

وسهلا



أهلا

الأستاذ الدكتور يوسف حسين

أستاذ التشريح وعلم الأجنة - كلية الطب - جامعة الزقازيق - مصر

رئيس قسم التشريح و الأنسجة و الأجنة - كلية الطب - جامعة مؤتة - الأردن

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دكتورة من جامعة كولونيا المانيا

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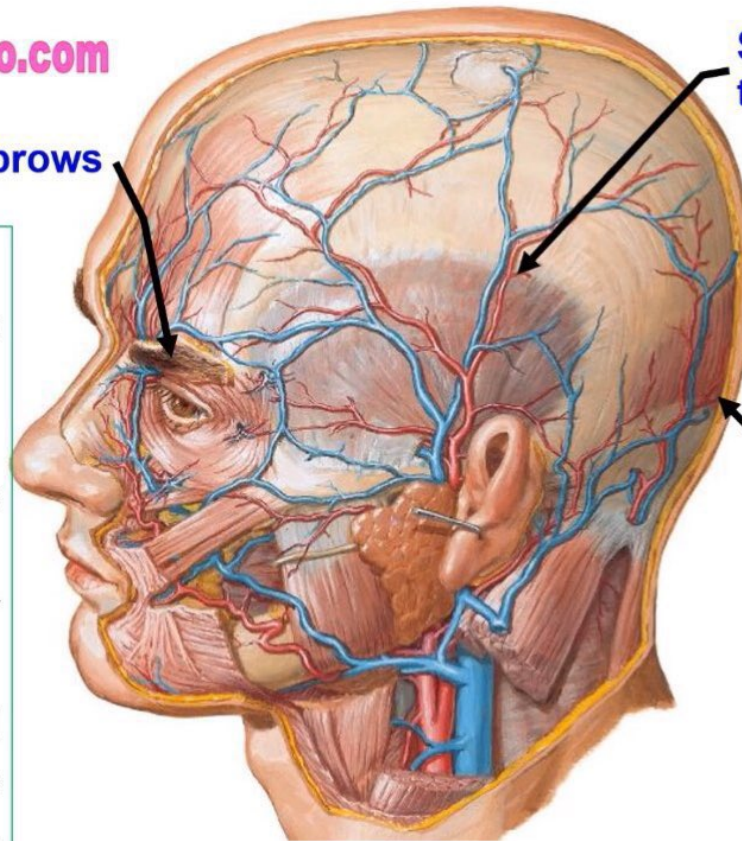


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- **Scalp**
 - The soft tissues covering skull cap (calvaria).
- **Extension**
 - **Anteriorly;** Skin of the eye brows.
 - **Laterally;** superior temporal lines.
 - **Posteriorly;** external occipital protuberance and **highest** nuchal lines.

