

# ENT SAQ

## By: 430 ENT team

Facial nerve

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



# Ear, Nose & Throat

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# FACIAL NERVE FIBERS

- **Motor:** to the stapedius and facial muscles.
- **Secreto-motor:** to the submandibular, sublingual salivary glands and to the lacrimal glands.
- **Taste :** from the anterior two thirds of tongue and palate (Chorda Tympani).
- **Sensory:** from the external auditory meatus.

# ANATOMICAL DIVISIONS

- **Intracranial** : includes Nuclei+ Cerebellopontine angle.
- **Cranial (Intratemporal)**
- **Extracranial (Extratemporal)** : after leaving stylomastoid foramen.

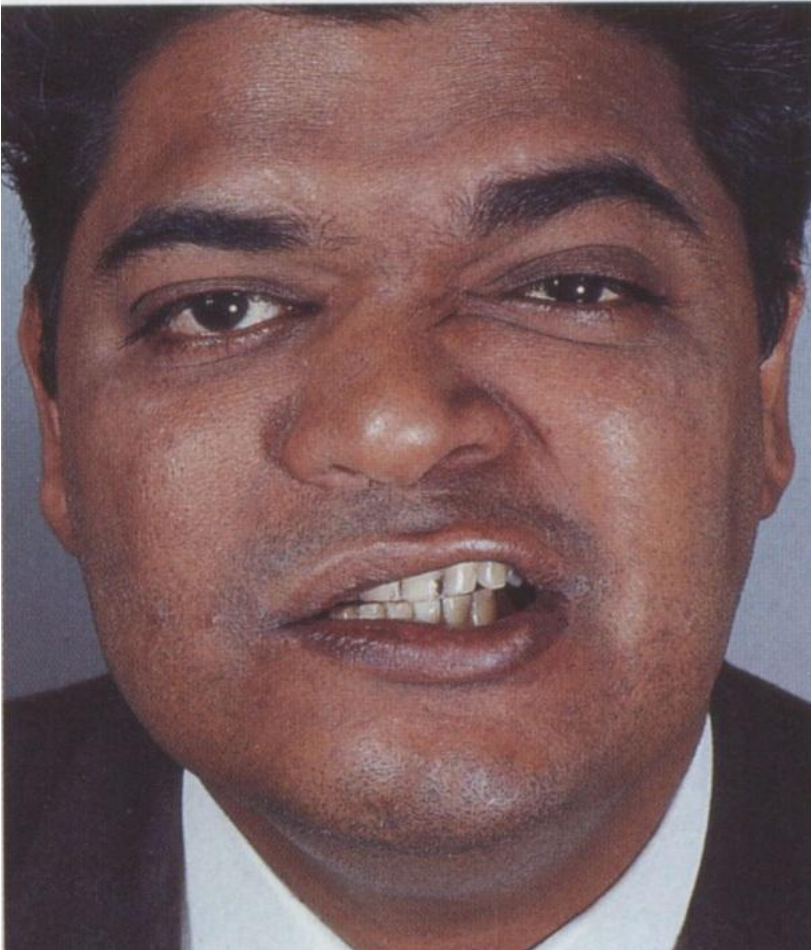
- *Upper part of the motor nucleus* receives fibers from both cerebral cortexes. While *lower part of the motor nucleus* receives fiber from the contralateral cerebral cortex.
- *Upper motor lesions* spare the upper facial muscles (frontalis M. and Orbicularis Occuli M.) and affect the contralateral lower face.
- *Lower motor lesions* affect all the ipsilateral (Whole half) facial muscles.

# CASE 1



- A. What is the abnormality and the side affected?**
- **Right lower motor neuron facial palsy**
- B. If search for a cause for this abnormality is negative, then what do we call it?**
- **Idiopathic facial paralysis (Bell's palsy)**

# CASE 2



**A. What is your diagnosis?**

- Right lower motor neuron facial palsy

**B. What is the most common cause?**

- Bell's palsy.

