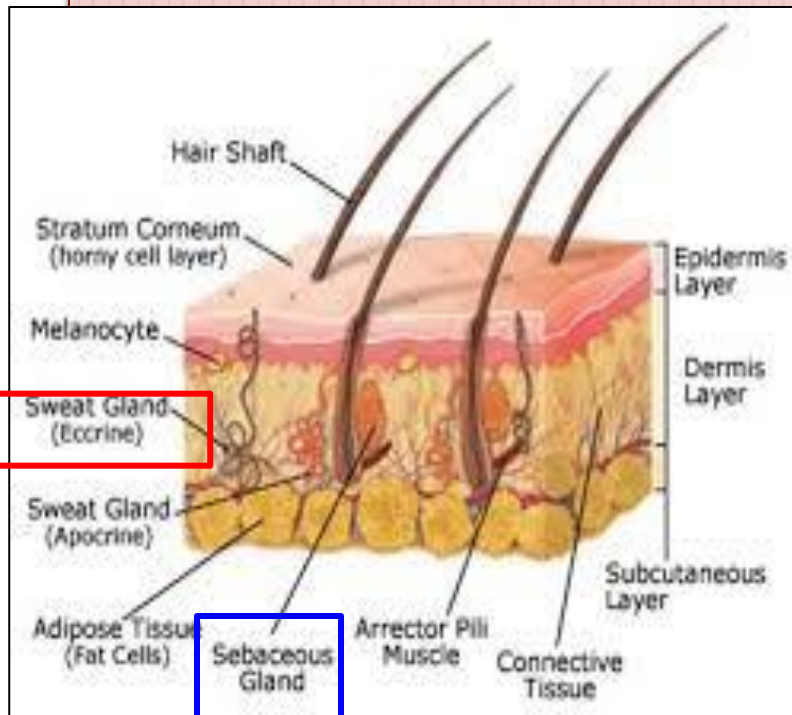


Clinical Anatomy of the Face

DR JAMILA EL MEDANY



Criteria of Skin of the Face



- Numerous **Sweat** and **Sebaceous** glands.
- **Connected** to the underlying bone by **Loose connective tissue**.
- **No Deep Fascia** in the face, because of this, facial lacerations tend to gap.
- The looseness of the subcutaneous tissue enables fluid and blood to accumulate in the loose connective tissue following bruising of the face.
- Similarly, facial inflammation causes considerable **swelling**.



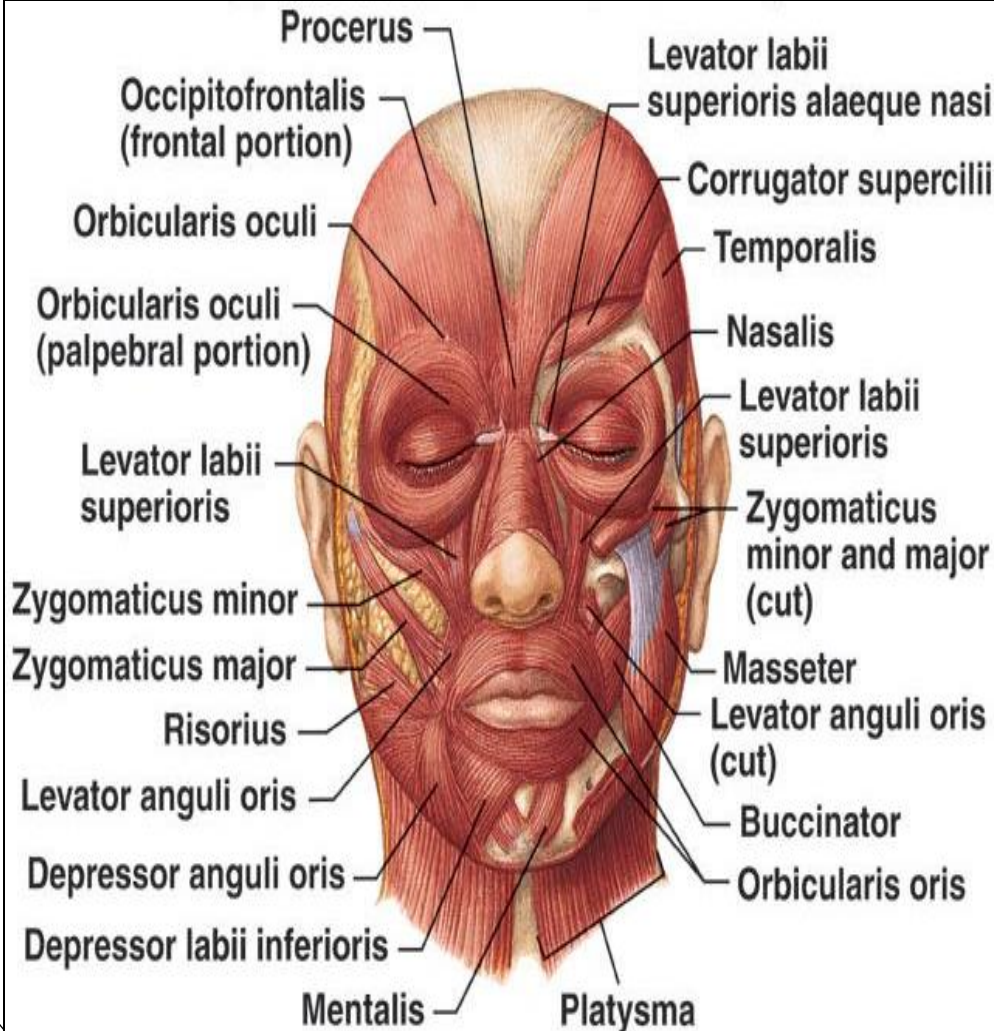
FIGURE 4-13 She was wearing glasses at the time she was struck. The laceration at the edge of the eye was caused by a blow to the glasses. See next photo.

SKIN TENSION LINES (STLs)



- They are the result of a complex interaction between internal and external factors involving the skin. The intrinsic framework of the skin, which consists of elastin and collagen, progressively loosens with age. Its interaction with the muscles of facial expression leads to the development of (STLs). Generally, STLs are perpendicular to the underlying muscles of the face. Aging, particularly, tends to accentuate the appearance of STL
- **Incisions along these wrinkle lines heal with minimal scarring.**

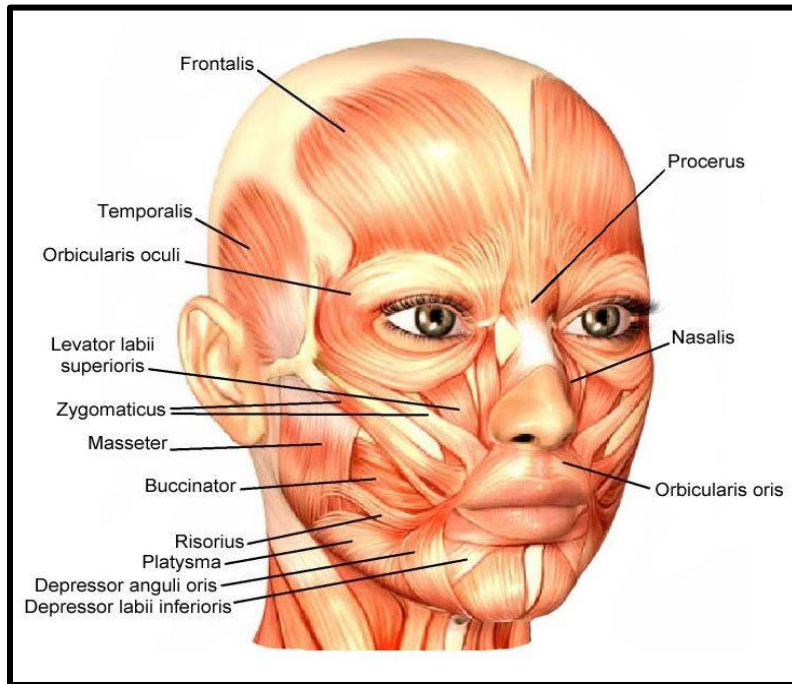
Muscles of Facial Expression



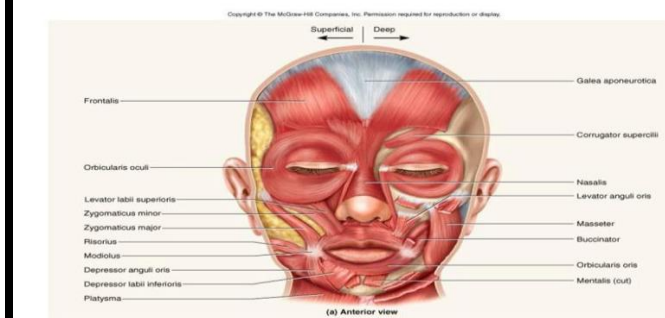
Muscles of the Face

- Are embedded in loose connective tissue
- Mostly **arise** from the skull bones and get **inserted** into the skin
- All developed from the **2nd pharyngeal arch**
- All supplied by **facial nerve**
- **Act as sphincters** around the orifices of face (orbit, nose, mouth)
- **Modify the expressions** of face (muscles of facial expression)

