



NEET-PG

PART-A

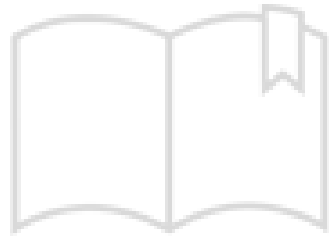
VOLUME-I
ANATOMY



ANATOMY

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Toppernotes
Unleash the topper in you

Upper limb :

- Pectoral region .

- Pectoralis major :

Origin : Medial $\frac{2}{3}$ rd of the clavicular manubrium and body of sternum .

2nd - 6th costal cartilages

Ext. oblique aponeurosis .

Insertion :

Lat. lip of the bicipital groove .

Action s:

Adduction

Flexion

Medial rotatⁿ @ shoulder joint .

Blood supply :

- br. of axillary artery .
- ① Sup. thoracic artery
 - ② Lat. thoracic artery .
 - ③ Thoraco acromial artery .
 - ④ Perforating branches of int. thoracic artery .
 - ⑤ Ant. intercostal artery .

Nerve supply: Medial and lateral pectoral nerves
[Composite / hybrid muscles].

Lesser tubercle → supscapularis, medial rotatⁿ of shoulder joint.

Greater tubercle → Supraspinatus, Abductⁿ 0-15°.

Infraspinatus → Teres minor — lat. rotation.

Forgotten muscle of shoulder joint: subscapularis.

Intracapsular muscles:

- ① Long head of biceps
- ② Popliteus.

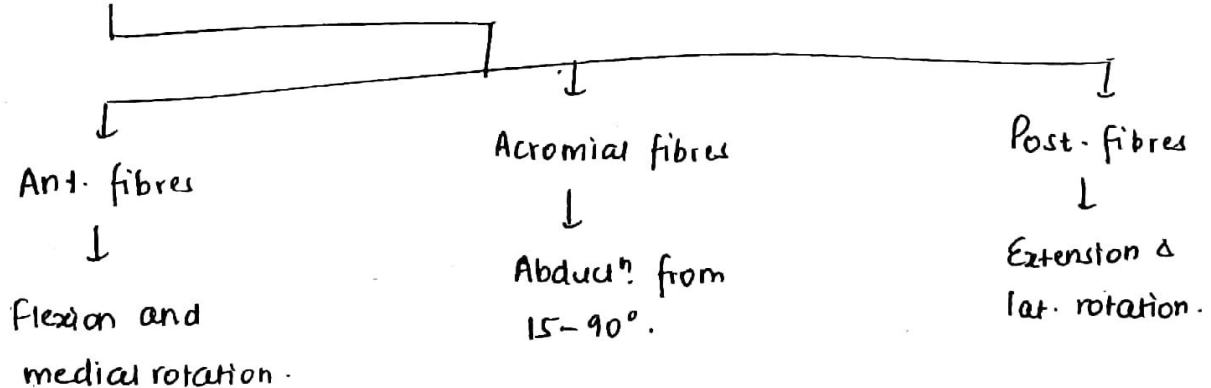
Lat. lip of bicipital groove — Pectoralis major.

Medial lip — Teres major.

Inter bicipital groove —

- ① Latissimus dorsi
- ② Long head of biceps brachii is synovial sheath of shoulder joint.
- ③ Asc. branch of ant. circumflex humeral artery.

Deltoid:



— The axillary nerve supplies;

- (a) Deltoid
- (b) Teres minor
- (c) Gives a cutaneous branch — upper lat. cutaneous nerve of arm (Regimen badge sign)

Serratus anterior :

Origin : lat. aspect of upper 8 ribs as digitations .

Insertion : Coastal aspect of the scapula on its medial border.

Nerve supply : Long thoracic nerve .

Actions :

① Protractⁿ of scapula .

② Lateral rotation of scapula (during overhead abduction



Serratus ant. + trapezius .

* Thoracodorsal Nerve = Nerve to latissimus dorsi .

* Boxer^u muscle is Serratus anterior .

* Winging of scapula is due to paralysis of :

① Serratus ant → on attempting movement .

② Trapezius → @ rest .

Abductⁿ @ shoulder joint :

0-15° - Initiatⁿ of abduction → supraspinatus .

15-90° - Acromial fibres of deltoid .

90° & above - overhead abduction → -serratus anterior,

- trapezius (lower fibres)

- lat. rotation of scapula .

* Retraction of scapula done by:

- (a) Rhomboidus minor (b) Rhomboidus major
- (c) Middle fibres of trapezius .