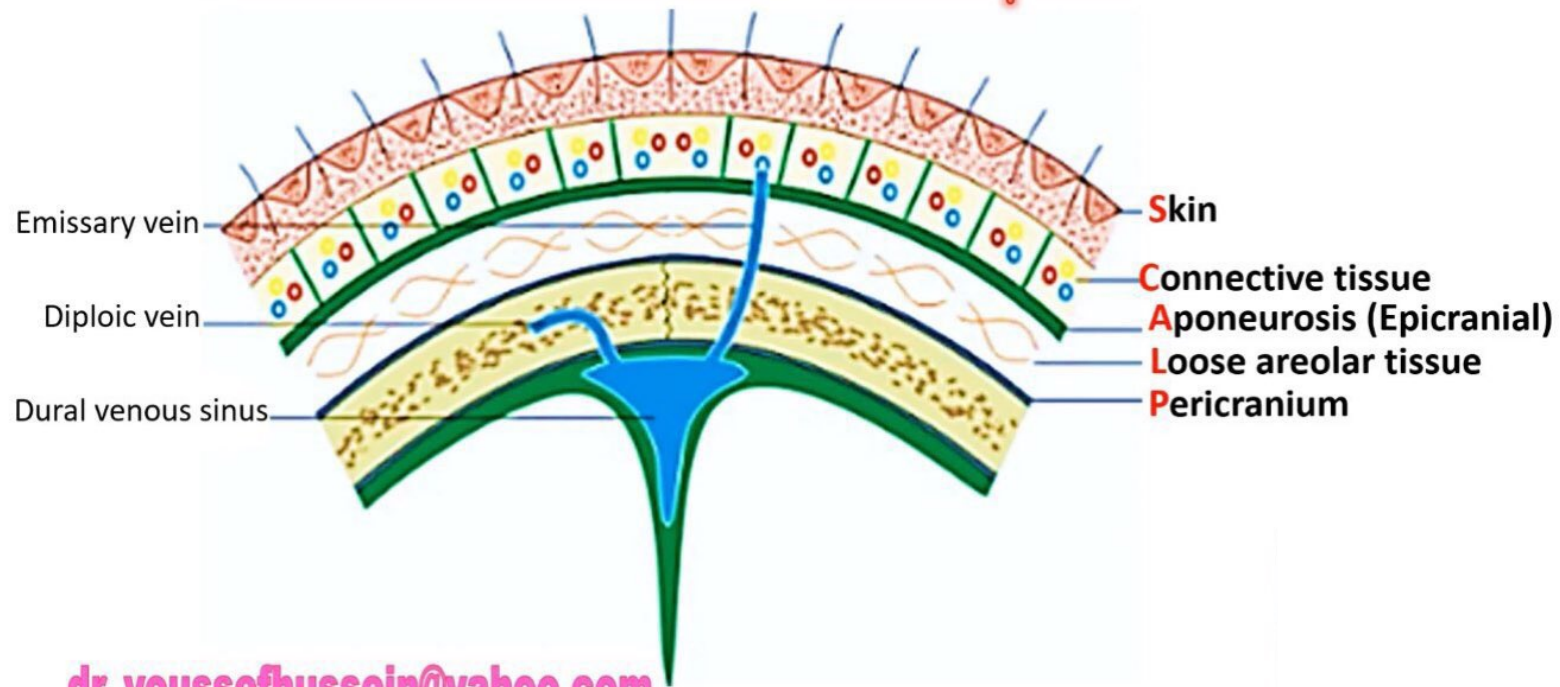
Eye brows



Superior temporal line

External occipital protuberance

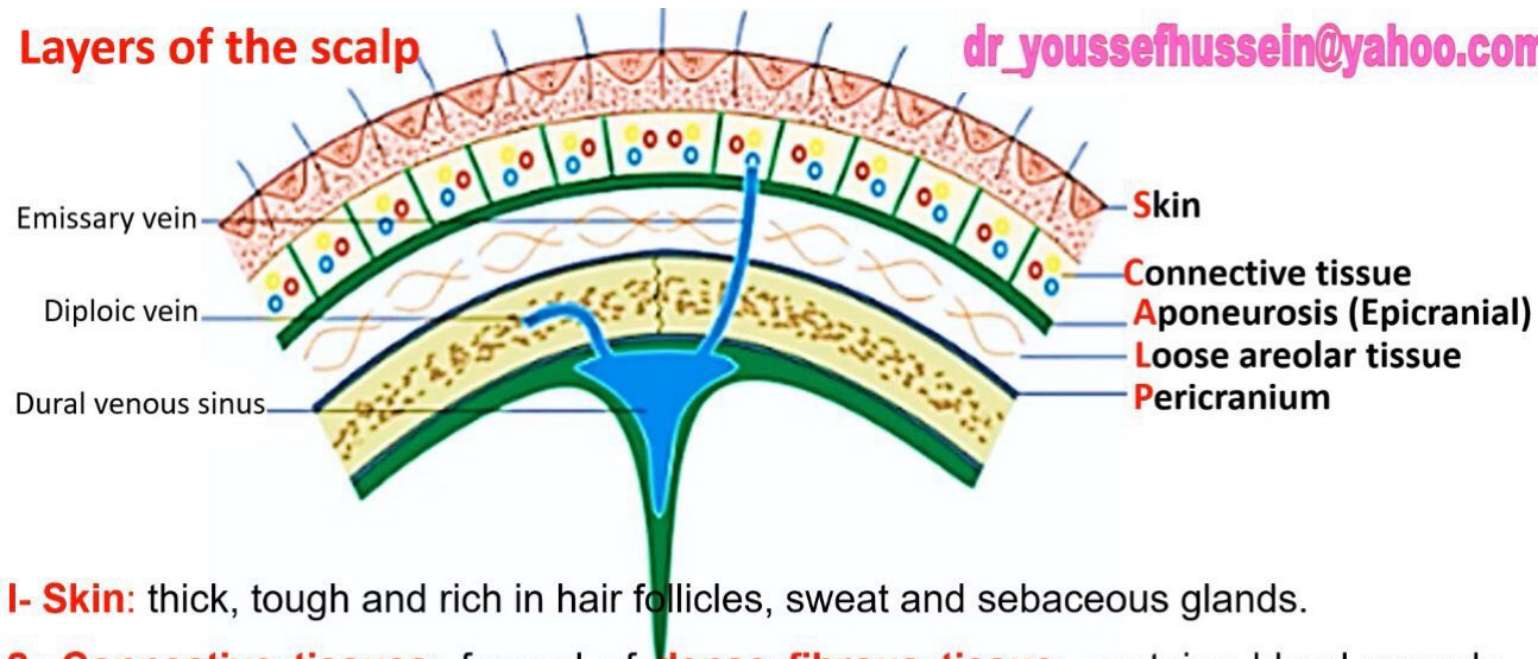
Layers of the scalp : 5 layers (S.C.A.L.P.)



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Layers of the scalp

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1- Skin: thick, tough and rich in hair follicles, sweat and sebaceous glands.

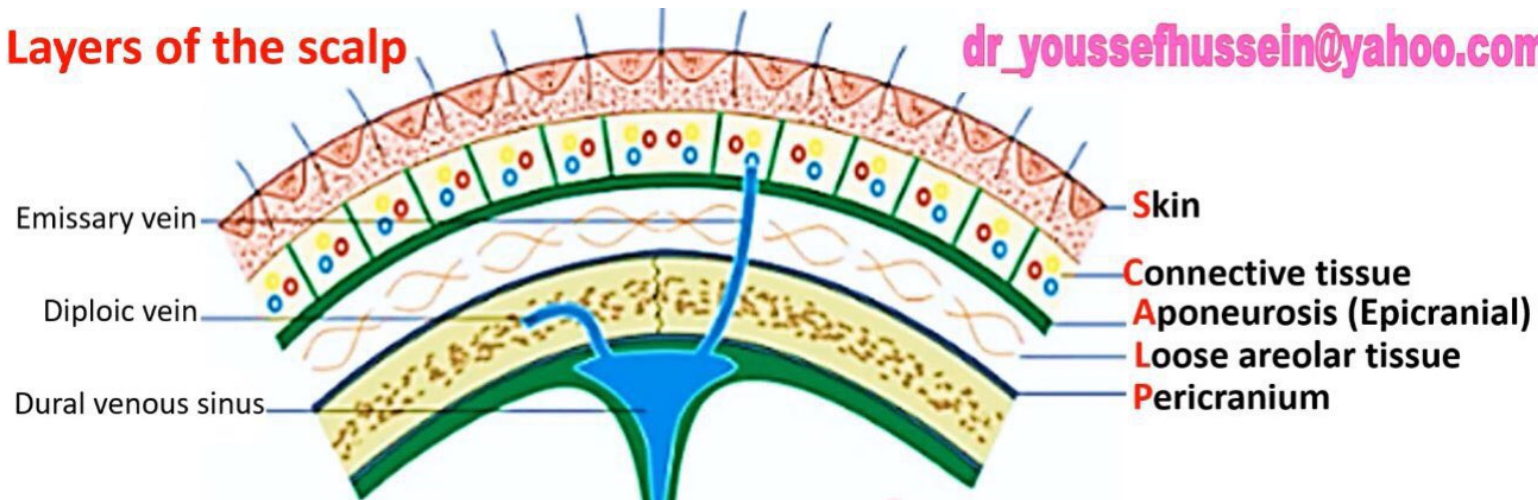
2- Connective tissues: formed of **dense fibrous tissue**, contains blood vessels, nerves and lymphatic.

3- Aponeurosis of occipitofrontalis muscle (*galea aponeurotica*).

- The first 3 layers **attached together** and move on the underlying layer.

