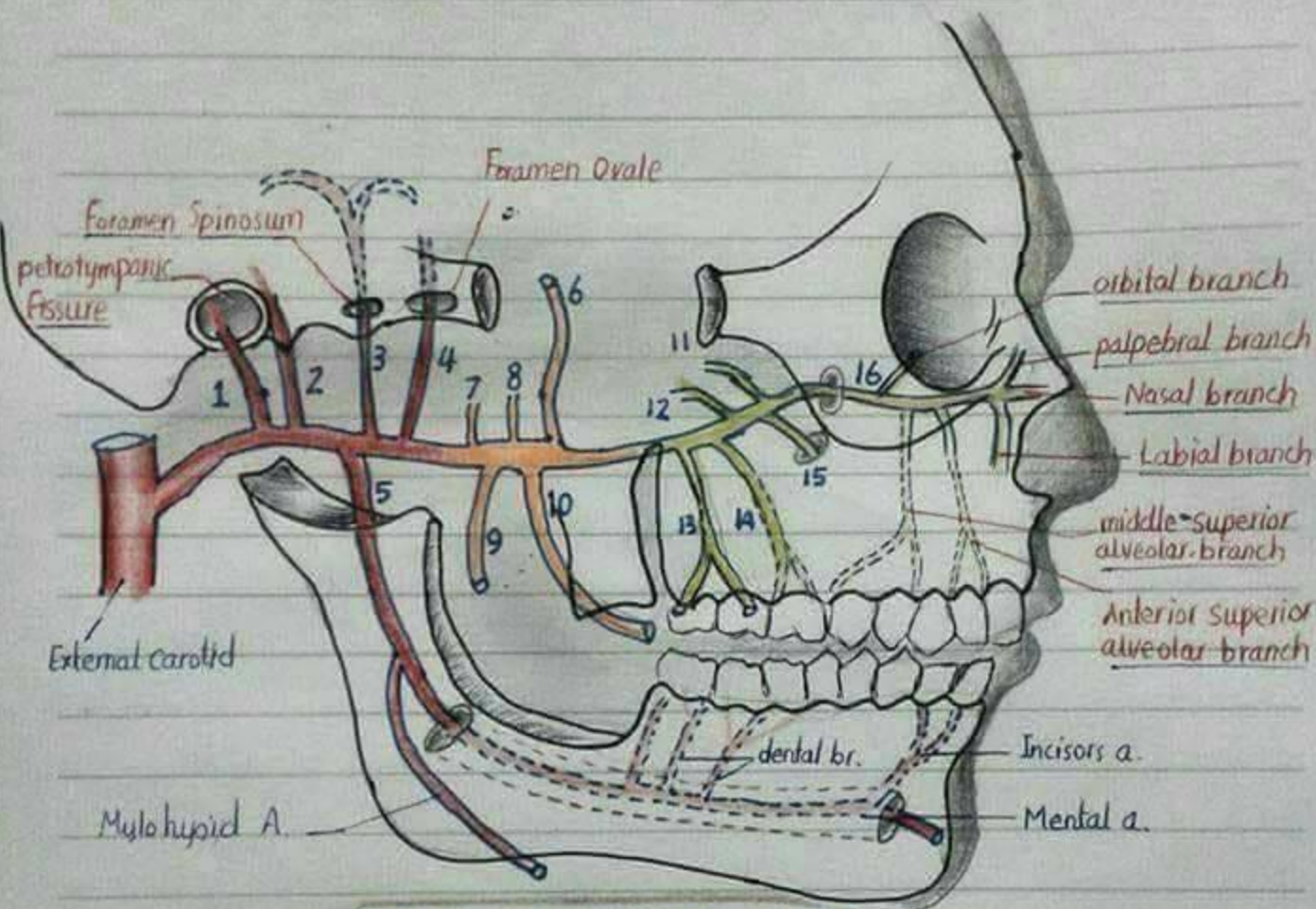


# Branches of Maxillary artery :-



• Maxillary artery divides into 3 parts

1st part

1. Deep auricular artery
2. Anterior tympanic artery
3. Middle meningeal artery
4. Accessory meningeal artery
5. Inferior alveolar artery

2nd part

6. Deep temporal artery
7. Lateral pterygoid artery
8. Medial pterygoid artery
9. Masseteric artery
10. Buccal artery

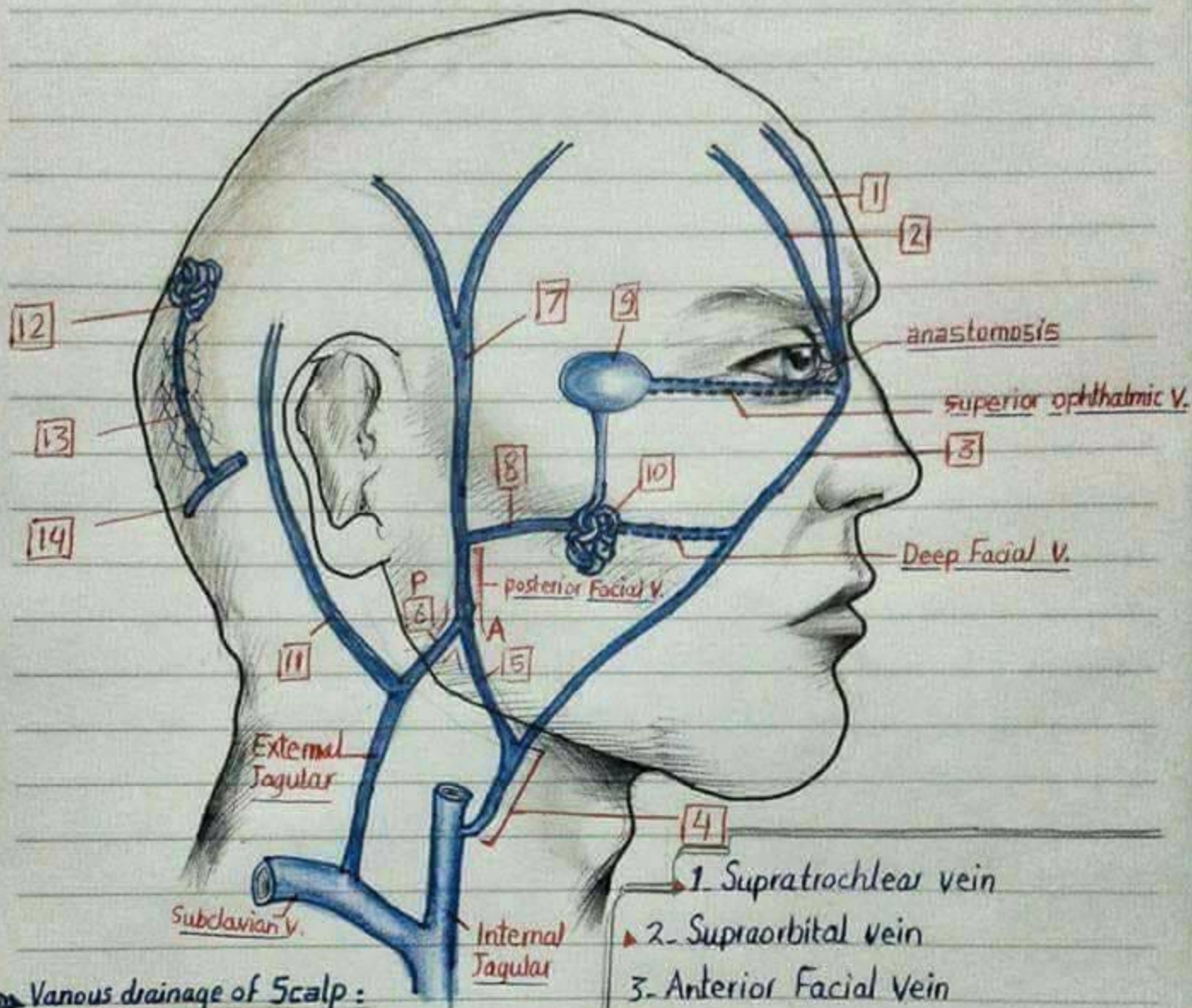
3rd part

11. artery of pterygoid canal
12. Pharyngeal artery
13. Descending (greater) palatine a.
14. posterior superior alveolar a. (dental)
15. Sphenopalatine artery
16. Infraorbital artery

K.F.K



# Various drainage of Scalp and face :-



## ➤ Various drainage of Scalp :

↳ 1, 2, 7, 11, 13

## + Various drainage of FACE :

↳ + Anterior & posterior facial v.

