]ANATOMY OF THE SCALP[

Monday , 15/10/2017
BY
Dr. Hassa B. Jawad

OBJECTIVE

At the end of this lecture the student should be able to

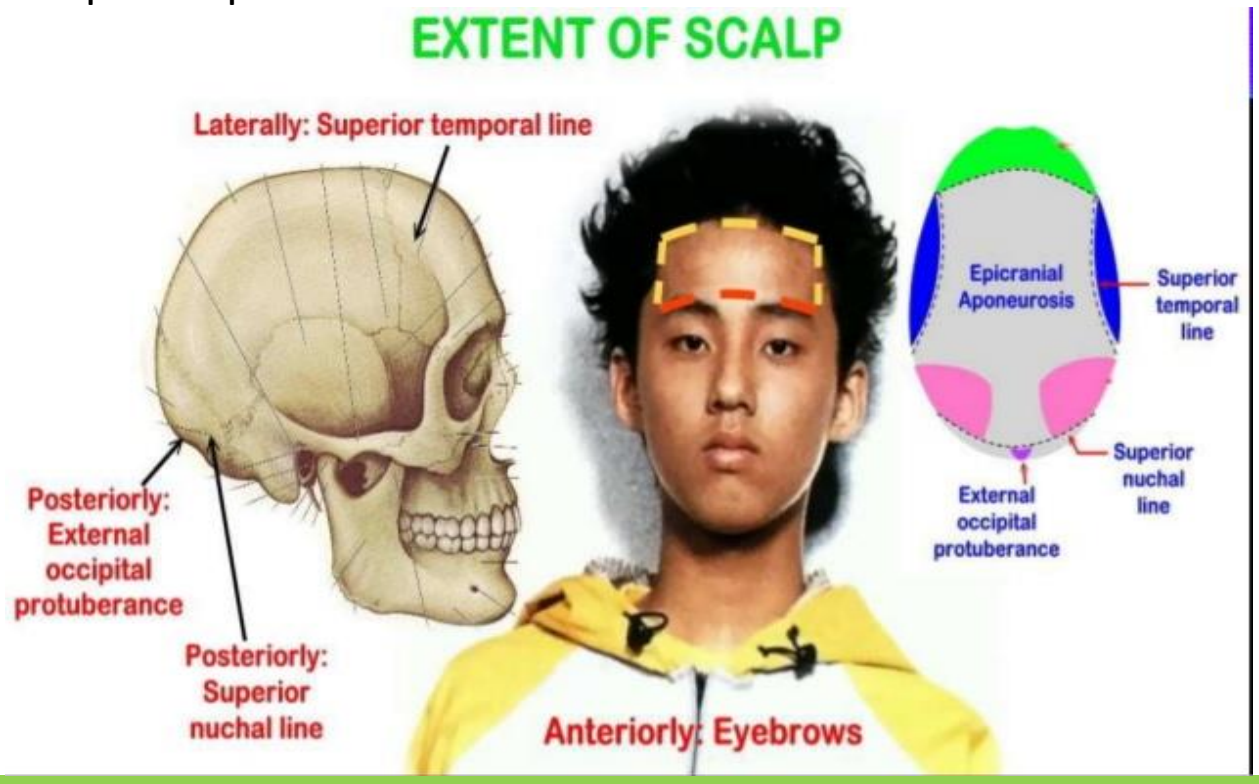
1.Define the scalp and its extension :
2. Enlist the layers of the scalp
3. Describe each layer of the scalp
4. Identify the nerve and the blood supply of the scalp
5. Describe the lymphatic drainage
6. Explain some clinical notes regarding scalp injury and infection

Definition

The scalp refers to the layers of skin and subcutaneous tissue that cover the bones of cranial vault.

Extent of scalp

Anteriorly supraorbital margins.
Posteriorly External occipital protuberance and nuchal lines.
Each Sides Superior temporal lines.