Layers of the scalp

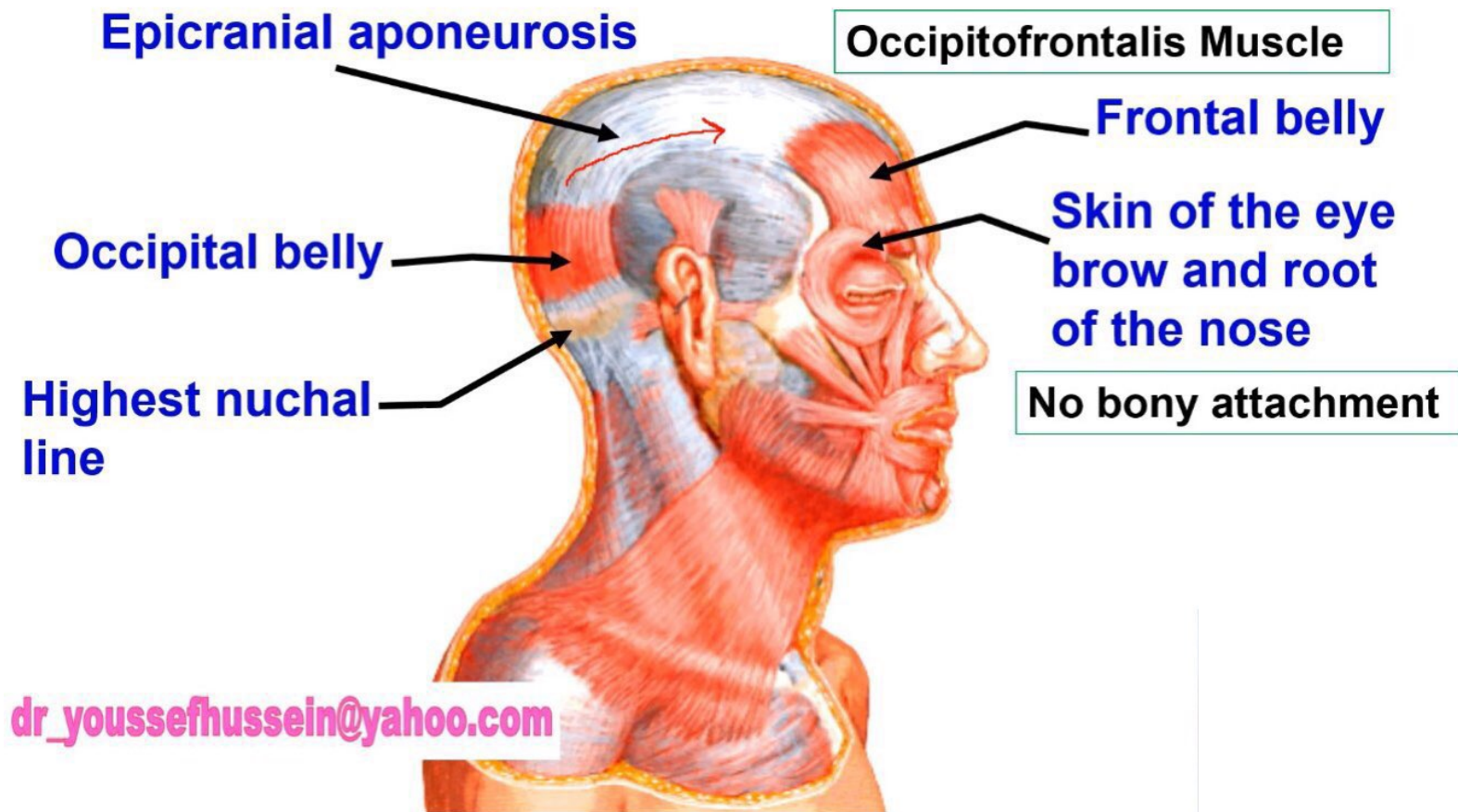
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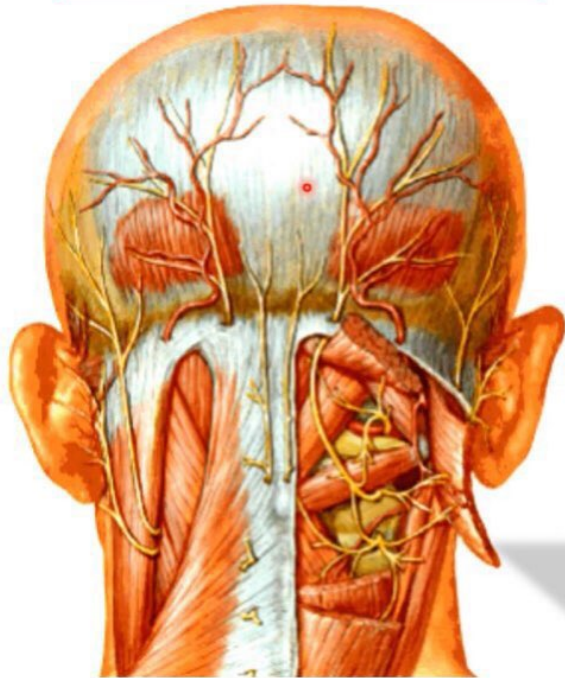
4- Loose areolar tissue (dangerous zone): allows **mobility** of the scalp on the skull, site of collection of pus and blood

5- Pericranium (periosteum): it does not adhere to the skull bones but the **sutures** of the skull by bands of fibrous tissue called **sutural ligament**

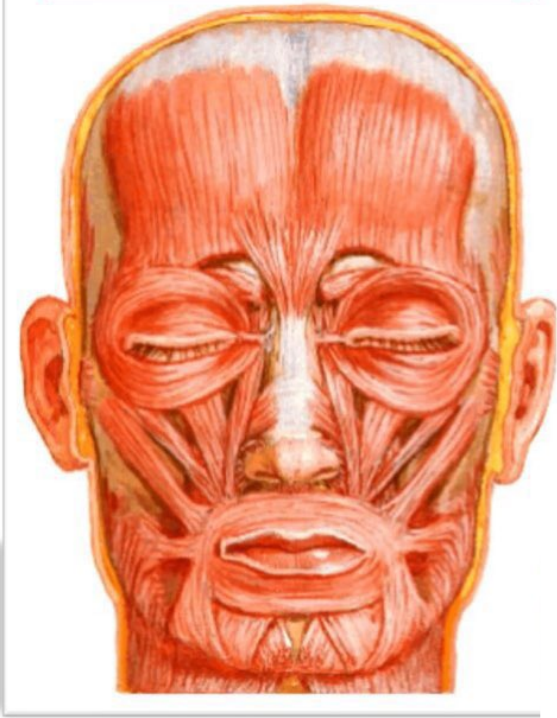




Occipital bellies



Frontal bellies



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* **Occipitofrontalis Muscle**

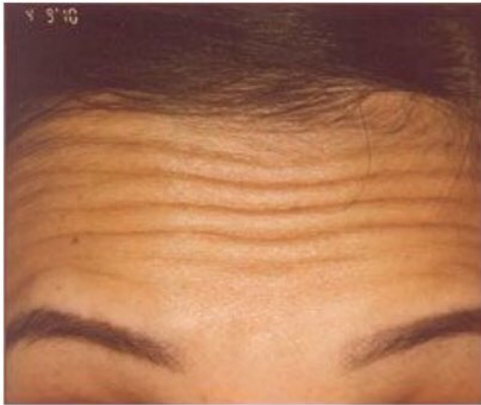
- It is formed of **2 frontal bellies and 2 occipital bellies** connected together by the epicranial aponeurosis.
- The two **frontal** bellies are much **larger** than the occipital bellies.
- The two frontal bellies come **close together** in the median plane, while the two occipital bellies are separated by a **gap** of epicranial aponeurosis (***galea aponeurotica***).

a- The occipital bellies

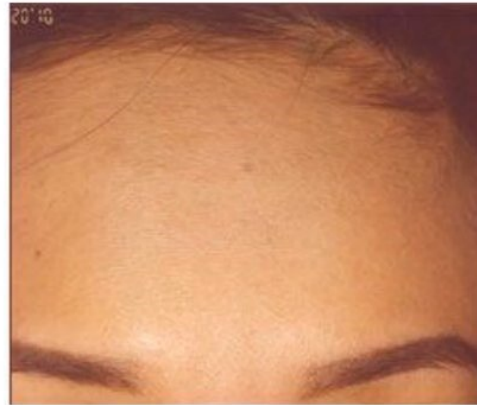
- * **Origin**; from the highest nuchal lines.
- * **Insertion**; epicranial aponeurosis.
- * **Nerve supply**, posterior auricular branch of facial nerve.