↳ Common Facial v.

⊙ Anterior facial vein is connected by

Cavernous sinus by 2 routs :

1- Superior ophthalmic Vein

2- Deep facial Vein Via

Emissary Vein

1. Supratrochlear vein

2. Supraorbital vein

3. Anterior Facial Vein

4. Common Facial Vein

5 & 6 - Anterior and posterior divisions of posterior Facial Vein

7. Superficial temporal Vein

8. Maxillary vein

9. Cavernous Sinus 10. pterygoid Venous plexus

11. posterior auricular Vein

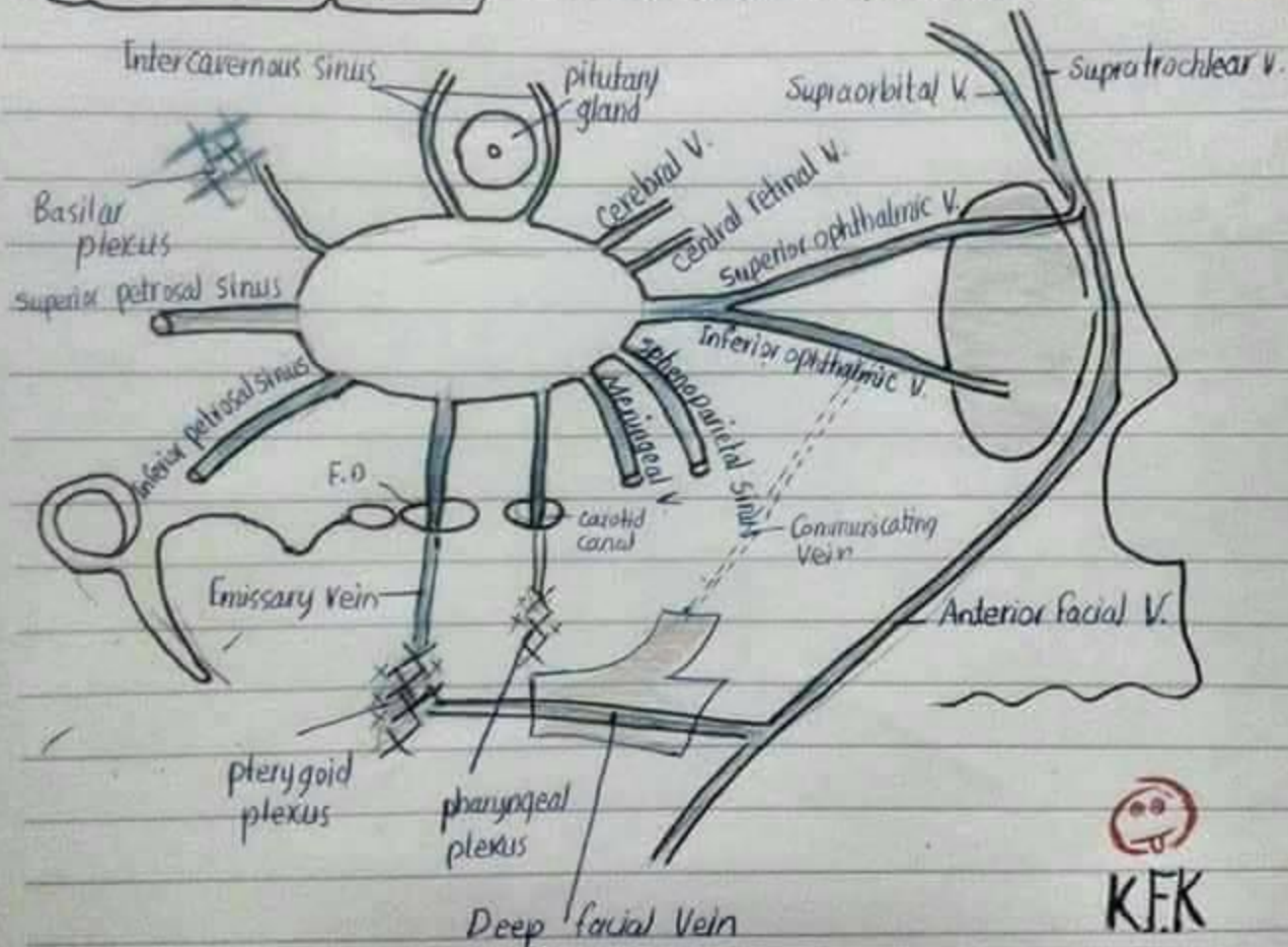
12. Occipital plexus

13. Occipital Vein

14. Vertebral Vein

# ► Cavernous Sinus "Communication & Tributaries"

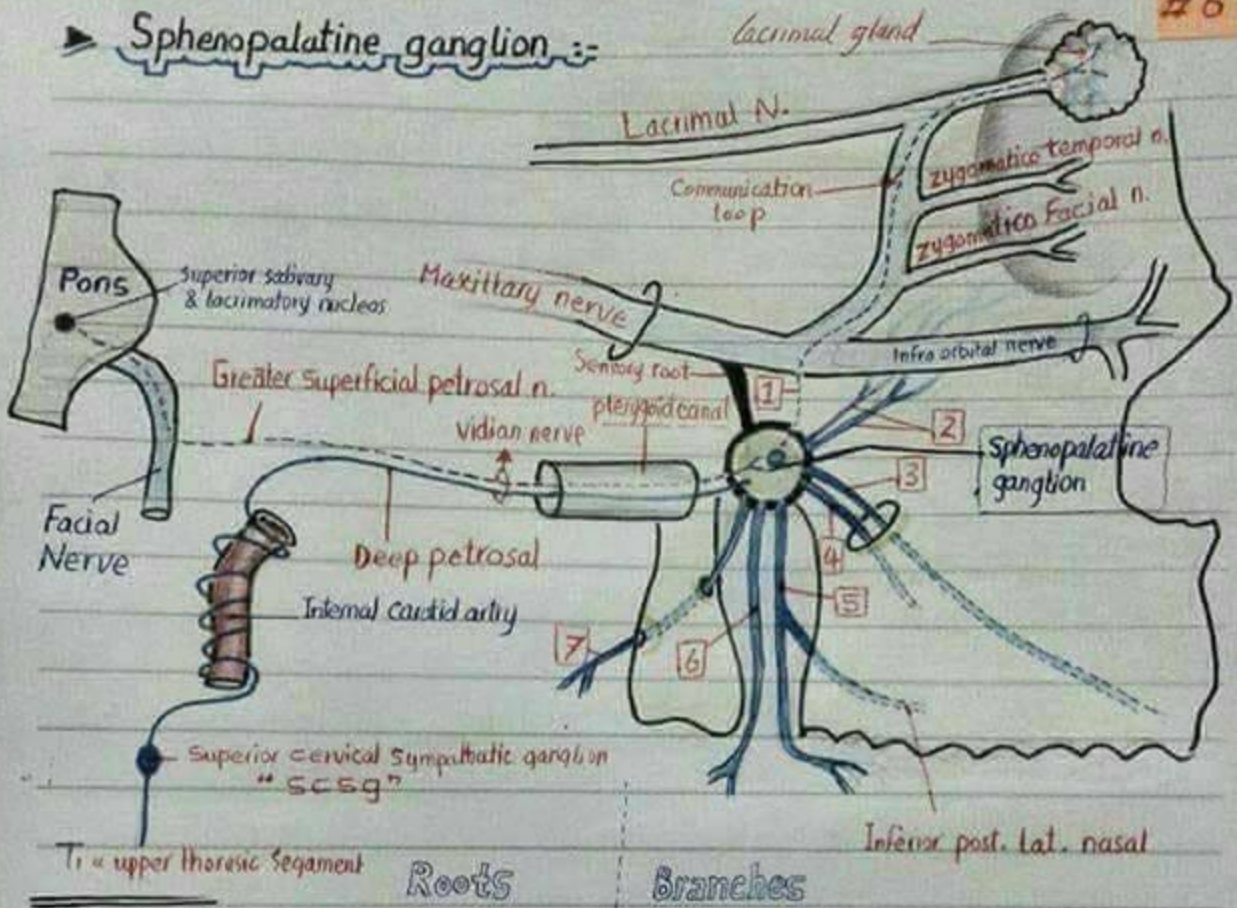
#8



KFK



# Sphenopalatine ganglion :-



## Branches :-

- 1) Post ganglionic parasympathetic fibers to lacrimal gland
- 2) Orbital branches
- 3) Long sphenopalatine nerve
- 4) Short sphenopalatine nerve
- 5) Greater palatine nerve
- 6) Lesser palatine nerve
- 7) Pharyngeal branch