* Structure lying in the deltopectoral groove : Cephalic vein .

* " " " " iliopsoas groove : Femoral nerve .

* " " " " tracheo esophageal groove : Recurrent laryngeal nerve .

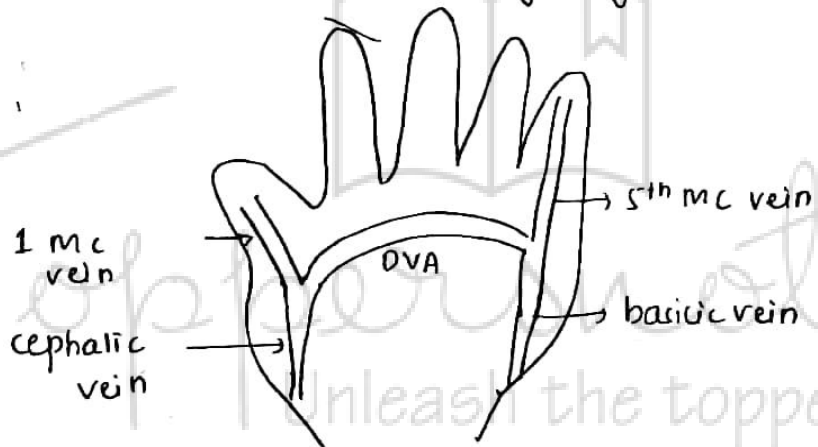


Fig : Dorsum of the hand .

Cephalic vein :

- (1) Formed by joining of lat. end of dorsal venous arch & the 1st meta carpal vein .
- (2) Lies in the roof of anatomical snuff box .
- (3) Lies in deltopectoral groove .
- (4) Pierces the clavipectoral fascia .
- (5) opens into axillary vein .

Clavipectoral fascia :

- Begins from the clavicle
- Inserted into the axilla.
- Encloses two muscles ;
 - (a) Subclavius
 - (b) Pectoralis minor.
- Part of the fascia b/w subclavius and pec. minor extending from costal cartilage to coracoid process is the Costocoracoid ligament.
- Part of the fascia pectoralis minor and the axilla is the suspensory ligament of axilla.

Structures piercing the fascia :

- ① Cephalic vein .
- ② Thoracoacromian artery .
- ③ Lat. pectoral nerve .
- ④ Lymphatics from the breast .

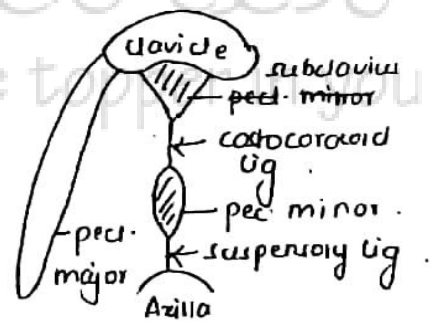


Fig. Structures deep to pec. major .

The axilla:

- Ant. wall: Formed by;

- ① P. major
- ② P. minor
- ③ subclavius.

- Post. wall: Formed by;

- ① Subscapularis
- ② T. major
- ③ latissimus Dorsi

↳ causes extension, adduction and medial rotation.
@ the shoulder joint.

- latissimus dorsi aka 'climbers muscle'.

- Medial wall: Formed by ribs and serratus anterior.

- Lat. wall: Formed by;

- (a) Humerus
- (b) Coracobrachialis.

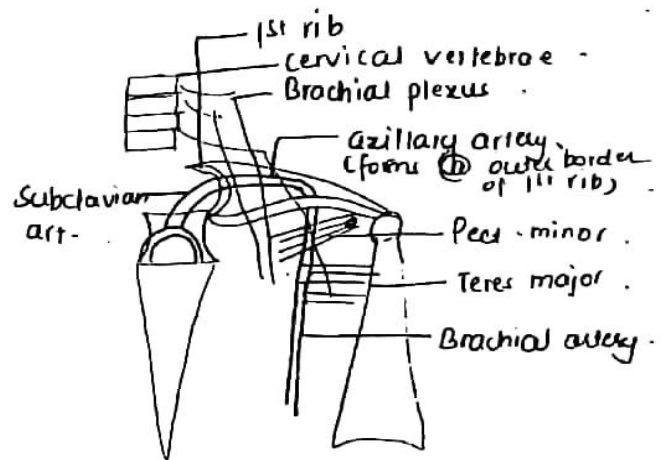
- Apex / cervicoaxillary canal:

Boundaries:

Ant: clavicle.

Post: sup. border of scapula.

Medial: outer border of 1st rib.



