

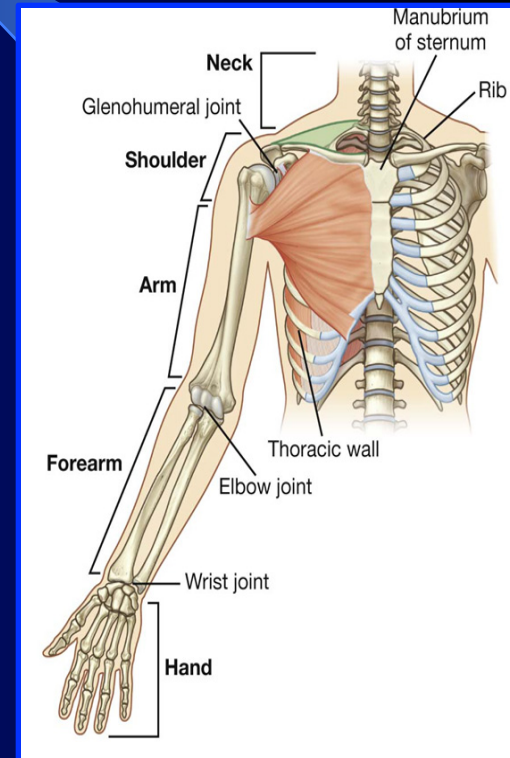
“The upper limb clinical anatomy”

Dr.h.șt. m., profesor Viorel Nacu

Upper limb Regions (EXTREMITAS SUPERIOR)

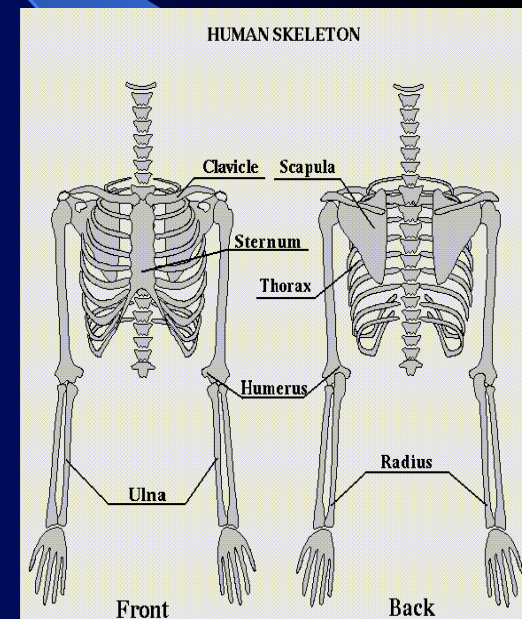
Regions:

- Scapular region (*regio scapularis*)
- Deltoid region (*regio deltoidea*)
- Infraclavicular region (*regio infraclavicularis*)
- Axillary region (*regio axillaris*)
- Anterior and posterior regions of the arm (*regio brachii s. humeri anterior et posterior*)
- Anterior and posterior elbow regions (*regio cubiti anterior et posterior*)
- Anterior and posterior regions of the forearm (*regio antebrachii anterior et posterior*)
- Wrist region (*regio carpi*)
- Palmar and dorsal regions of the hand (*regio palmae et dorsi manus*)



The upper limb bones

- Claviculă
- Scapula
- Humerus
- Radius
- Ulna
- Carpal region (scafoideus, semilunatum; trquetrum, pisiformis; trapezoid, trapezoideum, capitatum, hamatum).
- Metacarpian (five bones from I-V)
- Falanges (14 for each limb, on tumb 2 falanges the other 3)



● Upper limb Landmarks

- The **clavicle** is subcutaneous and can be palpated throughout its length. Its **sternal end** projects little above the manubrium. Between the 2 sternal ends of the 2 clavicle lies the **jugular notch** (suprasternal notch).
- The acromial end of the clavicle can be palpated medial to the lateral border of the **acromion**, of the scapula. particularly when the shoulder is alternately raised and depressed. The large vessels and nerves to the upper limb pass posterior to the convexity of the clavicle.
- The **coracoid process** of scapula can be felt deeply below the lateral one third of the clavicle in the
- Deltopectoral GROOVE
- The Deltopectoral triangle is the slightly depressed area just inferior to the lateral third of clavicle.
- Inferior to the acromion, the **deltoid muscle** forms the rounded contour of the shoulder
- The shaft of the humerus may be felt in different areas through the muscles surrounding it.
- The medial and lateral epicondyles of the humerus are palpated on the medial & lateral sides of the elbow region.

- When the elbow joint is extended, the tip of the olecranon process, the medial and the lateral epicondyles lie in a straight **line**.
- *When the elbow is flexed*, the olecranon forms the apex of an equilateral **triangle**, of which the epicondyles form the angles at its base (fractures of any of these structures will disturb this arrangement).

The **head of radius** can be palpated and felt to rotate in the depression on the extended elbow, just distal to the lateral epicondyle of the humerus with supination and pronation.

The **radial styloid process** can be palpated on the lateral side of the wrist in the anatomical snuff box. It is approximately 1 cm distal to that of the ulna.

The **metacarpals**, although they are overlapped by the long extensor tendons of the fingers, they can be palpated on the dorsum of the hand.

The **heads of the metacarpals** form the knuckles of the hand.

Notice that the 3rd metacarpal head is the most prominent.

- The dorsal aspects of the phalanges can be easily palpated.
- The knuckles of the fingers are formed by the **heads of** the proximal and middle **phalanges**.

Veins of the upper limb

Deep veins: accompany the arteries of the same region and bear similar names

Superficial veins. Cephalic vein

– Arises from the lateral side of the dorsal venous rete of hand, continues up the arm in the deltopectoral groove and then to the infraclavicular fossa, where drain into axillary vein.

Basilic vein Arises from the medial side of the dorsal of hand, ascends on the ulnar side of forearm and then in the medial bicipital brachii where it pierces the deep fascia and drein to brachial or axillary vein.

Median cubital vein links cephalic vein and basilic vein in the cubital fossa.

The lymphatic drainage of upper limb

Lymphatic vessels

- Superficial—follow the superficial veins, drain into supratrochlear and axillary lymph nodes
- Deep—accompany main vessels, end in axillary lymph nodes

lymph nodes

- Cubital lymph node: lies above medial epicondyle of humerus
- Axillary lymph node—arranged in five groups

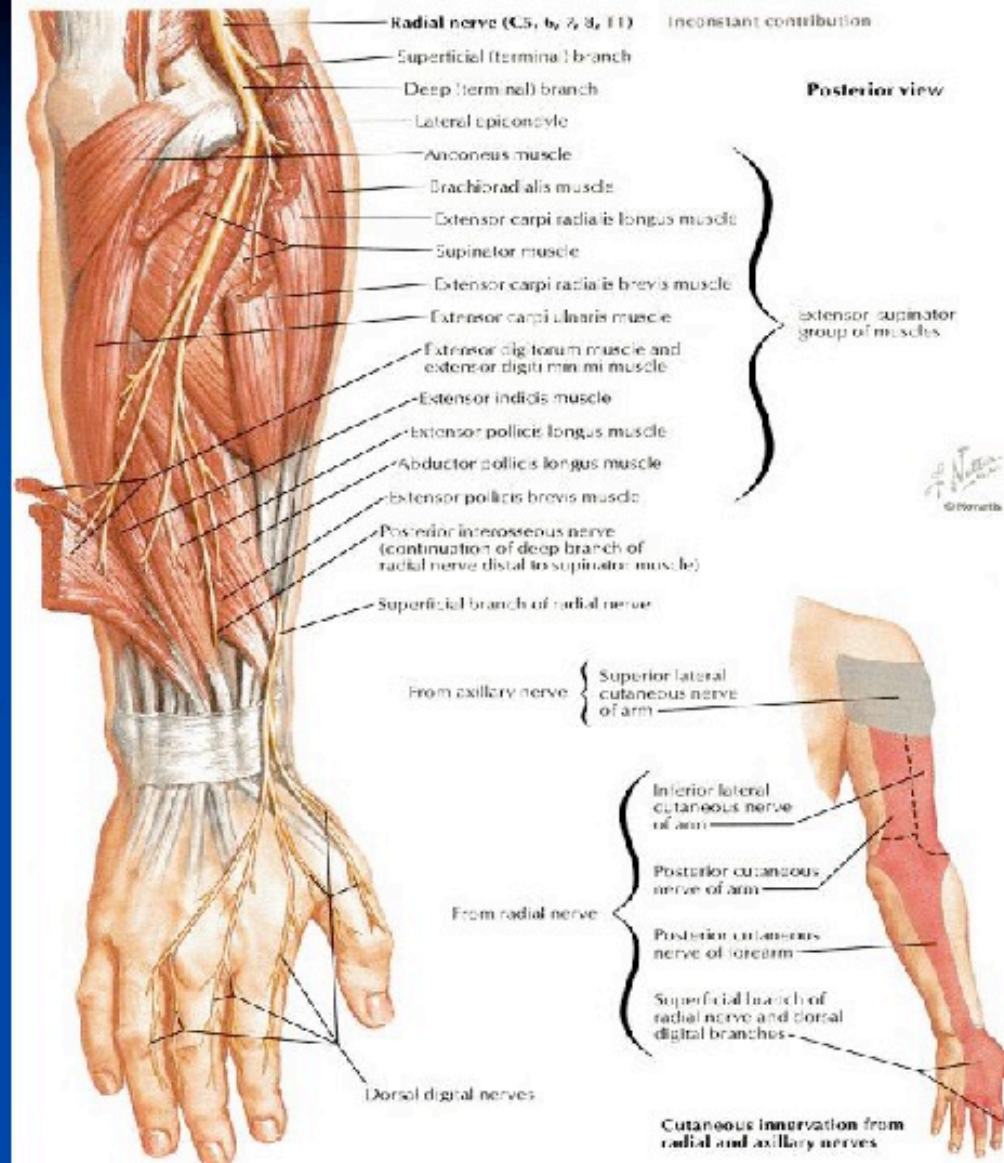
radial n. (C5-T1)

triceps brachii m.,
anconeus m.

(brachialis m.)