b- The frontal bellies

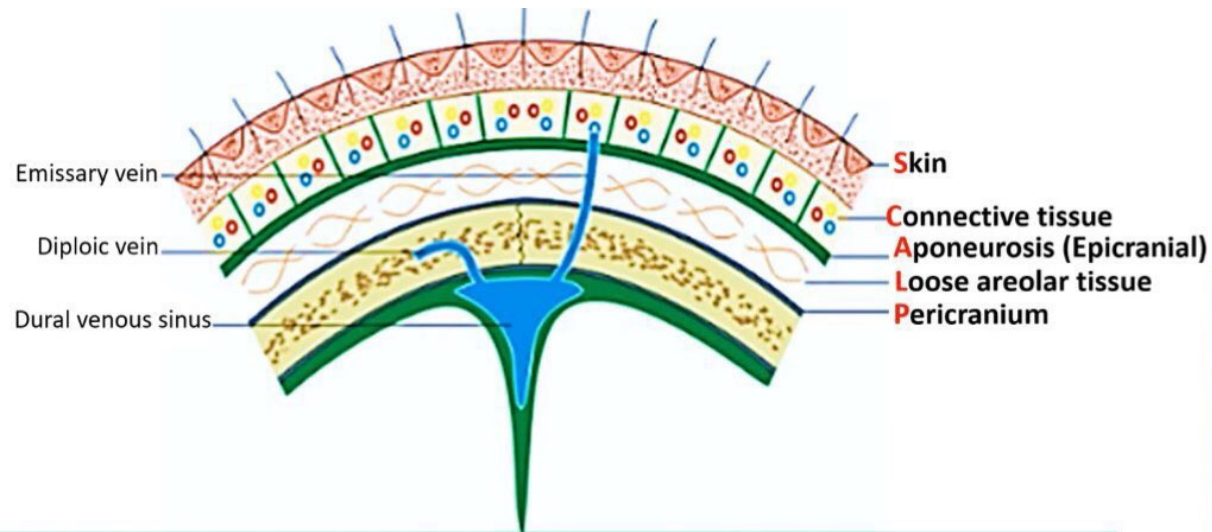
- * **Origin**; from epicranial aponeurosis.
- * **Insertion**; to the skin of the eye brows and root of the nose (no bony)
- * **Nerve supply**; temporal branches of the facial nerve.



*** Action of frontal belly**
- Elevate the eye brows producing transverse wrinkles of skin of the forehead (*expression of surprise*).



*** Action of occipital belly**
- Pull the scalp backward leading to smooth skin of forehead.

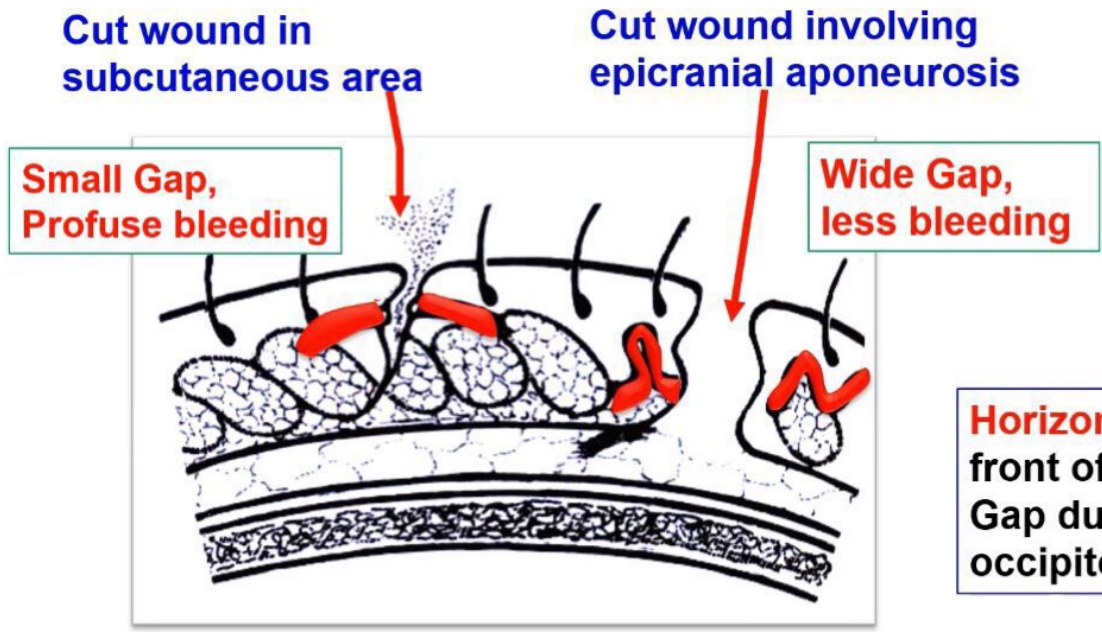


- **The first 3 layers attached together** and move on the underlying layer.
- **Bleeding under the first 3 layers forms diffuse hematoma** extending throughout the scalp and reach the upper eye lids **(Black eye)**.

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- Fracture of the skull bone produces a localized hematoma because the periosteum is firmly attached to the sutures.





Horizontal Cut wound of The front of scalp leading to Wide Gap due to retraction of occipitofrontalis muscle

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- **Clinical anatomy**

- **Wide gap and less bleeding** when epicranial aponeurosis is lacerated in coronal plane (**Deep wound**), because of the pull of the frontal and occipital bellies of the occipitofrontalis muscle in **opposite directions** (anteriorly and posteriorly).
- **Profuse bleeding:** The connective tissue is dense fibrous and adherent to the wall of the blood vessels so prevents their contraction or retraction following injury., The arteries supplying the scalp anastomose freely with each other.
- **Small gap:** Attachment of the skin to the epicranial aponeurosis keeps the edges of superficial wounds together

