

# ***Peripheral Nervous System***

## **THE FACE**

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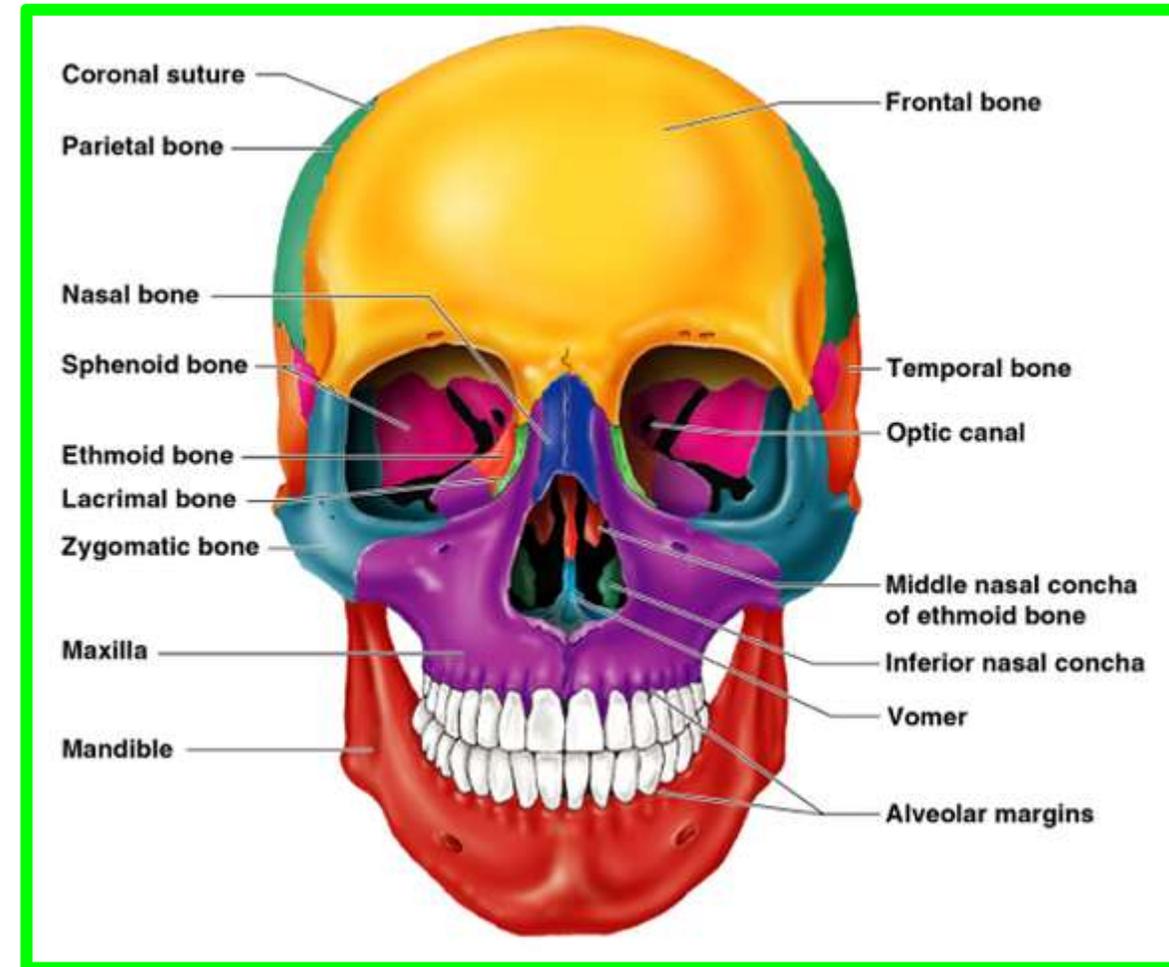
# Bones of the Face

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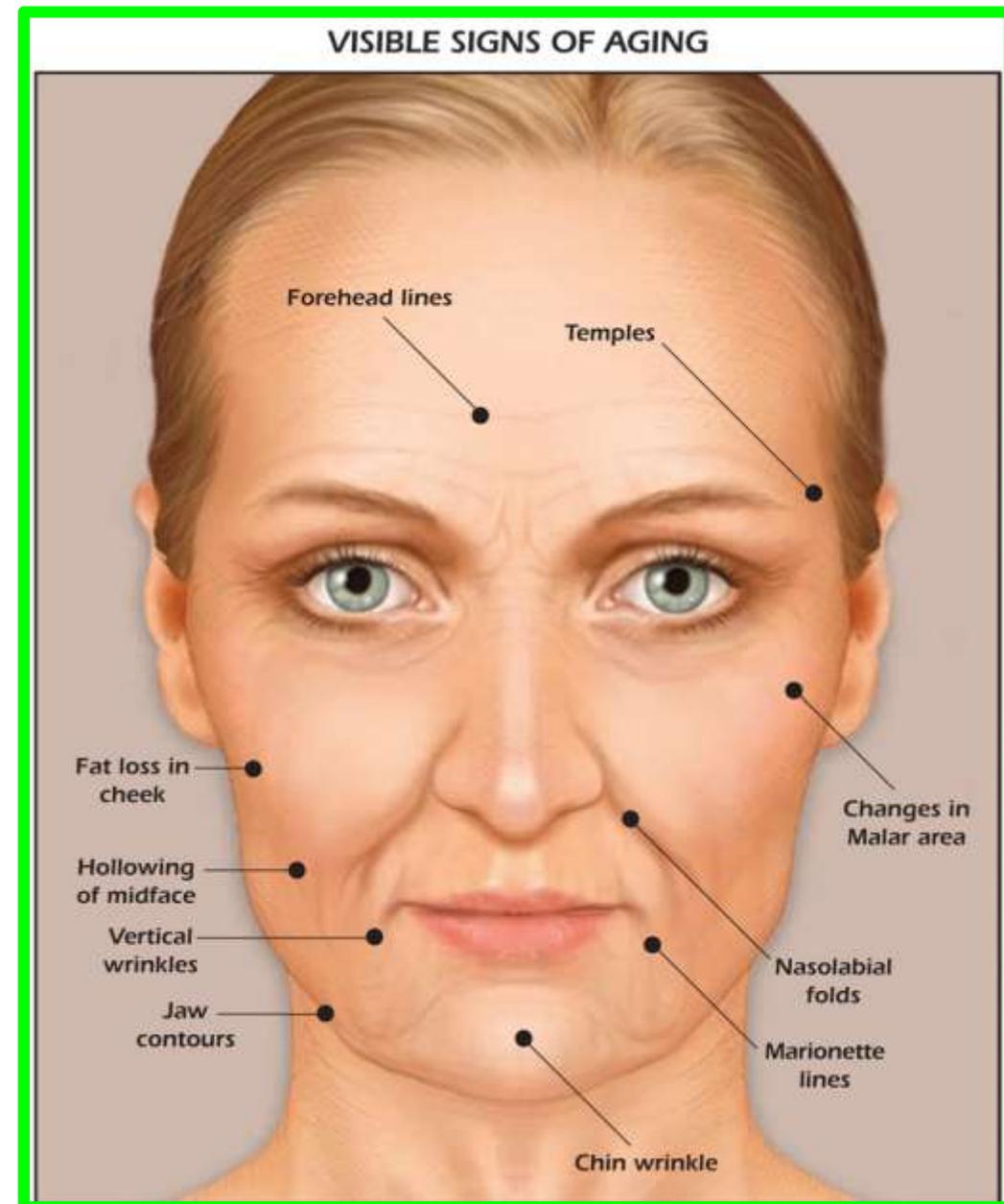
- ✓ The superior orbital margin formed by the frontal bone, which contains the frontal air sinuses.
- ✓ The lateral orbital margin is formed by the zygomatic bone and the inferior orbital margin is formed by the zygomatic bone and the maxilla.
- ✓ The root of the nose is formed by the nasal bones, which articulate below with the maxilla and above with the frontal bones.



- ✓ The important central bone of the middle third of the face is the maxilla, containing its teeth and the maxillary air sinus.
- ✓ The bone of the lower third of the face is the mandible, with its teeth.

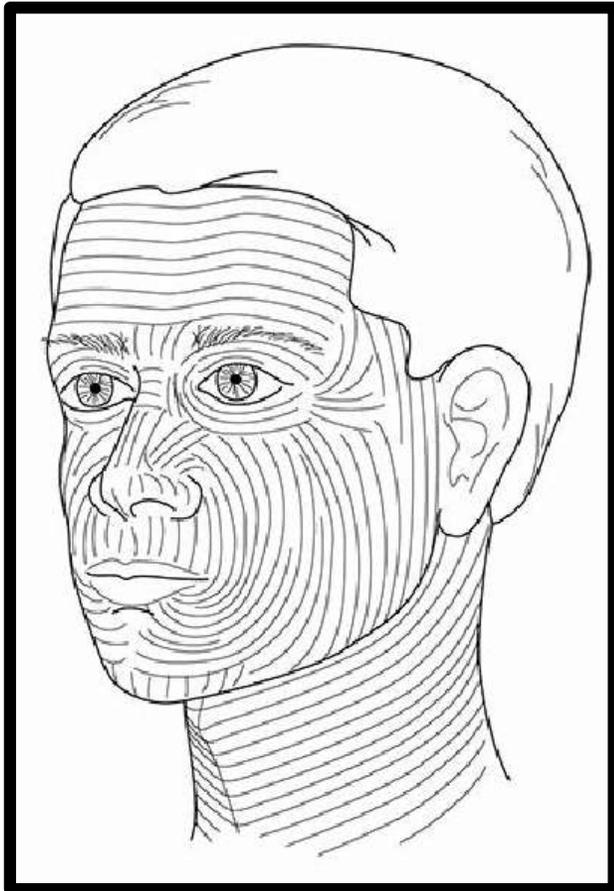
# Skin of the Face

- ✓ The skin of the face possesses numerous **sweat** and **sebaceous glands**.
- ✓ It is connected to the underlying bones by **loose connective tissue**, in which are embedded the muscles of facial expression.
- ✓ **No deep fascia is present in the face.**



## Skin of the Face

- ✓ **Wrinkle lines** of the face result from the repeated folding of the skin
- ✓ **Surgical scars** of the face are **less conspicuous** if they follow the wrinkle lines

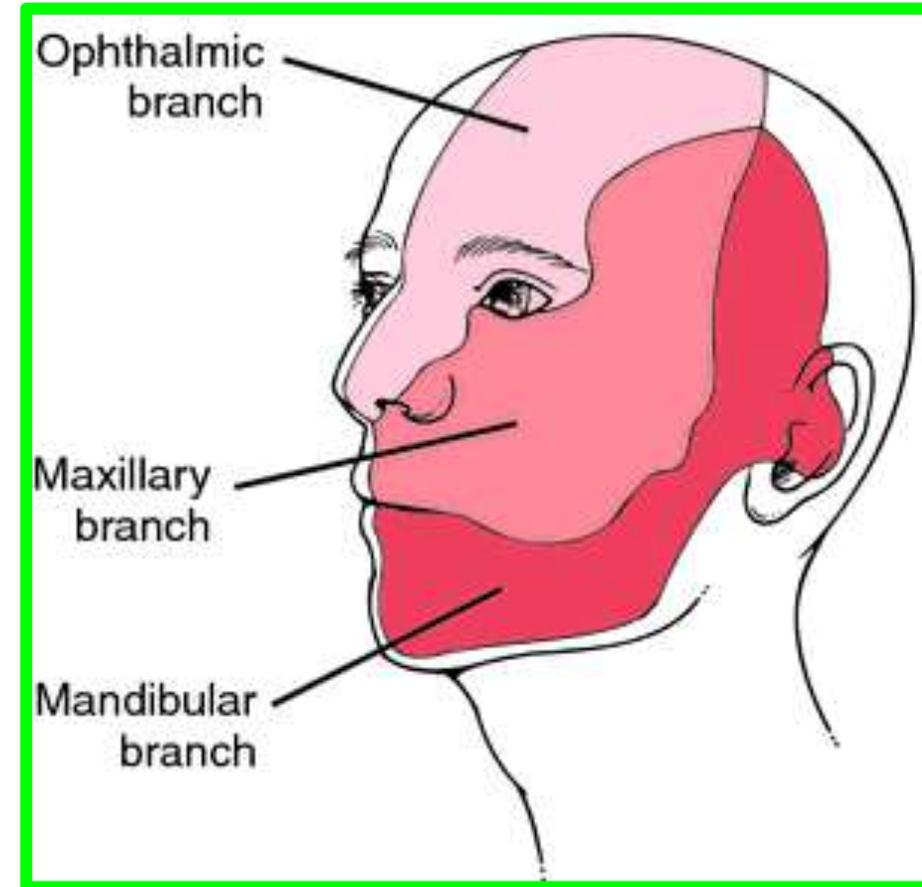


# Sensory Nerves of the Face

❑ The skin of the face is supplied by branches of the three divisions of **the trigeminal nerve**, except for the small area over the **angle of the mandible** and the **parotid gland** which is supplied by **the great auricular nerve (C2 and 3)**

❑ These nerves not only supply the skin of the face, but also supply **proprioceptive fibers** to the underlying **muscles of facial expression**.

