SCALP

May be defined as soft tissue covering of the skull including skin.

Extent: Anteriorly- up to the region of eyebrows up to supraorbital margin.

Posteriorly- Up to ext. occ. protuberance and superior nuchal lines.

Laterally- up to superior temporal line
S  Skin

C  Connective tissue (Dense)

A  Aponeurotic (epicranial aponeurosis)

L  Loose connective tissue

P  Pericranium
Figure 7.11. Layers of the scalp.

Figure 7.14. The occipitofrontalis muscle in sagittal section.
Skin: Thin epidermis, thick dermis
Epidermo-dermal junctions contain hair follicles
Numerous sebaceous glands
Richly vascularised, sensitive to touch, pain and temp.

Connective tissue layer:
Collagen bundles form caverns, also adherent to vessels
Neurovascular plane
Musculo-aponeurotic layer: Broad musculo-fibrous layer having two muscular bellies- Occipital and frontal.

Frontal- No bony attachment, fibres 8-10 cm long

Fibres continue with facial muscles (Procerus, corrugator supercilli, Orbicularis oculi)

Bellies anteromedially blend with each other, posteriorly diverge.

N. supply- Temporal br. of facial nerve

Action- raise the eyebrows (surprise, horror, fright)

Throwing forehead into transverse wrinkles.
Figure 7.09. Muscles of the face.
Occipital belly-
Origin from lateral two third of highest nuchal line and mastoid part of temporal bone.
Smaller fibres of 3-4 cm length
N. supply- Posterior auricular br. of facial nerve
Action- draws scalp backwards

Galea aponeurotica-
Attached to superior temporal lines

Loose areolar tissue-
Reticular and elastic fibres
Allows the first three layers to glide over it
Large intercommunicating spaces

Pericranium-
Periosteum on the outer surfaces of bones
Continuous with endosteum through the sutures
Loosely attached over the skull bones except in the temporal fossa
Applied Anatomy

Sebaceous cysts in the skin

2nd layer- Inflammation painful but self limiting

    Profuse bleeding/Heals well

3rd layer- Wounds gape if there is a transverse cut

4th layer- Dangerous layer

    Easily separated from other layers

    Inflammation- less painful, spreads fast and throughout the layer

    Black eye-accumulation of pus/blood in this layer
    trickles down till the attachments of 3\textsuperscript{rd} layer.

    Emissary veins pass through this layer on their way to the sinuses

5th layer- Safety valve haemotoma/ Cephalo- haemotoma
Scalp

The connective tissue layer of the scalp contains collagen fibers that attach to the external surface of the blood vessels. When a blood vessel of the scalp is cut, the connective tissue holds the lumen open, resulting in profuse bleeding.

If an infection occurs in the scalp, it can spread within the connective tissue layer. Therefore, this layer has been called the “dangerous area.” From the “dangerous area,” the infection may pass into the cranial cavity through emissary veins.
Subdural Hematoma

As a complication of head injury, cerebral veins may bleed into the potential space between the dura mater and the arachnoid mater. When this happens, the blood accumulates between the dura mater and arachnoid mater (a “subdural space” is created), and this condition is called a subdural hematoma.
Figure 7.20. Coronal section through the superior sagittal sinus.
Nerve supply

- Motor (Facial nerve)
  Temporal branch
  Post. auricular
- Sensory (trigeminal nerve; C₂, C₃, Cervical spinal nerves)
  In front of ear - trigeminal nerve; behind ear- cervical nerves
  Supratrochlear
  Supraorbital
  Zygomatico-temporal
  Auriculo-temporal
  Posterior – C₂, C₃
  Postero superior part - Greater occipital, Third occipital
  Antero inferior part - Greater auricular, Lesser occipital
Figure 7.15. Sensory nerves and blood vessels of the scalp.
Figure 7.16. Muscles that must be removed to cut an occipital wedge.
Lymph Drainage of SCALP

- It also follows same pattern of Arteries of SCALP.

- Lymph Nodes for Drainage of SCALP
  - Occipital Node
  - Cervical Node
  - Mastoid Node
  - Parotid Node
  - Pre-auricle Node
  - Sub-Mandibular Node
Muscles of facial expression

- Embryologically - Mesoderm of 2\textsuperscript{nd} branchial arch
- Morphologically – Remnants of panniculus carnosus
- Functionally – Regulators of three openings
  Every opening has single sphincter (circular) and variable number of dilators (radial)
Muscles of facial expression

- Muscles of eyelids – Orbicularis oculi
  Corrugator supercilli
  Levator palpabрае sup.