**C. Give a serious complication?**

- Incomplete recovery



## ■ Facial Palsy

Facial palsy may follow skull fracture or facial nerve laceration near the stylomastoid foramen, and is also an uncommon complication of middle-ear surgery and superficial parotidectomy. An extensive cholesteatoma or middle-ear carcinoma may also damage the facial nerve. In the absence of a careful examination of the tympanic membrane, such a case may be wrongly diagnosed and treated as Bell's palsy. *All facial palsies should have an otological assessment.*

*Bilaeral facial palsy* is an interesting rarity. It is the facial asymmetry of facial palsy that is conspicuous and makes the diagnosis obvious; a bilateral facial palsy may not be so readily diagnosed.



**Fig. 2.100 Bell's palsy is the commonest cause of facial palsy** and is a lower motor neuron lesion of the facial nerve, of unknown etiology, involving a loss of movement of facial muscles, usually total, of one side of the face. This includes the muscles of the forehead (with facial paralysis due to an upper motor neuron lesion, such as a stroke, these muscles continue to function due to cross innervation distal to the cortex).

Pain in or around the ear frequently precedes Bell's palsy, and a history of draught on the side of the face may be significant. Bell's palsy may be recurrent and associated with parotid swelling (Melkersson–Rosenthal's syndrome).

The etiology and management of Bell's palsy is controversial, although the cause is almost certainly viral.

Edema of the facial nerve near the stylomastoid foramen has been demonstrated. Most Bell's palsies recover completely and spontaneously within 6 weeks. If seen in the early stages, however, antiviral treatment and prednisolone orally should be given. Providing there is no general medical contraindication to steroids, "a" suggested dose of prednisolone is: \* 20 mg q.d.s. five days: 20 mg t.d.s. one day: 20 mg b.d. one day: 20 mg o.d. one day: 10 mg o.d. one day. Physiotherapy maintains tone in the muscles during recovery and also has a place in the management of Bell's palsy. Bilateral facial palsy is very rare. These cases, however, require investigation to exclude underlying disease, e.g., Lyme disease, sarcoidosis.

# CASE 3



➤ This is a picture of an old man presented after parotidectomy.

A. what is your diagnosis?

- Right lower motor neuron facial palsy

B. Mention 2 areas supplied by facial nerve (but not motor)

- **Secreto-motor:** to the submandibular, sublingual salivary glands and to the lacrimal glands.
- **Taste:** from the anterior two thirds of tongue and palate (Chorda Tympani).
- **Sensory:** from the external auditory meatus.



# CASE 4



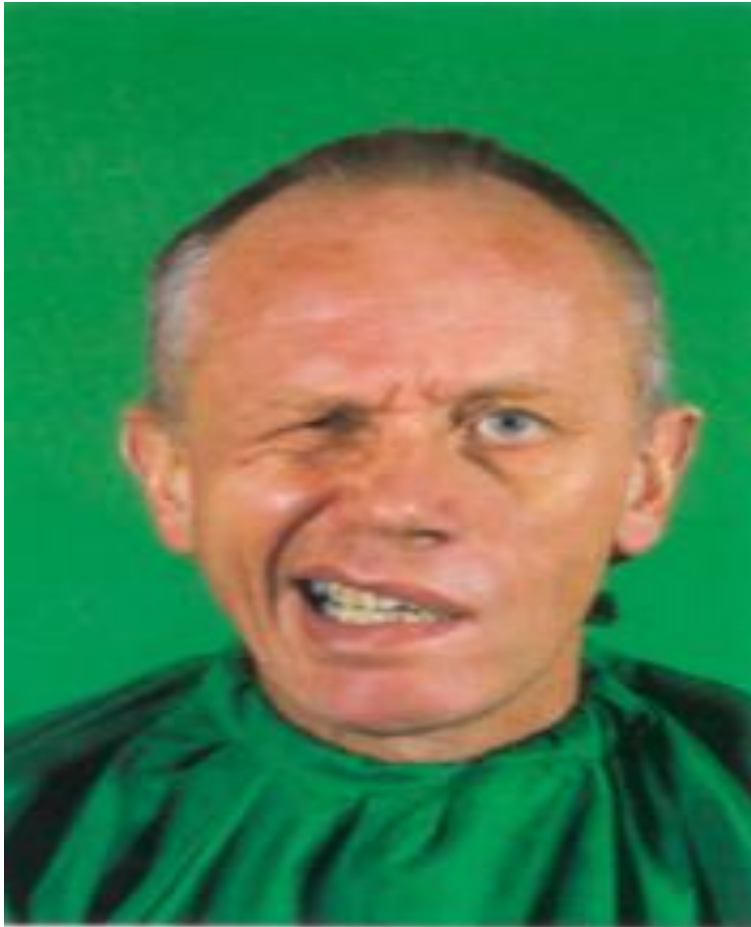
**A. What is the abnormality and the side affected?**

- **Right lower motor neuron facial palsy**

**B. If search for a cause for this abnormality is negative, then what do we call it?**

- **Idiopathic facial paralysis (Bell's palsy)**

# CASE 5



➤ This is a 40 years old man with this condition which started 2 days ago.