BR, ECRL, ECRB,
ED, EDM,
supinator, ECU,
EI, AbdPL, EPL,
EPB

Netter's Atlas of Human Anatomy 2nd ed

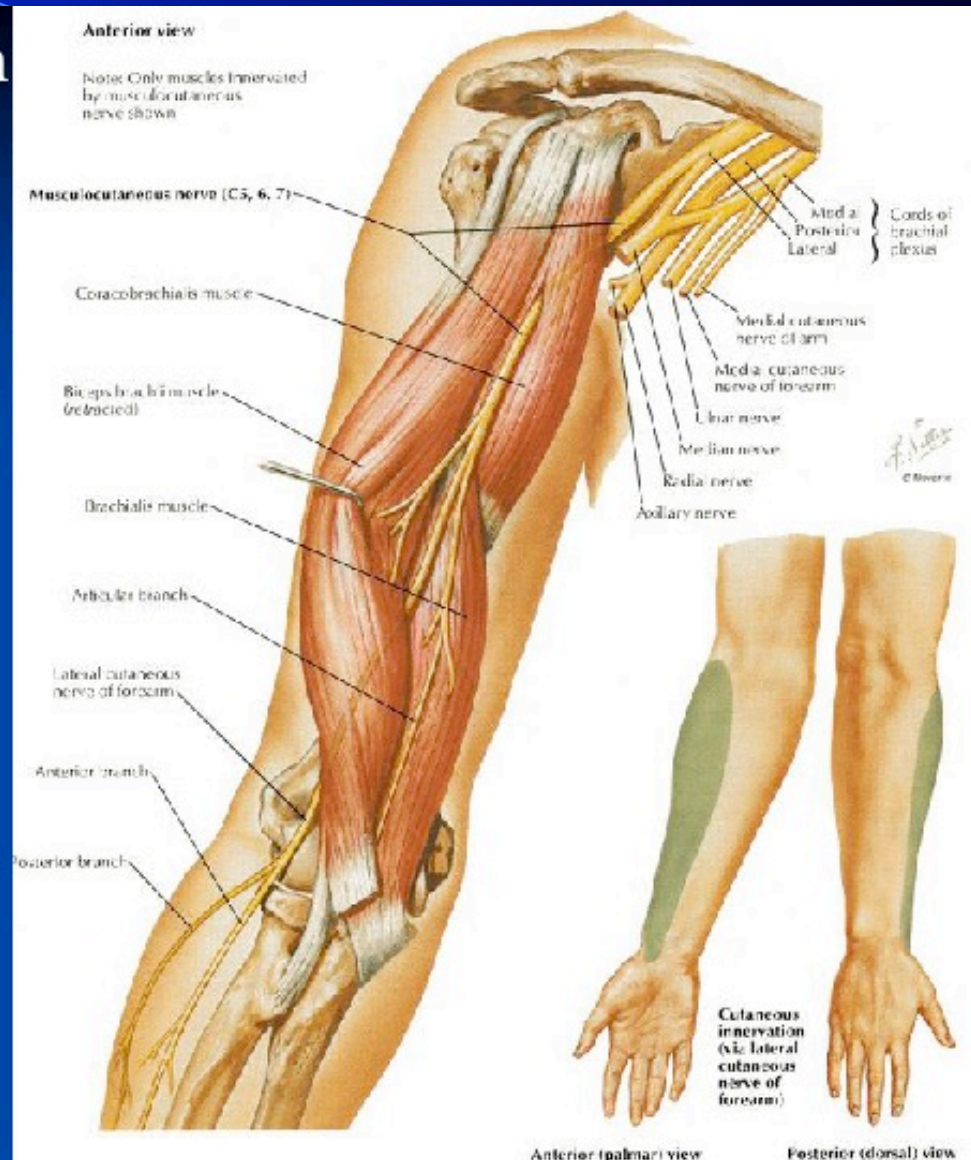


musculocutaneous n (C5-C7)

biceps brachii m.

brachialis m.

coracobrachialis m.



axillary n. (C5-C6)

deltoid m.

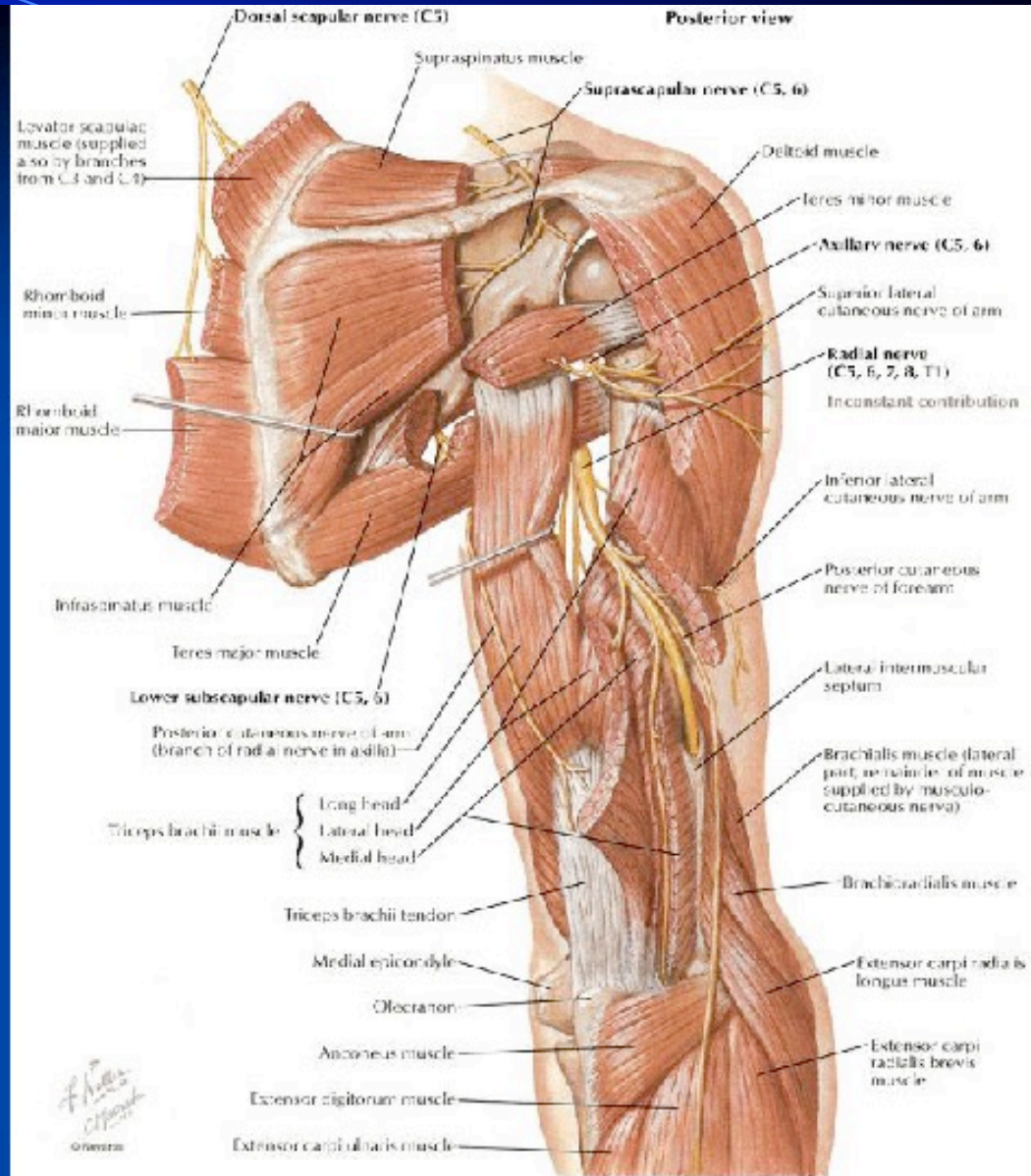
teres minor m.

radial n. (C5-T1)

triceps brachii m.

anconeus m.

(brachialis m.)

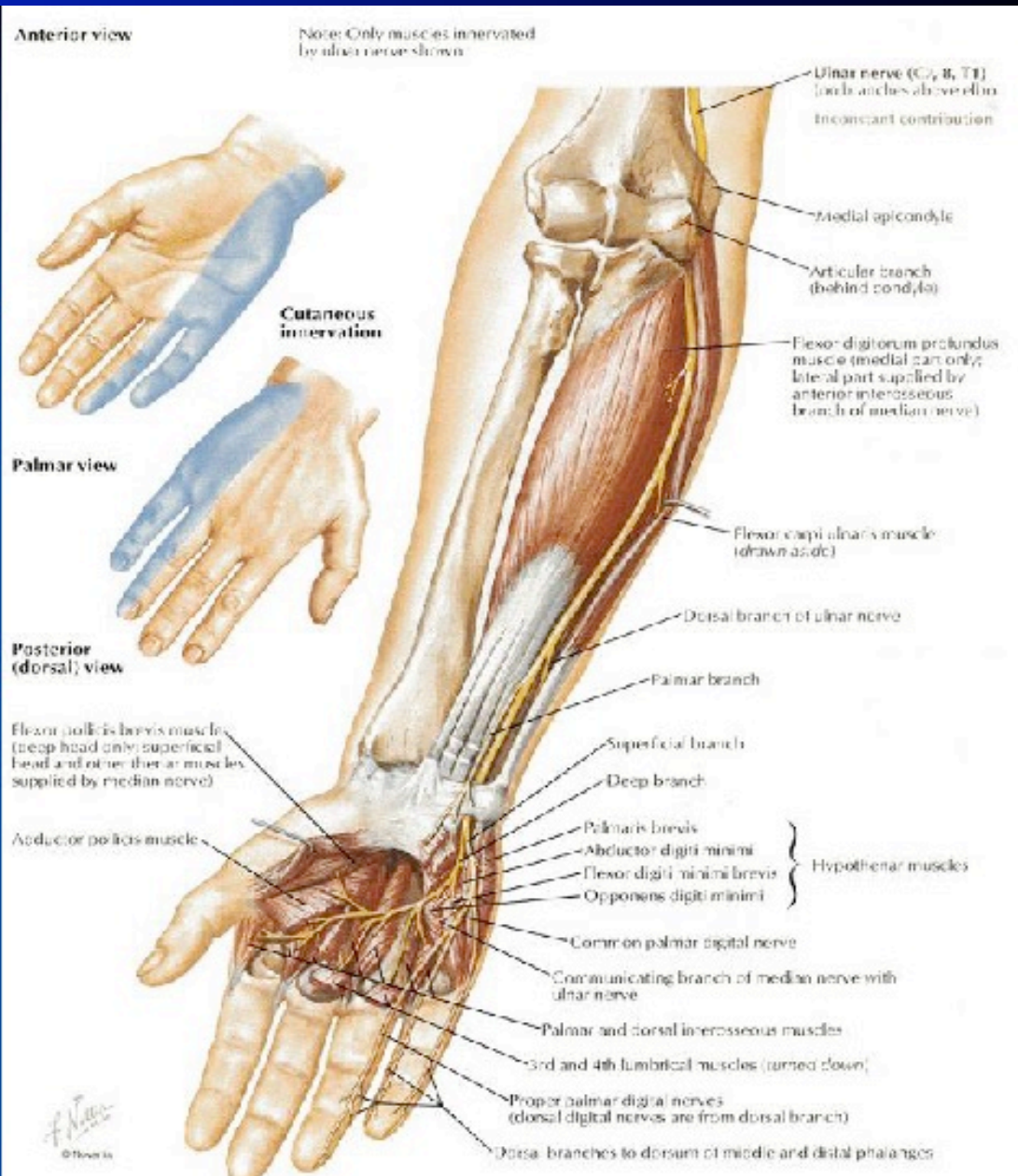


ulnar n. (C7-T1)

flex carpi ulnaris m.