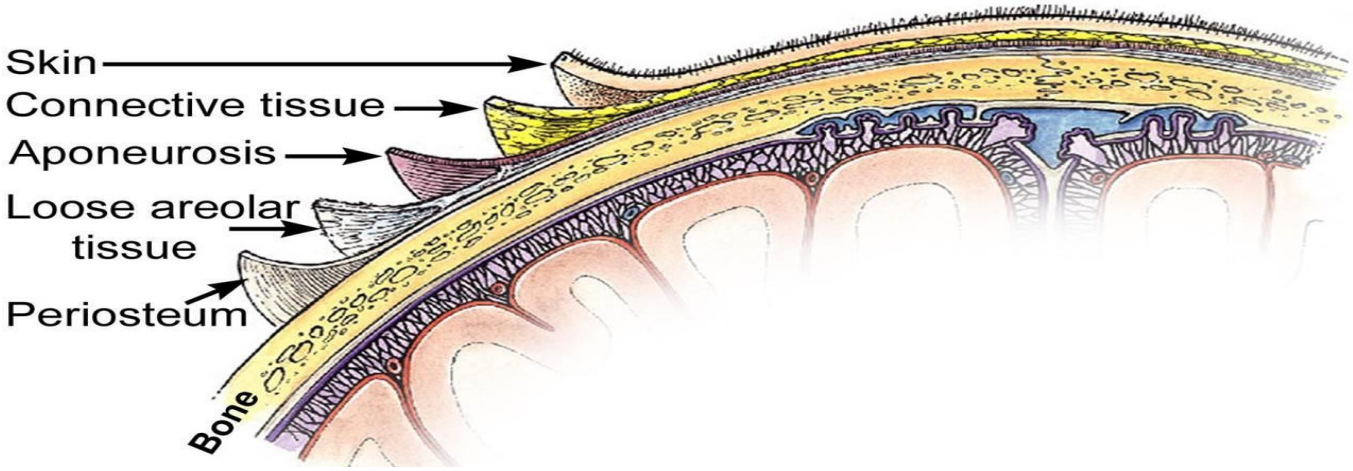
Layers Of Scalp

The scalp is made up of five layers.

S. Skin
C. Connective tissue layer
A. Aponeurosis
L. Loose areolar tissues
P. Pericranium

]ANATOMY OF THE SCALP[

Monday , 15/10/2017
BY
Dr. Hassa B. Jawad



1.Skin

The skin is thick and hairy. It is adherent to the epicranial aponeurosis through the dense superficial fascia.

2.Connective Tissue Layer

It is more fibrous and dense in the center than the periphery of the head. It binds the skin to the subjacent aponeurosis, and provides the proper medium for passage of vessels and nerves of the skin.

3.Aponeurosis

Occipital frontalis muscles have two bellies, Occipitalis and frontalis, both of which are inserted in to the epicranial aponeurosis The epicranial aponeurosis or galena apponeurotica is free movable on the Pericranium along with the overlying and adherent skin and fascia.

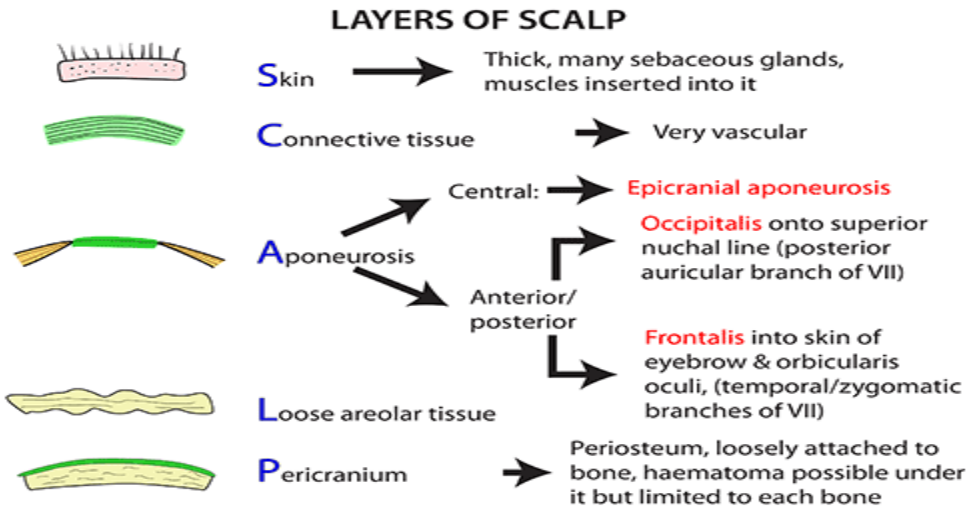
- **Origin: It consists of four bellies, two occipital and two frontal, connected by an aponeurosis.**
- **The occipital bellies are smaller and arise from the highest nuchal line on the occipital bone and pass forward to be attached to the aponeurosis.**
- **The frontal bellies arise from the skin and superficial fascia of the eyebrow and pass backward to be attached to the aponeurosis.**
- **Nerve supply:**
- **The occipital belly is supplied by the posterior auricular branch of the facial nerve;**
- **The frontal belly is supplied by the temporal branch of the facial nerve.**

4.Loose areolar tissues

It is the fourth layer of the scalp. It extents anteriorly eyelids and posteriorly highest and superior nuchal line and on each line the superior temporal line.

