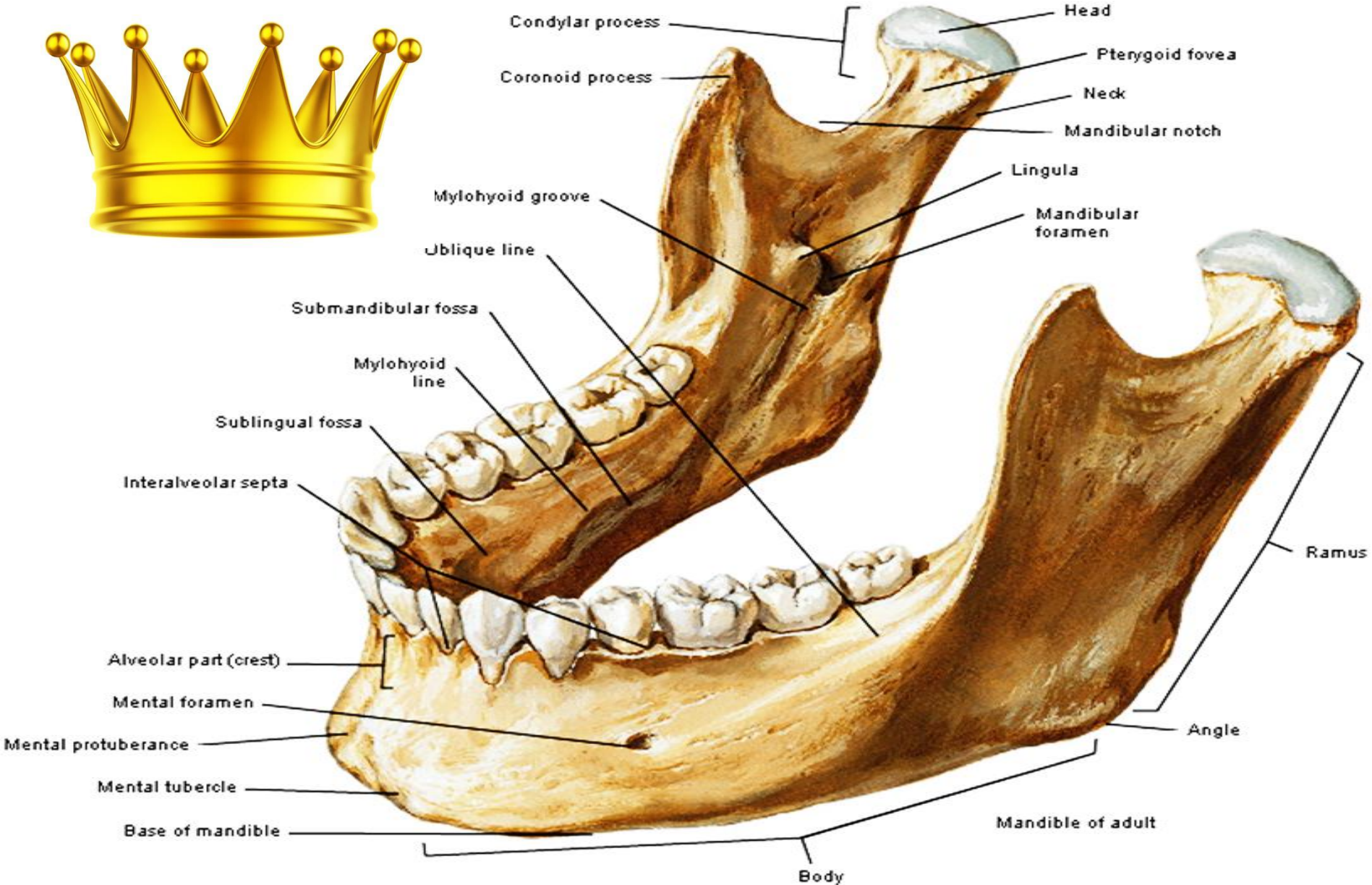
anatomy lab

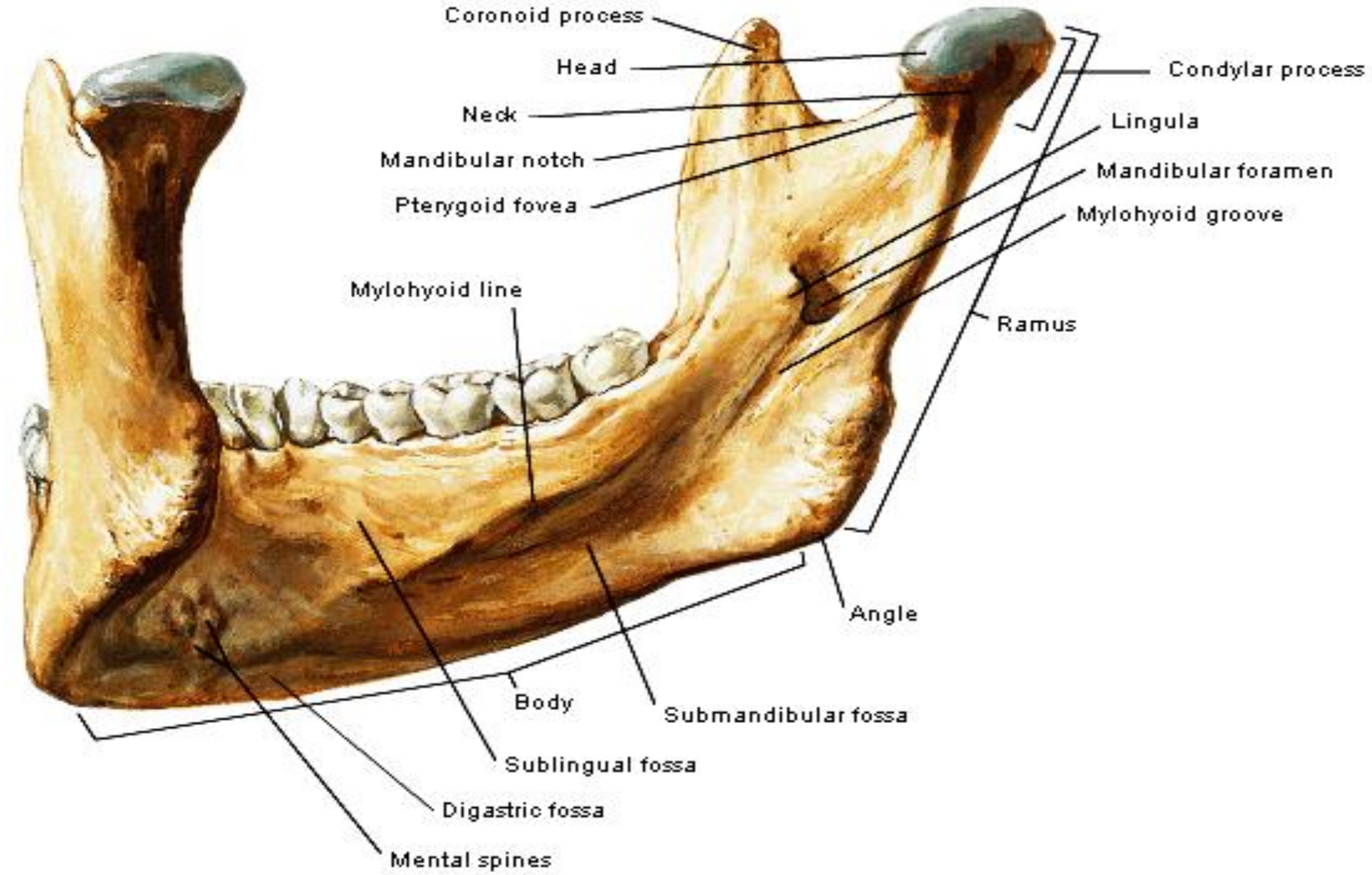
Dr yousef

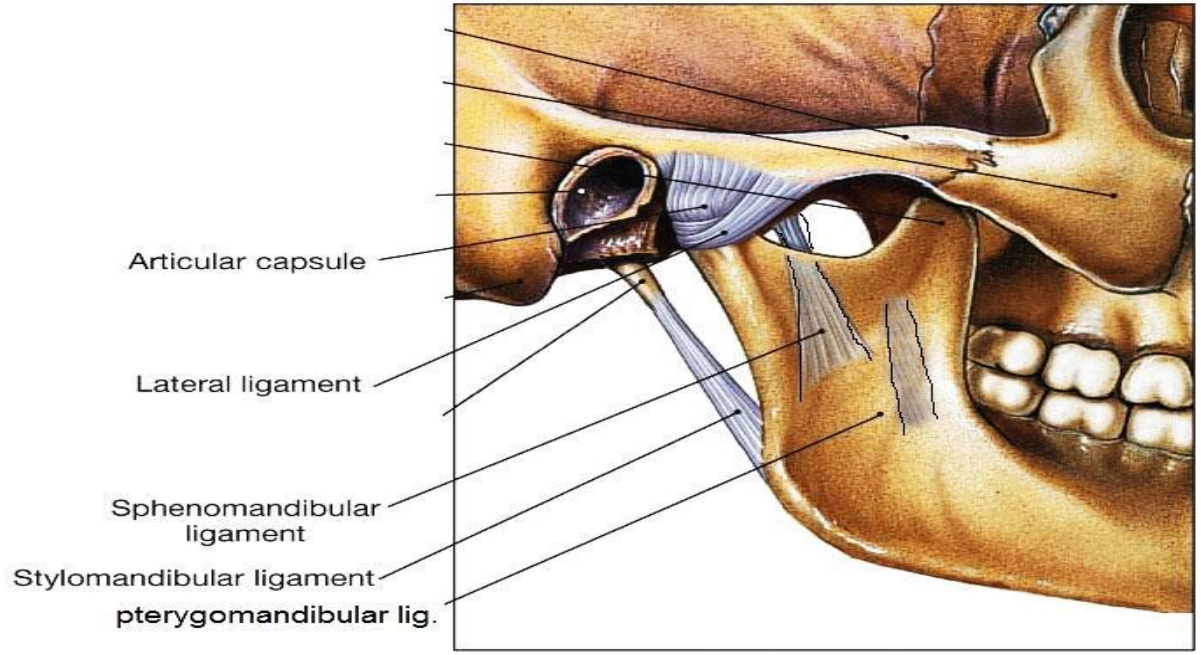
Dr Abulmaaty Mohamed

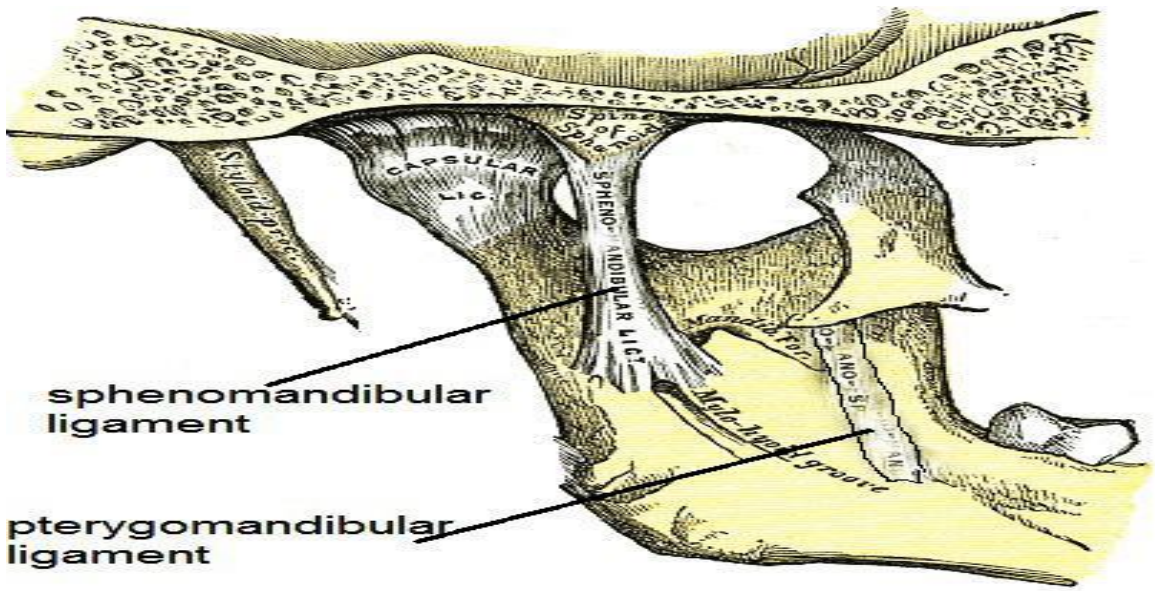
MANDIBLE


Condylar process
Coronoid process
Head
Pterygoid fovea
Neck
Mandibular notch
Lingula
Mandibular foramen
Mylohyoid groove
Oblique line
Submandibular fossa
Mylohyoid line
Sublingual fossa
Interalveolar septa
Alveolar part (crest)
Mental foramen
Mental protuberance
Mental tubercle
Base of mandible
Ramus
Angle
Mandible of adult
Body

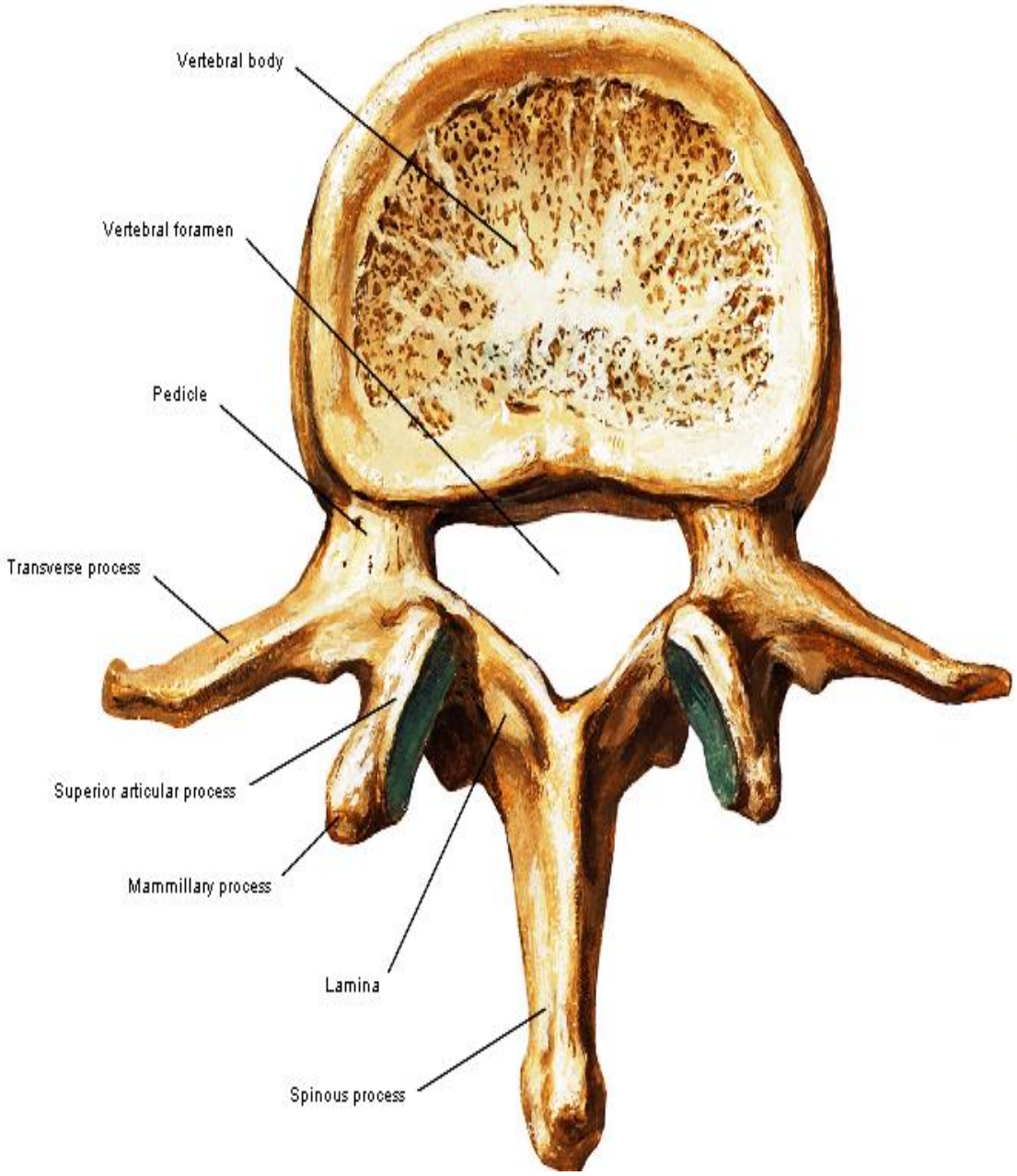
MANDIBLE

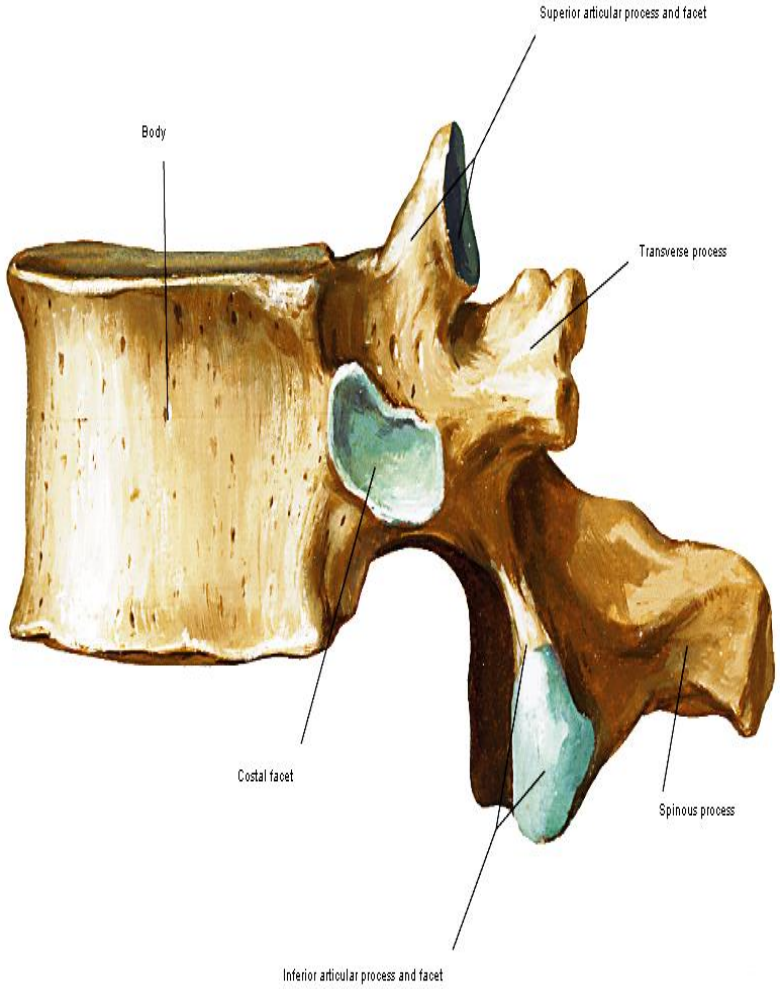

Coronoid process
Head
Neck
Mandibular notch
Pterygoid fovea
Mylohyoid line
Condylar process
Lingula
Mandibular foramen
Mylohyoid groove
Ramus
Angle
Body
Submandibular fossa
Sublingual fossa
Digastric fossa
Mental spines


Articular capsule
Lateral ligament
Sphenomandibular ligament
Stylomandibular ligament
pterygomandibular lig.

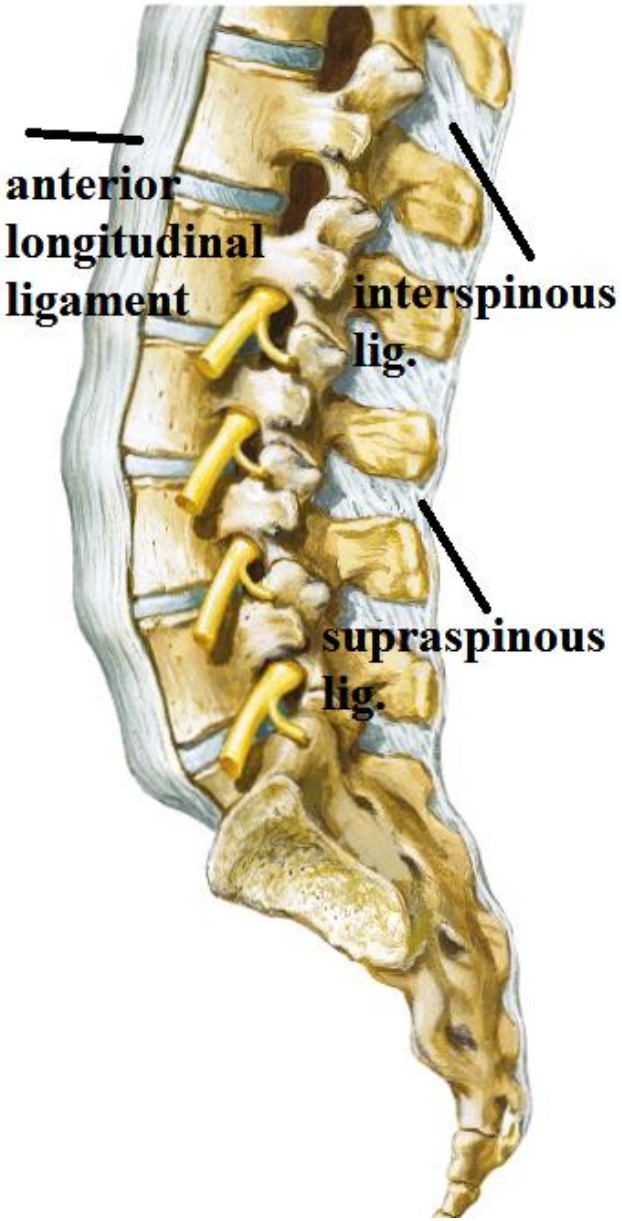

sphenomandibular ligament
pterygomandibular ligament

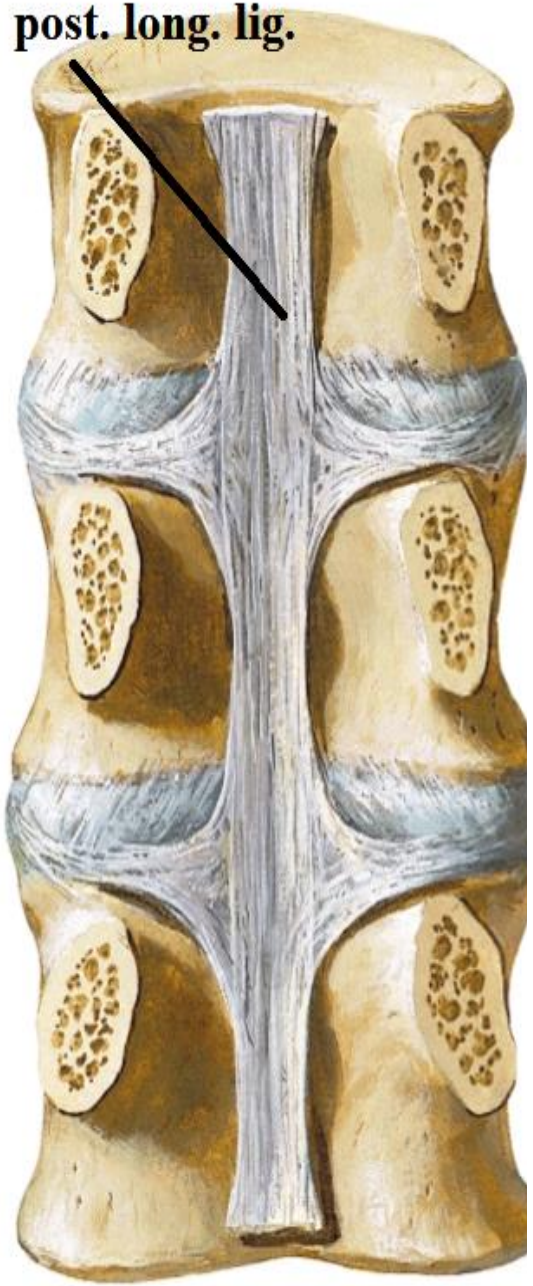
VERTEBRAE

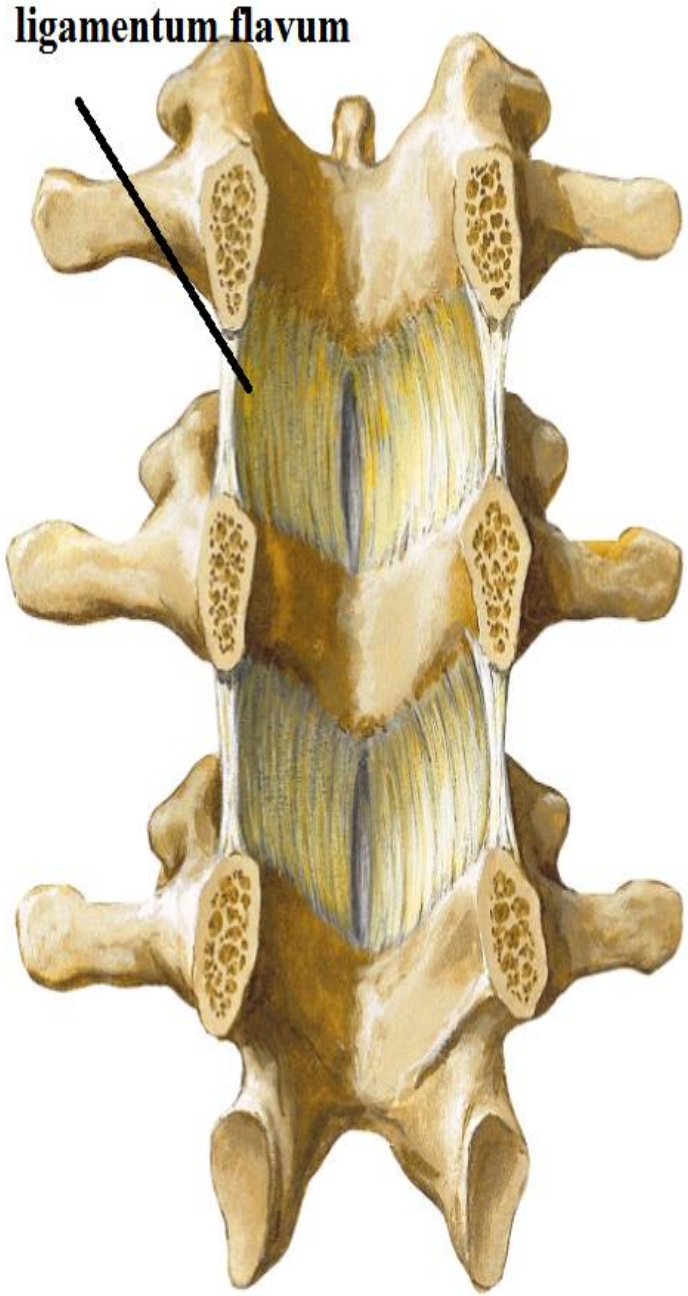

Vertebral body
Vertebral foramen
Pedicle
Transverse process
Superior articular process
Mammillary process
Lamina
Spinous process