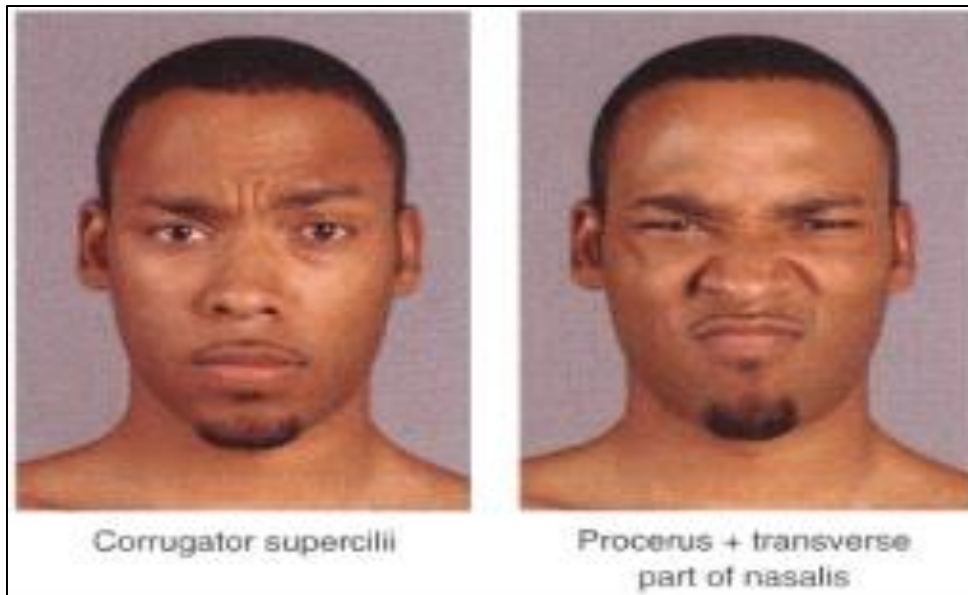
Muscles acting on the Fore head



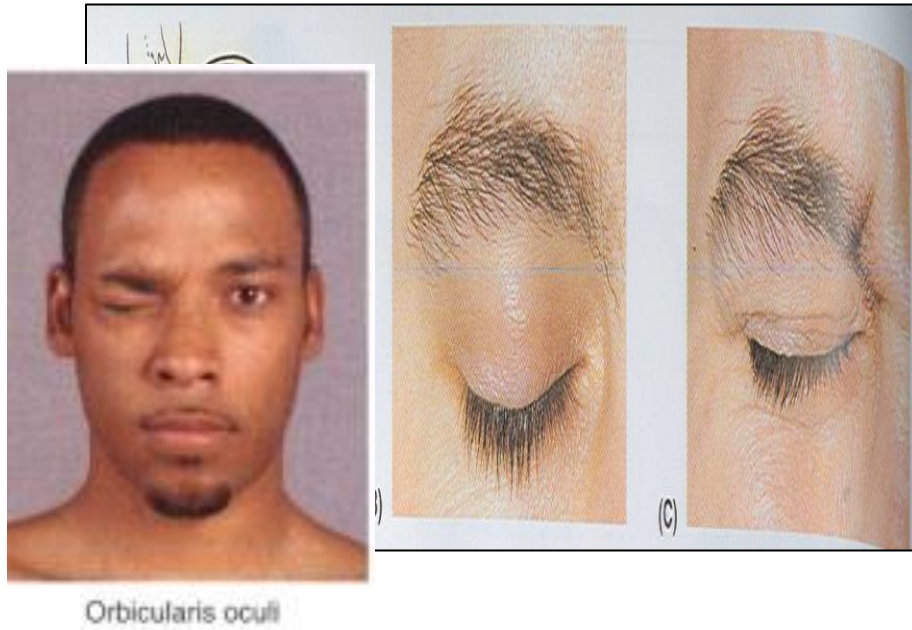
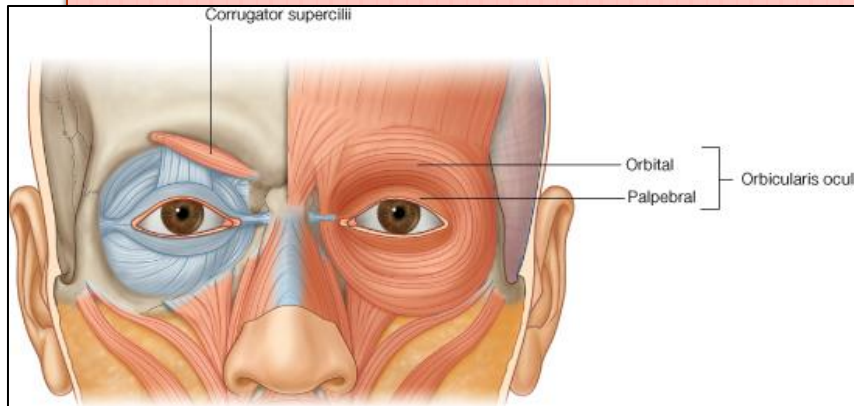
Muscles in Facial Expression



- **Frontalis muscle:**
- It creates the horizontal wrinkles on the forehead and assists with eyebrow elevation giving the face a surprised looking.
- **The corrugators and procerus muscles:**
- Are the antagonistic muscles on the forehead.
- The dominant muscle of the **Nose** is the **Nasalis** muscle, which consists of Nasal and Alar components.
- Its function is to compress and dilate the nares.



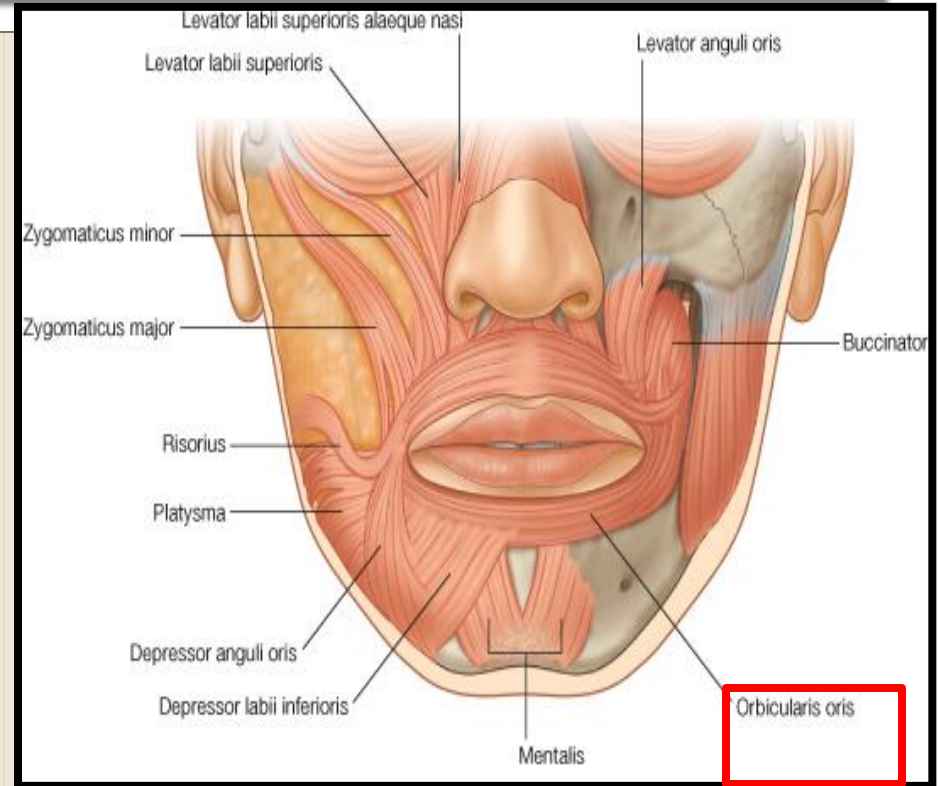
MUSCLES OF THE EYE LIDS



- The **Orbicularis Oculi muscles** are a complex of muscles surrounding the eyes; these assist with closing the eye tightly. This complex lies superficially in the eyelid skin and is encountered with even a shallow incision.
- It has orbital part & palpebral part.
- **Palpebral part** : closes the eye **lightly** (as in **plinking and sleeping**).
- **Orbital part** :
- Closes the eye **firmly** (as in exposure to strong light).
-

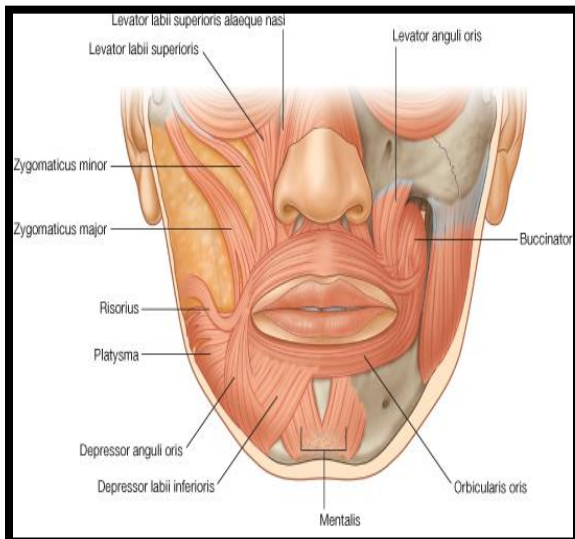
MUSCLES OF THE MOUTH

- The **mouth** has the most extensive network of facial musculature and accounts for much of an individual's capability of facial expression.
- The **Orbicularis Oris** encircles the mouth and is the major component of the lips.
- The major functions of the orbicularis oris muscle are to pull the lips against the teeth, to draw the lips together, to pull the corners of the mouth together, and to pucker the mouth. **This muscle is also extremely important for the phonation of sounds that rely on the lips, such as the pronunciation of the letters *M*, *V*, *F*, and *P*.**



Orbicularis oris

Quadratus Labii Superioris Muscles



- A group of 6 muscles, controls the upper mouth. The 6 muscles are as follows:
- **Zygomaticus major** muscle – It helps in forming the lower nasolabial fold and is primarily responsible for **smiling**
- **Zygomaticus minor** muscle - Arises just medially to the zygomaticus major and assists with its functions.
- **Levator labii superioris** muscle - helps to elevate the medial part of the upper lip and assists the zygomatic muscles with open smiling (
- **Levator anguli oris** muscle - The most deeply positioned of the lip elevators; it assist with lip elevation
- **Risorius muscle** - assists with smiling; the risorius is not always present.