5.Pericranium

It is the fifth layer of the scalp. It is loosely attached to the surface of the bones but it is firmly adherent to their structures where the sutural ligaments bind the pericranium to the endocranium.



.

Arterial supply of the scalp:-

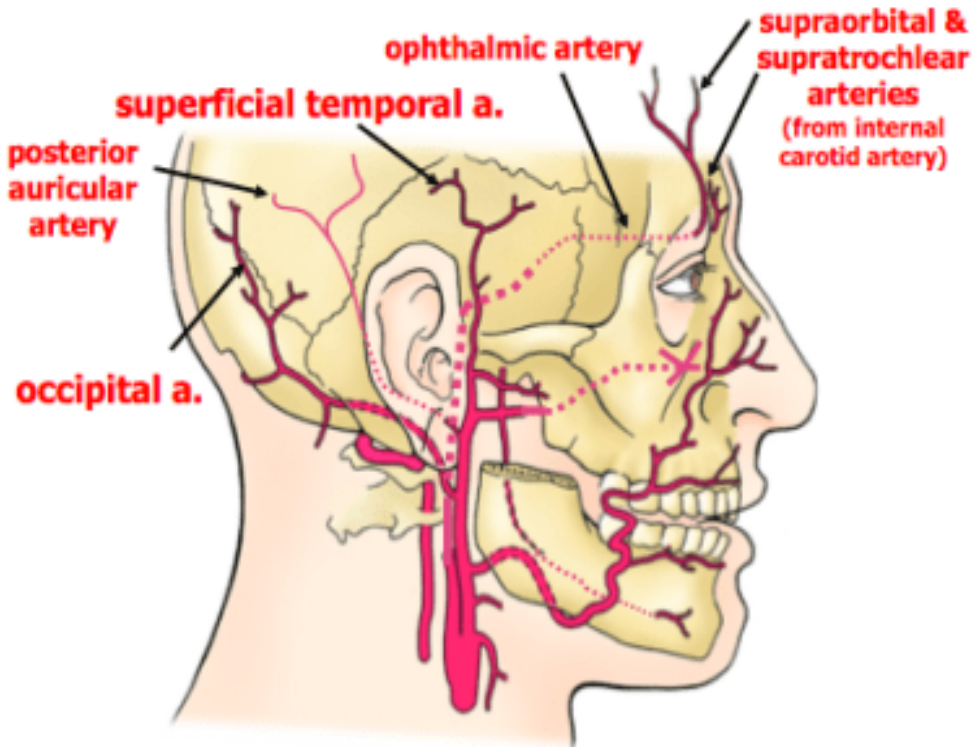
Thus the scalp has a rich blood supply derived from both the internal and external carotid arteries. The two systems anastomosing over the temple:

In front of auricle

1. Supratrochlear artery
2. Supraorbital artery
Branches from ophthalmic artery (branch of internal carotid artery).Accompany the corresponding nerves to supply the scalp as far as the vertex
3. Superficial temporal artery from external carotid artery It is a major artery of the head.
It is a major artery of the head.
Commences in parotid gland supplies the scalp in front the auricle , Its pulse can be felt above the zygomatic arch, above and in front of the tragus of the ear.

Behind auricle

1. Posterior auricular artery :the smallest branch that supplies the scalp posterior to the ear.
2. Occipital Artery: accompanies the greater occipital nerve.
*** passes through the musculature of the back**
***supplies a large area of the back of the scalp.**

