



# Facial Nerve Palsy

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Part 1

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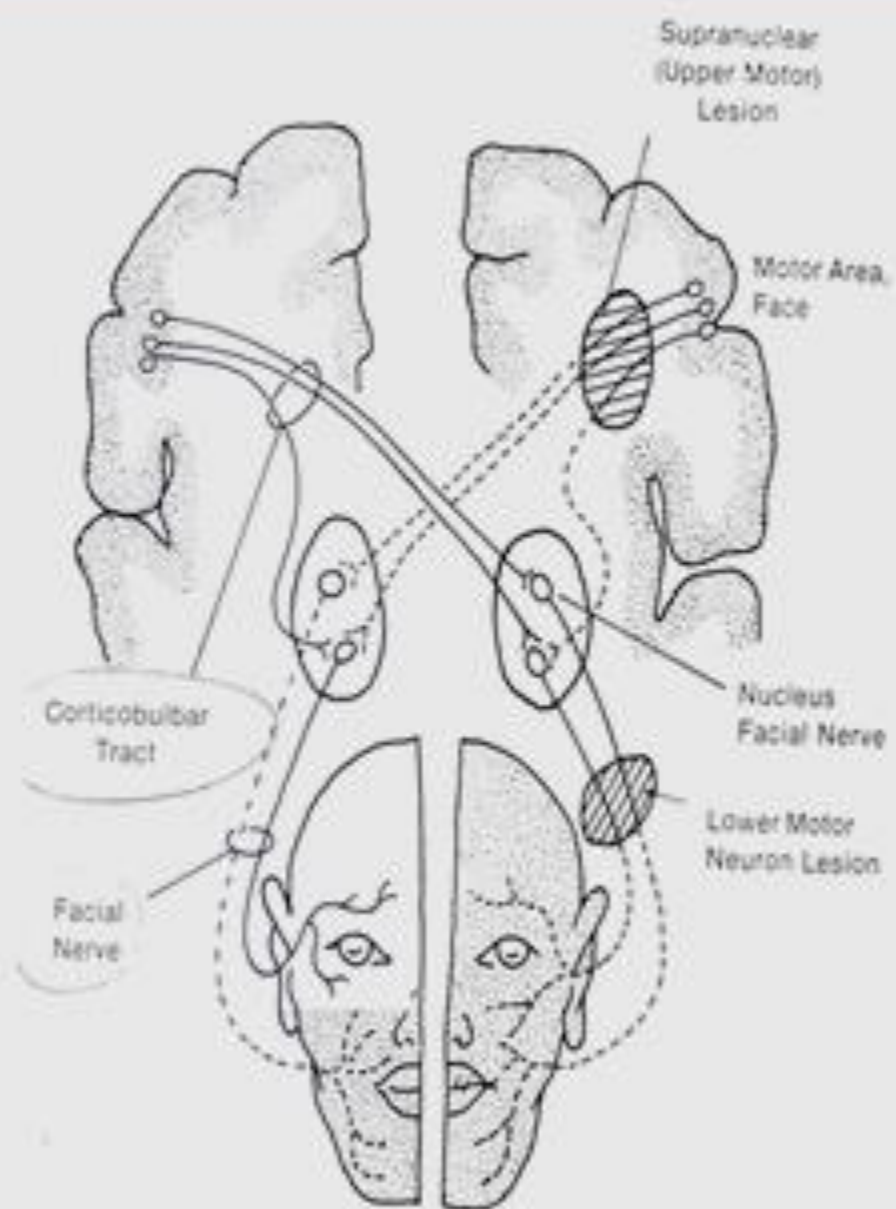
# Anatomy

- Facial nerve is a mixed nerve, having a motor root and a sensory root.
- Motor root supplies all the mimetic muscles of the face which develop from the 2<sup>nd</sup> brachial arch.
- Sensory root “nerve of Wrisberg” carries taste fibers from the anterior 2/3 of the tongue and general sensation from the concha and retroauricular skin.