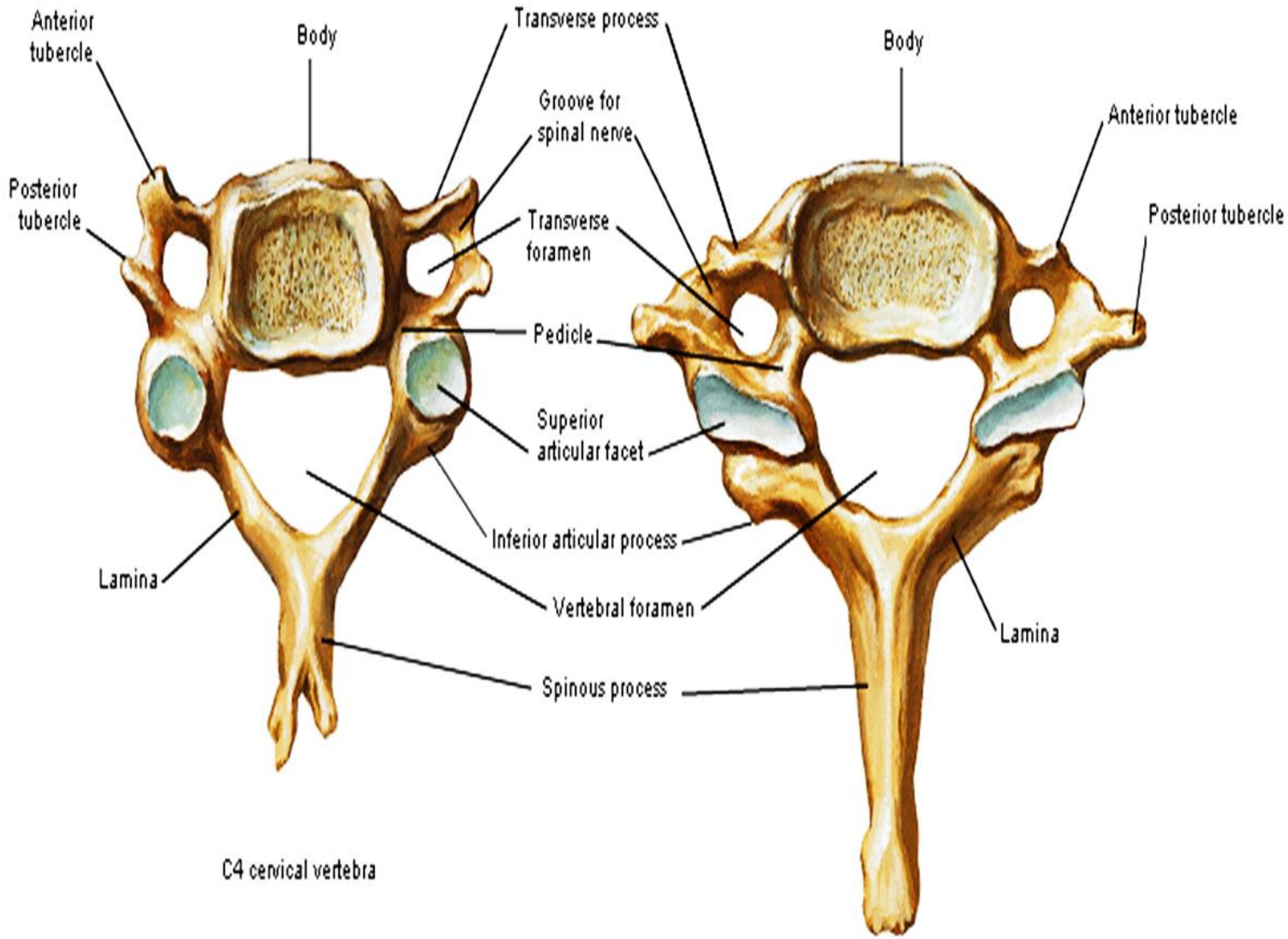

Superior articular process and facet
Body
Transverse process
Costal facet
Spinous process
Inferior articular process and facet

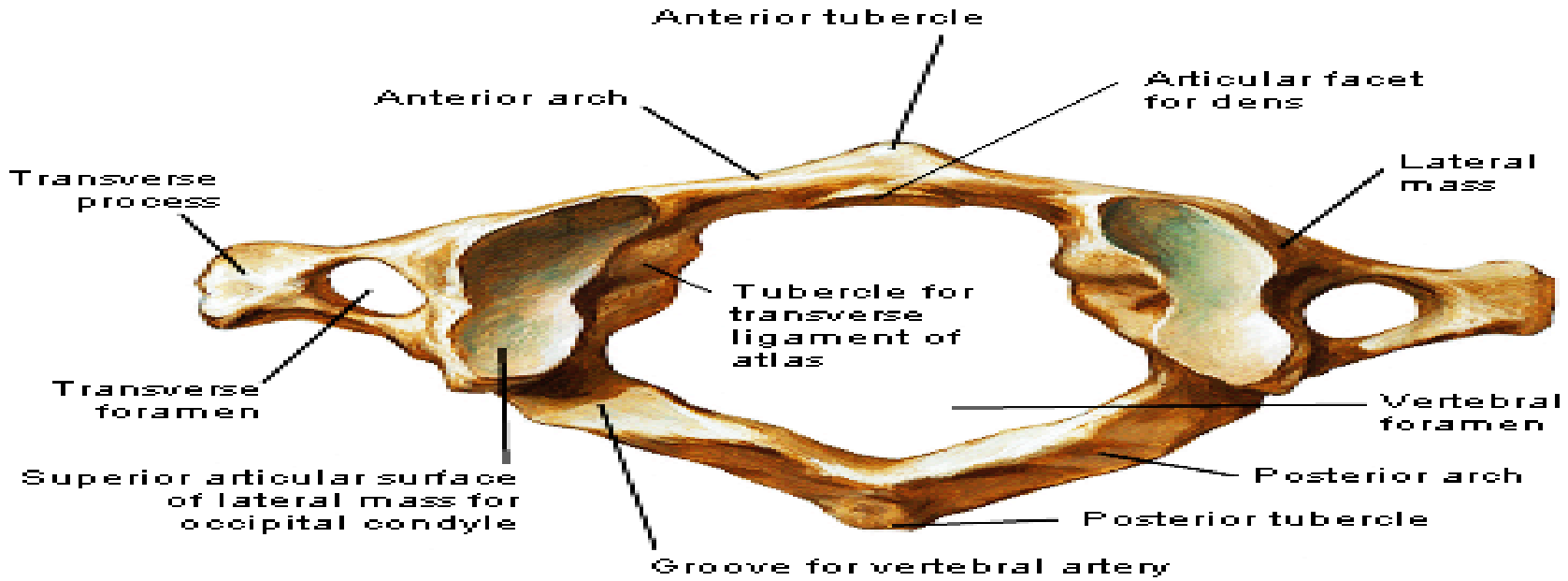
VERTEBRAE


anterior
longitudinal
ligament
interspinous
lig.
supraspinous
lig.

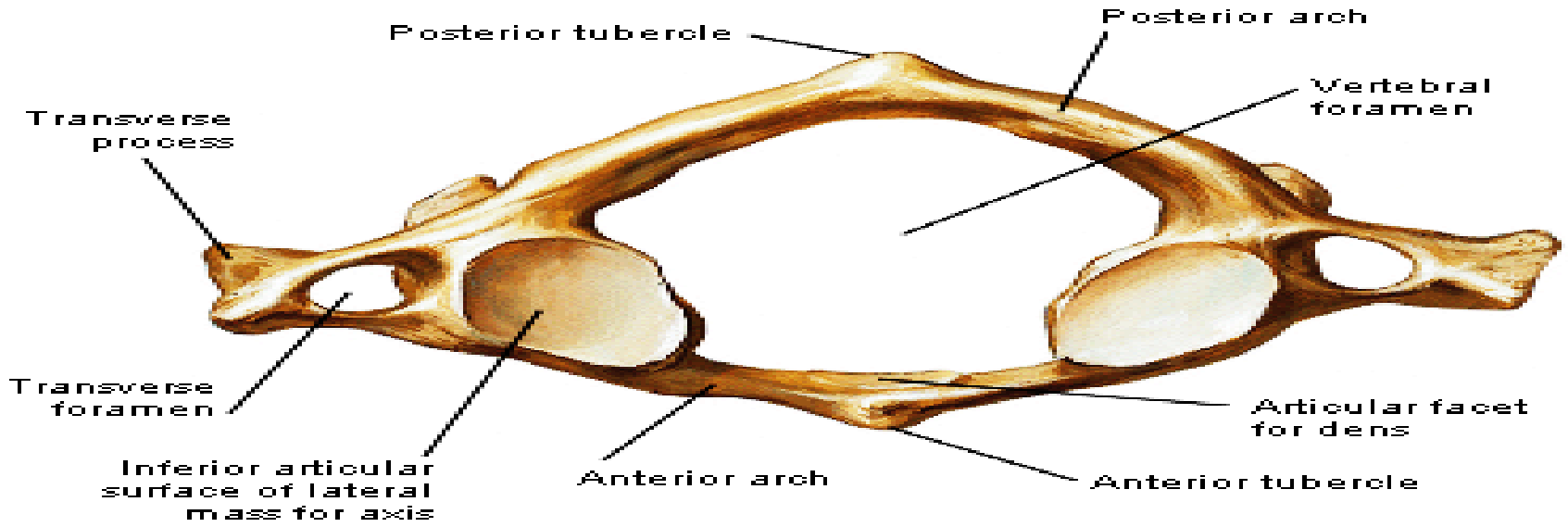

post. long. lig.


ligamentum flavum

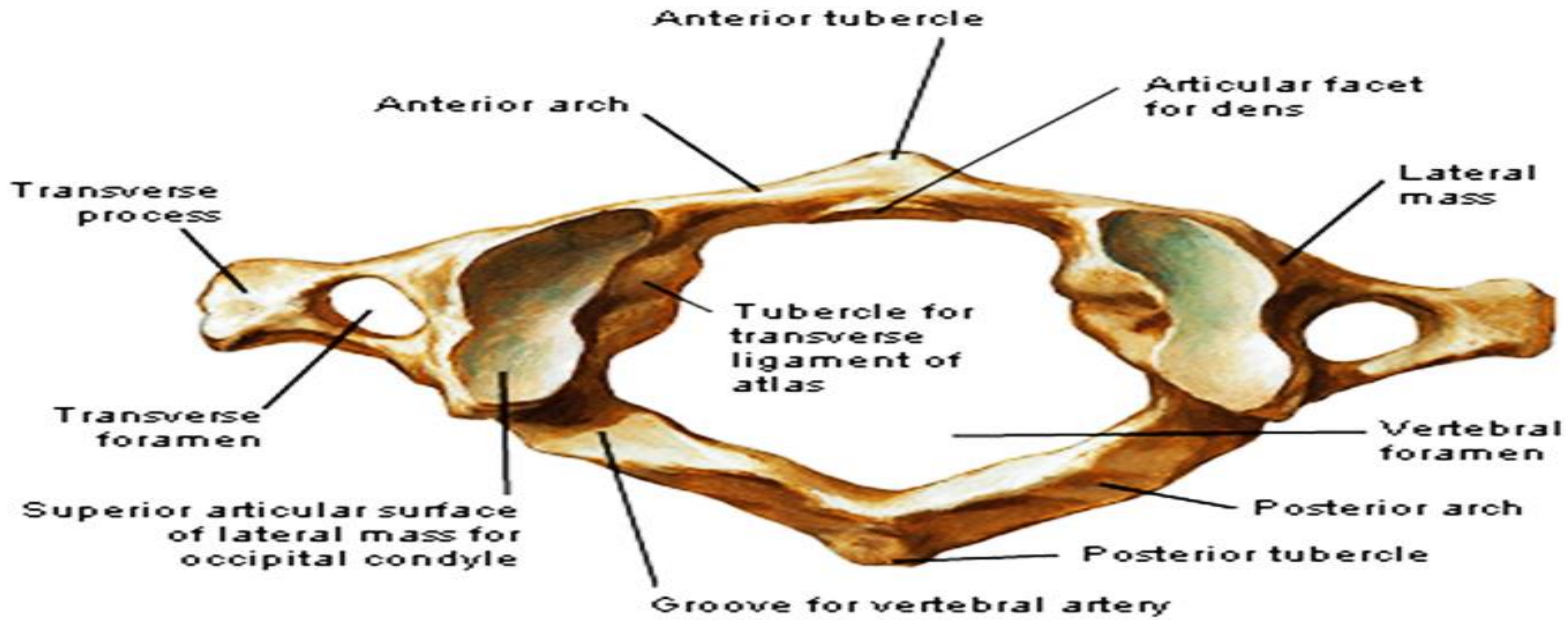

Anterior tubercle
Body
Transverse process
Groove for spinal nerve
Posterior tubercle
Transverse foramen
Pedicle
Superior articular facet
Inferior articular process
Lamina
Vertebral foramen
Spinous process
C4 cervical vertebra
Body
Anterior tubercle
Posterior tubercle
Lamina
C7 cervical vertebra