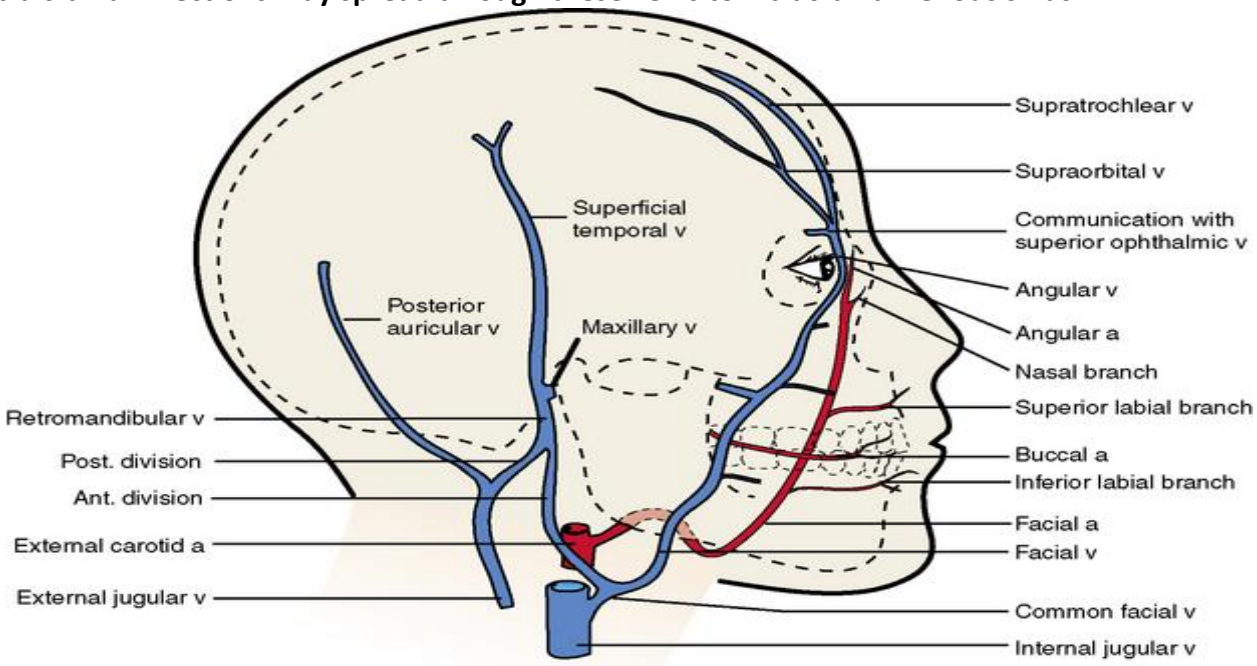


]ANATOMY OF THE SCALP[

Venous drainage:-

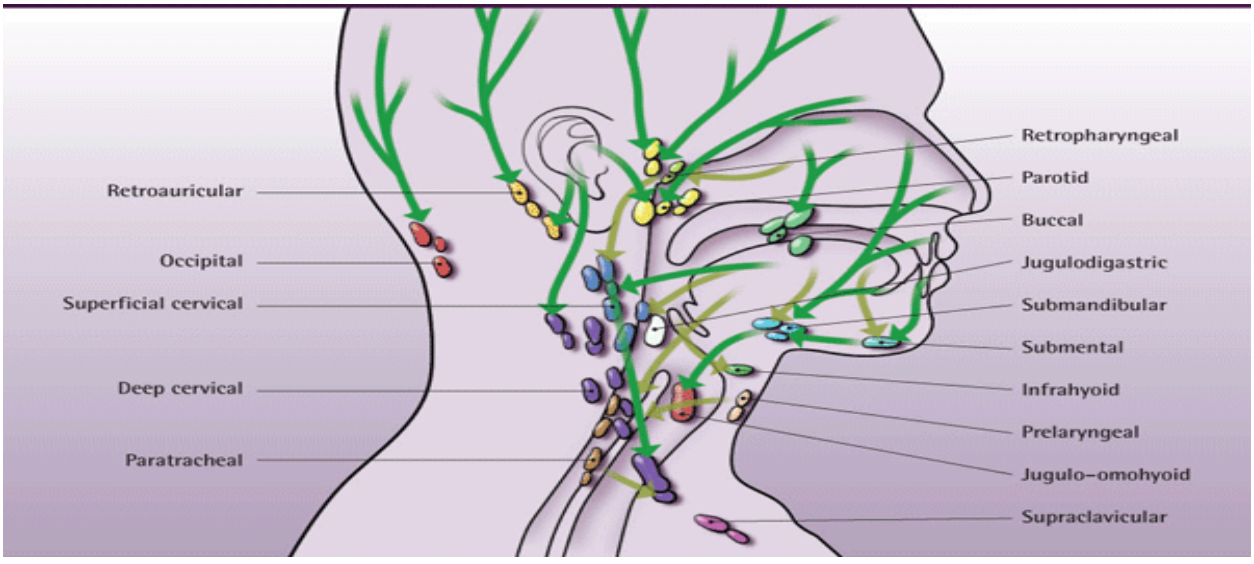
The veins of the scalp accompany the arteries and have similar names
***Supratrochlear, Supraorbital- both veins continue down as the facial vein.**
***Superficial temporal veins drain in internal jugular vein.**
***Posterior auricular, and Occipital vein drain external jugular vein.**

Emissary veins connect the extra cranial veins with the intracranial Venus sinus to equalize the pressure. The extra cranial infections may spread through these veins to intracranial venous sinus.



