

Scalp

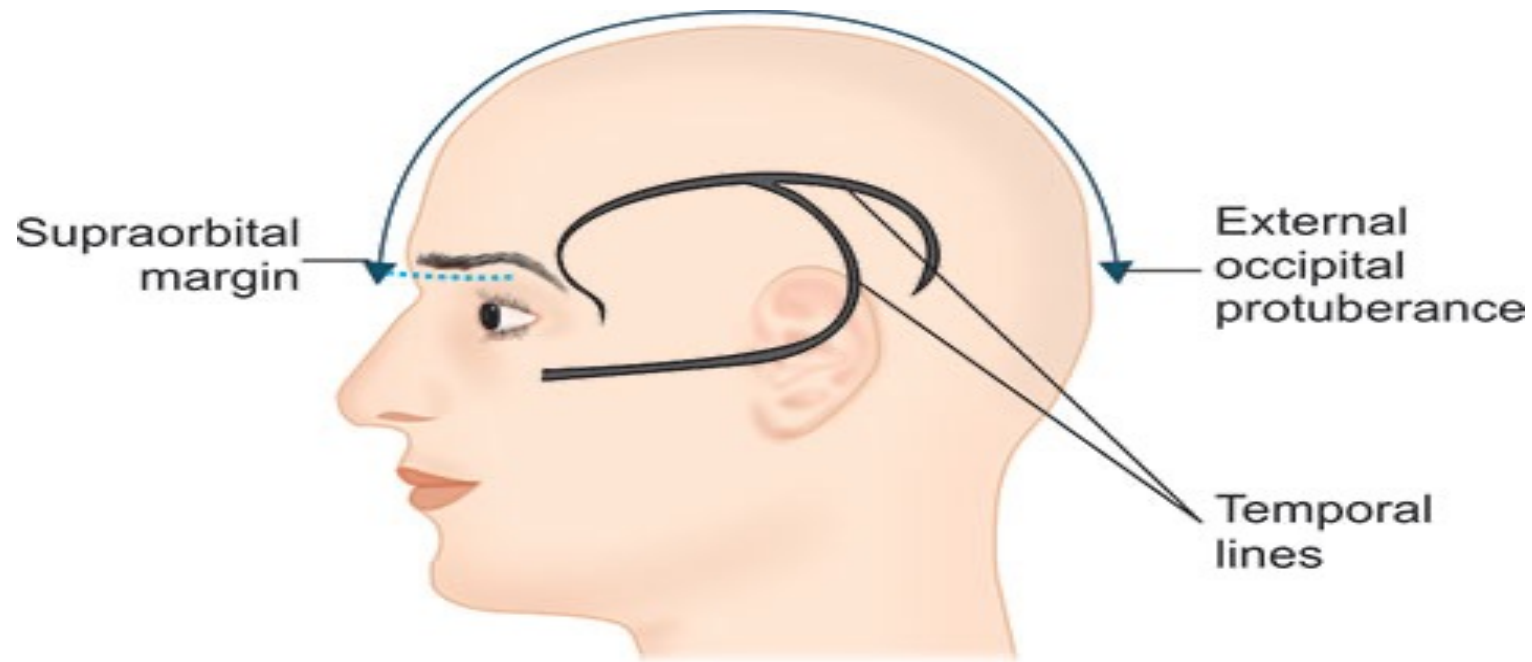
DR. AHMED SALMAN

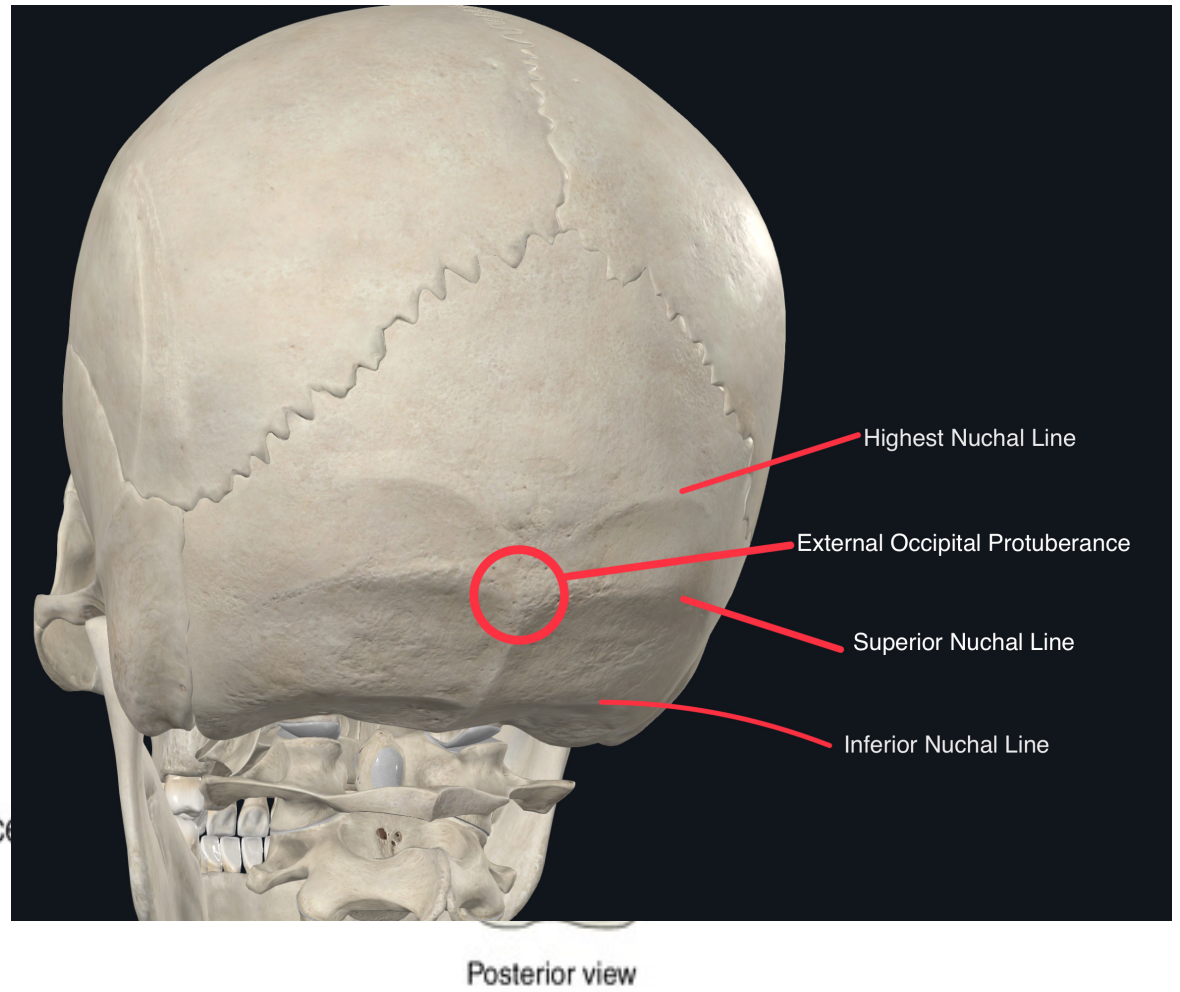
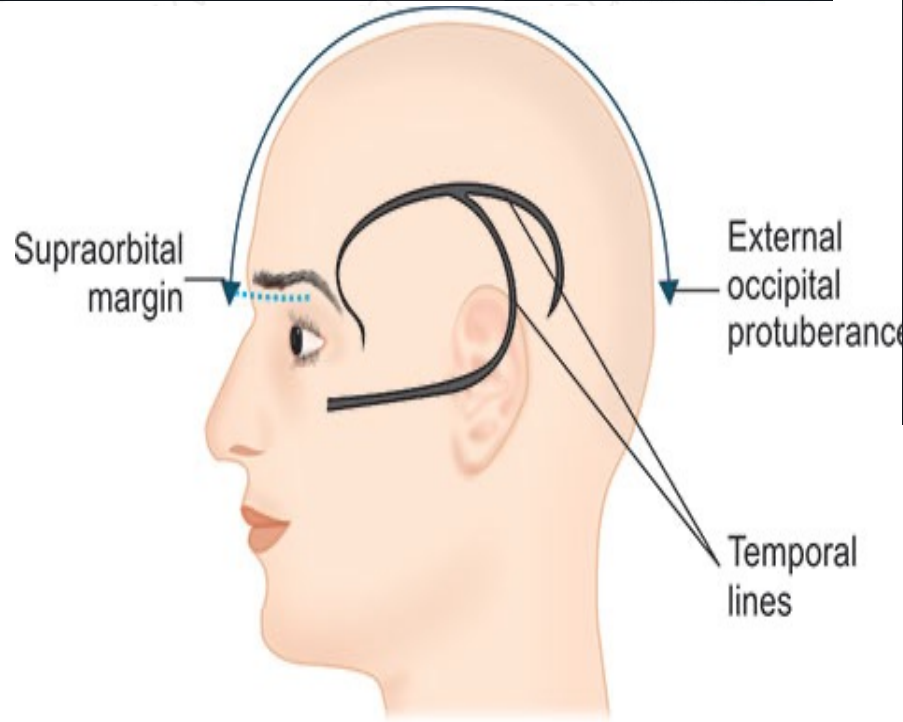
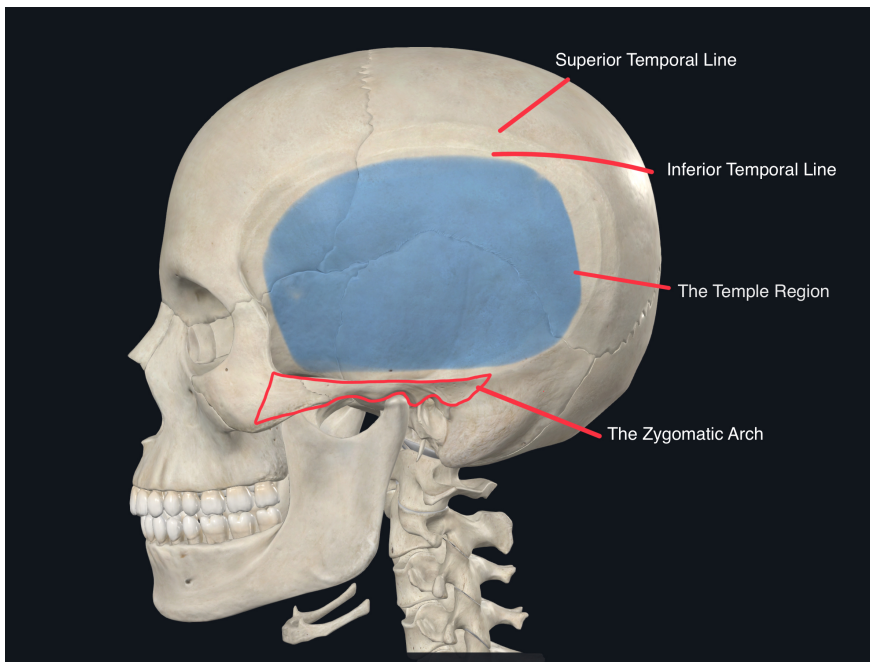
Associate professor of anatomy