medial 1/2 FDP

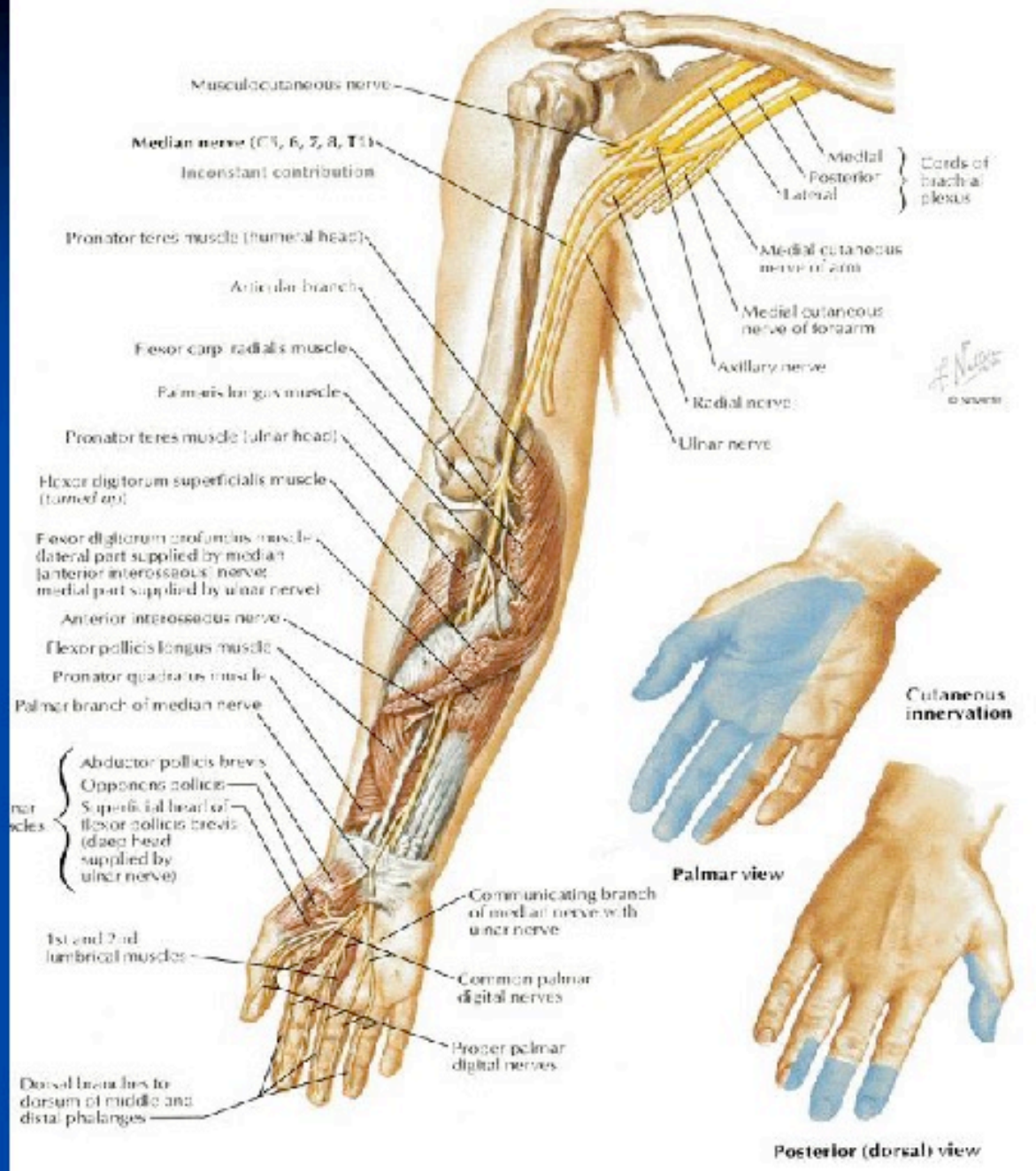
+ 14 intrinsic hand muscles



median n. (C5-T1)

PT, FCR, PL,
FDS, lat 1/2 FDP,
FPL, PQ

+ 5 intrinsic hand
muscles



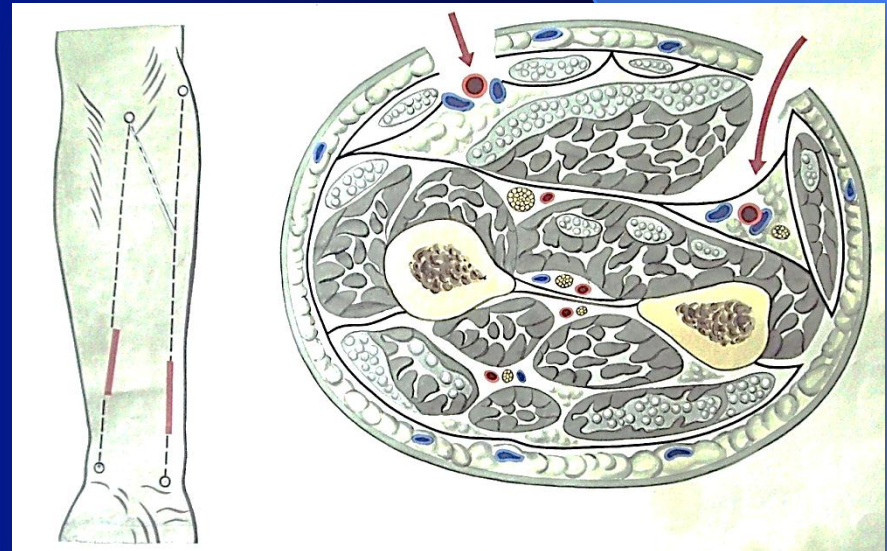
The projection line of the ulnar neuro-vascular bundle (Pirogov): From medial epicondyle of the humerus to pisiform bone.

incizia: lungimea de 5-6 cm pe linia de proiecție

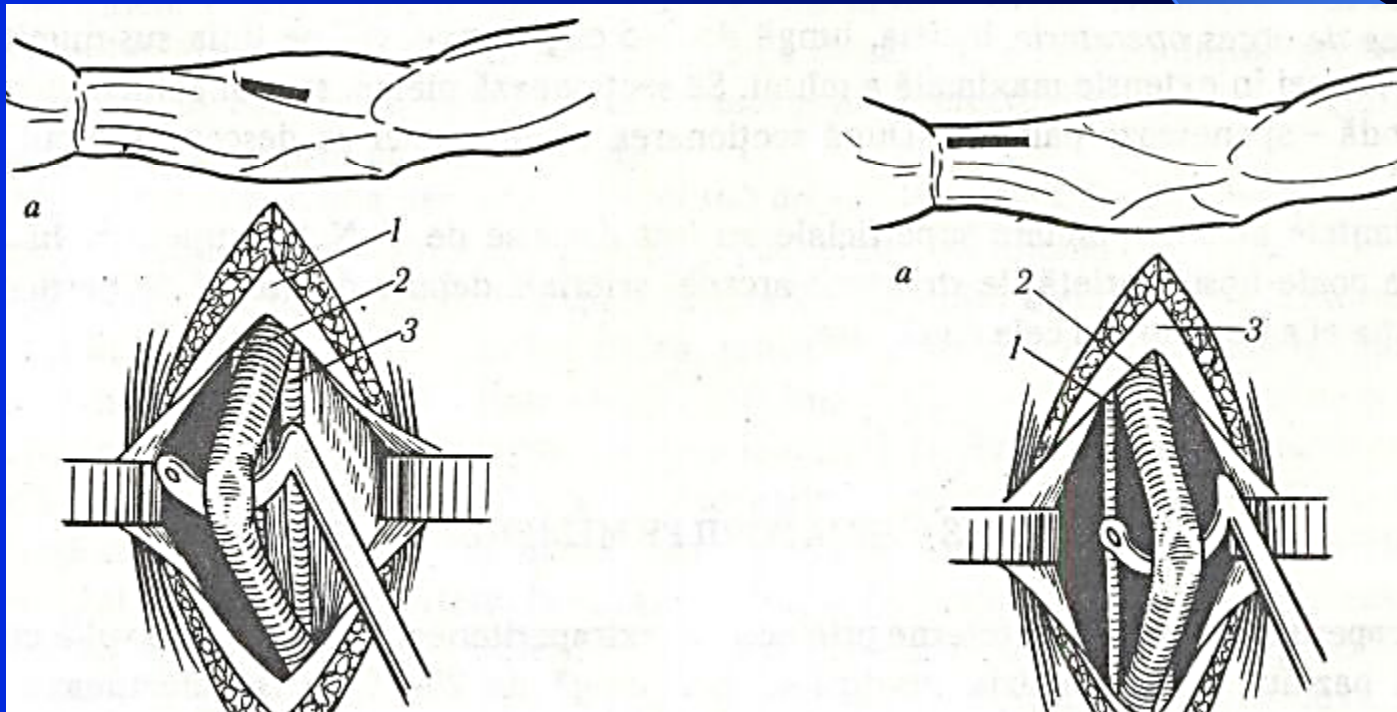
- Pe straturi: pielea, str. Celular subcutanat, fascia superficială, proprie a m. flexor al degetelor, astfel se pătrunde în spațiul dintre acesta și m. flexor ulnar.

Secționarea foței profunde a fasciei proprii, se îndepărtează lateral m. flexor superficial al degetelor și se denudează artera ulnară, mai medial nervul ulnar.

- Circulația colaterală: pe baza arterei radiale



- **The projection line of the radial neuro-vascular bundle: From the middle point of cubital fossa to the styloid process of the radial bone. radial epicondile of the humerus to pisiform bone or pouls point on the radial artery.**
- Incizia 5-7 cm pe linia de proiectie în reg. Medie sau distală de antebraț.
- Pe straturi: pielea, str. celular subcutanat, fascia superficială(ce conține nervi cutanați superficiali și vena subcutanatăp laterală), fascia proprie cu denudarea sulcusului radial, artera radială(2) și ramura superficială a nervului radial(2) situat lateral de aceasta



The shoulder

- Infraclavicular region
- Deltoidian region
- Scapular region
- Axillary region

Axillary Folds

The **anterior axillary folds** is formed by the lower margin of the pectoralis major, and can be palpated by the finger.

This can be made by asking the patient to press his or her hand against the ipsilateral hip.

The posterior axillary fold is formed by the tendon of latissimus dorsi and teres major muscle

Axilla

The axilla should be examined with the forearm supported and the pectoral muscles relaxed.

When the arm by the side, the inferior part of the head of the humerus can be easily palpated through the floor of the axilla.

The **pulsations** of the **axillary artery** can be felt high up in the axilla, and around the artery the cords of the brachial plexus.

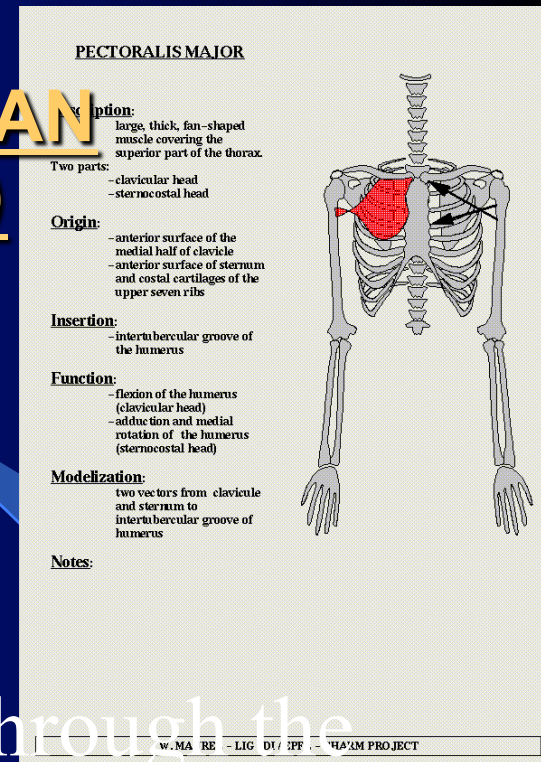
The medial wall of the axilla is formed by the upper ribs covered by the serratus anterior.