Lymphatic Drainage:-

The anterior part of scalp drains in to the pre auricular or parotid lymph nodes. The posterior part of the scalp drainage in to the posterior auricular or mastoid and occipital lymph nodes.



Nerve Supply:

The nerve supply of scalp is through:

***Trigeminal nerve branches.**

***Cervical nerves (2^{ND} & 3^{RD}).**

Depending on whether it is anterior or posterior to the ears.

Anterior to ear

1. Supratrochlear nerve; Branch of Ophthalmic nerve supplies the forehead and scalp as fare as midline.

2. Supraorbital nerve; Branch of Ophthalmic nerve supplies the head as fare as vertex

3. Zygomaticotemporal nerve Branch of Maxillary nerve . ; It exits through a small foramen in the Zygomatic bone. It supplies a small anterior area of the temple.

4. Auriculotemporal nerve Branch of Mandibular nerve . It passes just anterior to the ear. It supplies the scalp over the temporal region

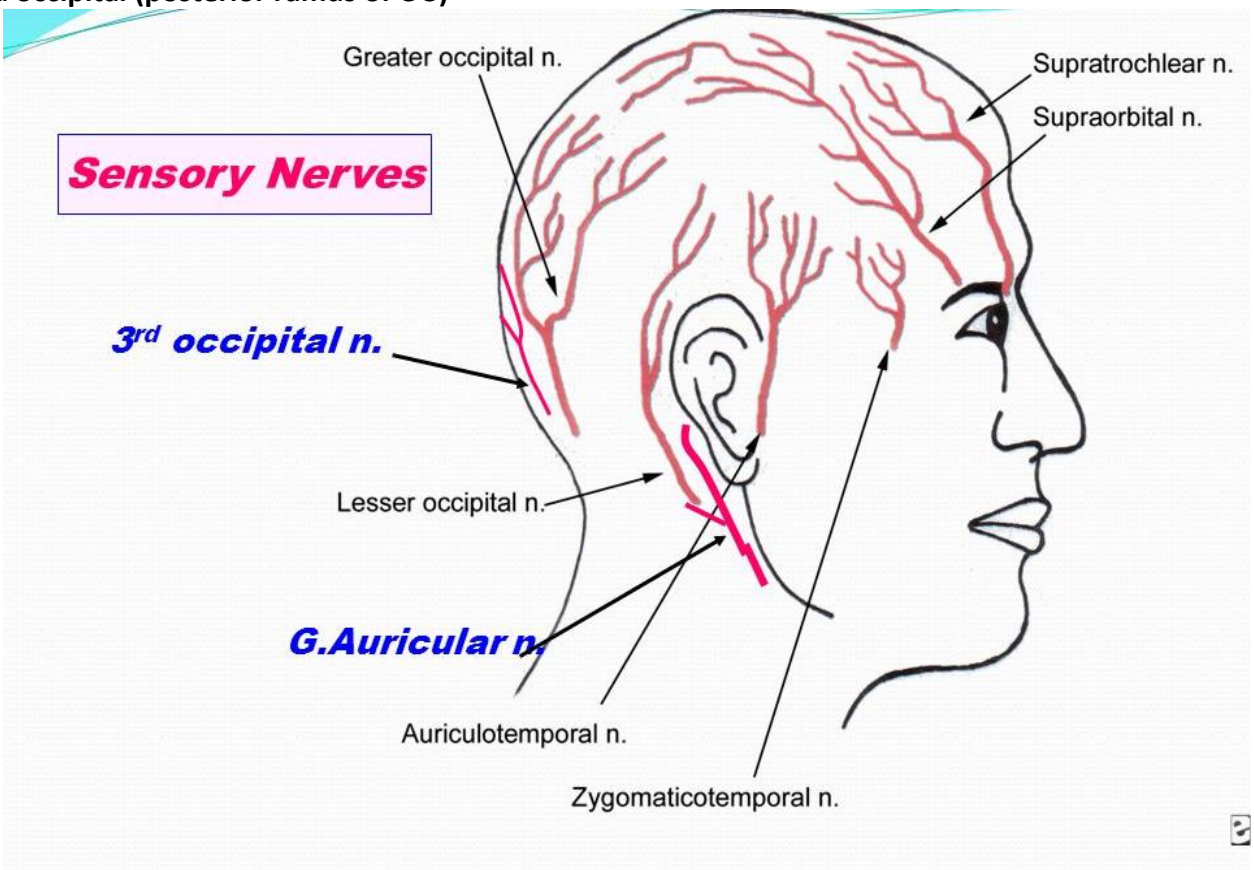
Posterior to ear

1. Great auricular nerve ; It supplies a small area posterior to the scalp.

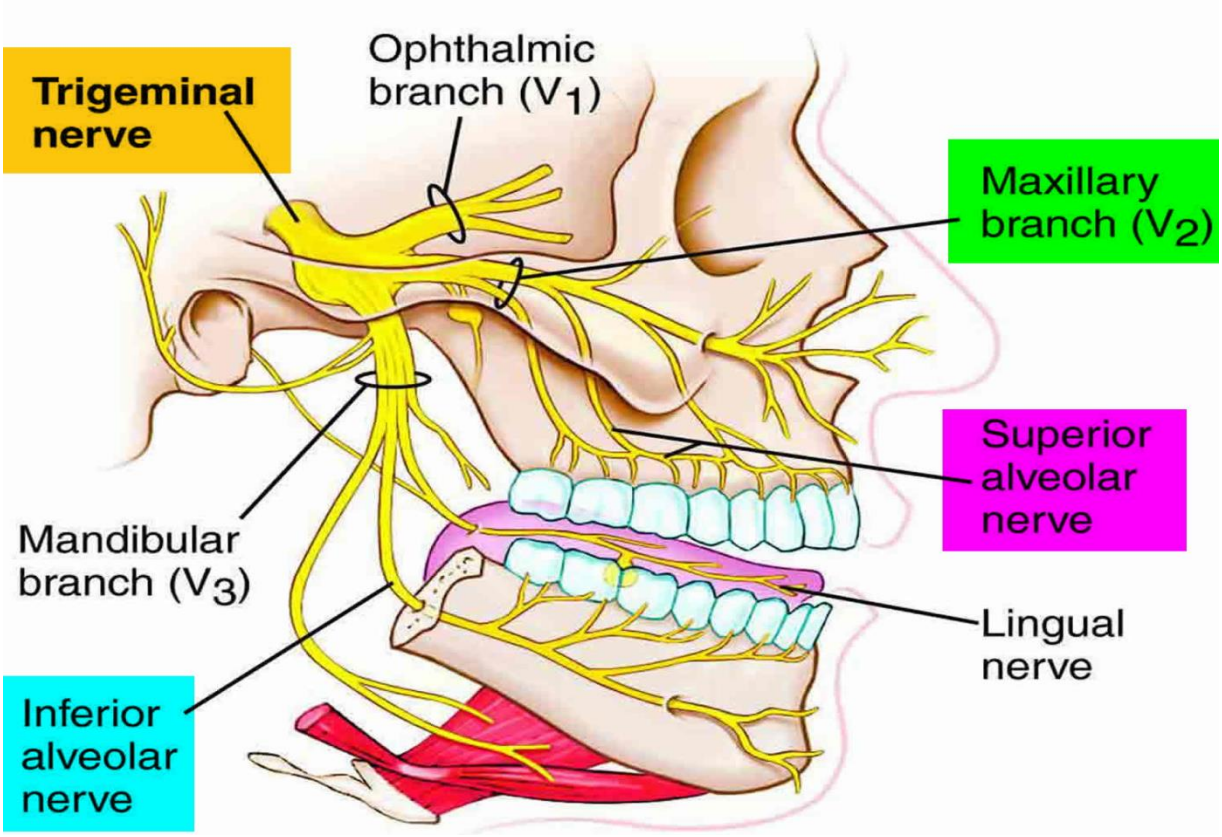
2. Lesser occipital: it supplies the area posterior and superior to the scalp