Zygomaticus major + minor



Risorius

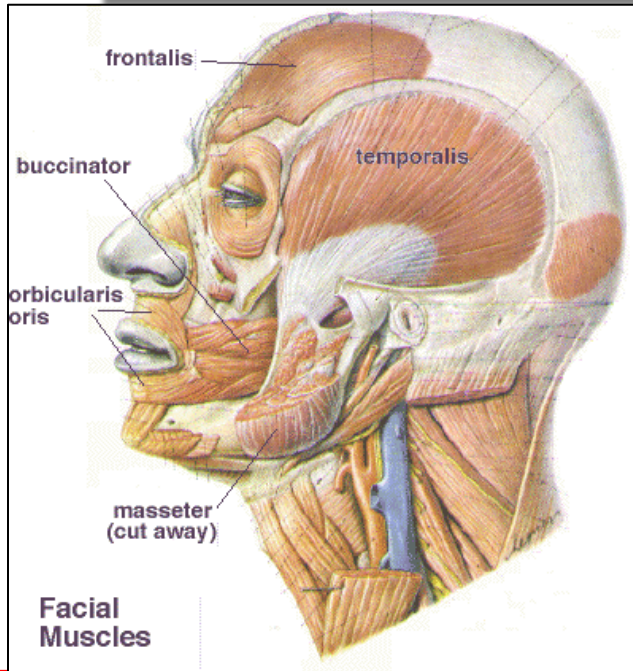


Risorius + depressor
labii inferioris



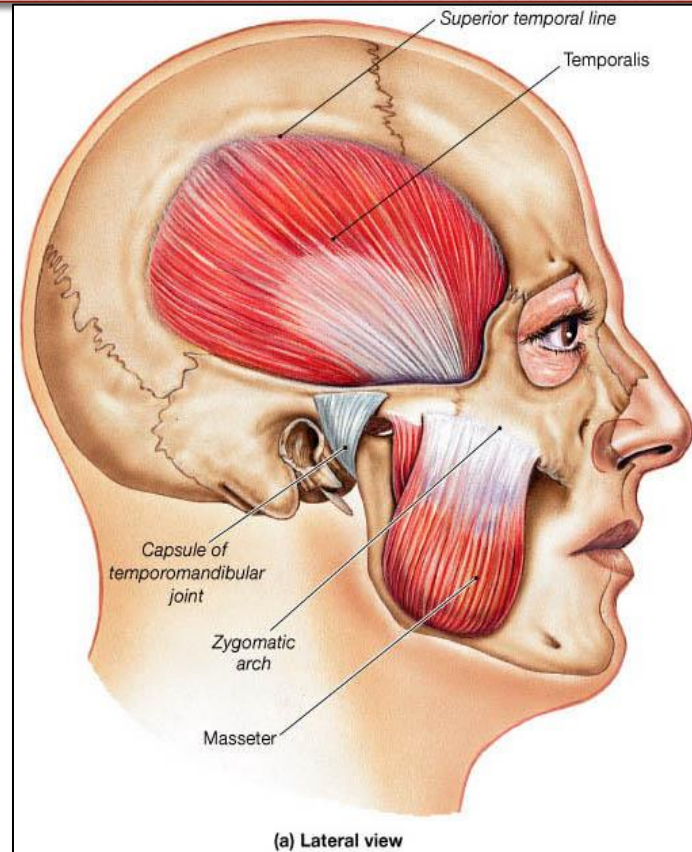
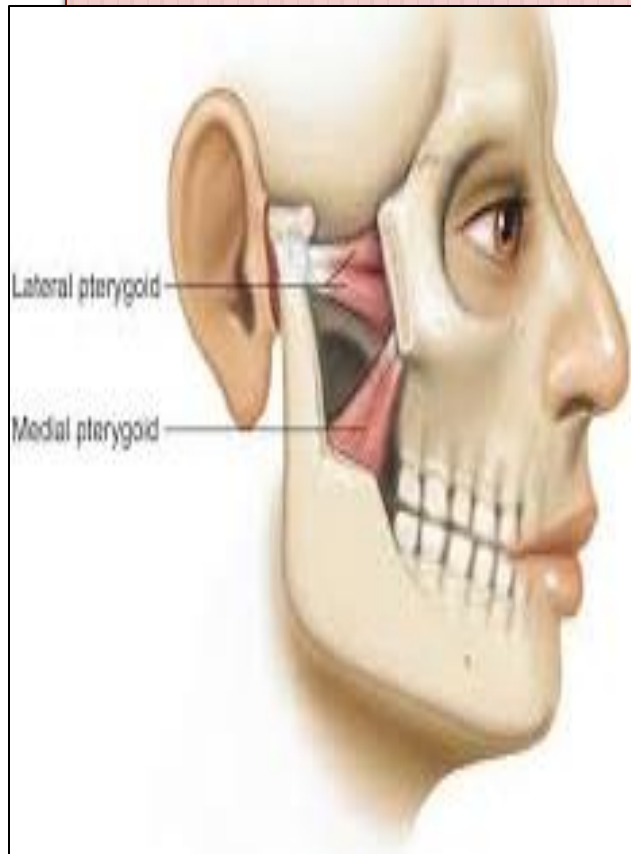
Levator labii superioris +
depressor labii

MUSCLE OF THE CHEEK (BUCCINATOR)



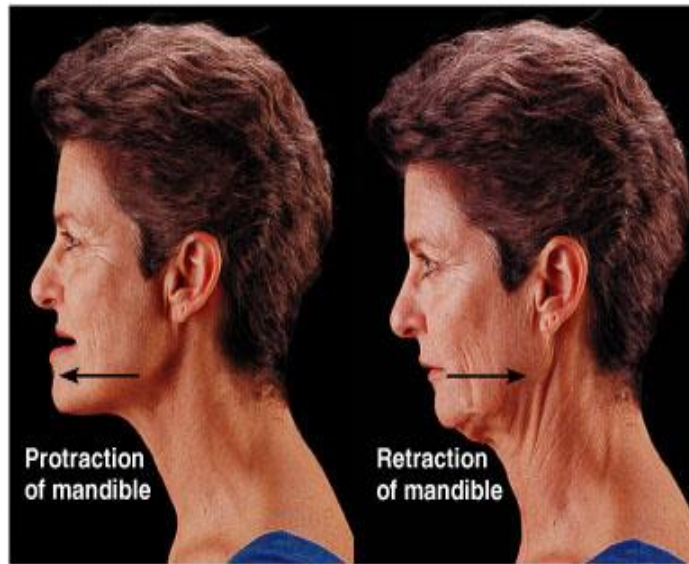
- The buccinator muscle is neither an elevator nor a depressor of the lip; it arises just posterior and medial to the last molar tooth and extends forward to become continuous with the orbicularis oris muscle
- The buccinator muscle is the major component of the cheek musculature and **prevents overdistension of the cheek** (eg, in playing a wind instrument).
- This muscle assists the orbicularis oris muscle in **whistling**.

MUSCLES OF MASTICATION



(A) Temporalis, Masseter, Lateral & Medial pterygoids.
Supplied by the mandibular nerve

**ACTION OF
MUSCLES OF
MASTICATION**

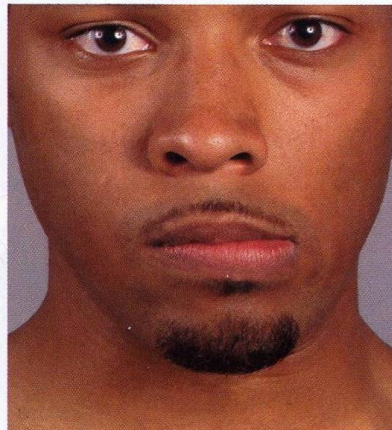
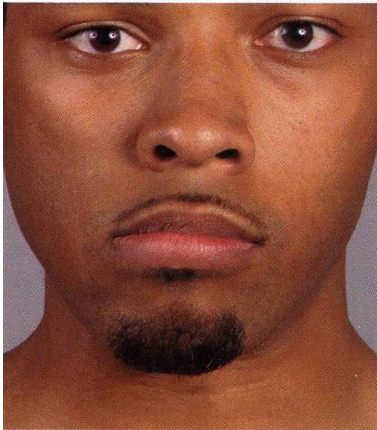