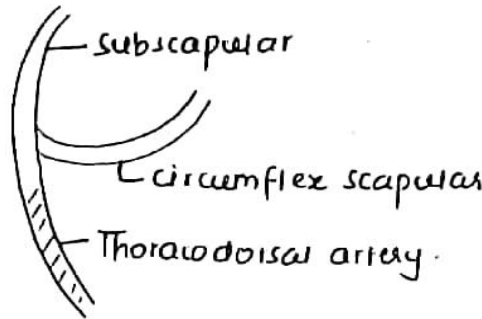
- Axillary artery divided into 3 parts by; pec. minor.
- Subclavian artery - divided into 3 parts by scalene anterior.
- Maxillary artery " " " " " lat. pterygoid.
- Lingual artery divided by hyoglossus.

Axillary artery :

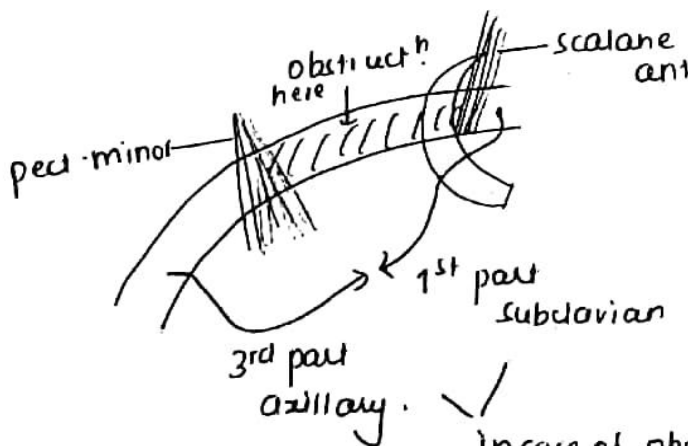
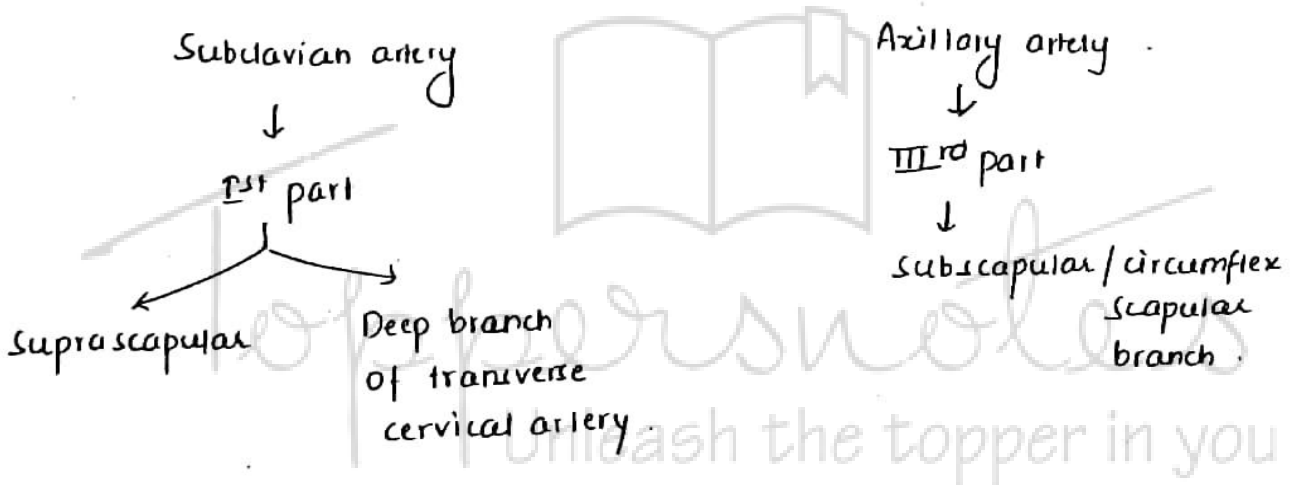
- continuatⁿ of subclavian artery at the outer border of the 1st rib.
- continues as brachial artery below lower border of T. major.
- divided into 3 parts by p. minor.
- Branches ;
 - 1st part : 1 branch (Sup. thoracic artery)
 - 2nd part : 2 branches
 - Lateral thoracic (chief artery supplying the breast).
 - Thoracoacromial artery.
 - 3rd part :
 - Ant. circumflex humeral.
(content of bicipital groove).
 - Post. circumflex humeral.
 - Subscapular artery.

It gives a branch circumflex scapular
 away & passes
 through upper triangular space and
^{take part} expands in anastomosis of dorsal
 aspect of scapula.