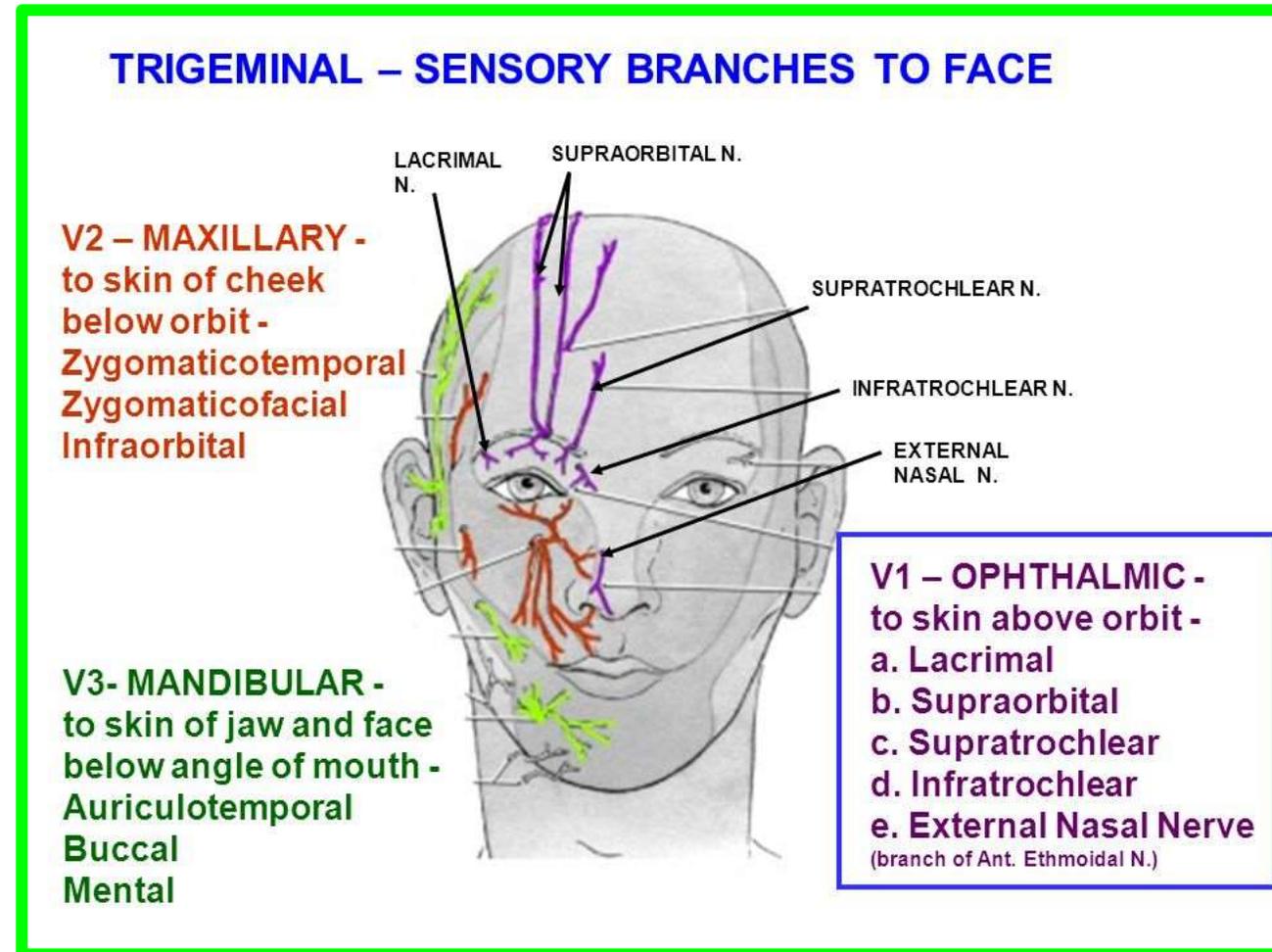
❑ They are, in addition, the sensory nerve supply to **the mouth, teeth, nasal cavities, and paranasal air sinuses**.



# Sensory Nerves of the Face

- ❖ The ophthalmic nerve V1: supplies the skin of the forehead, the upper eyelid, the conjunctiva, the side of the nose down to and including the tip.
- Five branches of the nerve pass to the skin:

- ✓ ■ The Lacrimal nerve
- ✓ ■ The supraorbital nerve
- ✓ ■ The supratrochlear nerve
- ✓ ■ The infratrochlear nerve
- ✓ ■ The external nasal nerve

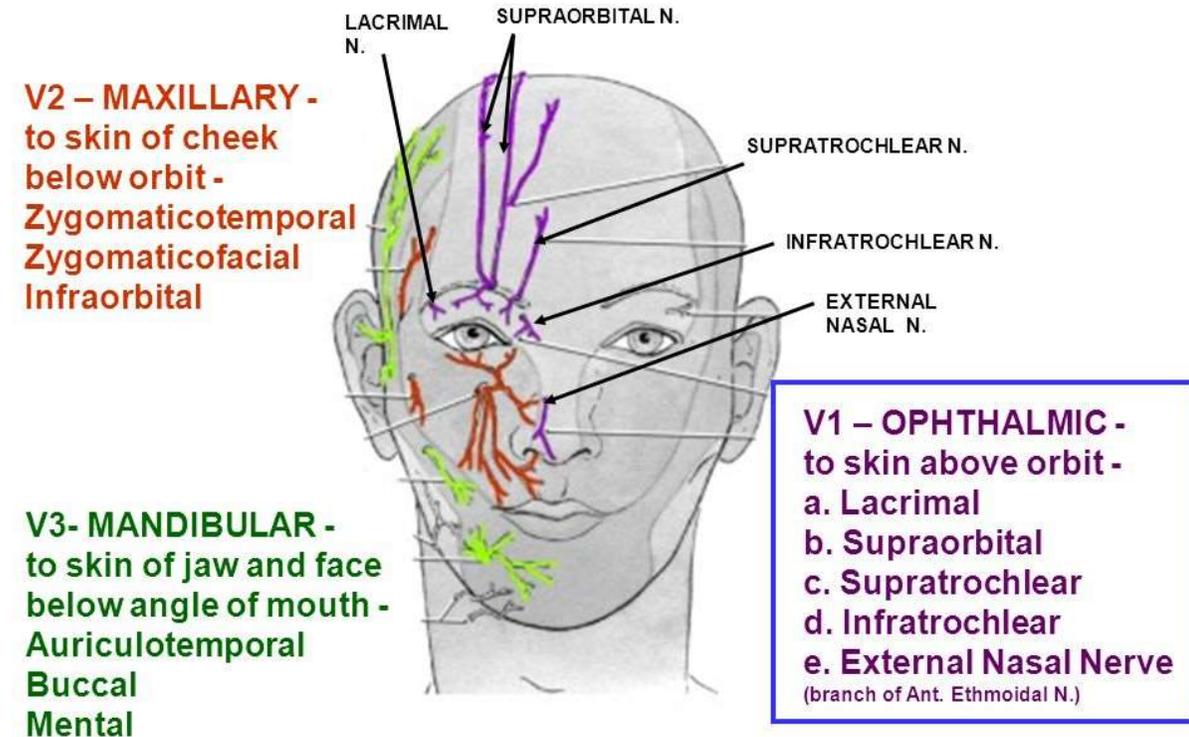


# Sensory Nerves of the Face

- ❖ **Maxillary Nerve V2:** Supplies the skin on the **posterior part of the side of the nose, the lower eyelid, the cheek, the upper lip, and the lateral side of the orbital opening.**
- Three branches of the nerve pass to the skin:

- ❖ The infraorbital nerve
- ❖ The zygomaticofacial nerve
- ❖ The zygomaticotemporal nerve

## TRIGEMINAL – SENSORY BRANCHES TO FACE



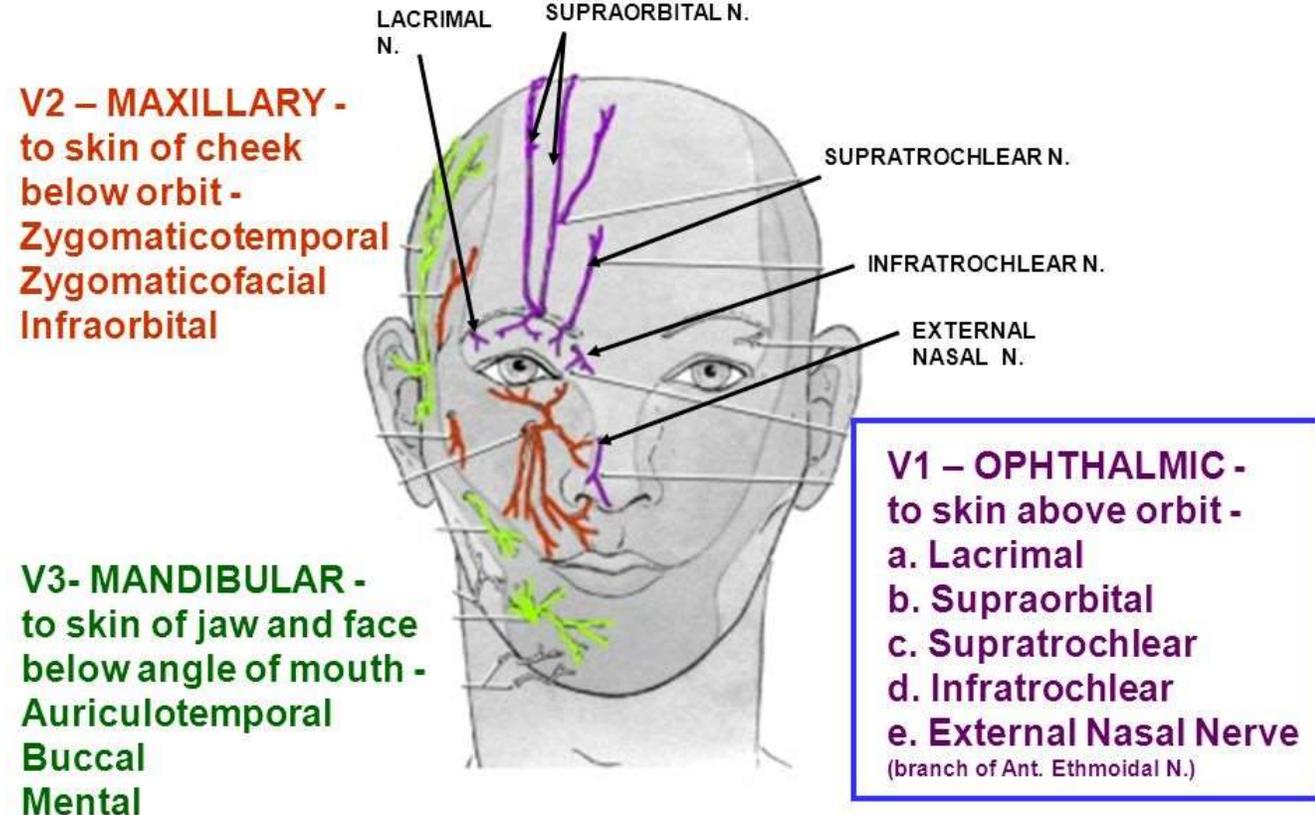
# Sensory Nerves of the Face

❖ **Mandibular Nerve V<sub>3</sub>**: supplies the skin of the lower lip, the lower part of the face, the temporal region, and part of the auricle. It then passes upward to the side of the scalp.