**A. What is your diagnosis?**

- **Left lower motor neuron lesion of the facial nerve**

**B. Mention two iatrogenic causes for such a case?**

- **Mastoidectomy**
- **Parotid surgery**

# CASE 6



**A. Mention two causes for this condition?**

- Idiopathic/ bell's palsy
- Operations at the CP angle, ear and the parotid glands

**B. How to differentiate clinically between upper and lower motor neuron lesion?**

- Ask the patient to elevate her eye brow if she can do it this means it is upper motor neuron lesion if she can't it is lower motor neuron lesion.

# CASE 7



- **Right lower motor neuron facial paralysis as a complication of middle ear and mastoid surgery.**

# CASE 8



- **Left lower motor neuron facial nerve palsy**



# CASE 9

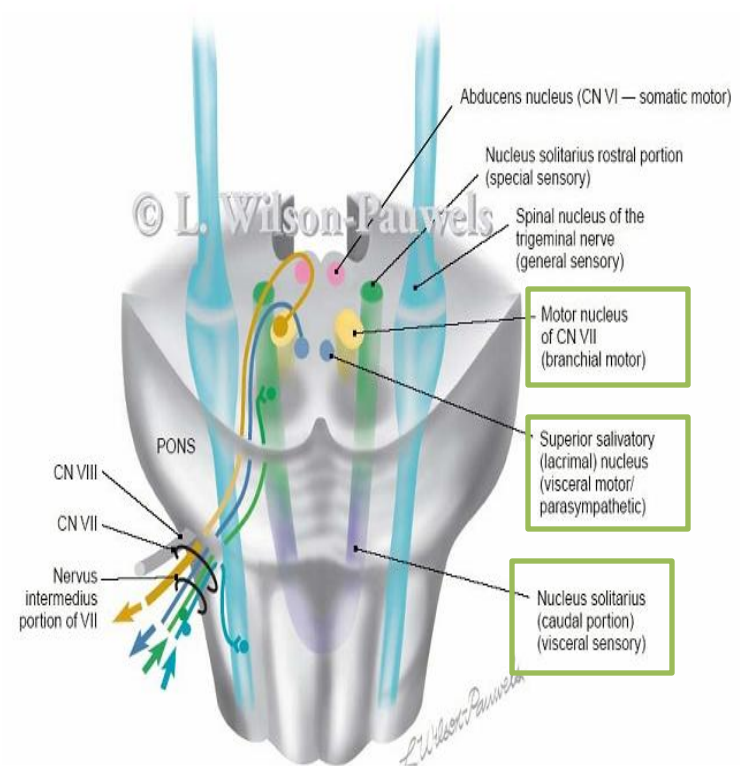


- **Right lower motor neuron facial nerve palsy**



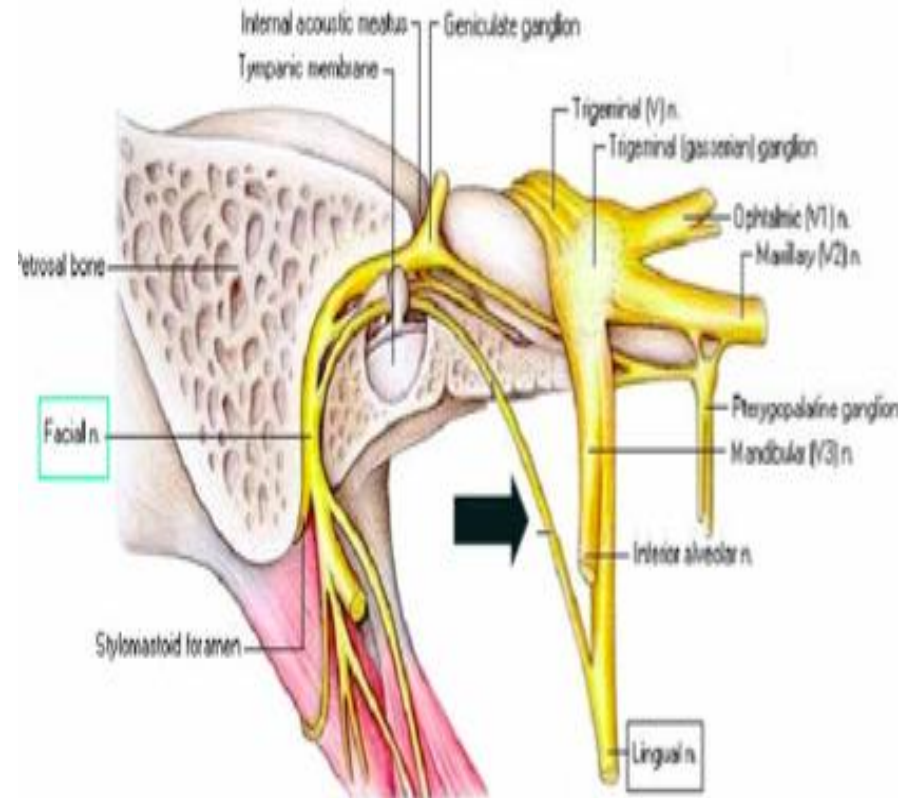
# 1. Intracranial part

- It has the nuclei WHICH are:
- Superior salivary nucleus  
(Parasympathetic)