Scalp is the soft tissue which covers the cranial vault of the skull

Boundaries :

- **Anteriorly** : The supraorbital margin (eyebrows) .
- **Posteriorly** : The level of the external occipital protuberance and the superior nuchal line
- **On either side** : to level of the superior temporal line but it continuous with the hairy area of the temple up to zygomatic arch

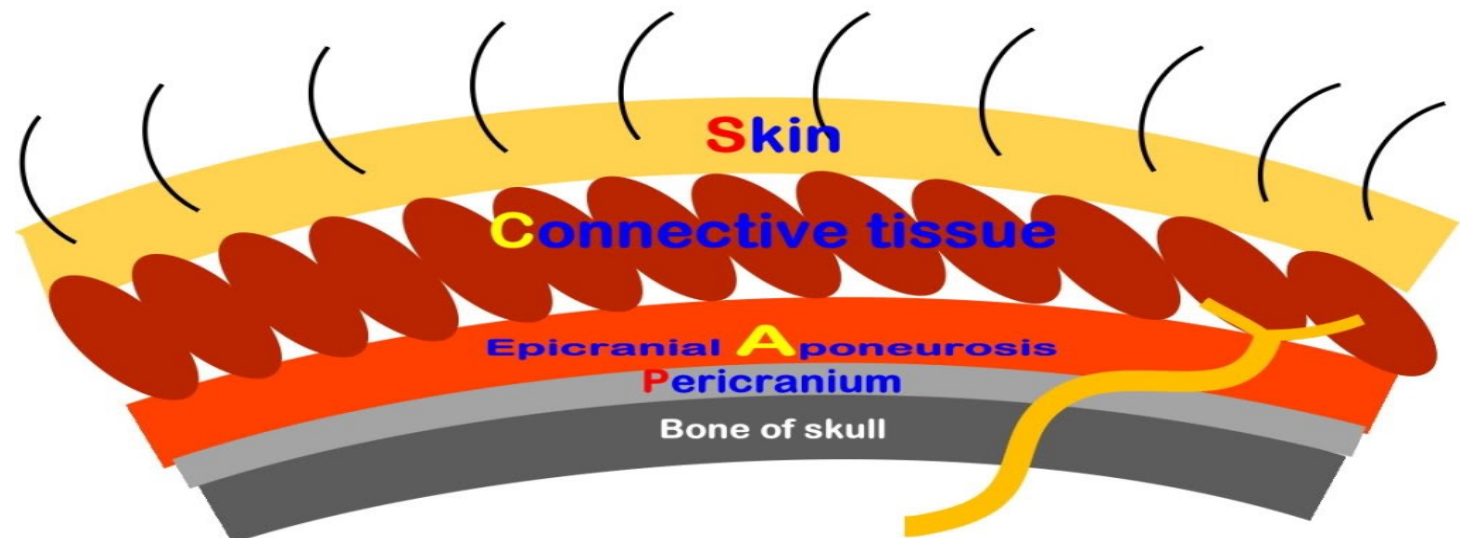




Layers of Scalp

S	S kin
C	C onnective tissue
A	A poneurosis (Epicranial)
L	L oose Areolar tissue
P	P ericranium