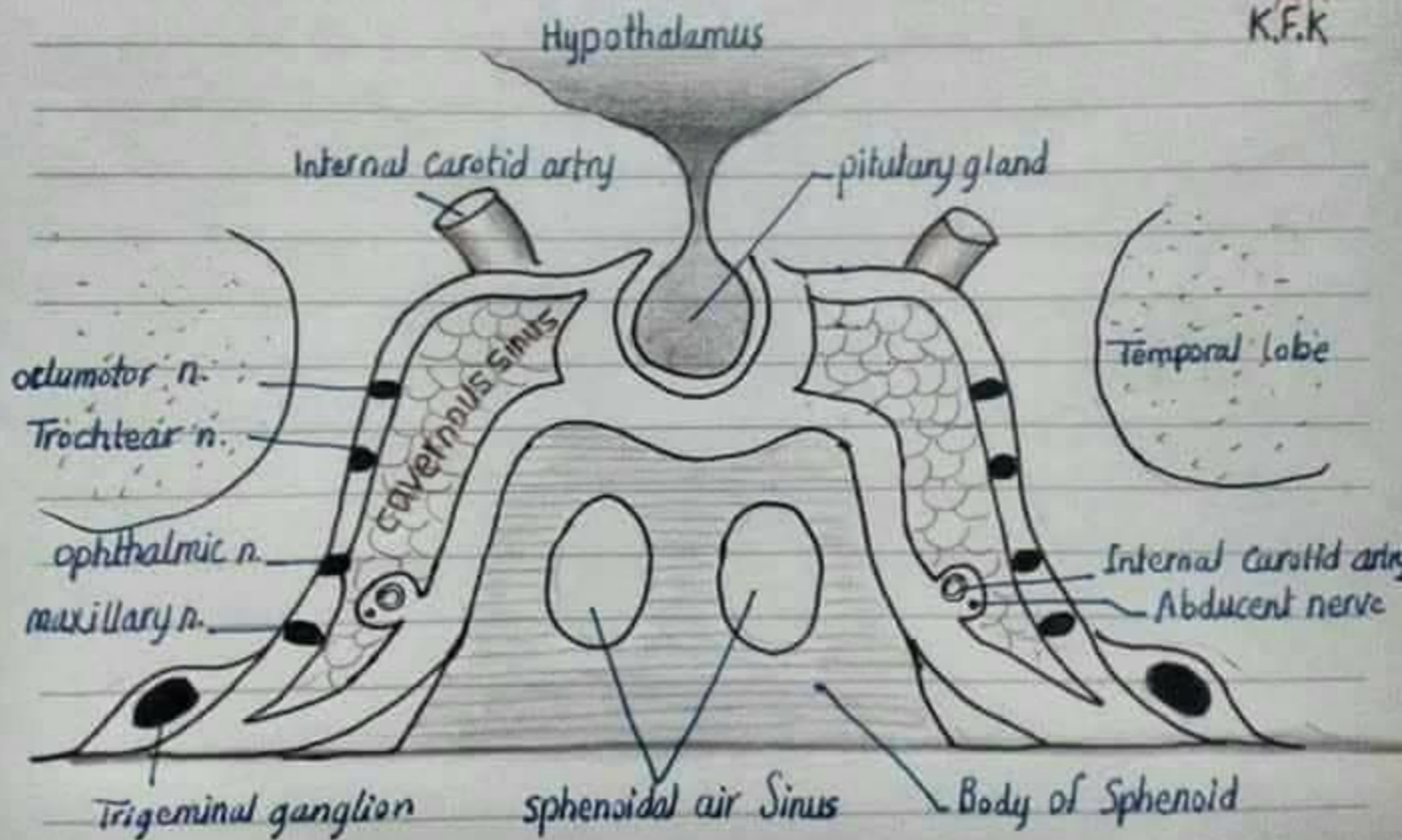


K.F.K

# → Cavernous Sinus = (Relations)

#7

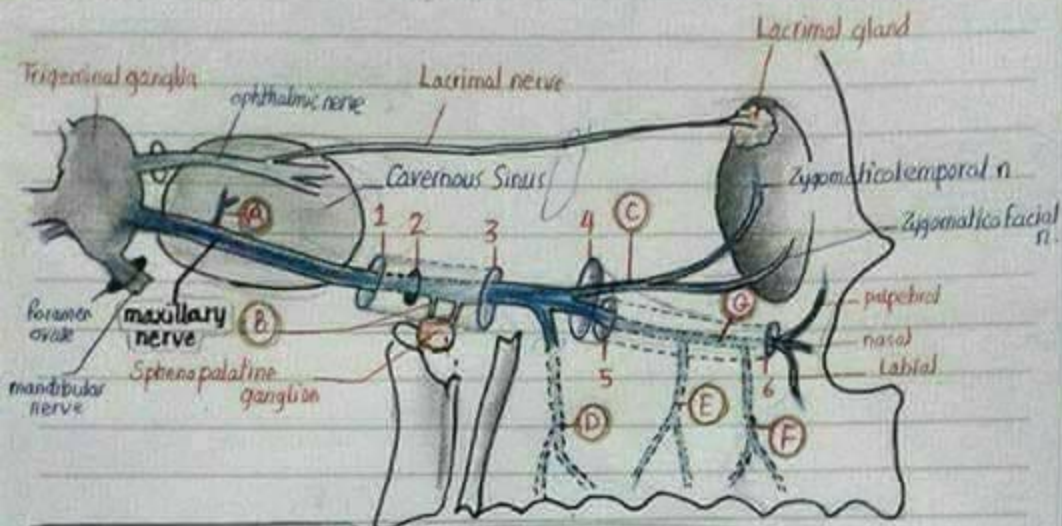
K.F.K



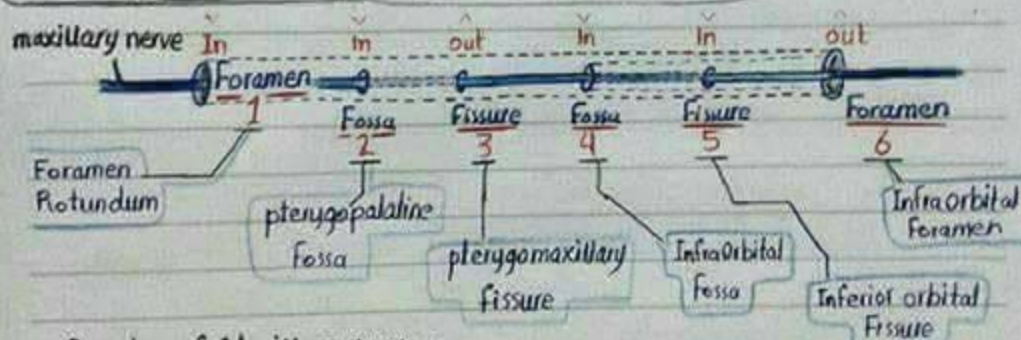


# ➤ Maxillary Nerve

#5



## • Maxillary Nerve course: (through Foramina, Fossae & Fissures)

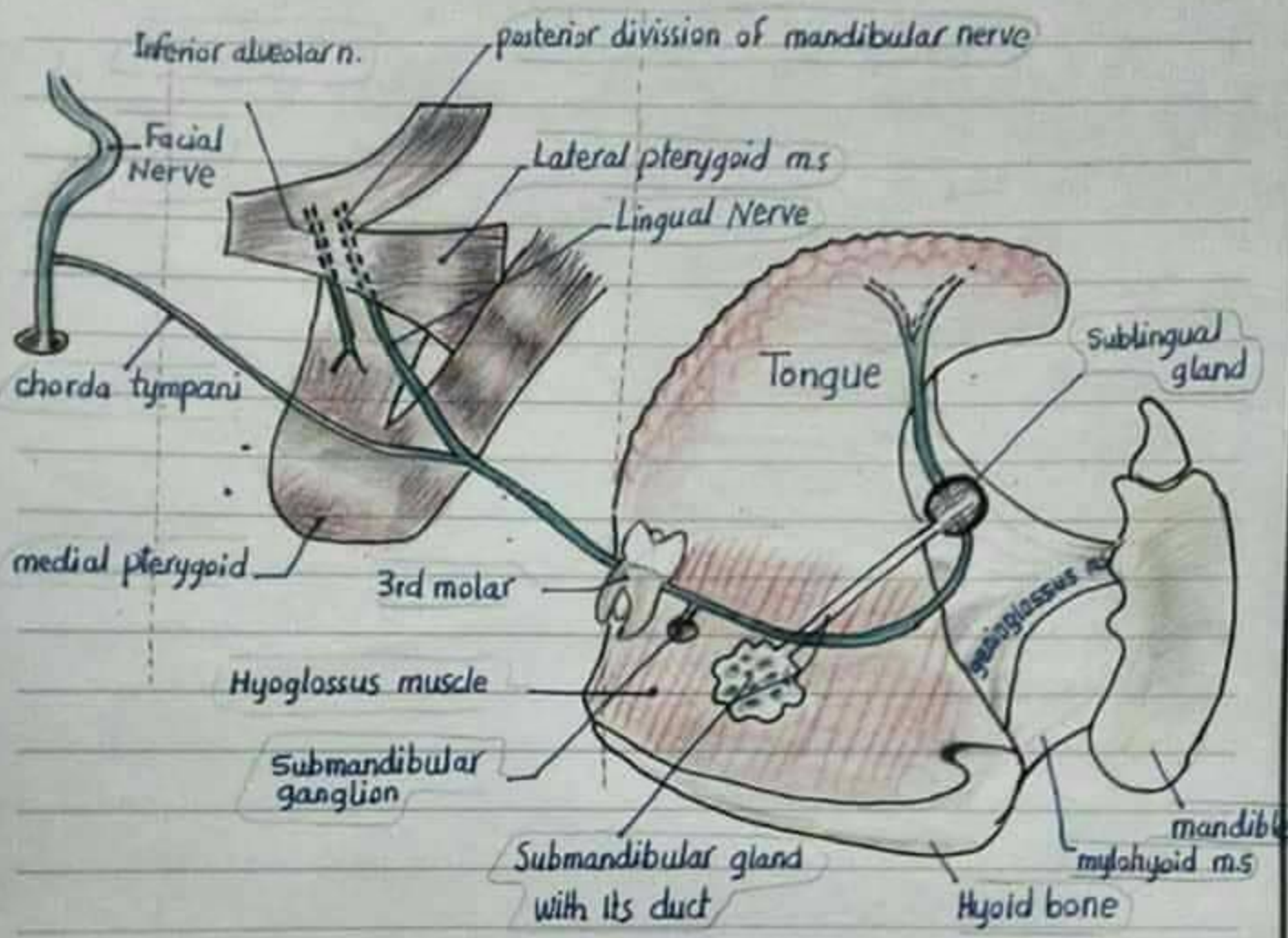


## • Branches of Maxillary nerve :-

- (A) Meningeal
- (B) 2 ganglionic branches
- (C) Zygomatic nerve
  - ↳ Zygomaticotemporal n.
  - ↳ Zygomaticofacial n.
- (D) posterior superior alveolar n.
- (E) Middle superior alveolar n.
- (F) Anterior superior alveolar n.