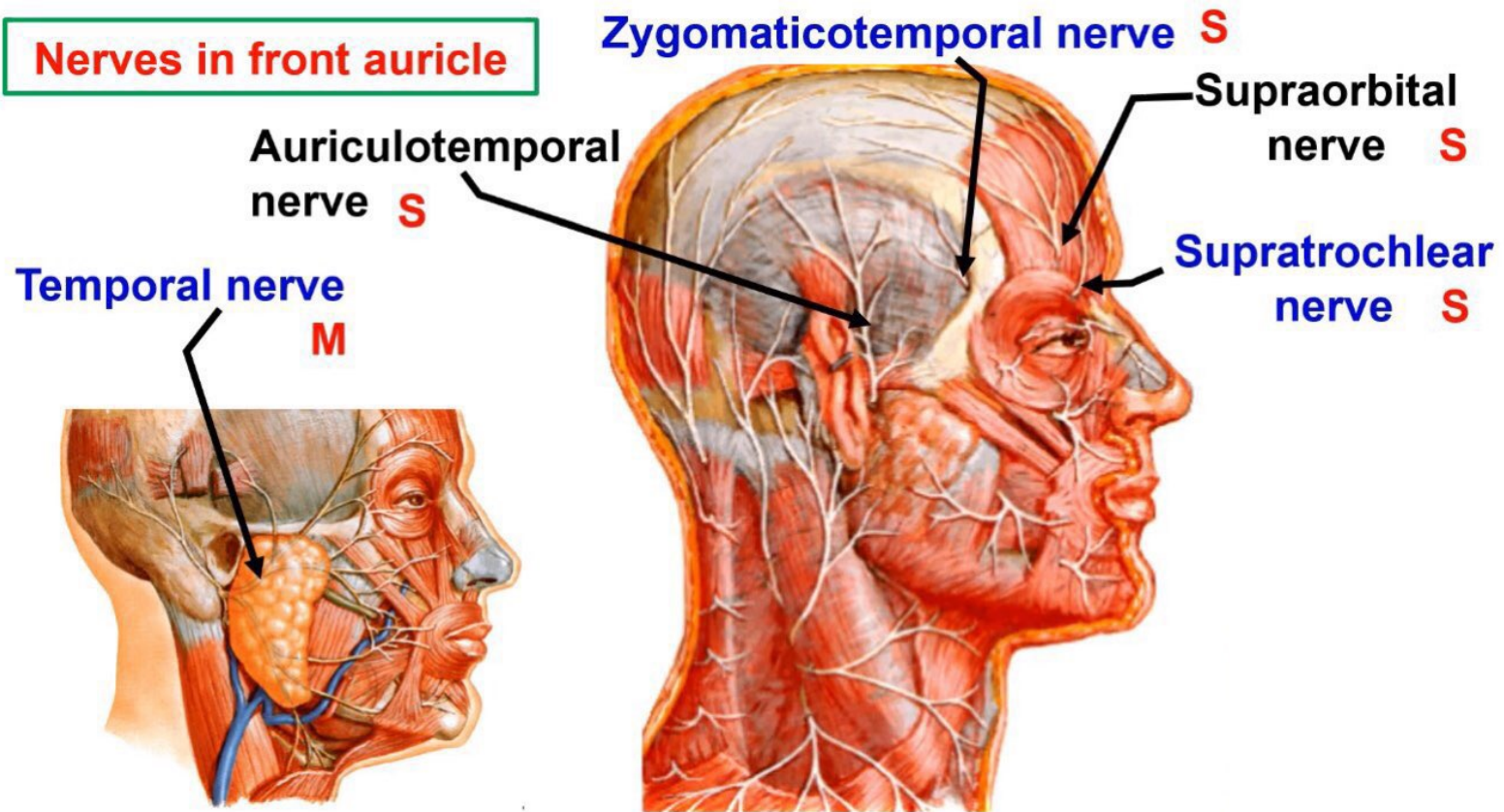
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Nerve supply of scalp

- Scalp is supplied by 10 nerves on each side.
- Five nerves in front the auricle
- Fives nerves behind the auricle.
- Each 5 nerves, 4 sensory and 1 motor.

Nerves in front auricle



A- Nerves in front the auricle

A- Branches of the ophthalmic nerve.

a. Supratrochlear nerve (Sensory): leaves the orbit through supratrochlear notch supplies

- 1- The medial part of the upper eye lid.
- 2- Forehead and scalp till the coronal suture.

b- Supraorbital nerve (Sensory): leaves the orbit through supraorbital notch or foramen supplies

- 1- The middle part of the upper eye lid.
- 2- Forehead and scalp till the lambdoid suture.

B- Branch of the maxillary nerve.

- **Zygomaticotemporal nerve (Sensory)** passes through zygomatic foramen to the anterior part of the temporal region (temple).

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A- Nerves in front the auricle

C- Branch of the mandibular nerve.

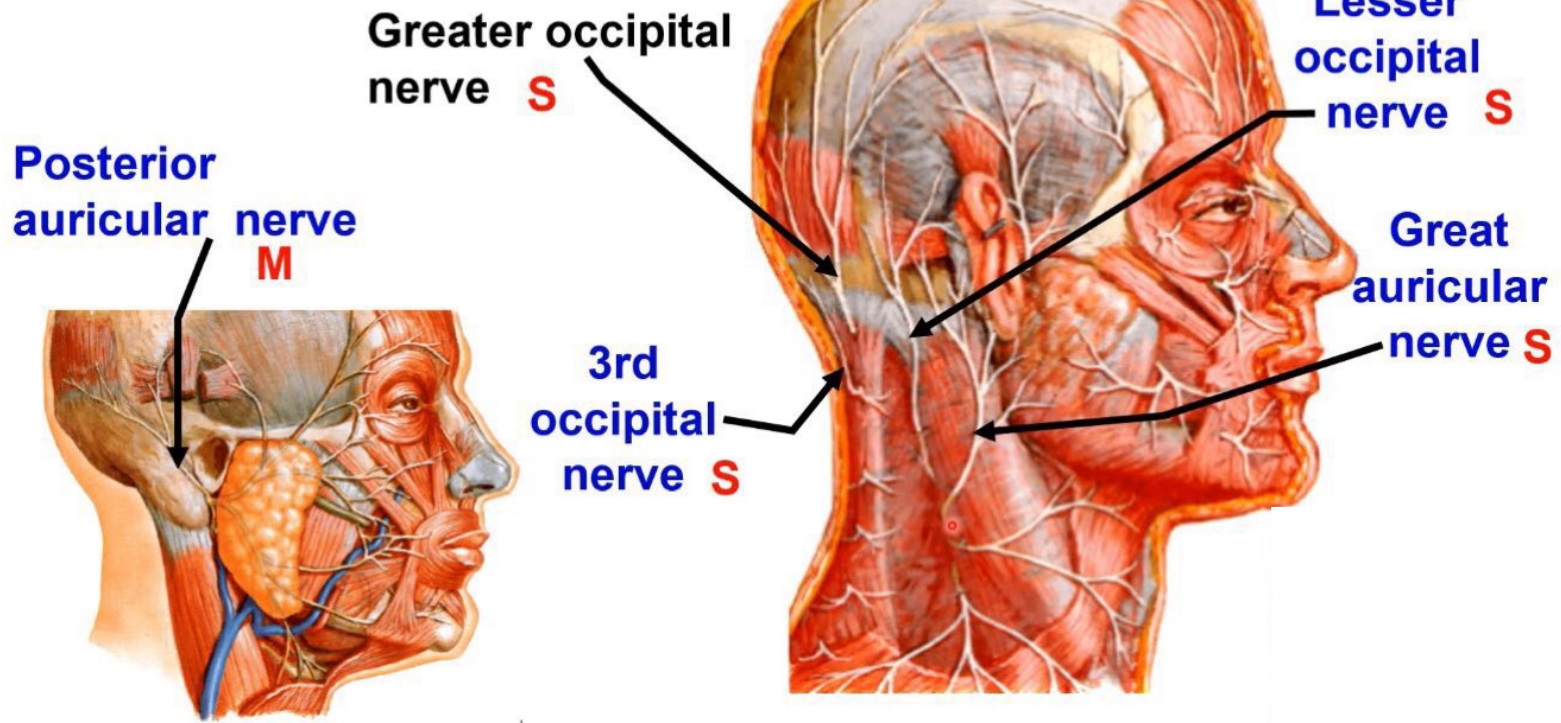
- **Auriculotemporal nerve (Sensory):**
 - It enters the parotid gland and leaves it through the upper end, **supplies**
 - 1- Posterior part of the temporal region (temple).
 - 2- Upper 1/2 of the outer surface of the auricle.
 - 3- Skin of the external auditory meatus and ear drum.
 - 4- Parasympathetic to the Parotid gland.