- Motor Nucleus (most part of the facial nerve)
- Nucleus tractus solitarii (Solitary Nucleus) → (taste)



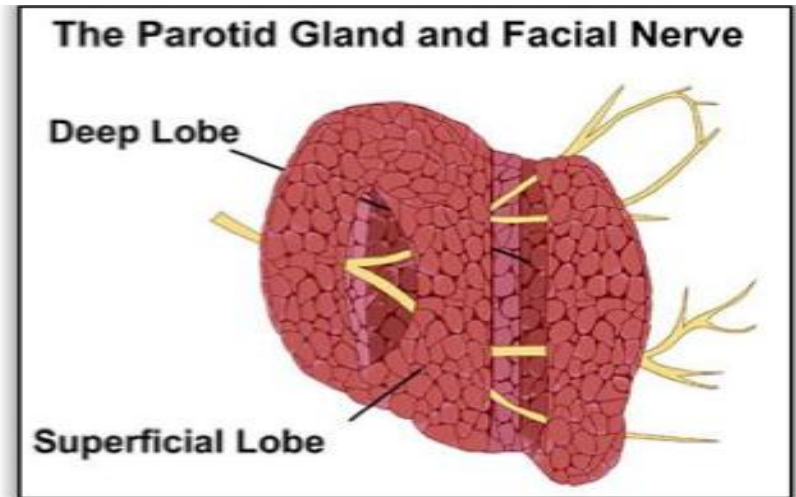
## 2. Intratemporal part of the facial nerve

- From the Internal Auditory Meatus (association with vestibulocochlear nerve). Then goes to Fallopian canal.
- Fallopian Canal has a horizontal part and a vertical part. **AND its divided to:**
  - labyrinth: Related to the inner ear.
  - Tympanic: Related to the middle ear.
  - Vertical part (mastoid): Related to the external ear
- **Branches:** 1-Supplies Stapedius Muscle 2-Chorda Tympani.



### 3. Extracranial part

- After it leaves the temporal bone through the Stylomastoid foramen, it goes through the parotid gland.
- In the parotid gland it divides into its **FIVE branches** which are:
- **Temporal:** Supplies frontalis
- **Zygomatic:** orbicularis oculi (most important branch) responsible for closure of the eye.
- **Buccal:** buccinator
- **Mandibular:** orbicularis oris
- **Cervical:** Platysma