LAYERS OF SCALP

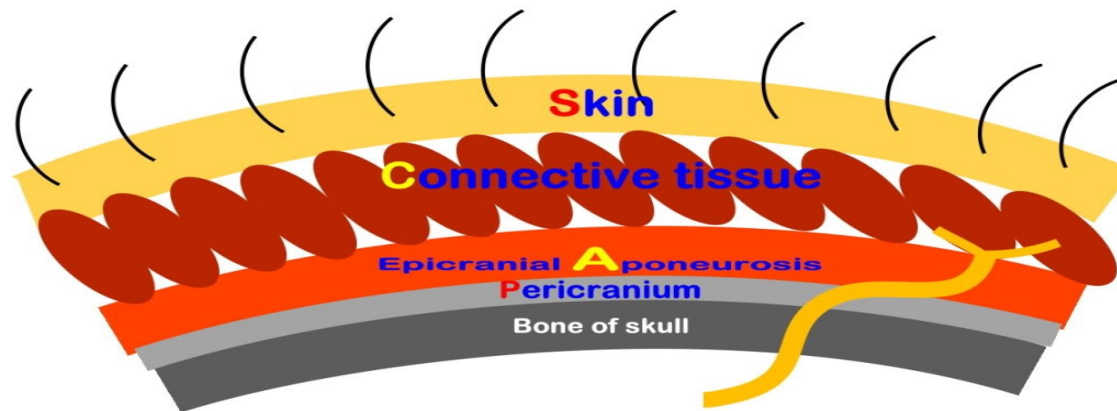


Layers of Scalp

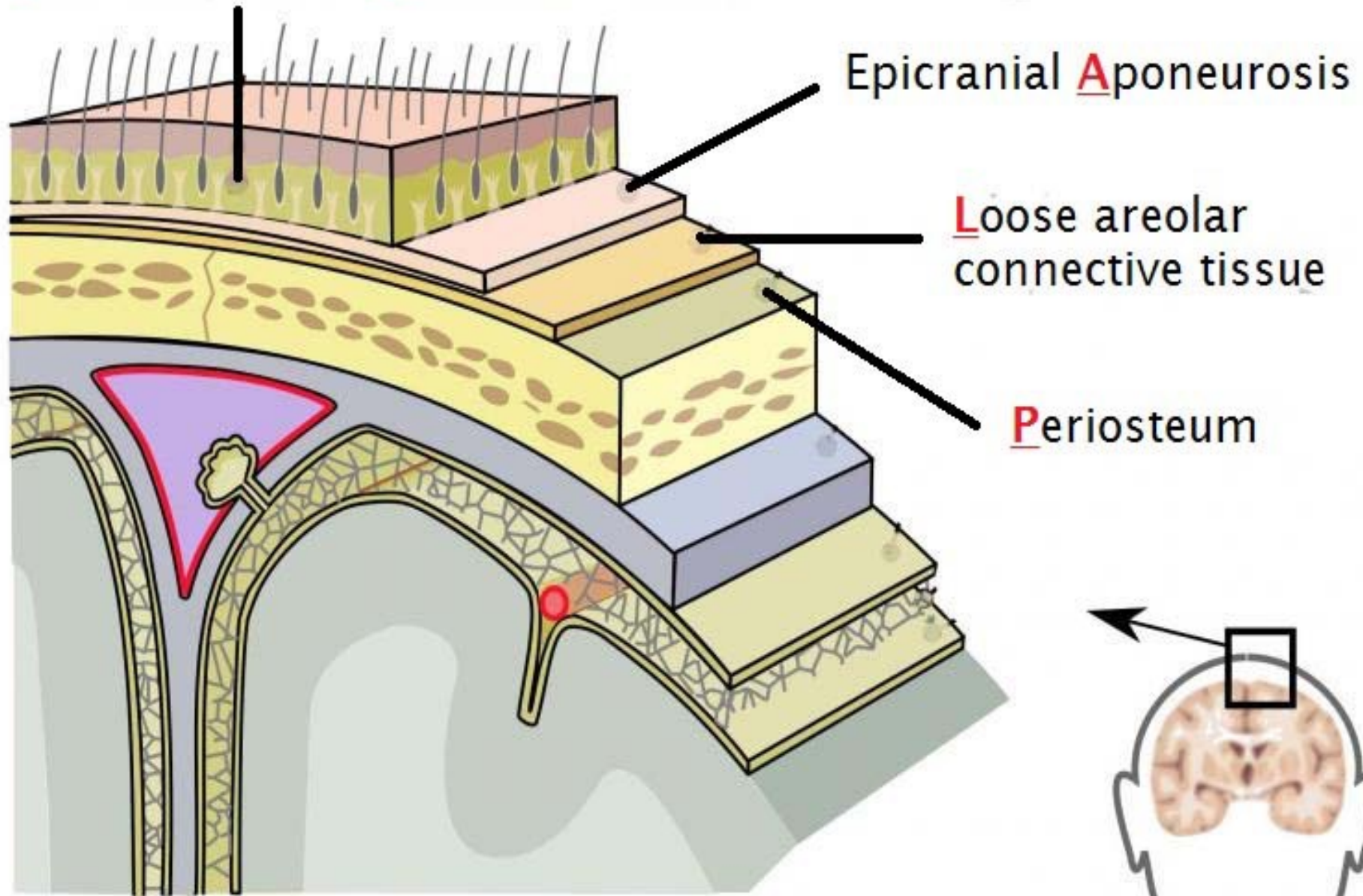
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LAYERS OF SCALP

N.B Scalp is
commonest site
of sebaceous
cyst



Skin and Dense Connective Tissue



1- Skin

It is thick, hairy and adherent to the epicranial aponeurosis (3rd layer).

-It is rich in sebaceous glands, the scalp is a common site for sebaceous cysts.

2- Subcutaneous connective :

- It is fibrous, dense and connects the skin with the epicranial aponeurosis .

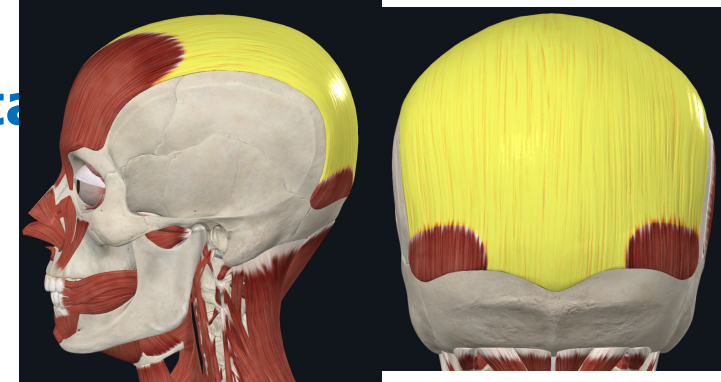
- It is rich in blood vessels and nerves. *→ forming a single Movable unit that takes part in facial expressions*

- Wounds of the scalp bleeds profusely because the torn blood vessels are prevented from contraction and retraction by the closely attached thick fibrous septa.

→ The highly tight connective tissue prevents the Margins of the wounded vein to come close to each other → A large blood clot is needed to close the entire hole



3- Epicranial aponeurosis and Occipitofrontalis



A. Epicranial aponeurosis:

- It is a flat tendon on the cranial vault.
- **It is adherent to the first and second layers, so they form a unit moving on the pericranium.**

↳ Gliding above the loose Areolar Tissue (SCALP)

Attachment

- **Anteriorly:** it receives insertion of the frontal bellies of the occipitofrontalis muscle.
- **Posteriorly:** it receives insertion of the occipital bellies of the occipitofrontalis and is attached to the external occipital protuberance and the highest nuchal lines.
- **On either side :** it is attached to the superior temporal line, but sends a thin extension down to the zygomatic arch.