D-Temporal branch of the facial nerve (motor):

- It leaves the parotid gland through the upper end.
- It ascends to the scalp in front of the auricle.
- It supplies **frontal** belly of occipitofrontalis and auricularis muscles.

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Nerves behind auricle



B- Nerves behind the auricle

1- Great auricular nerve (sensory): Branch of cervical plexus (ventral rami of C2 & 3).

- It appears at middle of posterior border of sternomastoid muscle, ascends towards angle of the mandible.

- **It supplies;** a- Skin behind the auricle.

b- Skin of the lower 1/2 of the auricle (outer and inner surface).

c- Skin over the angle of mandible.

2- Lesser occipital nerve (sensory): Branch of cervical plexus (ventral rami of C2).

- **It supplies;** a- Skin behind the auricle.

b- Skin of the upper 1/2 of the inner surface of auricle.

3- Greater occipital nerve (sensory): Branch of the **dorsal rami of C2.**

- It is a thick nerve, supplies the greater part of the back of the scalp.

4- Third occipital nerve (sensory): branch from the **dorsal rami of C3.**

- It supplies the scalp covering the external occipital protuberance.

5- Posterior auricular nerve (motor): a branch of the **facial nerve.**

- **It** supplies occipital belly of occipitofrontalis and auricularis muscles.

B- Nerves behind the auricle

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- It appears at middle of posterior border of sternomastoid muscle, ascends towards angle of the mandible.

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c- Skin over the angle of mandible.

2- Lesser occipital nerve (sensory): Branch of cervical plexus (ventral rami of C2).

- **It supplies;** a- Skin behind the auricle.

b- Skin of the upper 1/2 of the inner surface of auricle.

3- Greater occipital nerve (sensory): Branch of the **dorsal rami of C2.**

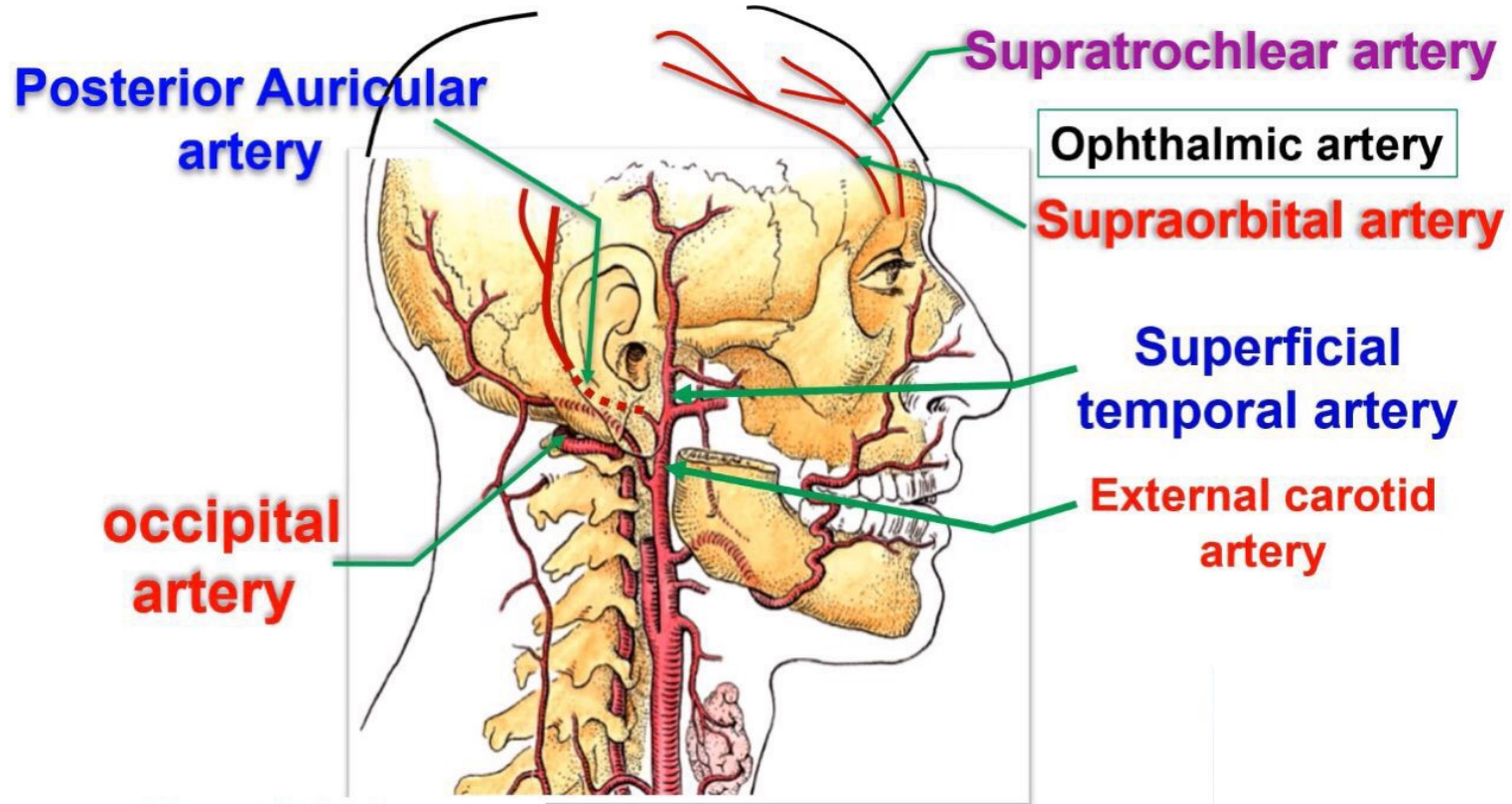
- It is a thick nerve, supplies the greater part of the back of the scalp.