➤ Three branches of the nerve pass to the skin.

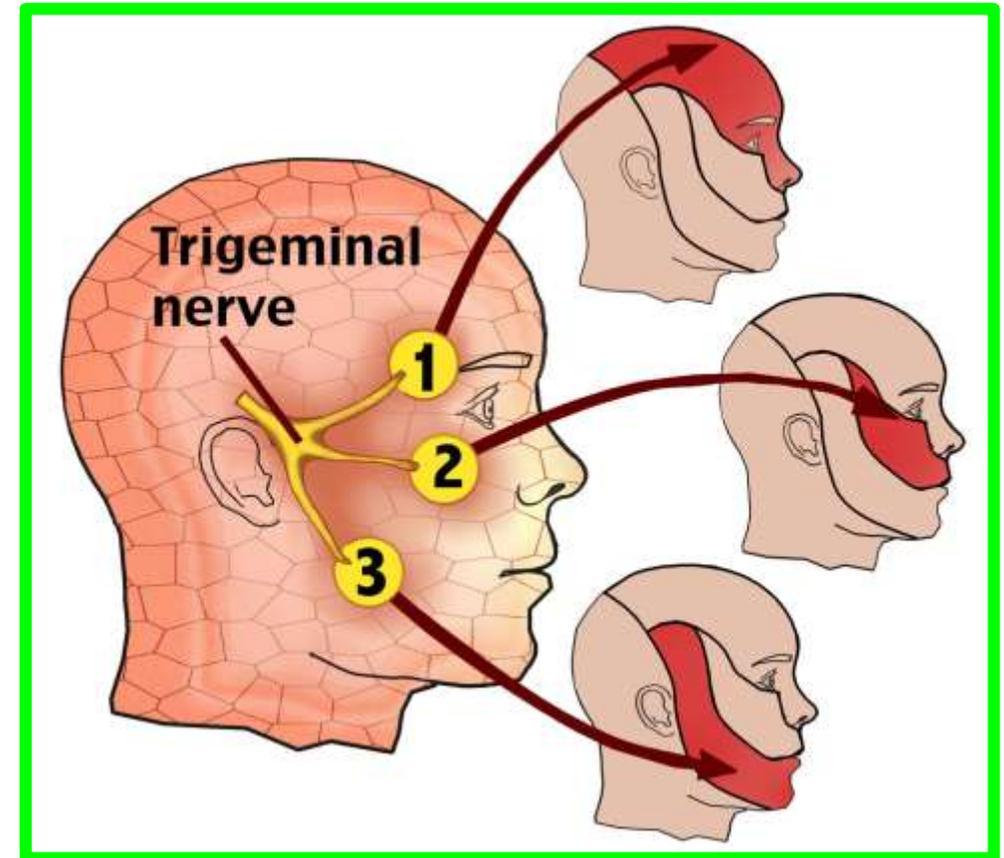
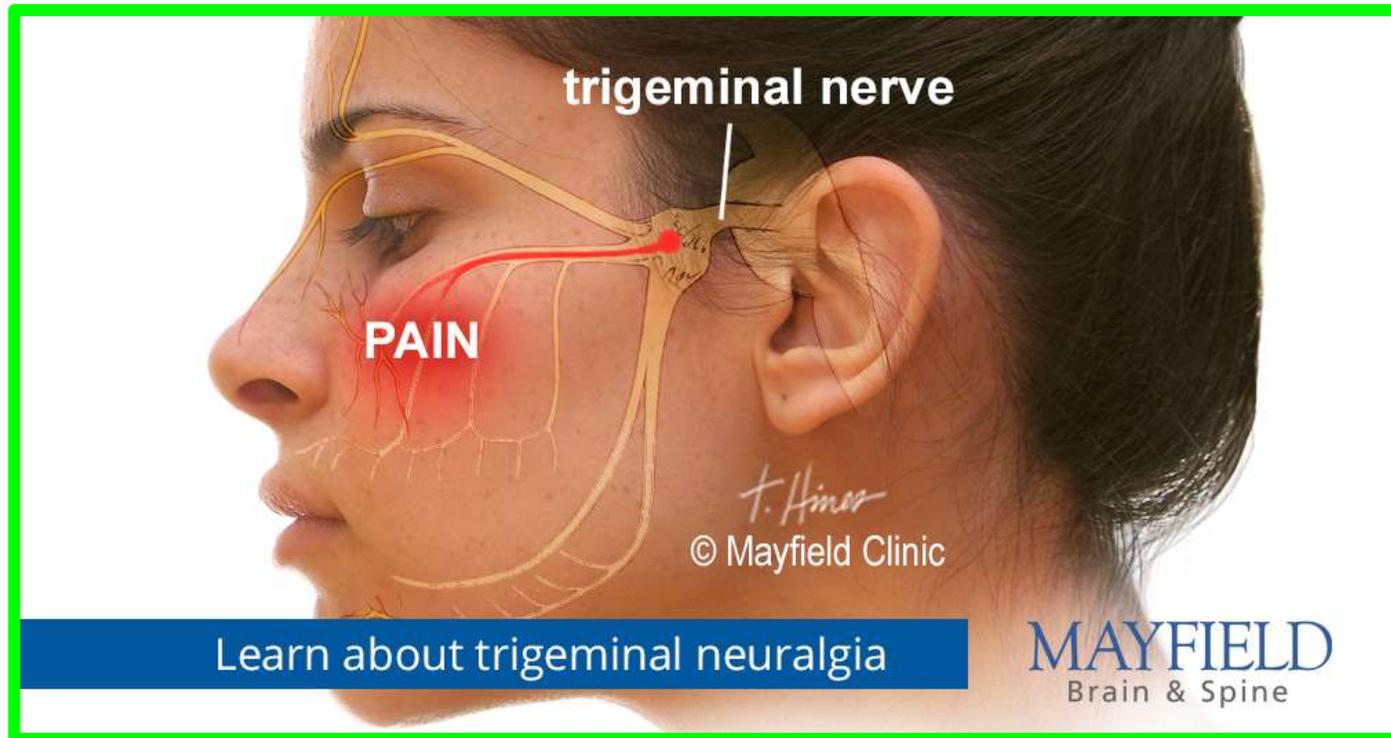
- ❖ ■ The mental nerve
- ❖ ■ The buccal nerve
- ❖ ■ The auriculotemporal nerve

## TRIGEMINAL – SENSORY BRANCHES TO FACE



# Sensory Nerves of the Face

**Trigeminal neuralgia:** is a relatively common condition in which the patient experiences excruciating pain in the distribution of **the mandibular** or **maxillary division**, with the ophthalmic division usually escaping.



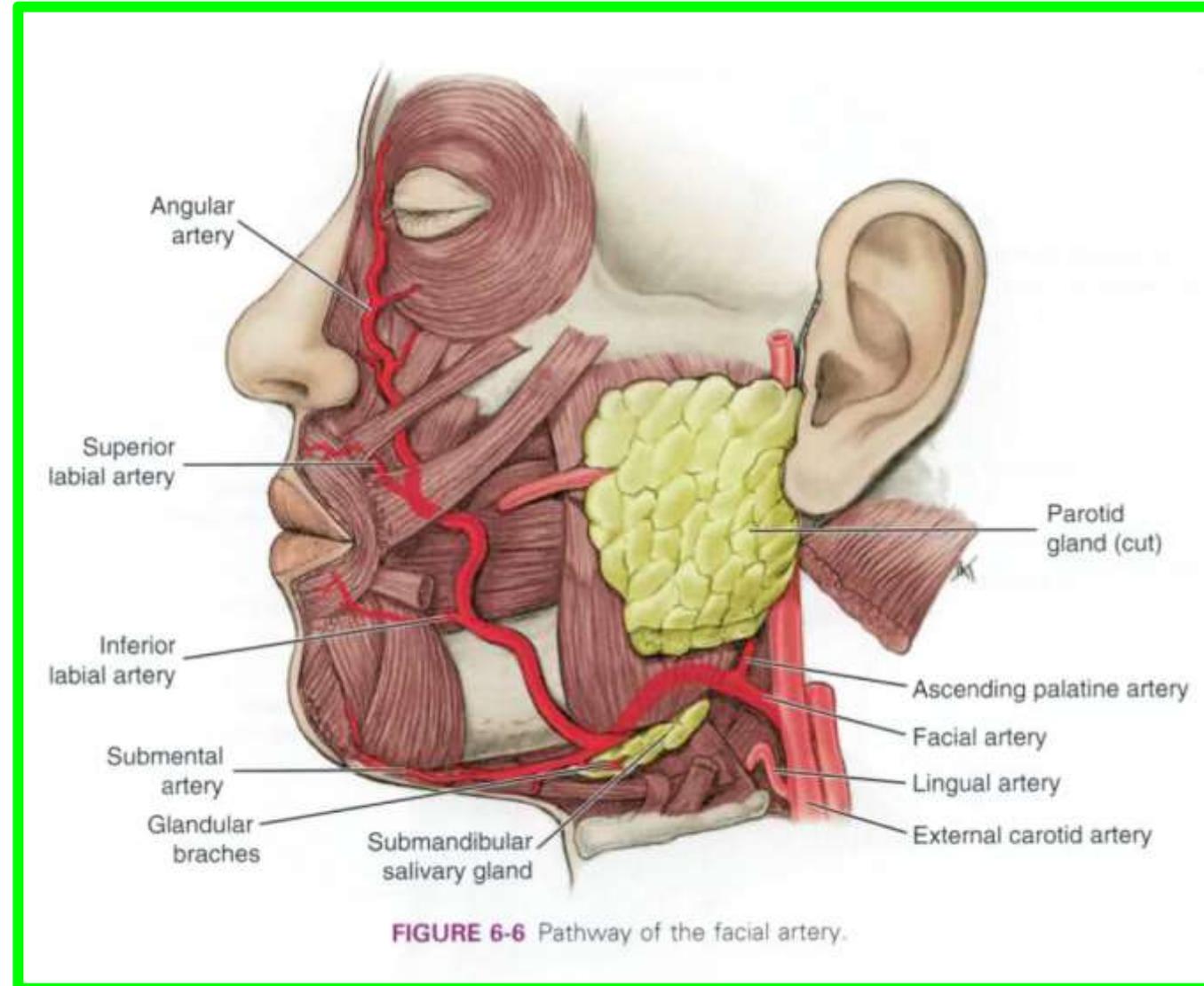
# Arterial Supply of the Face

The face receives a rich blood supply from two main vessels: **the facial** and **superficial temporal arteries**