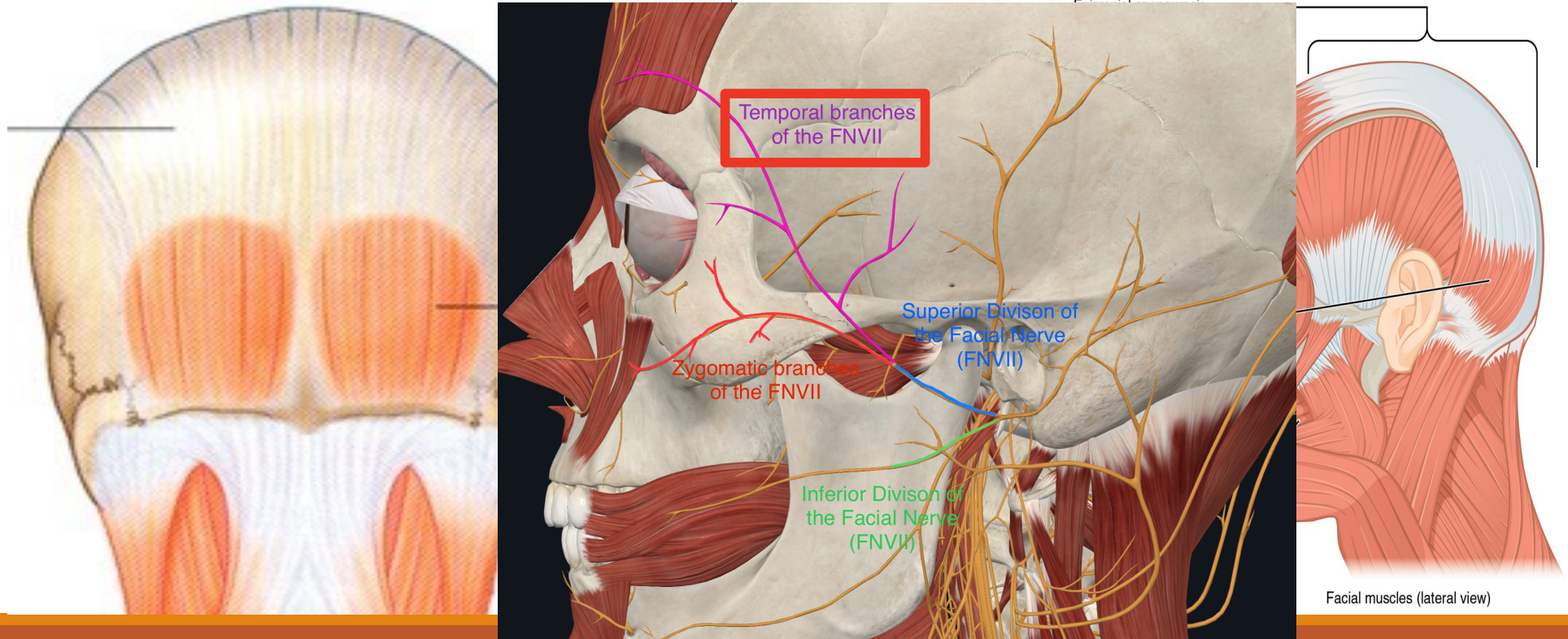
B. Occipitofrontalis muscle

It contains frontal and occipital bellies which are connected by the epicranial aponeurosis.

Attachment?

Frontal belly : Has no bony attachment ,It is attached to the subcutaneous tissue in the region of eyebrows (Attached to the skin of the eyebrows)

Nerve supply : Temporal branch of facial nerve



Facial muscles (lateral view)

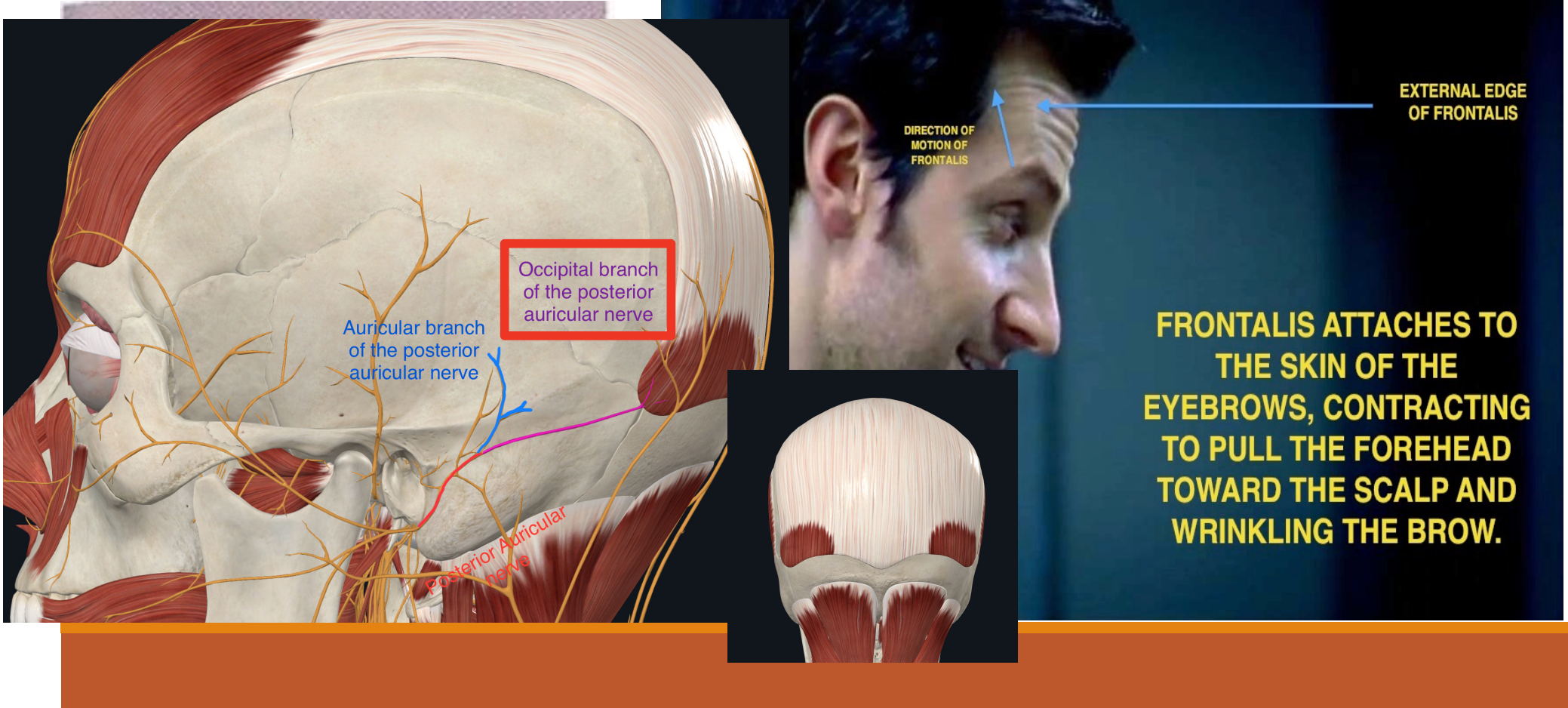
Attached to ↘ ?

Occipital belly : each belly arises from the lateral 2/3 of the highest nuchal line.