(c) Protraction and retraction



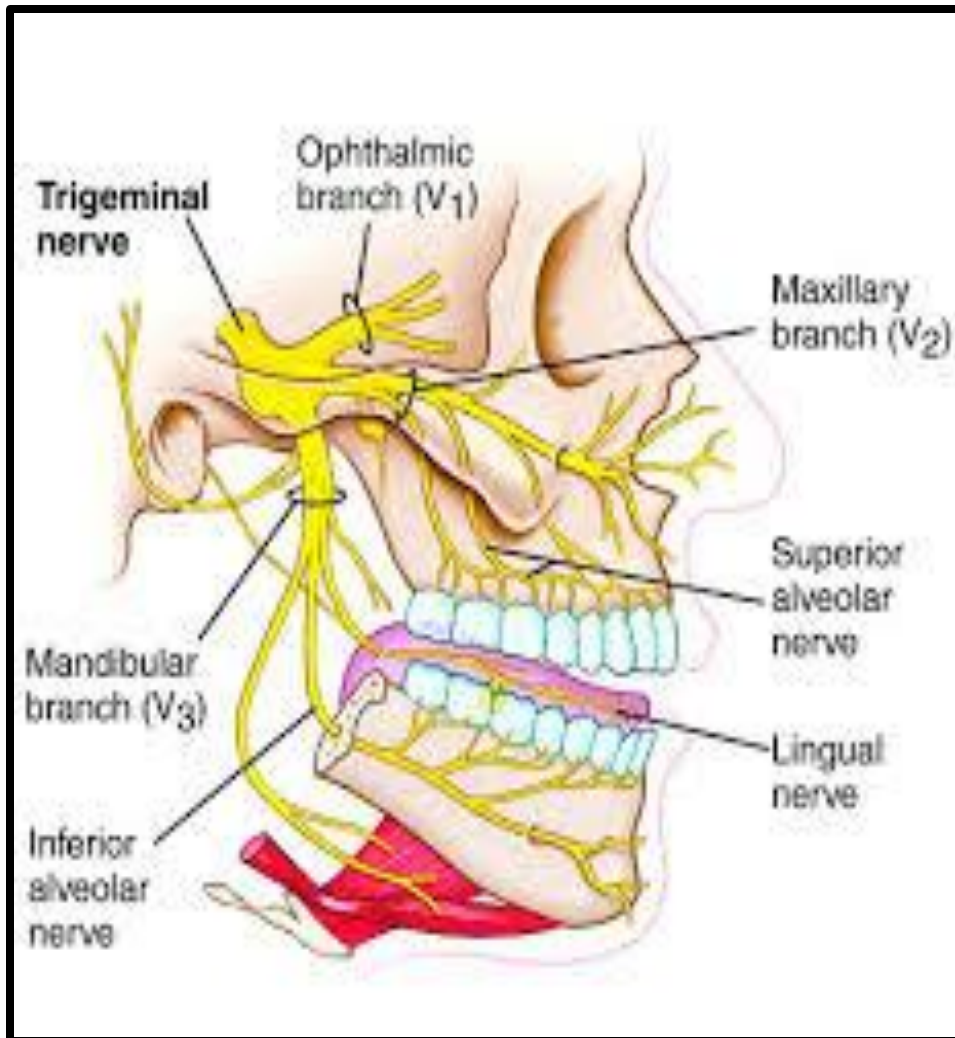
(d) Elevation and depression

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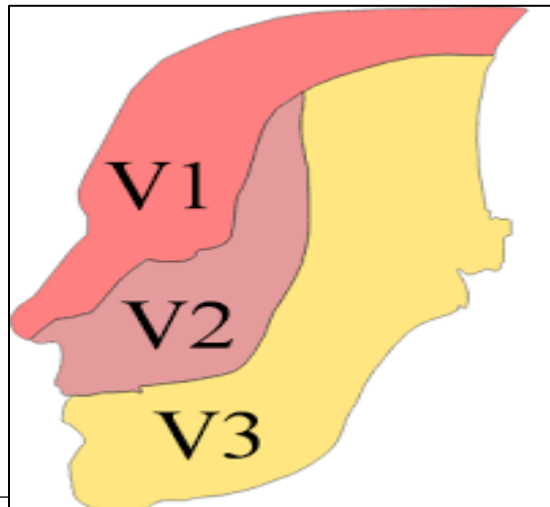
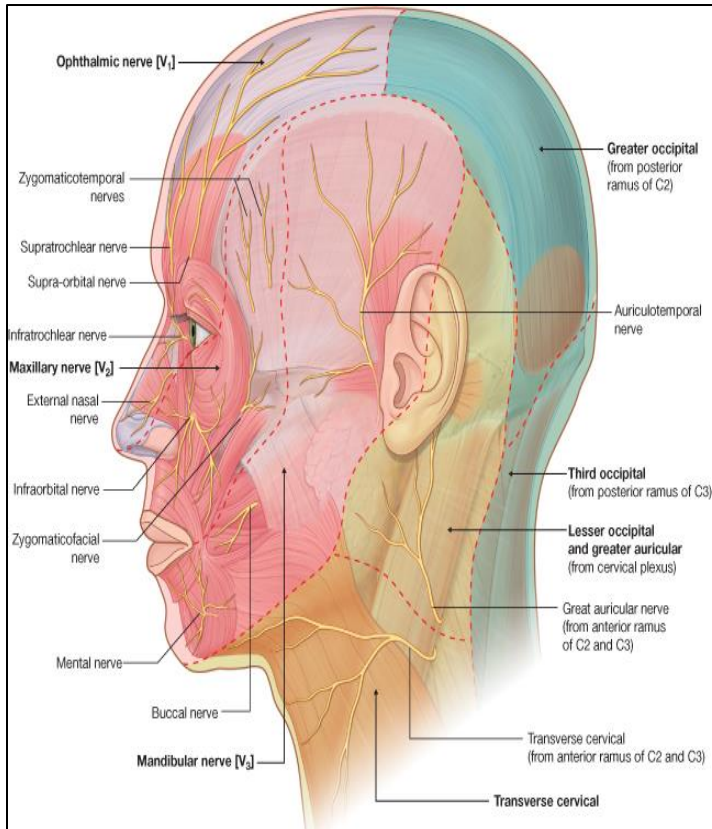


SIDE TO SIDE MOVEMENT

Sensory Nerve Supply



- The **Trigeminal** nerve (the **fifth cranial nerve**, or simply CN V) is the nerve responsible for sensation in the face and motor functions such as biting and chewing.
- It has three major branches: the ophthalmic nerve (V_1), the maxillary nerve (V_2), and the mandibular nerve (V_3).
- The **ophthalmic and maxillary** nerves are purely sensory, and the **mandibular nerve** has sensory (or "cutaneous") and motor functions. ^[1]



OPHTHALMIC NERVE Supplies :

Forehead.

Upper Eye Lid & Conjunctiva.

Side of the Nose down to and including the tip.

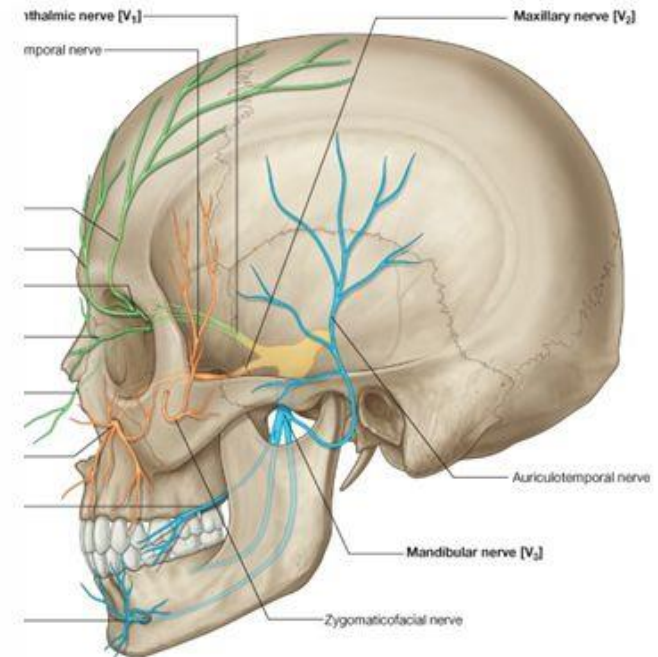
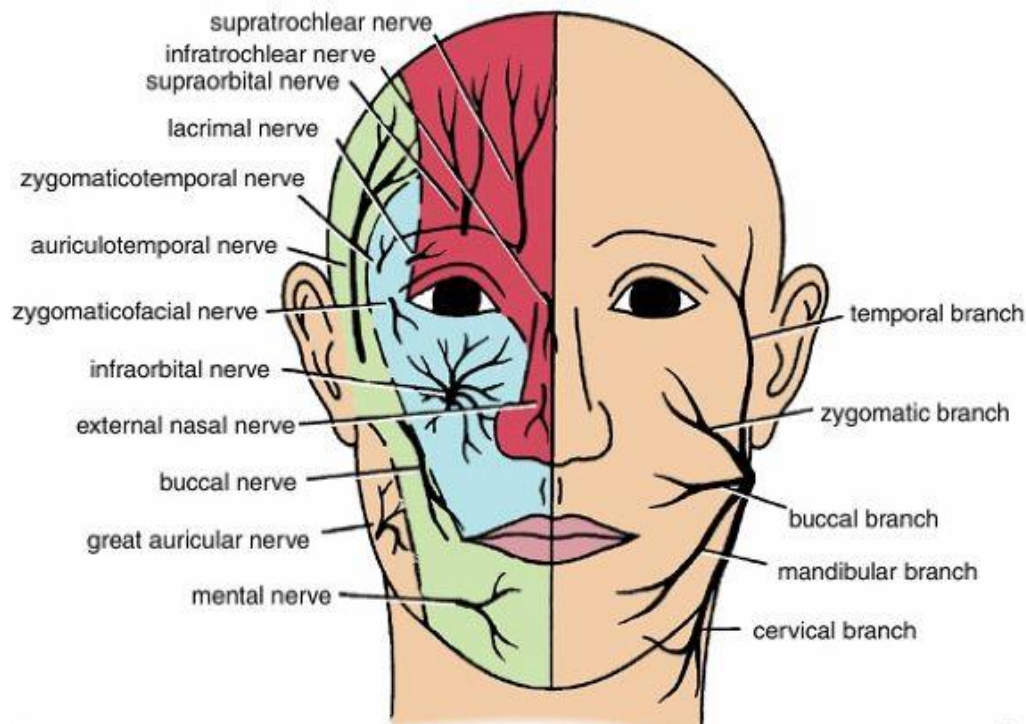
MAXILLARY NERVE Supplies :

Posterior part of the side of the nose.

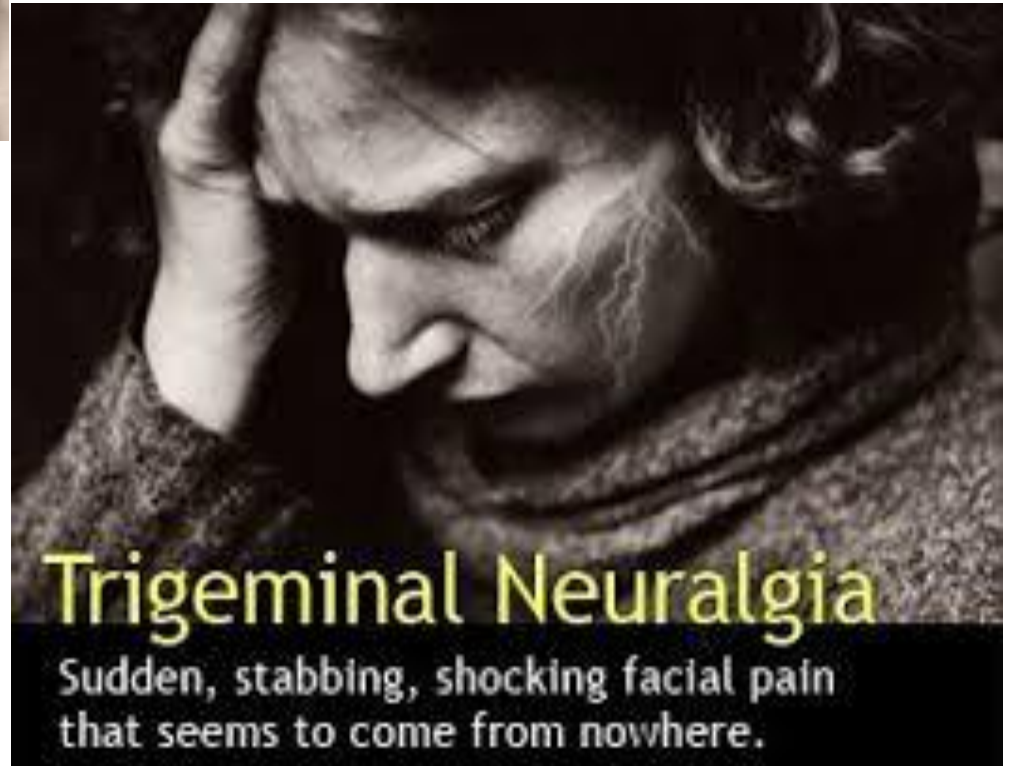
- Lower eye lid.
- Cheek & Upper lip .
- Lateral side of the orbital opening.
- Mandibular Nerve Supplies:
- Lower lip& chin.
- Lower part of the face &cheek.
- Temporal region.
- Part of the auricle, external auditory meatus and outer surface of tympanic membrane

The Innervation of the Face

- Mainly by **the trigeminal nerve**, EXCEPT for small area over the angle of the mandible and the parotid gland by the **great auricular nerve (cervical nerves C2-C3)**.
- **The ophthalmic and maxillary divisions are *ONLY SENSORY*.**
- **The mandibular division is *SENSORY* to the face, scalp and dura and *MOTOR* to the muscles of mastication.**



Trigeminal Neuralgia



Trigeminal neuralgia

Trigeminal means three branches

Place for pain depends on which branch is affected...