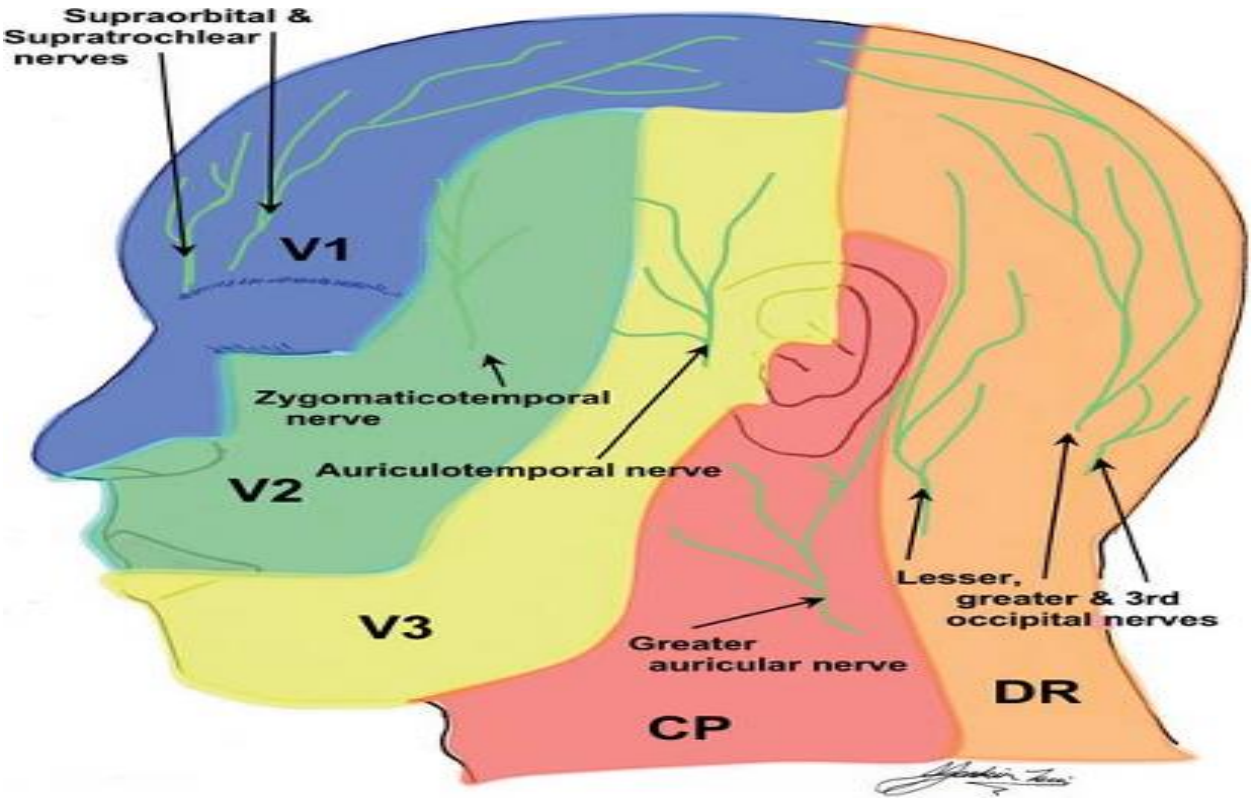
3. Greater occipital (posterior ramus of C 2).

4. Third occipital (posterior ramus of C 3)



]ANATOMY OF THE SCALP[





]ANATOMY OF THE SCALP[

Monday , 15/10/2017
BY
Dr. Hassa B. Jawad

Applied Anatomy :

1. Because of the abundance of sebaceous glands, the scalp is common site for sebaceous cysts.

2. Since the blood supply of the scalp and the superficial temporal region is very rich; avulsed portion need not be cut away. They can be replaced in position and stitched; they usually take up and heal well.

3. Wounds of scalp bleed profusely because the vessels are prevented from retracting by the fibers fascia. Bleeding can be arrested by applying pressure against the bone.