- continuation of subscapular artery is k/a Thoraco dorsal artery .

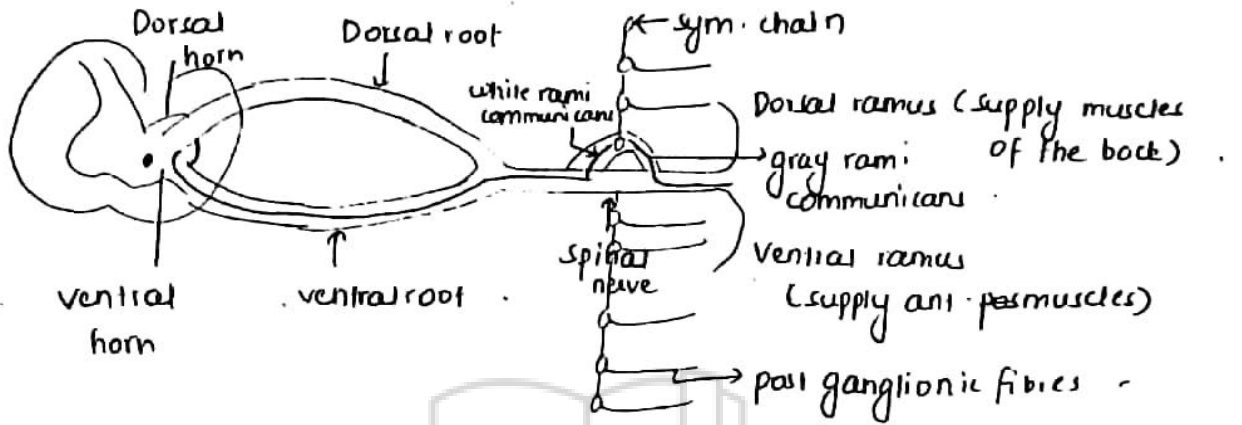


- "Anastomosis on the dorsal aspect of scapula" :



In case of obstructⁿ, blood flows directly from 1st part subclavian to 3rd part of axillary .

→ A plexus is formed by the ventral ramus of the corresponding spinal nerve.



→ However, the thoracic spinal nerves do not form a plexus; these form Intercostal nerves.

→ White rami communicans : fnt in T₁-L₂.

→ Grey rami communicans : fnt in all the spinal nerves.

C ₄			
C ₅		I	Post. (C ₅ -T ₁)
C ₆	U. Trunk (C ₅ , C ₆)	V	
C ₇	M. Trunk (C ₇)		Lat. (C ₅ , C ₆ , C ₇)
C ₈	L. Trunk (C ₈ , T ₁)		Medial (C ₈ , T ₁)
T ₁			
T ₂			

Bi. of lat. cord. : C₅, C₆, C₇.

- ① lat. pectoral nerve.
- ② lat. root of median nerve
- ③ Musculocutaneous nerve.

Branches of medial cord : C₈, T₁ .

- ① Medial pectoral nerve
- ② Medial root of median nerve .
- ③ Medial cutaneous nerve of arm .
- ④ Medial cutaneous nerve of forearm .
- ⑤ Ulnar nerve → C₇, C₈, T₁ .

↳ receives C₇ fibres from lateral cord .

→ P. major : supplied by all the 5 root values of brachial plexus .
C₅, C₆, C₇, C₈, T₁ .

→ Nerves containing all the 5 roots are :

- (a) Median nerve (b) Radial nerve .

Branches of post. cord :

- | | | |
|---------------------------------|---|---|
| C ₅ , C ₆ | [| <ol style="list-style-type: none"> ① Upper subscapular nerve → subscapularis . ② Lower subscapular nerve → subscapularis and T. major . ③ Axillary nerve → Deltoid
T. minor . ④ Nerve to latissimus dorsi → Thoracodorsal nerve . ⑤ Radial nerve → C₅ - T₁ . |
|---------------------------------|---|---|

→ If C₄ takes part in brachial plexus formatⁿ : It is pre fixed .

→ If T₂ " " " " " " " " " " : " " post fixed .

Branches from roots :

- ① $C_5 \rightarrow$ Nerve to rhomboids — Dorsal scapular nerve .
- ② $C_5, C_6, C_7 \rightarrow$ Long thoracic nerve / Nerve to S. anterior .
- ③ $C_5 \rightarrow$ Accessory phrenic nerve — joins the main phrenic nerve
(C_5) [C_3, C_4, C_5]
through nerve to subclavius .