- (G) Infraorbital nerve
  - ↳ palpebral
  - ↳ nasal
  - ↳ labial

  
K.F.K

# Lingual Nerve :-



- ▶ Lingual nerve unites with chorda tympani with acute angle on medial pterygoid.
- ▶ Sensory → general sensation
- ▶ chorda → Special Sense (taste)
- ▶ Parasympathatic



(4)

## VENOUS DRAIN. OF H&N

- In the scalp there is 5 veins which are: ① supraorbital v. ② supratrochlear v. ③ superficial temporal v. ④ post. auricular and ⑤ occipital veins

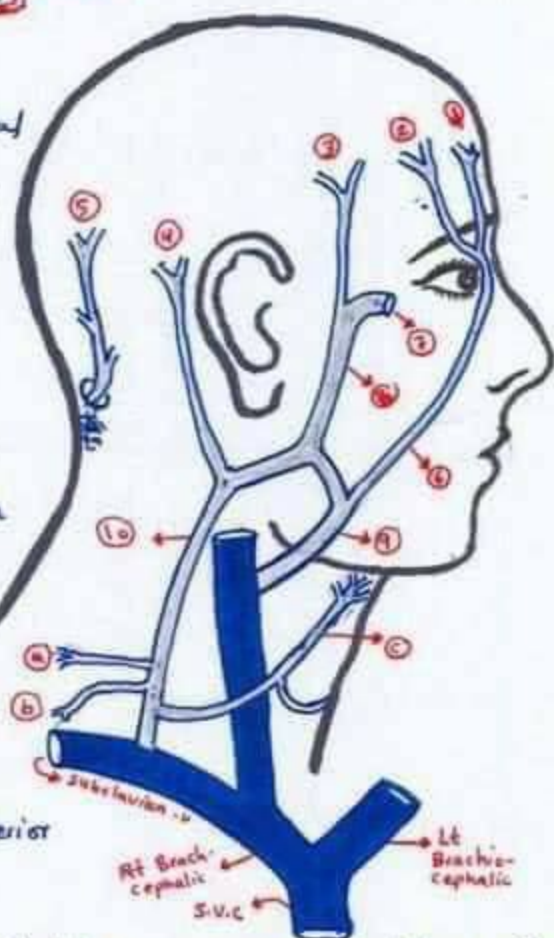
NB: the scalp has also 5 arteries the same names as veins