The lateral wall is formed by the coracobrachialis and biceps brachii and the bicipital groove.

TOPOGRAPHY OF THE SUBCLAVIAN REGION (*regio infraclavicularis*)

Borders

- Superior: Clavicle
- Interior: Horizontal line drawn through the 3rd rib (in men); upper margin of the mammary gland (in women)
- Medial: Lateral margin of the sternum
- Lateral :Anterior margin of the deltoid muscle



Layers.

1. Skin:

1. It is thin, easily movable, (contains sebaceous glands, it is innervated by the supraclavicular nerve (branch of the cervical plexus)).

2. Subcutaneous tissue: It is well-developed, especially in women, it contains the cutaneous nerves; It contains the thoracoacromial and thoracoepigastric veins which drains to cephalic and axillary veins.

3. Superficial fascia: it is thin and firm. Attached to the inferior margin of the clavicle and upper margin of the mammary gland, which forms the Cooper's suspensory ligaments of the mammary gland.

PECTORALIS MINOR

Description:
lies in the anterior wall of the axilla, and is covered by the pectoralis major

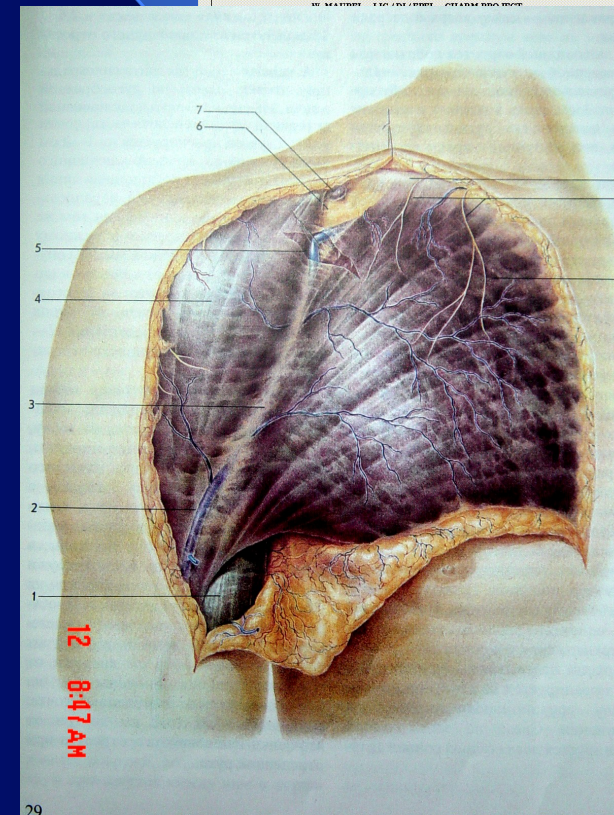
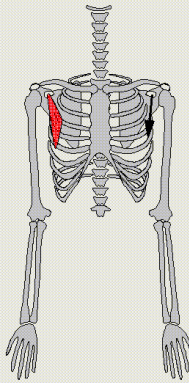
Origin:
the 3rd to 5th ribs near their costal cartilages

Insertion:
medial border and superior surface of coracoid process of scapula

Function:
- inferior drawing of scapula
- anterior drawing of scapula

Modelization:
one vector from the coracoid process to the 4th rib near costal cartilage

Notes:



4. Deep fascia (pectoral fascia): covers the pectoralis major muscle; divides the pectoralis major muscle into 3 parts: - Clavicular

- Sternocostal
- Abdominal

5. Superficial subpectoral space of fat tissue

6. Deep proper fascia (clavipectoral fascia): It is attached to the lower margin of the clavicle, coracoid process and 1st ri; It covers the subclavius and pectoralis minor muscles; Lower part of proper fascia forms the suspensory ligaments of the axilla.

6. Deep subpectoral space of fat tissue.

- **Lymphatic drainage** is directed to infraclavicular lymphnodes along the axillary vein, after to the subclavicular lymphatic trunk .

SUBCLAVIUS

Description:
small, rounded muscle lying inferior to the clavicle.

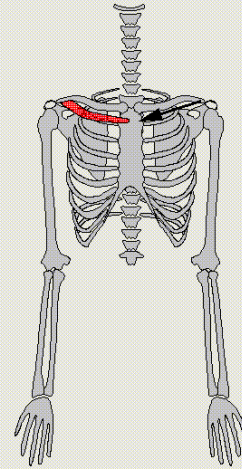
Origin:
junction of first rib and its costal cartilage

Insertion:
inferior surface of middle third of clavicle

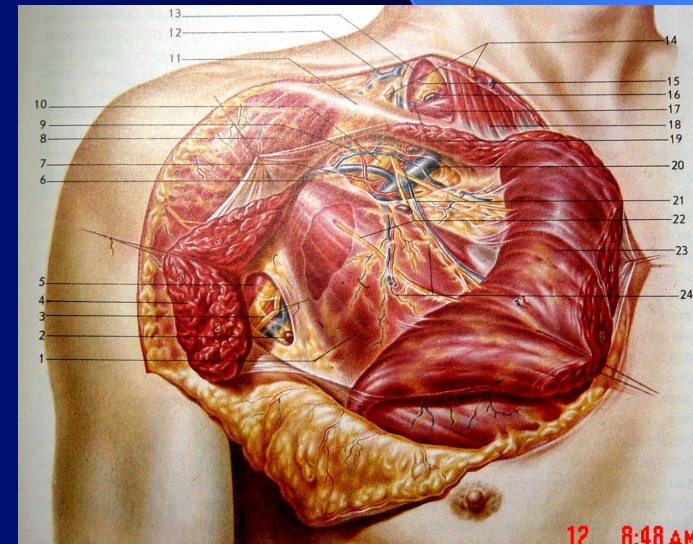
Function:
- medial drawing of clavicle
- anterior drawing of shoulder

Modelization:
one vector between sternum and clavicle near its distal end

Notes:



W. MAUREL - LIG / DI / EPFL - CHARM PROJECT



12 8:48 AM

TOPOGRAPHY OF THE AXILLARY REGION (REGIO AXILLARIS)

Borders: Anterior: Lower margin of the pectoralis major muscle

Posterior: Lower margin of the latissimus dorsi muscle

Medial: Line connecting the margin of the pectoralis major and latissimus dorsi muscles along the sagittal section of the lateral surface of the thorax at the level of the 3rd rib

Lateral: Line connecting the margin of the pectoralis major and latissimus dorsi muscles on the medial surface of the arm

Layers:

1. Skin: It is thin and easily movable; It contains lots of sweat glands, sebaceous glands and hair; (innervated by intercostobrachial nerve).

HIDRADENITIS SUPPURATIVA

– inflammation of the sweat glands.

2. Subcutaneous tissue: It contains the superficial axillary lymph nodes; It is innervated by the intercostal nerve of the medial cutaneous nerve of the arm.

3. Superficial fascia

4. Deep fascia (axillary fascia): It contains nerve and vessels; connected to suspensory ligament of the axilla.

Axillary cavity:

BORDERS

- Anterior: Pectoralis major et minor muscles and clavipectoral fascia;
- Posterior: Subscapularis, latissimus dorsi, teres minor and teres major muscles;
- Medial: Thoracic wall. serratus anterior muscle and 1st until 4th intercostal muscles;
- Lateral: Surgical neck of the humerus. short head of the biceps brachii muscle and coracobrachialis muscle.

Contents:

- Axillary artery is divided into 3 parts and gives branches according to:
 - i. Clavipectoral triangle: Thoracoacromial artery, *arteria thoracica suprema*, lateral and medial pectoral nerves.
 - ii. Pectoral triangle: Lateral thoracic artery and long thoracic nerve
 - iii. Subpectoral triangle: Subscapular artery, anterior and posterior circumflex humeral arteries
- Axillary vein
- Brachial plexus: Lateral cord; Posterior cord; Medial cord
- **Axillary lymph nodes (5 groups)**.
 - i. Lateral axillary lymph nodes
 - ii. Central axillary lymph nodes
 - iii. Medial (pectoral) axillary lymph nodes
 - iv. Posterior (subscapular) axillary lymph nodes
 - v. Apical (infraclavicular) axillary lymph nodes
- Fatty tissue

Quadrangular space: four-sided space that accommodates the **axillary nerve and posterior circumflex humeral artery**. The borders are:

Superior = teres minor and the capsule of the glenohumeral joint

Inferior = superior border of teres major

Lateral = surgical neck of the humerus

Medial = long head of the triceps brachii

Triangular space: transmits the **circumflex scapular vessels**. The borders are:

Superior border = teres minor muscle

Inferior border = teres major muscle

Lateral border = long head of the triceps

Communicating the axillary cavity:

Through the tip of the axilla to the omoclavicular triangle and the interscalenic space. (axillary artery and vein pass, branches of the brachial plexus).

Through the Velpeau quadrilateral (humero-bi-rondo-tricipital) – to the deltoid region. Contains a. circumflexa humery and n. axilaris .

Through the trilateral hole (the bi-rondo-tricipital trine) with the scapular region. It contains a. circumflexa scapulae.

To the posterior region of the arm. Long to n. radialis and deep brachial artery.

To the infraclavicular region along short nerves of brachial plexus.

SCAPULAR ARTERIAL NETWORK

- A) Anastomosis around the scapula:

Anastomosis occurs in 3 fossae:

1. Suprascapular fossa
2. Infrascapular fossa
3. Subscapular fossa

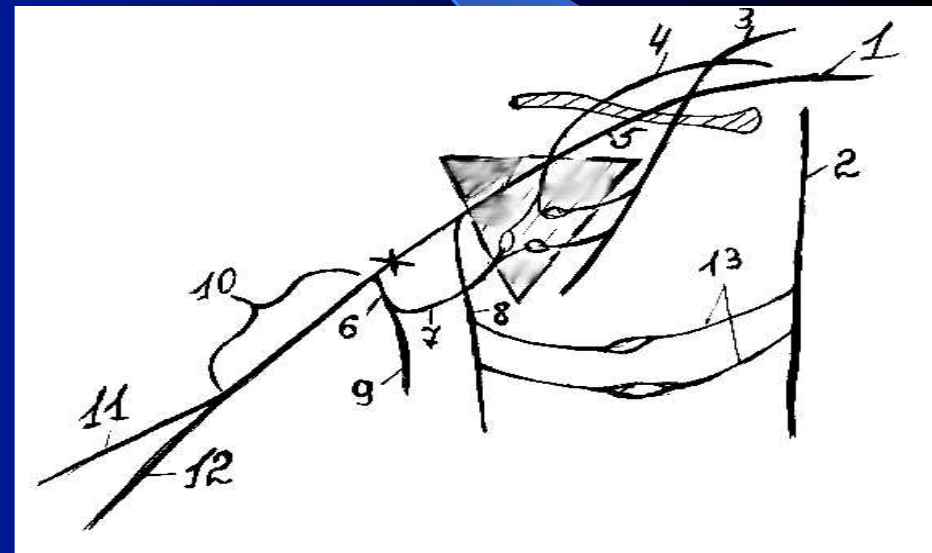
It is formed by:

i. Suprascapular artery (branch of the thyrocervical artery of the subclavian artery)

ii. Dorsal scapular artery / deep branch of the transverse cervical artery (branch of the

thyrocervical artery of the subclavian artery)

iii. Circumflex scapular artery (branch of the subscapular artery of the axillary artery)