Ophthalmic branch
Forehead, eyes, part of nose

V1

Maxillary branch
Cheek, upper lip...

V2

Mandibular branch
Lower lip, teeth, chin...

V3



Treatment depends mostly on the use of & Antiepileptic (AED) & Antidepressant drugs (ADD) to relieve pain. In some cases **Section of the sensory root** is necessary.

Causes

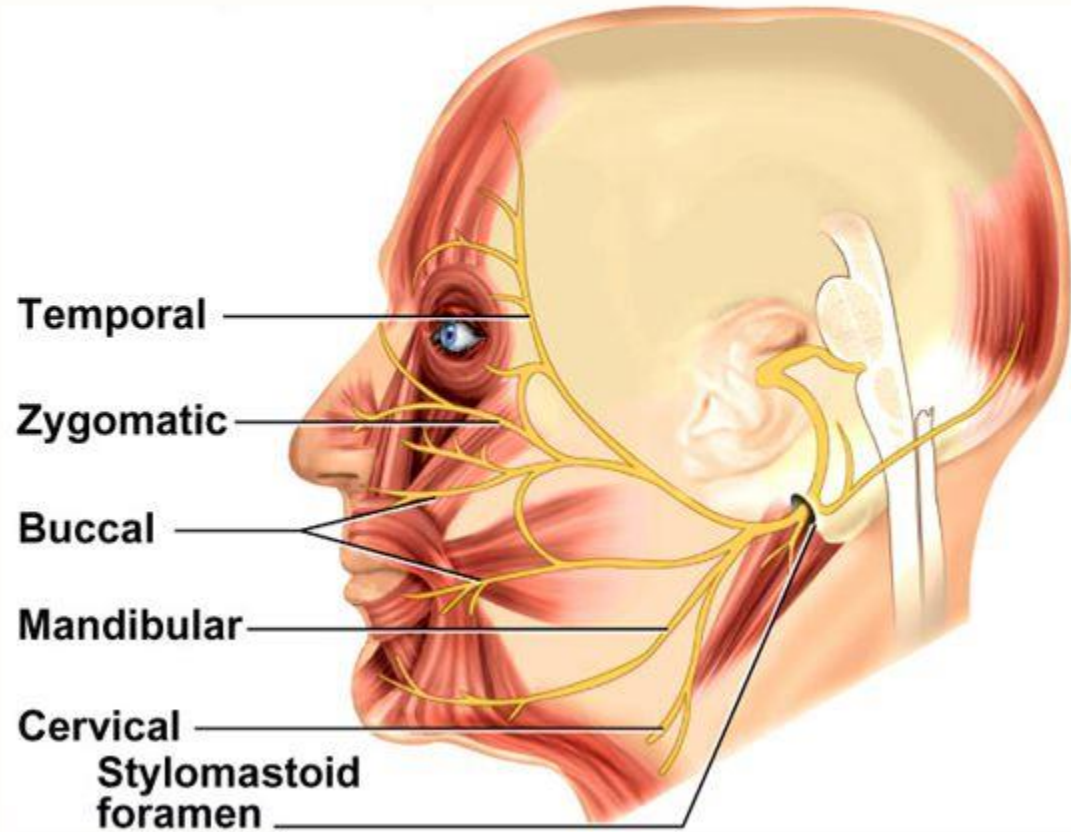
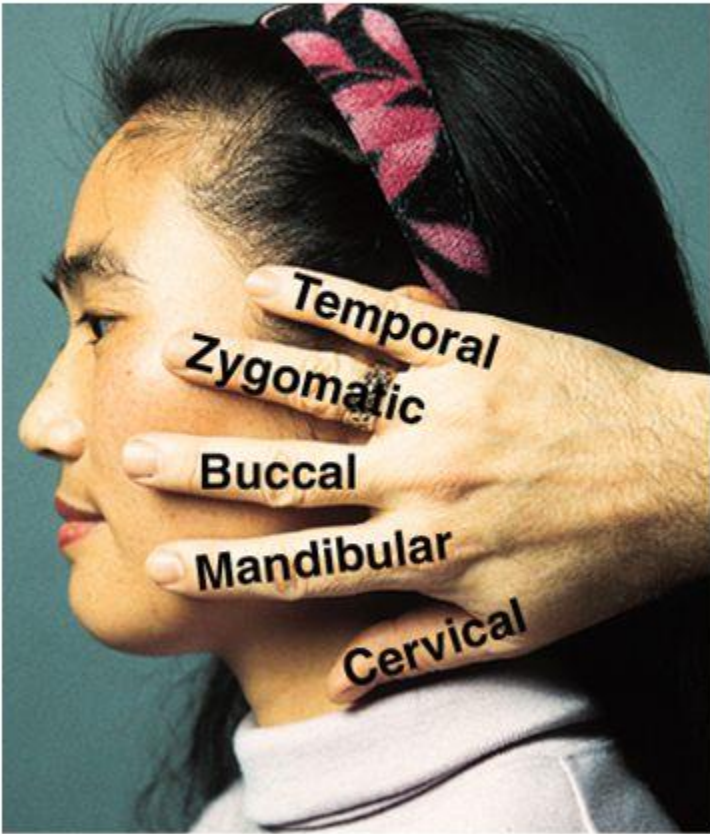


Motor Nerve Supply (Facial Nerve)



- (7th cranial nerve).
- It gives motor supply to all muscles of facial expression.
- **It does not supply the *Skin*.**
- It enters the inner ear through the internal auditory meatus
- It passes through the middle ear (tympanic cavity) and leaves it to enter the **Parotid gland**.
- **Within the parotid gland:**
- It passes forward in a **Horizontal** direction
- At the anterior border of the gland, it divides into its **Five terminal branches**.

Branches of Facial Nerve



Bell's Palsy

It is a condition that causes the facial muscles to weaken or become paralyzed. It's caused by trauma to the 7th cranial nerve, and is not permanent.

The most common cause is **idiopathic** but it can result from **exposure to cold**, **tumor of parotid gland**, **lacerations of the face**.

Bell's Palsy

Inability to wrinkle brow

Drooping eyelid;
inability to close eye

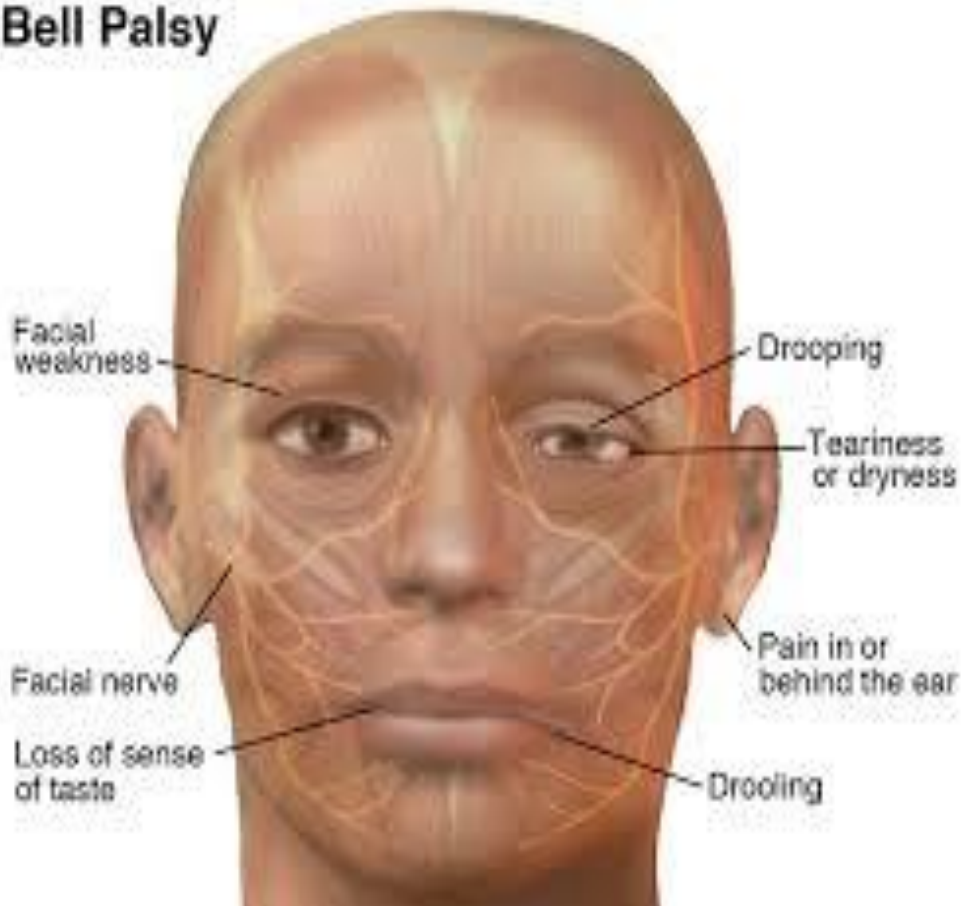
Inability to puff cheeks;
no muscle tone