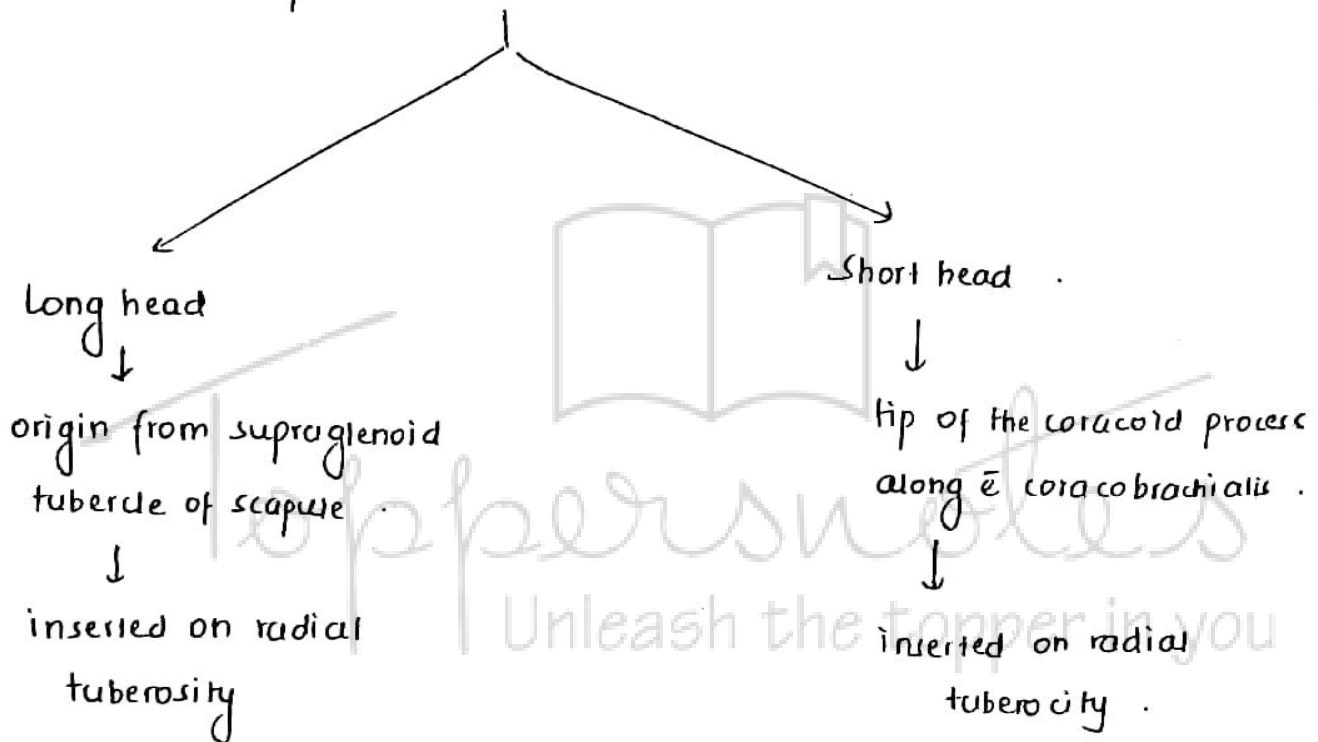
Branches from upper trunk :

- ① Nerve to subclavius ^{\rightarrow single best answer} .
- ② Supra scapular nerve : may arise from C_5, C_6 roots before they join to form upper trunk .

- Roots, trunks, divisions \rightarrow supra clavicular part of the brachial plexus .
 \downarrow
they lie in post. triangle of the neck b/w
scalenus ant. & scalenus medius .
- The 'phrenic nerves' lie on the scalenus anterior.
- The cords and nerves are infra clavicular .
- They lie in the axilla around axillary artery enclosed in axillary sheath .
 - \hookrightarrow axillary artery
 - \hookrightarrow brachial plexus .
- Cords are 3 in 1st & the 2nd parts & the nerves in the 3rd part .
- Cords are placed acc to the names in the 2nd part .
- Median nerves formed on 3rd part of axillary artery on the lat. aspect .

Front of the arm :

① Biceps brachii :



Nerve supply : Musculocutaneous nerve (C₅, C₆).

Action : - supination @ radio ulnar joint .
- flexion @ elbow joint .
- flexion @ shoulder joint .

② Brachialis :

Origin : lower half of the shaft of humerus below insertion of coracobrachialis .

Insertion : on the ulnar tuberosity .

Nerve supply : dual nerve supply .