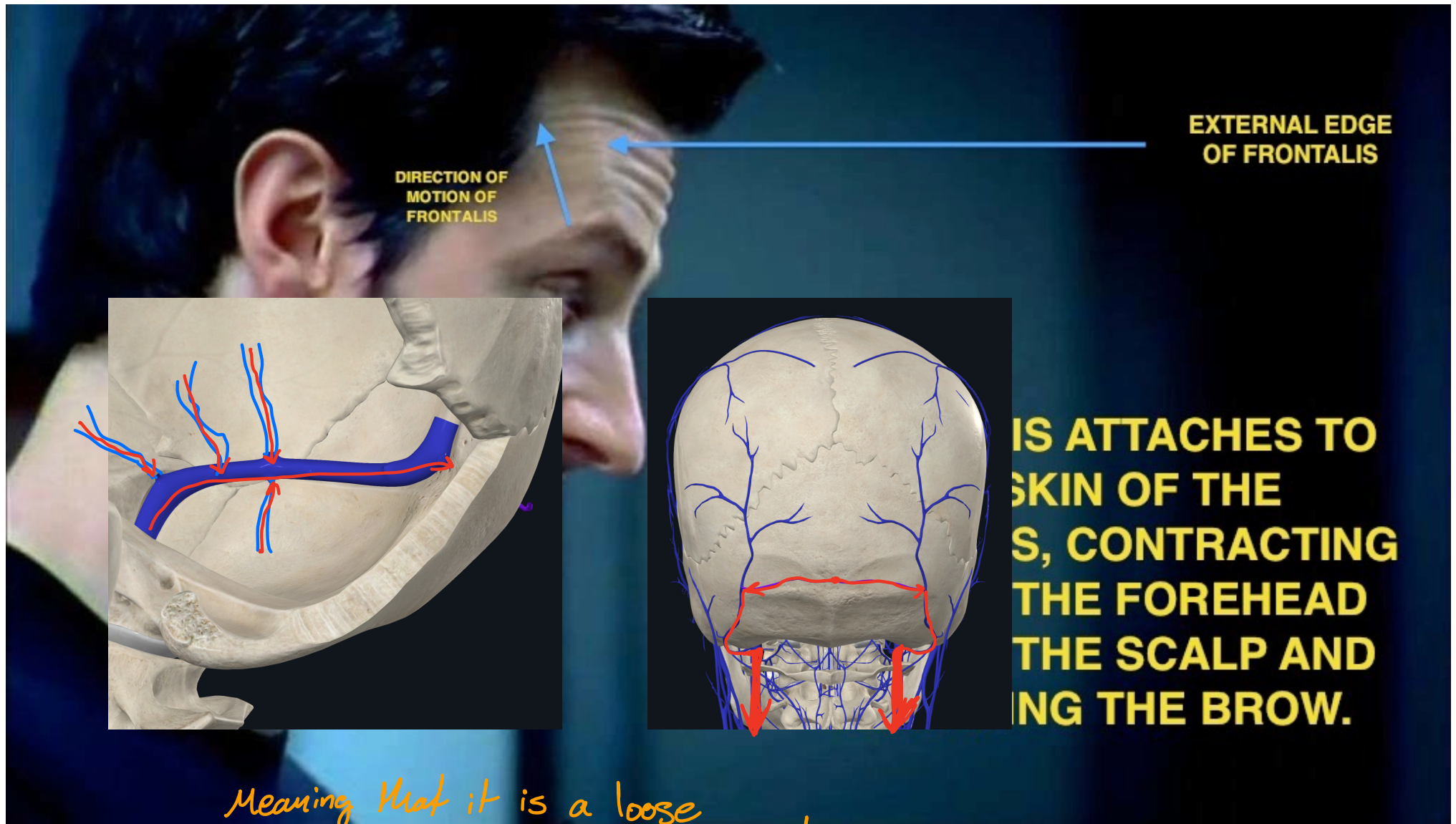
Nerve supply : posterior auricular branch of facial N.

Action : 1-It produces transverse wrinkles in the skin of forehead.
2. It raises the eyebrows

of the Occipitofrontalis Muscle



Action of Occipitofrontalis muscle



IS ATTACHES TO SKIN OF THE S, CONTRACTING THE FOREHEAD THE SCALP AND NG THE BROW.

Meaning that it is a loose open structure (contains holes and gaps between the fibers)

4. Loose areolar tissue

Also known as? why? (2)

Above the orbital muscles (such as the orbicularis oculi), there is a layer of loose areolar connective tissue, which is continuous with the loose areolar tissue of the scalp.

- Is continuous with the loose areolar tissue of the upper eyelid.
- It is the plane of movement for the first three layers of scalp.
- It is the **dangerous layer of the scalp**, why? (2)

A Gliding plane

✓ Normal blood flow direction:

Intracranial venous sinuses → Emissary veins → Scalp veins → Internal Jugular vein → Heart

1- "Its Emissary Veins Spread Infections from the Scalp to the Brain"

- Emissary veins in this layer connect the scalp veins to the dural venous sinuses. (The intracranial Sinuses)
- Because these veins are **valveless**, infections from the scalp can travel backward into the brain, leading to infecting either:

- 1- The intracranial sinuses (veins), Leading to thrombosis
- 2- The Diploë (The spongy bone) of the skull → Osteomyelitis

2- Its continuity with the Loose Areolar Connective tissue of the upper eye lid allows any infection in the scalp to reach the upper eye lid + any Hemorrhage in the scalp to gravitate down to the eye Causing a **Black Eye**.



N.B

Emissary veins

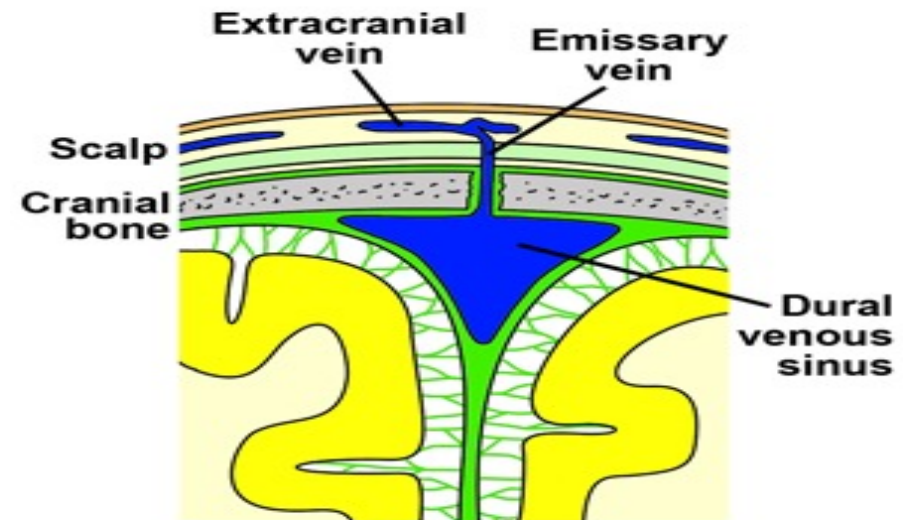
Are valvless veins connects veins outside skull with venous sinuses inside the skull

Its Role Rather than returning blood to the heart?

It equalize venous pressure outside and inside the skull

5. Pericranium : *(The Periosteum of the skull)*

- Is *loosely* attached to the surface of the skull bones and could be easily separated from these bones.