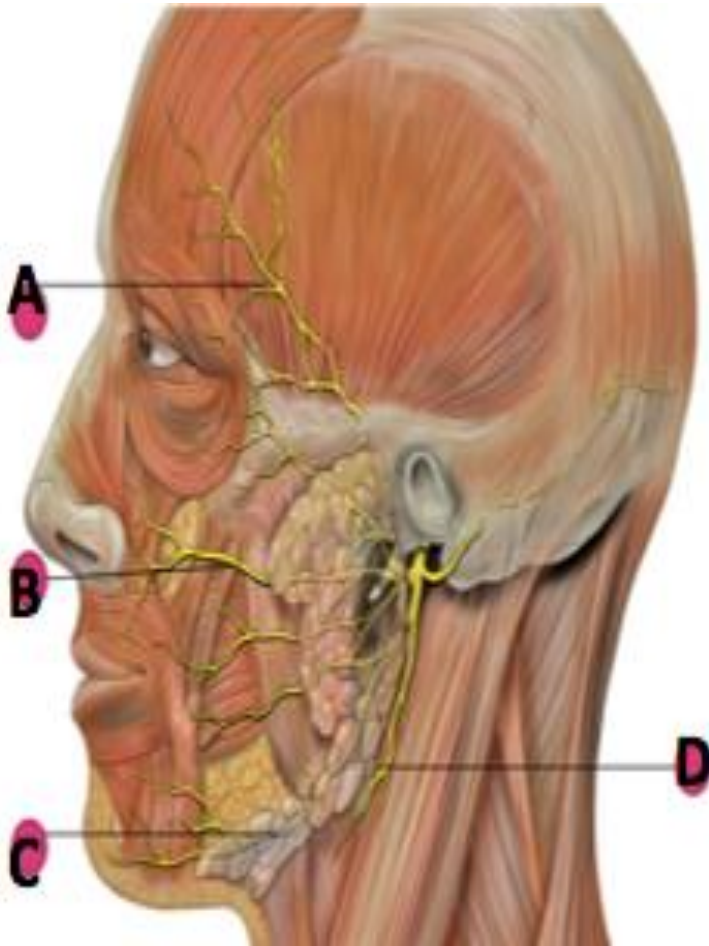


## Branches of the Facial Nerve





# Identify:

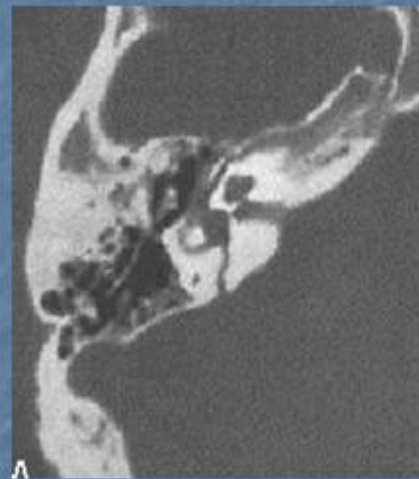
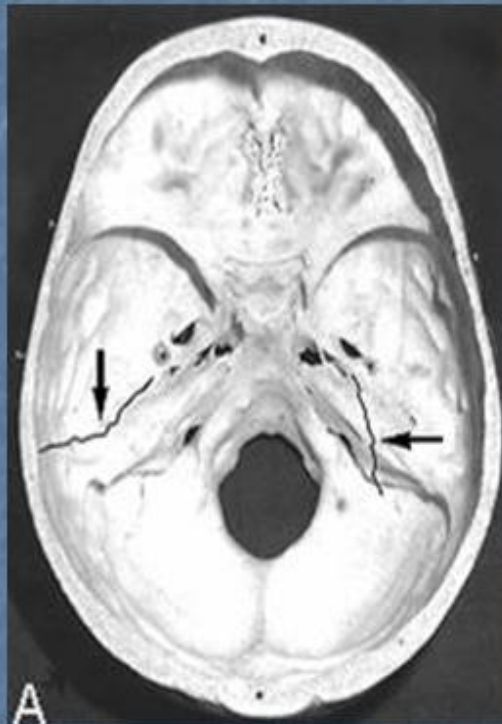


- A. Temporal branch of the facial nerve**
- B. Buccal branch of the facial nerve**
- C. Mandibular branch of the facial nerve**
- D. Cervical branch of the facial nerve**

