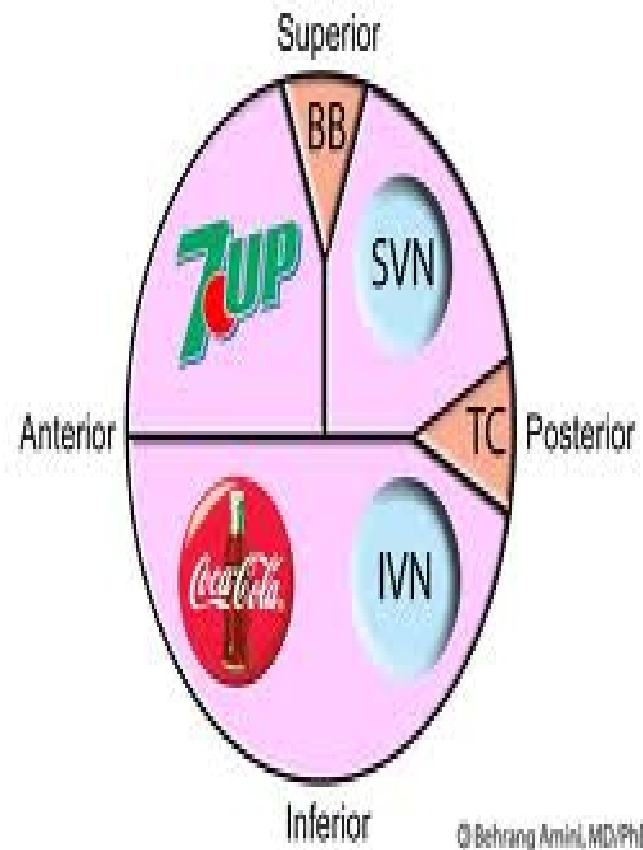
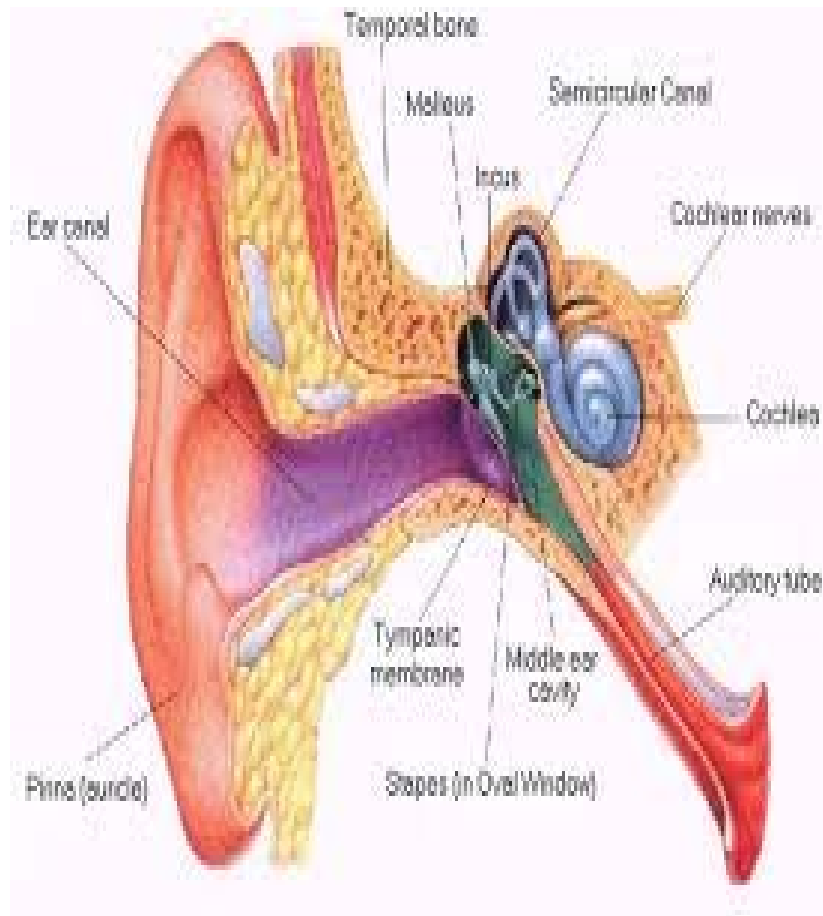
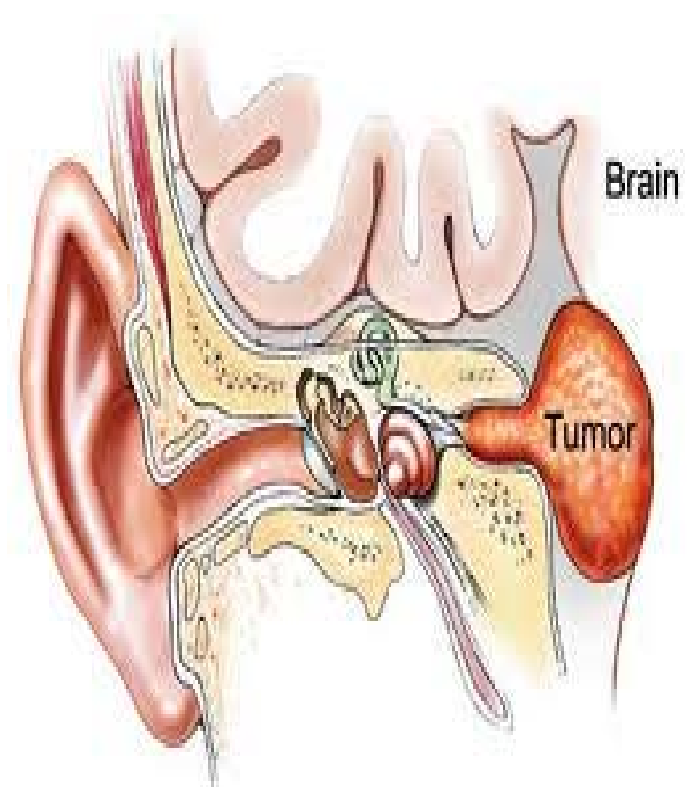
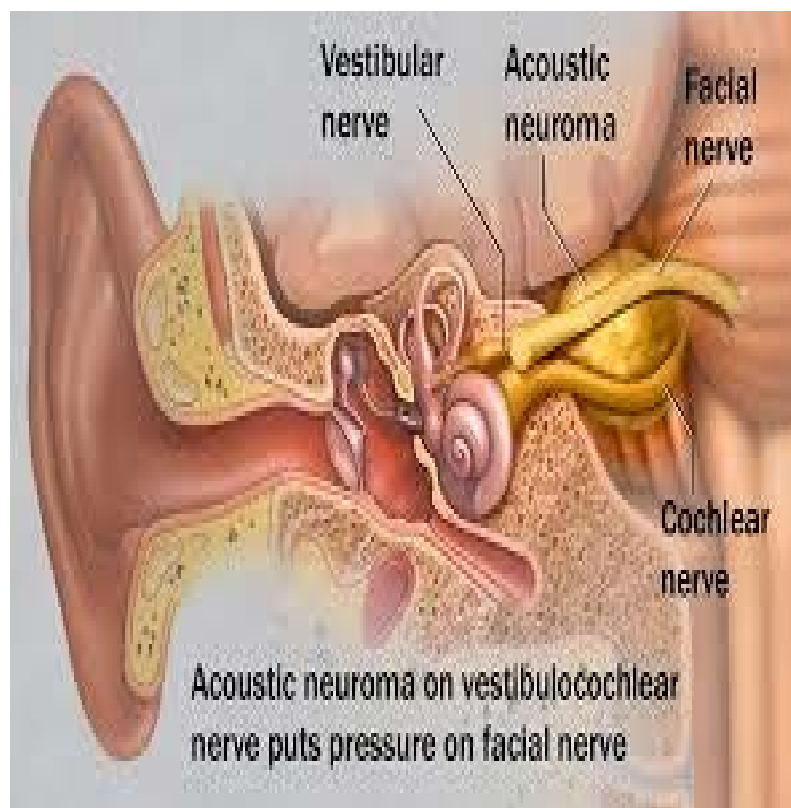