- Also it carries secretomotor fibers to the lacrimal, submandibular and sublingual glands as well as those in the nose and palate.

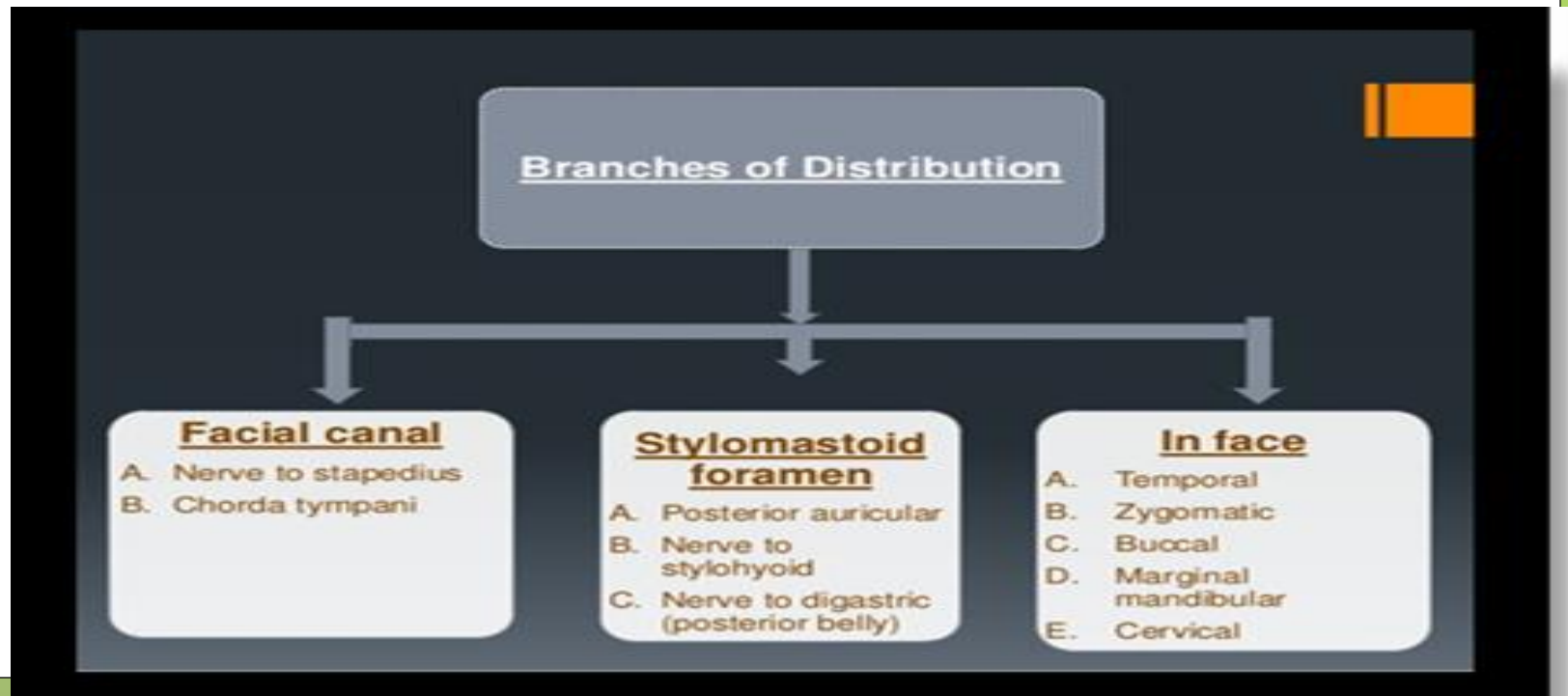
### Parts of facial nerve

- Intracranial part
- Intratemporal part
- Extracranial part



# Intratemporal segments

- Meatal
- Labyrinthine
- Tympanic, horizontal
- Mastoid, vertical