# FRACTURE TEMPORAL BONE



Longitudinal #



Transverse #

# Fracture of the temporal lobe

	Transverse (1)	Longitudinal (2)
<b>Extension</b>	Into bony labyrinth and internal auditory meatus	Into middle ear
<b>Incidence</b>	10 to 20%	70 to 90%
<b>Etiology</b>	Frontal/occipital trauma	Lateral skull trauma
<b>CN pathology</b>	CN VII palsy (50%)	CN VII palsy (10 to 20%)
<b>Hearing loss</b>	Sensorineural loss due to direct cochlear injury	Conductive hearing loss secondary to ossicular injury
<b>Vestibular symptoms</b>	Sudden onset vestibular symptoms due to direct semicircular canal injury (vertigo, spontaneous nystagmus)	Rare
<b>Other features</b>	Intact external auditory meatus, tympanic membrane $\pm$ hemotympanum Spontaneous nystagmus CSF leak in eustachian tube to nasopharynx $\pm$ rhinorrhea (risk of meningitis)	Torn tympanic membrane or hemotympanum Bleeding from external auditory canal Step formation in external auditory canal CSF otorrhea Battle's sign = mastoid ecchymoses Raccoon eyes = periorbital ecchymoses

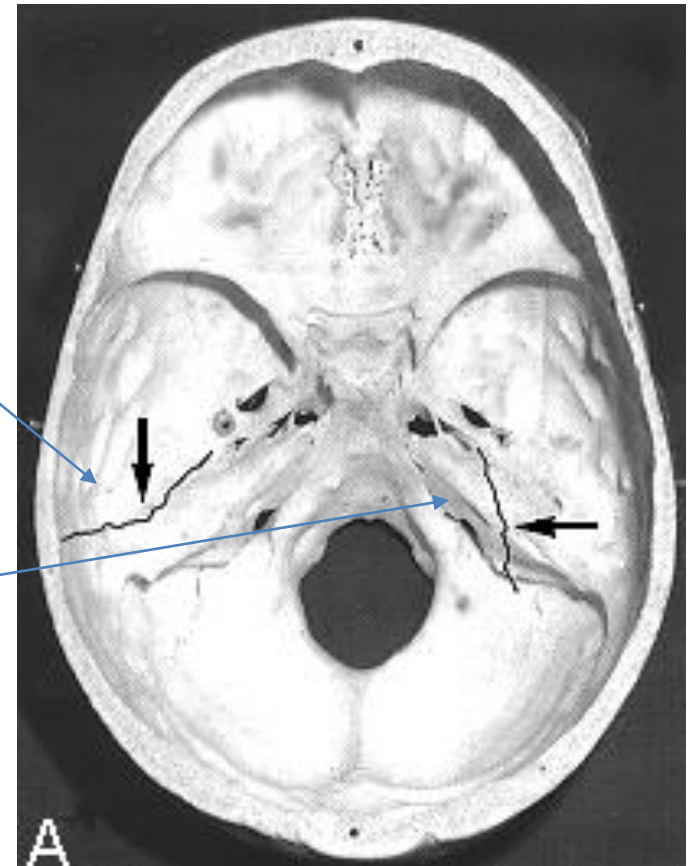
# Temporal Bone Fracture

## Longitudinal

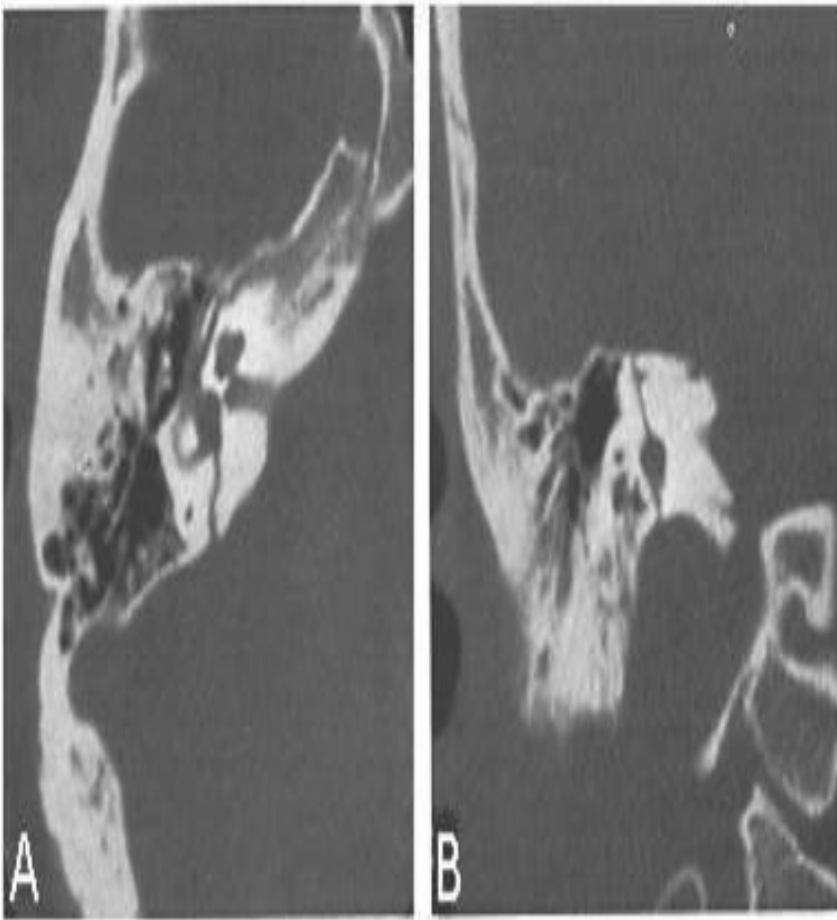
- 80% of Temporal Bone Fractures
- 15-20% Facial Nerve involvement