4. Because of the density of fascia, inflammation in this layer cause little swelling but much pain

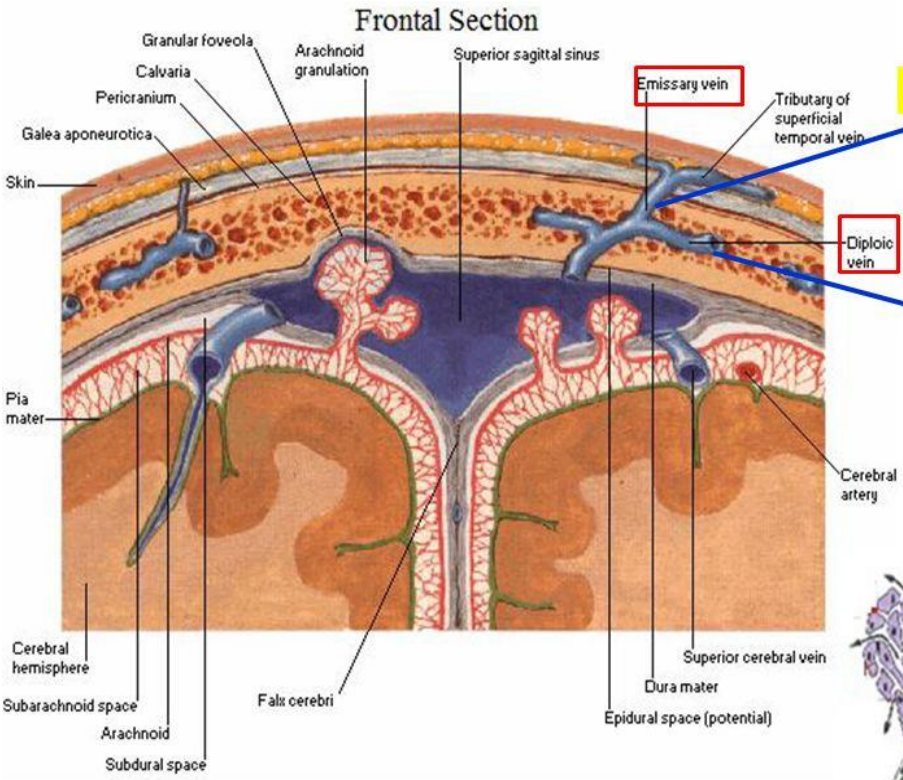
5. The layer of loose areolar tissue is known as The danger area of the scalp because of the emissary veins, which open here may transmit infection from the scalp to the cranial venous sinuses. Infection can spread through the emissary veins to the intracranial venous sinuses to cause Venous Sinus thrombosis.

An infection in the scalp cannot extends

***posteriorly into the neck Because of the attachment of occipitalis muscle to the occipital and temporal bones.**

***Nor laterally because of attachment of the aponeurosis to the temporal fascia.**

***An infection or fluid can spreads only into the eye lids and the root of the nose because the attachment of the frontalis into the skin and not to the bone.**

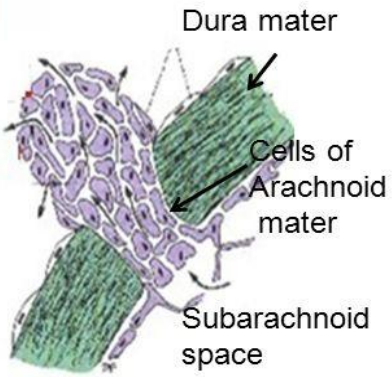


Emissary veins

Drain blood from the external surface of the skull into the dural sinuses.

Diploic veins

Drain blood from the space within the bone of the skull (diploic space) into the dural sinuses.



6. Collection of the blood in the layer of loose connective tissues cause generalized swelling for the scalp the blood may extent anteriorly in to the root of the noose and in to the eyelids causing black eyes.

7. Wounds of the scalp do not gape unless the epicranial aponeurosis is divided transversely and the bleeding is profuse because :

- **1. The abundant arterial anastomoses.**
- **2. Arteries do not retract when lacerated because they are held open by the dense connective tissue in layer (2).**

8. Because of the pericranium is adherent to sutures collection of fluid deep to the pericardium known as cephalhaematoma taking the shape of the bone concerned

Answer the following questions

1.Regarding the scalp ,all statements are true except :

A. **Its wound bleeds profusely**
B. **Its wound is gaped if the aponeurosis is cut**
C. **Contains no specious gland s**
D. **Its veins communicated with cranial venous sinuses**
E. **It contains muscles of facial expression**

2. In which of the following layers of scalp dose the infection spread:

A. **Skin**
B. **Connective tissue**
C. **Aponeurosis**
D. **Loose areolar tissue**
E. **Pericranium**

3. Explain why :
***Loose areolar connective tissue layer of scalp is the called dangerous layer of the scalp**
***Transvers wound of scalp bleeds profusely**

4. What is the clinical importance of emissary vein?