Acoustic Neuroma and Glomus tumor

Dr Hitesh Verma

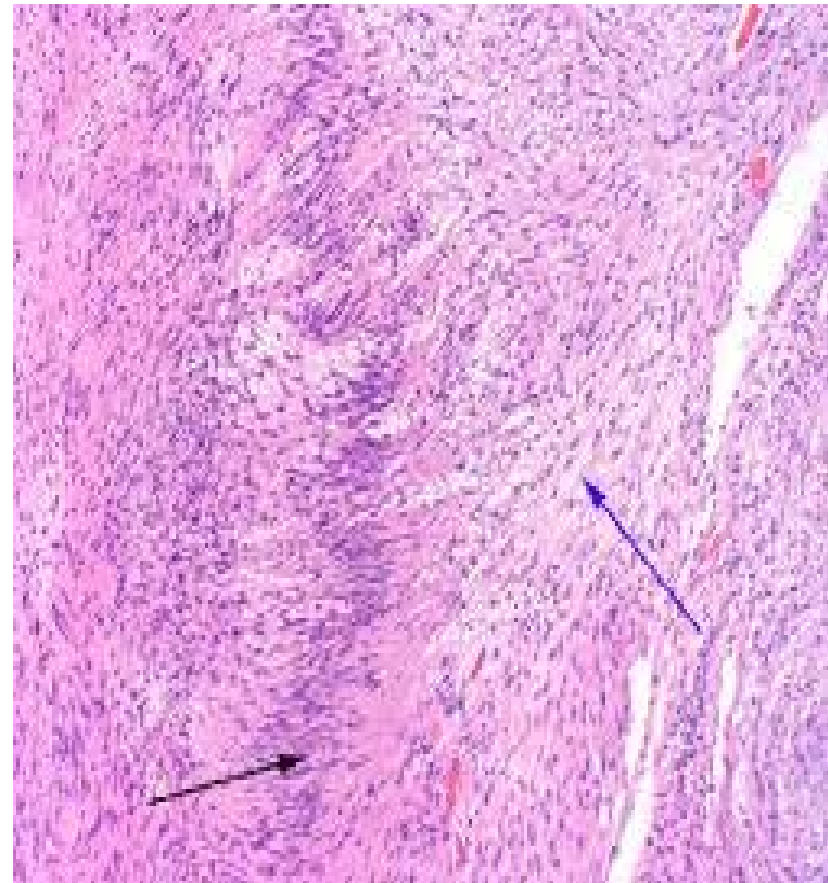
Anatomy





Pathology

- Firm, well encapsulated
- Microscopically shows two type of characteristic pattern- Antoni type A & B
- Antoni A- orderly arrangement of parallel cells with dark staining fusiform nuclei arranged in bundles or whorls separated by relatively acellular fibrous tissue
- Antoni B- loose reticular arrangement with fewer cellular elements and more disorderly arranged nuclei



Clinical features

- 5 stages
- I. Otological stage- changes confined to vestibulocochlear and to limited extent facial nerve. It includes all intrameatal tm and extrameatal tm < 2cm
- II. Trigeminal N involvement- ≥ 2 cm
- III. Brain stem and cerebellar compression
- IV. Rising intracranial pressure
- V. Terminal stage

Clinical features

Hearing loss

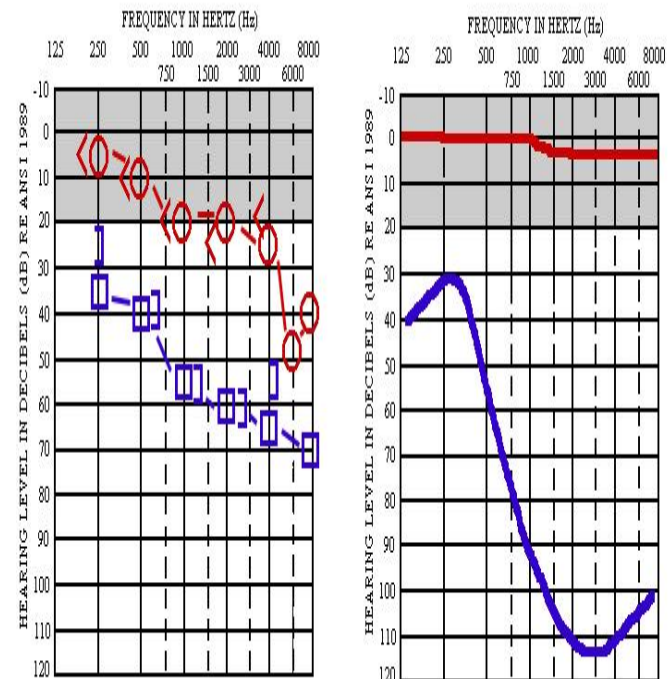
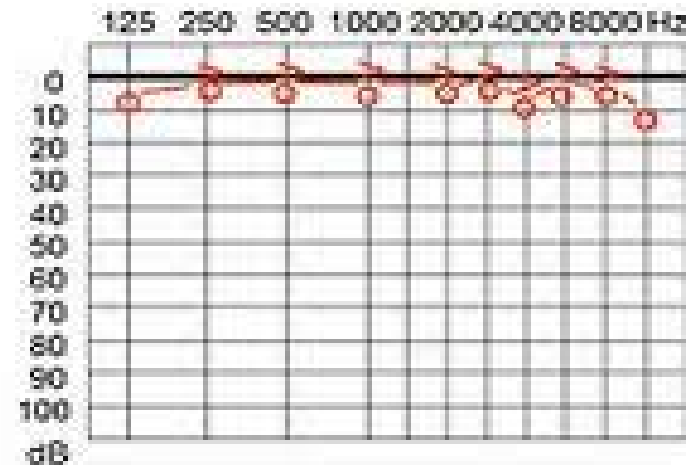
- Usually patient present with a gradual, progressive, unilateral, or asymmetrical high frequency sensorineural hearing loss
- sudden onset sensorineural hearing loss

Tinnitus

- It is usually high pitched, continuous, and unilateral or asymmetric

Vertigo

Tonaudiogramm



Clinical features

- Trigeminal nerve dysfunction
- It manifest as hypesthesia, paraesthesia, or rarely anaesthesia, typically in the mid-facial region
- Absent corneal reflex



Clinical features

Facial nerve dysfunction

- The weakness is typically gradual in onset
- 10%
- Histelberger's sign- hypesthesia of the concha or external auditory canal floor. This is because the sensory fibers are less resistant to the effect of compression and consequently manifest earlier

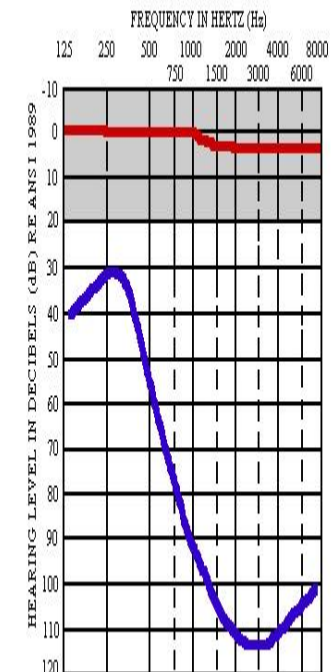
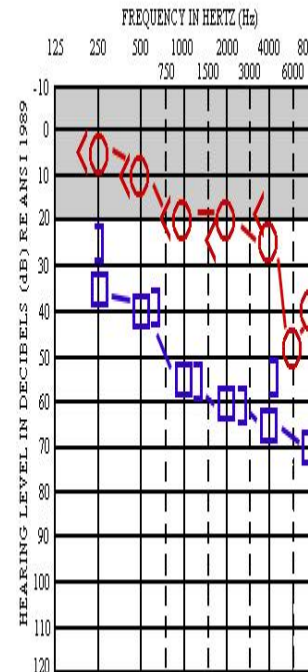
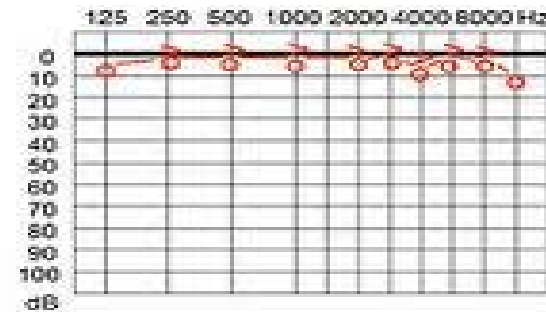