Drooping mouth;
inability to smile or pucker

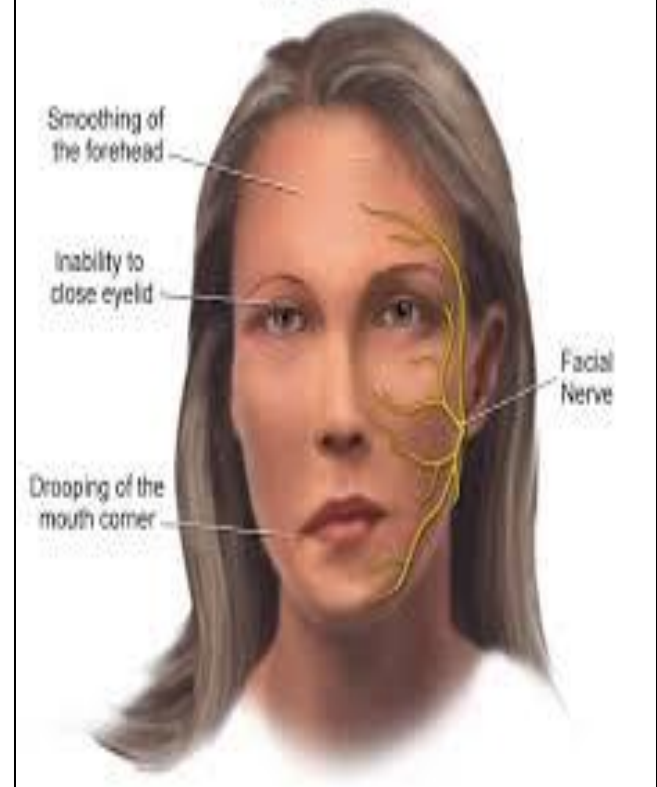


Manifestations

Bell Palsy



Bell's Palsy



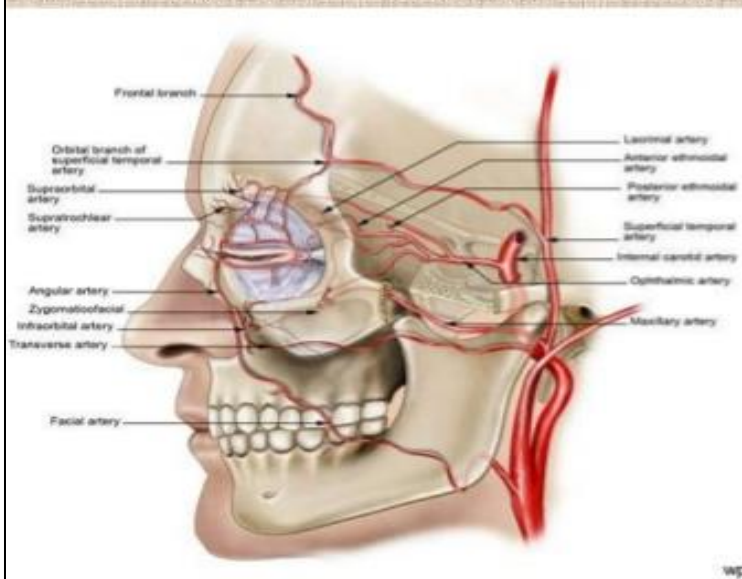
Manifestations



- Food accumulates during chewing and often must be continually removed by a finger.
- Patients frequently dab their eyes and mouth with a handkerchief to wipe the fluid (tears & saliva) which runs from the drooping lid and mouth.
- The fluid and constant wiping result in localised skin irritation.

Arterial Supply of Face

Arteries of the Face



Main Branches of External Carotid

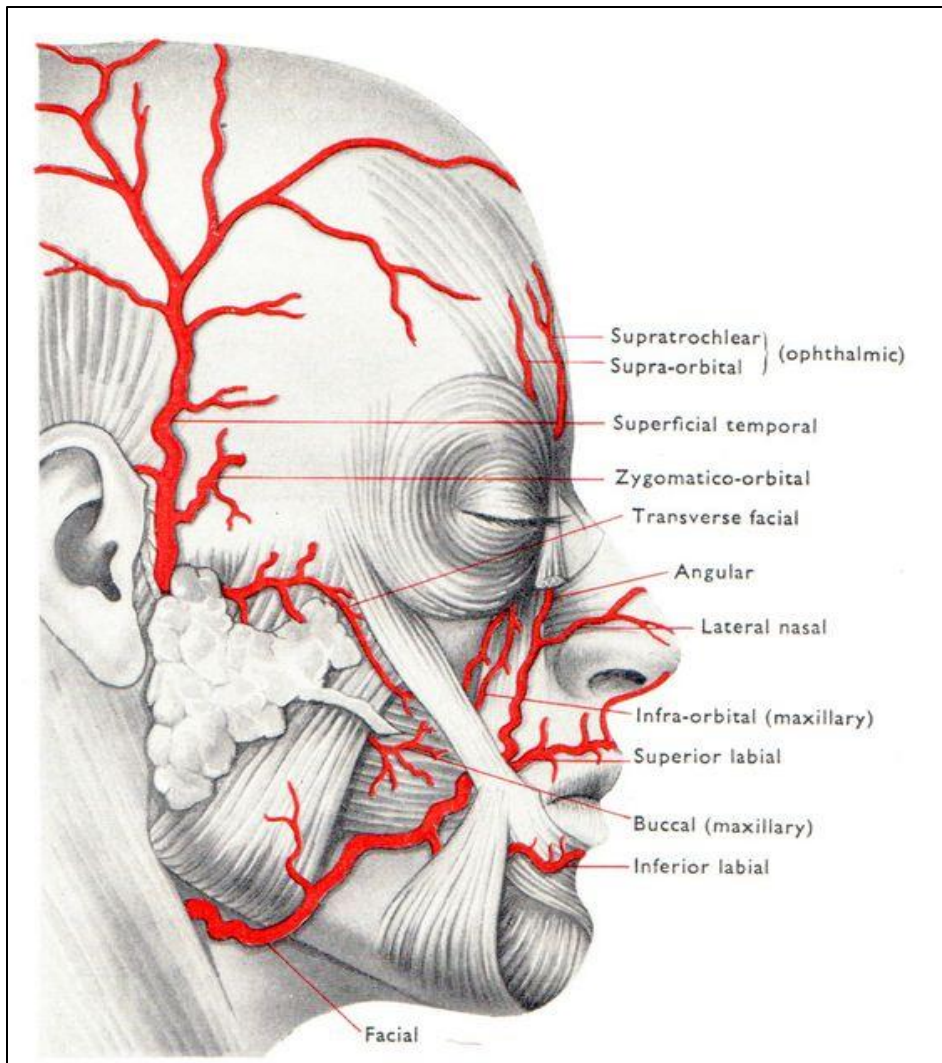
- SUPERFICIAL TEMPORAL ARTERY
- MAXILLARY ARTERY
- TRANSVERSE FACIAL ARTERY
- FACIAL ARTERY
- LINGUAL ARTERY

Main Branch of Internal Carotid

- OPHTHALMIC ARTERY

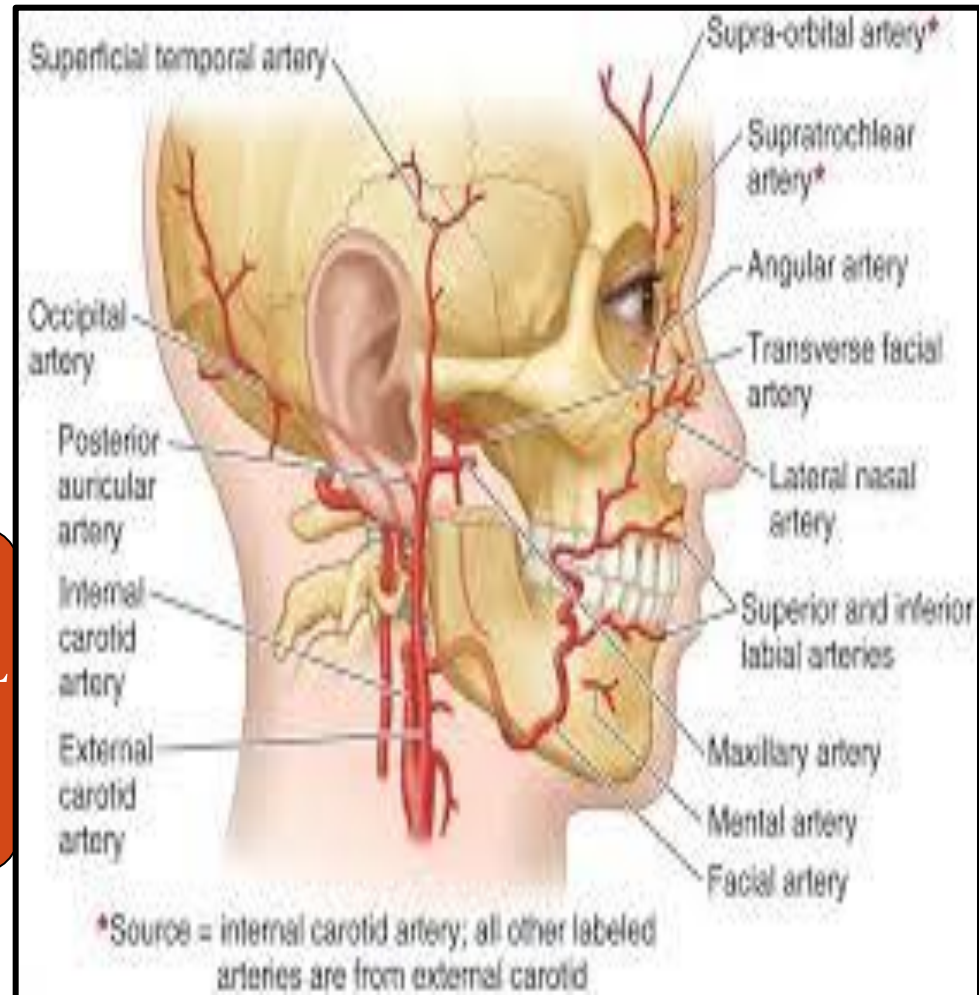
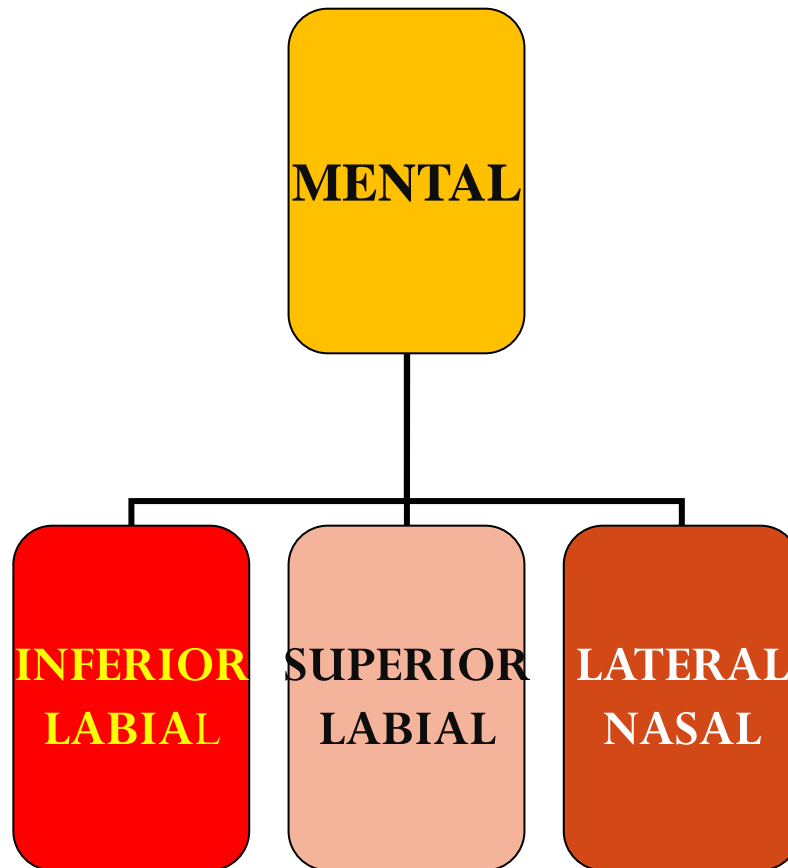
**The face has a rich blood supply so that it is rare for skin flaps in the face to necrose in plastic surgery.
Facial wounds bleed freely but heal rapidly.**