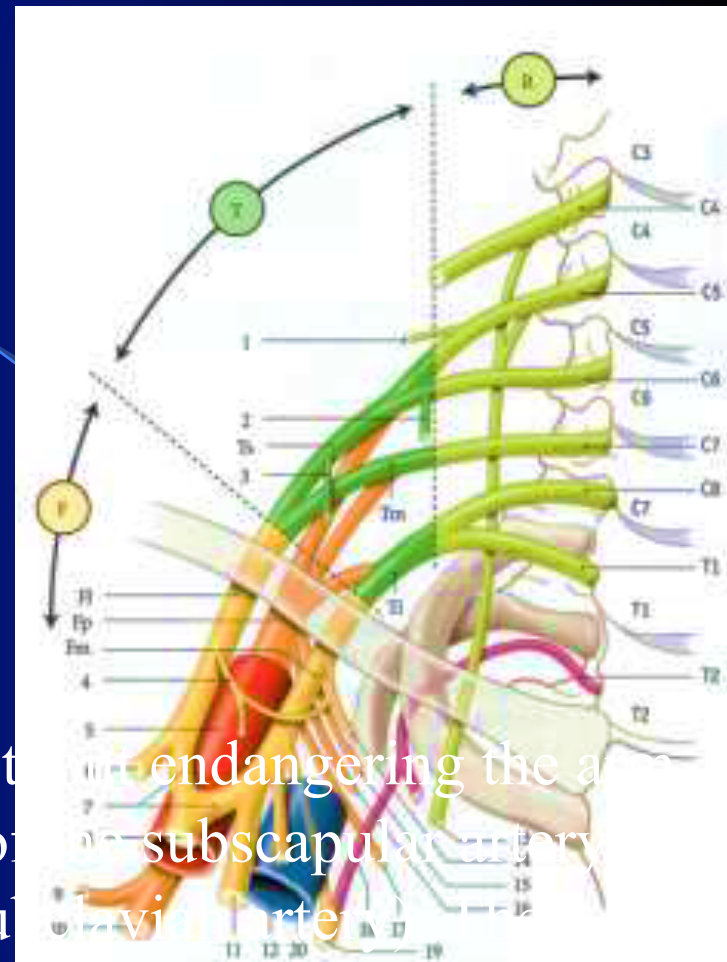
Line indicated the curs of axillary artery

1. Between anterior and medial third of the axilla. (Lisfranc),
2. As extension of the deltopectoral groove (Langenberk),
3. Anterior border of axillary hairline.

Clinical significance

The axillary artery may be safely clamped without endangering the arm but only in a location proximal to the origin of the subscapular artery (and distal to the thyrocervical trunk of the subclavian artery). The anastomotic network surrounding the scapula provides an alternate path for collateral circulation to the arm from arteries including the dorsal scapular artery and suprascapular artery.

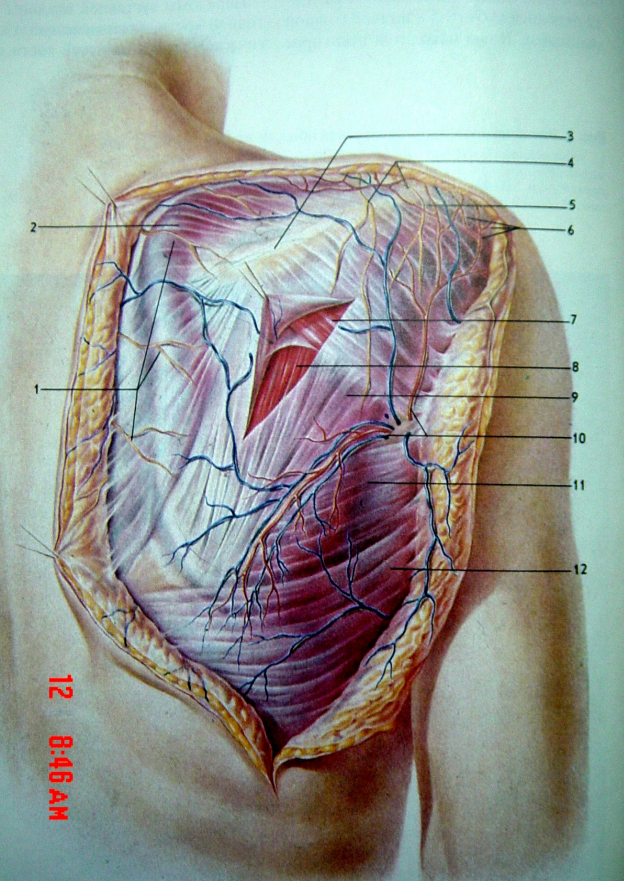
The right axillary artery is often used as an arterial cannulation site in cardiac surgery, particularly for repair of aortic dissection and replacement of the ascending aorta and aortic arch.



Scapular region

Limits:

- superior - line connecting acromioclavicular joint and spinous processes of the VII cervical vertebra.
- inferior - horizontal line passing through the inferior angle of the scapula
- medial - medial edge of the scapula
- lateral - the back edge of m. deltoid and posterior axillary line.



Stratigraphy:

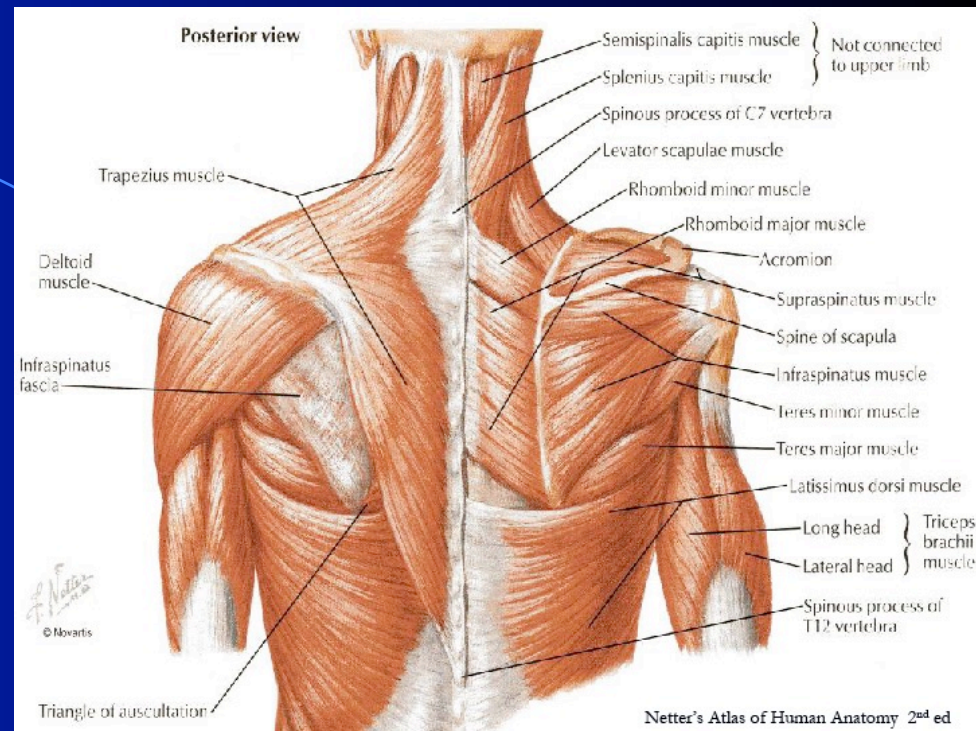
1. skin - thick, less mobile
2. subcutaneous fat tissue - is fixed between the skin and deep fascia by superficial fascia fibers.
3. superficial fascia - compact
4. Deep fascia - form pockets for muscles<
5. superficial muscles: mm. trapezius and m. latissimus dorsi

6. deep fascia – take part in the formation of fibrous sheaths of the mm. supraspinatus and infraspinatus and sheaths for *mm. teres major and minor*.

In the supraspinatus compartment, is neurovascular package (nerve, suprascapular artery and veins).

In the infraspinatus compartment - neurovascular package is consisting of a. circumflex scapulae r. descendants of. transversae colli, their comitants veins.

7. deep muscles:
supraspinatus, infraspinatus, teres major, teres minor



8. Scapula
9. m. Subscapularis
10. subscapular fascia,
forming sheath for
subscapular muscle
11. m. Serratus anterior
12. Subscapularis space of fat
tissue
13. Ribs and external
intercostal muscles

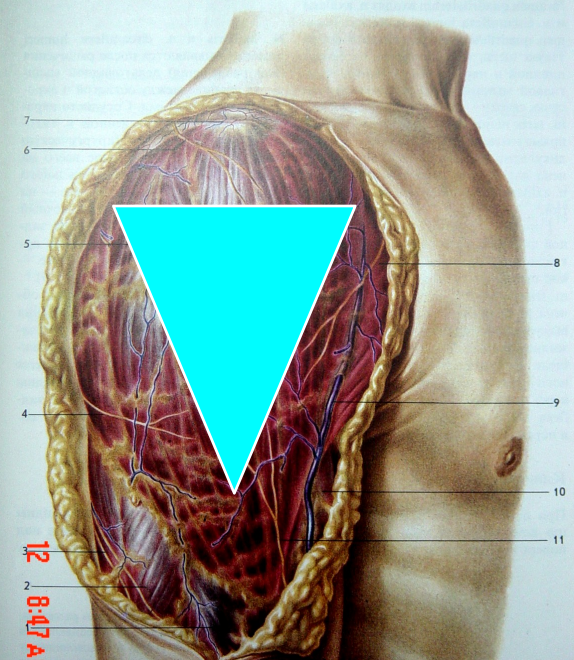
Deltoid region

Anteriorly - front edge of the deltoid muscle

Posteriorly - the rear edge of m. deltoid

Superior - the outer edge of the clavicle, acromion

Inferior - lower edges of the line joining mm. pectoralis major latissimus dorsi et.



Stratigraphy

- 1. skin, thick
- 2. subcutaneous fat layer; there may be branches n. cutaneus brachii- superior lateralis, n. axillaris
- 3. superficial fascia is attached to the clavicle, acromion and spina scapulae
- 4. deep fascia / deltoid, fixed to scapula, clavicle and acromion. Sheath formed for m. Deltoid, divide it into acromial portion, clavicular and spinal. Medial and inferior, it passes freely to pectoral fascia, respectively
- brachial.

5. *m. Deltoideus*

6. *subdeltoid space* - : *bursa subdeltoidea*, *bursa subacromialis*, -
support for *m. Deltoideus* movement.

Bursa subdeltoidiana is situated superior to the greater tuberosity of the humerus, and the *bursa subacromialis* (inconstant) usually communicates with the joint cavity.