4- Third occipital nerve (sensory): branch from the **dorsal rami of C3.**

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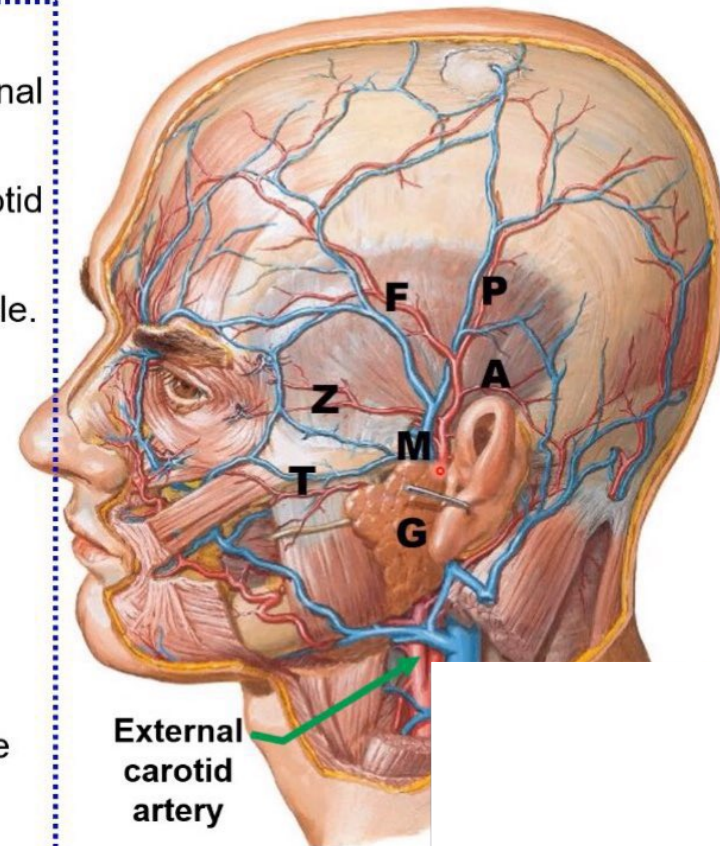
- **Superficial temporal artery:**

- The smallest terminal branches of the external carotid artery **inside the parotid gland**.
- It emerges from the upper pole of the parotid gland.
- It crosses root of zygomatic arch just in front auricle.

- **Pulsation** can be felt in front of auricle.

- **Branches:** 

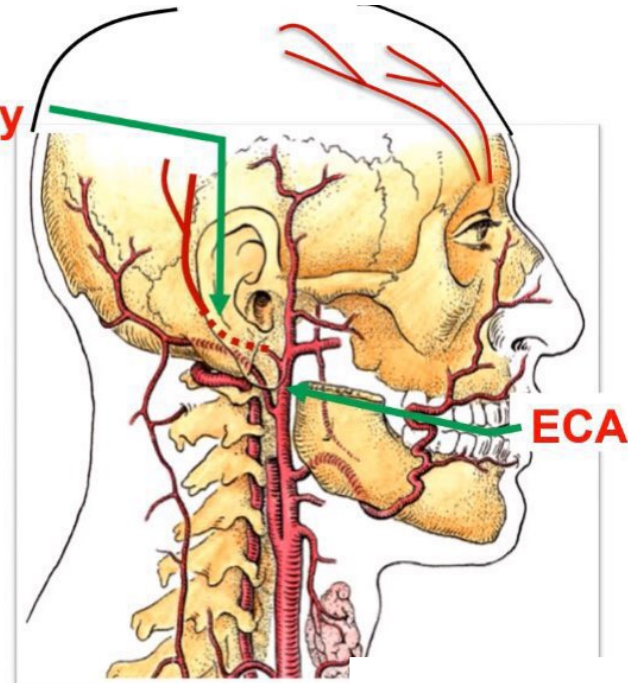
- (1) **Glandular** to the parotid gland.
- (2) **Transverse facial** artery.
- (3) **Zygomatico-orbital** artery.
- (4) **Anterior auricular** artery.
- (5) **Middle temporal** artery (the largest branch), ascends and grooving temporal bone deep to the temporalis muscle.
- (6) **Terminal** branches (Frontal & Parietal) : to scalp.



Posterior auricular artery

- **Posterior auricular artery**

- branch of the external carotid artery.
- It passes backwards **on upper border** of posterior belly of digastric muscle. It gives;
 - a- Occipital branch** to scalp behind the auricle.
 - b- Auricular branch** to the auricle.
 - c- Stylomastoid branch** enters the stylomastoid foramen. It supplies **tympanic cavity, mastoid antrum and mastoid air cells.**



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Occipital artery

- **Occipital artery**

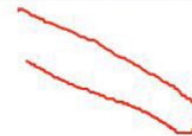
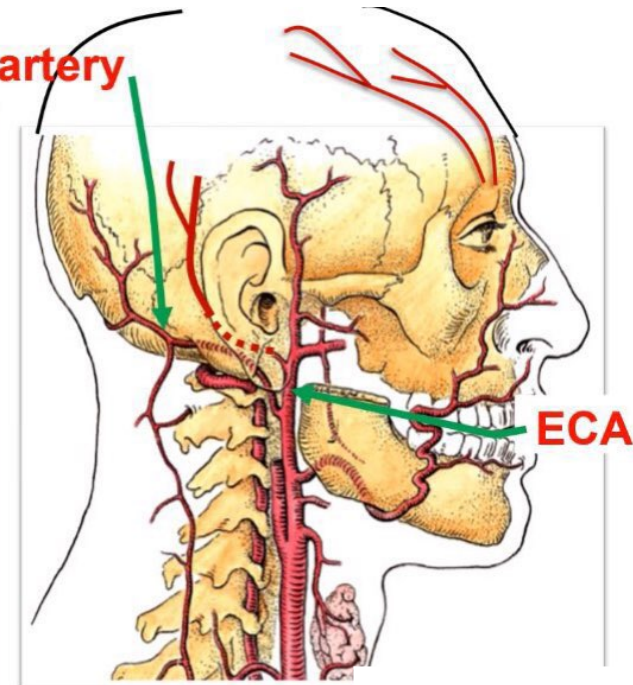
- : branch of the external carotid artery.
- It passes backwards **on lower** border of posterior belly of digastric muscle.
- It passes through the occipital groove medial to the mastoid process.
- Crossing **apex of posterior triangle** of neck