Diagnostic Testing

Audiogram

- Unilateral or asymmetrical sensorineural hearing loss
- U-shaped or low tone patterns of loss are less common

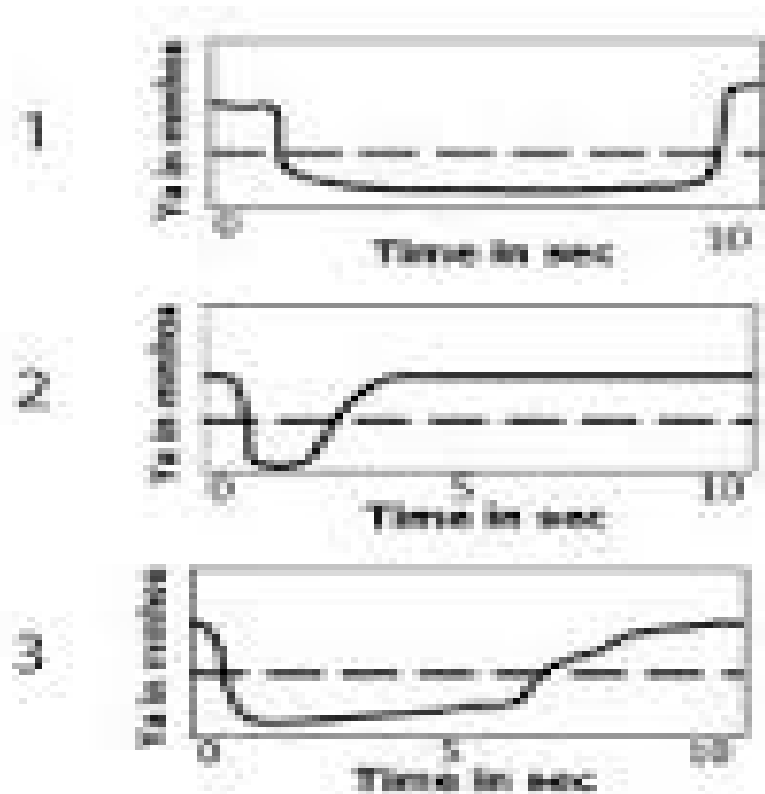
Tonaudiogramm



Diagnostic Testing

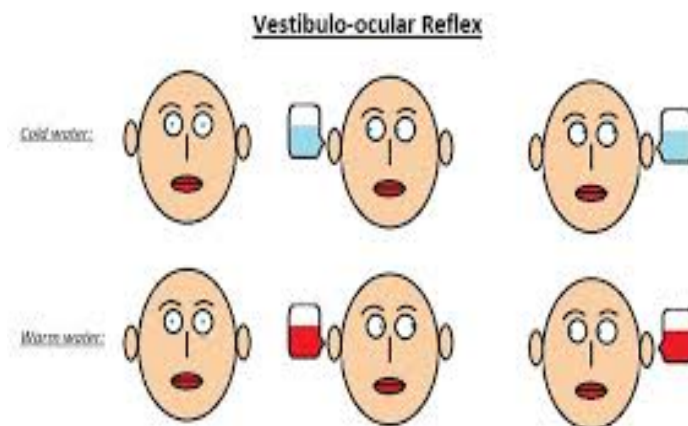
Tympanometry

- Absent stapedial reflex
- stapedial reflex decay
(greater than 50% return to base line in 10 sec)



Diagnostic Testing

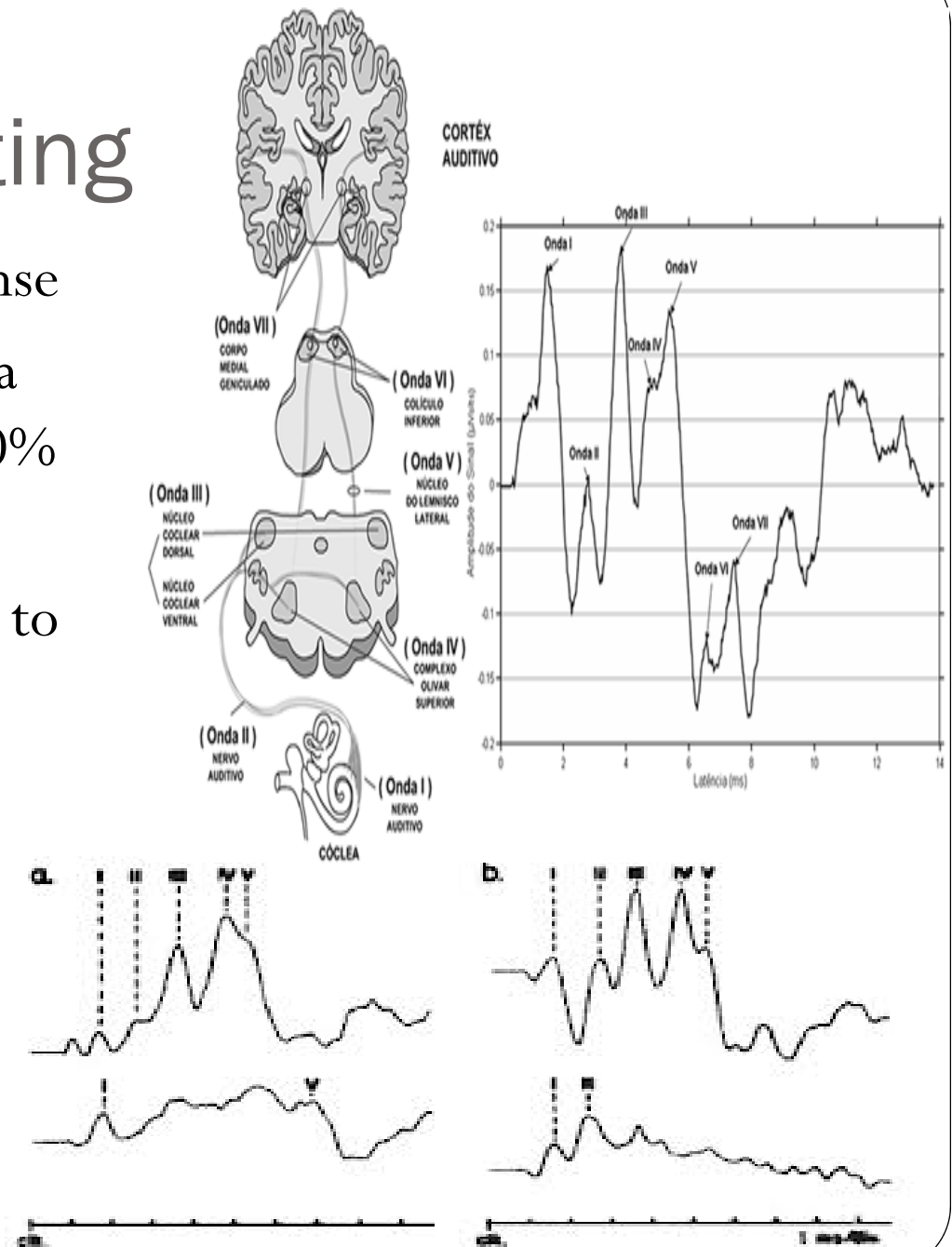
- Electronystamography
determine whether the inferior or superior vestibular nerve is the site of origin for the vestibular schwannoma
- Caloric testing reveals the status of the horizontal semicircular and the superior vestibular nerve



Diagnostic Testing

Auditory brain stem response

- It is a sensitive test with a sensitivity of 90% to 100%
- The specificity of ABR testing ranges from 54% to 78%