- Supra trochlear & supra orbital unite at medial angle of eye to form the anterior facial vein (facial vein) ⑥

- Superficial temporal vein unites with maxillary vein ⑦ to form the post facial v. (retromandibular v.) ⑧

- The post. facial v. divides into anterior & post. divisions;

- the ant. division unites with ant. facial v. → common facial vein ⑨ which drains into internal jugular vein.
- the post. division unites with post. auricular v. → External jugular v. ⑩ which drains into subclavian vein



- The ext. jugular vein descends above sternomastoid ms & pierces the deep fascia of roof of post triangle of neck (1 inch above clavicle)
- It receives ① transverse cervical v. ② suprascapular v. ③ ant. jugular vein ④

- The ant. jugular vein is formed by union of submental veins & is connected to ant. jugular vein of other side by jugular arch. - it drain to ext. jug. v. by passing deep to sternomastoid ms.



①

# Head & Neck

د. خالد العبدالله

■ This chapter will be discussed as (face and scalp) & Neck

① **SKIN** - ie cutaneous nerve supply of head & neck (H&N).

② **SUPERF. FASCIA** - venous & lymphatic drainage of H&N.

(N.B: superf. fascia of neck contains also platysma ms.)

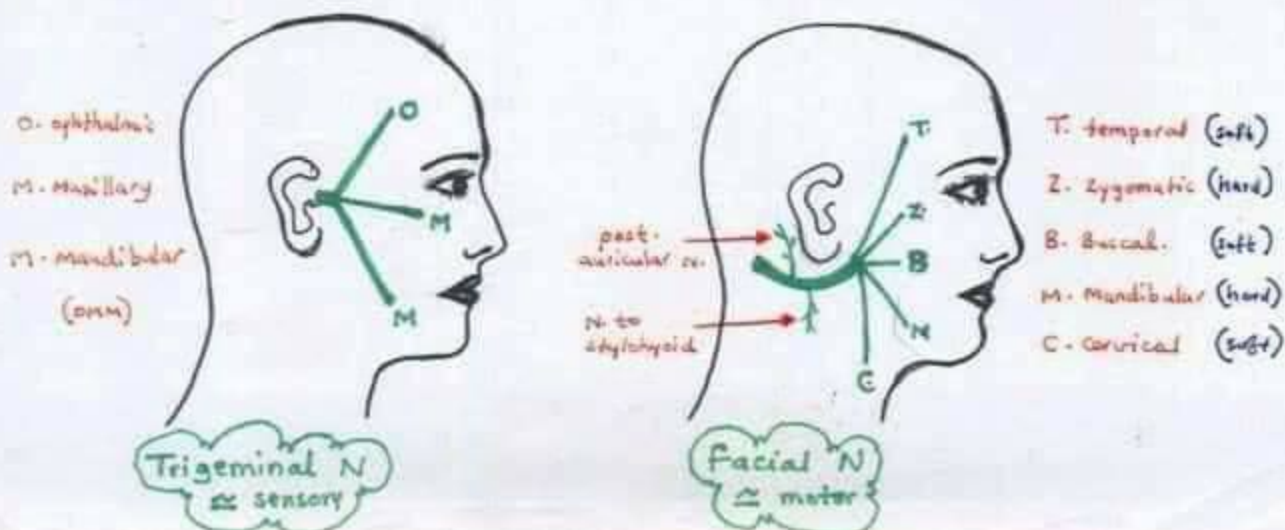
③ **DEEP FASCIA** -- In the neck it forms 4 layers ((prevertebral, pretracheal, investing layer & carotid sheath)).

- In the face no deep fascia, EXCEPT over parotid gland (forms parotid fascia) and over Buccinator ms (forms Bucco-pharyngeal fascia).

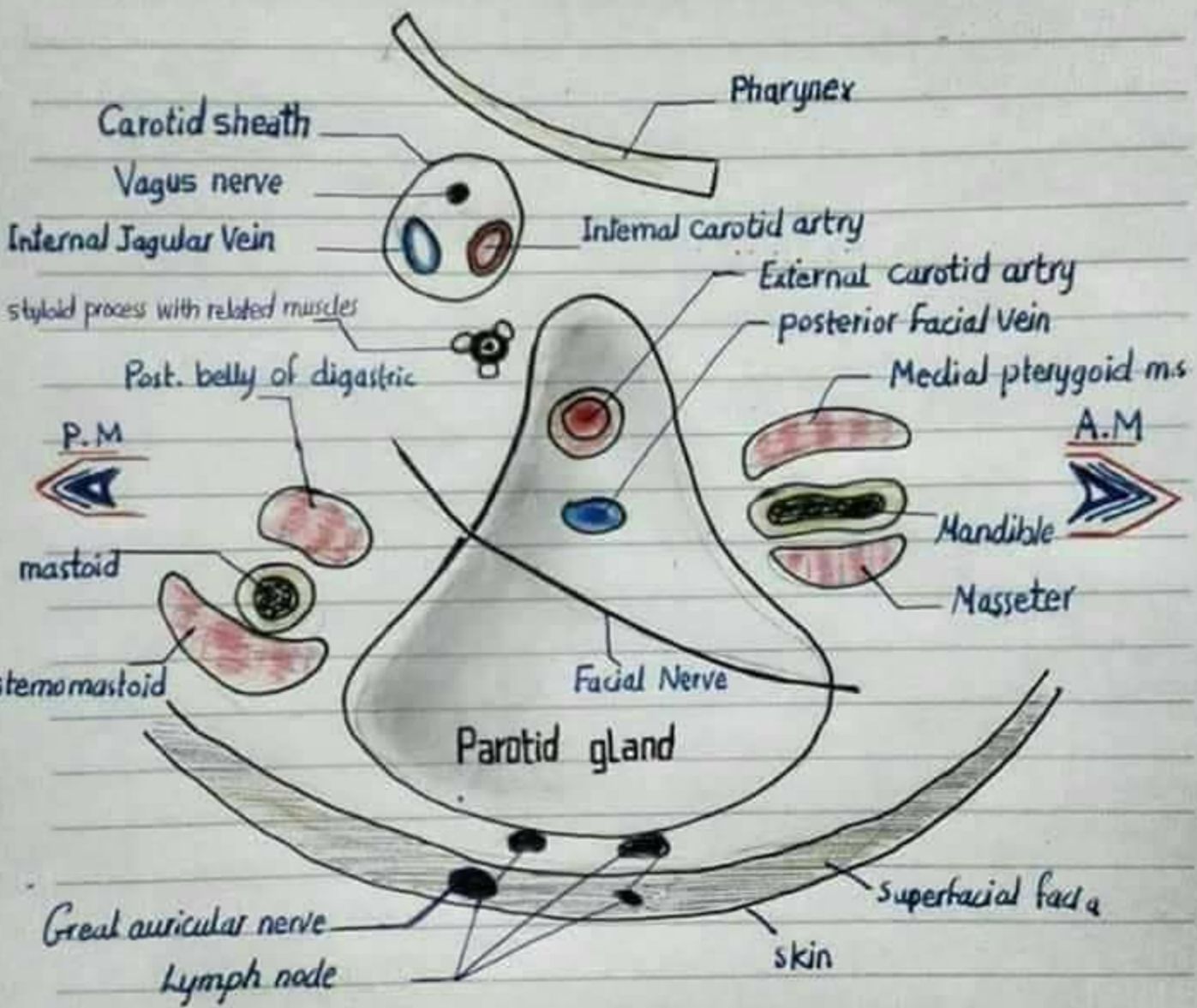
④ **MUSCLES** :- In the neck they form triangles [ant  $\Delta$ , post  $\Delta$  & suboccipital  $\Delta$ ].