## Transverse

- 20% of Temporal Bone Fractures
- 50% Facial Nerve Involvement



# CASE 10



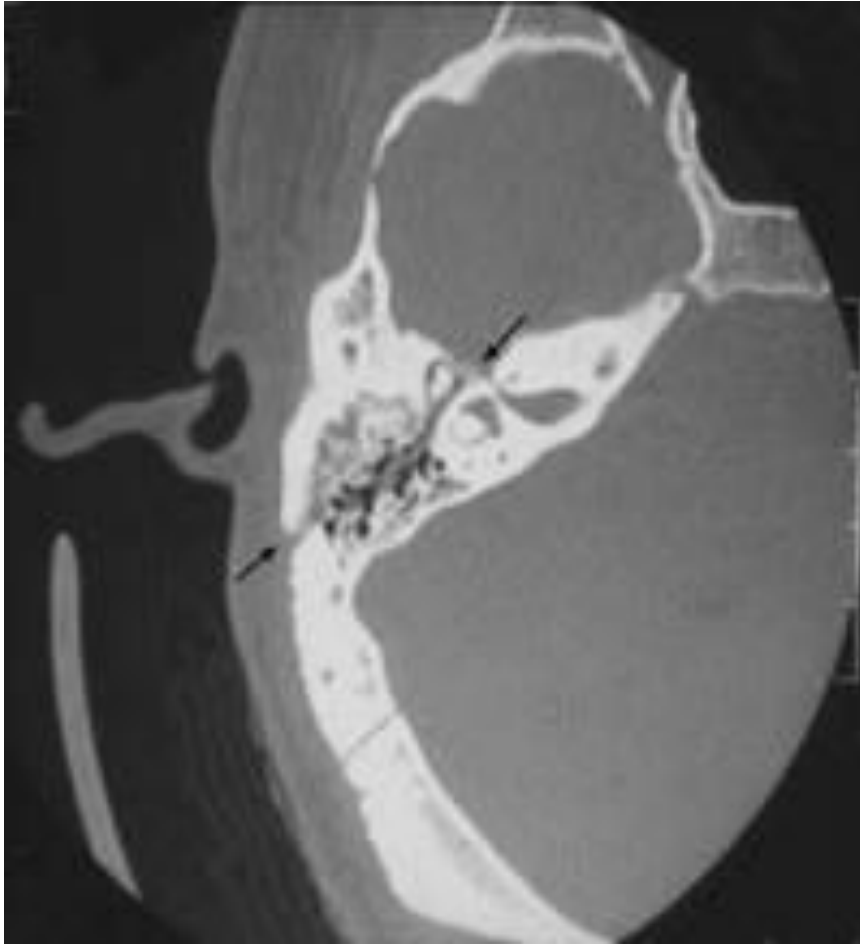
➤ 36 years old man with RTA:

**A. What is your diagnosis?**

- Transverse fracture of temporal bone
- **B. Mention 2 otologic complications?**
- Sensorineural loss due to direct cochlear injury
- Sudden onset vestibular symptoms due to direct semicircular canal injury (vertigo, spontaneous nystagmus)