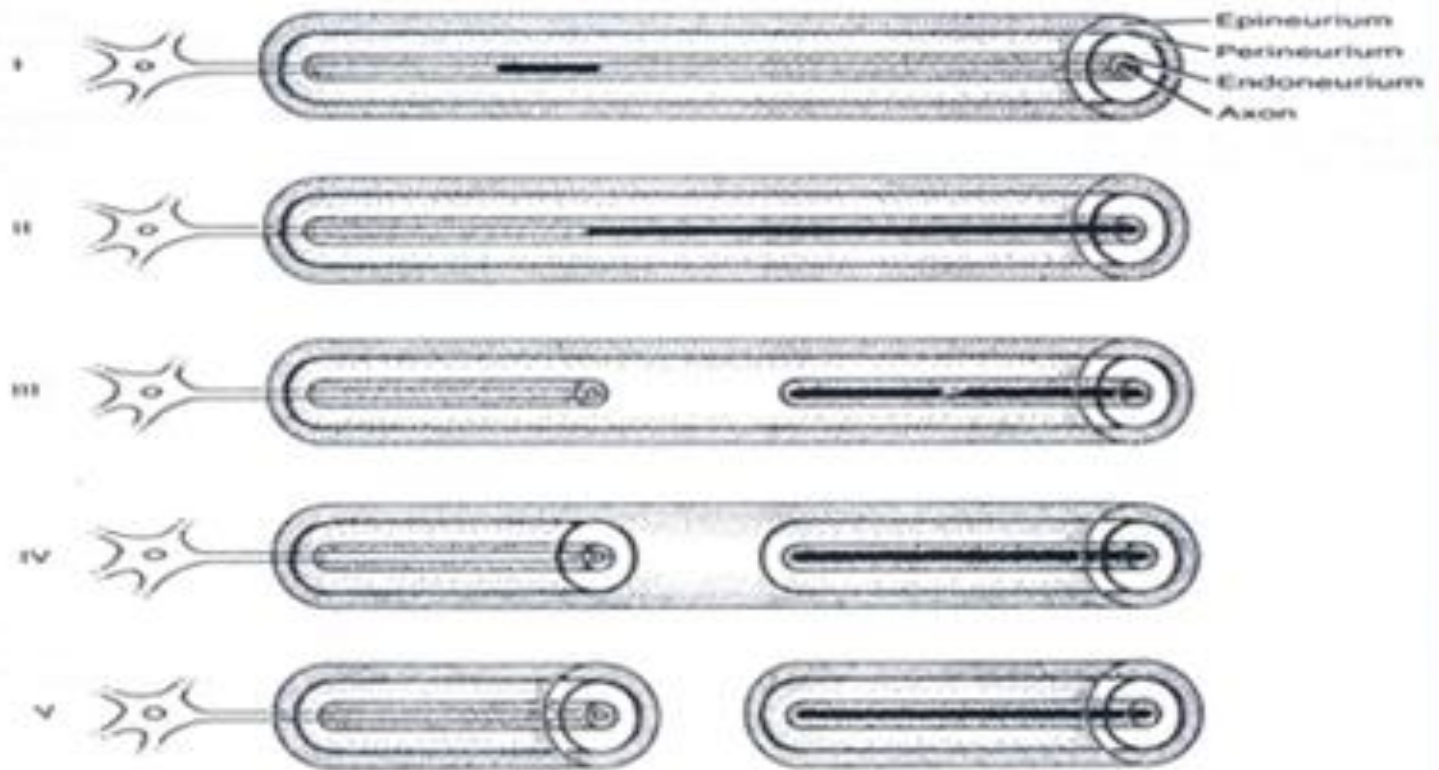
# Pathophysiology

## Severity of injury

### ○ **Saundersland classification:**

- **1°: Partial block: Neuropraxia**
- **2°: Loss of axons: axonotemesis**
- **3°: Injury to the endoneurium: neurotemesis**
- **4°: Injury to the perineurium: partial transection**
- **5°: Injury to the epineurium: complete transection**