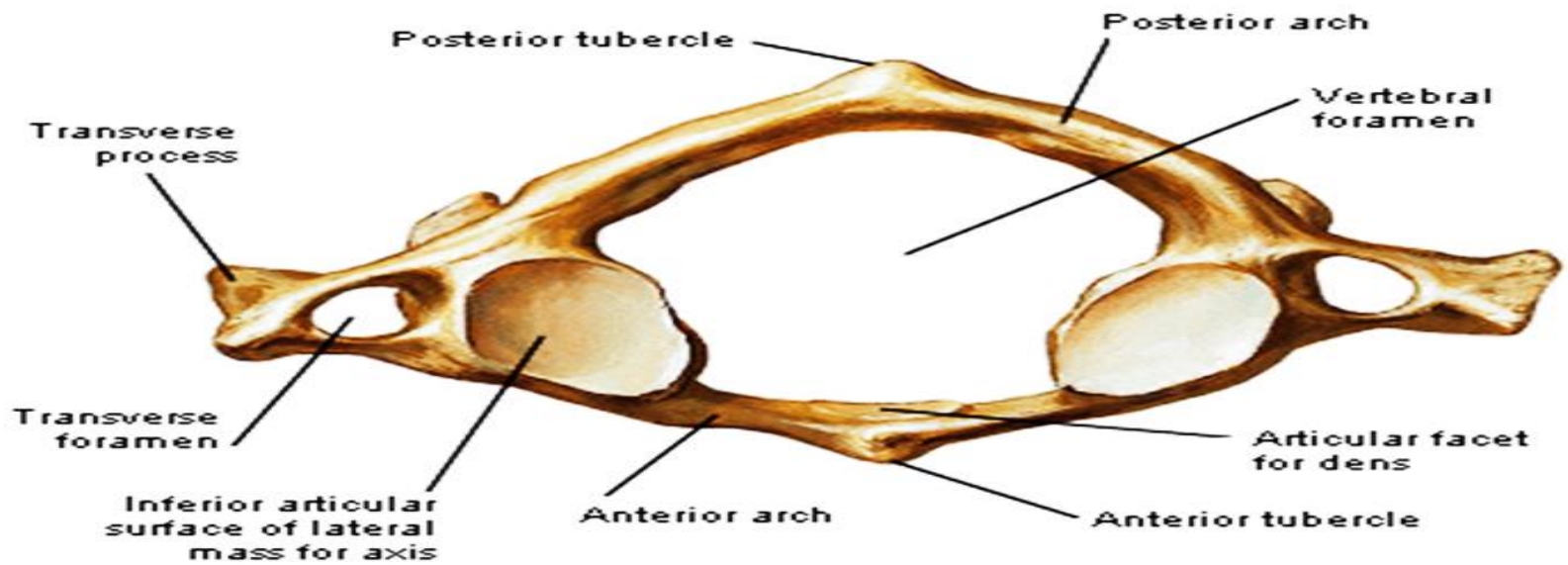
Atlas (C1): superior view



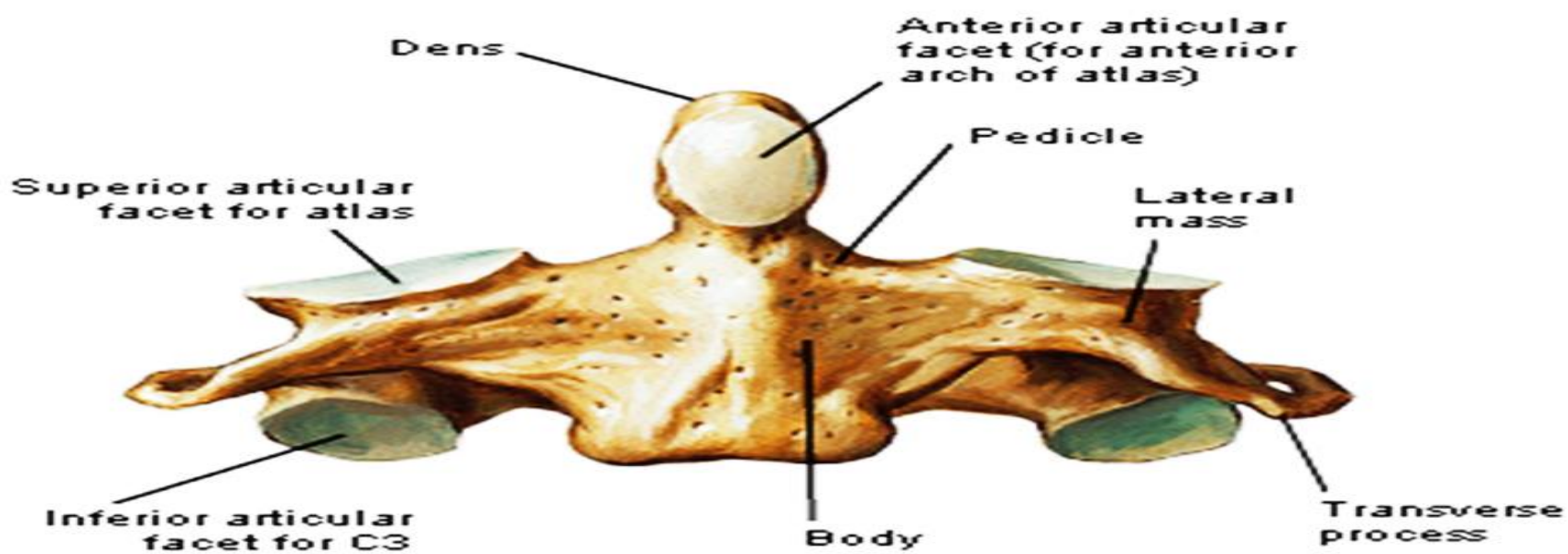
Atlas (C1): inferior view



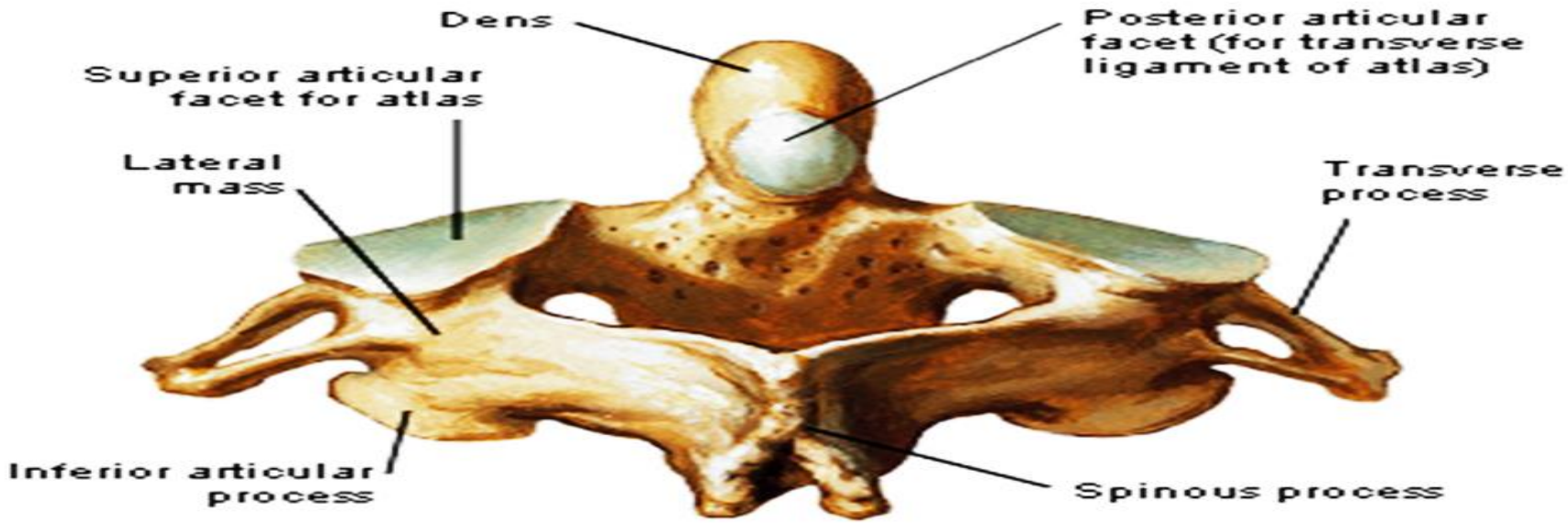
Atlas (C1): superior view



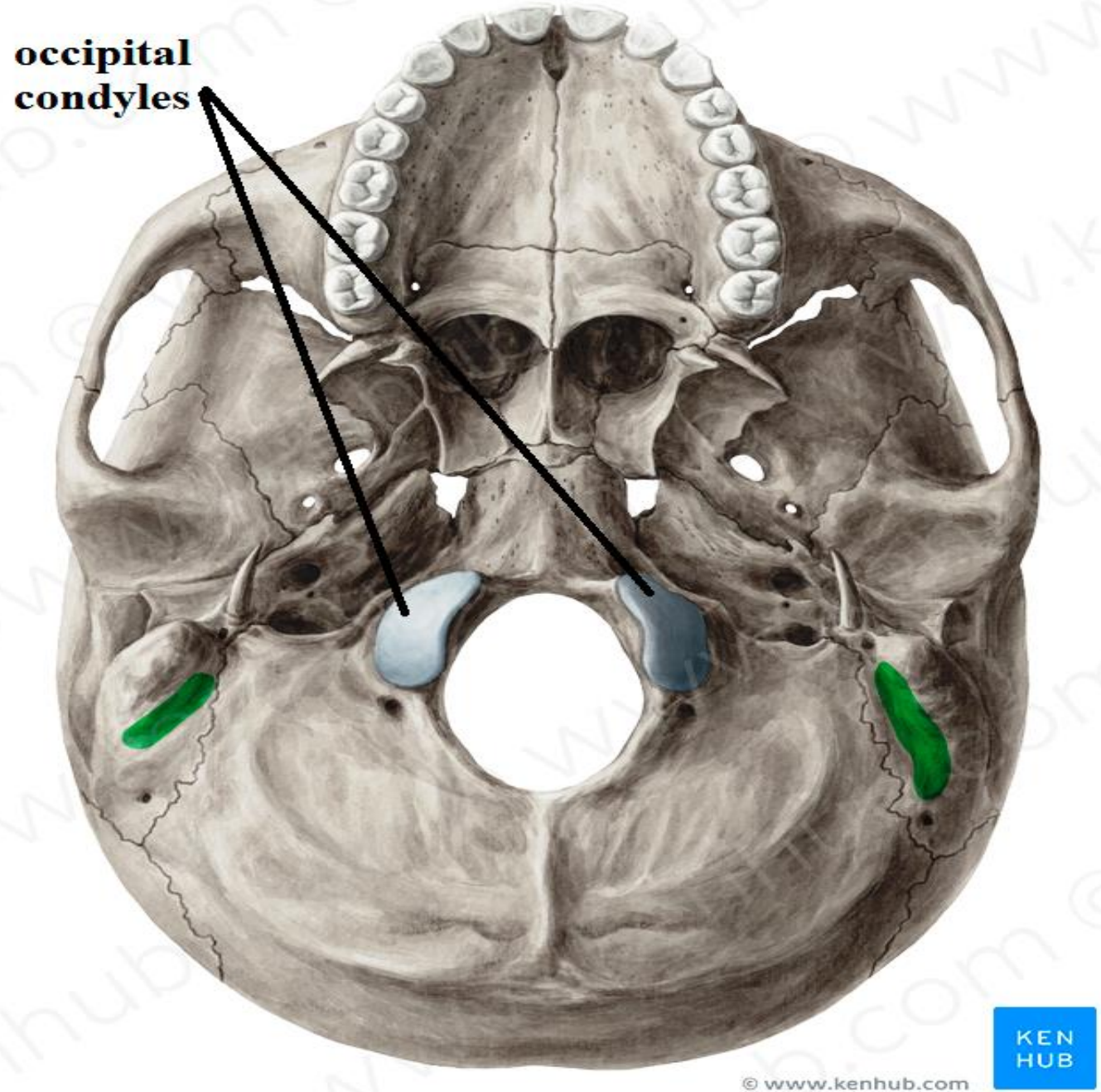
Atlas (C1): inferior view

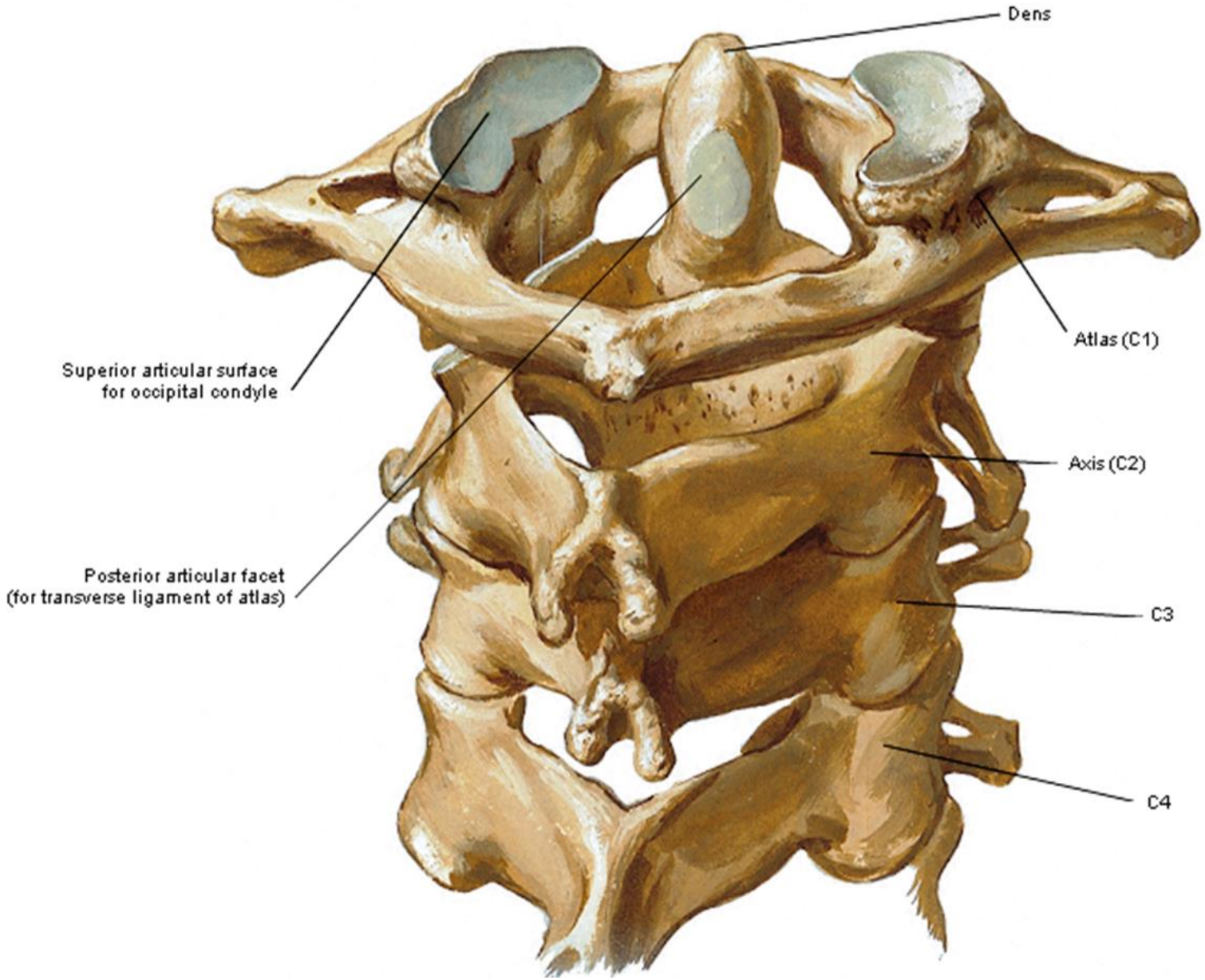


Axis (C2): anterior view

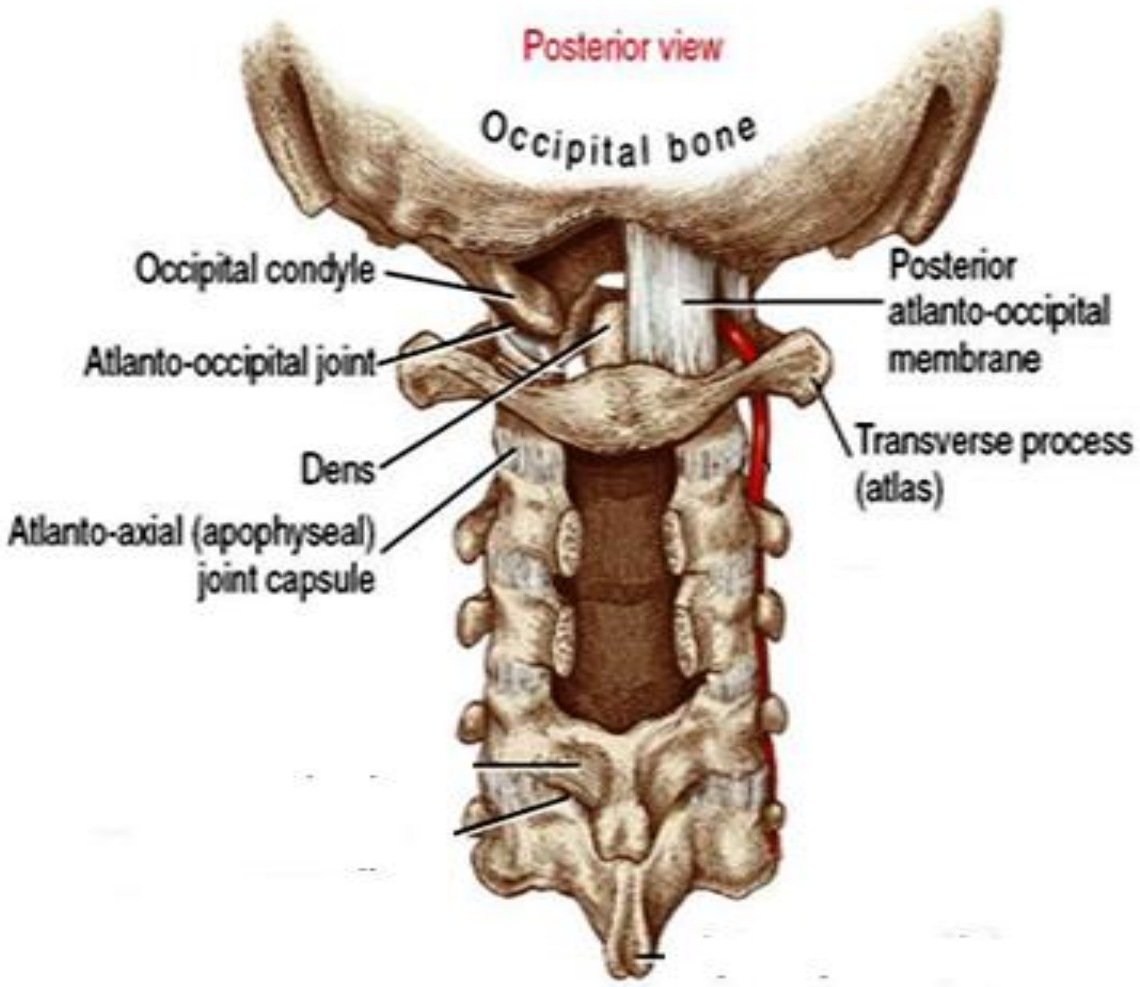


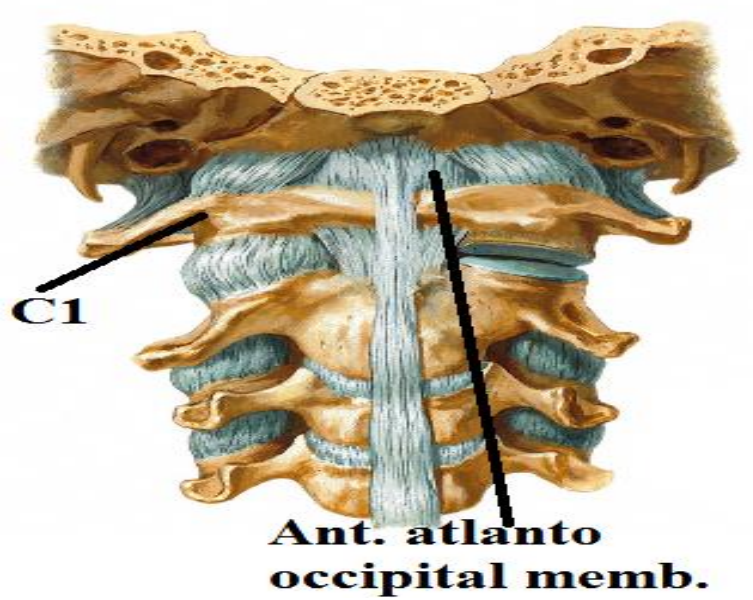
Axis (C2): posterosuperior view

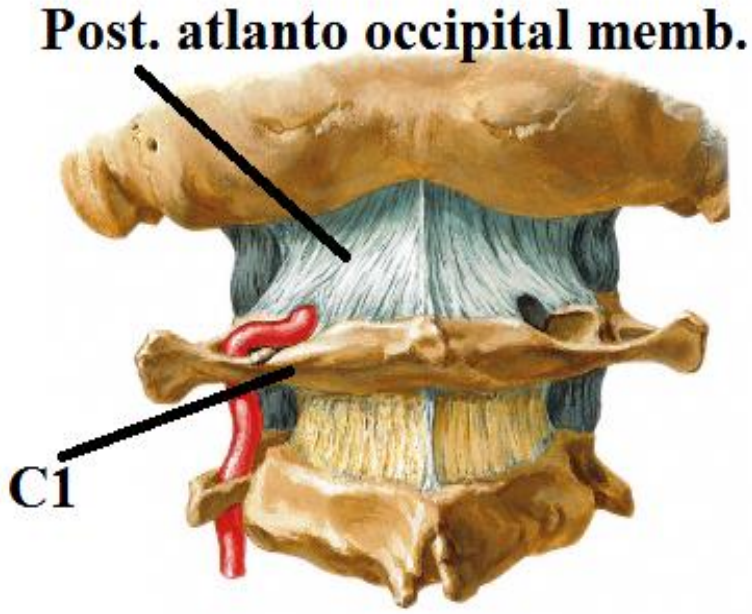

occipital
condyles
© www.kenhub.com
KEN
HUB


Dens
Atlas (C1)
Superior articular surface
for occipital condyle
Axis (C2)
Posterior articular facet
(for transverse ligament of atlas)
C3
C4

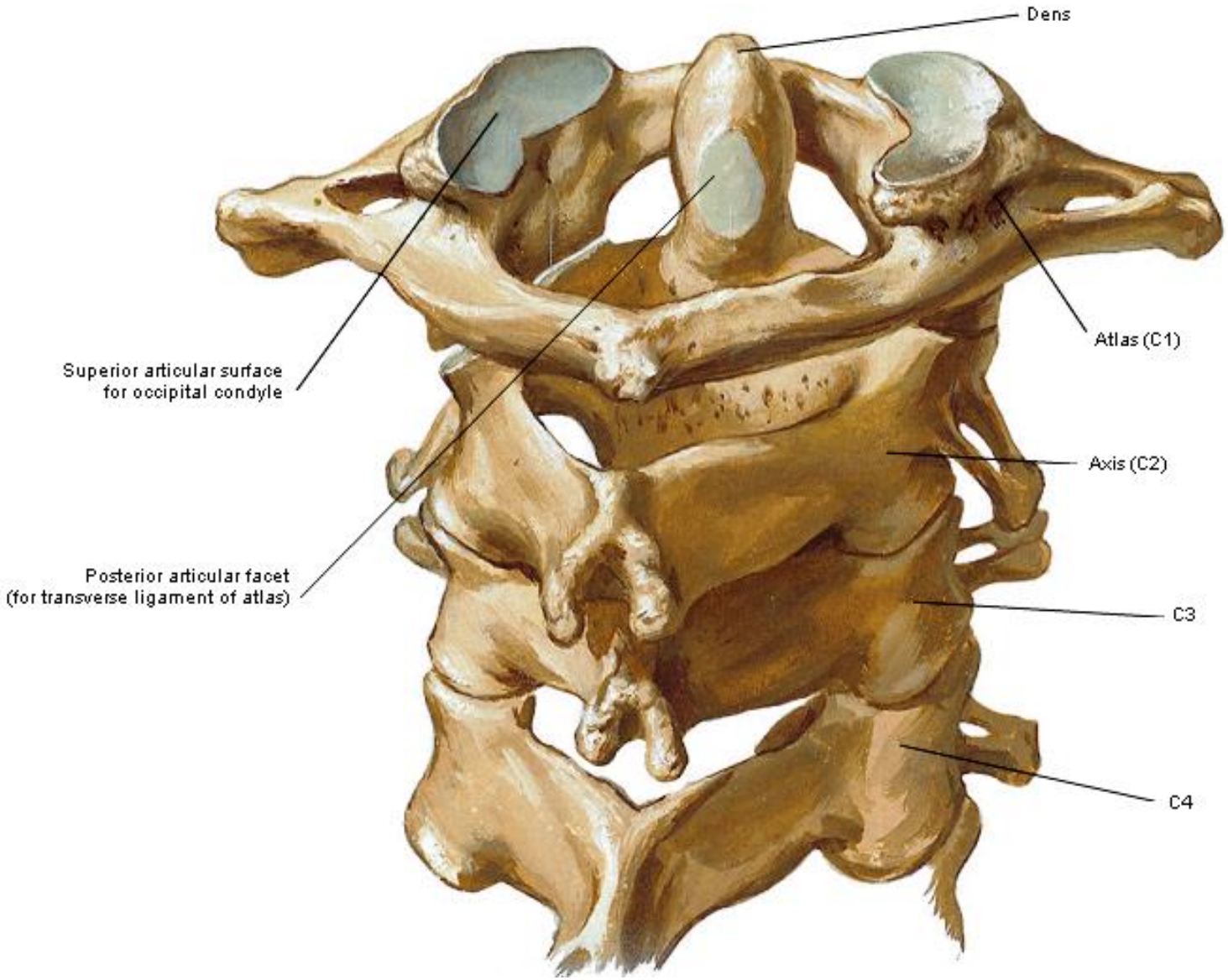
ATLANTO OCCIPITAL JOINT

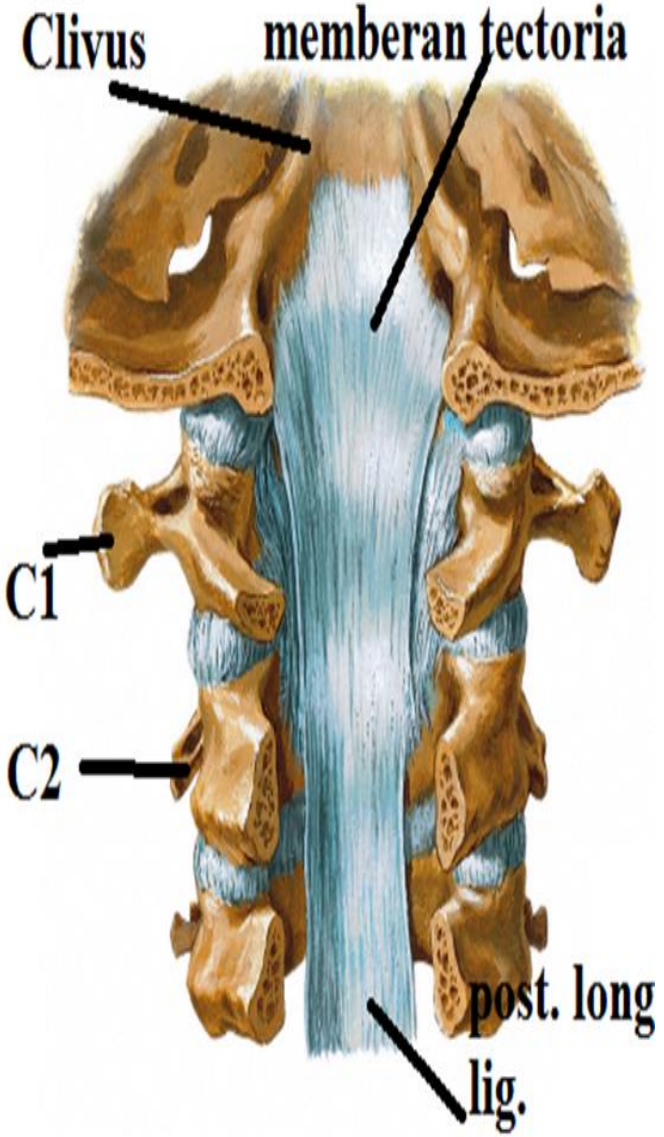




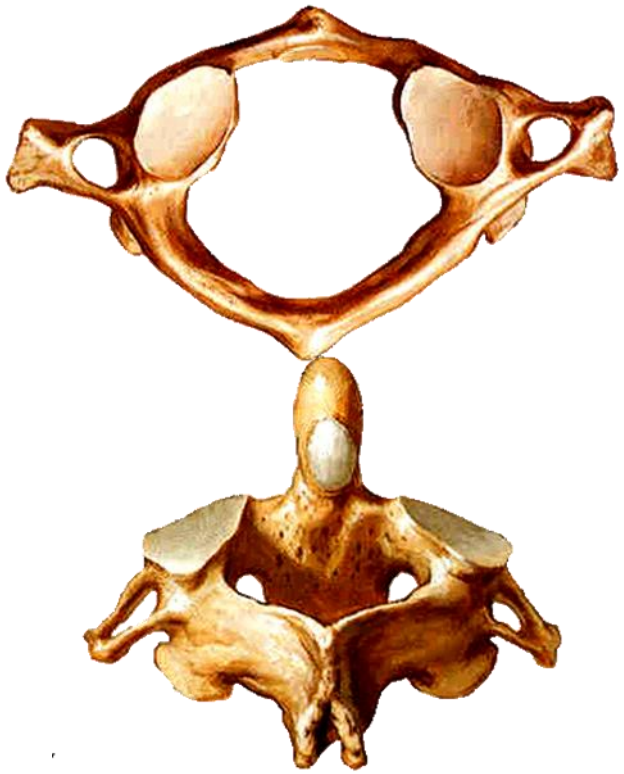


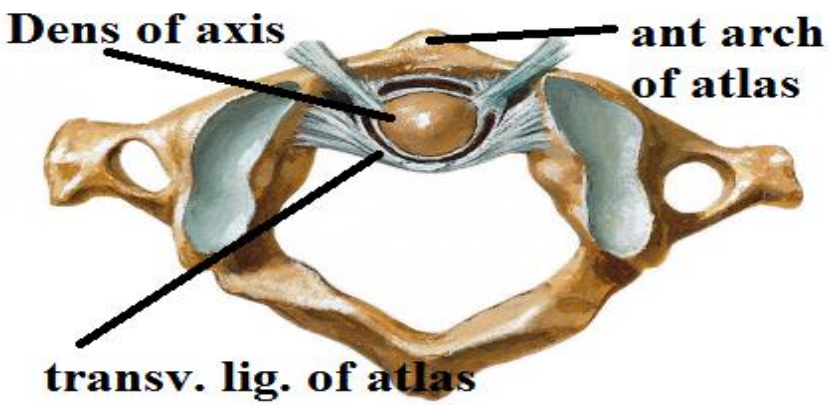
ATLANTO AXIAL JOINTS

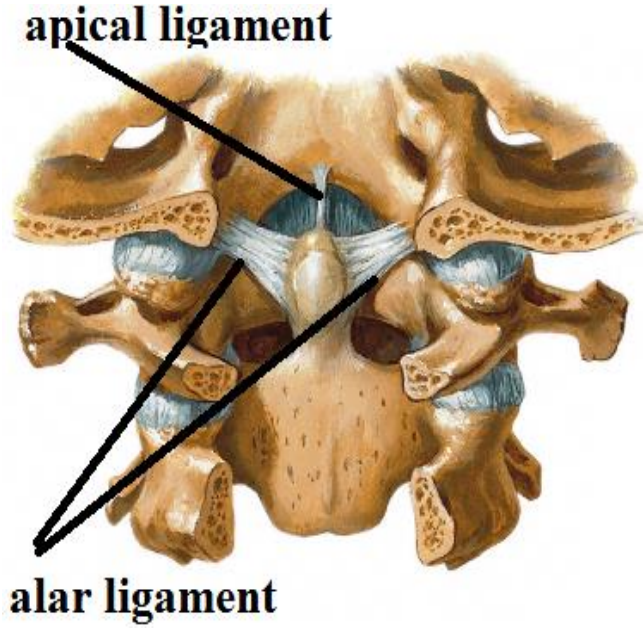


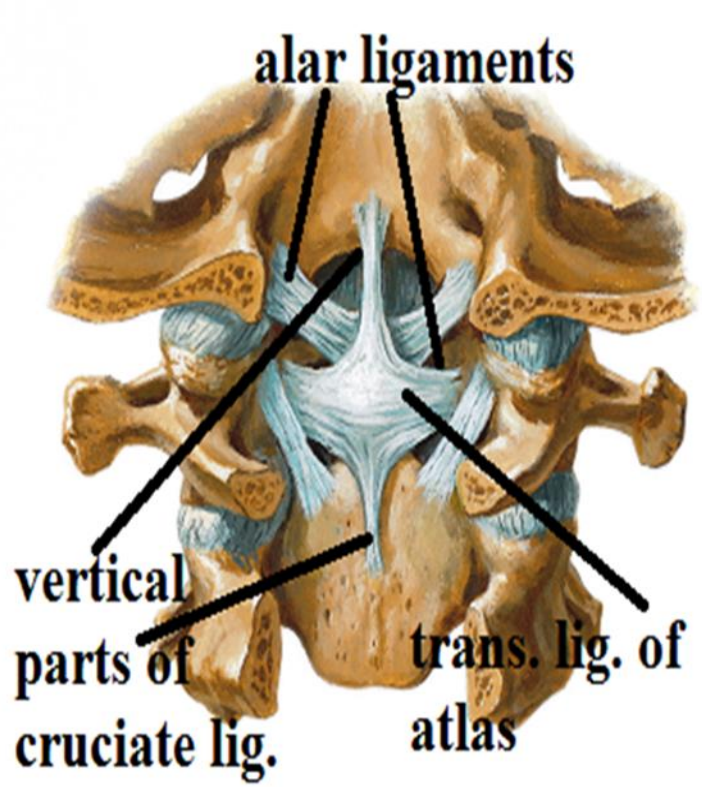


ATLANTO AXIAL JOINTS









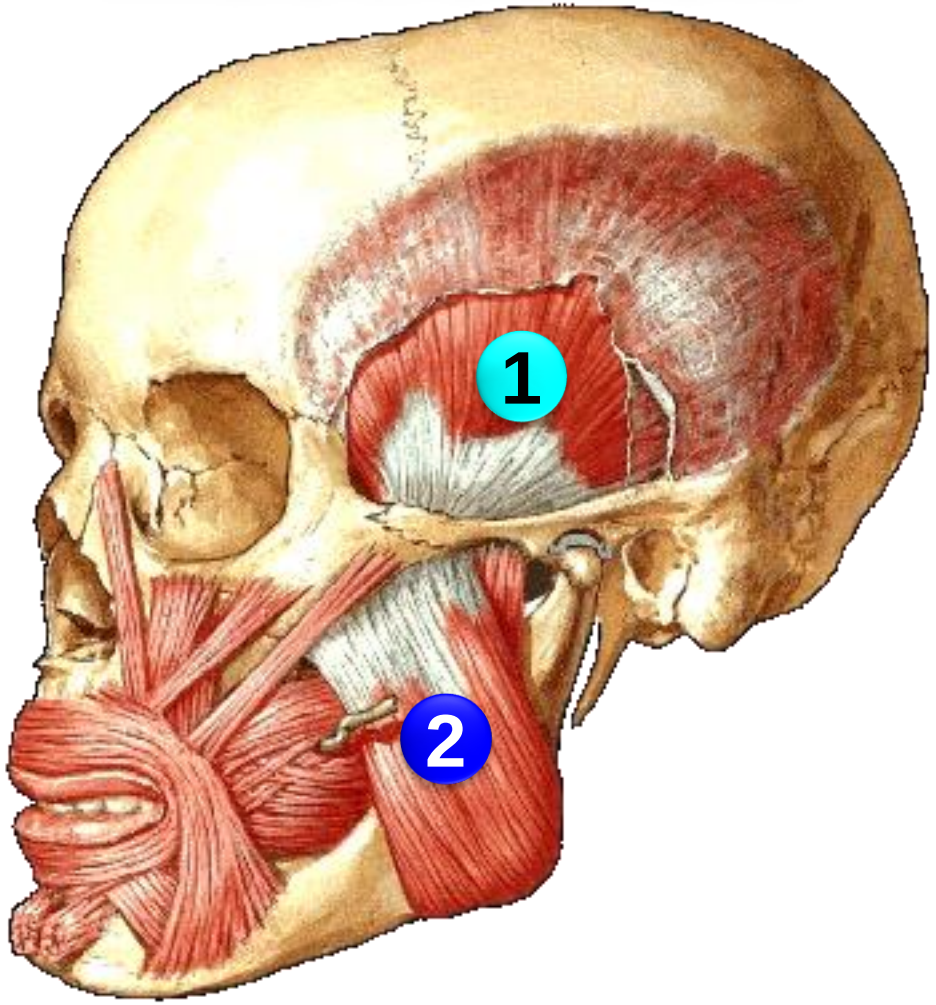
dr_youssefhussein@yahoo.com

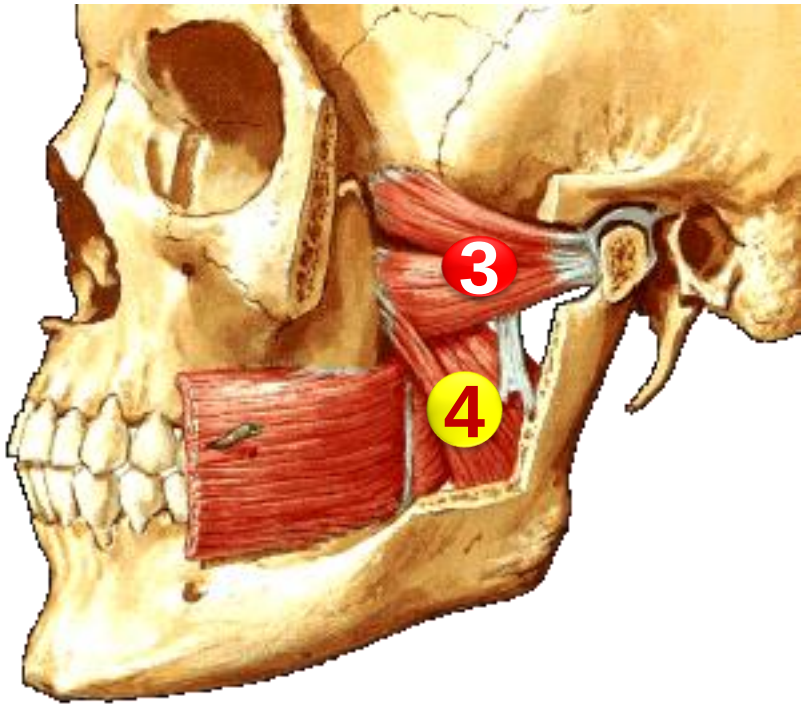
Muscles of mastication

dr_youssefhussein@yahoo.com

Muscles of Mastication

dr_youssefhussein@yahoo.com





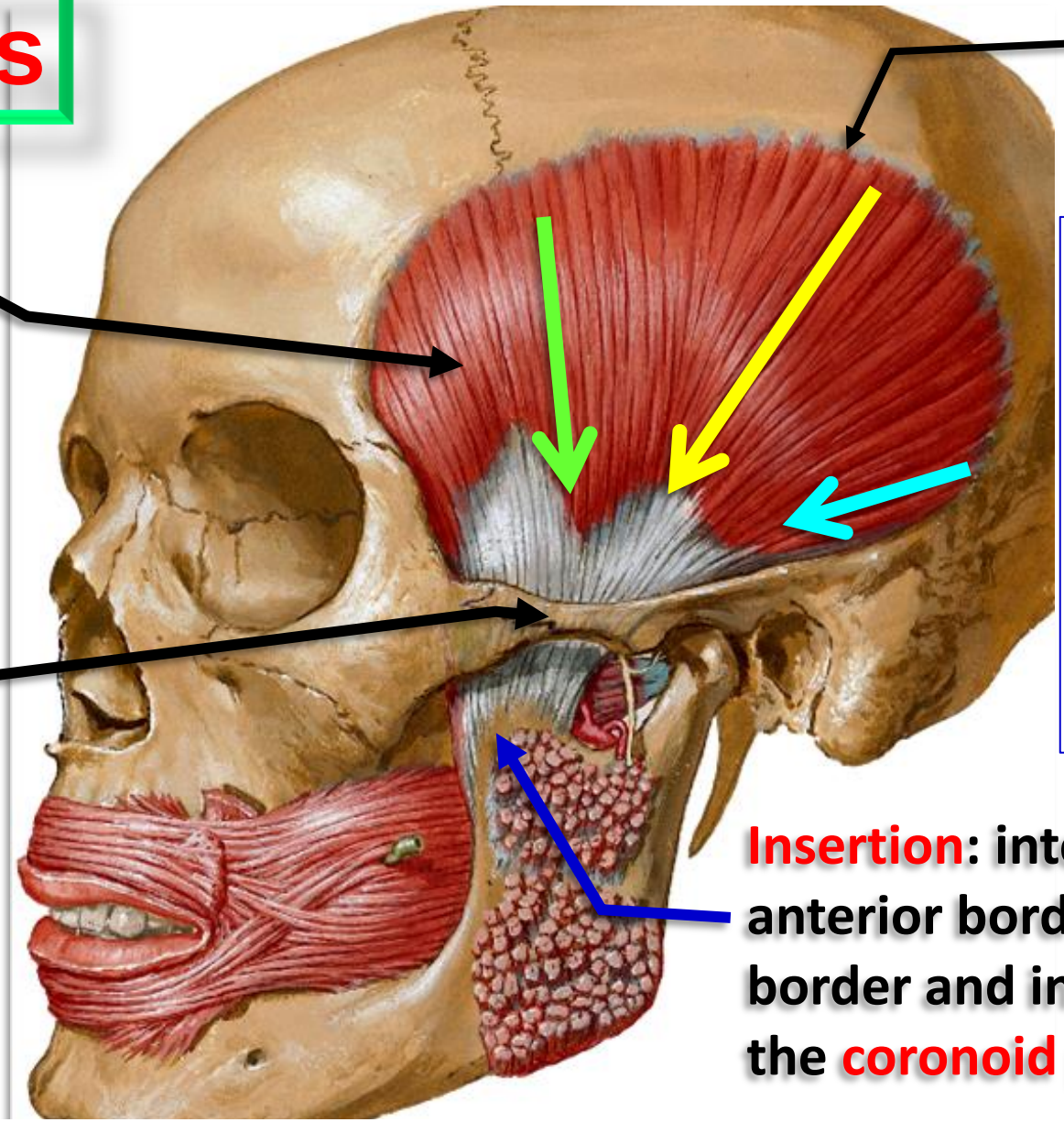
1. Temporalis
2. Masseter
3. Lateral Pterygoid
4. Medial pterygoid

Temporalis

Origin From Temporal fossa and temporal fascia

Zygomatic arch.

Fan shaped muscle



Origin From **Inferior temporal line**

- **Direction of fibres;**

- **Anterior** fibers are vertical downward.
- **Posterior** fibers are downward and forward.
- The **most posterior** horizontally forward.