Facial Artery

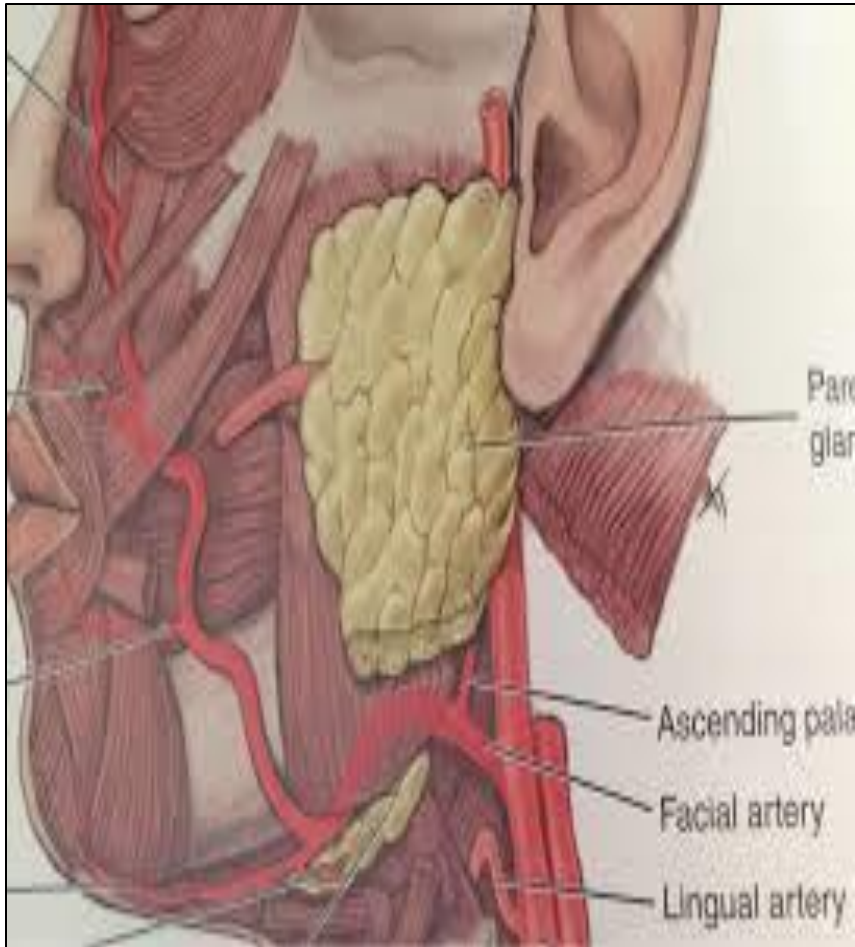


- It arches upward **Deep** to the **Submandibular salivary gland**.
- It curves around the inferior margin of the body of the mandible **at the anterior border of the masseter muscle**.
- It runs upward in a *tortuous course to the angle of the*
- *mouth* deep to the muscles.
- This is to accommodate itself to neck movements such as those of the pharynx in deglutition; and facial movements such as those of the mandible, lips, and cheeks.
- It ascends along the side of the nose to the medial angle of the eye and terminates as the Angular artery.

Branches of Facial artery



Where to feel Facial Pulsation?



- *As the artery crosses the inferior margin of the body of the mandible at the anterior border of the masseter muscle.*

Compression of the Facial Artery



- The facial artery can be occluded by pressure against the mandible as the vessel crosses it.
- Because of the numerous anastomoses of the arteries of the face, compression of the facial artery on one side does not stop all bleeding from a lacerated facial artery or one of its branches.
- In lacerations of the lip, **pressure must be applied on both sides of the cut to stop bleeding**

Venous Drainage of the face

It is drained mainly by **Anterior & Posterior Facial (Retromandibular) veins.**

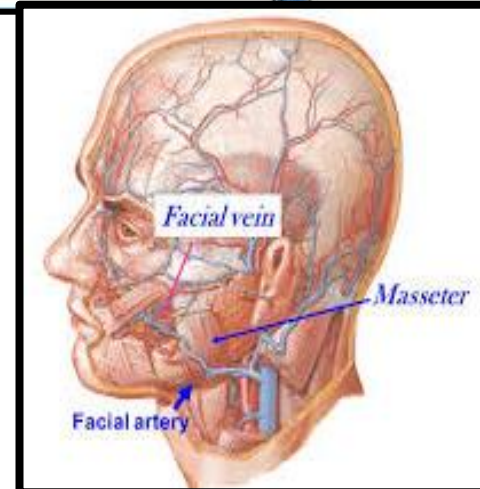
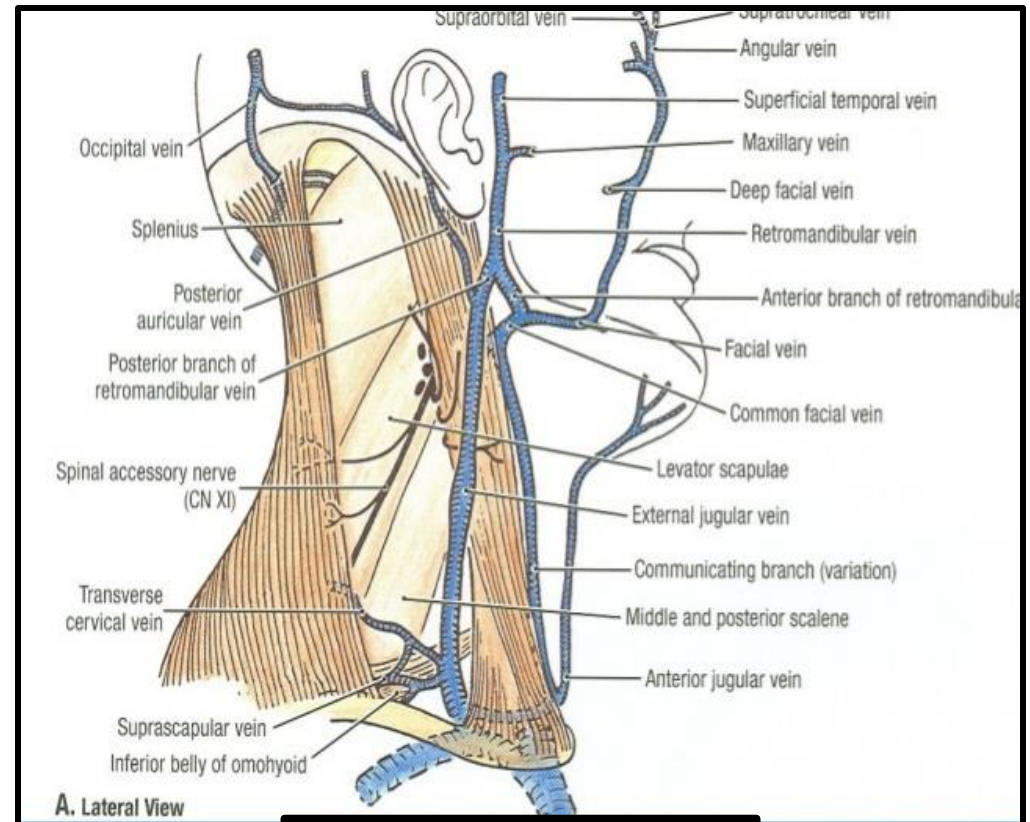
Anterior Facial vein:

Formed close to *medial angle* of the eye by union of:

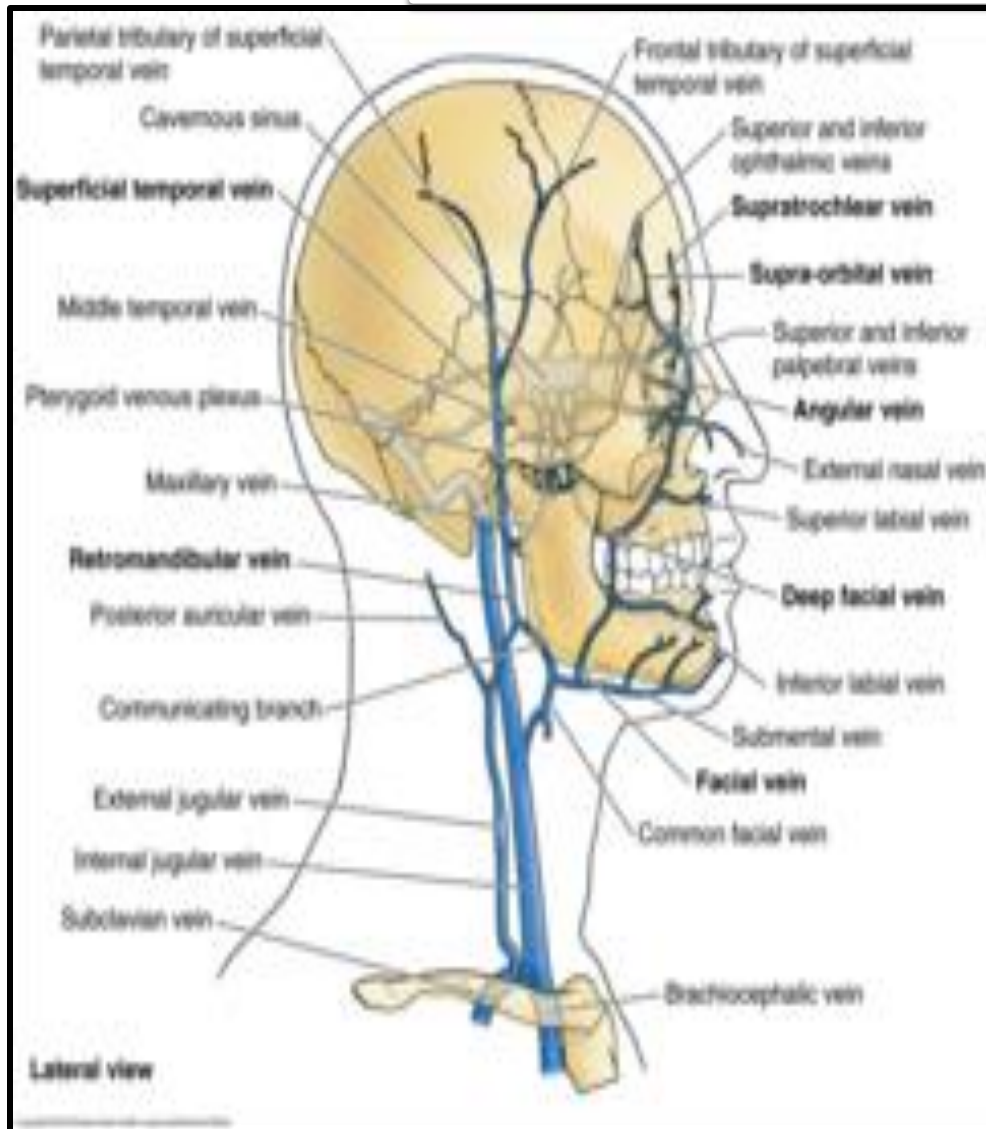
Supratrochlear & Supraorbital veins

Descends in the face *behind* the facial artery.

In the neck it joins the *anterior* branch of retromandibular to form **Common Facial** that ends in **Internal jugular vein (IJV)**



Tributaries of Facial Vein



It receives tributaries that correspond to the branches of facial artery.

It is joined to pterygoid venous plexus (a venous network lying around pterygoid muscles) by **deep facial vein** and to the cavernous sinus by **superior ophthalmic vein**.

Transverse facial vein joins superficial temporal vein within the parotid gland.

Dangerous Area of the Face

It is a triangular area bounded by: **the Side of nose, Medial angle of the eye and Upper lip.**



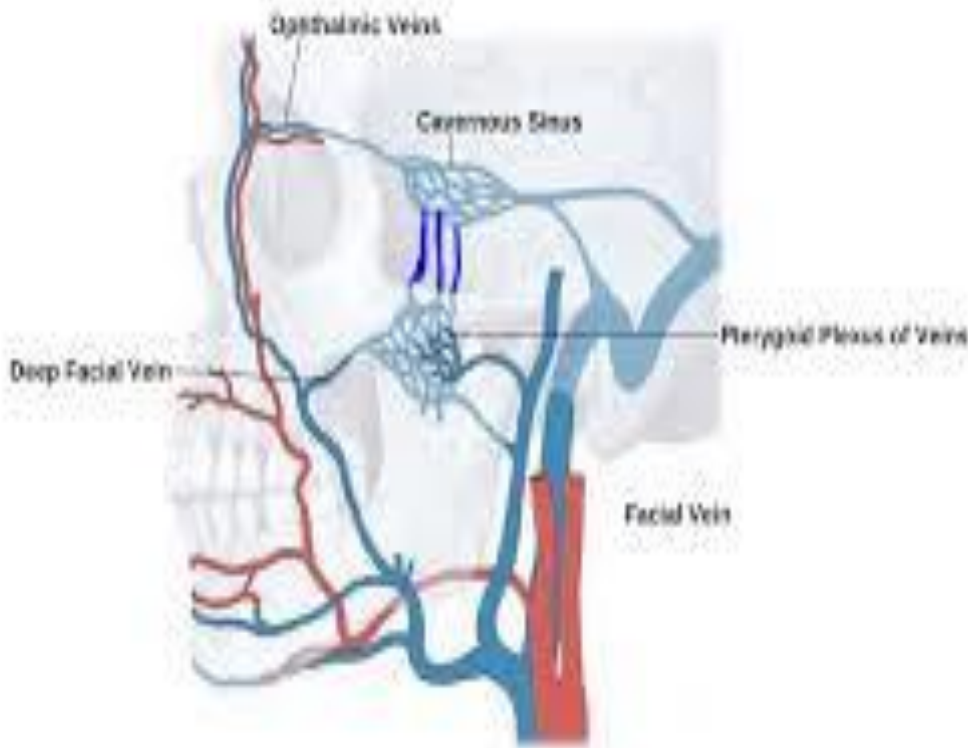
Thrombophlebitis of the Cavernous sinus



- This may result from lacerations of the nose or by squeezing pustules on the side of the nose and upper lip (dangerous area)
- In patients with inflammation of the facial vein with secondary thrombus, pieces of the infected clot may extend into the intracranial venous system and produce **thrombophlebitis of the cavernous sinuses.**

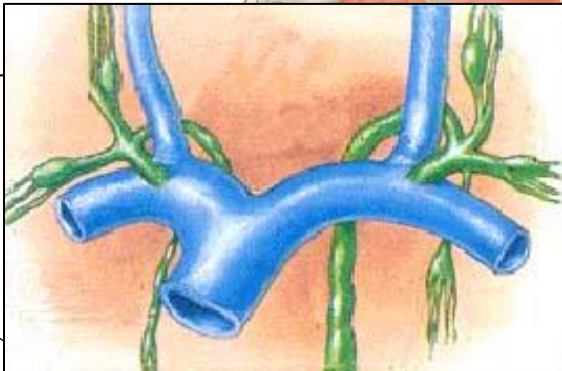
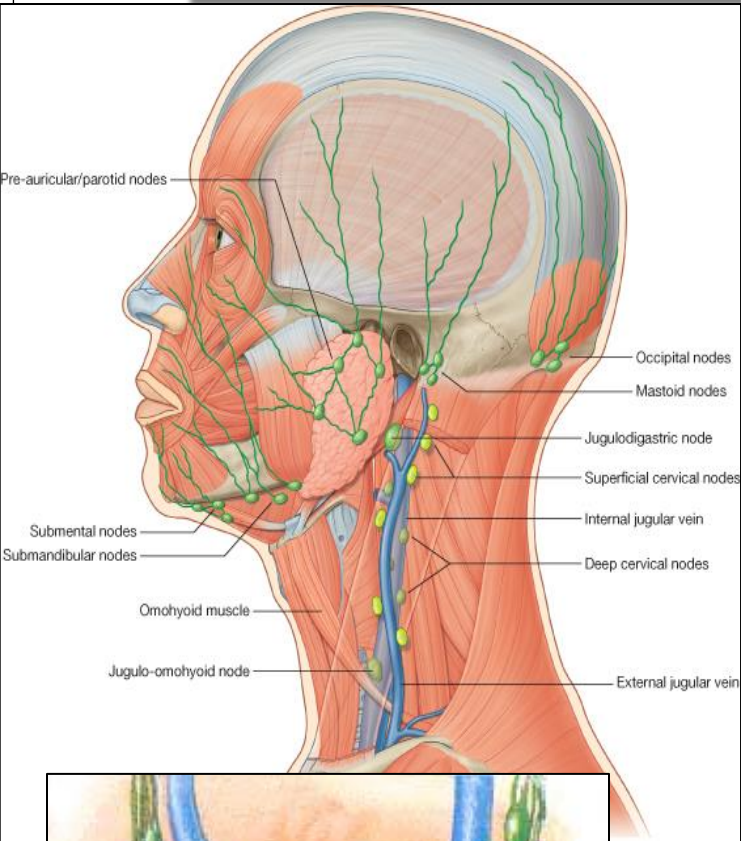
How it Happens?

Venous Drainage and Cavernous Sinus Thrombosis



- **Blood from the nose, medial angle of the eye and lips usually drains inferiorly through the facial vein**
- especially when the person is erect.
- Because the facial vein has no valves, blood may pass through it in the opposite direction to the inferior ophthalmic vein and enters the **Cavernous Sinus**

Lymph Drainage of Face



- Lymphatic nodes are categorized into several groups:
- **Parotid lymph nodes**: Receive lymph from the side of the face and scalp
- **Submandibular lymph nodes**: Get lymph from the upper lip and part of the lower lip as well as most of the oral cavity
- **Submental lymph nodes**: Get lymph from the chin, tip of the tongue and center of the lower lip
- Lymph from these nodes eventually drains into the **Deep Cervical lymph** nodes. The deep cervical lymph nodes drain into the **Jugular Lymphatic Trunk**, which joins the internal jugular vein or brachiocephalic vein on the **right side** and **Thoracic Duct** on the **left side**.

Thank You!