Neurovascular bundle: *n. axillaris*, *a. circumflexa humeri posterioris* and *anterioris*

7. *Muscles attached to joint capsule*

DELTOIDEUS

Description:

Thick and powerful triangular muscle covering the shoulder joint

Three parts:

- anterior head
- lateral head
- posterior head

Origin:

- the lateral third of the clavicle (anterior head)
- the lateral margin of the acromion of the scapula (lateral head)
- the spine of the scapula (posterior head)

Insertion:

- deltoid tuberosity of the humerus

Function:

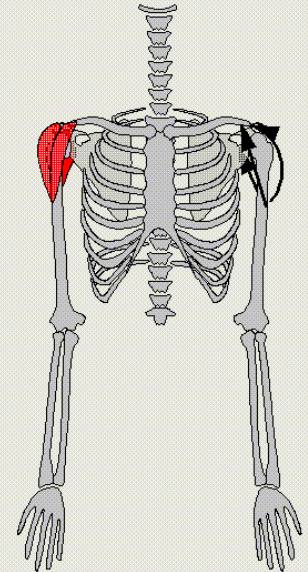
- flexion of the humerus (anterior head)
- abduction of the humerus (lateral head)
- extension of the humerus (posterior head)

Modelization:

three paths for the three heads:

- one curved path for the lateral head
- two vectors for the anterior and posterior heads

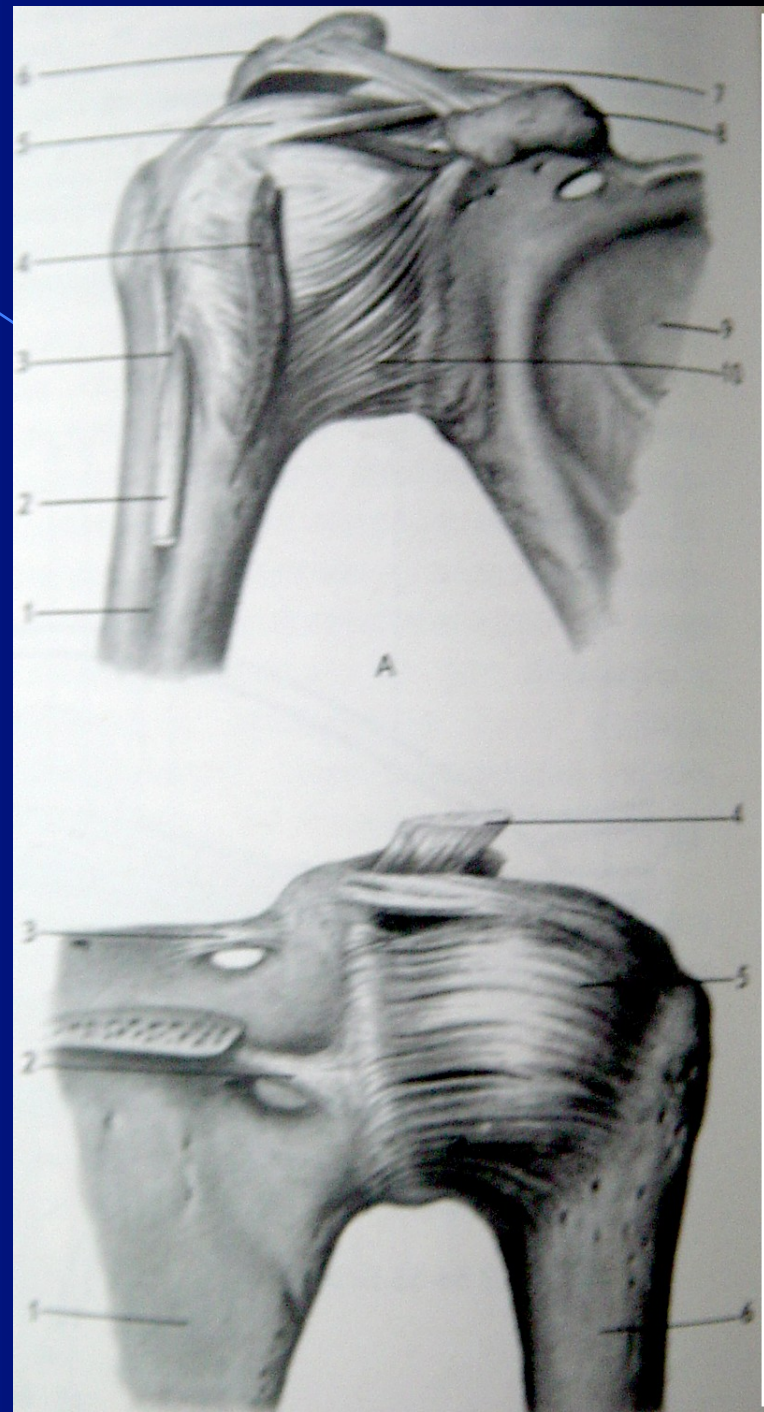
Notes:



SCAPULAR-HUMERAL JOINT

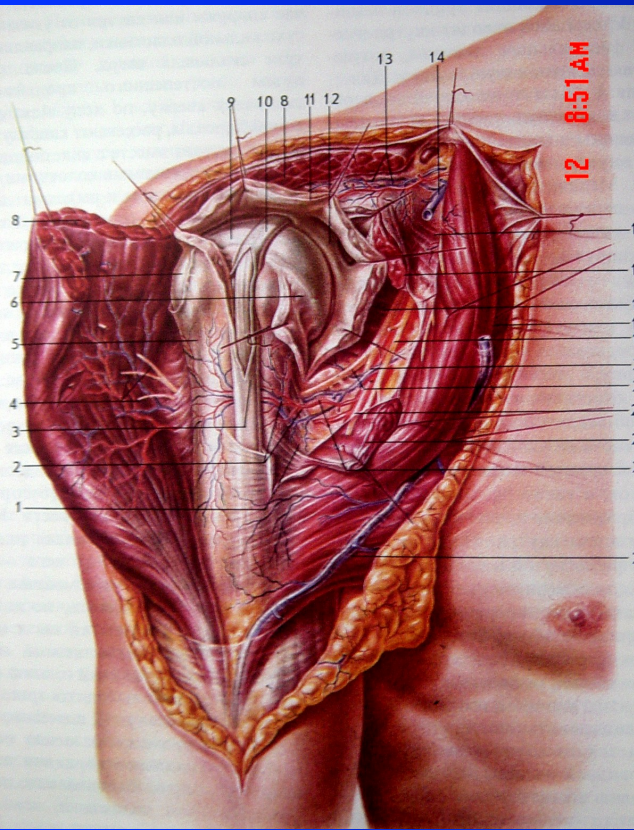
- Between the humeral head and glenoid cavity of the scapula.

Humeral head is 3 times higher than before the depression articular scapula, which is complemented by the glenoid labrum, to increase congruence between the two sides hinge



Joint capsule

It is inserted at the edge of articular cartilage in the the fossa glenoidale of the scapula and anatomical Neck of the humerus.



Puncture of shoulder joint

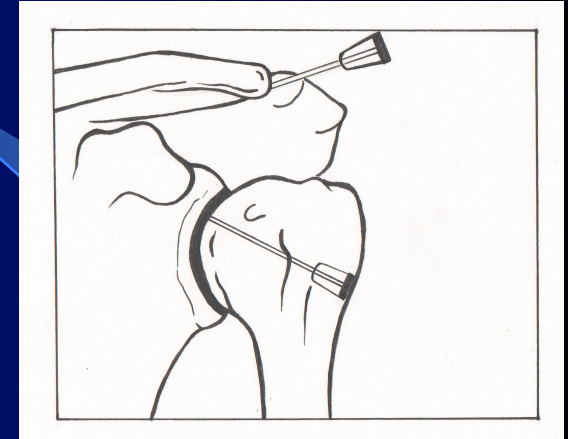
- There are three approaches: **anterior**, **lateral** and **posterior**.

Anterior approach: It is done along the coracoid process of the scapula. It can be palpated 3 cm distal to the acromial end of clavicle. A needle is inserted lateral to the coracoid process of the scapula. Then it is inserted 3 - 4 cm in depth, between the head of the humerus and coracoid process.

Lateral approach: A needle is inserted from the acromion of the scapula, inferiorly through the deltoid muscle.

Posterior approach:

- - posterior approach gives easy access to glenohumeral joint & avoids risk of damaging brachial plexus or cephalic vein;
- - pt should be seated & entire shoulder, both anterior & posterior, should be prepped and draped;
- - palpate most lateral edge of the acromion process;
- - choose an entry site one cm medial and one cm distal to this;
- - w/ other hand, palpate coracoid process anteriorly;
- - now aim needle for coracoid process and it should enter joint



Surgical approach on shoulder joint

- Overview this approach can be a fairly extensile exposure, allowing access to the anterior, medial, and lateral aspects of the shoulder.
- this approach is done in a supine position with a roll or wedge under the medial scapula.

Complications

- Musculocutaneous nerve enters medial side of biceps muscle 5-8 cm distal to coracoid (stay lateral)
 - can have neuropraxia if retraction is too vigorous
- Cephalic vein
 - should be preserved if possible; if injured, can ligate
- Axillary nerve at risk with release of subscapularis tendon (runs distal to) or with incision of teres major tendon or latissimus dorsi tendon (runs proximal to)

ARTHROTOMY OF THE SHOULDER JOINT

A) Indication : Drainage of suppurative (purulent) arthritis

B) Procedures:

-There are two approaches :anterior and posterior approaches.

- i. Anterior approach
- II Posterior approach

-

The Arm

- **Superiorly:** the imaginary line that connect the inferior borders of the mm. Pectoralis major et m. Lattissimus dorsi.
- **Inferiorly:** the line two cm up to humeral bone epicondyles.

The **brachial artery** can be felt pulsating deep to the medial border of the biceps.

To stop bleeding by pressure on the artery in the upper half of the arm it is pushed laterally against the humerus.

In the lower half it is pushed posteriorly.

In the cubital fossa, it lies beneath the bicipital aponeurosis.

At the level of the neck of the radius, it divides into radial and ulnar arteries.

Layers of the Arm

1. Skin: thin and mobile.
2. Cell-adipose layer: Contains vessels and nerves. In the bicipital lateral ditch there is the cephalic vein, which flows into the axillary vein. In the bicipital medial pit is the basilic vein that flows into the brachial vein or axillary.
3. The superficial fascia: adheres lax to their own fascia.
4. Deep Fascia: Forms two fascicles: anterior and posterior. From the internal face of the fascia two intermuscular (medial and lateral) septums are born, they deepen and separate the muscles in the anterior and posterior.
5. The superficial and deep muscles.
6. Periosteum Humerus.

Anterior compartment:

It is previously limited by its own fascia, posterior to the humerus, and parts of the intermuscular septum.

This lodge comprises the muscles of the previous group, located in two layers: Superficial- m.biceps brachii; Profund- m.coracobrachialis in the upper third and m.brachialis in the middle and lower part.

Between the muscular layers is the deep brachial fascia below which the nerve is located. In the upper third, the nerve emerges from the cortical mural thickness and goes down and laterally and in the middle and lower third is located on the brachial. With the muscular branches, the nerve enters near the lower limb of the arm, under its own fascia through the ditch between the brachial muscle and the bicipital.