Action: Chief flexor of the elbow joint.

③ Coracobrachialis:

- arises from tip of coracoid process along \bar{e} short head of biceps.
- inserted on medial aspect of middle half of shaft of humerus.

Nerve supply: Musculocutaneous nerve [C5, C6, C7].

Action: weak flexor of the shoulder joint.

Musculocutaneous nerve:

- ① Branch of lateral cord.
- ② Present on lateral aspect of 3rd part of axillary artery.
- ③ Pierces coracobrachialis.
- ④ Lies b/w biceps and brachialis.
- ⑤ continues as 'lateral cutaneous nerve of forearm'.

Erb's paralysis: Policeman tip sign.

- ① Inj. to upper trunk
- ② Nerve roots involved \rightarrow C5, C6.
- ③ Nerves involved \rightarrow (a) Axillary
(b) Musculocutaneous
(c) Suprascapular
(d) Nerve to subclavius.

Muscles paralysed

Position of upper limb .

A. Axillary Nerve — Deltoid

Arm is adducted .

② T. minor

- Arm is medially rotated .

- Regiment badge sign .

B. Musculo cutaneous nerve .

① Biceps

- Forearm is pronated .

② Brachialis

- Forearm is extended .

- Loss of sensations on lat. aspect of forearm .

C. Supra scapular nerve .

① Supra spinatus

- Arm is adducted .

② Infra spinatus

- Arm is medially rotated .

D. Nerve to subclavius .

① Subclavius .

Klumpke's paralysis :

- inj. to lower trunk .

- C₈, T₁ are the nerve roots involved .

- Nerves involved : median and ulnar nerve .

- Muscles paralysed : intrinsic muscles of hand (T₁)

* ulnar flexor of the wrist and fingers (C₈) .

- Presents :
 (a) Claw hand (b) Horner's syndrome

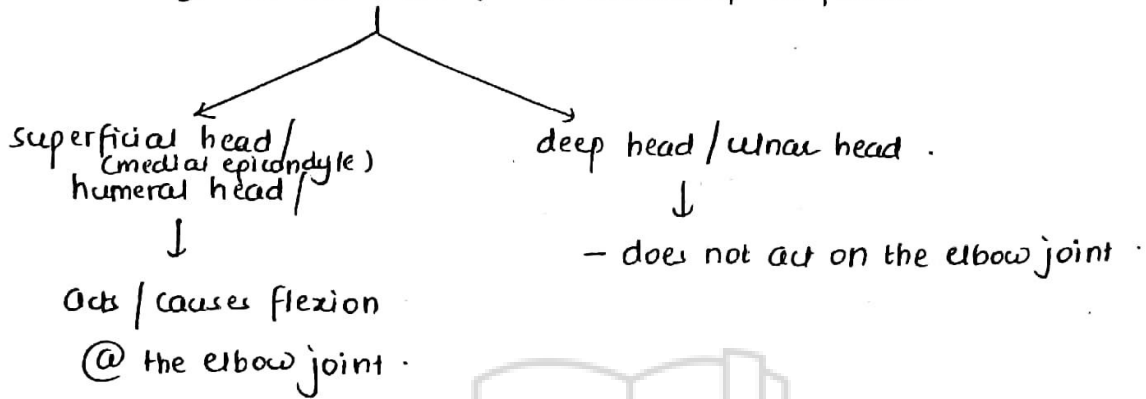
(C₈)

- cause : hyperabductor injury .

Front of the forearm :

① Superficial muscles :

① Pronator teres : most lateral of the flexors .



- The median nerve passes b/w the 2 heads of pronator teres
(Pronator teres syn.)
↳ compressⁿ of median nerve .

- The ulnar artery passes deep to the deep head .

- Pronator teres : inserted on lat. aspect of middle half of shaft of radius .

② Flexor carpi radialis :

- causes flexion @ the wrist joint .

- abduction at the wrist along \bar{e} extensor carpi radialis longus & brevis .

③ Palmaris longus :

④ Flexor digitorum superficialis :

- 4 tendons for 4 fingers .

- each tendon divides into 2 slips

- inserted on either sides of middle phalanx .

- acts on all joints (elbows, wrist, middle phalanx, prox. phalanx)
except distal interphalangeal joint .