## ❖ The facial artery:

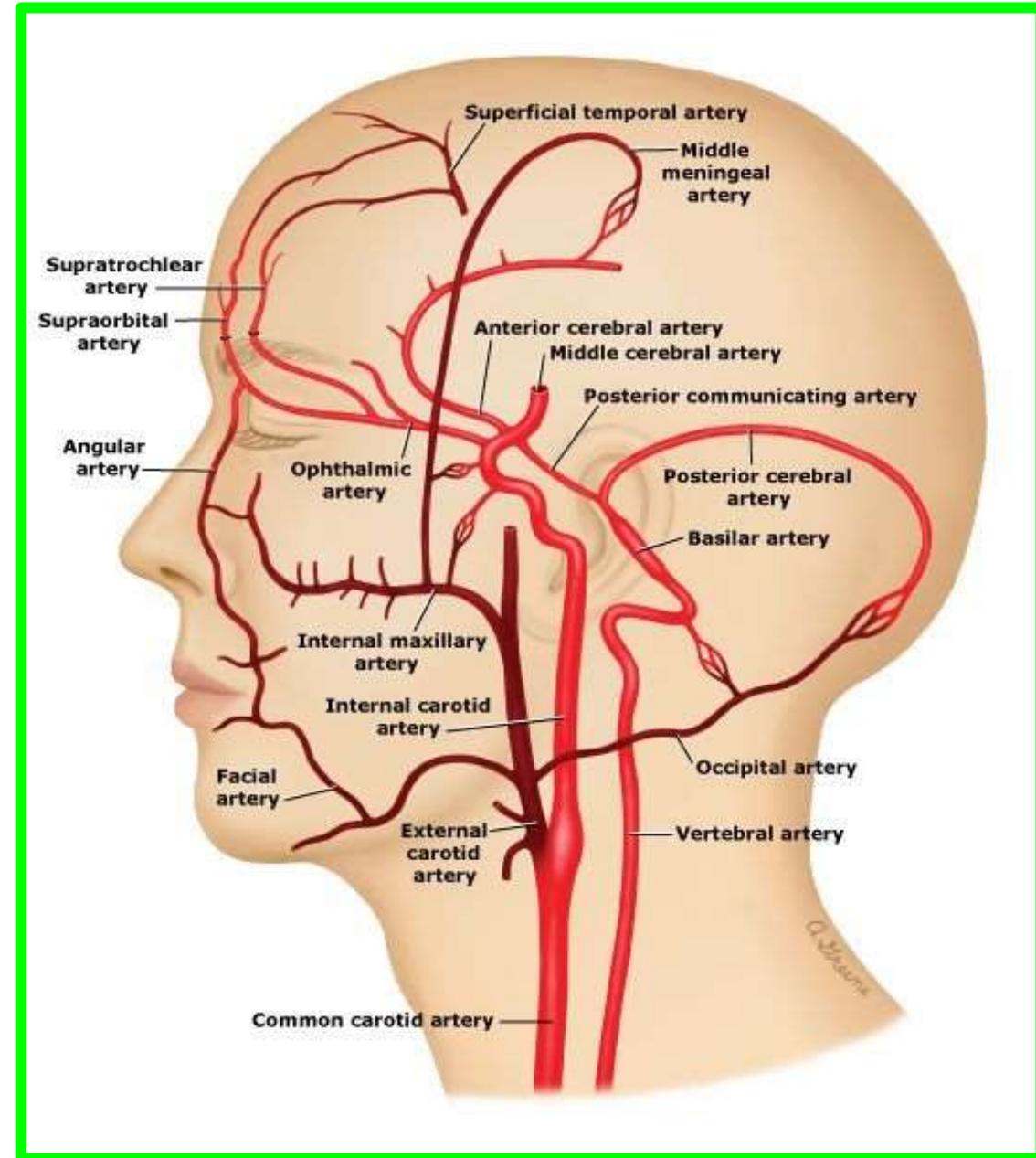
✓ arises from **the external carotid artery** it curves around the inferior margin of the body of the mandible at the anterior border of **the masseter muscle**.

✓ *It is here that the pulse can be easily felt.*



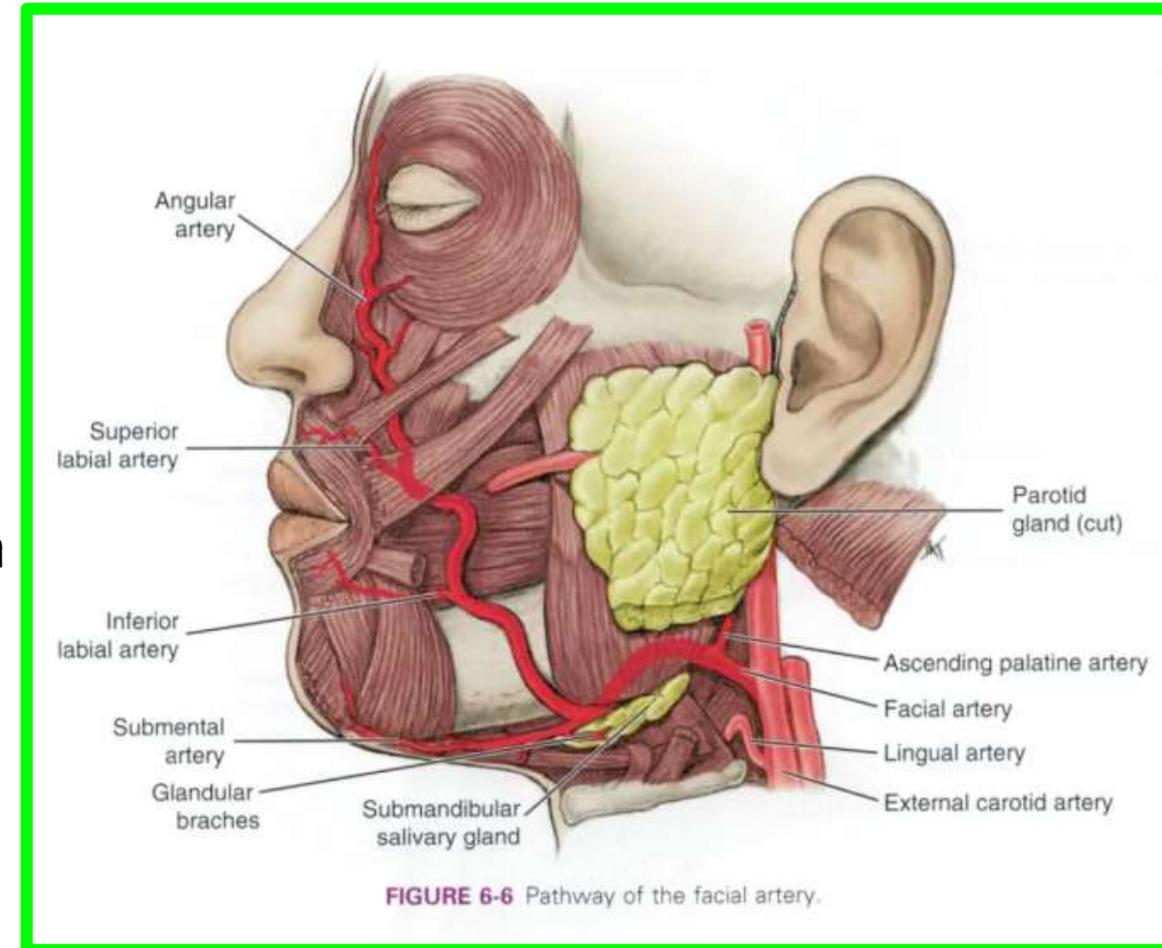
## ❖ The facial artery:

- ✓ It runs upward in a tortuous course toward the angle of the mouth
- ✓ It then ascends along the side of the nose to the medial **angle of the eye (angular artery)**, where it anastomoses with the terminal branches of **the ophthalmic artery**



## ❖ Branches of the facial artery:

- ■ **The submental artery** It supplies the skin of the chin and lower lip.
- ■ **The inferior labial artery** It runs medially in the **lower lip** and anastomoses with its fellow of the opposite side.
- ■ **The superior labial artery** It runs medially in the **upper lip** and gives branches to **the septum** and **ala of the nose**.
- ■ **The lateral nasal artery** It supplies the skin on the side and dorsum of the nose.



# Arterial Supply of the Face

## ❖ ■ The superficial temporal artery

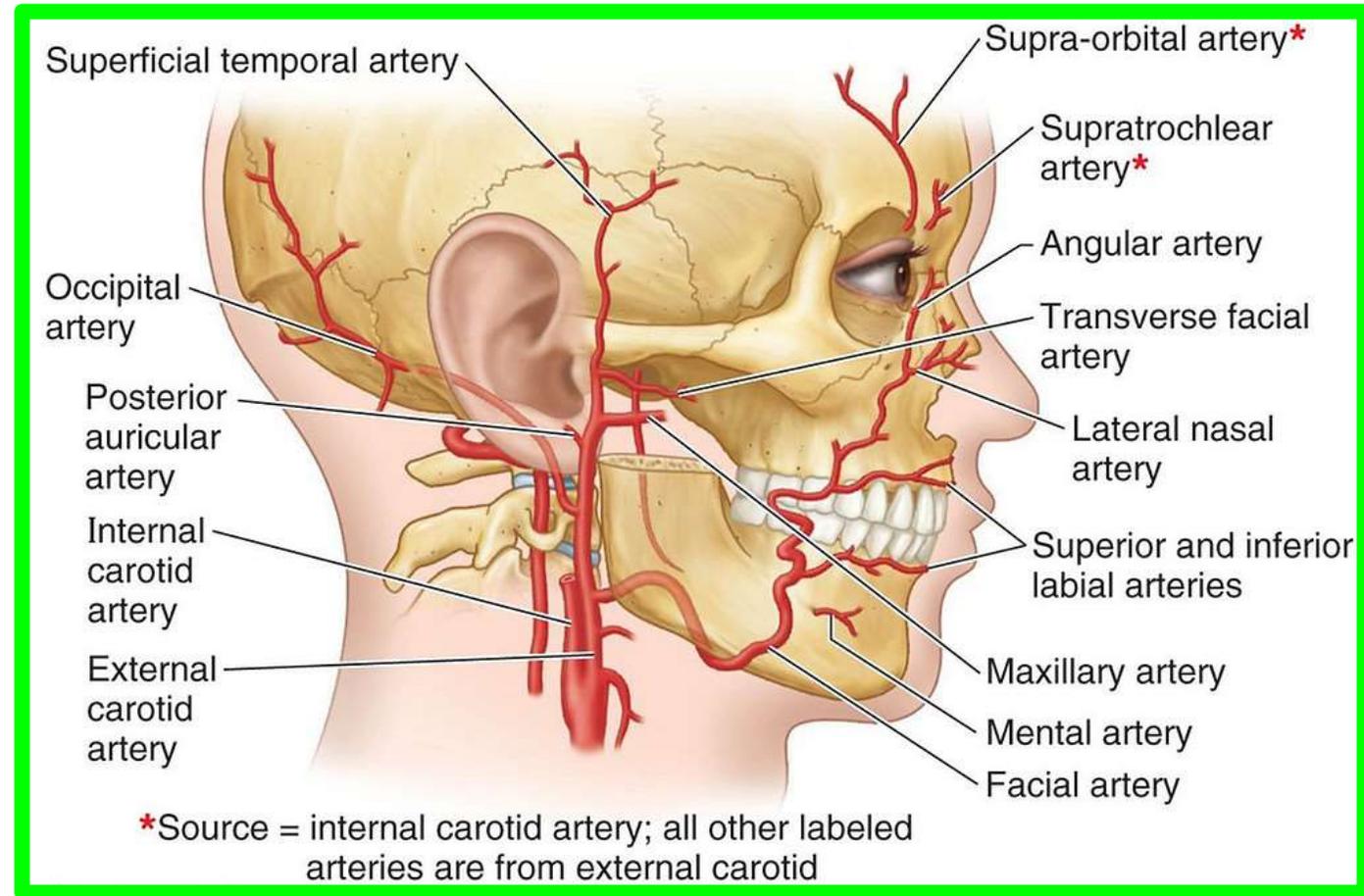
The smaller terminal branch of the **external carotid artery**, commences in the **parotid gland**. It ascends in front of the auricle to supply the scalp)