# Sunderland Classification of nerve injury



# History:

- **Onset: Sudden vs. Gradual**
- **Duration:**
- **Rate of progression:**
- **Recurrent or familial**
- **Associated symptoms**
- **Medical history**
- **Previous surgeries**



# Physical exam:

- **Complete vs. incomplete**
- **Segmental vs. uniform involvement**
- **Unilateral vs. bilateral**
- **Cranial nerves assessment**
- **Neurologic evaluation**
- **Cerebellar signs.**
- **Microscopic otoscopy**
- **Complete head and neck exam**

## Physical exam:

- **Localization of facial nerve lesion:**
- **Central vs. Peripheral.**
- **Level of nucleus**
- **CPA level**
- **Bony canal level: Topodiagnostics**
- **Outside the Temporal bone**

# Physical exam:

- Pure-tone audiometry
- Electrophysiologic tests
- Imaging tests
- Others
- Topodiagnosics:
  - Schirmer's test:
  - Stapedial reflex:
  - Taste test:
  - Submandibular salivary flow test: Warton's ducts

- **Electrophysiologic tests:**

- **Nerve Excitability Test: NET**
  - **Maximum stimulation Test: MST**
  - **Electroneurography: ENG**
  - **Electromyography: EMG**
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- **Nerve Excitability Test: NET :**

- **Indication: complete paralysis < 3wks**
- **Interpretation: < or = 3.5 mA threshold:  
Prognosis Good**
- **Limitation: Not useful in the 1<sup>st</sup> 3 days or during recovery**

# ○ **Maximum stimulation Test: MST:**

- **Indication: complete paralysis < 3wks**
- **Interpretation: Marked weakness or no muscle contraction: advanced degeneration with guarded prognosis**
- **Limitation: Not Objective.**

## ○ **Electromyography: EMG**

- **Indication: Acute paralysis less than 1 week or chronic paralysis longer than 2 weeks**
- **Interpretation:**
  - **Active mu: intact motor axons**
  - **Mu + fibrillation potentials: partial degeneration**
  - **Polyphasic mu: regenerating nerve**
- **Limitation: cannot assess degree of degeneration or prognosis for recovery.**

## ○ **Electroneurography: ENoG :**

- **Indication: complete paralysis < 3wks**
- **Interpretation: < 90% degeneration: prognosis is good; > or = 90%: prognosis is question**
- **Limitation: False-positive results in deblocking phase.**

# Causes:

- **Central:**
- **Intacranial part:**
- **Intratemporal part:**
- **Extracranial part:**
- **Systemic:**



# Causes:

## ○ Central:

- Brain abscess
- Pontine glioma
- Poliomyelitis
- Multiple sclerosis

## Intacranial part:

- Acoustic neuroma
- Meningioma
- Metastatic CA
- Meningitis

## **Causes:**

### **○ Intratemporal part:**

#### **1-Idiopathic:**

- Bell's palsy**
- Melkersson's syndrome**

#### **2-Infections:**

- ASOM**
- CSOM**
- Herpes Zoster Oticus**

### 3-Trauma:

- **Surgical:**

- **Mastoidectomy**
- **Stapedectomy**

- **Accidental: # temporal bone**

### 4-Neoplasms:

- **Glomus jugulare tumour**
- **Facial nerve neuroma**
- **Metastatic CA**

## Extracranial part:

- Parotid gland CA
- Parotid gland surgery
- Parotid gland injury
- Neonatal facial nerve injury

## Systemic:

- DM
- Hypothyroidism
- Uremia
- PAN
- Wegener's granulomatosis
- Sarcoidosis
- Leprosy
- Leukemia

# Complications:

- Incomplete recovery
- Exposure keratitis
- Synkinesis
- Tics and spasms
- Contractures
- Crocodile tears
- Frey's syndrome “gustatory sweating”
- Psychological and social problems