⑨ Flexor carpi ulnaris :

- flexion at elbow and wrist joint
- adduct! @ the wrist joint (along ē ext. carpi ulnaris)

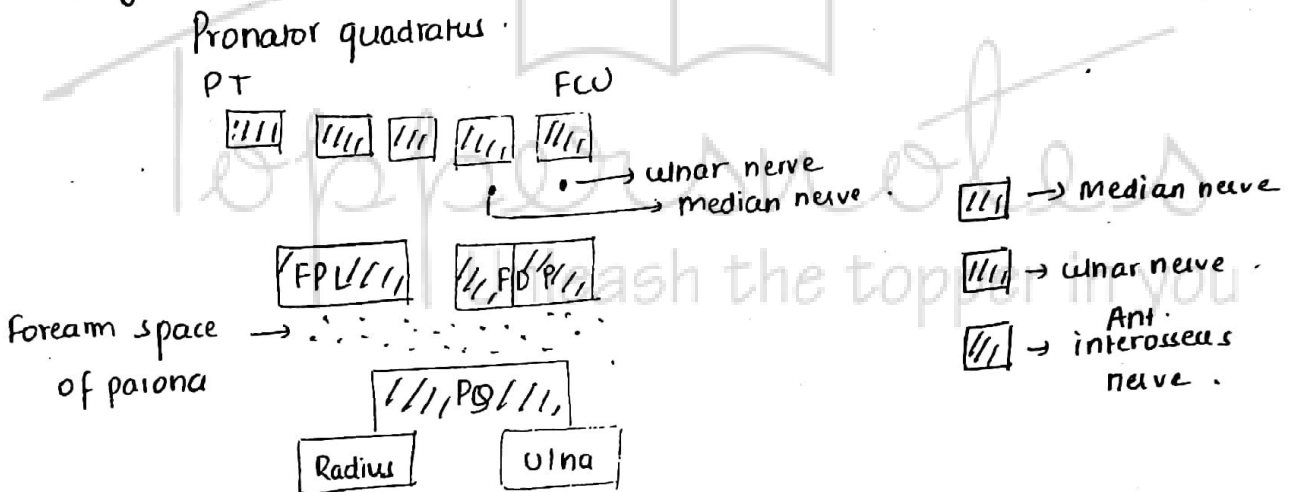
Intermediate group :

① Flexor pollicis longus

② Flexor digitorum profundus

↓
 inserted on base of distal phalanx of the fingers

Deep group :

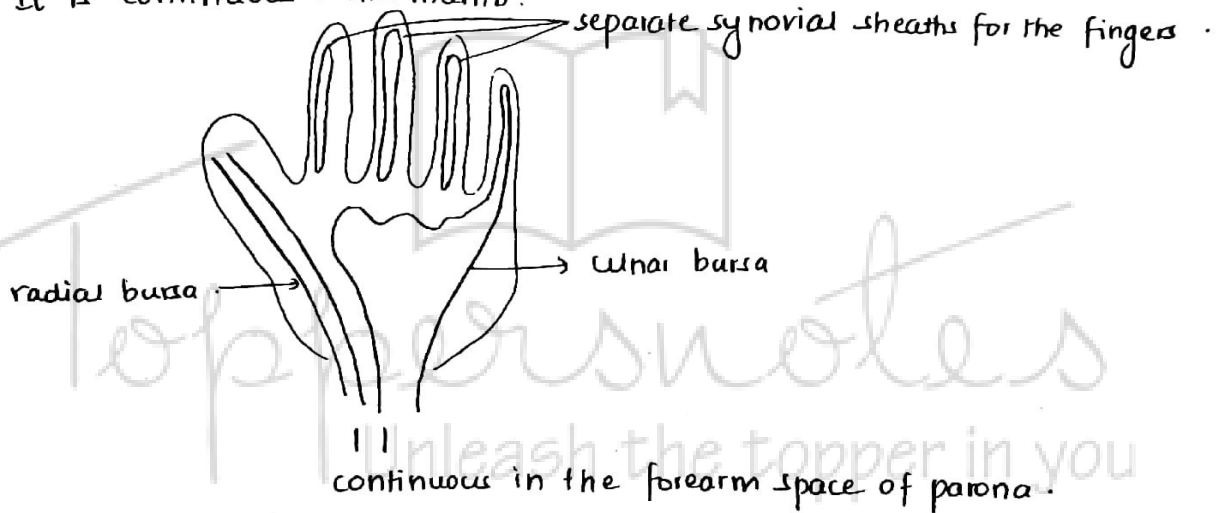


- In the wrist, median nerve lies lat. to PL & medial to FCR
- " " " , ulnar " " medial to ulnar artery & lat. to FCR
- " " " , radial artery lies b/w brachioradialis & FCR

Flexor retinaculum:
& carpal tunnel.