- Muscles of face are supplied by facial N (cranial 7)

except ms of mastication which are supplied by Mandibular division of trigeminal N (cranial 5).



# T.S in parotid gland :-



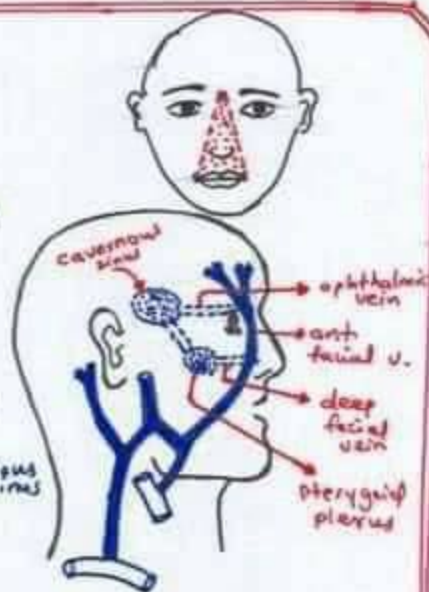


⑤

- The occipital vein usually end in the suboccipital plexus of veins and through emissary veins into superior sagittal sinus and sigmoid sinus.

### DANGEROUS AREA OF FACE

- It is the nose and upper lip.
- An infection in this area may → infection in cavernous sinus in the skull through connection to it by :-
  - supratrochlear & supraorbital (form ant. facial) but also drain into ophthalmic vein → cavernous sinus
  - ant facial vein also connected to deep facial vein. which drain into pterygoid plexus of veins → cavernous sinus



- The internal Jugular vein: starts at jugular foram as a continuation of sigmoid sinus, descends in the carotid sheath lateral to int. & common carotid arteries.

- Ends by uniting with subclavian vein at medial end of clavicle → Brachiocephalic (innominate) v.

- Tributaries are
  - ① inferior petrosal sinus
  - ② pharyngeal plexus of veins.
  - ③ common facial vein.
  - ④ Lingual vein.
  - ⑤ superior & middle thyroid veins.

- It has superior bulb (at beginning) & inf. bulb at its end.



(3)

**I- NECK:** - skin of neck is supplied by

- ① greater occipital N. (P) → C<sub>2</sub>.
- ② lesser occipital N. (O) → C<sub>2</sub>.
- ③ great auricular N. (A) → C<sub>2</sub>, C<sub>3</sub>.
- ④ transverse cervical (M) → C<sub>2</sub>, C<sub>3</sub>.
- ⑤ supra clavicular N. (L) → C<sub>3</sub>, C<sub>4</sub>.
- ⑥ branches of post rami of C<sub>3</sub>, C<sub>4</sub> & C<sub>5</sub>.

from  
Cervical  
plexus

**N.B** Cervical plexus is formed by ventral rami of 1<sup>st</sup> 4 cervical N. C<sub>1,2,3,4</sub> and gives 4 cutaneous & 4 muscular branches

- The 4 cutaneous are:**
- ① - lesser occipital
  - ② - transv. cervical
  - ③ - great auricular
  - ④ - supraclavicular N.
- The 4 muscular are** →
- I. N. to sternomastoid. C<sub>2</sub>
  - II. N. to levator scapulae C<sub>3,4</sub>
  - III. N. to trapezius C<sub>3,4</sub>
  - IV. Phrenic N. C<sub>3,4,5</sub>

**III- SCALP:** - skin of scalp is supplied by 4 cutaneous (+ 1 motor) in front of the auricle and 4 cut. (+ 1 motor) behind the auricle

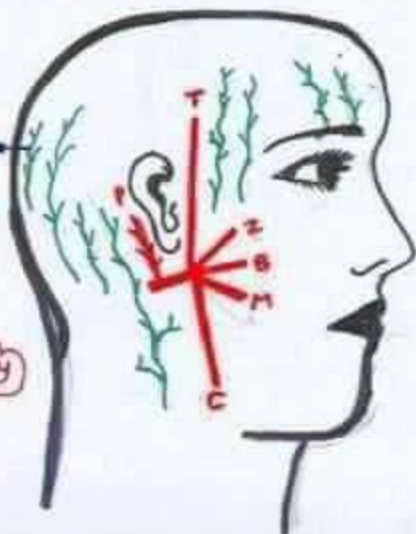
- In front of auricle**
- supra trichlear
  - supra orbital
  - zygomatico-temporal
  - auriculo-temporal
  - + Temporal bc of facial

Sensory

Motor

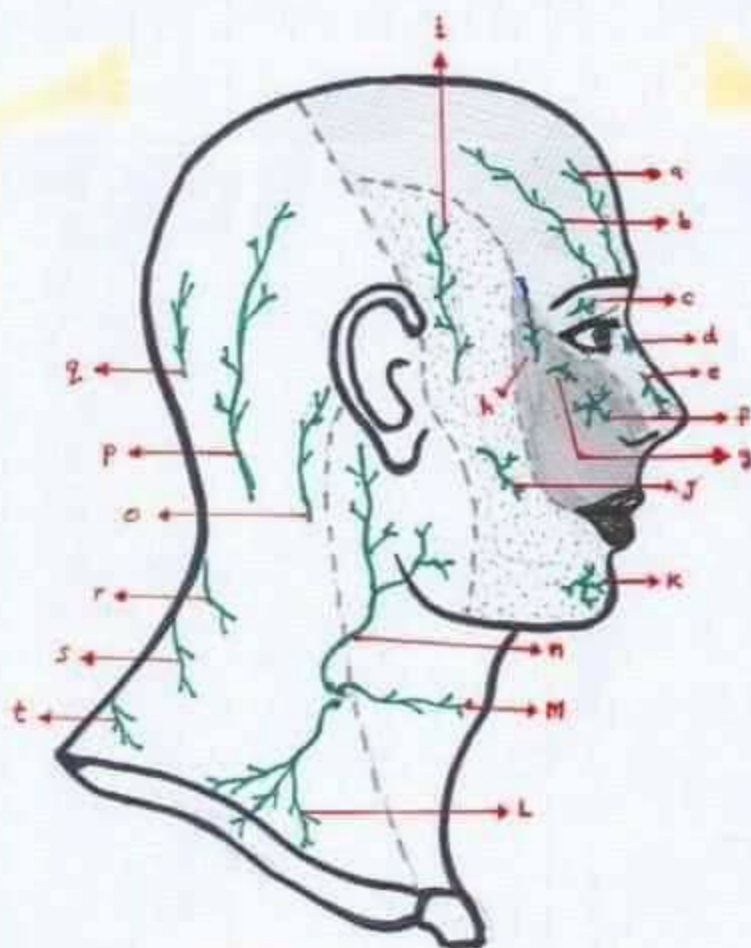
- Behind the auricle**
- Post. auricular (facial)
  - great auricular
  - lesser occipital
  - Greater occipital
  - Third occipital (O)