Imaging

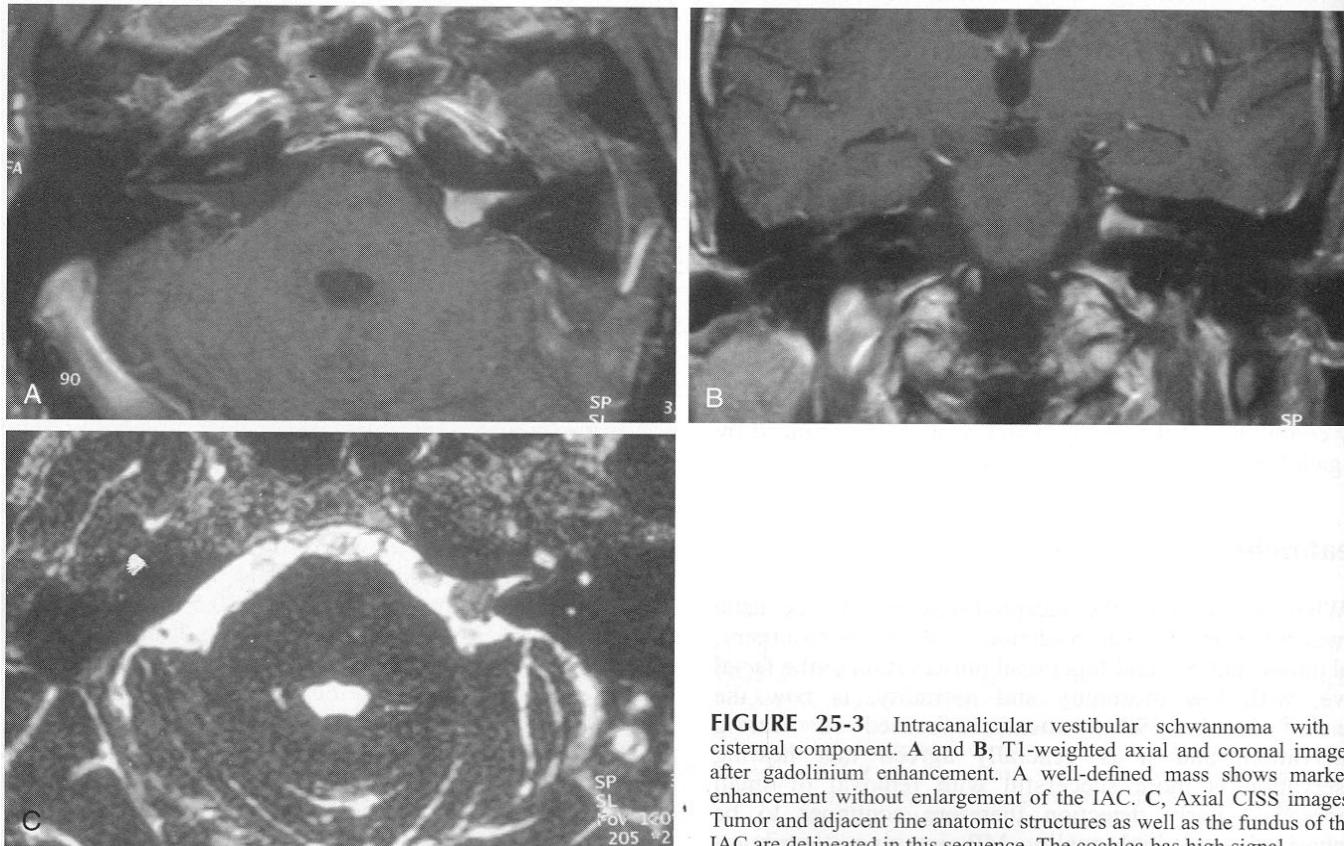


FIGURE 25-3 Intracanalicular vestibular schwannoma with a cisternal component. **A** and **B**, T1-weighted axial and coronal images after gadolinium enhancement. A well-defined mass shows marked enhancement without enlargement of the IAC. **C**, Axial CISS images. Tumor and adjacent fine anatomic structures as well as the fundus of the IAC are delineated in this sequence. The cochlea has high signal.

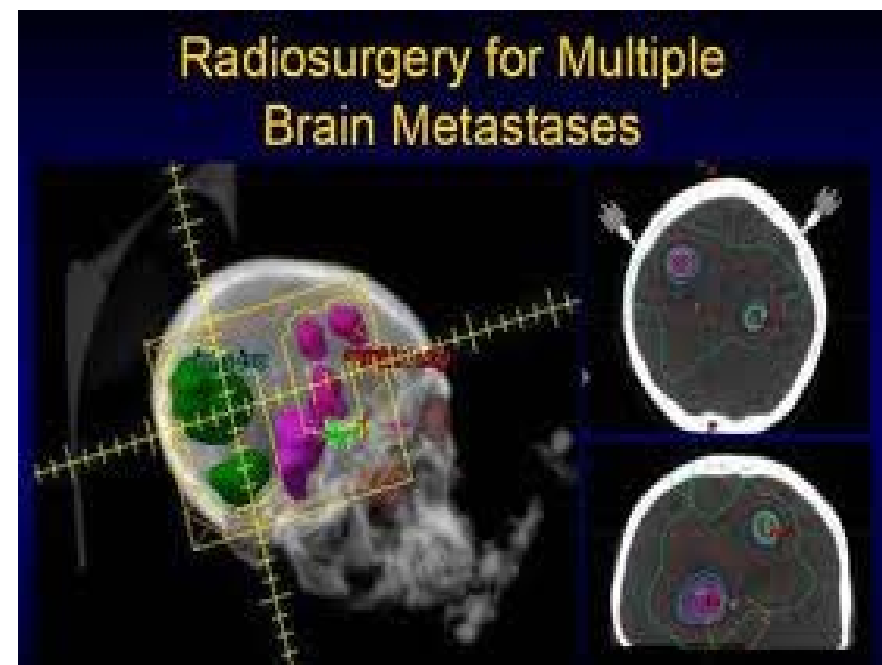
Treatment options

- The treatment options
 - surgical resection
 - radiation therapy
 - observation
- Observation with sequential MRI
 - only hearing ear
 - in patients with advanced age and limited life expectancy,
 - significant cardiovascular, pulmonary, or other systemic diseases

- Stereotactic radiation therapy

- Indications

- Small tumors > 3 cm
- Functional hearing
- Older patients
- Medically unstable patients
- Previous resection



Surgical treatment

- Surgical treatment
- The choice of approaches to the resection of vestibular schwannoma and other CPA tumor is guided by the

Degree of residual hearing

Hearing status in the contralateral ear

Location of the tumor

Size of the tumor

Cell type

Age of the patient

Trans-labyrinthine

- Indications
 - Non-serviceable hearing

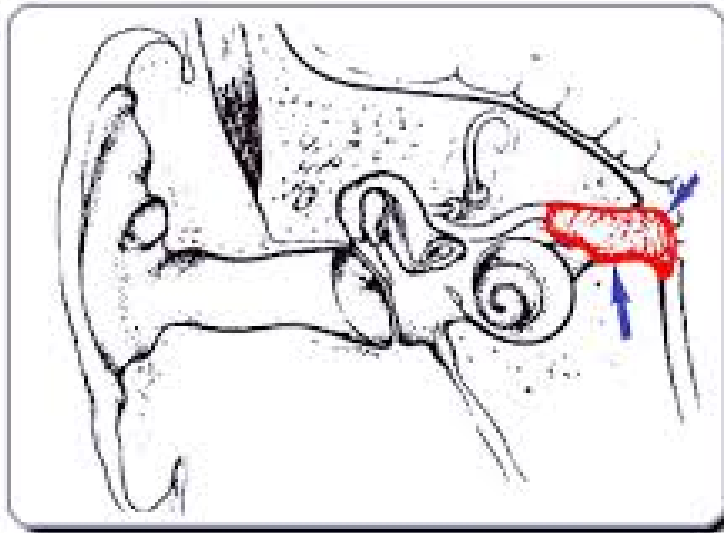


Figure C. As a tumor reaches medium size (between 1 and 3 centimeters in diameter) it extends out of the internal auditory canal and grows toward the brain stem. The larger tumors in this category make contact with the brain stem and other sensitive nerves.