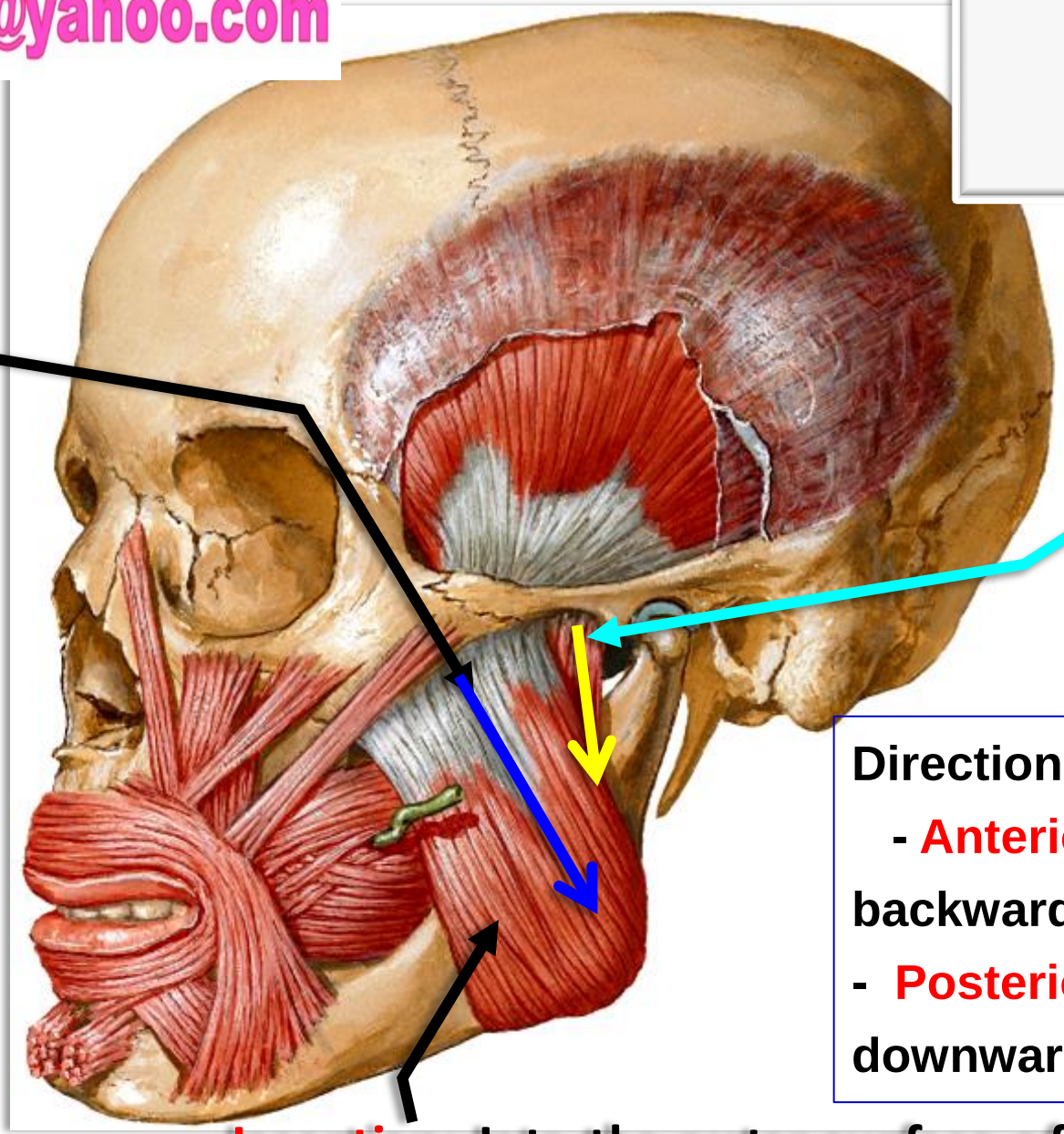
Insertion: into the tip, anterior border and posterior border and inner surface of the **coronoid process.**

dr_youssefhussein@yahoo.com

dr_youssefhussein@yahoo.com

Masseter muscle

Origin: Superficial fibers from lower border zygomatic arch



Origin: Deep fibers from deep surface of zygomatic arch

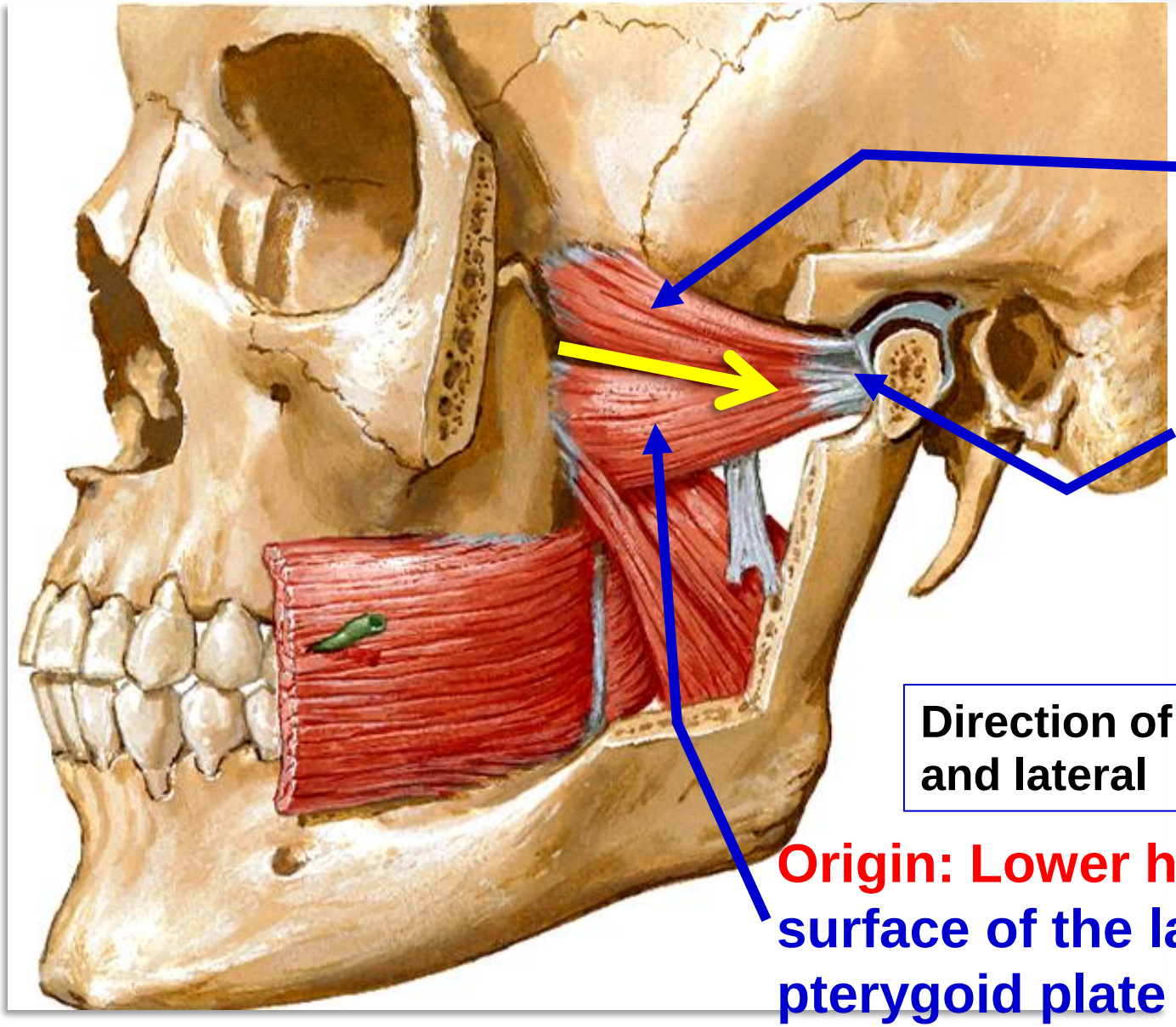
Direction of the fibres:

- **Anterior** directed downwards and backwards.
- **Posterior** directed vertically downwards.

Insertion: Into the outer surface of the ramus of the mandible

dr_youssefhussein@yahoo.com

Lateral Pterygoid muscle



Origin: Upper head from infratemporal surface of greater wing of sphenoid

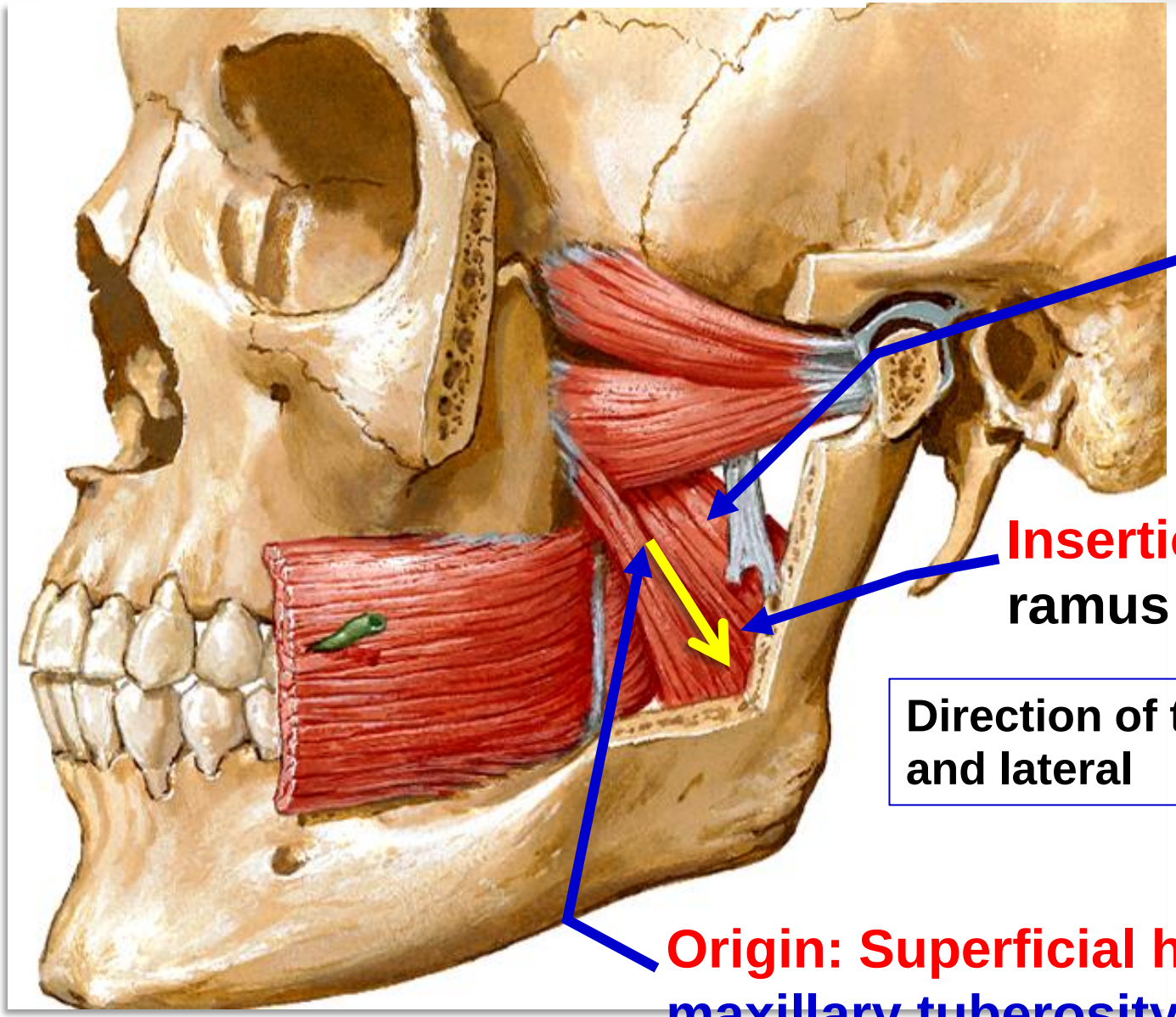
- **Insertion: Pterygoid fovea on anterior aspect of neck of mandible.**
- **Capsule and articular disc of temporomandibular joint.**

Direction of the fibres: horizontally backward and lateral

Origin: Lower head lateral surface of the lateral pterygoid plate

dr_youssefhussein@yahoo.com

Medial Pterygoid muscle



Origin: Deep head from medial surface of lateral pterygoid plate

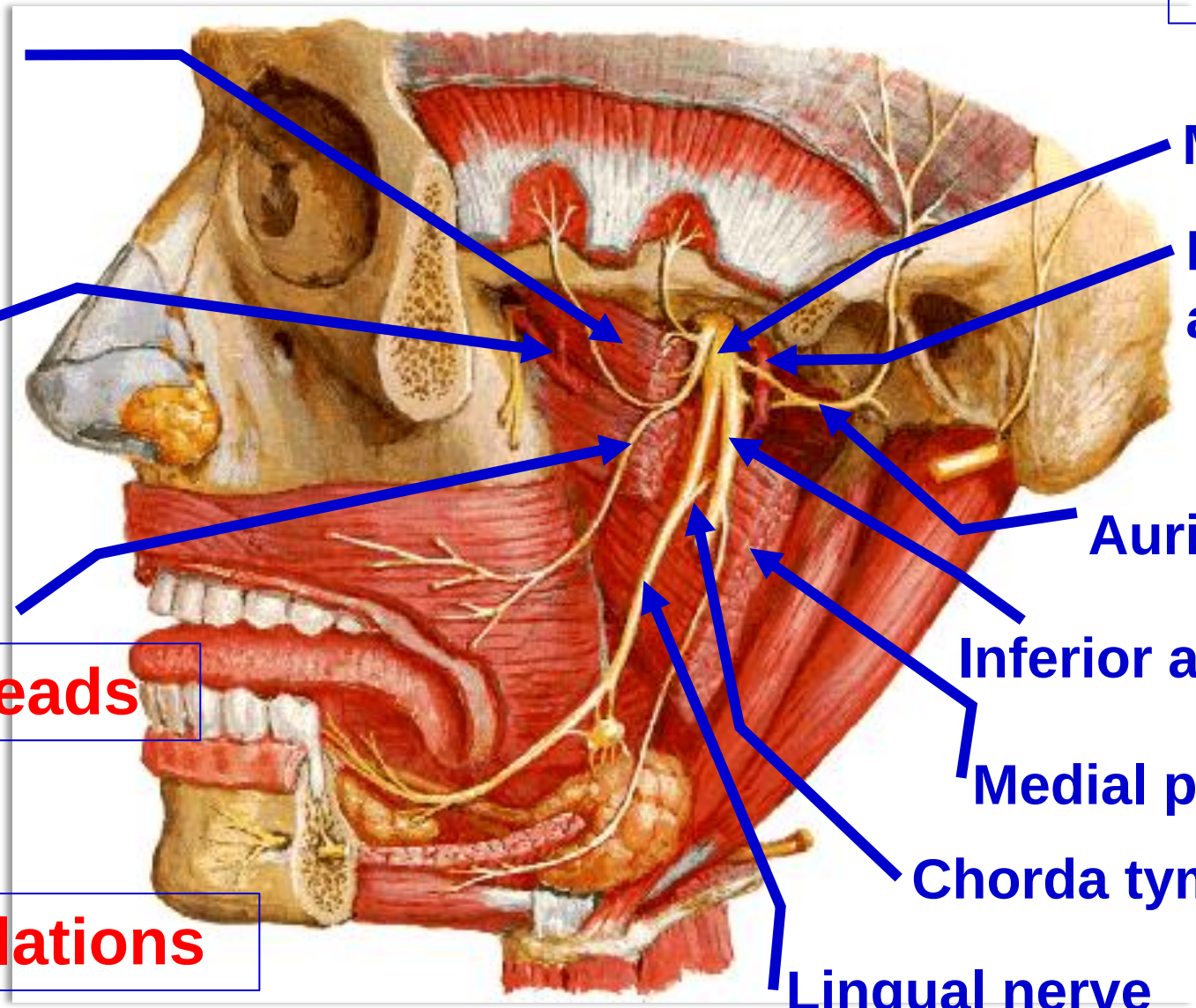
Insertion: Into the inner surface of the ramus and angle of the mandible

Direction of the fibres: downward, backward and lateral

Origin: Superficial head from maxillary tuberosity

dr_youssefhussein@yahoo.com

Deep Relations



Lateral pterygoid

3rd part of Maxillary artery

Buccal nerve

Between 2 heads

Mandibular nerve

Middle meningeal artery

Optic ganglion

Auriculotemporal nerve

Inferior alveolar nerve

Medial pterygoid muscle

Chorda tympani

Lingual nerve

Inferior Relations

★ 1st part of maxillary artery

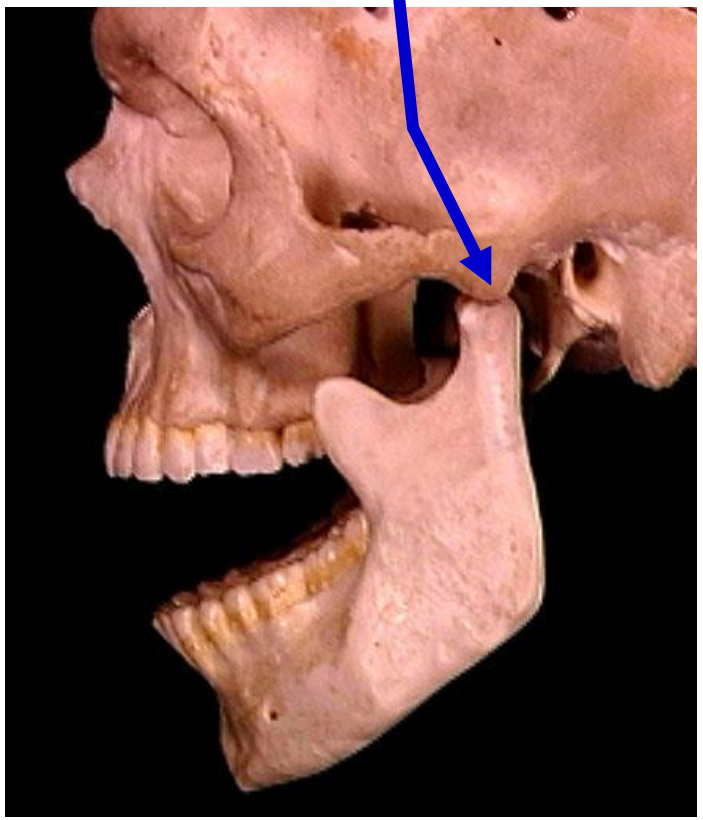
★ 2nd part of maxillary artery

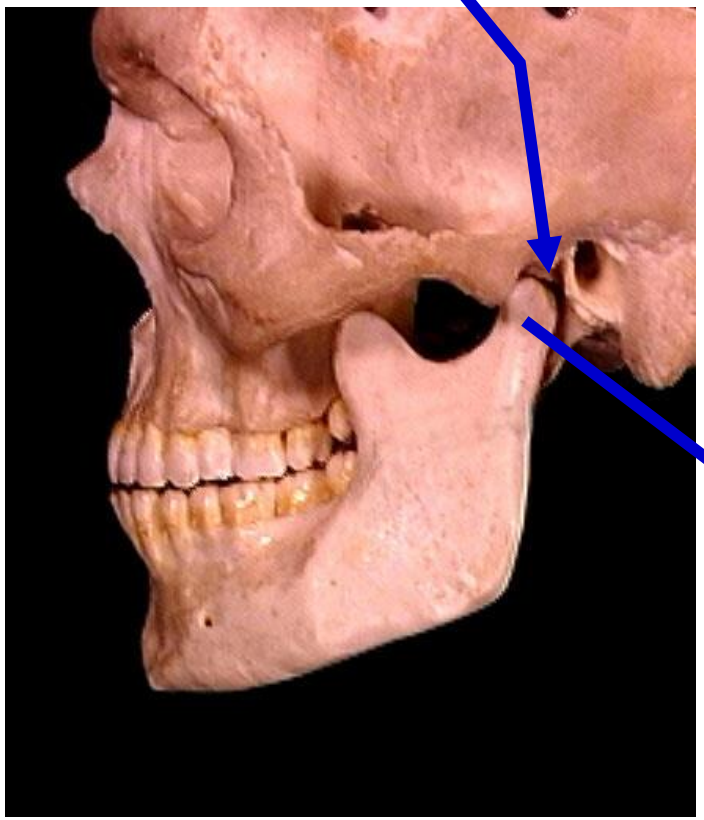
dr_youssefhussein@yahoo.com

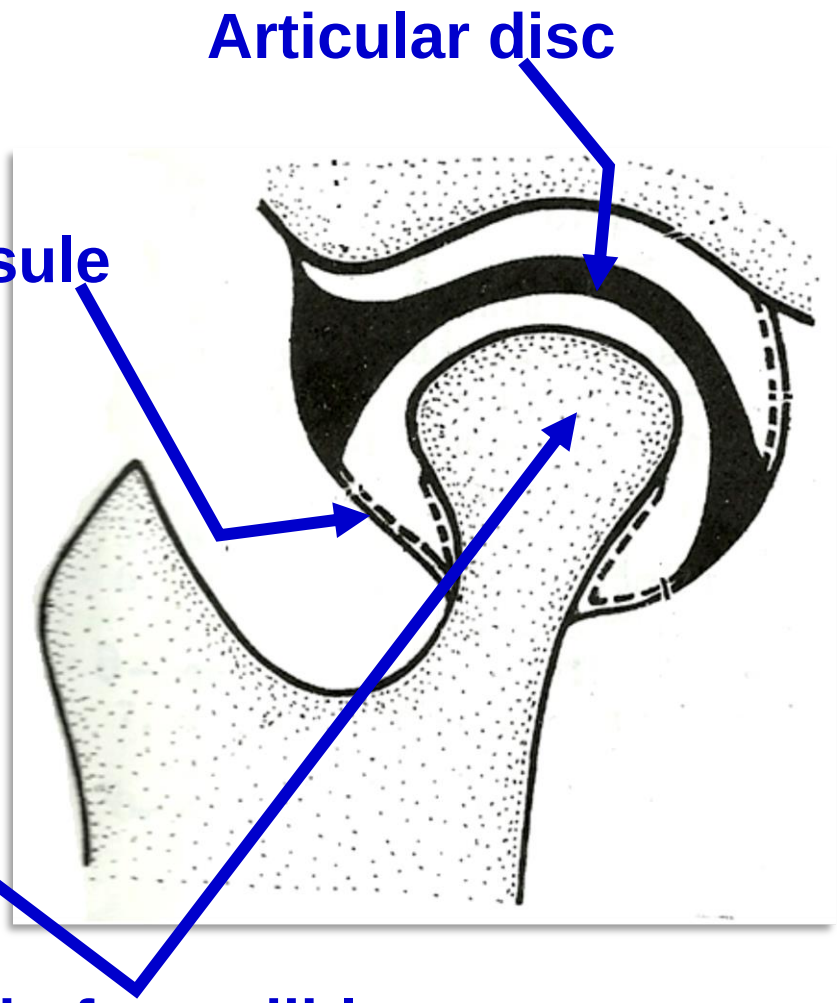
Temporomandibular joint

dr_youssefhussein@yahoo.com

Type: synovial joint of ellipsoid variety







- **Articular surfaces:** a) Head (condyle) of the mandible.

b) Articular (glenoid) fossa and articular tubercle of temporal bone.

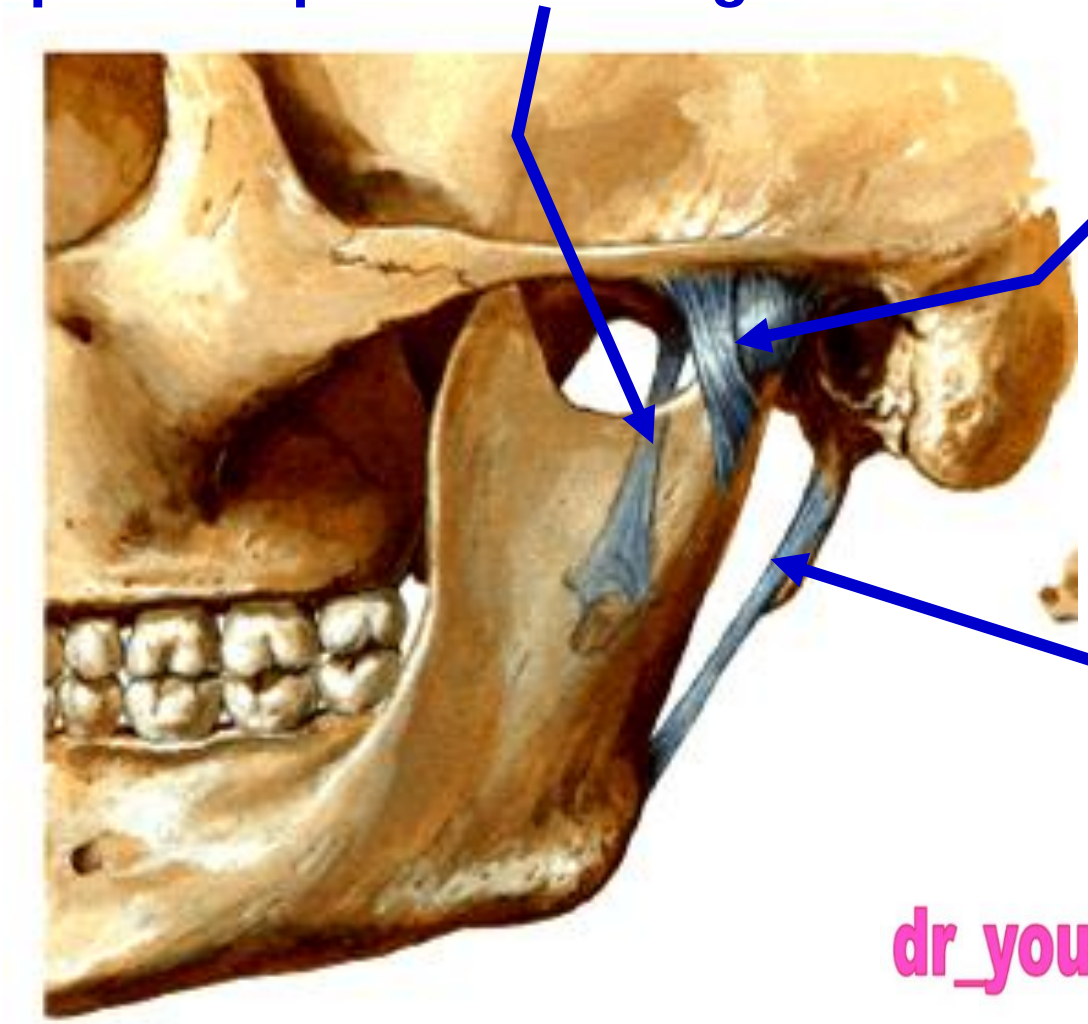
c) Articular disc divided the cavity into upper and lower parts.

- **Capsule**: attached around the articular surfaces. It is lined by synovial membrane.

dr_youssefhussein@yahoo.com

Sphenomandibular ligament from spine of sphenoid to lingula

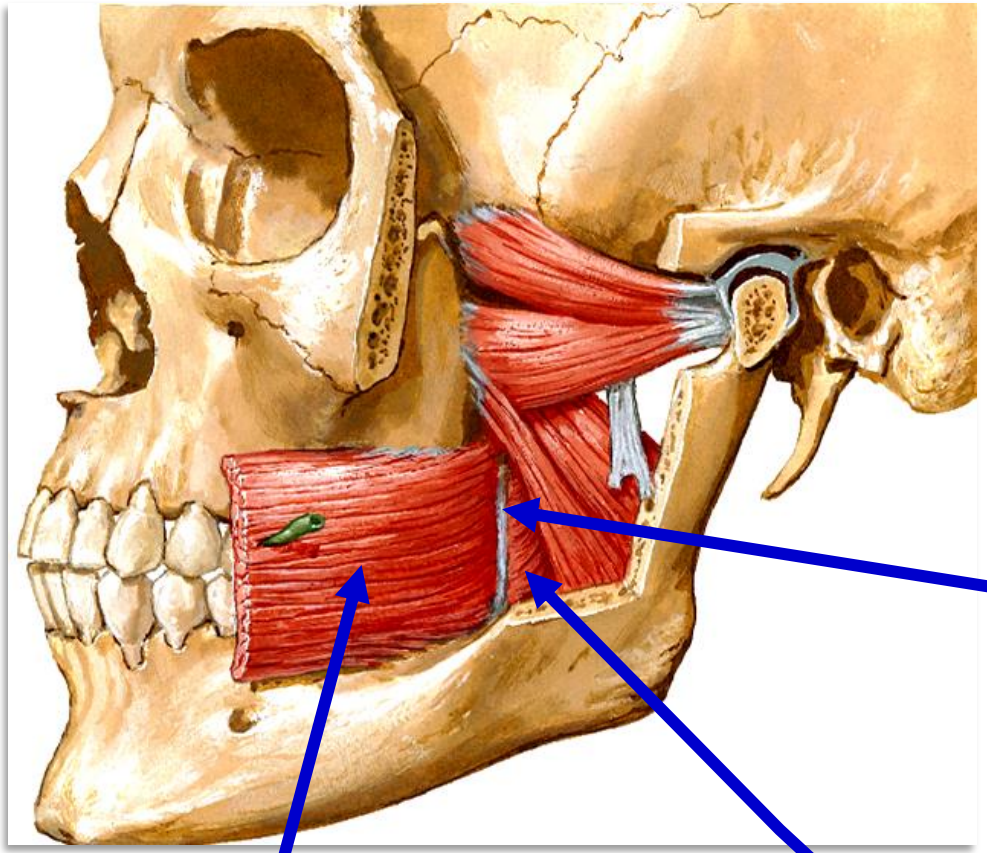
Tempromandibular ligament from articular eminence (root of zygomatic arch) to lateral side of neck of mandible

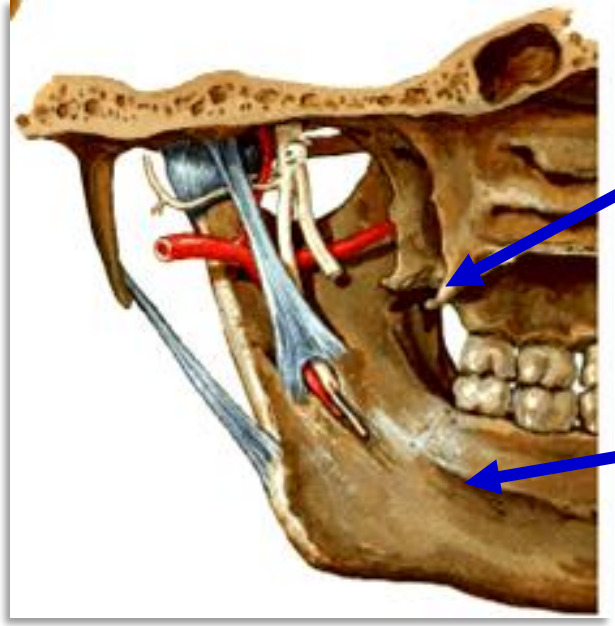


Stylomandibular ligament from styloid process to angle of mandible, separates parotid gland from submandibular gland

dr_youssefhussein@yahoo.com

Ligaments of temporomandibular joint





Pterygoid hamulus

Mylohyoid line

Pterygomandibular ligament: extends from **pterygoid hamulus** to the **posterior end of mylohyoid line** of mandible.