# CASE 11



➤ **24 yrs old man involved in RTA.**

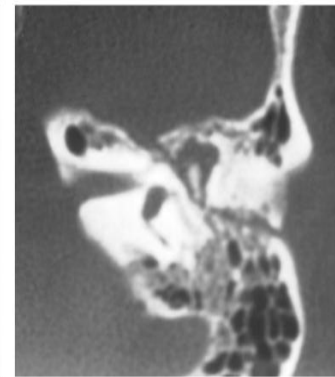
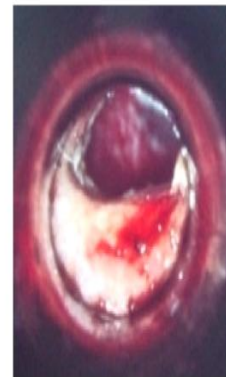
**A. what is your diagnosis?**

- Longitudinal fracture of temporal bone

**B. mention 2 other clinical findings?**

- Torn tympanic membrane or hemotympanum.
- Bleeding from external auditory canal.
- Step formation in external auditory canal .
- CSF otorrhea.
- Battle's sign = mastoid ecchymoses.
- Raccoon eyes = periorbital ecchymoses.

# Skull base fracture



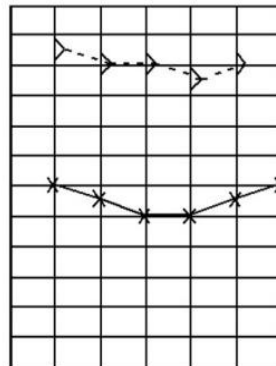
# Skull base fracture

1. Battle sign
2. hemotympanum
3. Rupture tympanic membrane
4. Longitudinal fracture of temporal bone
5. CSF otorrhea

Raccoons eye sign



CSF otorrhea



# CASE 12



➤ 34 yrs old with LMN facial paralysis.

**A. What is your diagnosis?**

- Ramsay-Hunt syndrome

**B. what is your management?**

- Acyclovir, steroid and symptomatic





# CASE 13

- Upper motor neuron facial nerve palsy



From  
internet





# CASE 14



**A. What is the most likely diagnosis?**

- **Left lower motor neuron facial nerve palsy**

**B. Mention 2 common causes?**

- **BELL'S PALSY**
- **Operations at the CP angle, ear and the parotid glands**

# Causes of Facial nerve palsy

## Chronic otitis media



## Cholesteatoma

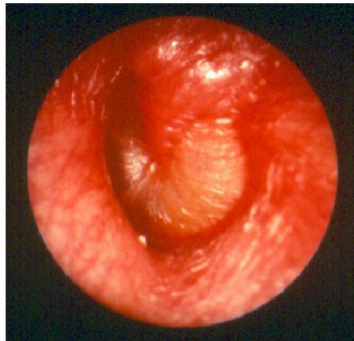
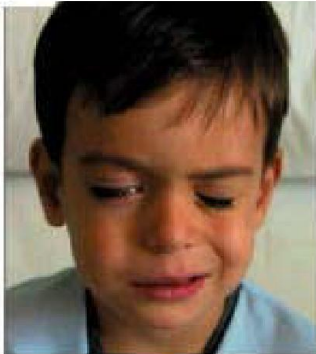


## Melkersson-Rosenthal syndrome



# Causes of Facial nerve palsy

## Otitis media



# Causes of Facial nerve palsy

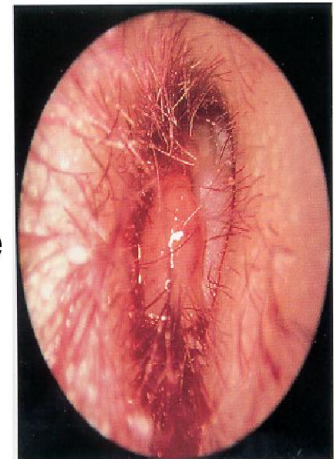
## Mastoiditis



## Malignant Otitis Externa

### 4 Ds

- Diabetes mellitus
  - Discharge (Purulent )
  - Discomfort
  - Dysfunction Cranial nerve
- 
- Granulation obscured TM





# Congenital facial palsy