## ❖ ■ The transverse facial artery

A branch of the **superficial temporal artery**, arises **within the parotid gland**. It runs forward across the cheek just above the parotid duct

## ❖ ■ The supraorbital and supratrochlear arteries

branches of the **ophthalmic artery**, supply the skin of the forehead



# Venous Drainage of the Face

Dr. Aiman Al Maathydi

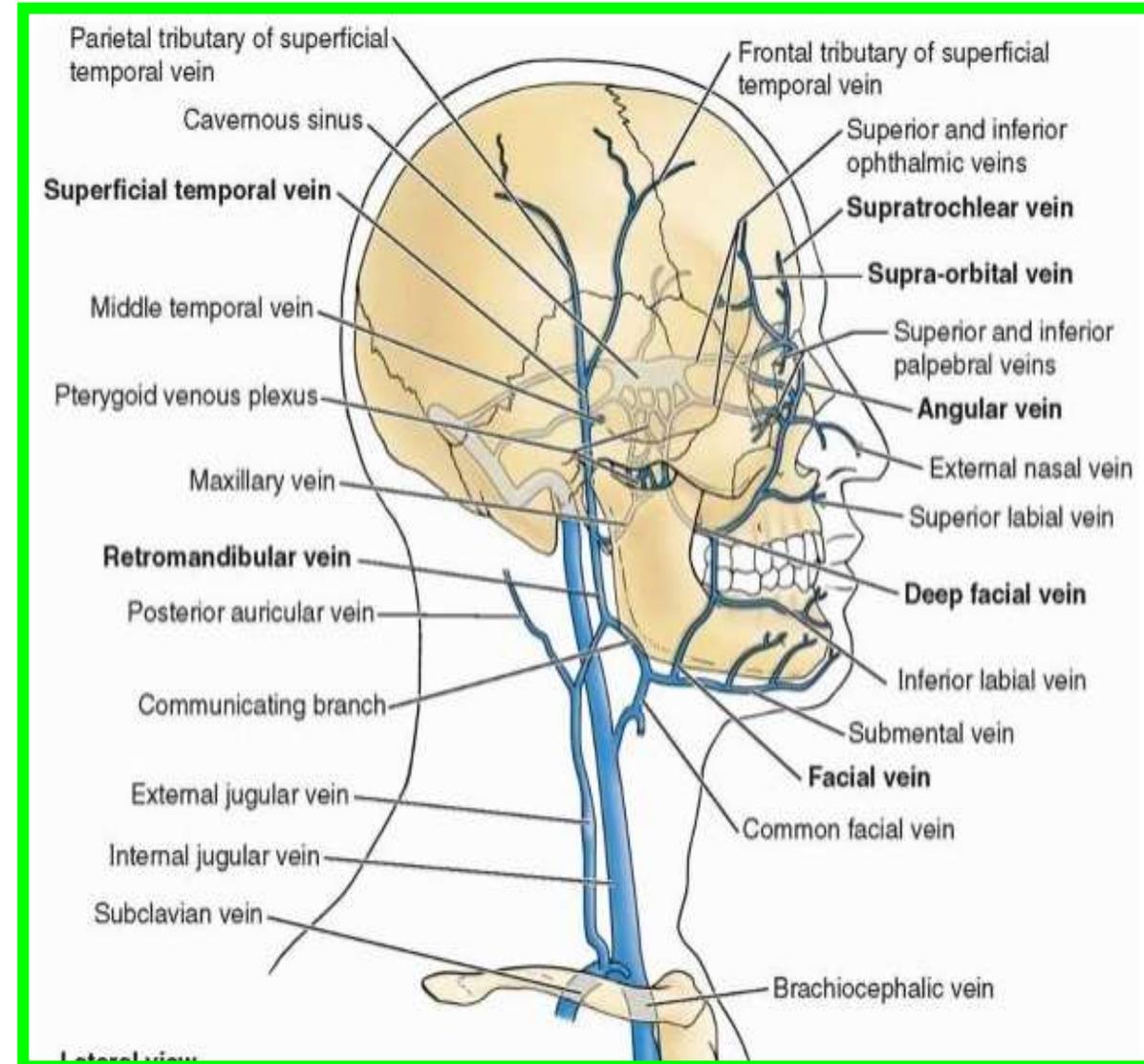
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✓ The facial vein is formed at the medial angle of the eye by the union of the **supraorbital** and **supratrochlear veins**

✓ It is connected to the **superior ophthalmic vein** directly through the **supraorbital vein**.

✓ By means of the **superior ophthalmic vein**, the **facial vein** is connected to the **cavernous sinus** *this connection is of great clinical importance because it provides a pathway for the spread of infection from the face to the cavernous sinus.*

✓ The **facial vein** descends behind the **facial artery** to the lower margin of the body of the mandible. The **facial vein** ends by draining into the **internal jugular vein**.

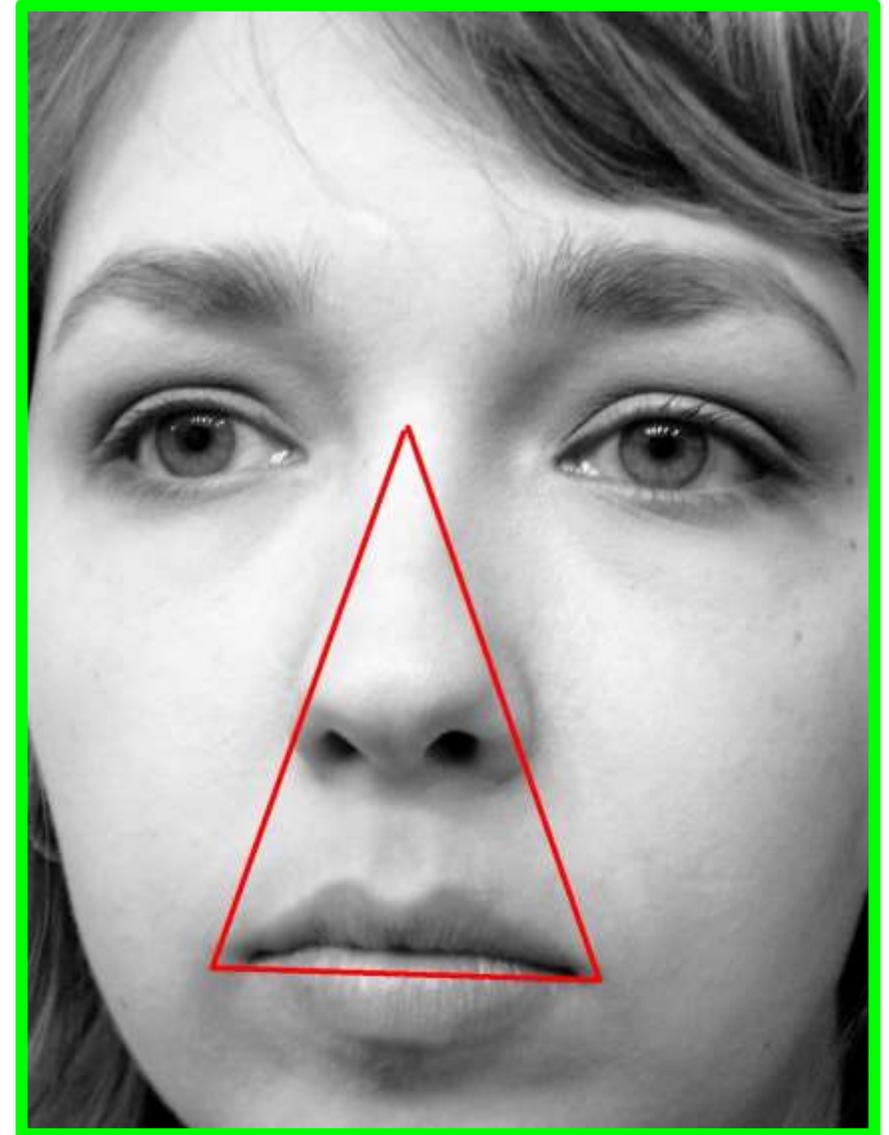


# Facial Infections and Cavernous Sinus Thrombosis

The area of facial skin bounded by **the nose**, **the eye**, and **the upper lip** is a potentially dangerous zone to have an infection.

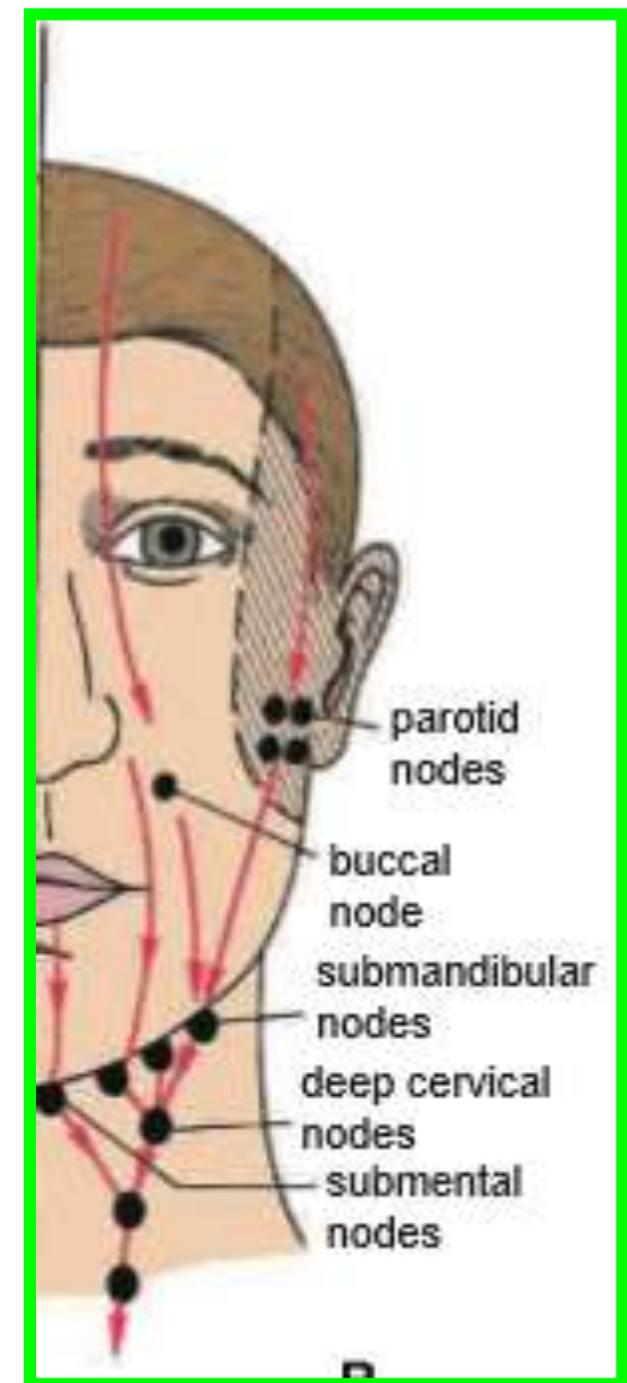
For example, **a boil** in this region can cause thrombosis of the facial vein, with spread of organisms through **the superior ophthalmic veins** to the **cavernous sinus**.