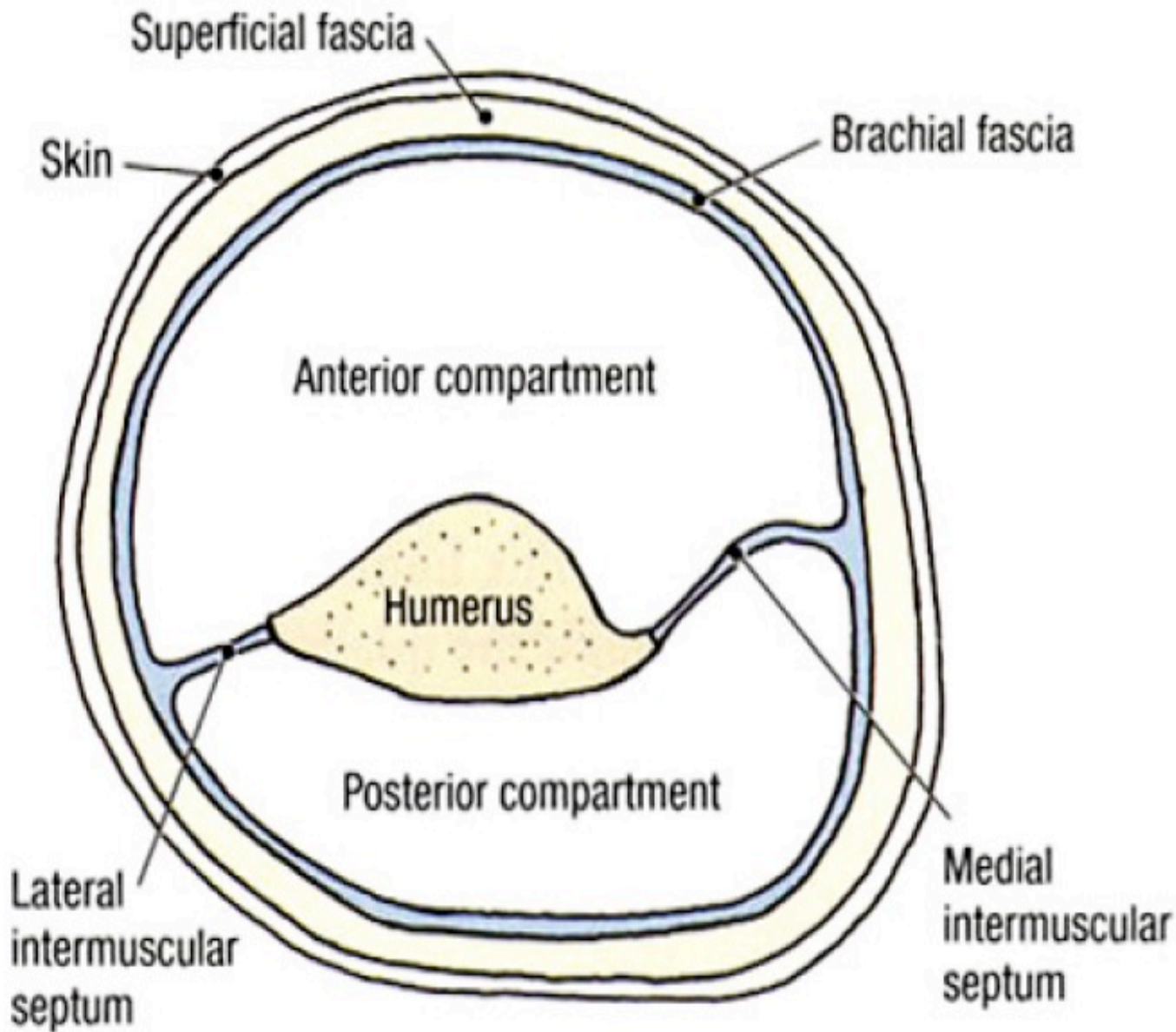


Figure 2.10. Compartments of the right arm.

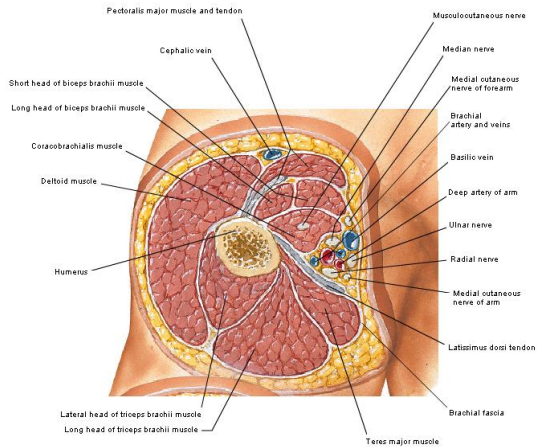
The Projection line of the brachial artery and n. medianus

Coincide cu sulcus bicipitalis medialis

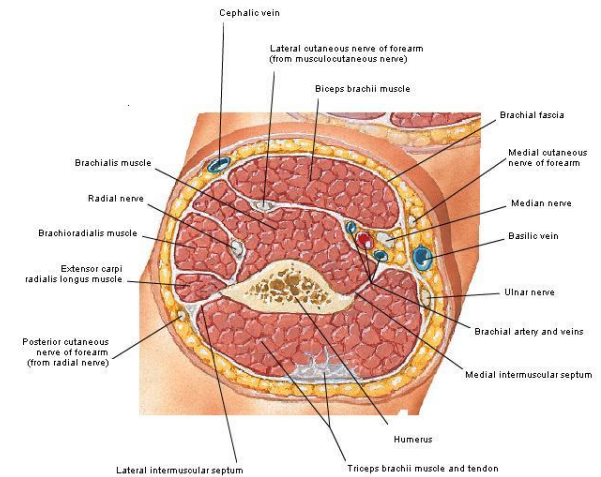
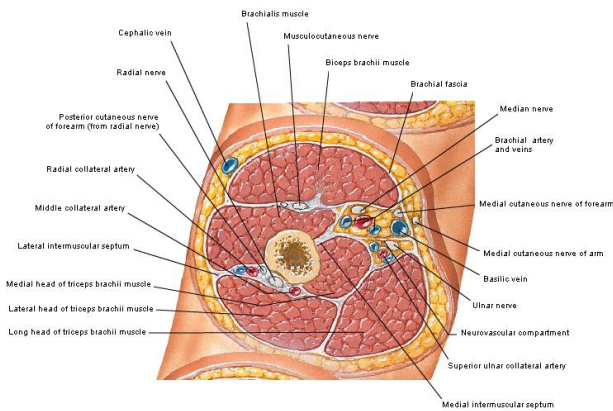
Incizia: pe proiecția ventelului m. Biceps brachii la 1 cm lateral de linia proiecției.

Pe straturi: pielea, str. celular subcutanat, fascia superficială, teaca m. Biceps prin care putem vizualiza n. median situat pe artera brahială.

Arm
Proximal Cross Section



Arm
Middle Cross Section



Cubital Fossa

- Limits: two horizontal lines, 4cm up and down from the line that connects the medial and lateral epicondyle of the humerus.
- Two vertical lines pass through epicondyles divide the region into anterior and posterior.

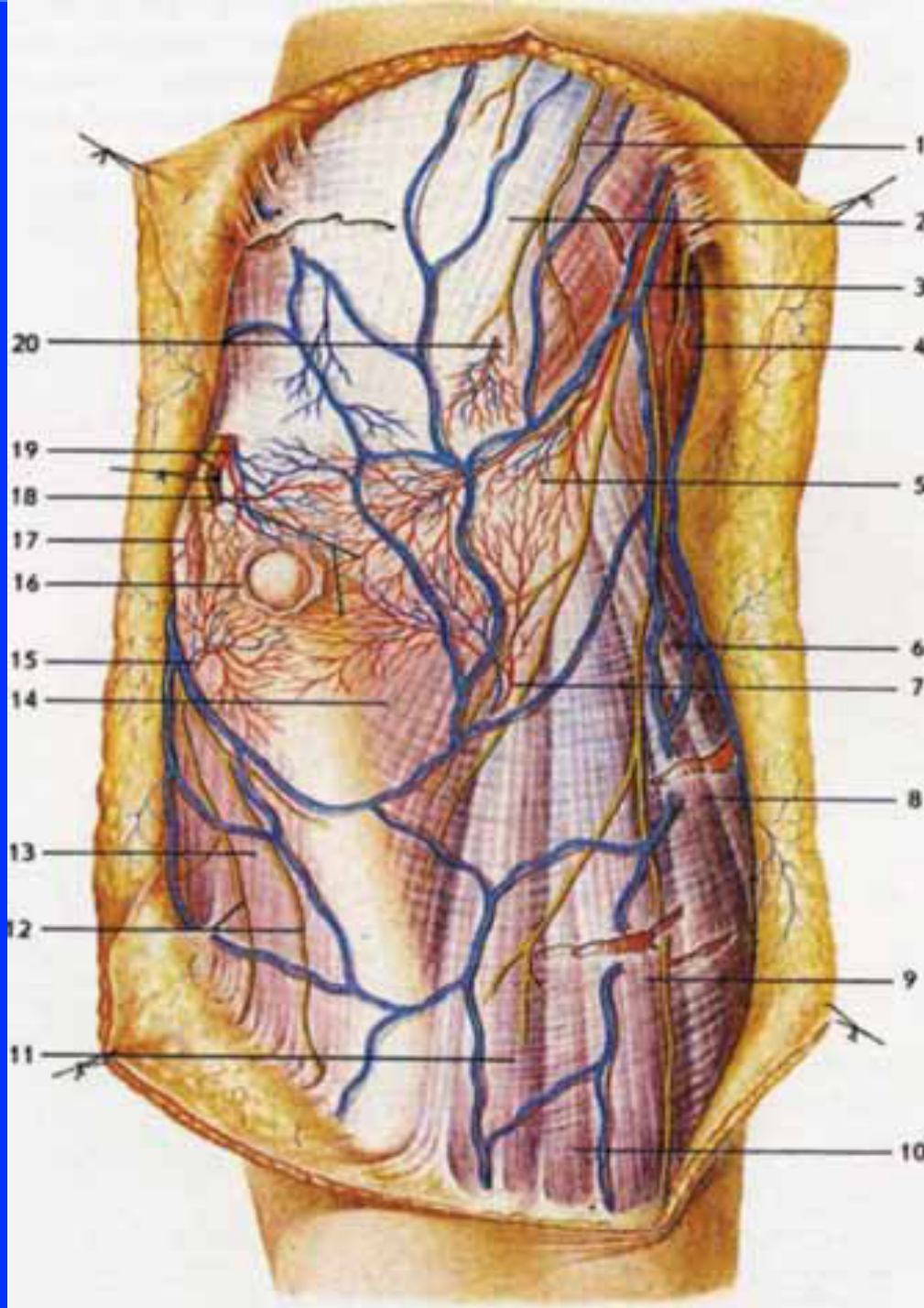
–Anterior surface elbow

–Contents

- Median Cubital Vein
- Brachial Artery
- Median Nerve

–Boundaries

- Medial= Pronator teres
- Lateral= Brachioradialis
- Superior= Line between epicondyles



- 1 — n. cutaneus antebrachii posterior;
- 2 — tendo m. Tricipitis brachii;
- 3 — a. collateralis radialis;
- 4 — m. brachioradialis;
- 5 — epicondylus lateralis;
- 6 — m. extensor carpi radialis longus;
- 7 — a. recurrens interossea;
- 8 — m. extensor carpi radialis brevis;
- 9 — m. extensor digitorum;
- 10 — m. extensor digiti minimi;
- 11 — m. extensor carpi ulnaris;
- 12 — n. Cutaneus antebrachii medialis (ramus ulnaris);
- 13 — m. flexor carpi ulnaris;
- 14 — m. anconeus;
- 15 — a. recurrens ulnaris (r. posterior);
- 16 — bursa subcutanea olecrani;
- 17 — epicondylus medialis;
- 18 — rete articulare cubiti (olecrani);
- 19 — a. Collateralis ulnaris superior и n. ulnaris;
- 20 — a. collateralis media.

