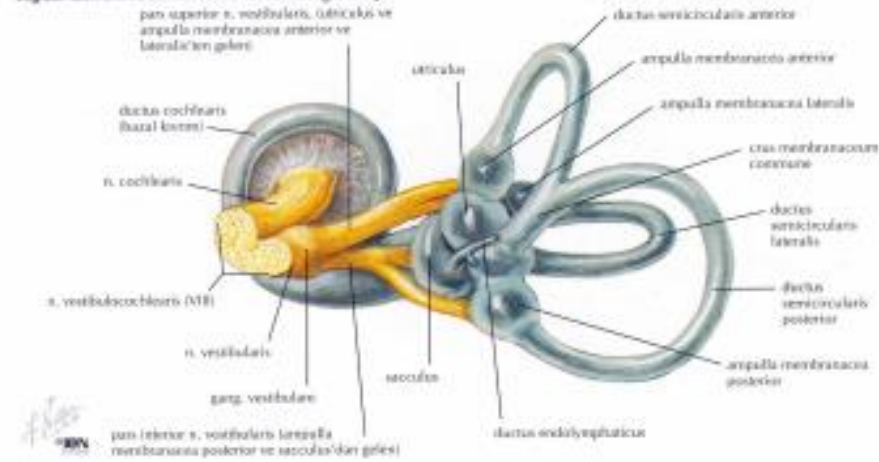


Disseke edilmiş sağ kemik labirent (otik kapsül): Zar labirent çıkarılmış



Sağ zar labirent ile sinirler; arka-medialden görünüşü

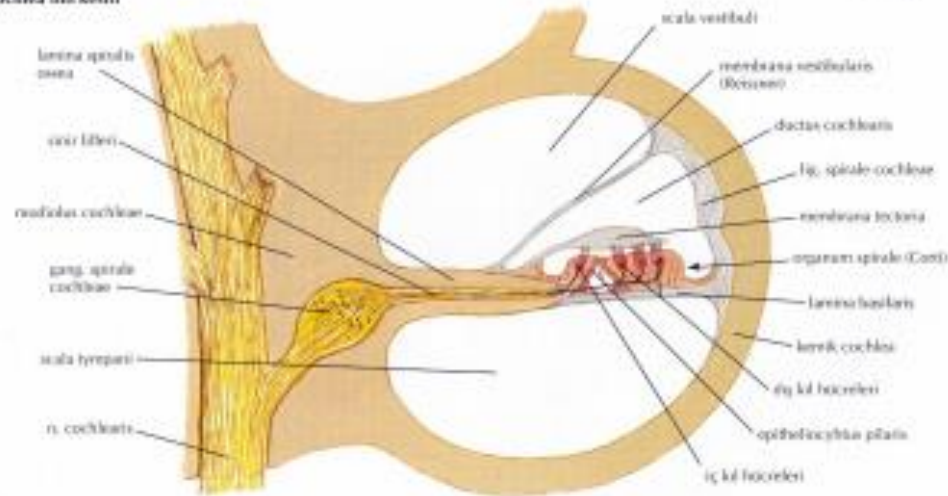
part superior n. vestibularis, cuticularis ve  
ampulla membranacea anterior ve  
lateralis (terghe)