**The resulting cavernous sinus thrombosis** may be **fatal** unless adequately treated with antibiotics



# Lymph Drainage of the Face

- ✓ Lymph from the forehead and the anterior part of the face drains into **the submandibular lymph nodes**
- ✓ A few **buccal lymph nodes** may be present along the course of these lymph vessels.
- ✓ The lateral part of the face, is drained into **the parotid lymph nodes**.
- ✓ The central part of the lower lip and the skin of the chin are drained into **the submental lymph nodes**.



# Muscles of the Face (Muscles of Facial Expression)

The muscles of the face are embedded in the superficial fascia, and most arise from the bones of the skull and are inserted into the skin

## Muscles of the Eyelids

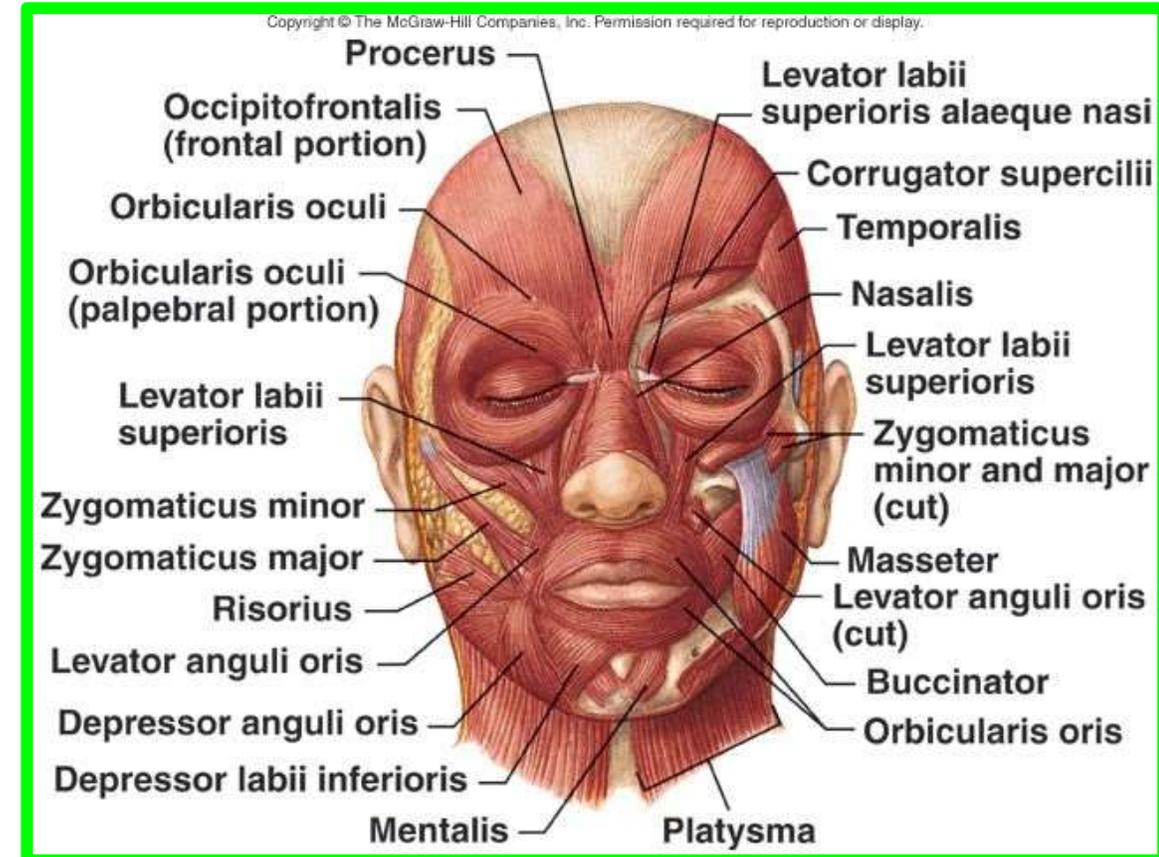
The sphincter muscle of the eyelids is the **orbicularis oculi**, and the dilator muscles are the **levator palpebrae superioris** and the **occipitofrontalis**

## Muscles of the Nostrils

The sphincter muscle is the **compressor naris** and the dilator muscle is **dilator naris**

## Muscles of the Lips and Cheeks

The sphincter muscle is the **orbicularis oris**.  
The dilator muscles consist of a series of small muscles that radiate out from the lips.



# Muscles of the Face (Muscles of Facial Expression)

- Levator labii superioris
- Zygomaticus minor
- Zygomaticus major
- Levator anguli oris (deep to the zygomatic muscles)
- Risorius
- Depressor anguli oris
- Depressor labii inferioris
- Mentalis

## Muscle of the Cheek

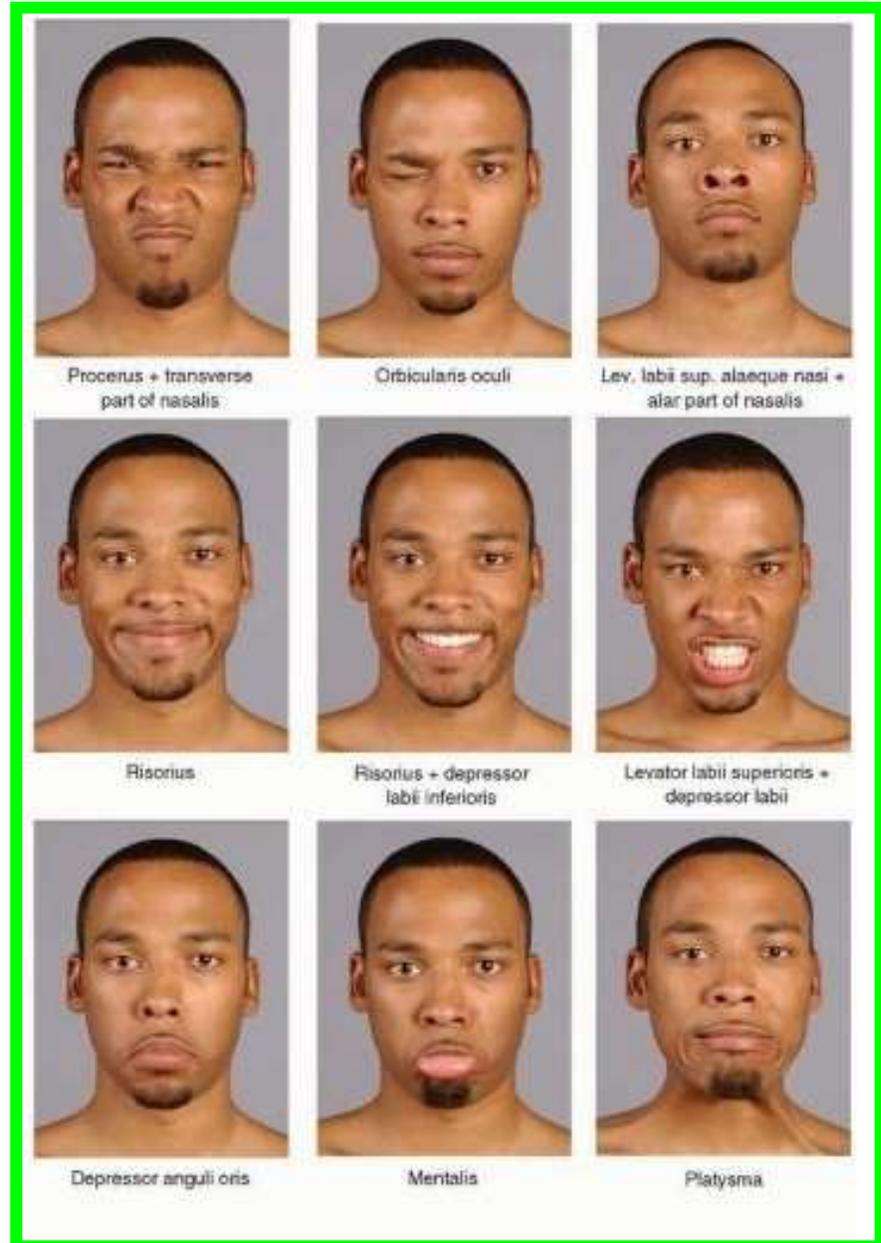
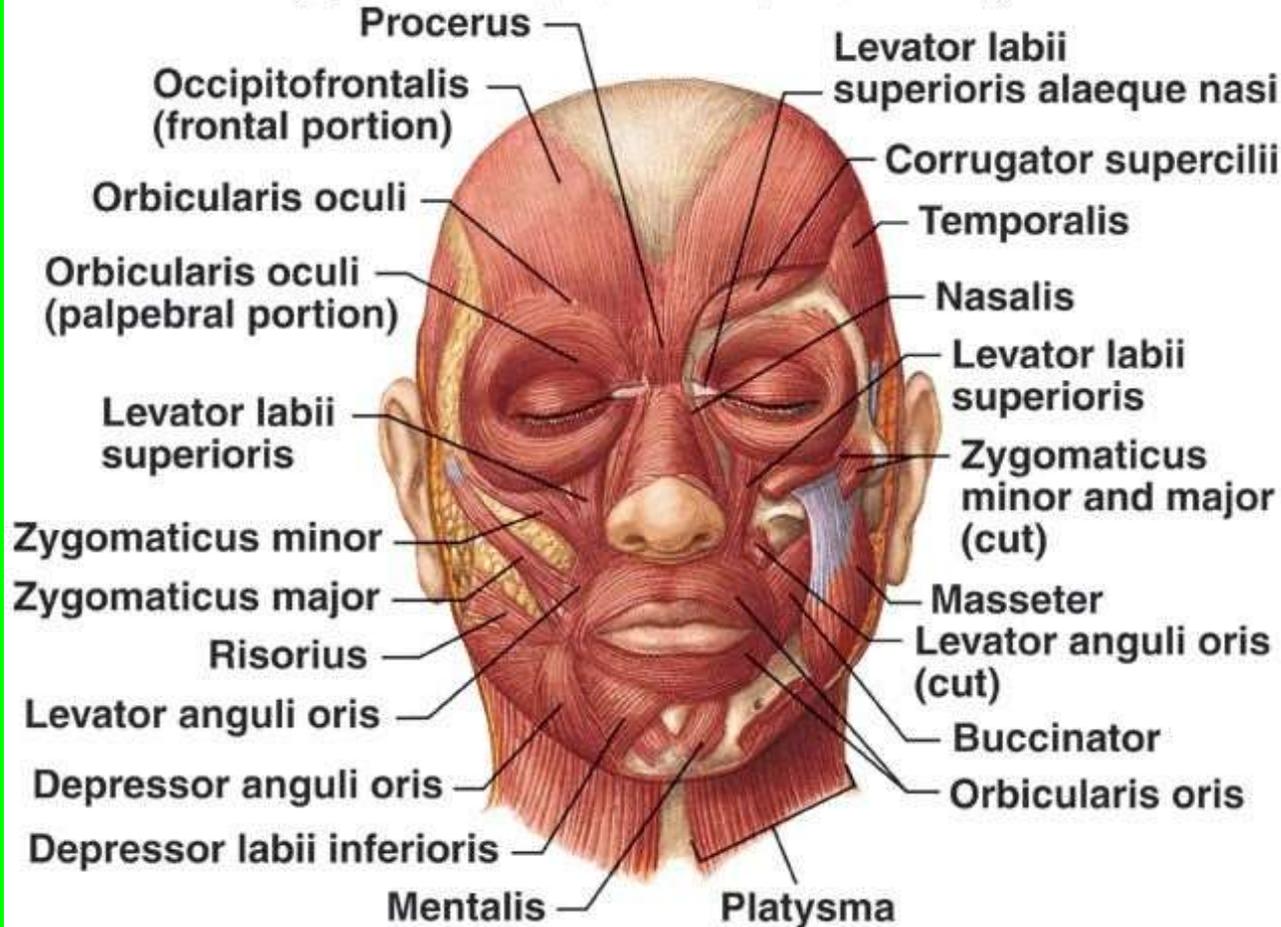
### Buccinator

- Nerve supply: Buccal branch of **the facial nerve**
- Action: Compresses the cheeks and lips against the teeth



# Muscles of the Face (Muscles of Facial Expression)

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# The orbicularis oculi

- It is the sphincter of the eye.
- It is formed of 3 portions.