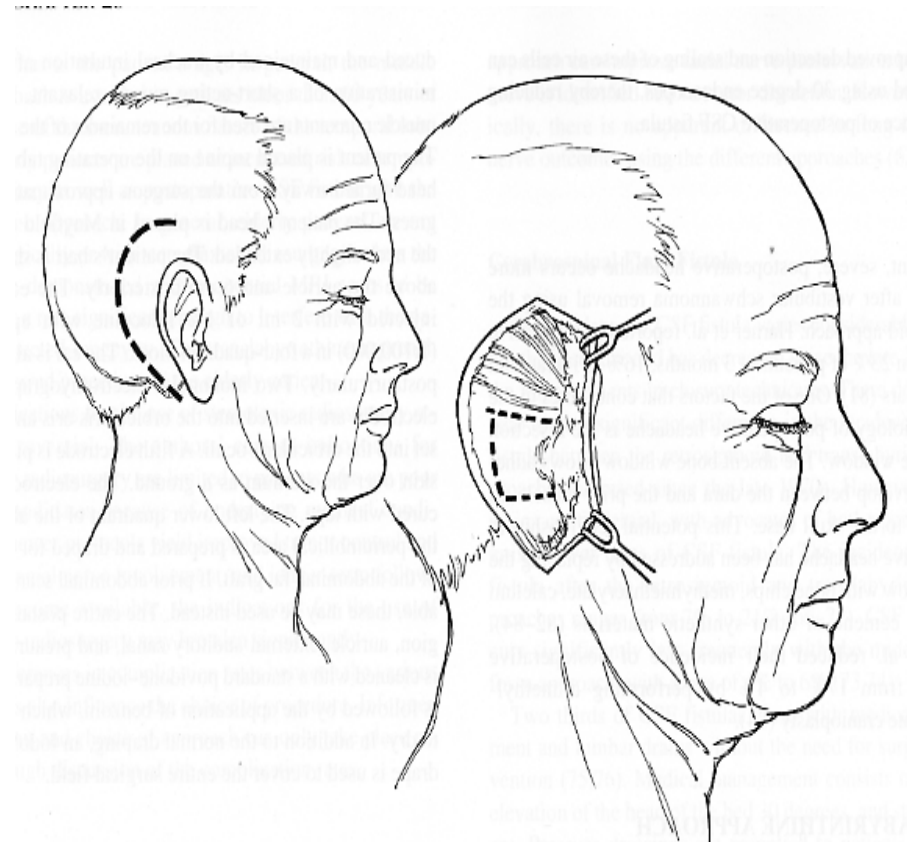
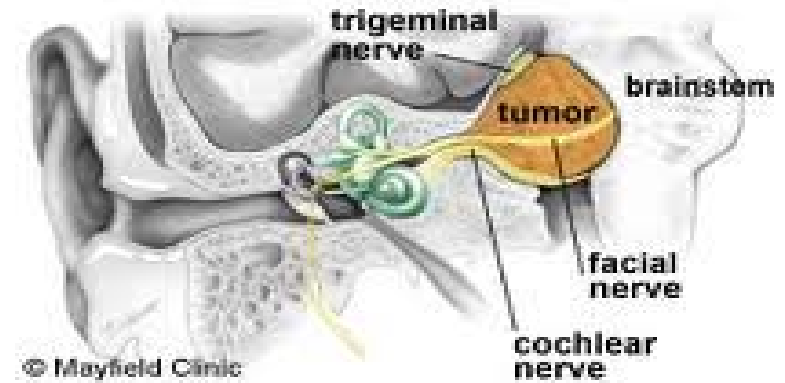


FIG. 1. An incision is created 3 cm posterior to the postauricular crease and extended 1 cm above the superior aspect of the helix. The incision is carried down to the temporalis fascia superiorly and the periosteum covering the mastoid cortex inferiorly. Parallel, horizontal incisions are created above and below the level of the external auditory canal. The incisions extend 2 cm posteriorly, at which point they are connected by a vertical incision.

Retrosigmoid

- Indications
 - Serviceable hearing
 - Large tumors
 - Compression of brainstem



acoustic neuroma

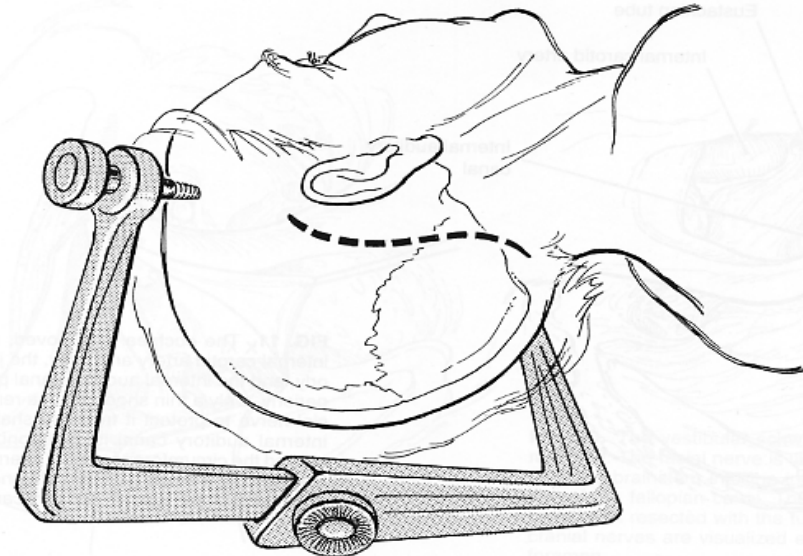


FIG. 12. The patient is placed in the three-quarters lateral position with the head placed in Mayfield tongs. A "lazy-S" incision is created four fingerbreadths behind the postauricular crease.

Middle Fossa

- Indications
 - Small tumor
 - Intraacanallicular tumor
 - Moderate CPA involvement
 - Adequate hearing (SRT < 50 db, Disc > 50%)

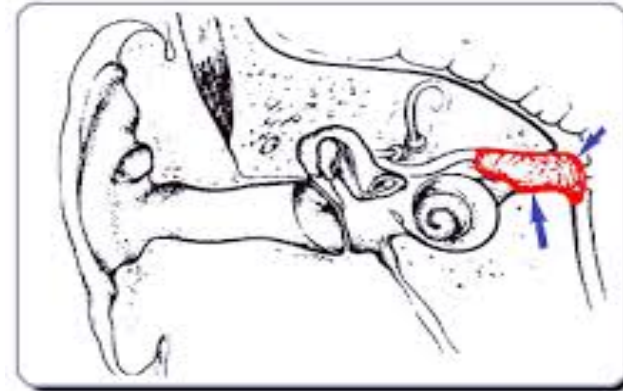


Figure C. As a tumor reaches medium size (between 1 and 3 centimeters in diameter) it extends out of the internal auditory canal and grows toward the brain stem. The larger tumors in this category make contact with the brain stem and other sensitive nerves.

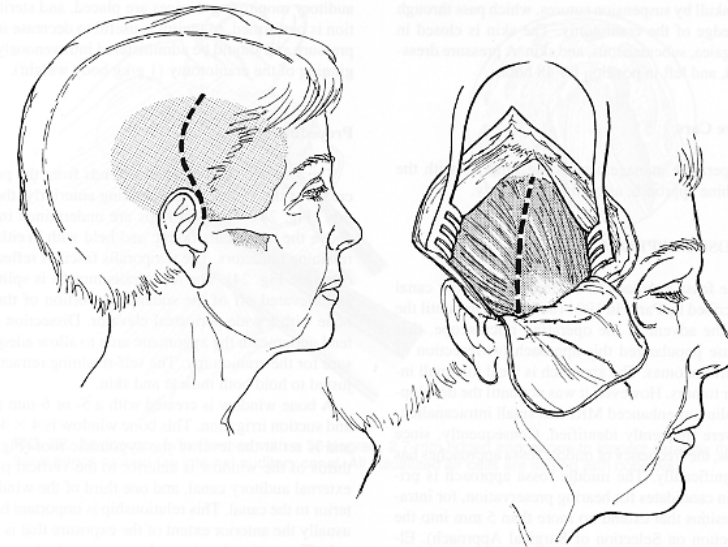


FIG. 24. A "lazy-S" skin incision extends from the preauricular crease toward the vertex. The incision is carried down to the temporalis fascia, which is elevated and reflected inferiorly. The temporalis muscle is split vertically, anterior to the plane of the external auditory canal.