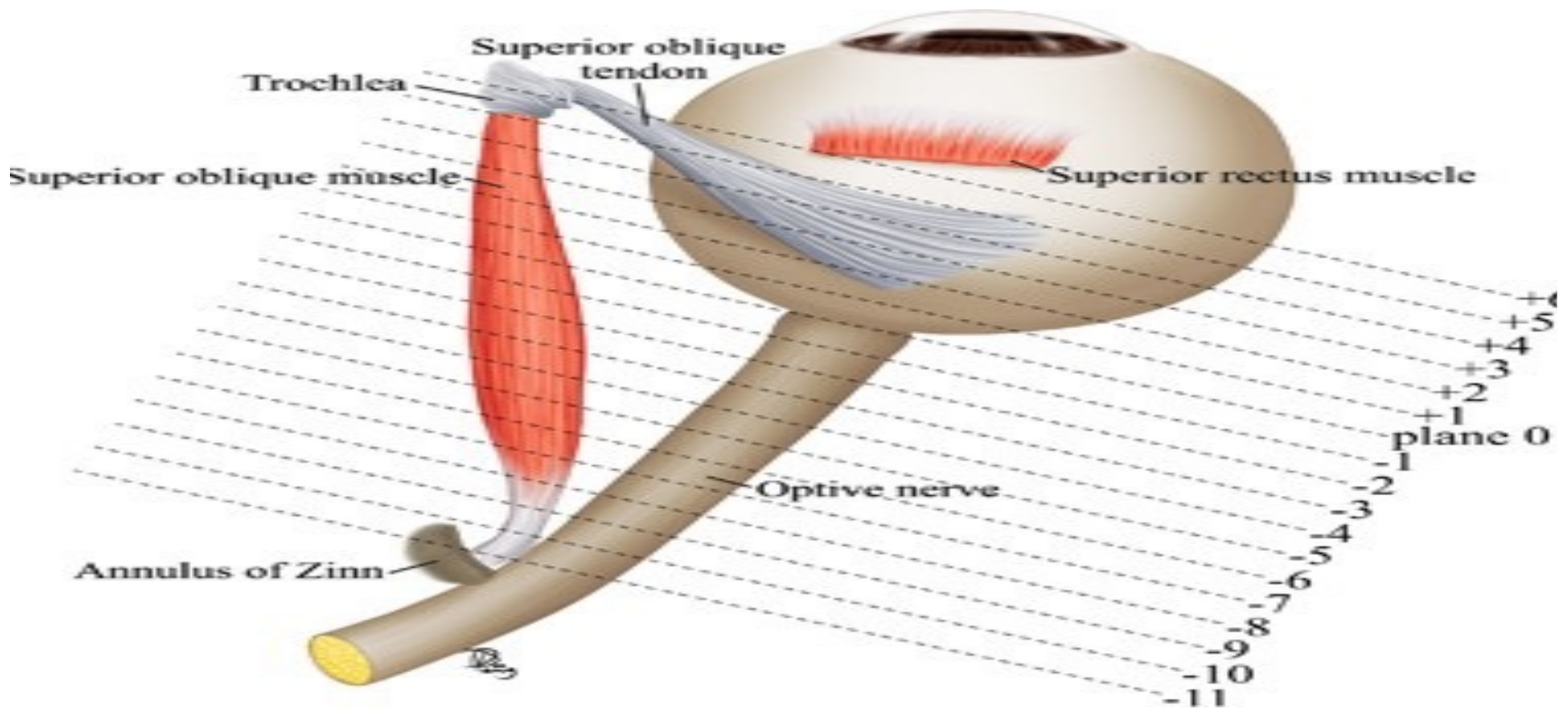


Clinical anatomy

1- Bleeding from scalp It is often difficult to stop the bleeding of a scalp wound because the arterial walls are attached to fibrous septa in the subcutaneous tissue and are unable to contract or retract to allow blood clotting to take place

2-Infection of the scalp The Loose Areolar tissue allows spread of bleeding and infection





Nerve supply of the scalp

Anterior half of scalp *(Anterior to the Auricle)*

Sensory :

(Branches of trigeminal nerve)

1. Supratrochlear N. → skin of the forehead.
2. Supraorbital N. → skin of the forehead up to the vertex of scalp.
3. Zygomaticotemporal → **hairless** area of the temple.
4. Auriculotemporal → **hairy** area of the *temple.*

→ *In the Temple Region*

Motor :

Temporal branch of facial N. (motor) → frontal belly of occipitofrontalis muscle.

Posterior half of scalp *(Posterior to the Auricle)*

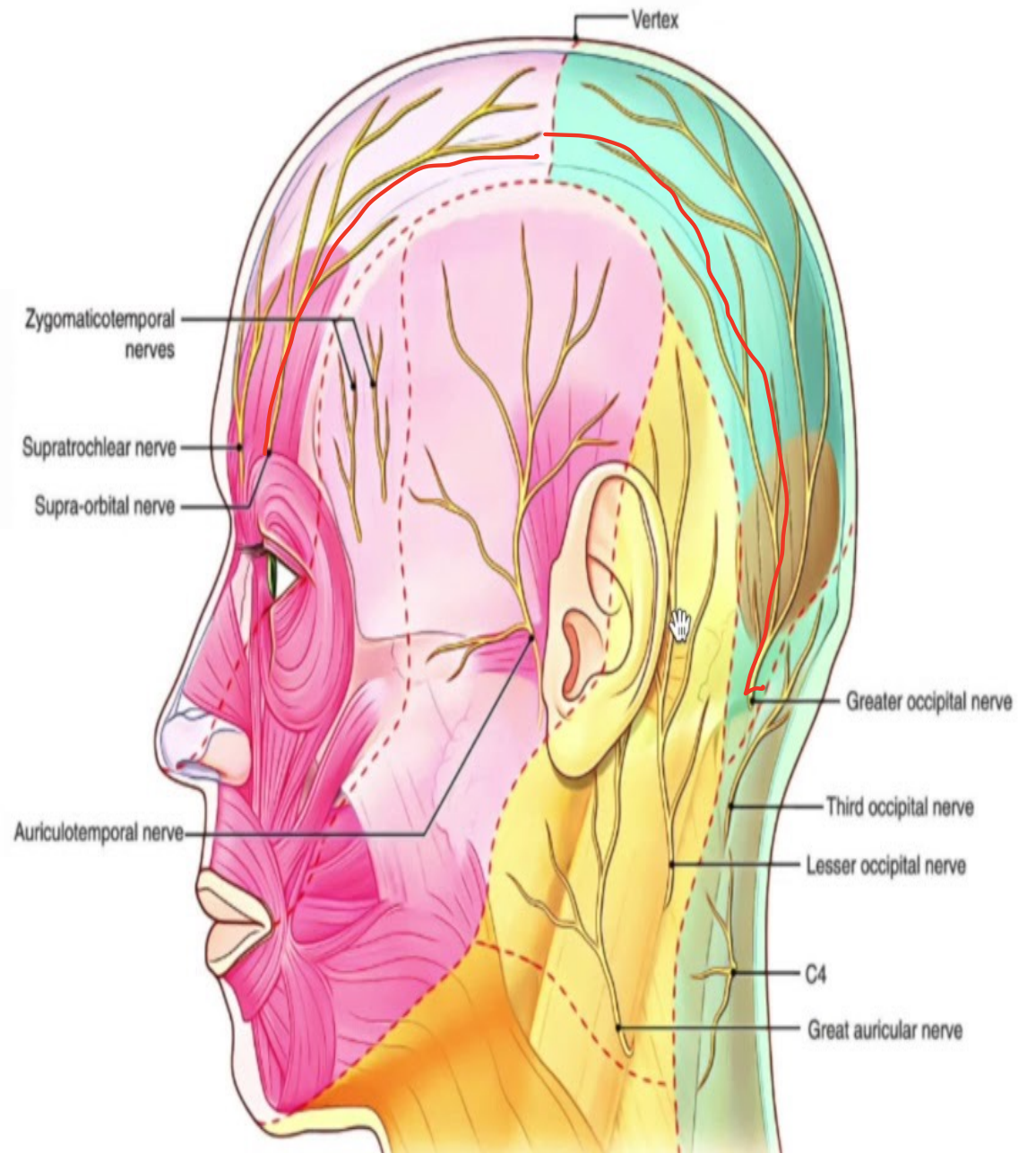
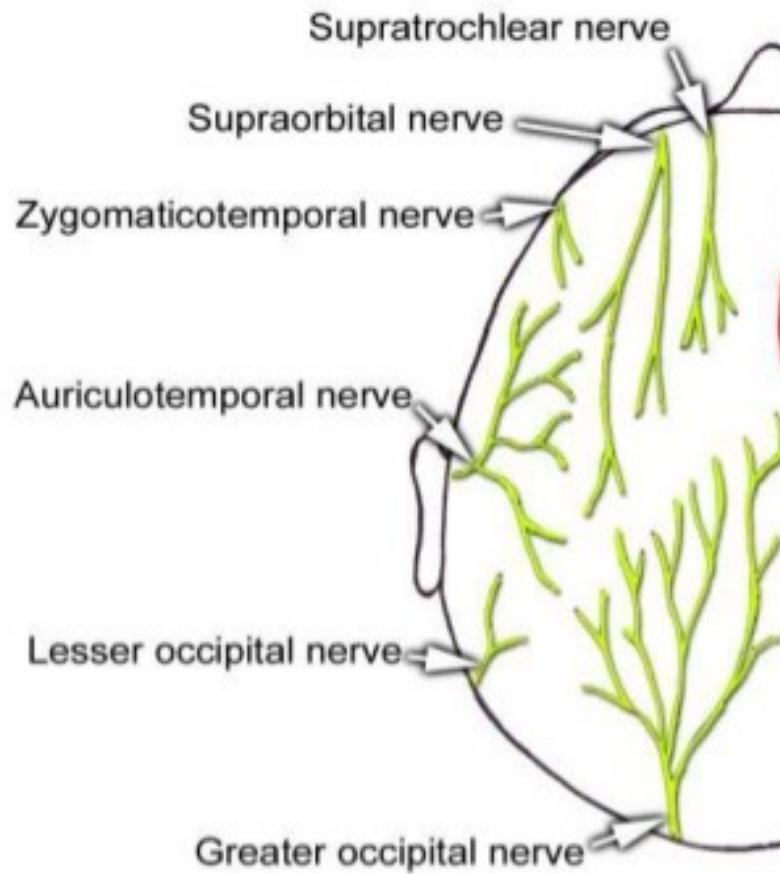
Sensory :