- Muscles of nose – Procerus
  Compressor naris
  Dilator naris
  Depressor septi

- Muscles of neck – Platysma
Muscles of facial expression

- Muscles around mouth –
  Orbicularis oris
  Levator labii superioris et alaque nasi
  Levator labii superioris
  Levator anguli oris
  Zygomaticus minor
  Zygomaticus major
  Depressor anguli oris
  Depressor labii inferioris
  Mentalis
  Risorius
  Buccinator
Procerus
Temporals
Orbicularis oculi
Zygomaticus minor
Levator anguli oris
Temporalis
Sternocleidomastoid
Masseter
Buccinator
Mentalis
Depressor anguli oris
Platysma
Orbicularis oculi
Levator labii superioris
levator labii superioris alaeque nasi
Levator labii superioris
Zygomaticus major
Masseter
Nasalis
Superior incisive M.
Depressor septi
Depressor labii inferioris
Common Facial Expressions

- Surprise/horror – Frontal belly of occipitofrontalis
- Winking – Orbicularis oculi
- Frowning – Corrugator supercilii, Procerus
- Anger – Dilator naris, Depressor septi
- Sadness – Depressor labii inferioris, Depressor anguli oris
- Smiling/laughing – Zygomaticus major
- Grief – Depressor anguli oris
- Doubt – Mentalis, Depressor labii inferioris
- Grinning – Risorius
Orbicularis Oculi

• Origin
  Orbital part – medial palpebral ligament
  adjacent orbital margin
  Palpebral part – medial palpebral ligament
  Lacrimal part – posterior margin of lacrimal fossa
  sheath of lacrimal sac

• Insertion – skin
  lateral palpebral raphe
  upper and lower tarsal plates

• Action – Closing of eyes
  Protection from sunlight/danger/expiratory efforts
  Promotes the flow of tears towards lacrimal canaliculi
Actions

- Palpebral fibres - close lids gently
- Orbital part - lowers the eyebrow
- Together they close eyelids forcibly
Corrugator supercilii
Orbicularis Oris

- Interlacing fibres which converge on the mouth
- Other muscles fibres mingle and sweep in curves through the lips
- Buccinator fibres also converge
- Origin
  - Intrinsic part – very thin sheet
  - Superior part from maxilla
  - Inferior part from mandible
- Insertion – Angle of mouth
Levator labii superioris alaeque nasi

Levator labii superioris

Levator anguli oris

Depressor anguli oris

Depressor labii inferioris
Orbicularis oris

- Intrinsic fibres – from mandible & maxilla near midline. Deepest fibres
- Extrinsic fibres – form bulk, most come from buccinator.
- Action – narrowing of mouth
Platysma

Origin - Upper part of pectoral fascia

    Deltoid fascia

Insertion – Base of mandible

    Skin of lower face/lip

Action – Releases pressure on veins

    Pull angle of mouth downwards
Buccinator

- Thin flat rectangular muscle
- Origin – alveolar processes of maxilla and mandible opposite molar teeth, pterygomandibular raphae
- Insertion – modiolus (knot of muscles lateral to angle of mouth, resp. for dimples)
Actions

- Accessory muscle of mastication
- Return bolus of food from cheek pouch to molars
- Keeps the cheek taut so prevents it from folding & get injured during chewing
- Forcible expulsion of air from mouth
Dilator muscles of mouth

- Levator labii superioris
- Aleque nasii
- Levator labii superioris
- Levator anguli oris
- Zygomaticus minor & major
- Depressor anguli oris
- Depressor labii inferioris
Depressor anguli oris
Cutaneous nerve distribution of the head and neck.
Figure 7.10. Sensory nerves of the face.
CUTANEOUS INNERVATION OF FACE

- Branches of trigeminal nerve (CN V):
  - Ophthalmic (V₁)
  - Maxillary (V₂)
  - Mandibular (V₃)
- Cervical plexus branches (C2)
  - Lesser occipital
  - Great auricular
- Greater occipital nerve (dorsal ramus of C2)
Arterial supply

- Facial a. – superior & inferior labial a., lateral nasal a., angular a.
- Superficial temporal a. – gives transverse facial a.
- Supra orbital & supra trochlear a. - branches of ophthalmic a.
Veins of face

- Supra orbital & supra trochlear veins join & form angular v., continues as facial v.
- Retromandibular v.- formed by joining of superficial temporal v. & max. v.
- Dangerous area of face
Facial lacerations

- No deep fascia
- Loose SC tissue
- Lacerations gape widely
- Bruising & inflammation causes large swellings
- Wrinkles occur perpendicular to muscle fibres
Paralysis of facial muscles

- Injury to 7 nerve
Applied Anatomy For Orbicularis Oculi

- If any injury to the nerve which supplies that muscle, it will lead to paralyses of that muscle. This causes the dropping of lower eyelid, called as “Ectropion” and
- Spilling of tears, called as “Epiphora”.

- Some times there will be radiating wrinkles at the angle of the eye during strong closure. This called as “Crow’s Feet”
Figure 7.08. Dissection of the lateral aspect of the face.