Complication of surgeries

- Though many complications occur, the important one include

- Intraoperative

Cranial nerve injury- VII, V,

Bleeding

Brain edema

Venous air embolism

Cardiac arrhythmias

Brain herniation



Identify the picture



- Another name?

- Award and year?

Identify



- Nature interpretation centre, Chandigarh

Logo represent ?



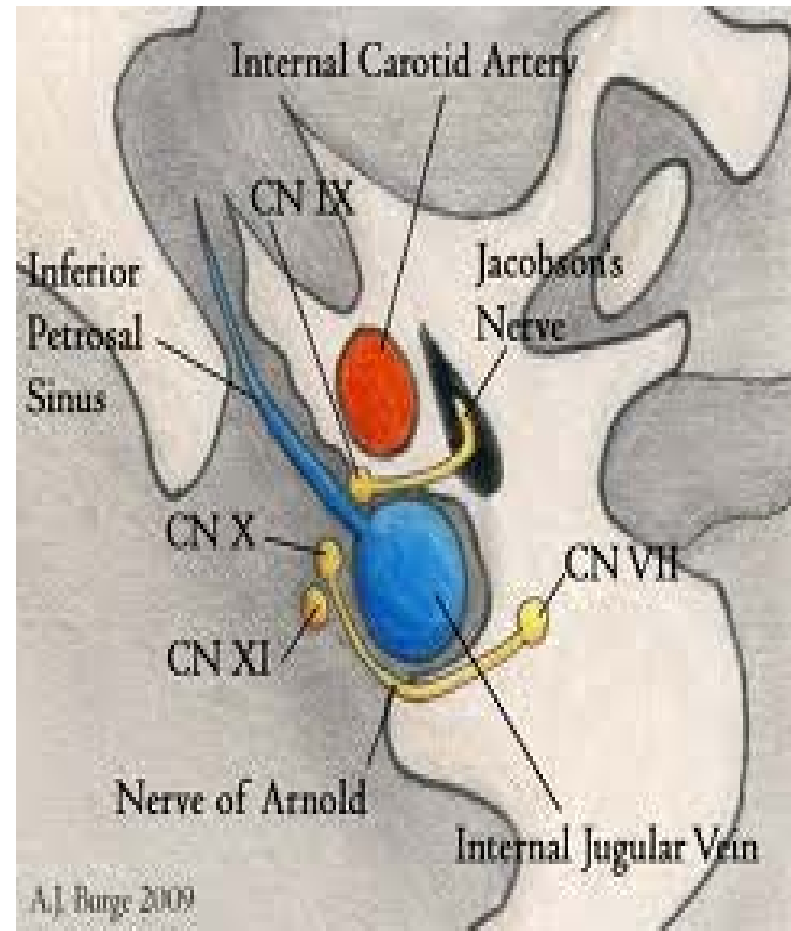
Message



Anatomy and Function of Paraganglia

Three bodies in each ear

- Jacobson's nerve
- Arnold's nerve
- in the adventitia of the jugular bulb
- blood supply is ascending pharyngeal artery via inferior tympanic and neuromeningeal branches



Clinical features

- second most common temporal bone tumor (after acoustic neuroma)
- female:male ratio 5:1
- median age 50-60 yrs (range 6 mo - 88 yrs)
- very slow growing
- spread locally in multidirectional fashion along paths of least resistance



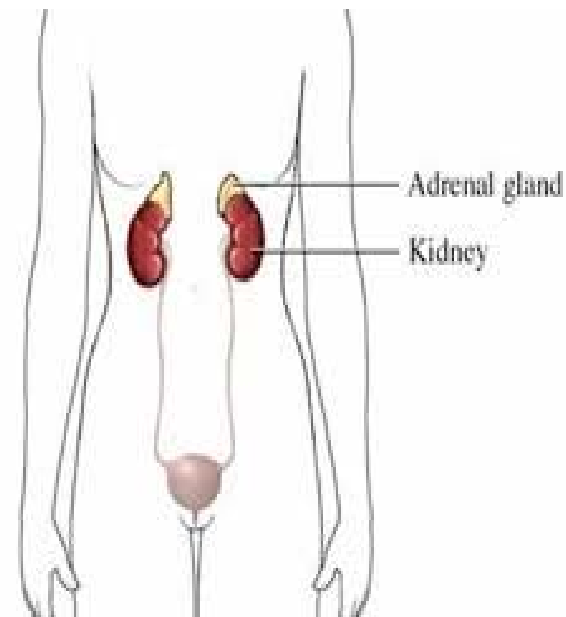
Clinical features

- Sign and symptoms can be divided into 3 type
- Those due to presence of tm in middle ear- conductive HL, aural polyp and aural discharge
- Those due to the vascularity of the tm- pulsatile tinnitus, aural bleeding



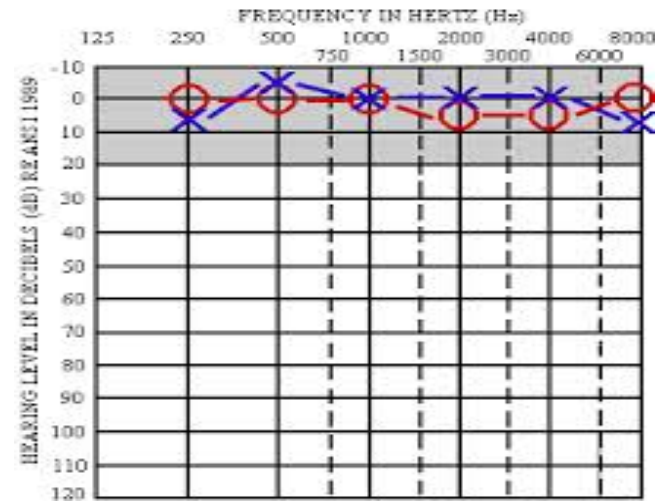
Evaluation

- question pt regarding symptoms of secreting tumor (labile B/P, tachycardia, vascular HA)
- any suspicion, obtain urine for VMA, circulating catecholamines
- if positive, get abdominal CT to r/o concomitant adrenal pheochromocytoma



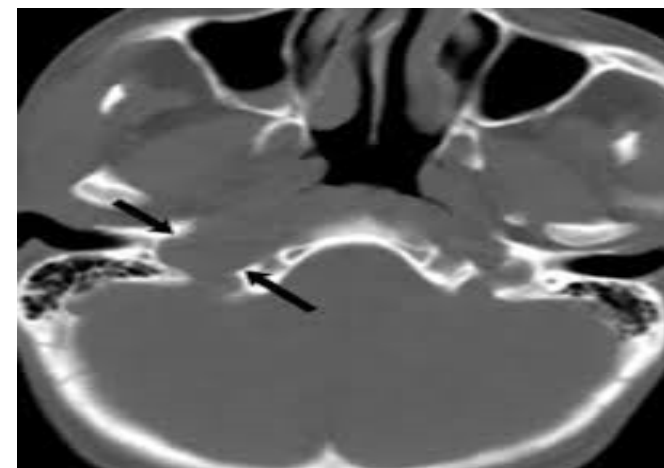
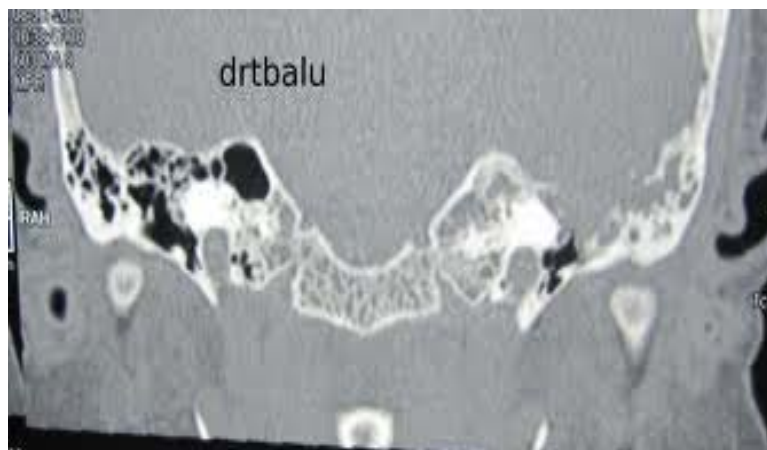
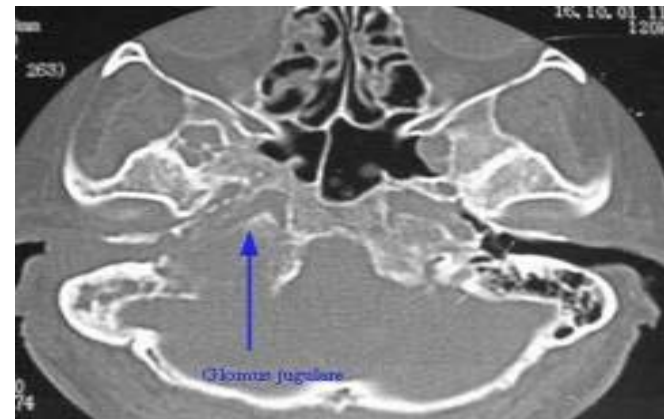
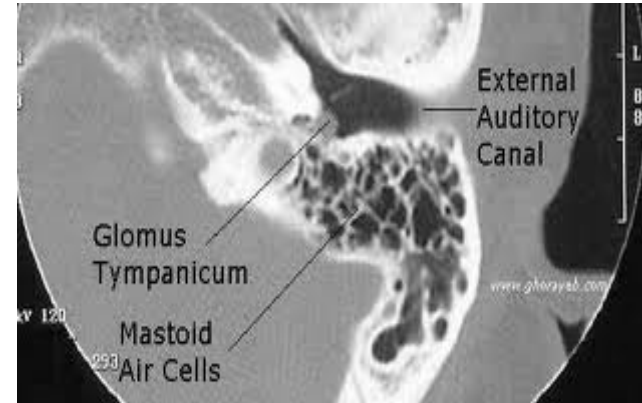
Evaluation