(Branches of cervical plexus)

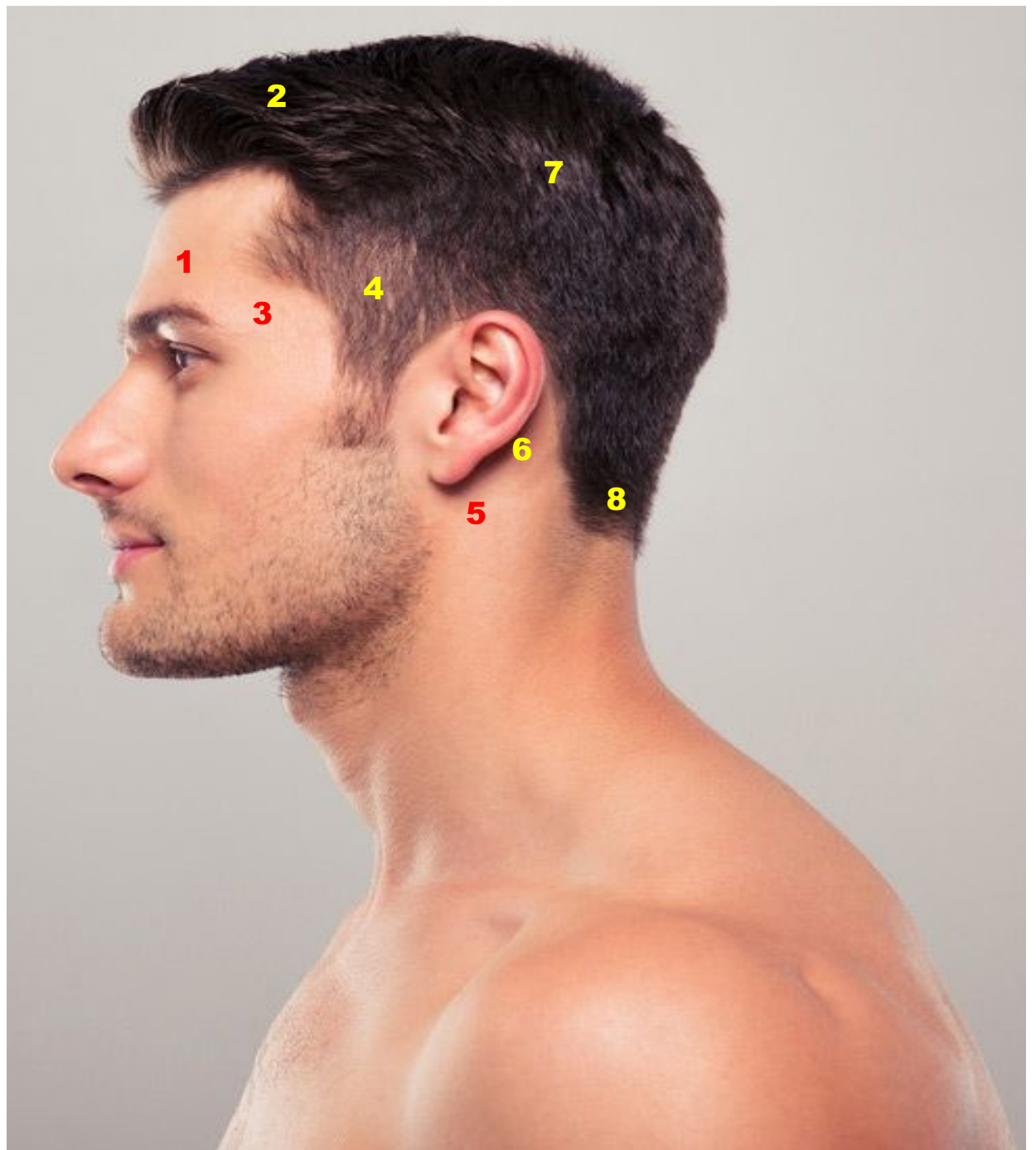
1. Great auricular N. (C_{2,3}) → skin over mastoid process.
2. Lesser occipital N. (C₂) → scalp behind the auricle.
3. Greater occipital N. (C₂ dorsal ramus) supplies the occipital scalp up to the vertex. *from the dorsal of the ramus to the vertex*
4. Third occipital N. (C₃ dorsal ramus) supplies skin of the lower occipital region. *(From the dorsal of the ramus لفرق فوق)*

Motor :

Posterior auricular branch of facial N. , (motor) → occipital belly of occipitofrontalis.



1. Supratrochlear
2. Supraorbital
3. Zygomaticotemporal
4. Auriculotemporal
5. Great auricular N.
6. Lesser occipital N.
7. Greater occipital N.
8. Third occipital N.



↑ 3?