- ① Ulnar bursa encloses tendons of Flexor Digitorum Superficialis & Flexor Digitorum Profundus.
- ② It is continuous w little finger.
- ③ Radial bursa encloses tendon of flexor pollicis longus.

- It is continuous w the thumb.



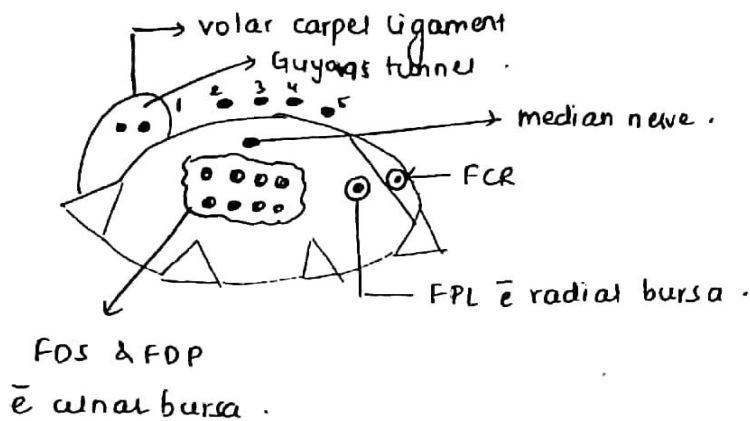
Importance: Blood to be drawn from the 3 fingers.

Not from thumb or little finger
 if infected if infected
 radial bursa ulnar bursa

spreads to the forearm space of pronator.

Cubital tunnel syndrome:

Compression of ulnar nerve b/w the two heads of
flexor carpi ulnaris.

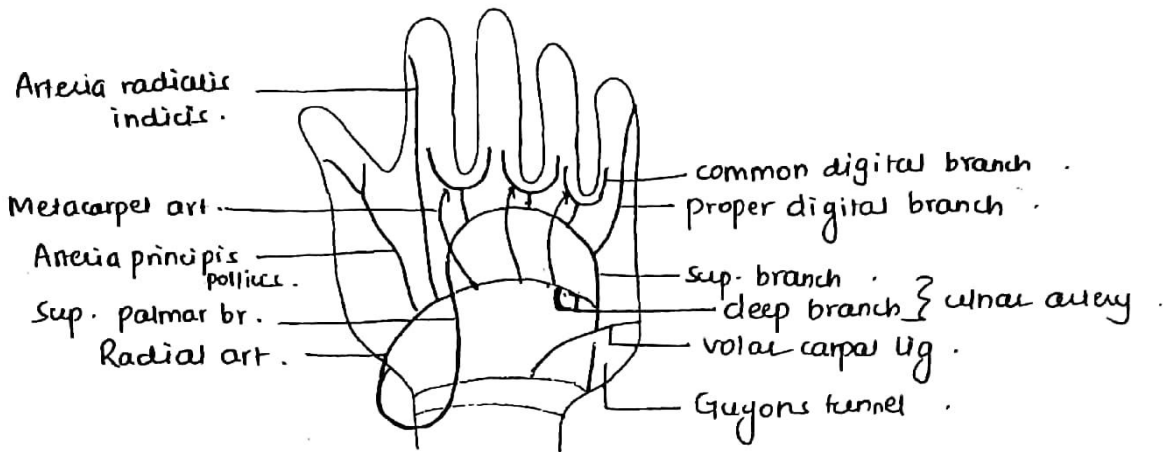


Structures passing above the flexor retinaculum :

- ① Ulnar nerves and vessels — passes below Volar Carpal Ligament through Guyon's tunnel.
- ② Palmar cutaneous branch of ulnar nerve — supplies the skin over hypothenar eminence.
- ③ Palmaris longus.
- ④ Palmar cutaneous br. of median nerve — supplies the skin over thenar eminence.
- ⑤ Superficial palmar br. of radial artery.

Superficial Palmar Arch :

- Formed by superficial branch of ulnar artery, completed by sup. palmar branch of radial artery.
- Lies above the flexor tendons. (FDS & FDP).
- Lies at the level of distal palmar crease / a line drawn medially from outstretched thumb.



Branches :

- 3 common digital branches
- 1 proper digital branch
- Supplies medial 3½ fingers.

Deep palmar arch :

- formed by radial artery
- completed by deep branch of ulnar artery.
- lies deep to the flexor tendons.
- lies 1cm proximal to superficial palmar arch.

Branches :

- ① Arteria princeps pollicis.
- ② Arteria radialis indicis.
- ③ Metacarpel arteries & anastomose & common digital digital branches of sup. palmar arch.