### Kemik ve zar labirentleri şeması



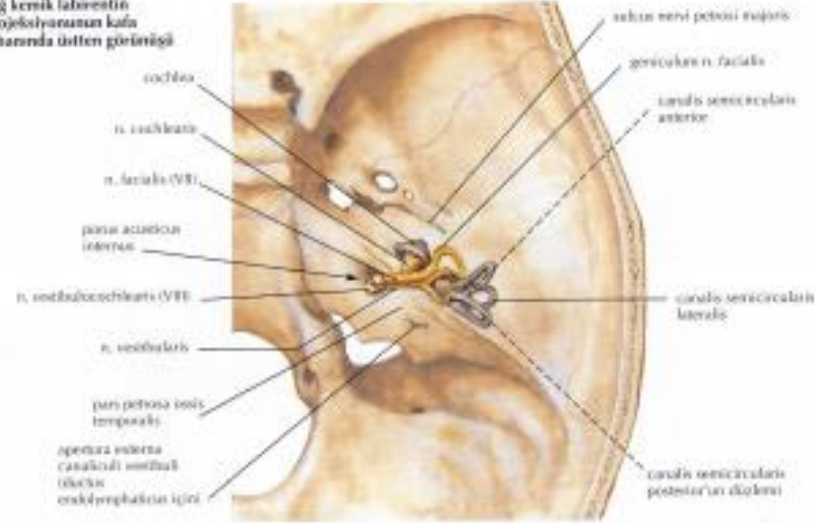
### cochlea'nın kesiti



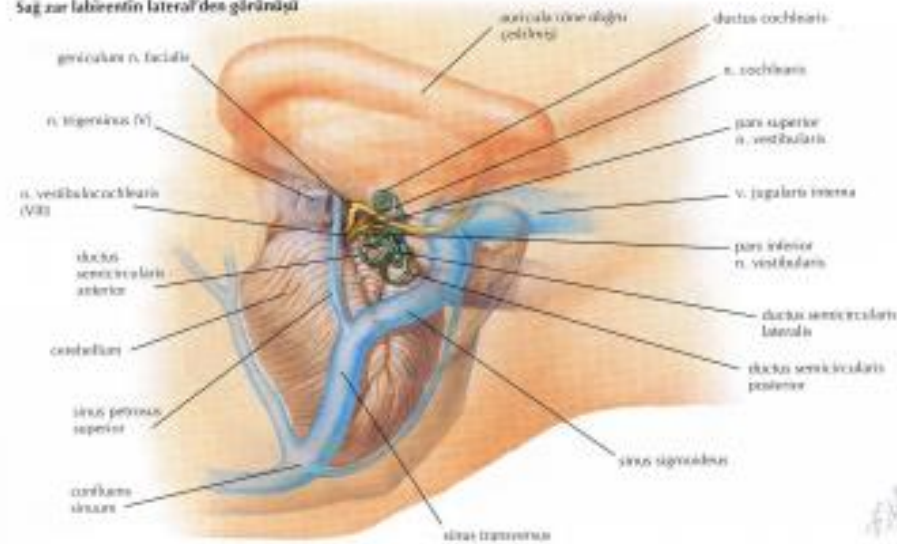


## Kafa İskeletinde Labirentin Oryantasyonu

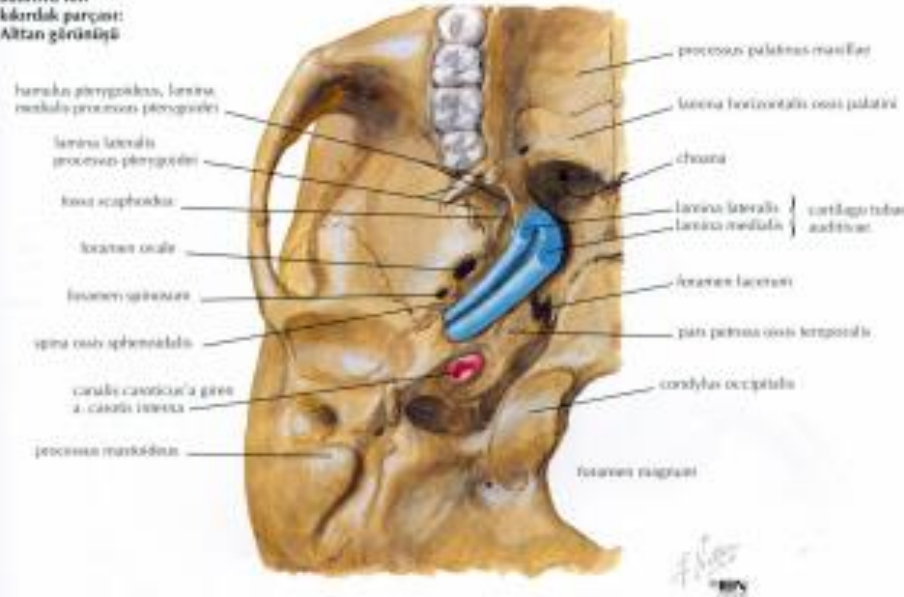
Sağ kereik labirentin  
projeksiyonunun kafa  
tabanında üstten görünüşü



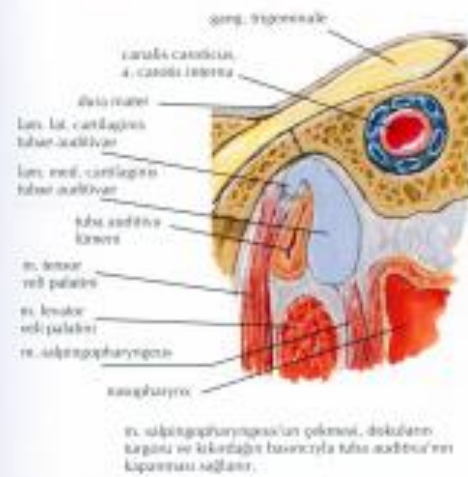
Sağ zar labirentin lateral den görünüşü



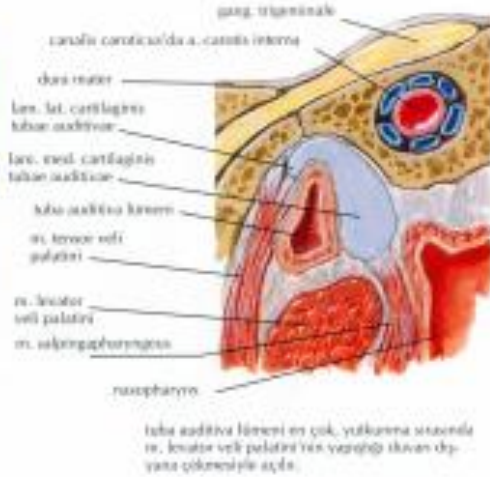
Kafatası tubasında tuba  
auditiva'nın  
kıkırdak parçası:  
Altan görünüşü



Tuba auditiva'nın kıkırdak parçasından geçen  
kesiti ve kapalı tuba auditiva (auditoria)



Tuba auditiva'nın kıkırdak parçasının kesiti ve  
tuba auditiva (auditoria)'nın açık hali



## **KAYNAKLAR**

**Netter FH. Atlas of human anatomy.  
Sobotta Anatomi Atlası.**