- obtain audiogram

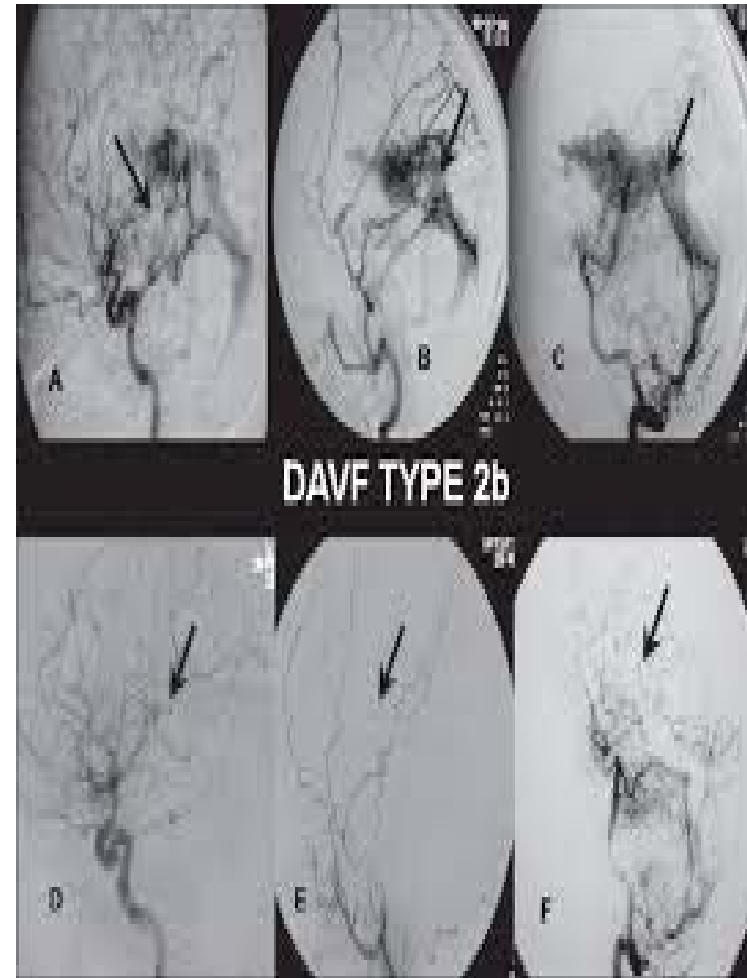


Evaluation

- imaging should include CT temporal bone and MRI

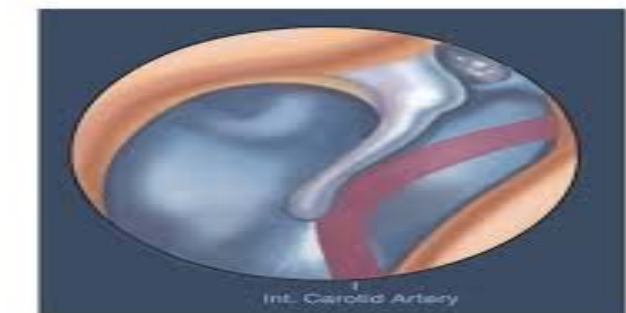


- arteriography is helpful if surgery is planned
- helps in detecting multicentric tumors, identifies feeding vessels, allows for embolization



Differential diagnosis

- Dehiscent or high riding jugular bulb
- Aberrant or laterally displaced ICA
- Acquired intratympanic carotid A aneurysm



Treatment planning

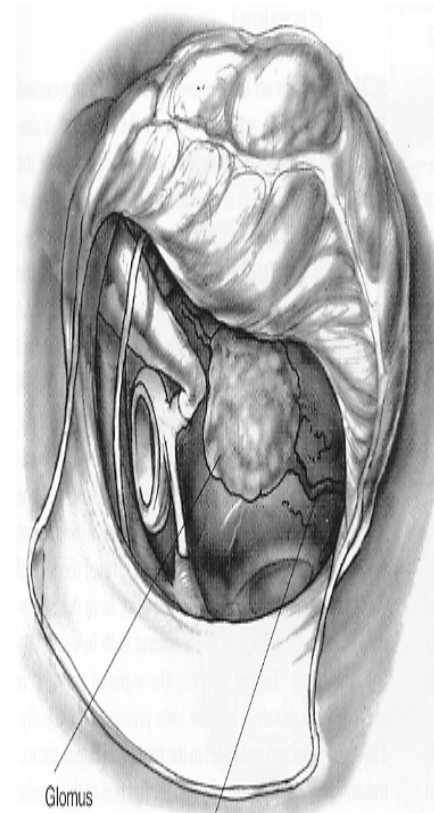
- in general, healthy younger pts (<65 yrs) should consider surgical resection
- pts with large tumors with pre-existing ipsilateral CN deficits should be offered surgery
- pts >65 with poor pulmonary fxn or other complicating medical conditions should consider primary XRT

Surgeries

Anatomic classification	Surgical approach
Tympanic	Transcanal
Tympanomastoid	Mastoid-extended facial recess
Jugular bulb	Mastoid-neck (possible limited
	Facial n rerouting)
Carotid artery	Infratemporal fossa
Transdural	Infratemporal fossa/intracranial

- Classification scheme devised by Antonio De la Cruz

Transcanal approach



Glomus
tympanicum

Inferior
tympanic artery

FIG. 8. Transcanal exposure of a tympanic tumor limited to the promontory.