- It gives origin to buccinator and superior constrictor muscle of the pharynx.

Buccinator

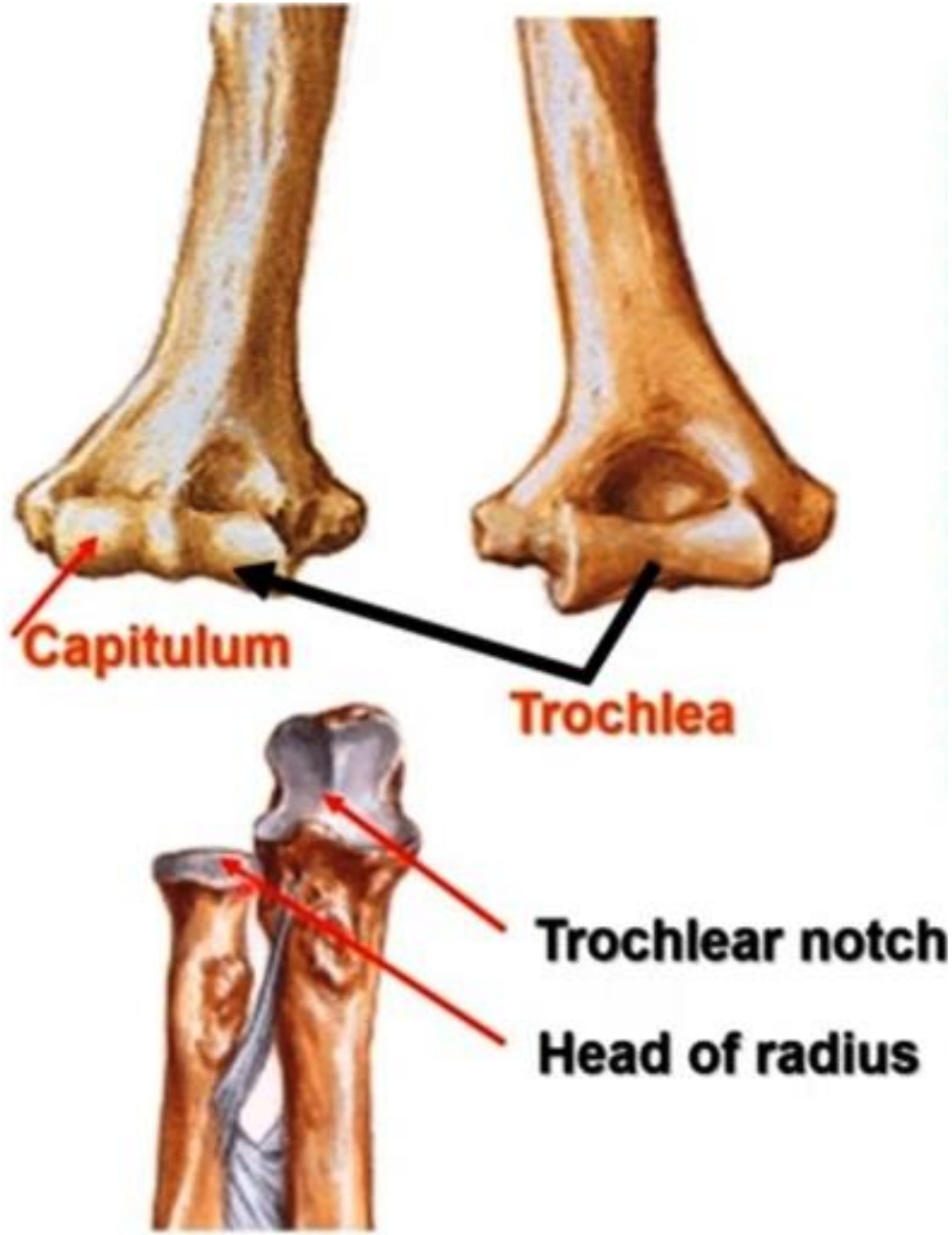
Superior constrictor muscle of pharynx

dr_youssefhussein@yahoo.com

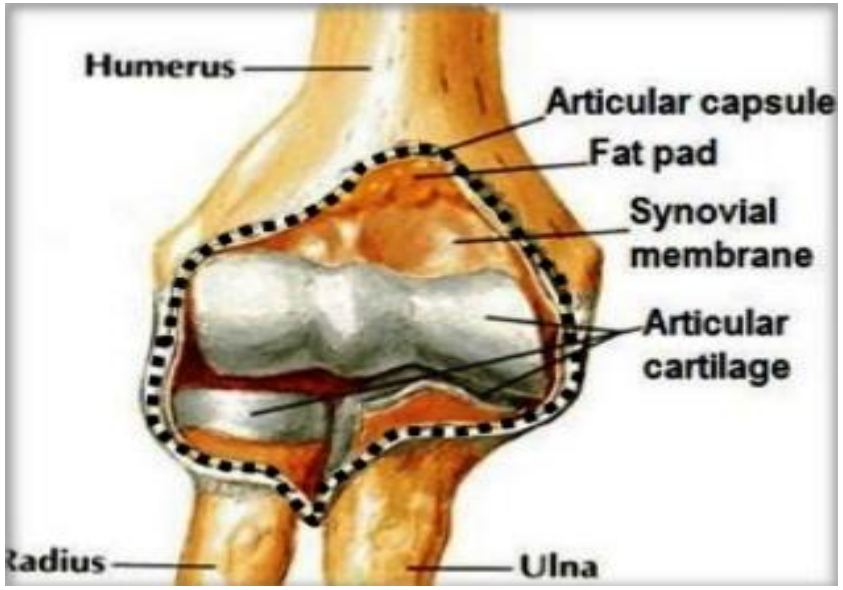
Ligaments of temporomandibular joint

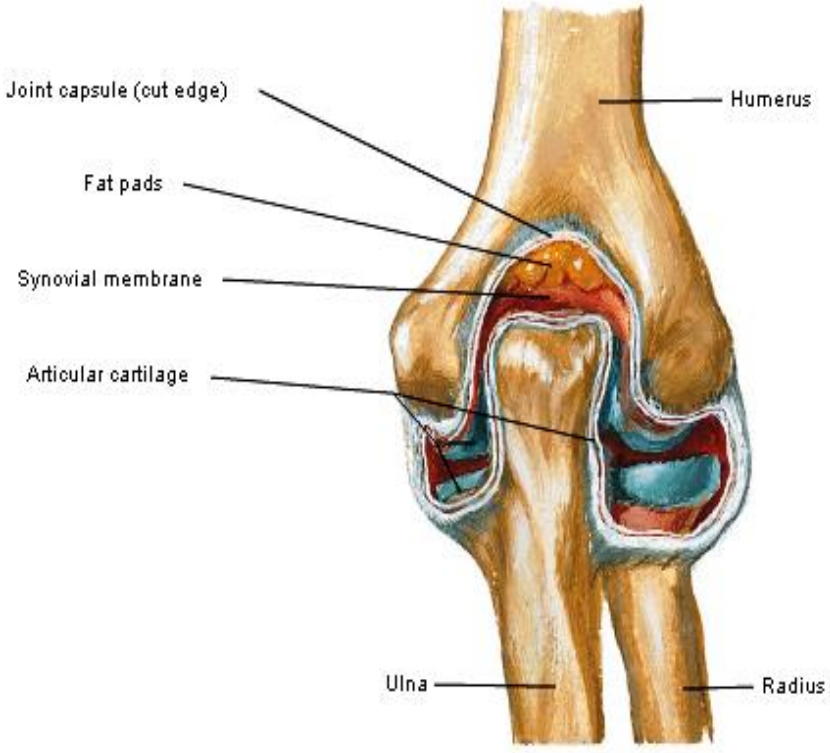
ELBOW JOINT


Annular
ligament


Capitulum
Trochlea
Trochlear notch
Head of radius

Capsule

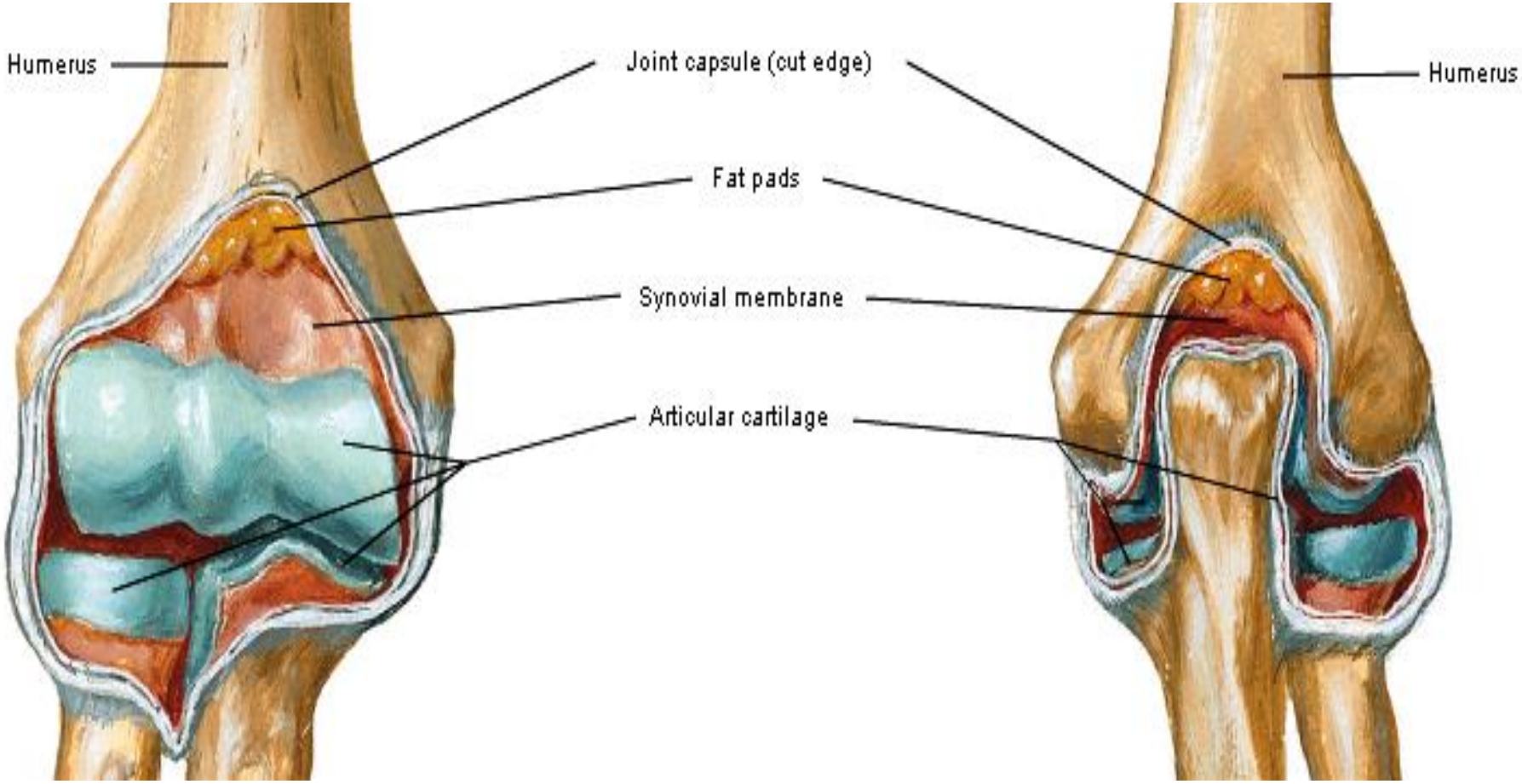

Humerus
Articular capsule
Fat pad
Synovial membrane
Articular cartilage
Radius
Ulna


Joint capsule (cut edge)
Humerus
Fat pads
Synovial membrane
Articular cartilage
Ulna
Radius

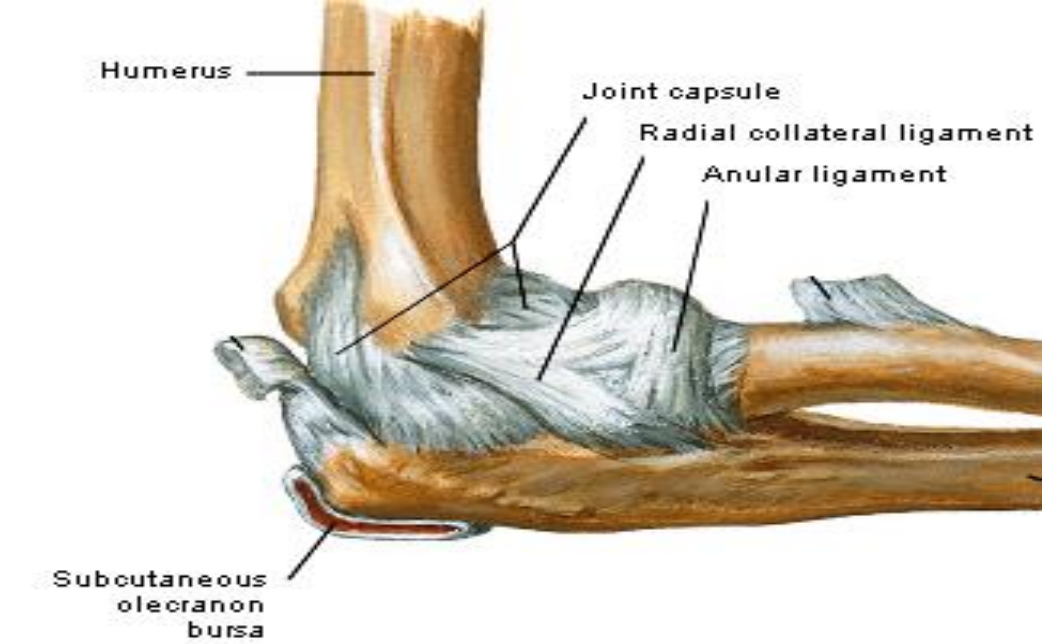
ELBOW JOINT

Synovial membrane:-

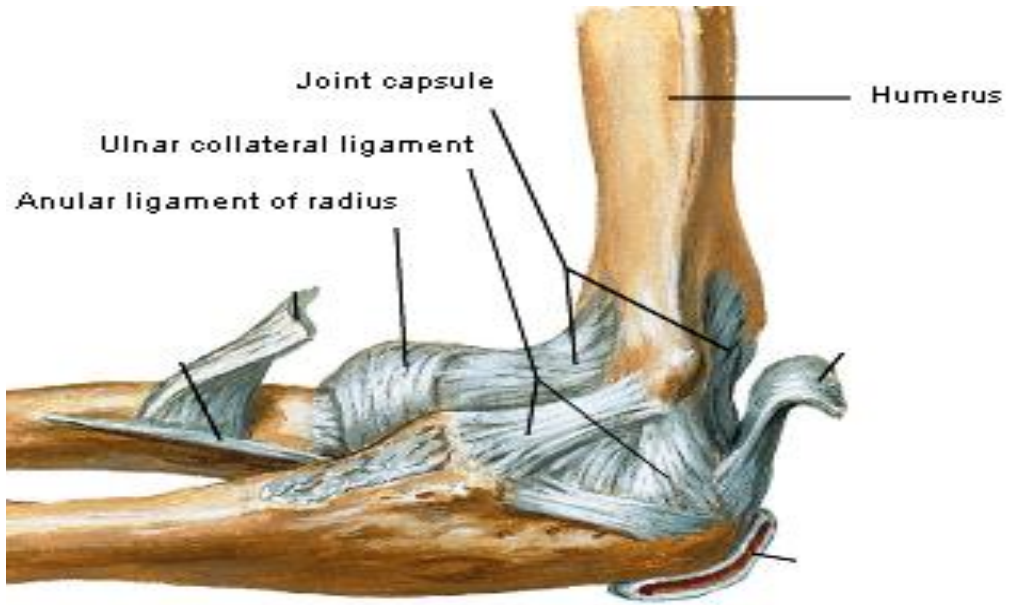
Lines the capsule and covers the non articular structures



Ligaments:-



Lateral



Medial

ELBOW JOINT

Relations

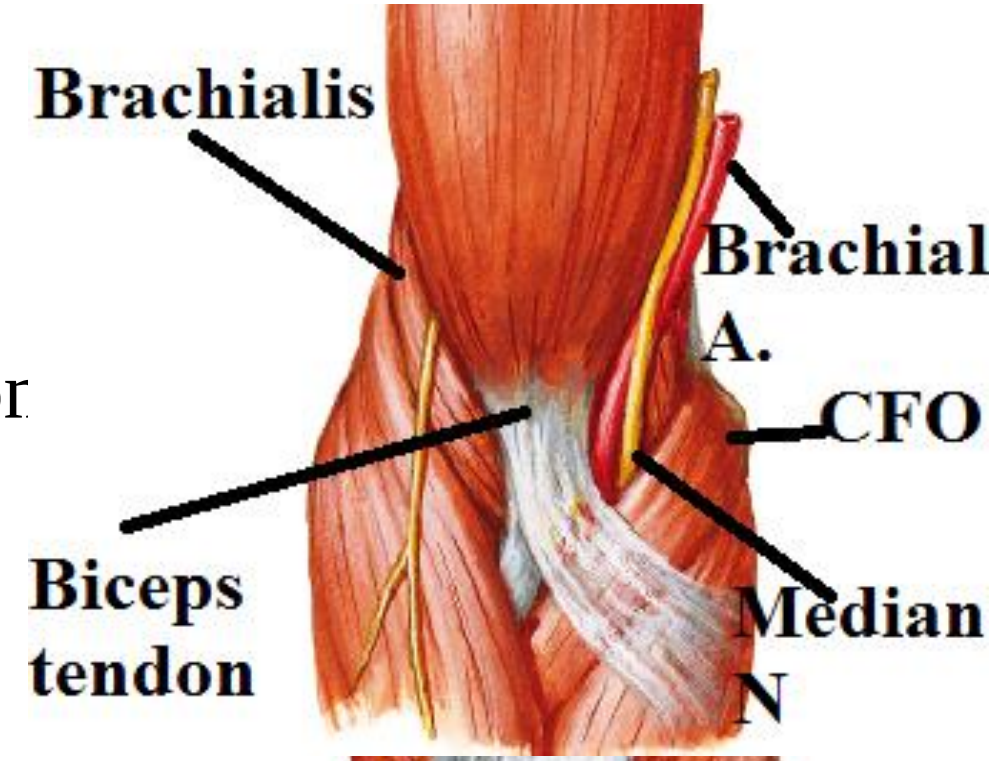
Anteriorly:

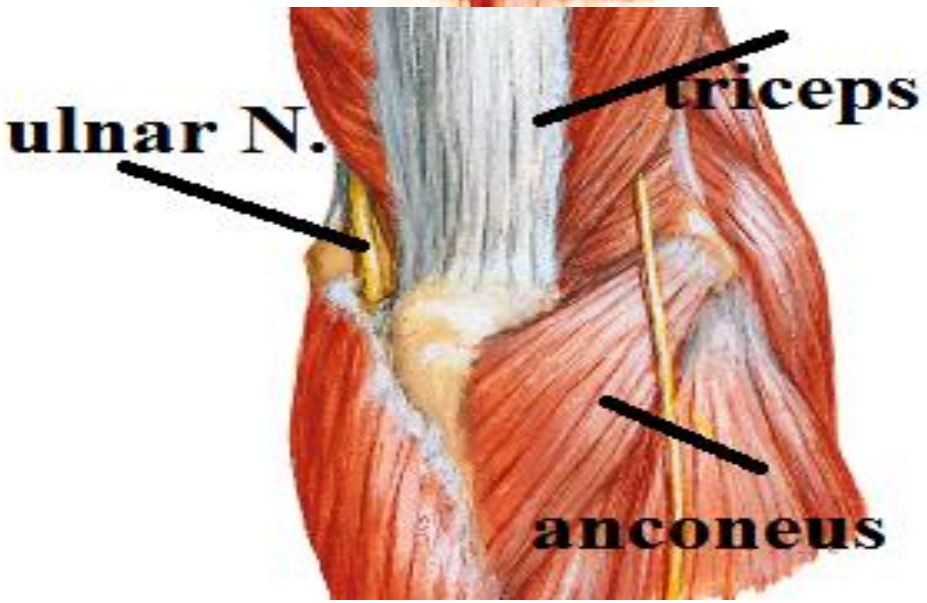
Brachialis separating it fror
median nerve,
brachial artery,
biceps tendon