Sensory





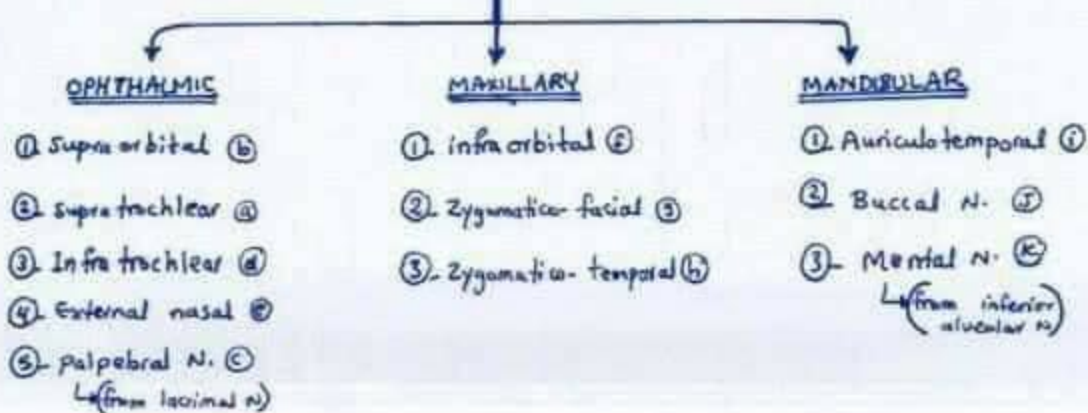
②



## SKIN OF H&N

**I. FACE:** - the skin of the face is supplied by the branches of trigeminal N (o.m.n) except skin at angle of mandible which is supplied by great auricular N. (C<sub>2</sub>, C<sub>3</sub>)

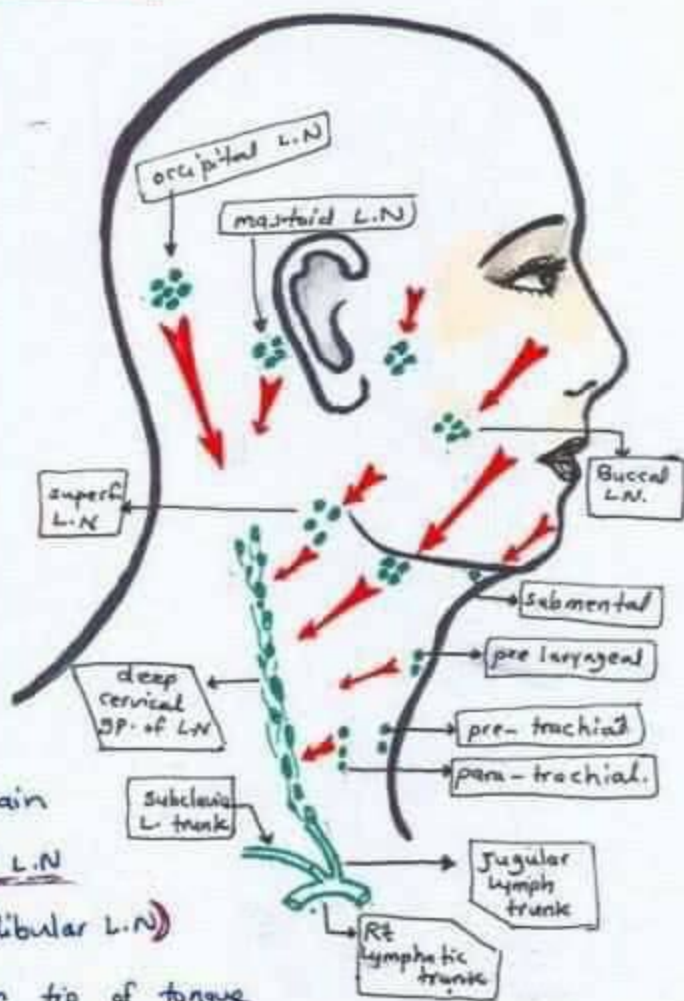
trigeminal N. (cranial 5)



⑥

## LYMPHATIC DRAIN. OF H&N

- ① occipital group of L.N.
- ② mastoid L.N (post-auricular).
- ③ Parotid L.N (pre-auricular).
- ④ Buccal L.N.
- ⑤ superficial cervical L.N.
- ⑥ submandibular L.N.
- ⑦ Submental L.N.
- ⑧ pre-laryngeal L.N.
- ⑨ pre-tracheal L.N.
- ⑩ para-tracheal L.N.
- ⑪ Retropharyngeal group of L.N.



- = All groups of L.N (1-11) drain their lymph to deep cervical L.N  
 (submental drain into submandibular L.N)  
 (submental L.N receive lymph from tip of tongue floor of mouth, center of lower lip) (sides of tongue → submandibular).

- = The deep cervical group of lymph nodes runs along the internal jugular vein inside the carotid sheath & divided into upper & lower groups

- = The deep cervical L.N drain lymph by forming jugular lymph trunk which (together with subclavian L. trunk) drain into thoracic duct (in Lt side) or Rt lymphatic duct (in Rt side) then to the Brachiocephalic veins (Rt & Lt).



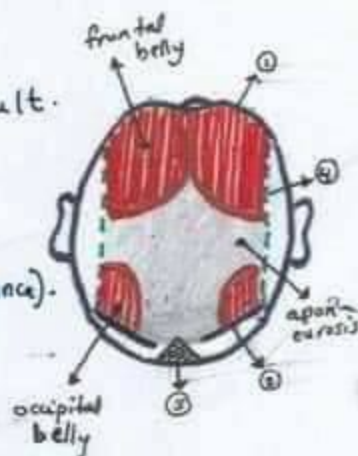
(7)

# SCALP

It is the soft tissue covering the cranial vault.

## \* BOUNDARIES :

- \* Anterior :- skin of eye brow. ①
- \* Posterior :- highest nuchal lines (ext. occipital protuberance). ②
- \* Laterally :- superior temporal lines (on each side). ③



## \* LAYERS : 5 layers (S.C.A.L.P) :-

- ① Skin :- hairy & connected to 3<sup>rd</sup> layer by 2<sup>nd</sup> one.
- ② Connective tissue (Dense c.t) = superf. fascia contain vessels & nerves.
- ③ Aponeurosis of occipitofrontalis muscle.
- ④ Loose C.T.
- ⑤ Pericranium (Periosteum) : attached loosely to bones (firmly to sutures).

NB: scalp has ⑤ arteries, ⑤ veins, ⑩ nerves in each side (5 in front, 5 behind ear)

## \* OCCIPITO-FRONTALIS Ms

It forms the 3<sup>rd</sup> layer of scalp. It has 4 bellies (2 ant & 2 post) connected by aponeurosis.

origin :- frontal bellies from skin of eye brows (they are large & fused)  
occipital " = highest nuchal line (Lat 4/3) (they are small & separate)

insertion :- both bellies inserted into aponeurosis.

N./s :- frontal bellies by temporal (br. of facial N.) & occipital by post. auricular (br. of facial N.)

action : elevation of eye brow and making wrinkles in forehead.