Blood supply of the scalp

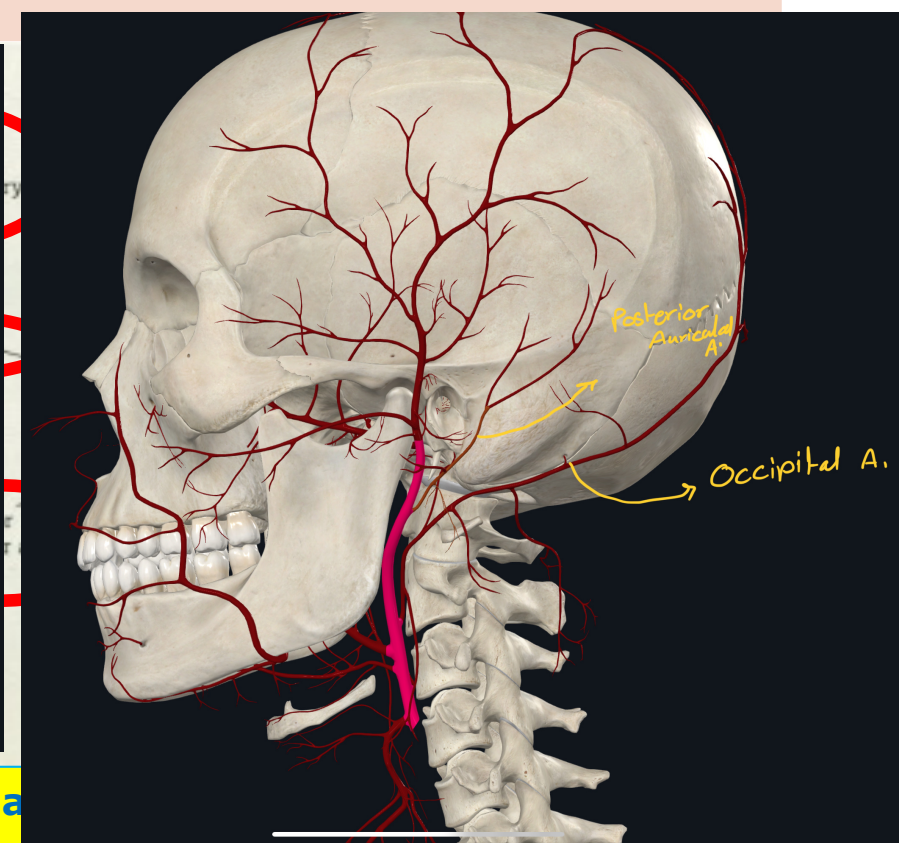
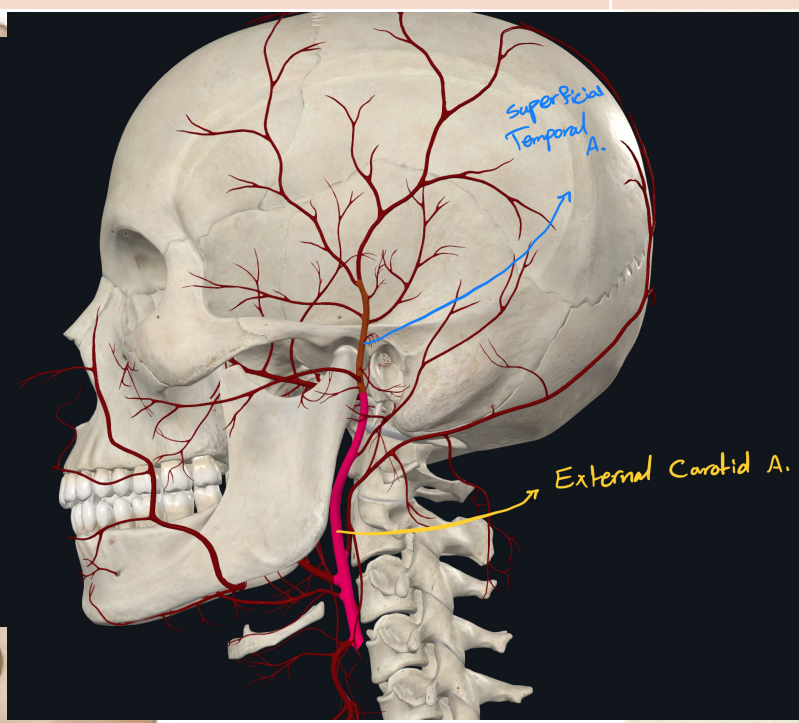
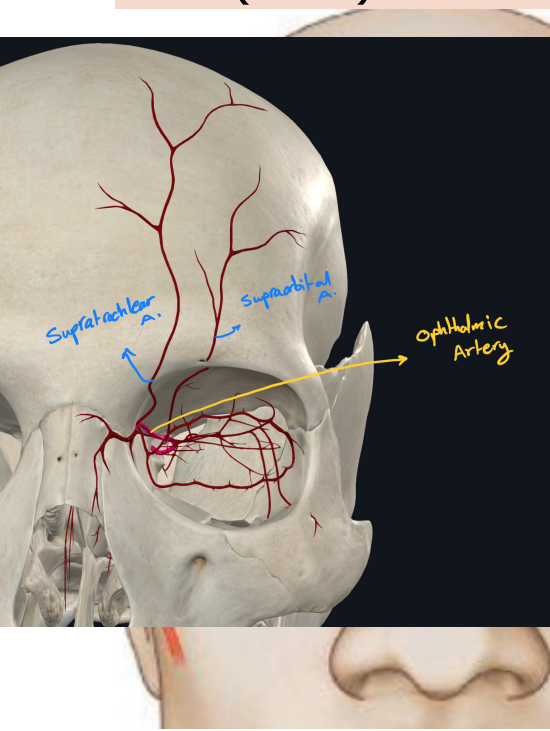
↑ 2?

Anterior half of scalp

Posterior half of scalp

1. Supratrochlear branch of ophthalmic A.
2. Supraorbital branch of ophthalmic A.
3. Superficial temporal branch of (ECA)

- 1-Posterior auricular (branch of ECA)
- 2-Occipital (branch of ECA)



(ECA) is External carotid artery

2 from Ophtha
3 From ECA

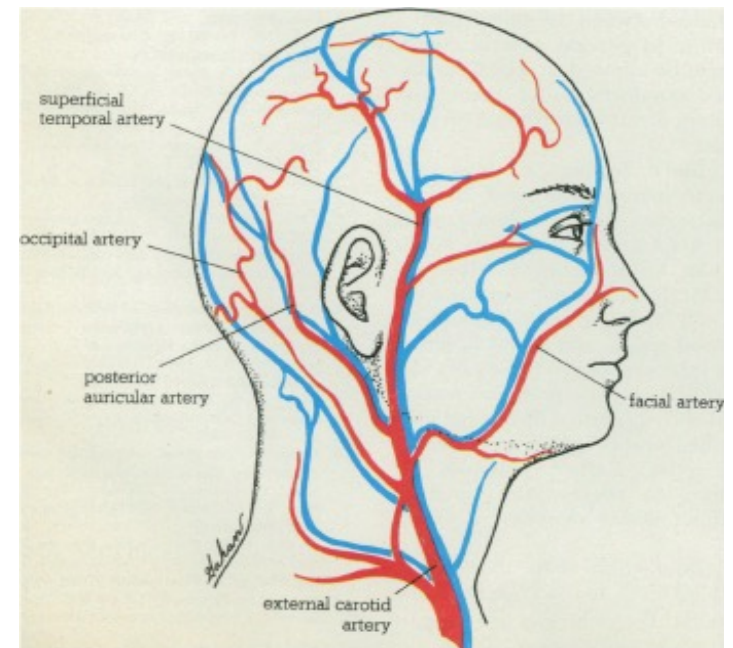
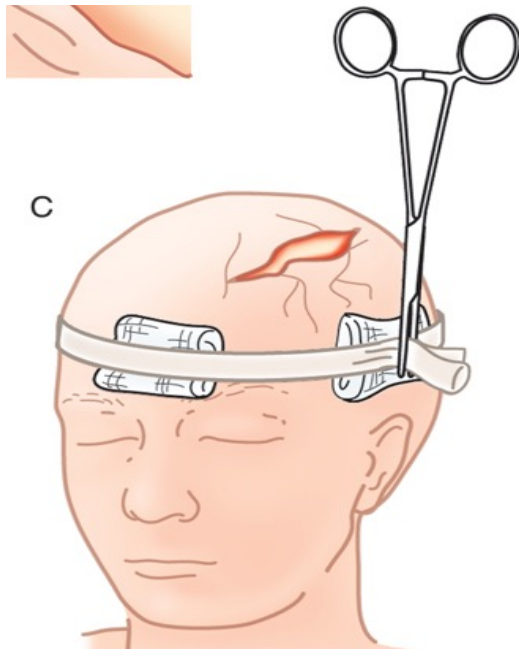
it is useful to remember in an emergency that all the superficial arteries supplying the scalp **ascend from the face and the neck.**

Thus, in **an emergency situation,**

Encircle the head just above the ears and eyebrows

with a tie, shoelaces, or even a piece of string and tie it tight.

Then insert a pen, pencil, or stick into the loop and rotate it so that the tourniquet exerts pressure on the arteries



Thank you!