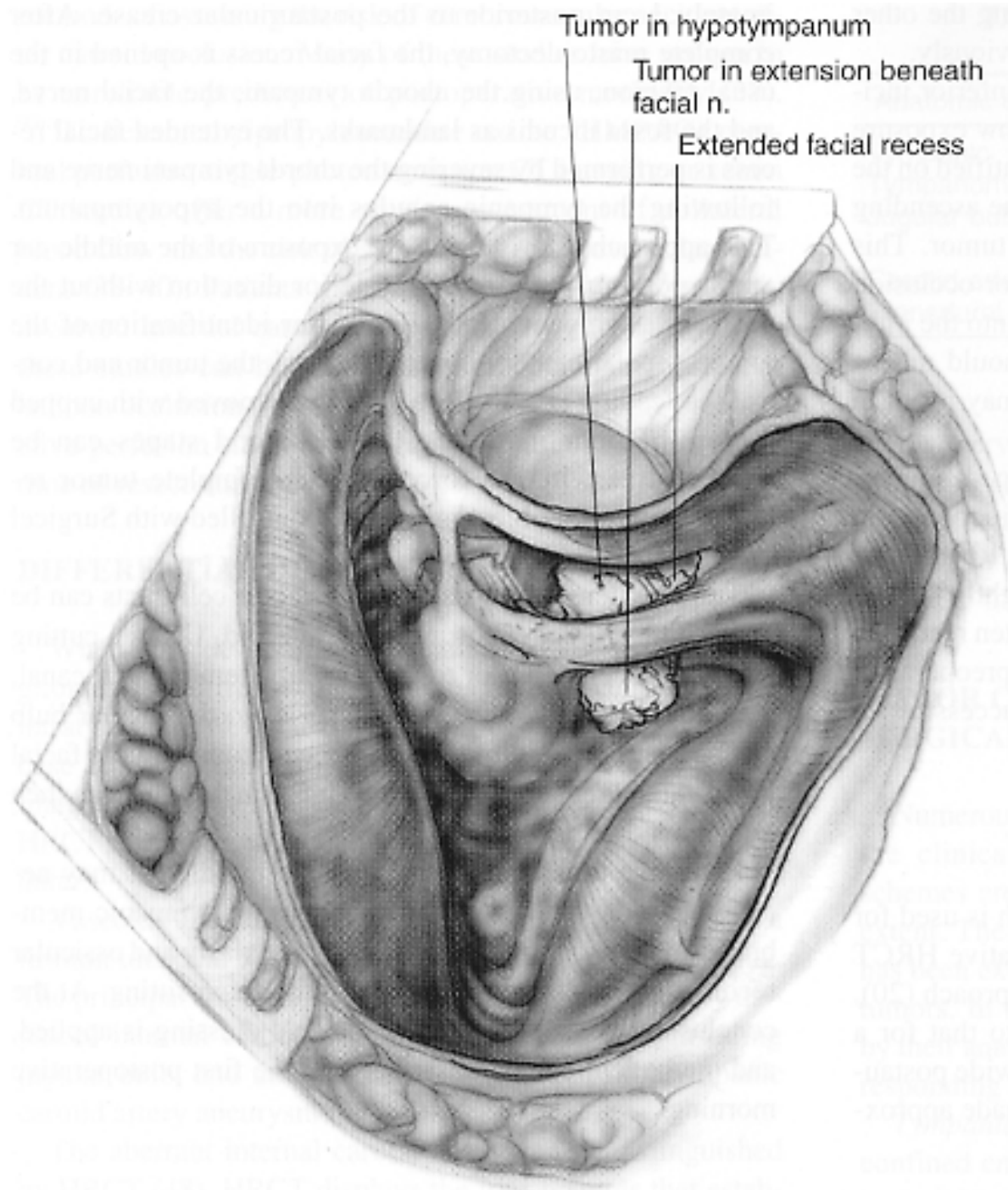


FIG. 9. Extended facial recess exposure of a tympanic tumor that has extended into the hypotympanum. The retrofacial air cells have been removed to expose tumor medial to the facial nerve.

Fisch approach

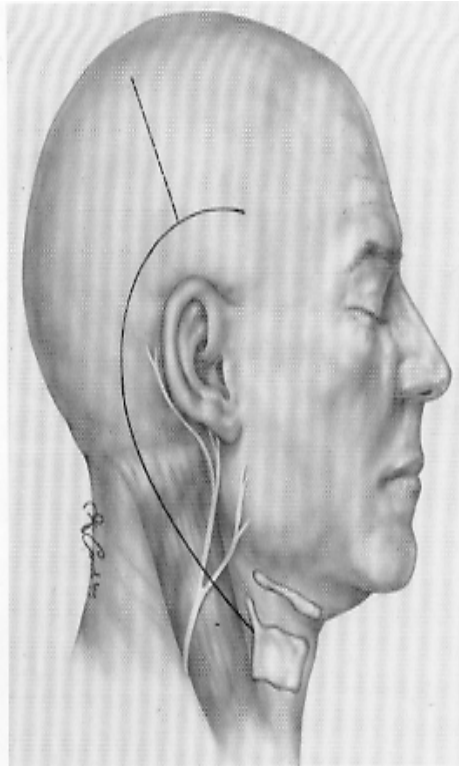


Figure 11. GJ tumor incision. The vertical dissection is executed only for temporoparietal fascia.



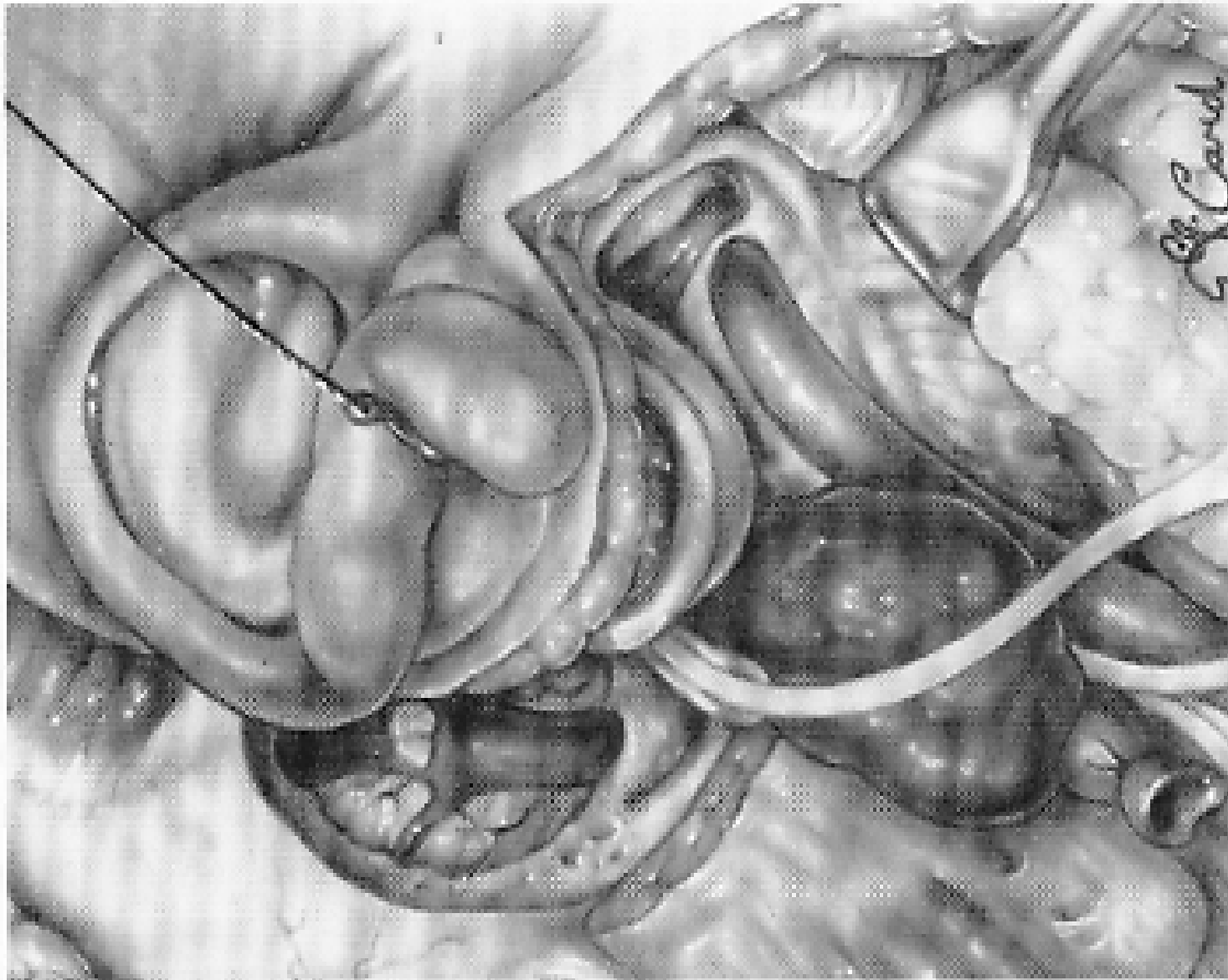


Figure 12. Distal control of ICA in small tumors can be achieved allowing for hearing preservation

Thank you.....