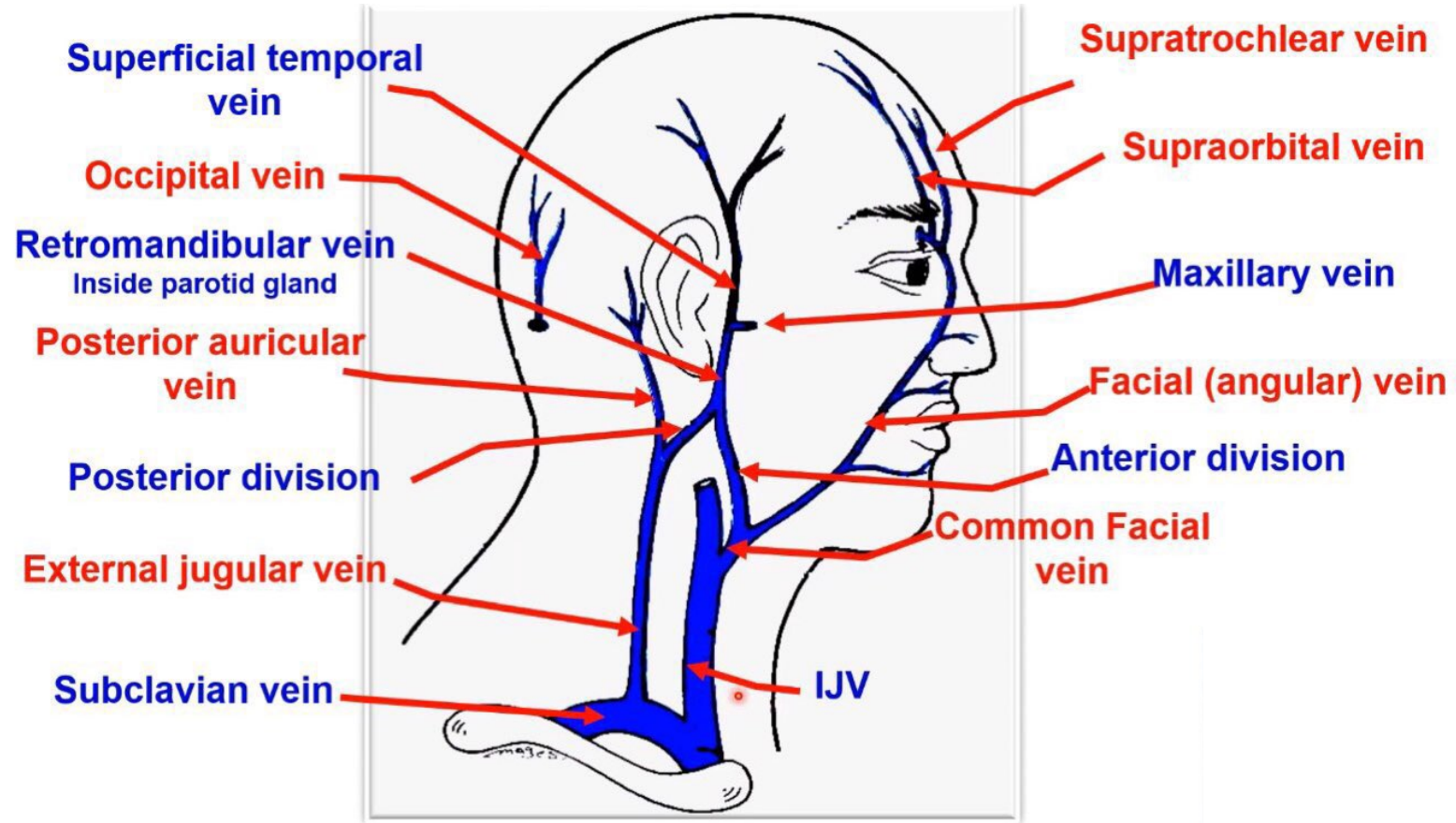
- **Branches;**

a- **Descending cervical artery** anastomosis with the deep cervical artery (**site of anastomosis between carotid and subclavian system**).

b- **Meningeal branch** to the dura matter.

c- **Terminal branch** to the back of the scalp.





- **Veins of the scalp**

1- Supraorbital and supratrochlear veins;

- They unit at the medial angle of the eye to form the **anterior facial vein (angular)**.

2- Superficial temporal vein; enters the parotid gland.

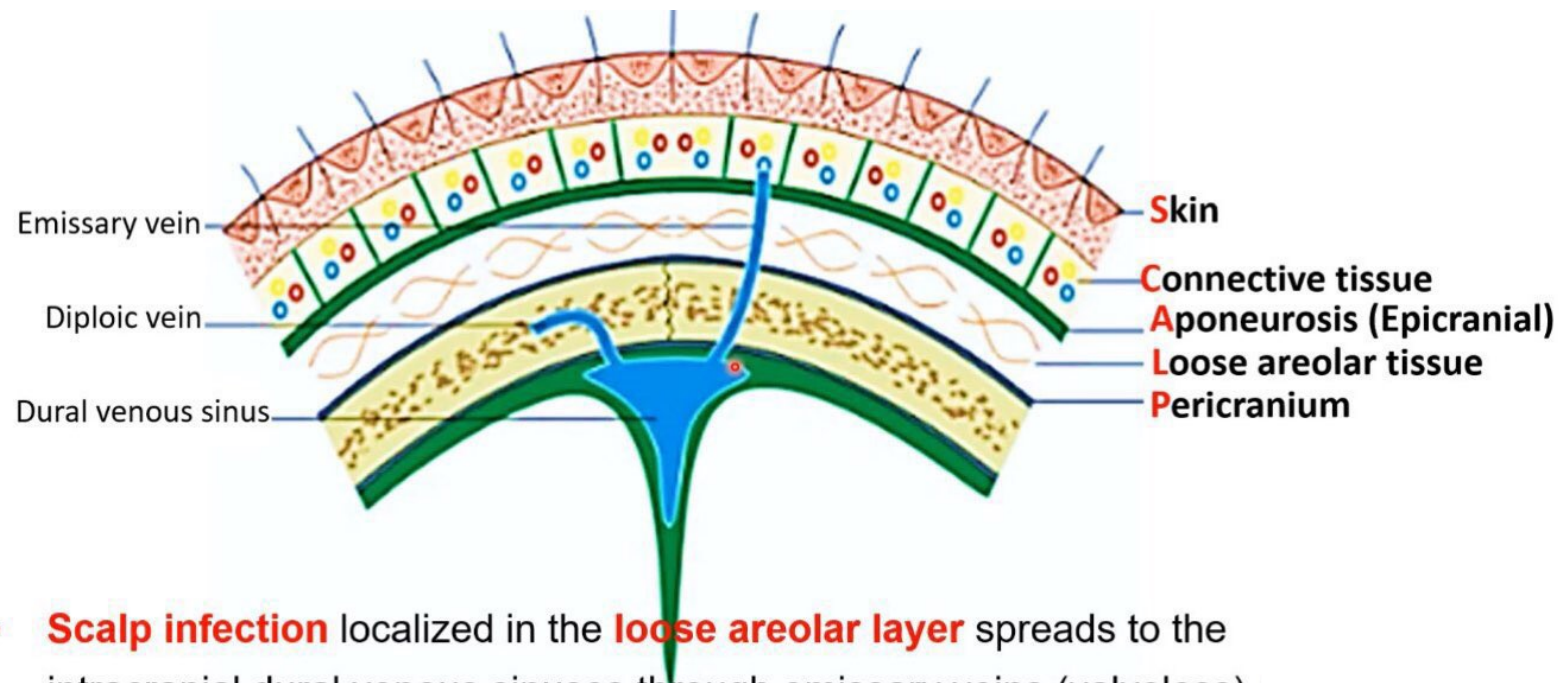
- Inside the gland, it fuses with the **maxillary vein** to form the **retromandibular vein** that divided into anterior and posterior divisions.

3- Posterior auricular vein unites with the **posterior division of retromandibular vein** to form the **external jugular vein** that ends in the **subclavian vein**.

** The **anterior division of the retromandibular vein** fused with the **anterior facial vein** forming the **common facial vein** that ends in the **internal jugular vein**.

4- Occipital vein; drains into the **suboccipital plexus of veins**.

- **Facial vein may be end in the pterygoid venous plexus** around substance of lateral pterygoid muscle through the deep facial vein



- **Scalp infection** localized in the **loose areolar layer** spreads to the intracranial dural venous sinuses through emissary veins (valveless), causing **meningitis** or **septicemia**.

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