## 1- Orbital portion;

- It is a thin sheath surround the orbital cavity.

\* **Origin;** from the **medial palpebral ligament** and adjacent bones.

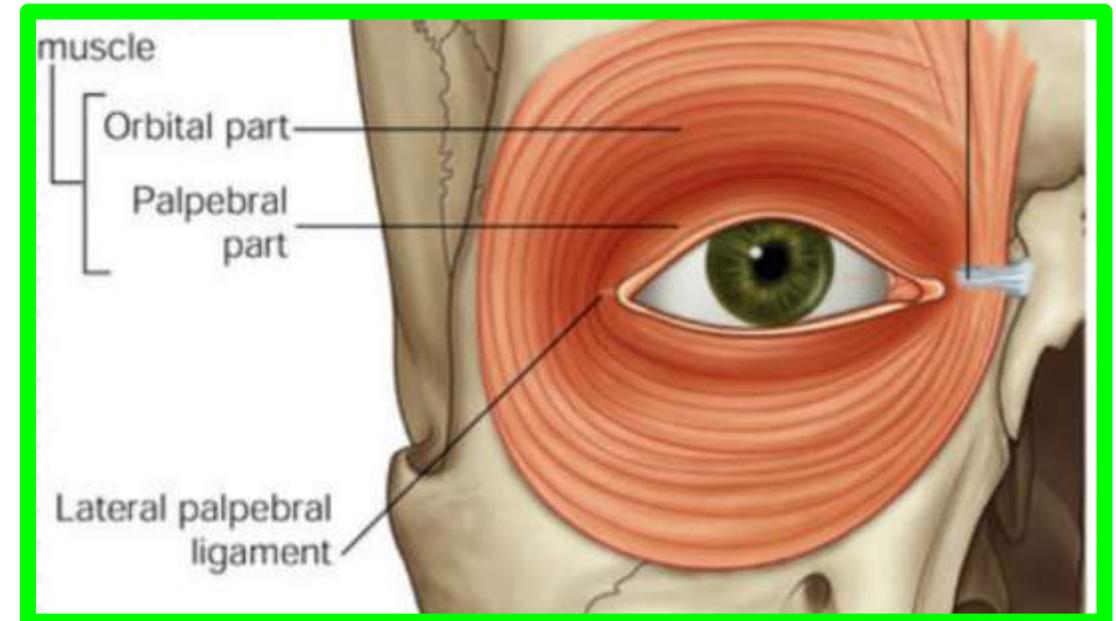
- Its fibers form complete circle around the orbit without bony attachment on the lateral side.

\* **Insertion,** into the **lower border of the medial palpebral ligament.**

2- **Palpebral part:** a thin sheet related to the eye lids.

• **Origin** from the **medial palpebral ligament.**

\* **Insertion** into the **lateral palpebral ligament.**



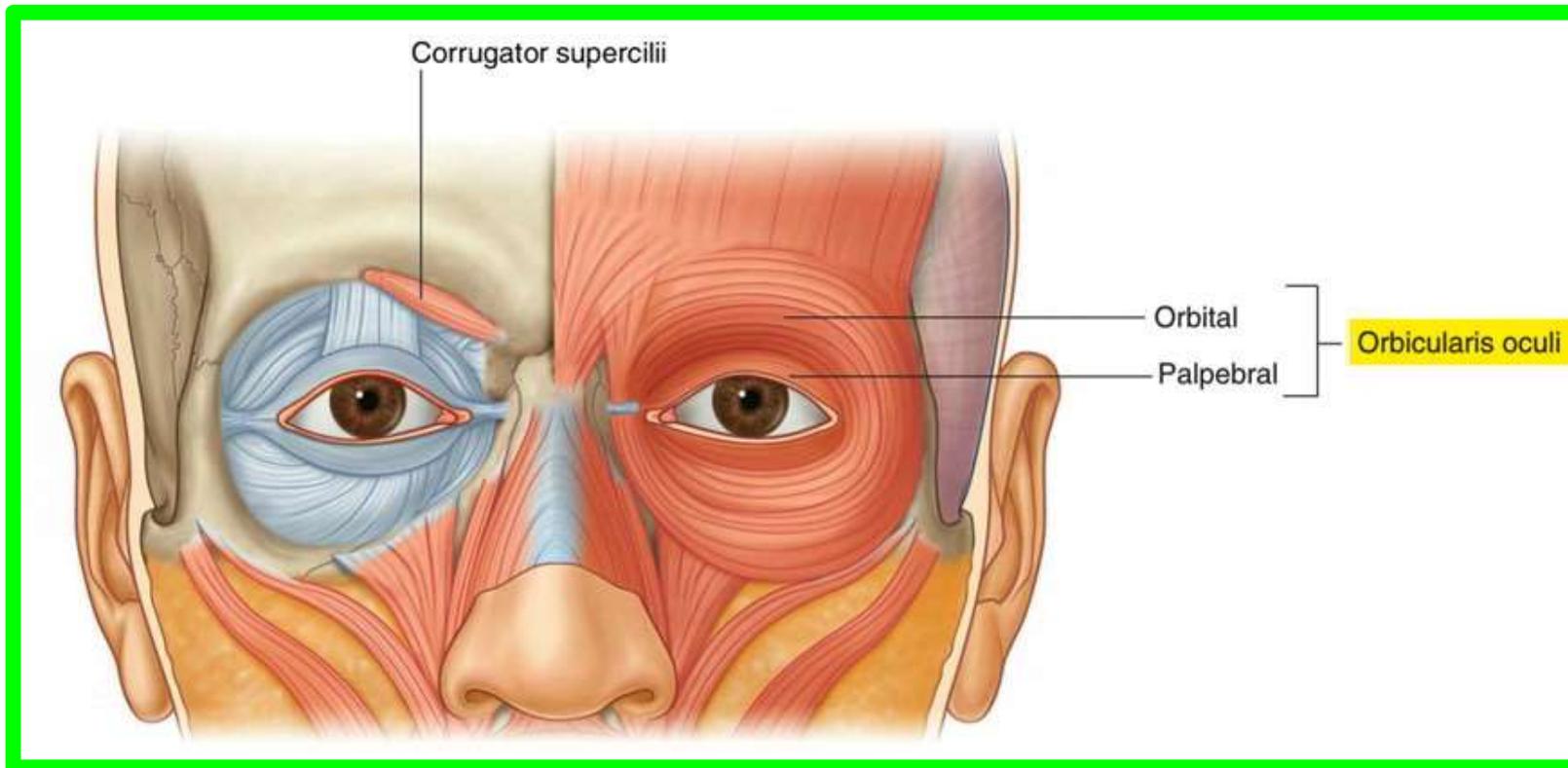
# The orbicularis oculi

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## 3- Lacrimal part:

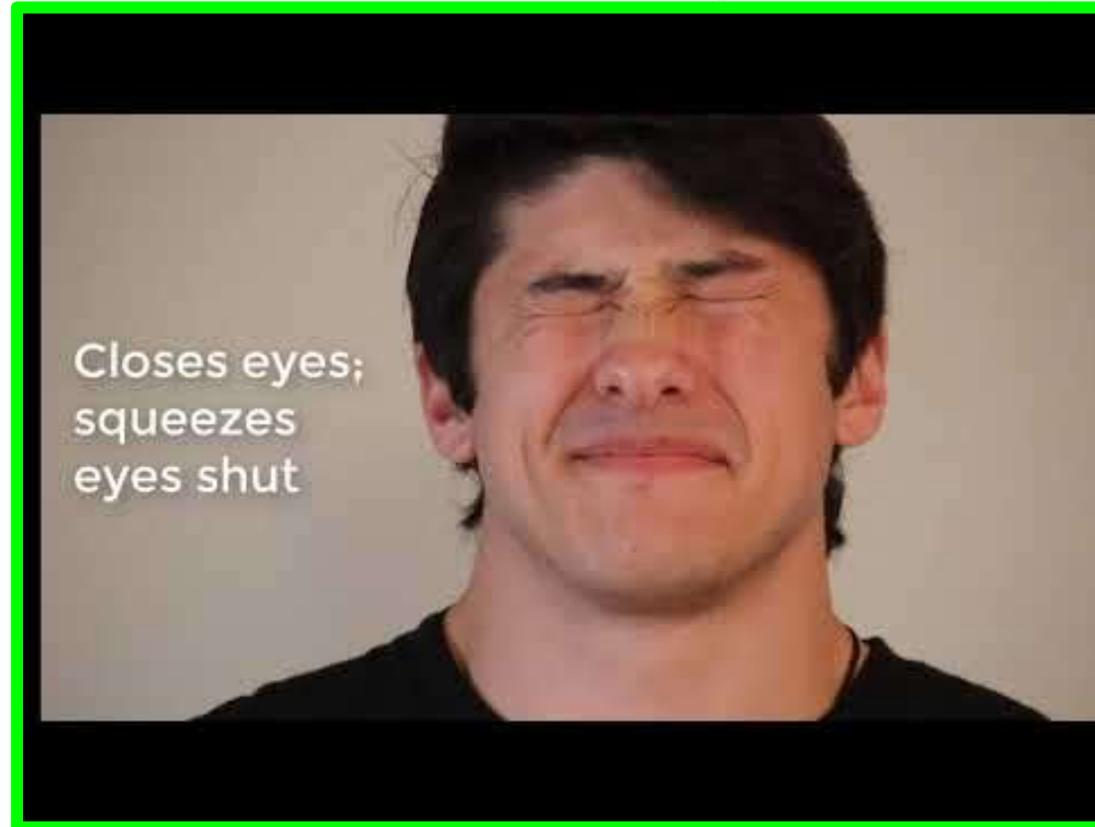
- \* **Origin**, from the lacrimal crest, floor of the lacrimal fossa and fascia covering the lacrimal sac.
- \* **Insertion**, into the tarsi of the eye lids and lateral palpebral ligament.
- \* **Nerve supply**, temporal and zygomatic branches of the facial nerve.