Posteriorly: triceps & anconeus

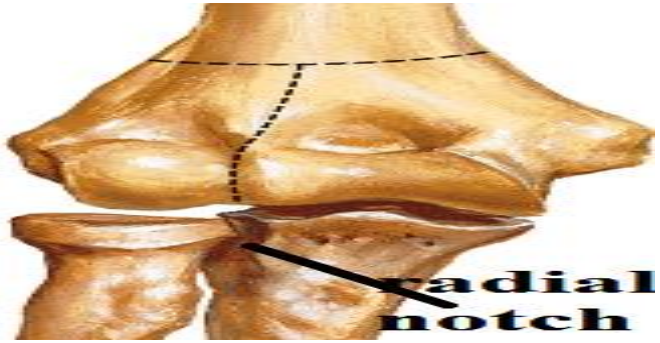
Medially: ulnar nerve, CFC

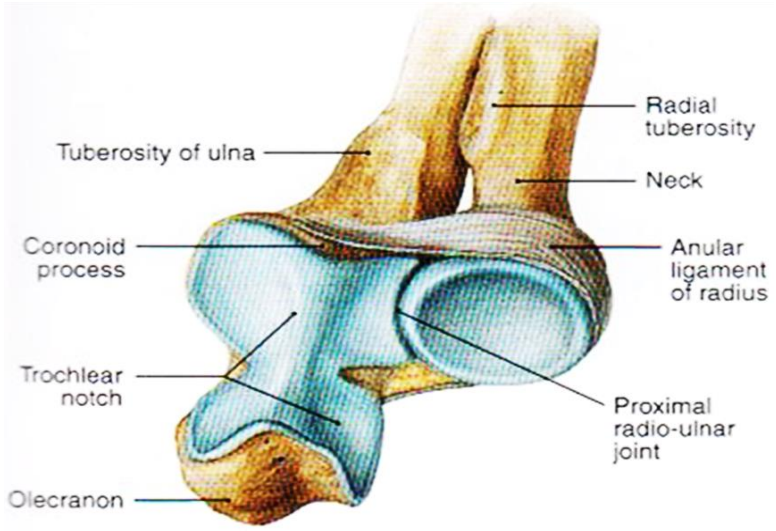
Laterally:- radial nerve, CEO

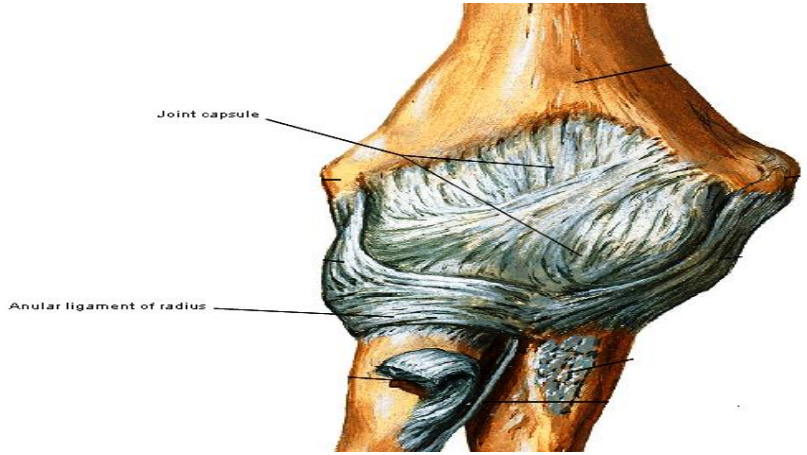




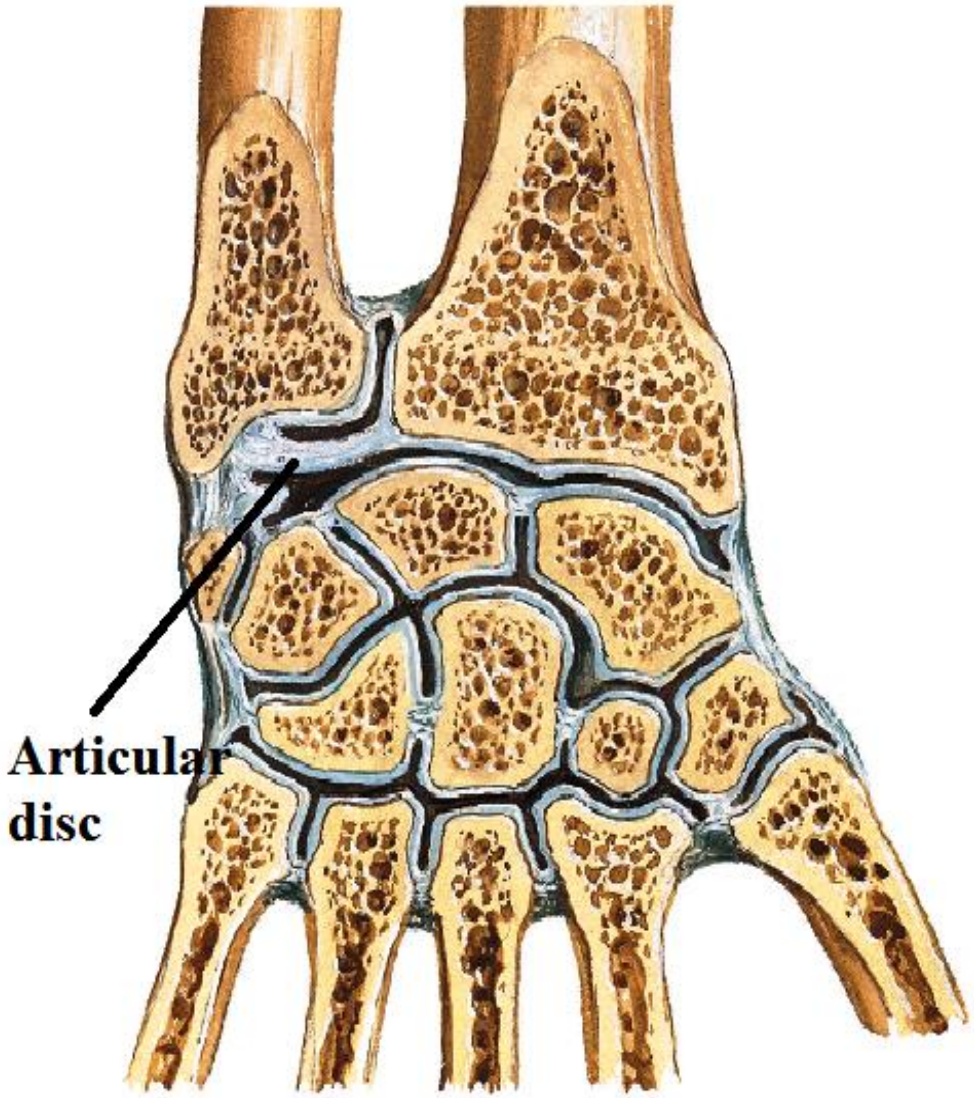
A- SUPERIOR RADIOULNAR JOINT

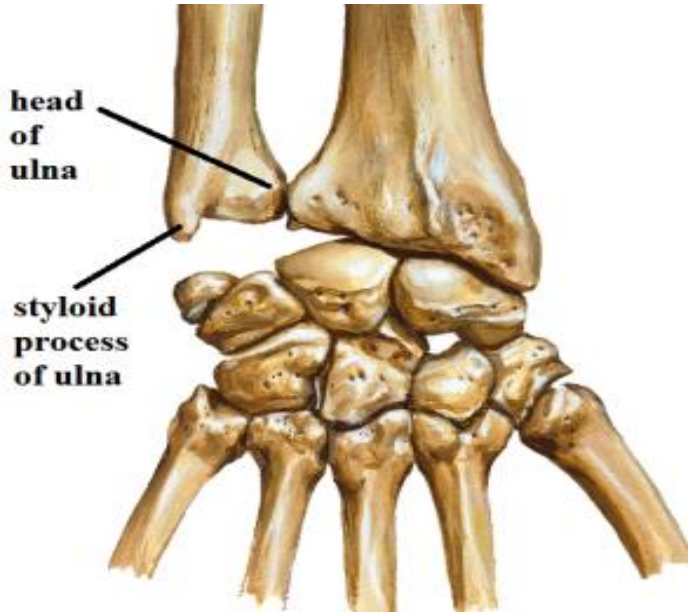


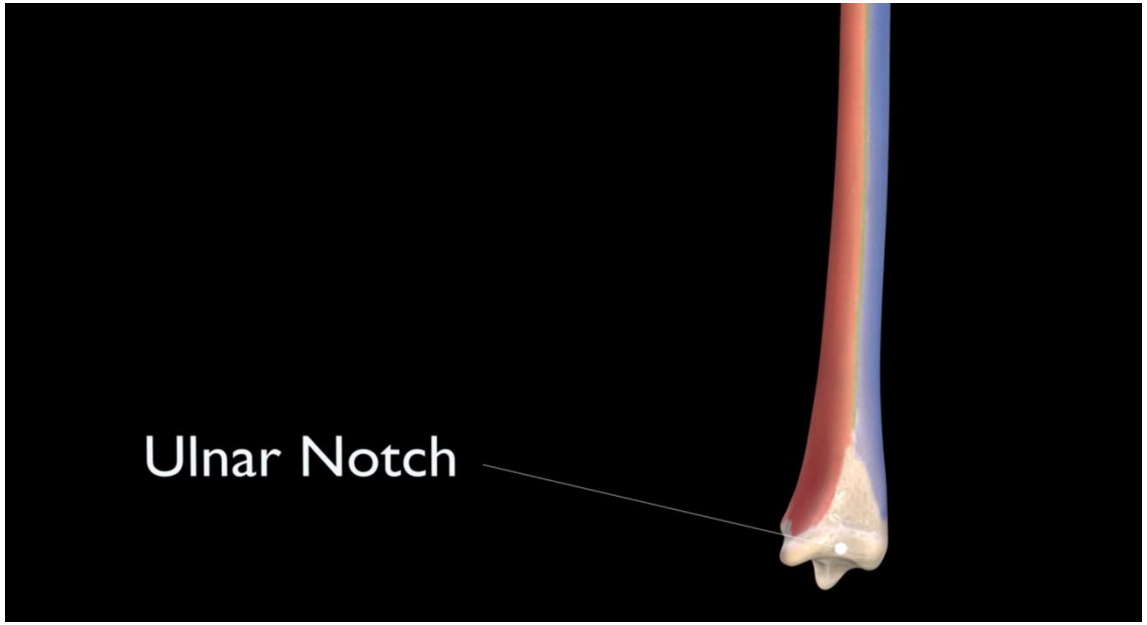




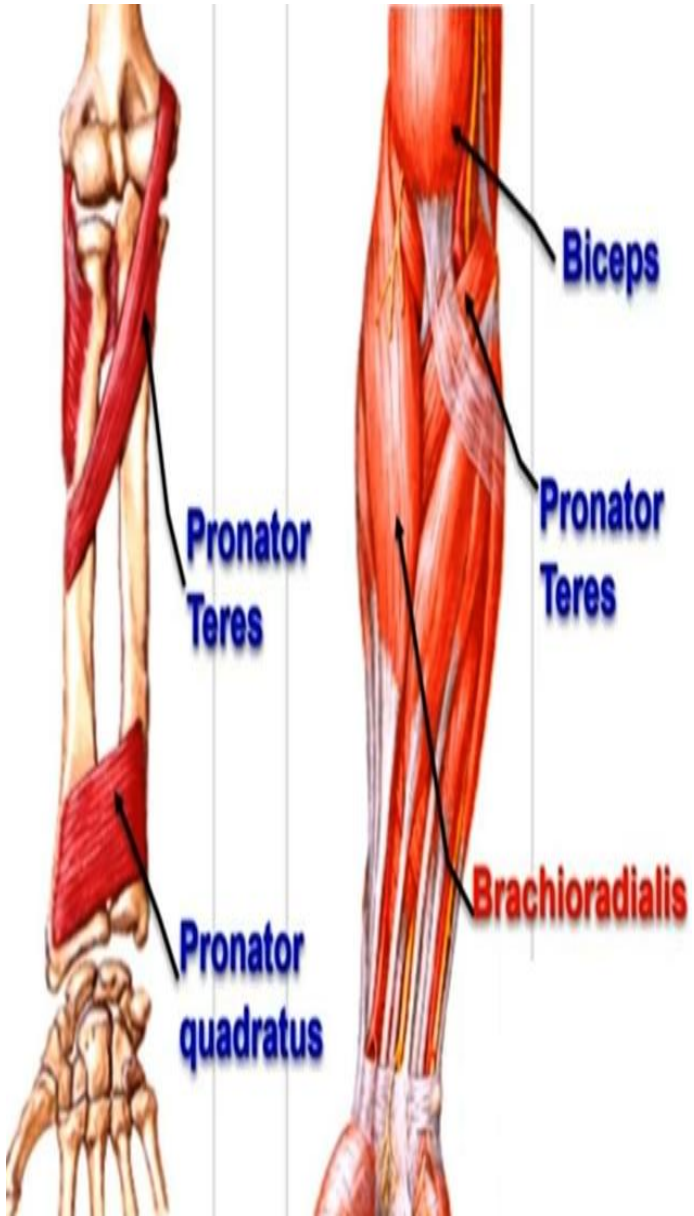
B- INFERIOR RADIOULNAR JOINT



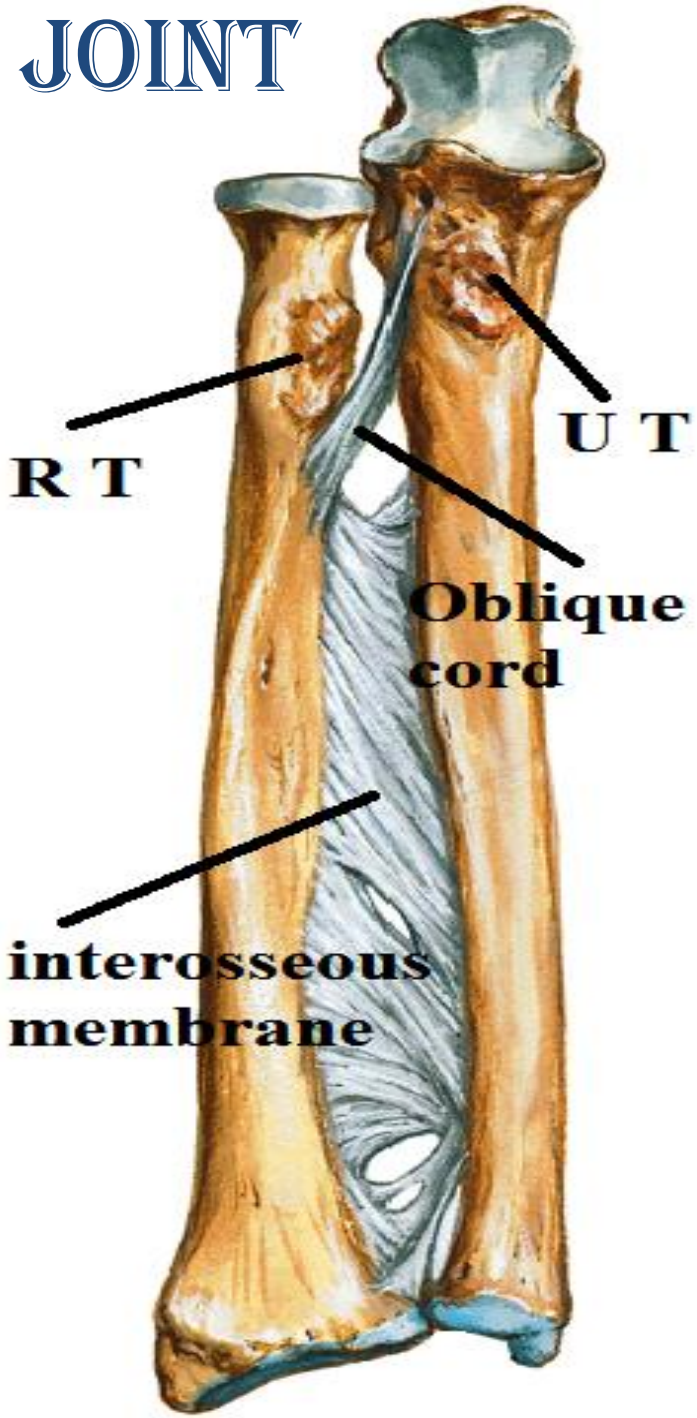


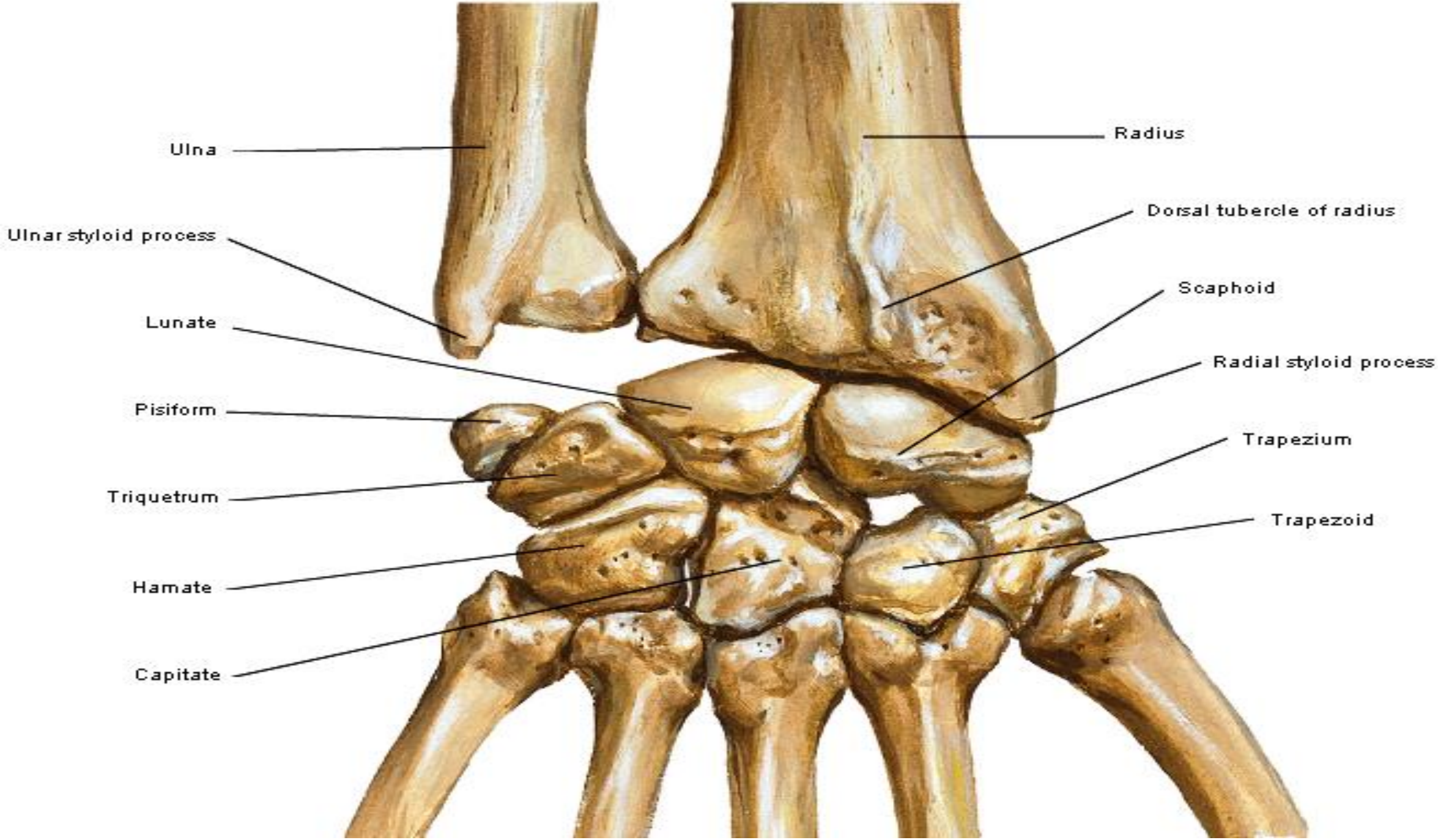


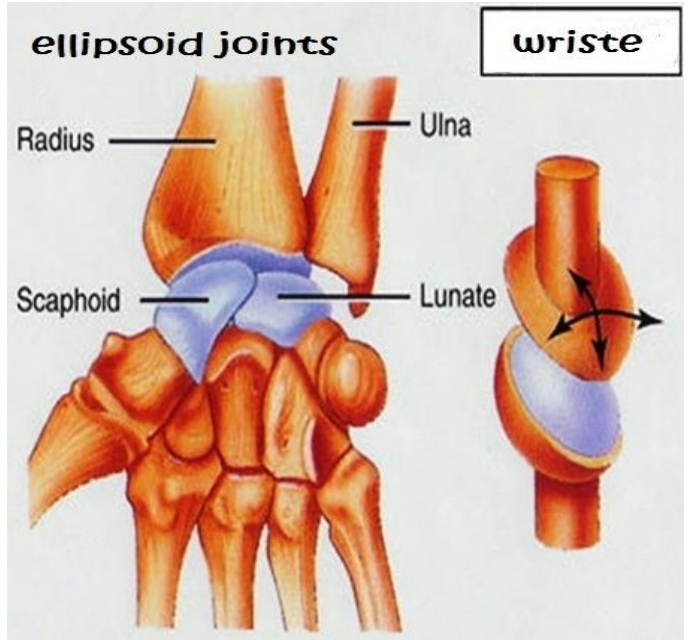
RADIOULNAR JOINT

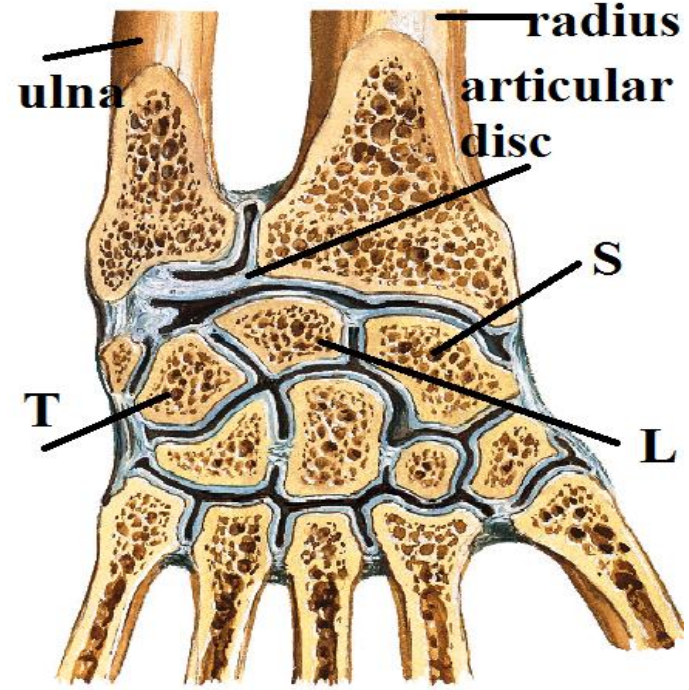


C- MIDDLE RADIOULNAR JOINT

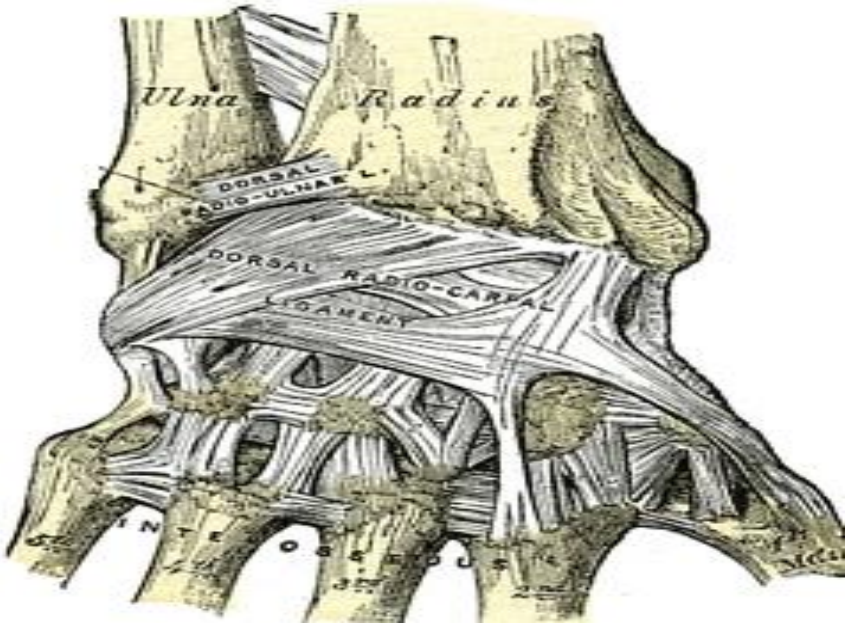


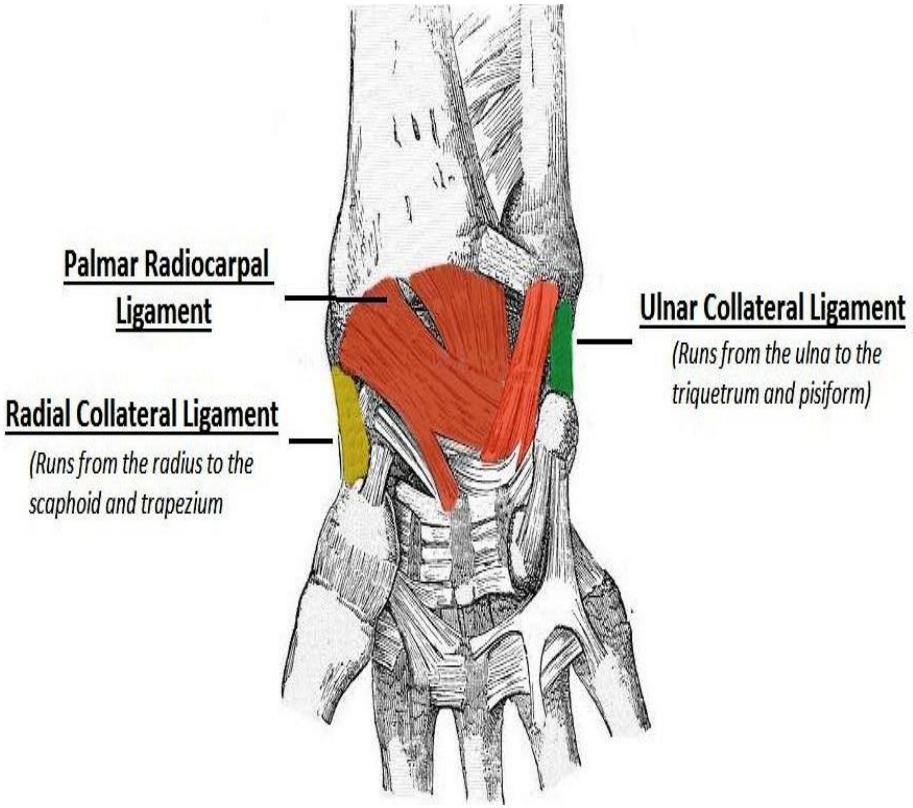

Ulna
Radius
Dorsal tubercle of radius
Ulnar styloid process
Scaphoid
Lunate
Radial styloid process
Pisiform
Trapezium
Triquetrum
Trapezoid
Hamate
Capitate