⑧

# FACE

- The face has no deep fascia [except parotid & buccopharyngeal fascia, over parotid gland & Buccinator muscle respectively].
- Muscles of face are originated from skull bones & inserted into the skin (muscles of facial expression)
- Ms of facial expression embryologically develop from 2<sup>nd</sup> pharyngeal arch so supplied by 7<sup>th</sup> (facial N.) and arranged around orifices (orbit, nose, mouth)
- Ms of mastication develop from 1<sup>st</sup> pharyngeal arch, so supplied by 5<sup>th</sup> (trigeminal) cranial N.

## \*\*\* MS OF FACIAL EXPRESSION :

### I. BUCCINATOR :

ORIGIN : ① upper fibers : from maxilla above upper 3 molar.

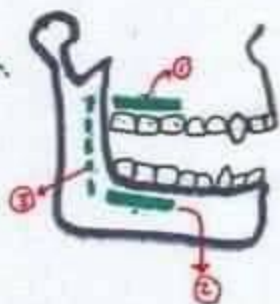
② lower " : " mandible below lower 3 "

③ Middle " : " pterygomandibular lig.

INSERTION :- upper fibers: to upper lip.

. Lower " : " lower "

. Middle " : decussate at angle of mouth where lower 1/2 goes to upper lip & vice-versa.



N/S :- → facial N (Buccal branch).

ACTION :- Compression of cheek → prevent food accumulation in the vestibule of mouth.



(9)

**II. Orbicularis oris**: (mouth sphincter):ORIGIN :- Extinsic fibers: derived from Buccinator ms.intrinsic fibers: from maxill & mandible.INSERTION :- encircles the oral orifice.N/S :- facial nerveACTION :- Compress lips together (sphincter).**III. Orbicularis oculi**:ORIGIN: ① orbital part :- from medial palpebral lig

② Palpebral part: " " " "

③ Lacrimal part: from lacrimal crest &amp; fossa.

INSERTION: ① orbital part returns to origin (circle) → [Med. pal. lig.]

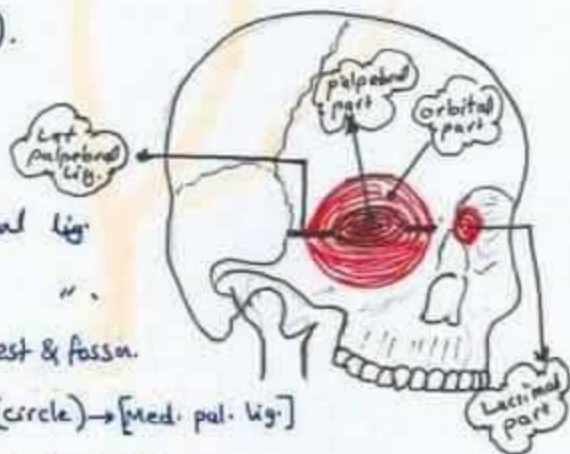
② Palpebral part: to Lateral palpebral lig.

③ Lacrimal part: to eye lids.

Nerve/s :- facial N. (by temporal & zygomatic branches).ACTION :- orbital part → closes the eye tightly (strongly).

- Palpebral part → " " " gently. (in blinking).

- Lacrimal part → aspirate tears from conjunctival sac to lacrimal sac.

**\*\* NERVES OF FACE**① Motor :- facial (7<sup>th</sup> cranial) Nerve → enters parotid gland and give 5 terminal branches (Temporal, Zygomatic, Buccal, Mandibular & Cervical)② Sensory: Trigeminal (5<sup>th</sup> cranial) N → gives 3 divisions

(Ophthalmic, maxillary &amp; mandibular divisions — see Page ②)

(10)

\* **ARTERIES OF FACE** :

= The main arteries of face are

① facial artery :-

br. of ext. carotid artery, in the face it gives:

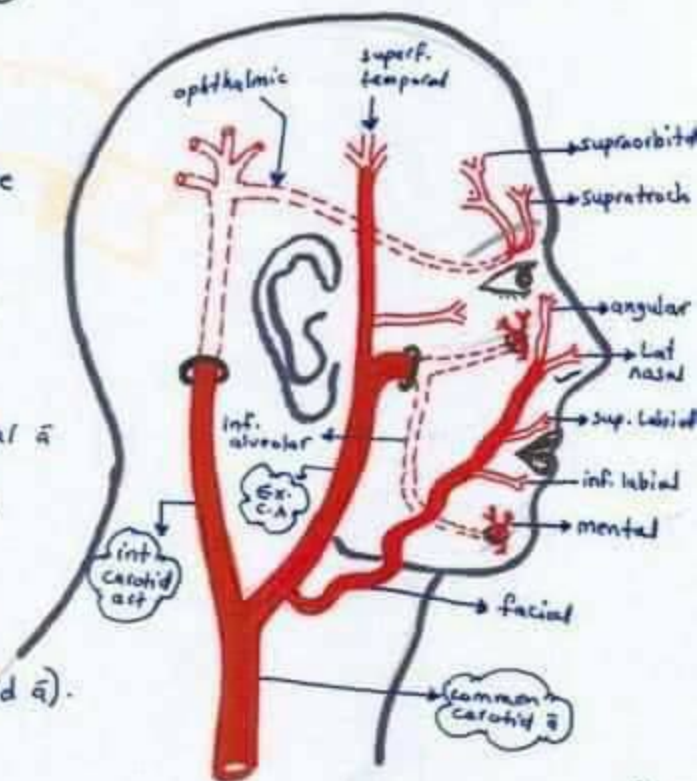
- a. inferior labial      c. Lateral nasal a  
b. superior labial    d. angular a.

② Transverse facial a :-

branch of superficial temporal artery (terminal br. of ext. carotid a).

③ Others :-

- i - supraorbital & supra orbital a → branches of ophthalmic a (br. of internal carotid a).
- ii - infraorbital a → br. of maxillary a (terminal br. of ext. carotid a) → emerge from infraorbital foramen.
- iii - Mental artery → termination of inferior alveolar a (br. of maxillary → ext. c.a).

\* **VENOUS DRAINAGE** : see page ④.

NB - The two terminal branches of ext. carotid a are maxillary & superficial temporal a [arise inside the parotid gland opposite the neck of the mandible].



(11)

# NECK

**I - SKIN** :- supplied by cutaneous branches of cervical plexus [page 3] and C<sub>3</sub>, C<sub>4</sub>, C<sub>5</sub> (post rami).

**II - SUP. FASCIA** :- contains the veins & lymphatics [see page 4, 5, 6] . also contains the platysma muscle

**Platysma ms** lies in superficial fascia.

Origin :- Deep fascia over pectoralis major & deltoid.

insertion :- base of mandible & angle of mouth.

action :- depression of " " " " " "

N/S → facial N. (cervical br).



**III - DEEP FASCIA** the deep fascia of the neck is differentiated into 4 layers

- ① **Prevertebral layer** → envelope the pre-vertebral muscles. attached to lig. nuchae. post (covers ms at the floor of post Δ of neck)
- ② **Pretracheal layer** . (forms false capsule of thyroid gland) < above to liquid & thyroid cartilage below with fibrous pericardium
- ③ **Investing layer** :- It splits to enclose the trapezius & sternomastoid muscles ant attached posteriorly to ligamentum nuchae and ascend to attach superiorly to base of mandible (between angle of mandible & styloid process it thickens to form stylomandibular lig.)