# The orbicularis oculi

## \* Actions:

- 1- **Orbital** part, acts as sphincter of the eyelids (it contracts reflexly to protect the eye against danger).
- 2- **Palpebral** portion closes the eyelids during blinking and sleeping.
- 3- **Lacrimal** portion dilates the lacrimal sac and pulls the eye lid medially



# Buccinator Muscle

## \* Origin;

a- **Upper fibres** from the outer surface of the maxilla opposite the molar teeth.

b- **Middle fibres** from the pterygo-mandibular ligament.

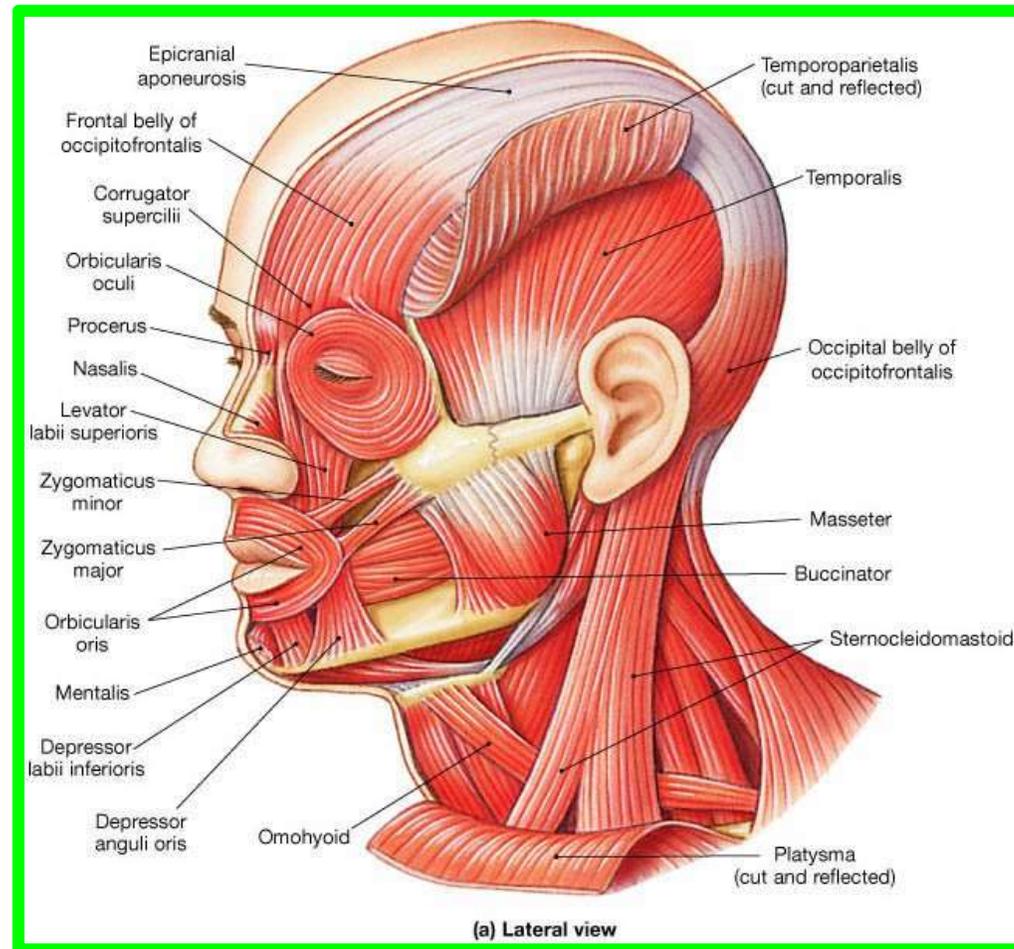
c- **Lower fibres** from the oblique line in the outer surface of the mandible opposite the molar teeth.

## \* Insertion;

a- **The upper fibers** are inserted into the upper lip.

b- **The lower fibers** are inserted into the lower lip.

c- **The middle fibers** decussate at the lateral angle of the mouth and are inserted into the upper and lower lips.



# Buccinator Muscle

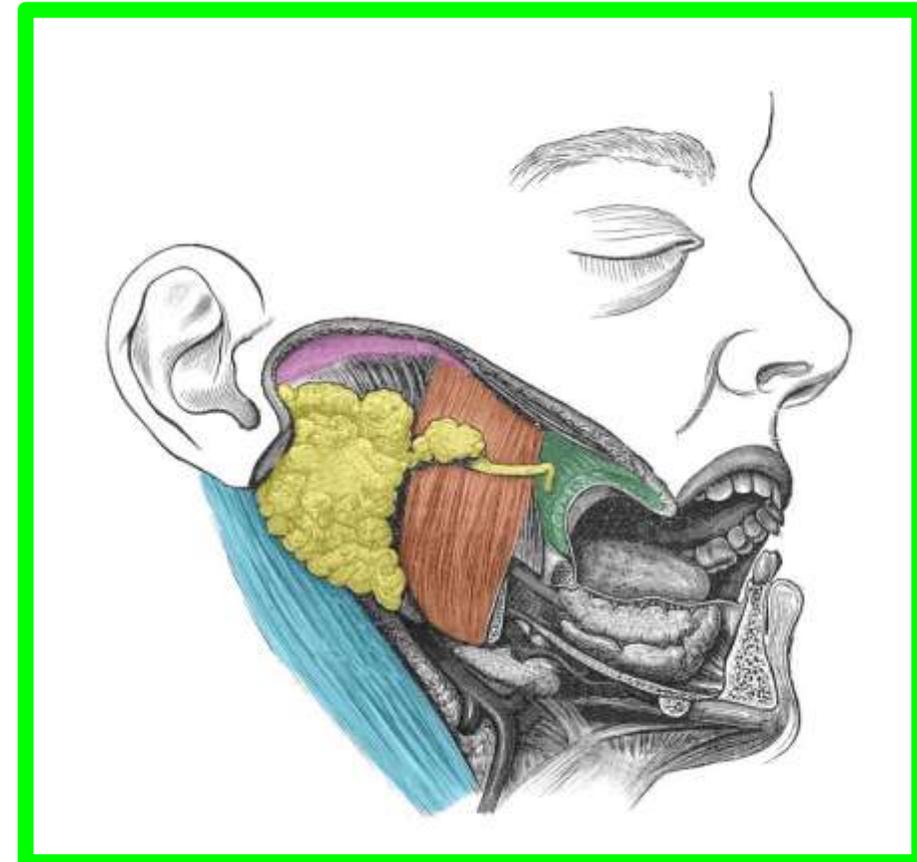
\* Nerve supply, **buccal branch of the facial nerve.**

\* **Actions;**

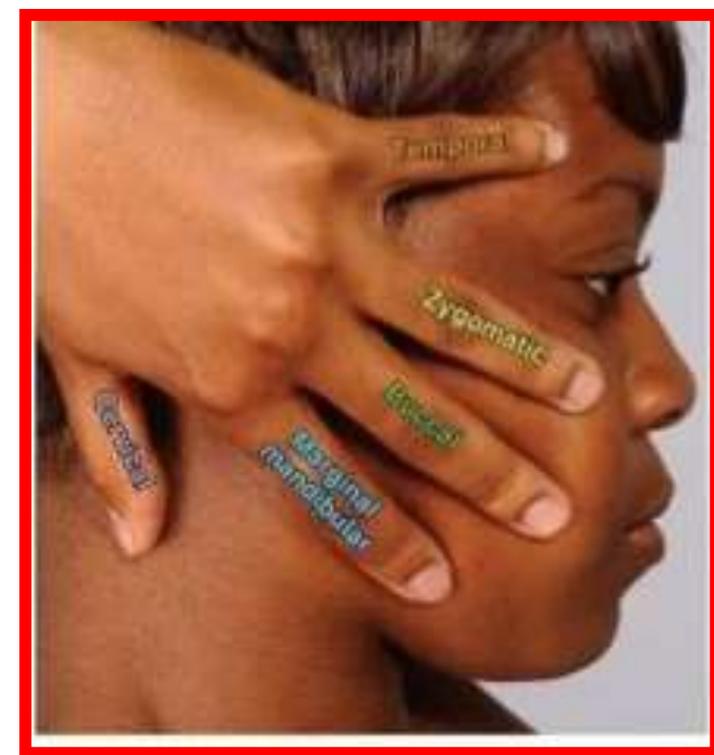
- 1- It compresses the cheek against the teeth to prevent food from falling into the vestibule of the mouth during mastication of food.
- 2- When the cheeks are distended with air, they contract to blow out the air, as in whistling (buccina =trumpet).

\* **Relations;**

- It is covered by buccal pad of fat and **facial artery.**
- Its deep surface is lined by the buccal mucosa.
- It is pierced by 1) **Parotid duct at the anterior border of the masseter muscle.**
- 2) **Buccal branch of the mandibular nerve (sensory) to supply the mucosa on the inner surface of the muscle**

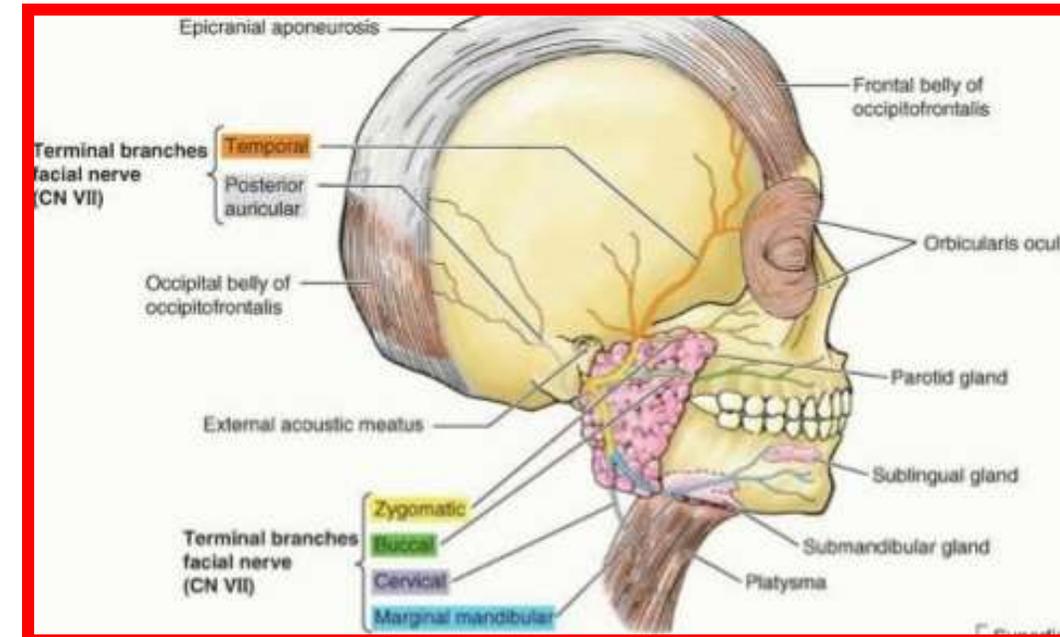


# Facial Nerve



As the facial nerve runs forward within the substance of the parotid salivary gland it divides into its five terminal branches:

- ❖ **The temporal branch**, supplies the frontal belly of the occipitofrontalis & the orbicularis oculi
- ❖ **The zygomatic branch** supplies the orbicularis oculi.
- ❖ **The buccal branch** supplies the buccinator muscle and the muscles of the upper lip and nostril.
- ❖ **The mandibular branch** supplies the muscles of the lower lip.
- ❖ **The cervical branch** supply the platysma muscle



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