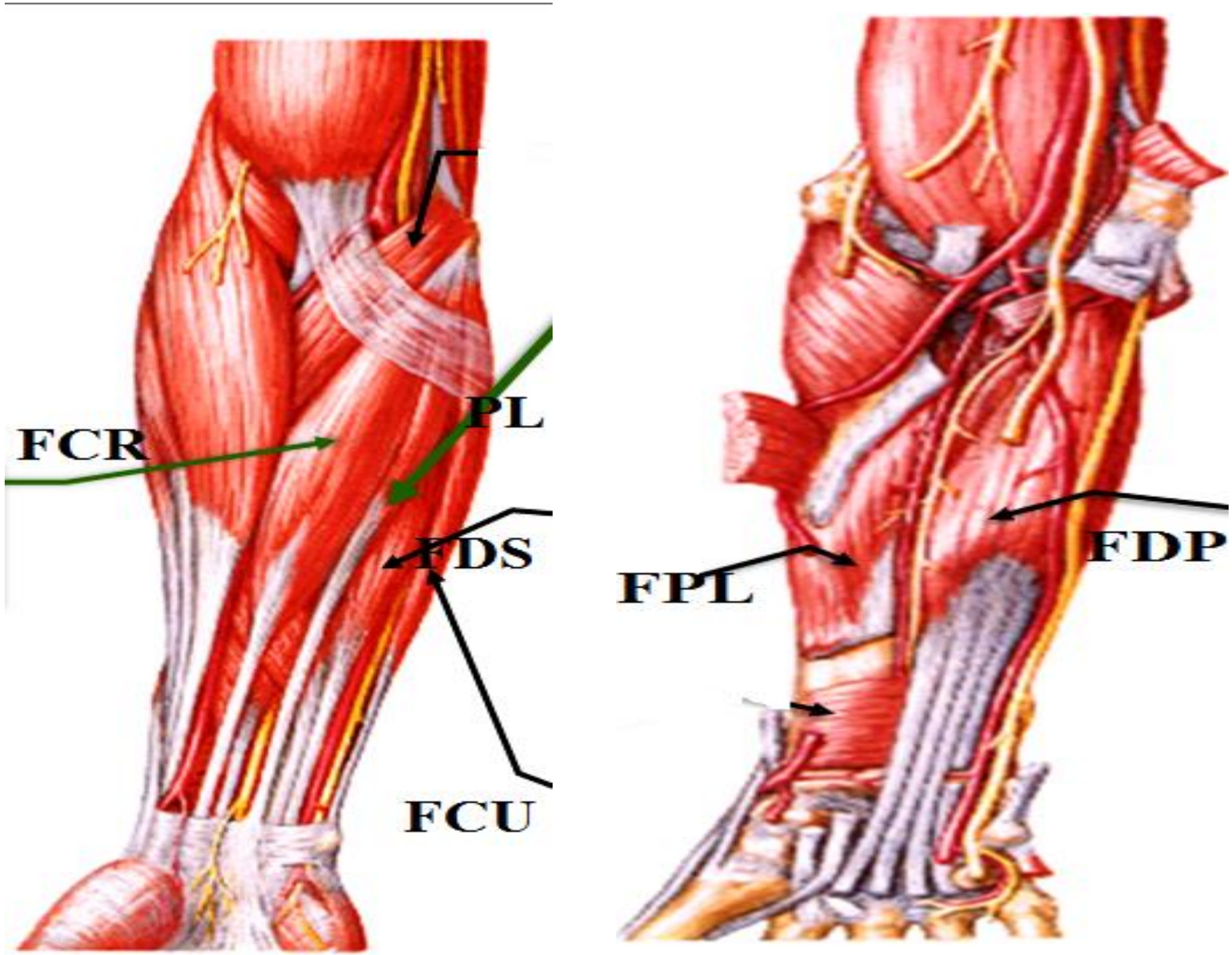

ellipsoid joints
wriste
Radius
Ulna
Scaphoid
Lunate

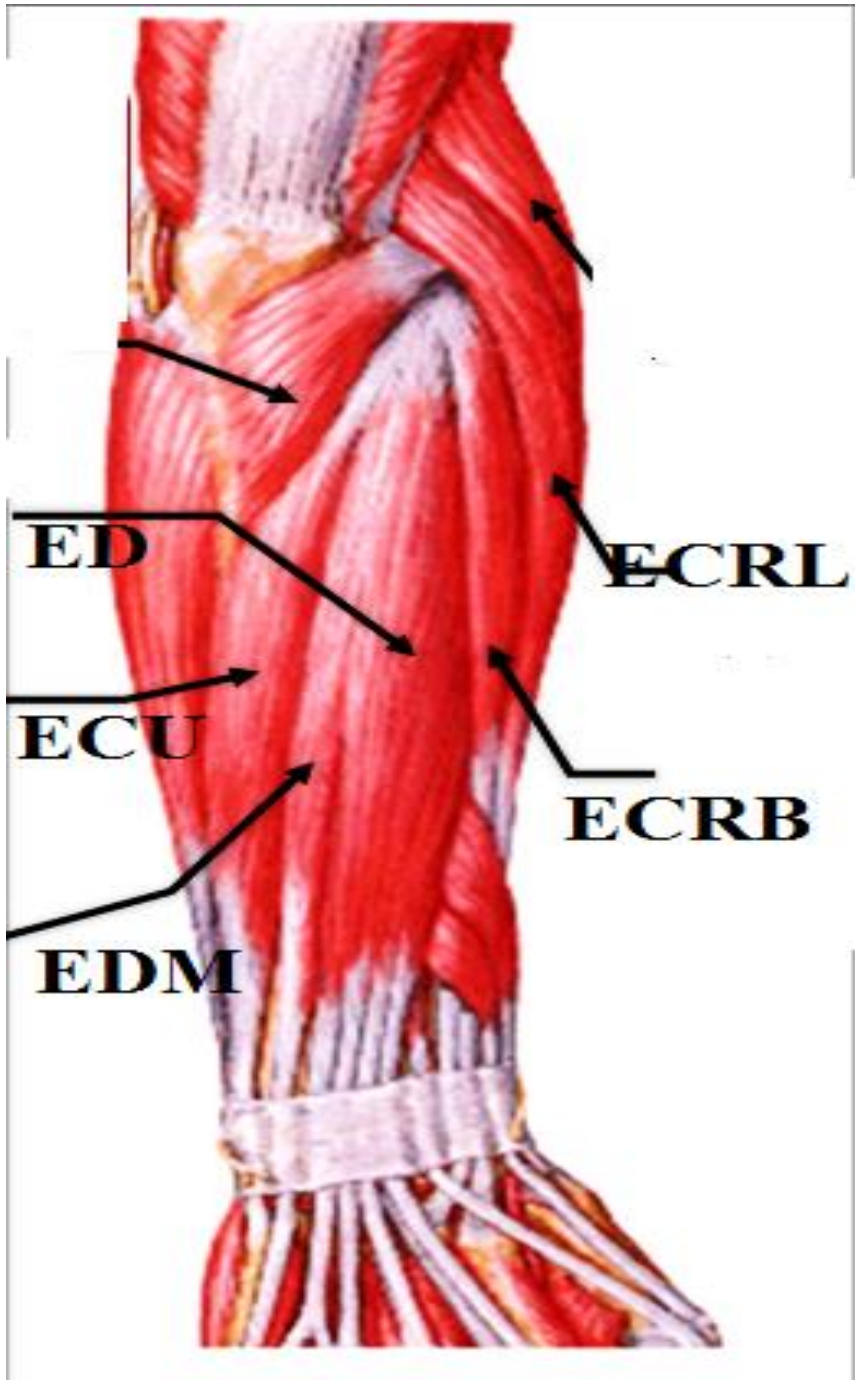

radius
ulna
articular
disc
S
T
L

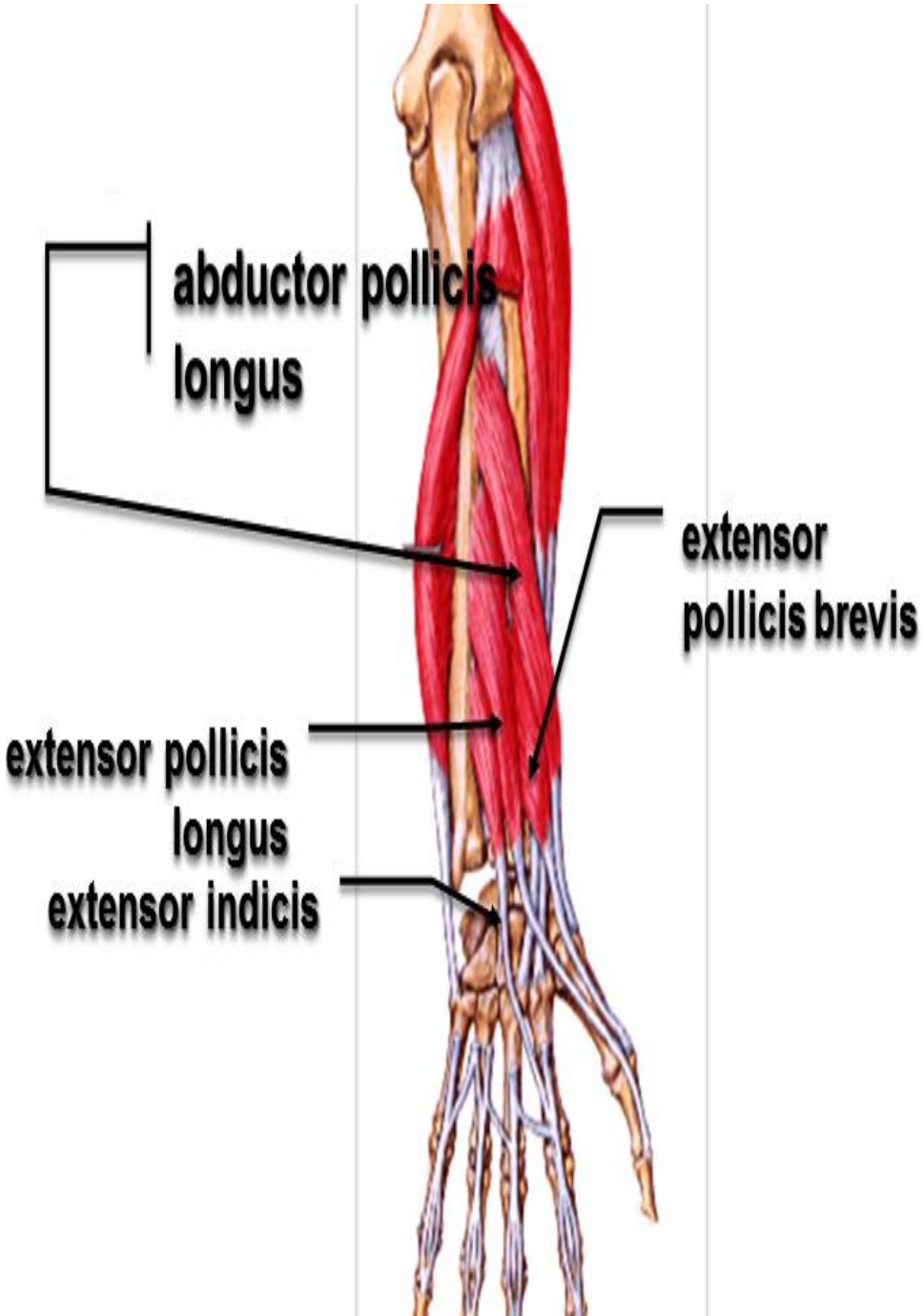
Ligaments:-


Ulna
Radius
DORSAL
RADIO-ULNAR L.
DORSAL RADIO-CARPAL
LIGAMENT

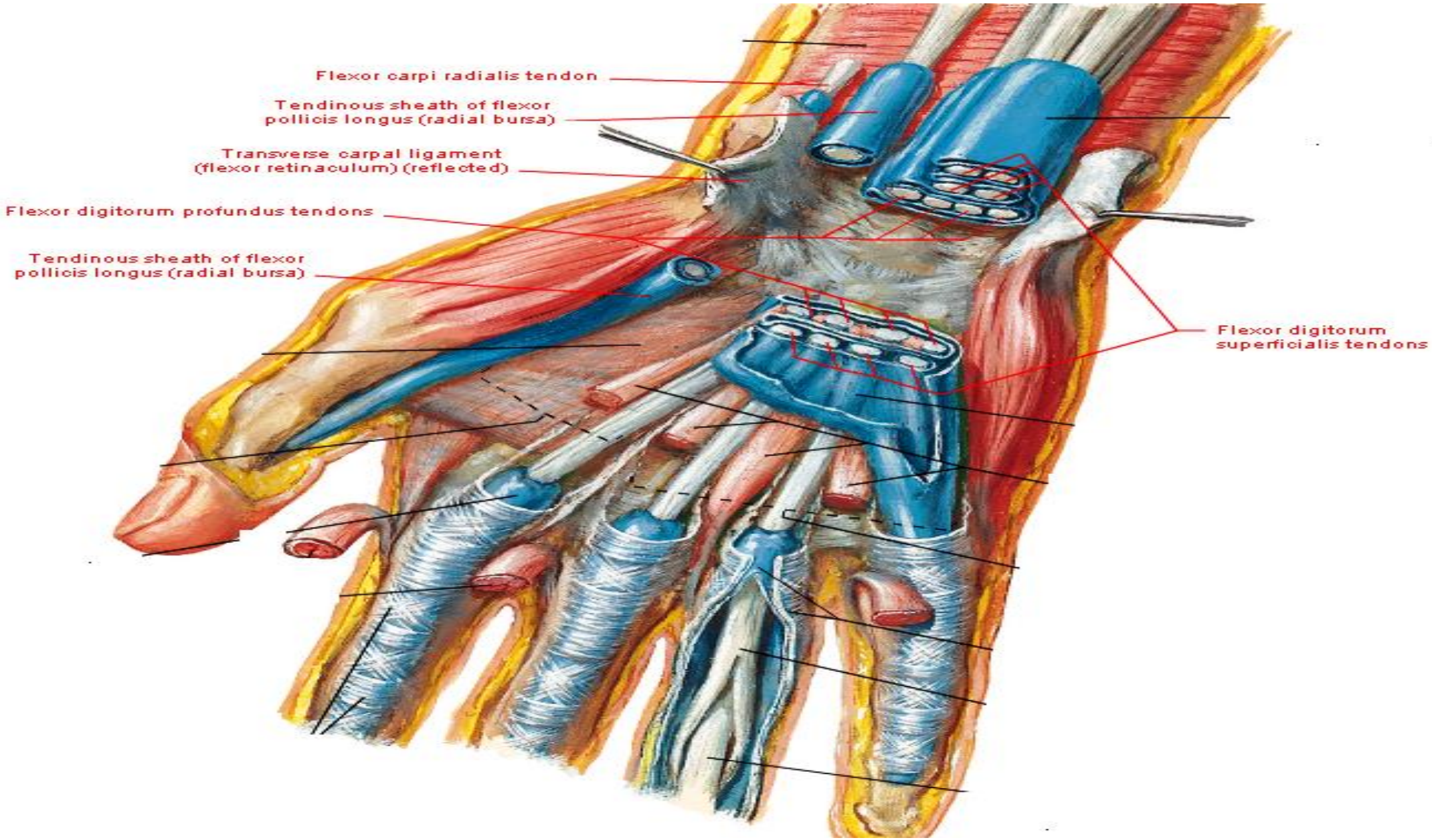

Palmar Radiocarpal Ligament
Radial Collateral Ligament
(Runs from the radius to the scaphoid and trapezium
Ulnar Collateral Ligament
(Runs from the ulna to the triquetrum and pisiform)

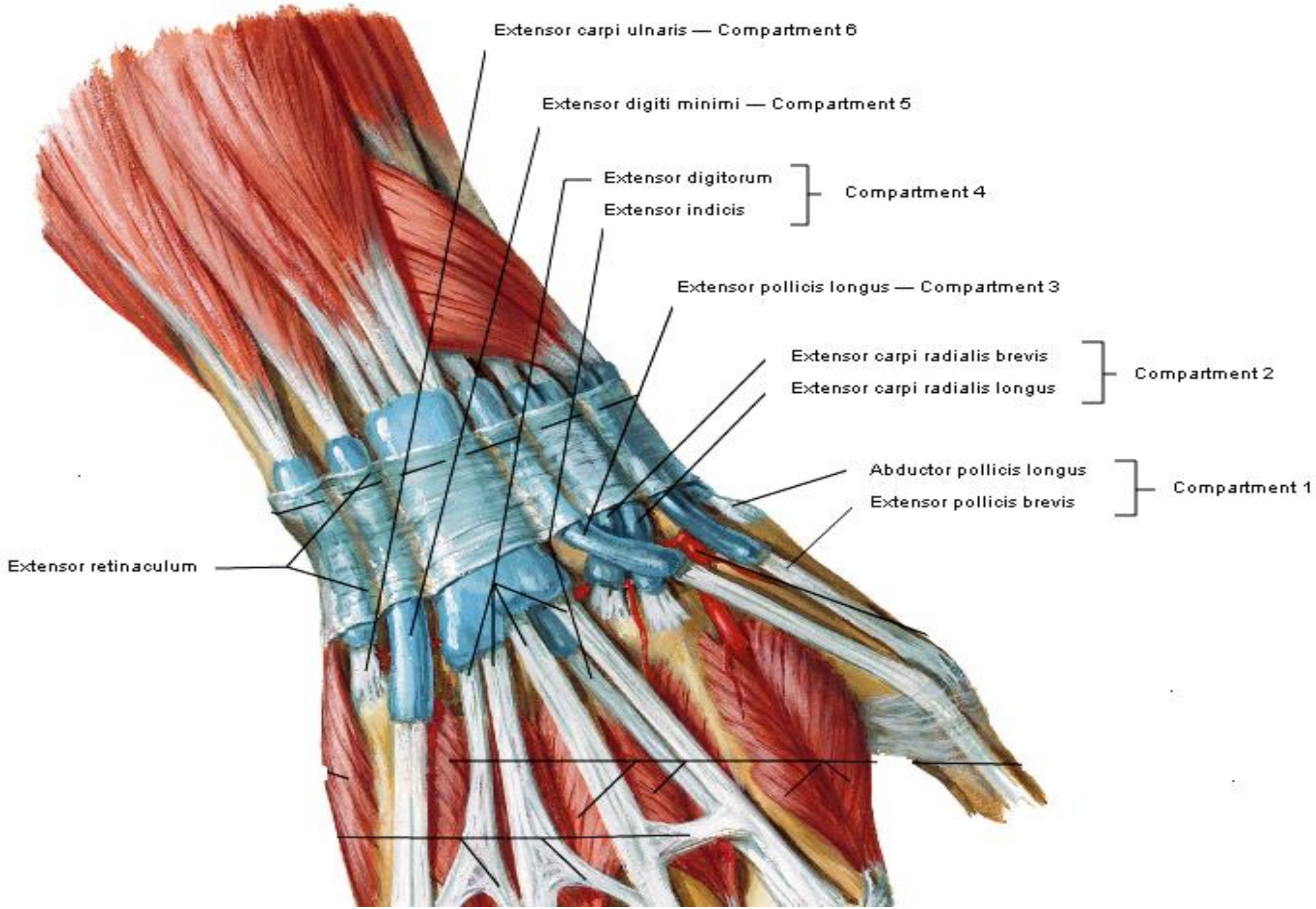

FCR
PL
FDS
FCU
FPL
FDP


ED
ECRL
ECU
ECRB
EDM

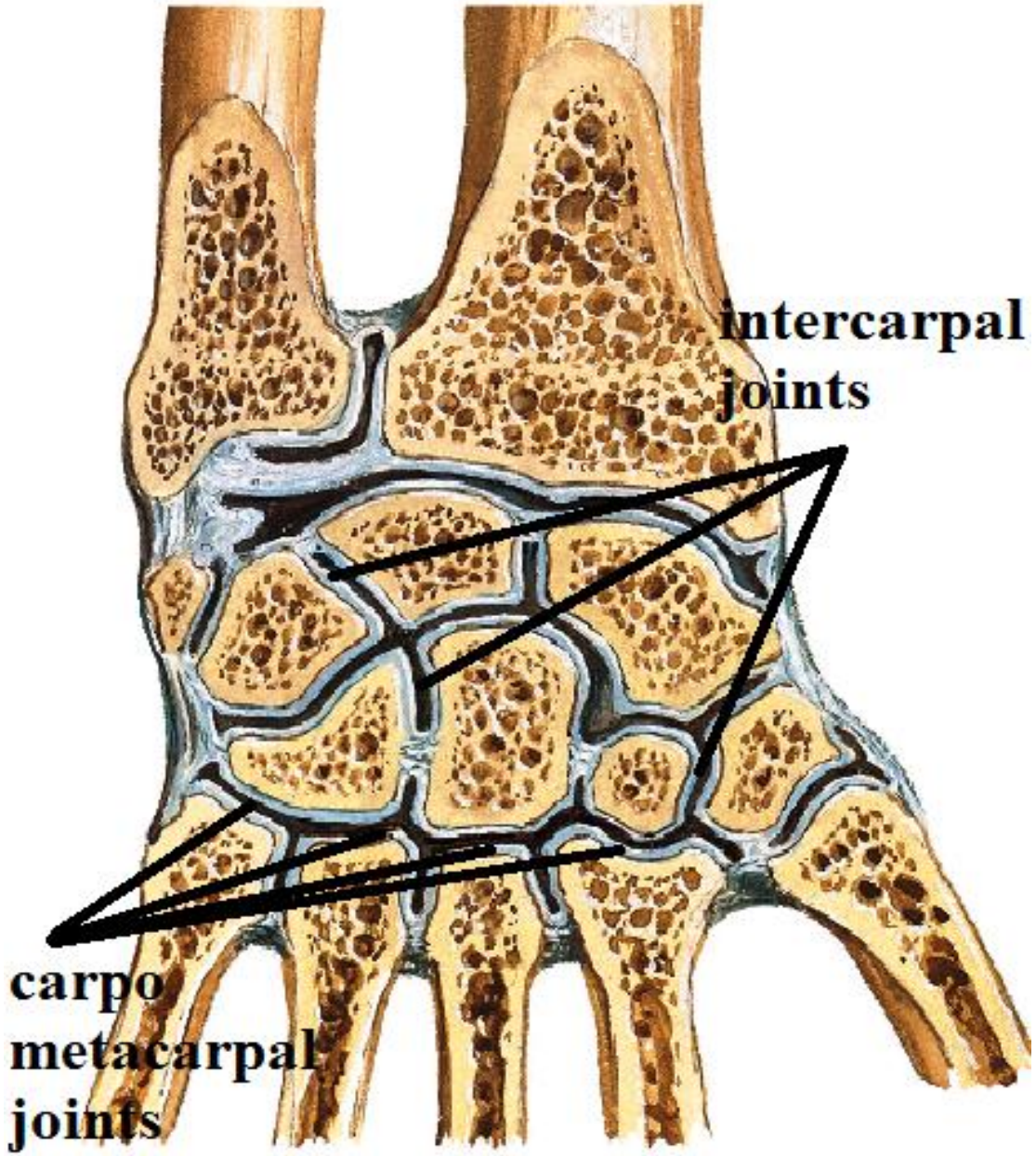

abductor pollicis longus
extensor pollicis brevis
extensor pollicis longus
extensor indicis

Relations

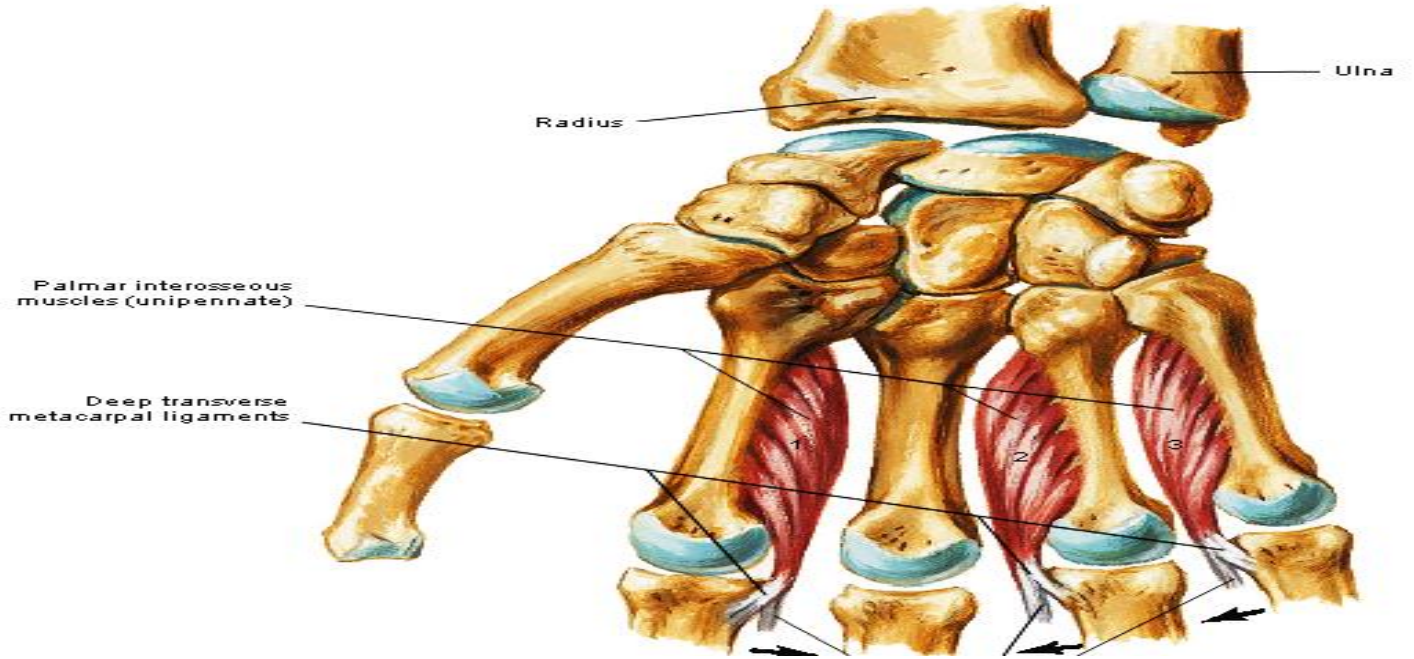

Flexor carpi radialis tendon
Tendinous sheath of flexor pollicis longus (radial bursa)
Transverse carpal ligament (flexor retinaculum) (reflected)
Flexor digitorum profundus tendons
Tendinous sheath of flexor pollicis longus (radial bursa)
Flexor digitorum superficialis tendons


Extensor carpi ulnaris — Compartment 6
Extensor digiti minimi — Compartment 5
Extensor digitorum
Extensor indicis
Compartment 4
Extensor pollicis longus — Compartment 3
Extensor carpi radialis brevis
Extensor carpi radialis longus
Compartment 2
Abductor pollicis longus
Extensor pollicis brevis
Compartment 1
Extensor retinaculum

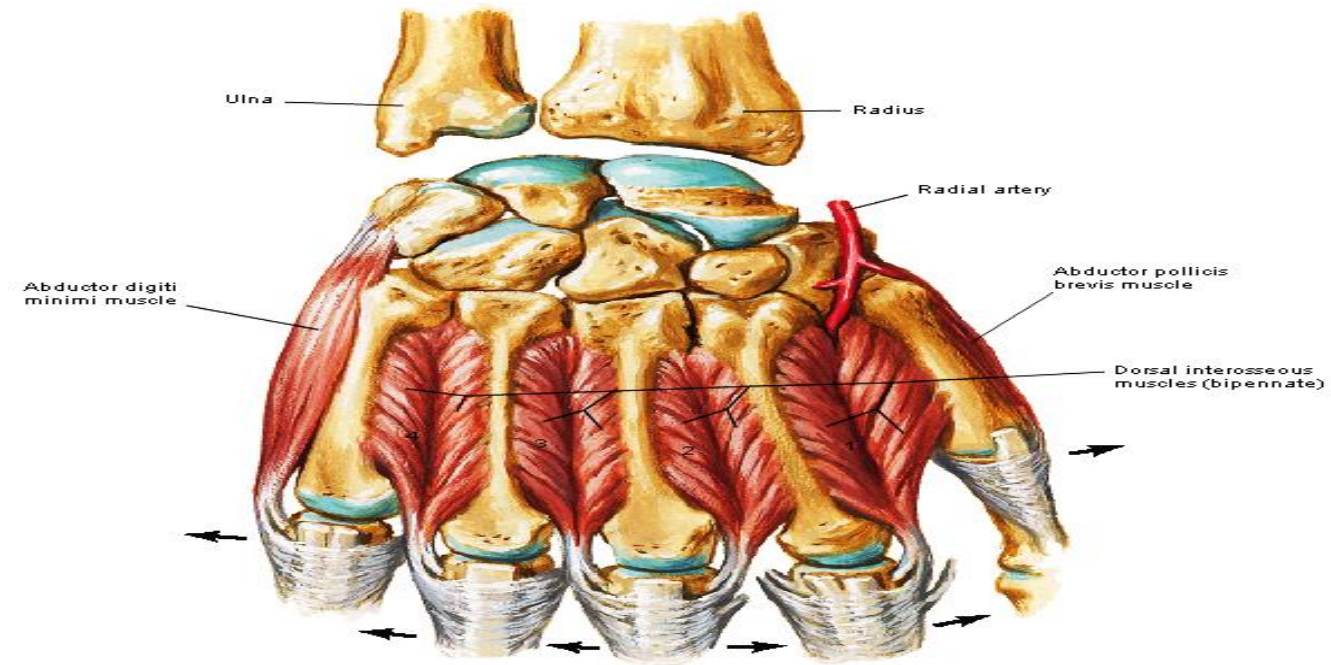
JOINTS OF THE HAND



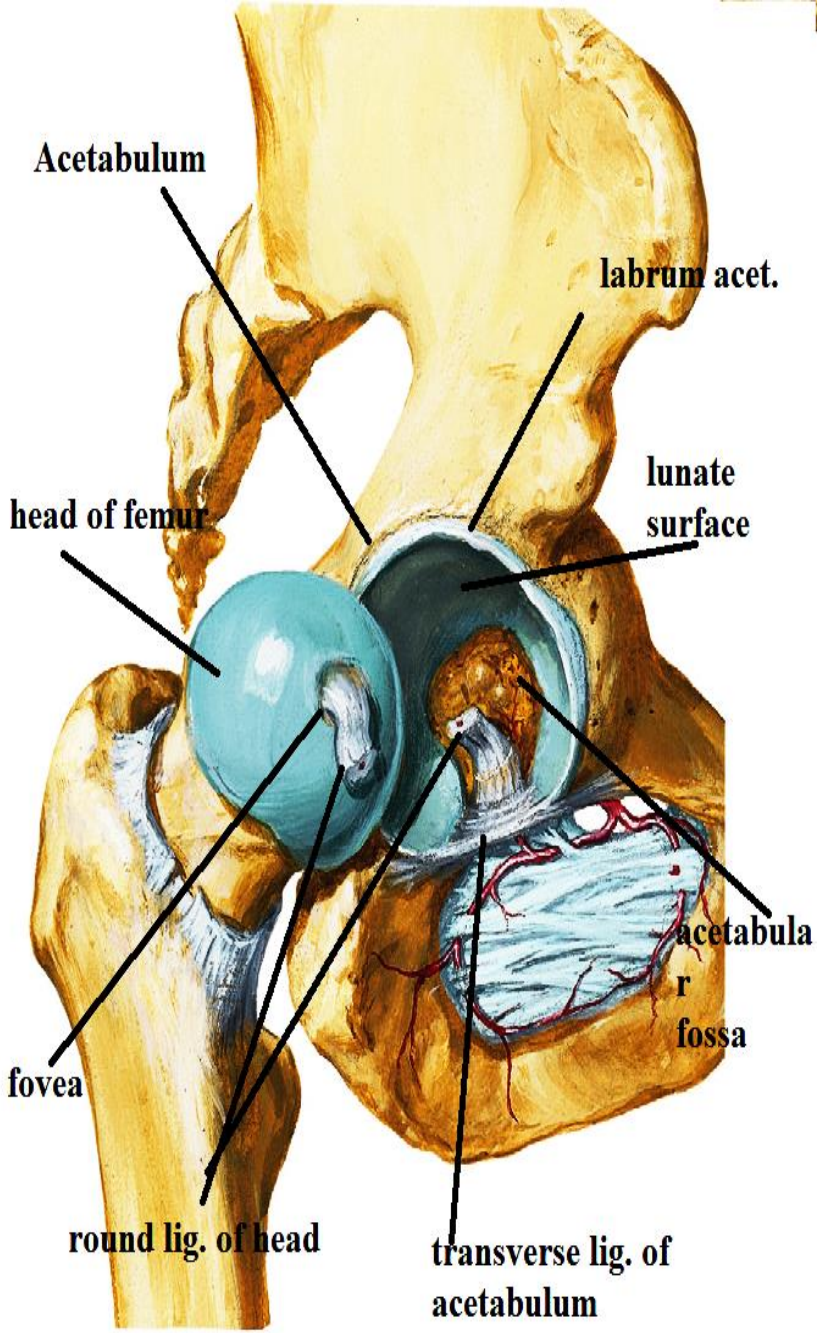
Metacarpophalangeal joint :-



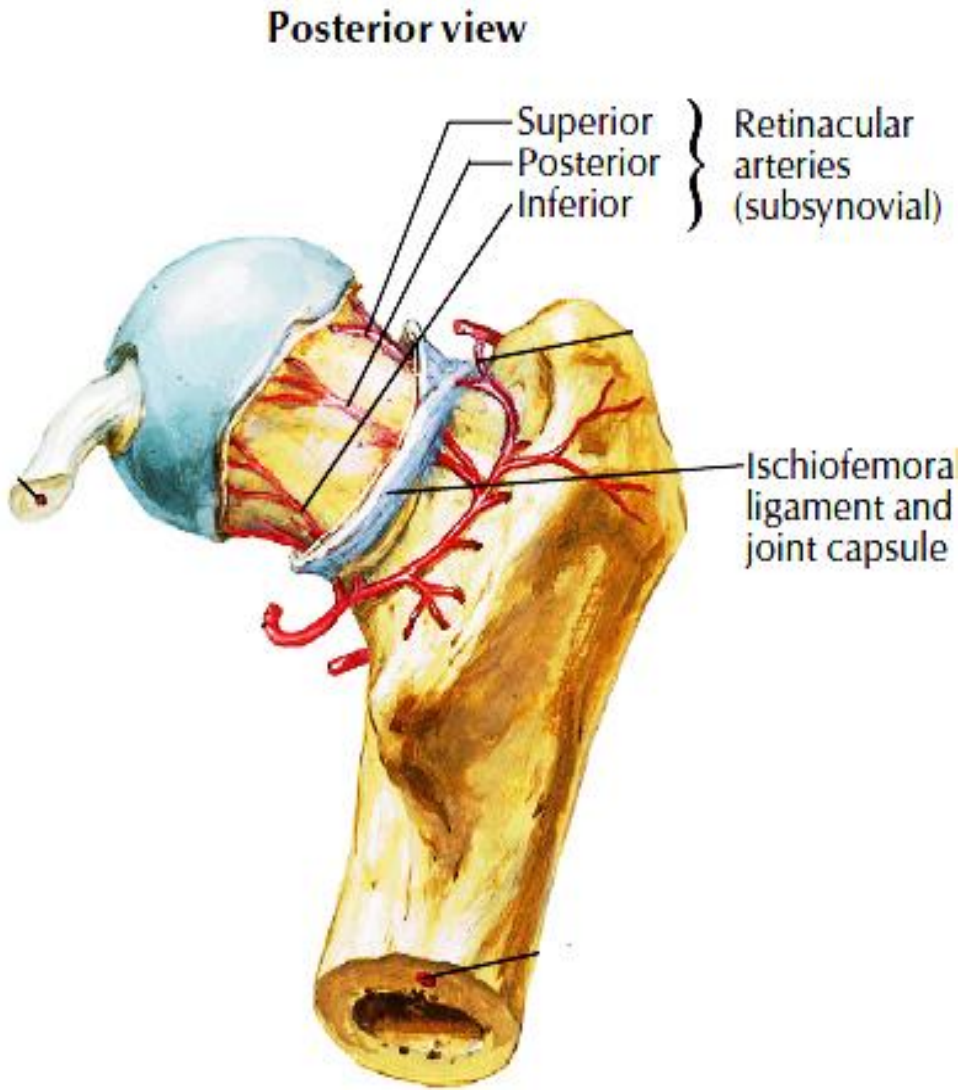
Interphalageal joints



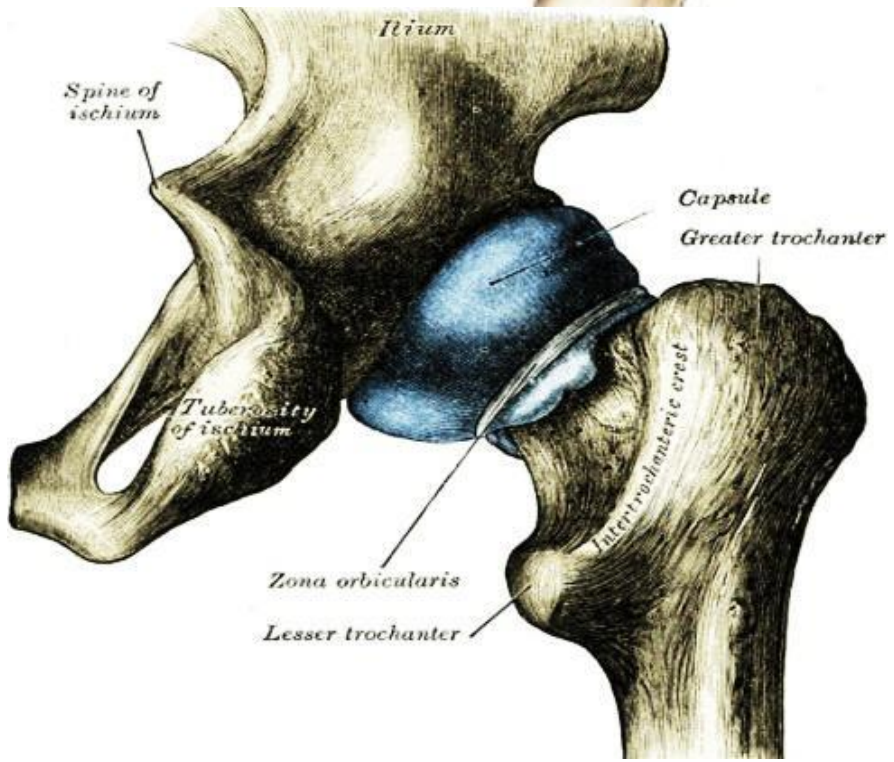
HIP JOINT

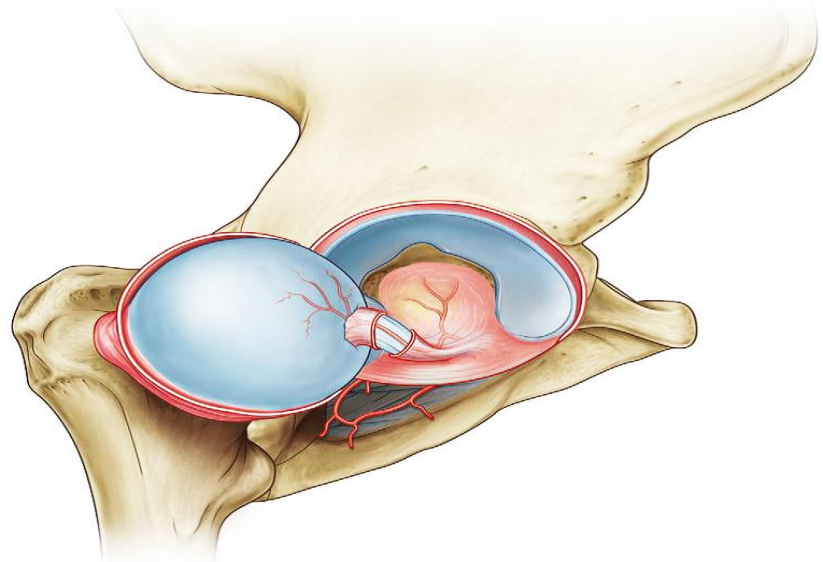

Acetabulum
labrum acet.
lunate surface
head of femur
acetabular fossa
fovea
round lig. of head
transverse lig. of acetabulum