Compartments of the forearm

- **1. Anterior Flexor Compartment :**

(Superficial + Deep layers)

Most of superficial flexors originate by a common origin from medial epicondyle

Contains 2 pronators, are supplied by Median and Ulnar nerves

- **2. Posterior Extensor Compartment :**

(Superficial + Deep layers)

Are supplied by Radial and post. Interosseus nerves

Anterior Compartment of Forearm

● Superficial Muscles

- Flexor digitorum superficialis Median
- Flexor carpi radialis Median
- Pronator teres Median
- Palmaris longus Median
- **Flexor carpi ulnaris** **Ulnar**

● Deep Muscles

- Pronator quadratus Median
- Flexor pollicis longus Median
- **Flexor digitorum profundus** **Ulnar**
(med 1/2)
Median (lat 1/2)

Posterior Compartment of Forearm

- **Superficial**

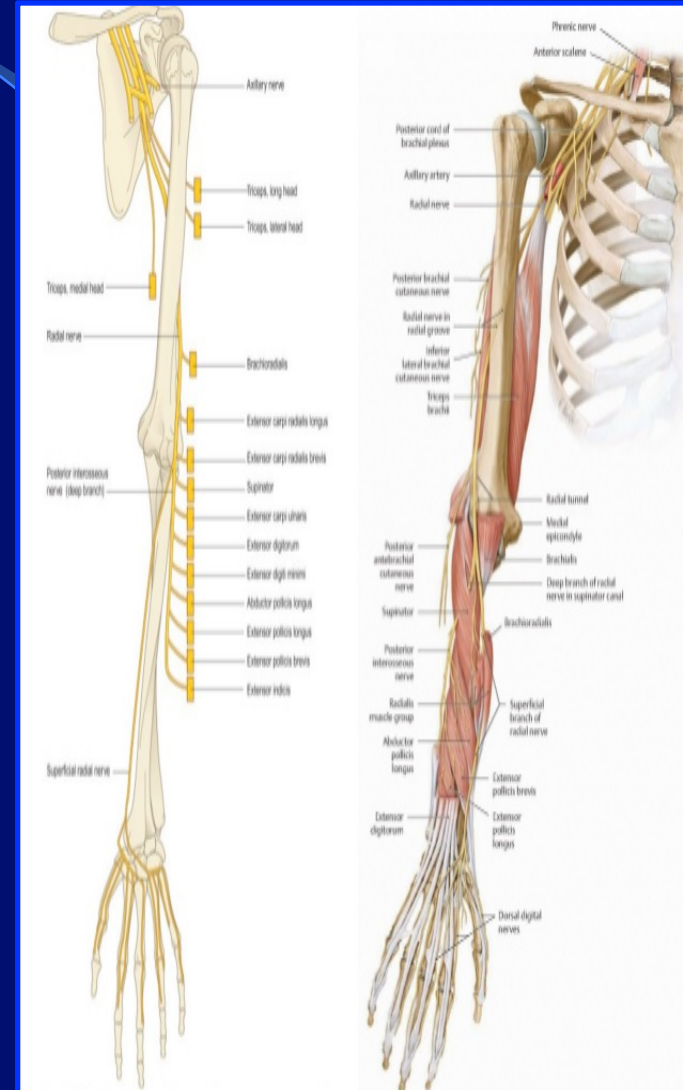
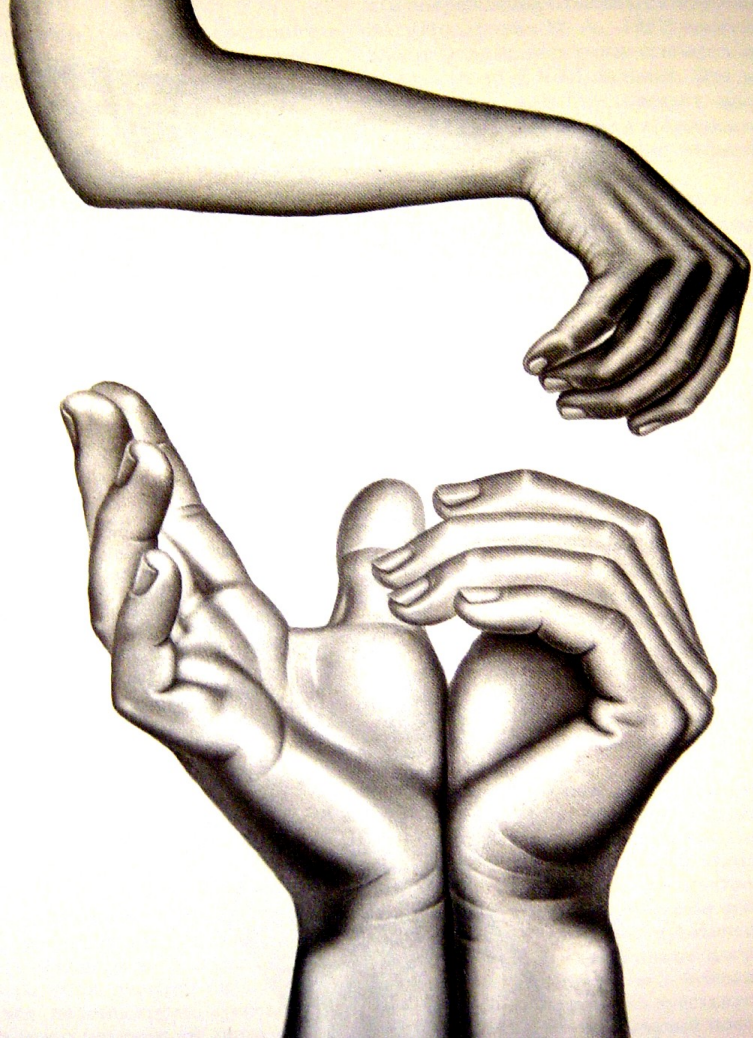
- Extensor carpi radialis longus Radial
- Extensor digitorum Radial
- Extensor carpi ulnaris Radial

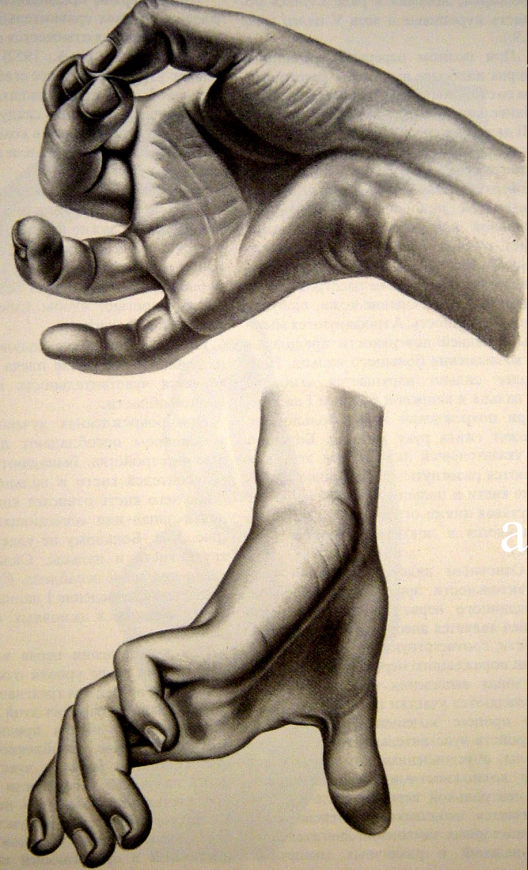
- **Deep**

- Supinator Radial
- Abductor pollicis longus Radial
- Extensor pollicis longus + brevis Radial
- Extensor indicus Radial

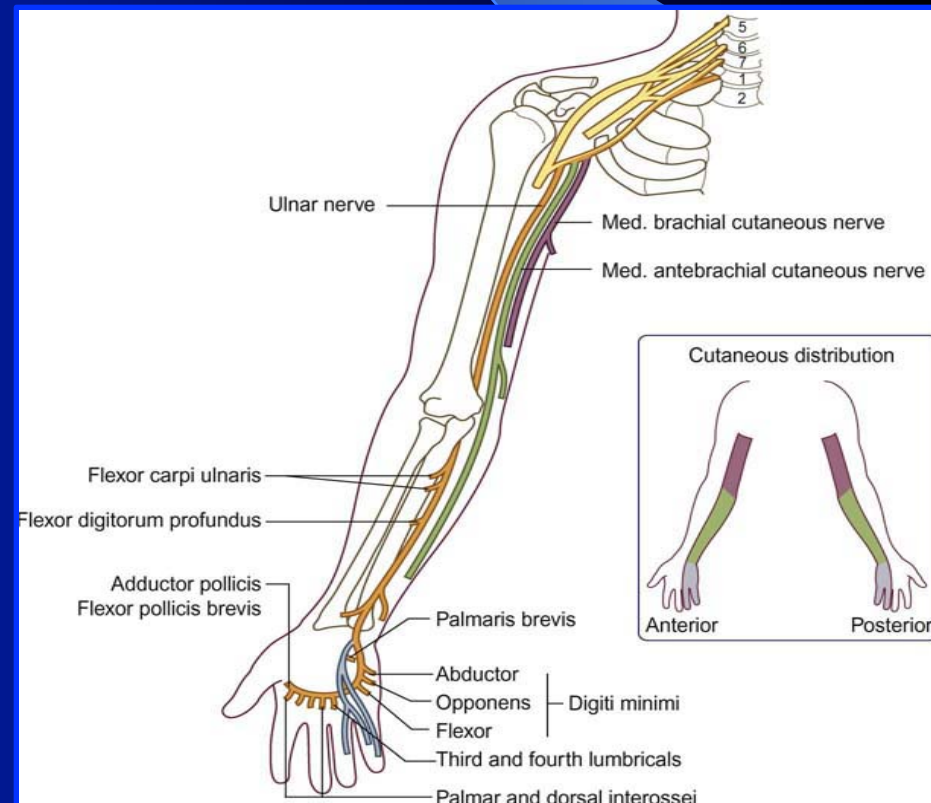
- **The projection line (a.v.radială, r.suprf. n. radial) trece de la mijlocul fosei cubitale spre apofiza stiloidă radială, sau la punctul de puls al arterei radiale.**
- **Incizia 5-7 cm pe linia de proiecție în reg. Medie sau distală de antebraț.**
- **Pe straturi: pielea, str. celular subcutanat, fascia superficială(ce conține nervi cutanați superficiali și vena subcutanată laterală), fascia proprie cu denudarea sulcusului radial, artera radială(2) și ramura superficială a nervului radial(2) situat lateral de aceasta**

Radial nerve injury – wrist drop





The ulnar nerve injury. claw hand deformity when the hand is at rest, due to hyperextension of the 4th and 5th digits at the metacarpophalangeal joints, and flexion at the interphalangeal joints.





Median nerve injury (simian hand), is a deformity in humans who cannot move the thumb away from the rest of the hand. It is an inability to abduct the thumb).