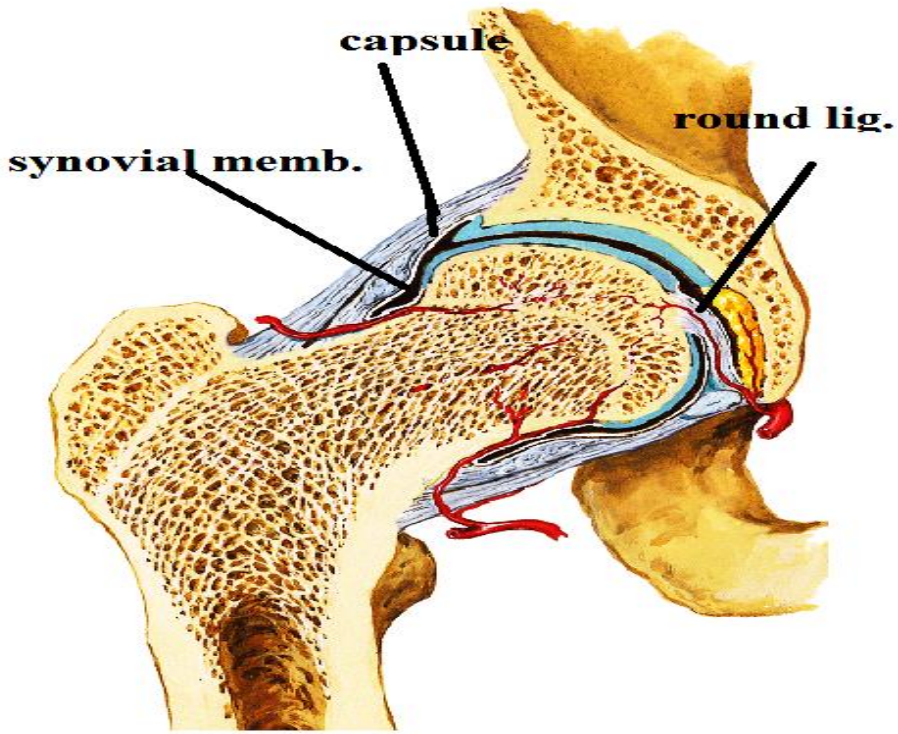
Capsule:


Posterior view
Superior
Posterior
Inferior
Retinacular arteries (subsynovial)
Ischiofemoral ligament and joint capsule

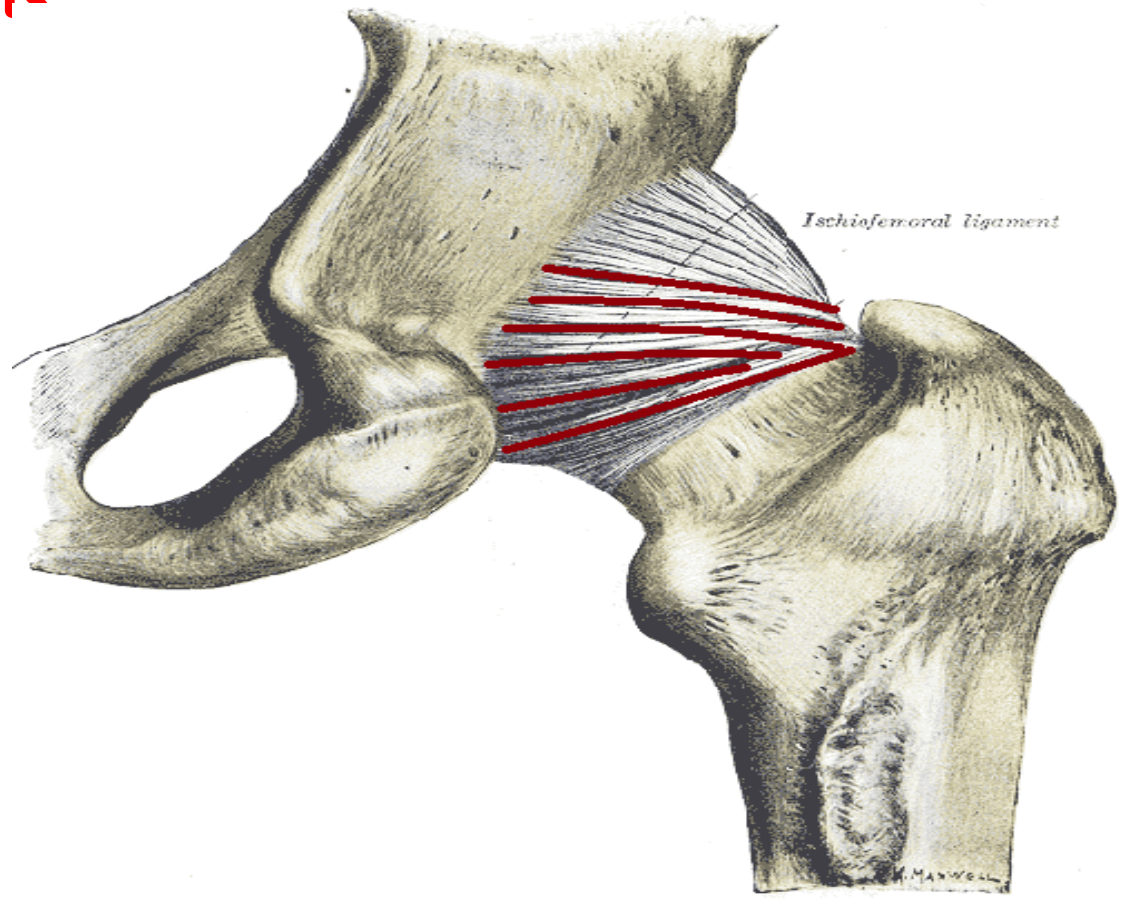

Intertrochanteric line

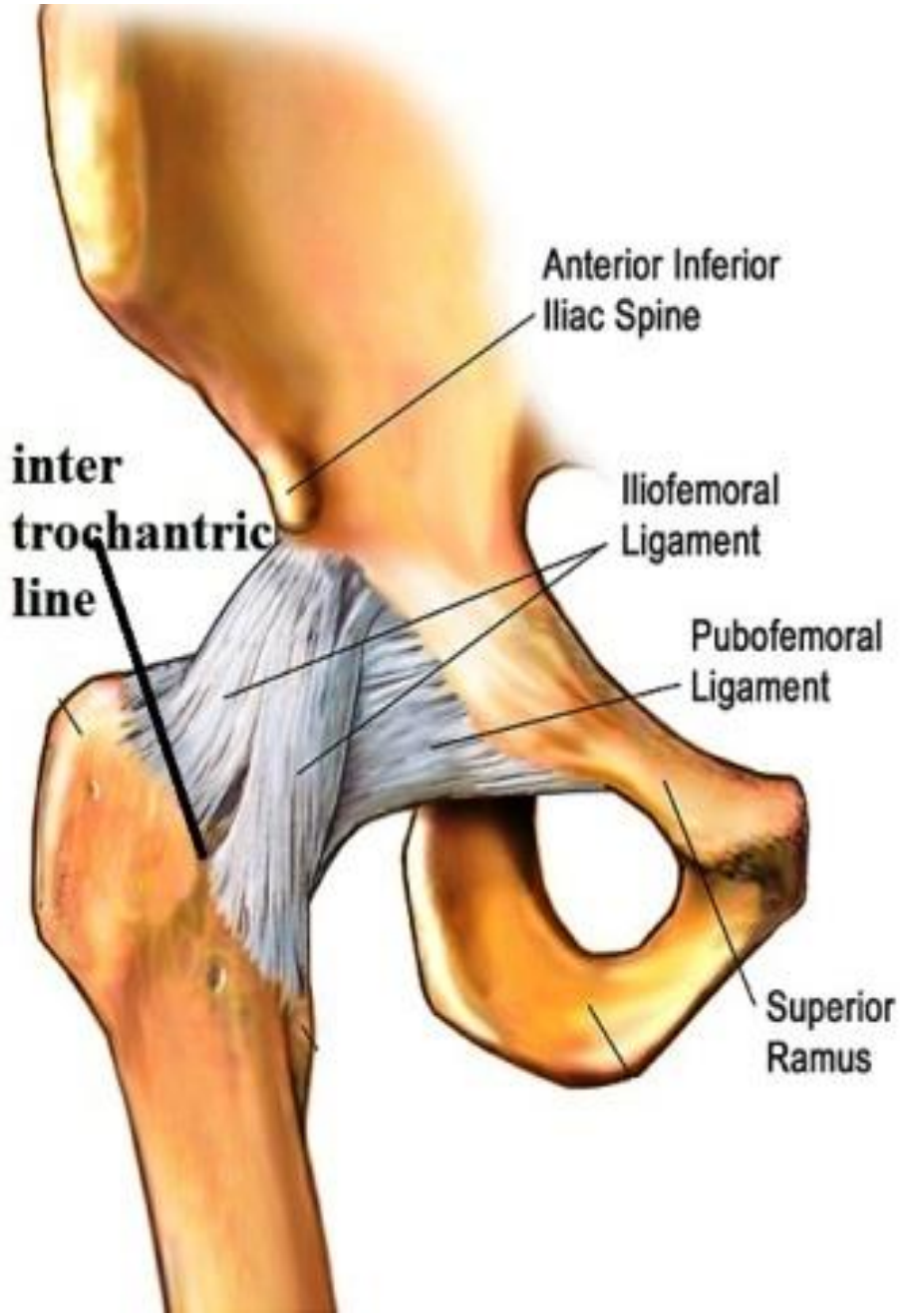

Ilium
Spine of ischium
Capsule
Greater trochanter
Tuberosity of ischium
Intertrochanteric crest
Zona orbicularis
Lesser trochanter



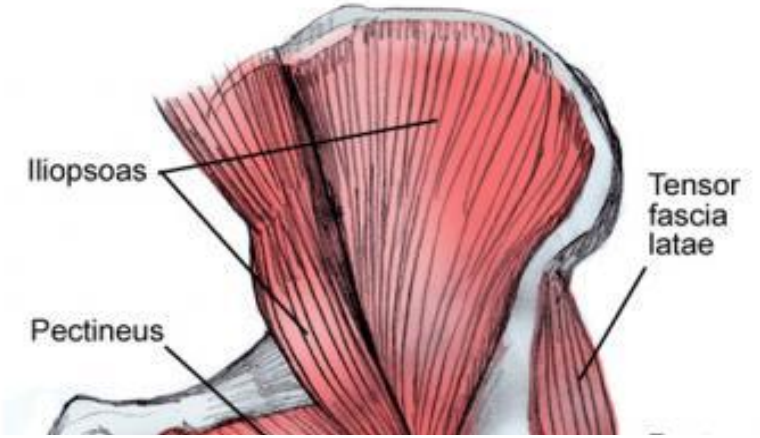

capsule
round lig.
synovial memb.

ligaments:

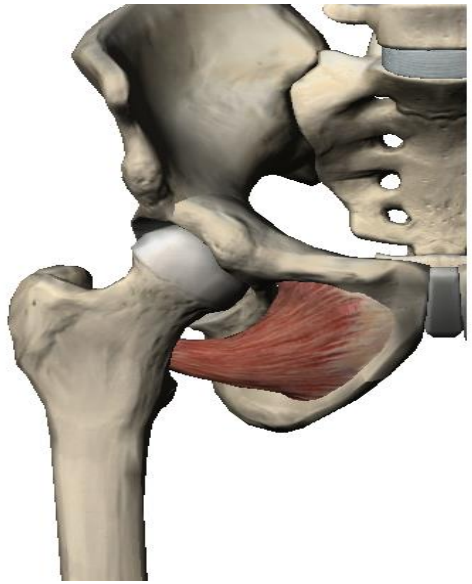

Ischiofemoral ligament

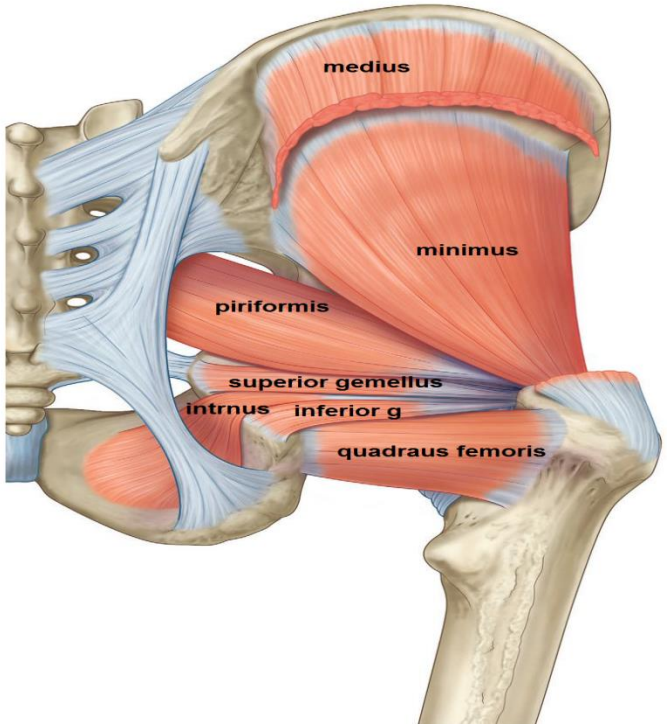

Anterior Inferior
Iliac Spine
inter
trochantric
line
Iliofemoral
Ligament
Pubofemoral
Ligament
Superior
Ramus

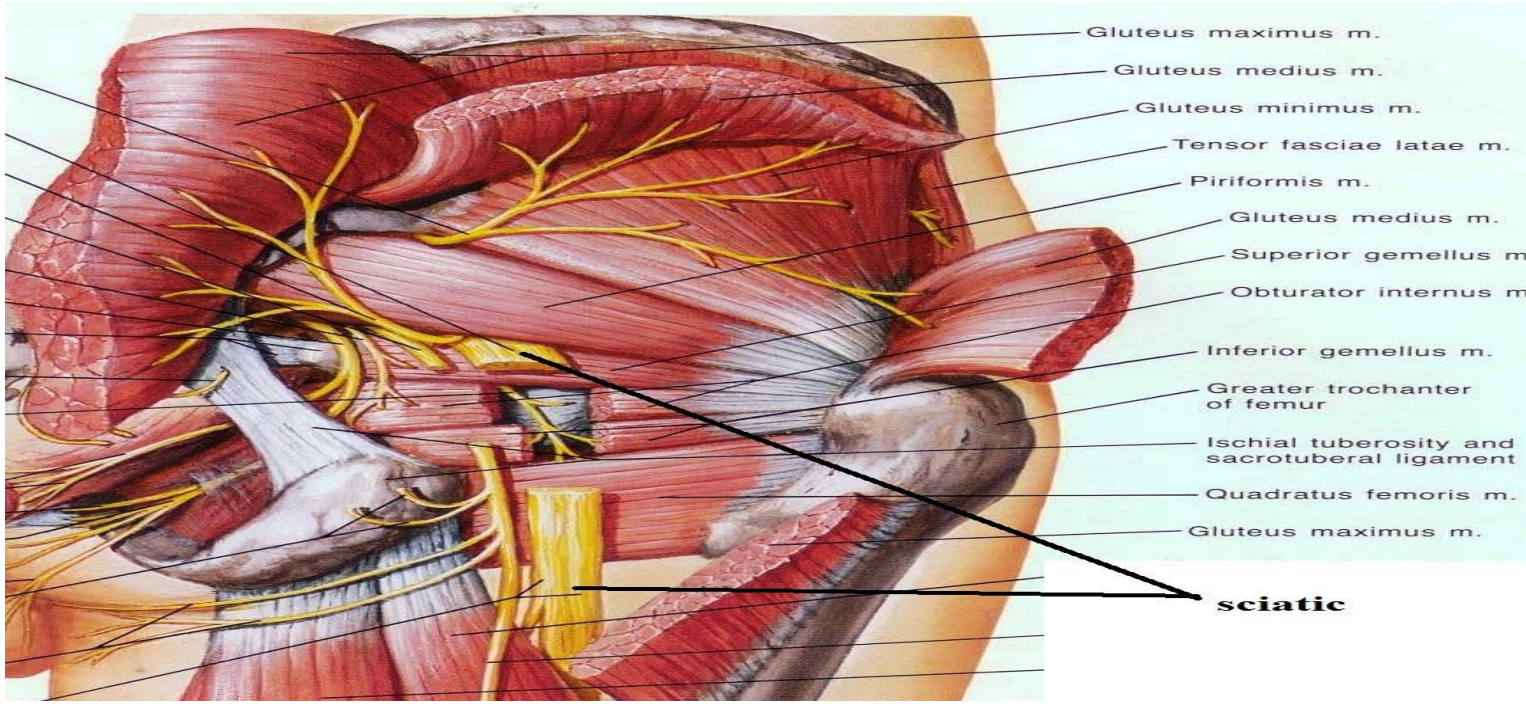
Relations :



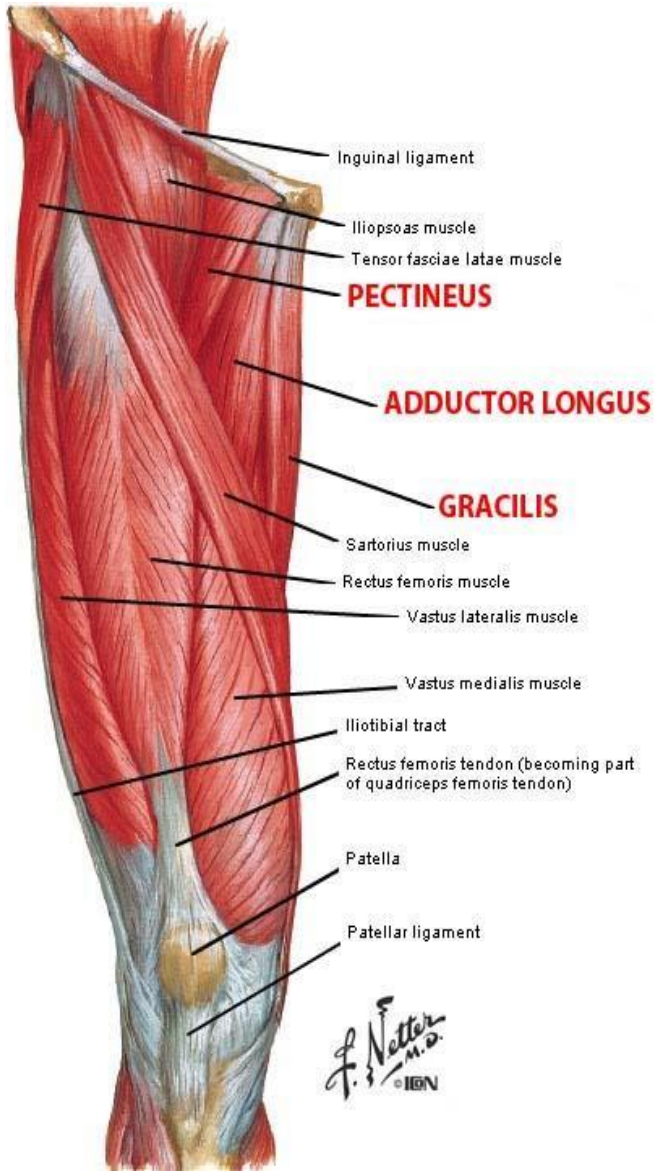
externus

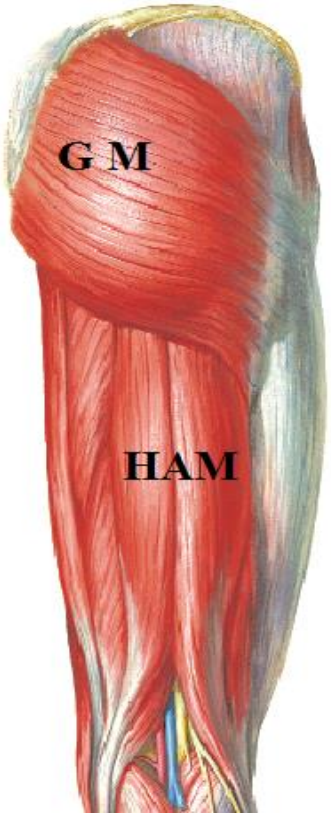


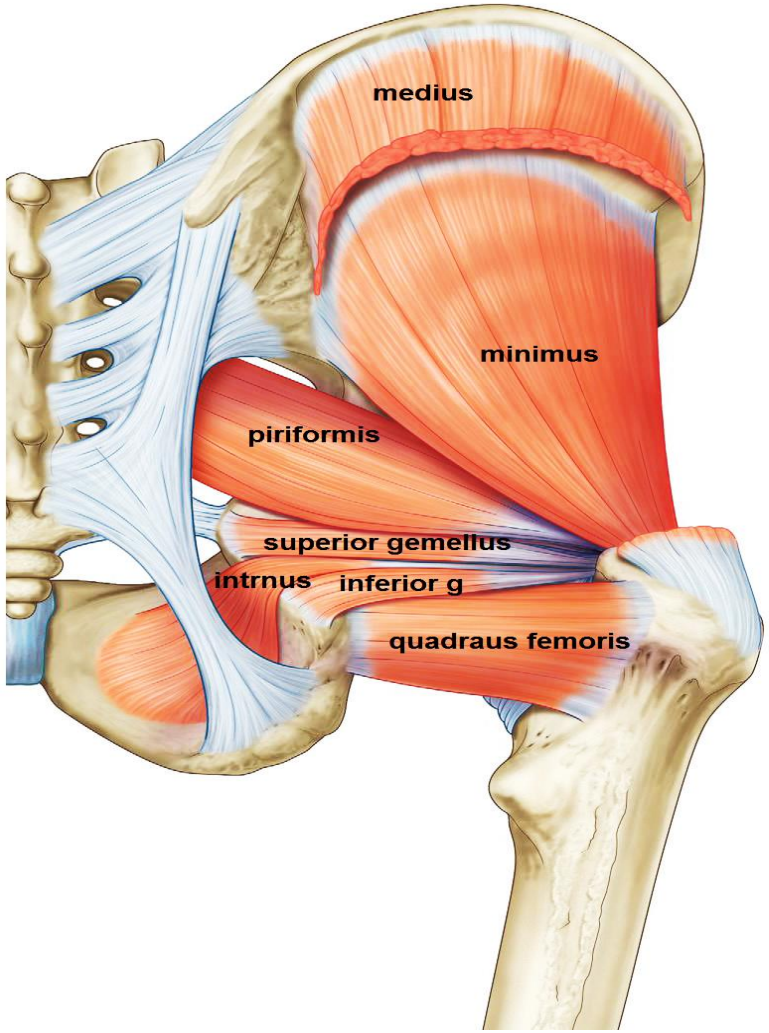




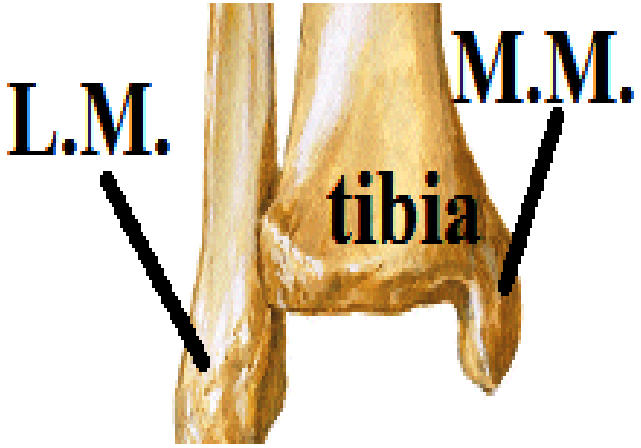
movements & muscles :

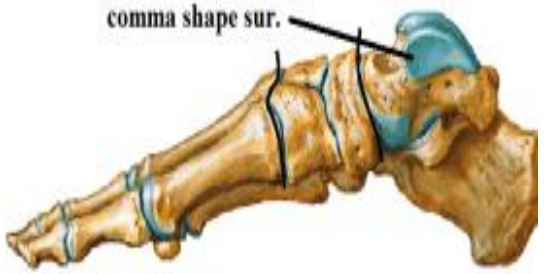


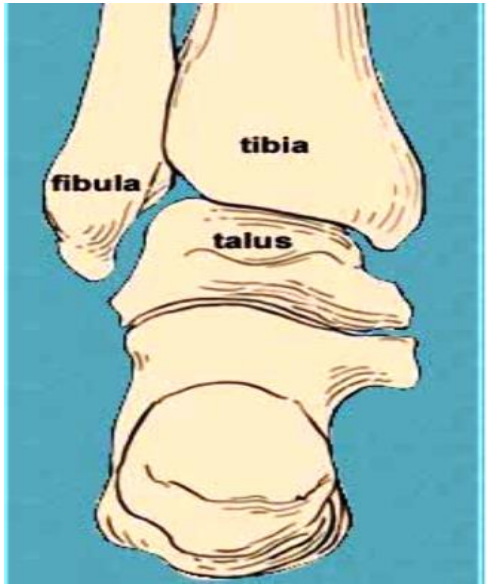


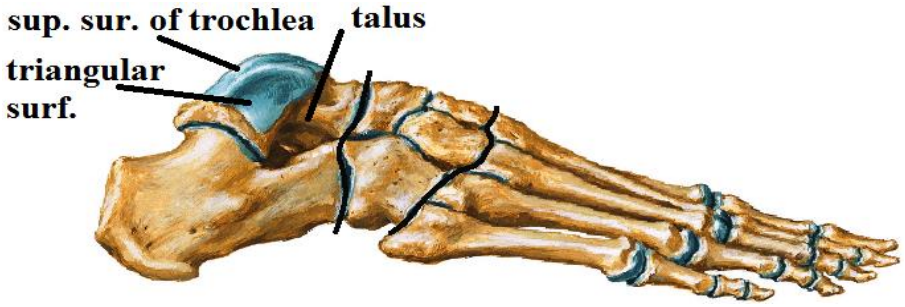


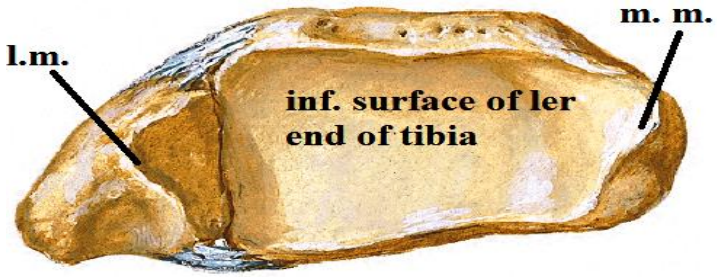
ANKLE JOINT & JOINTS OF FOOT





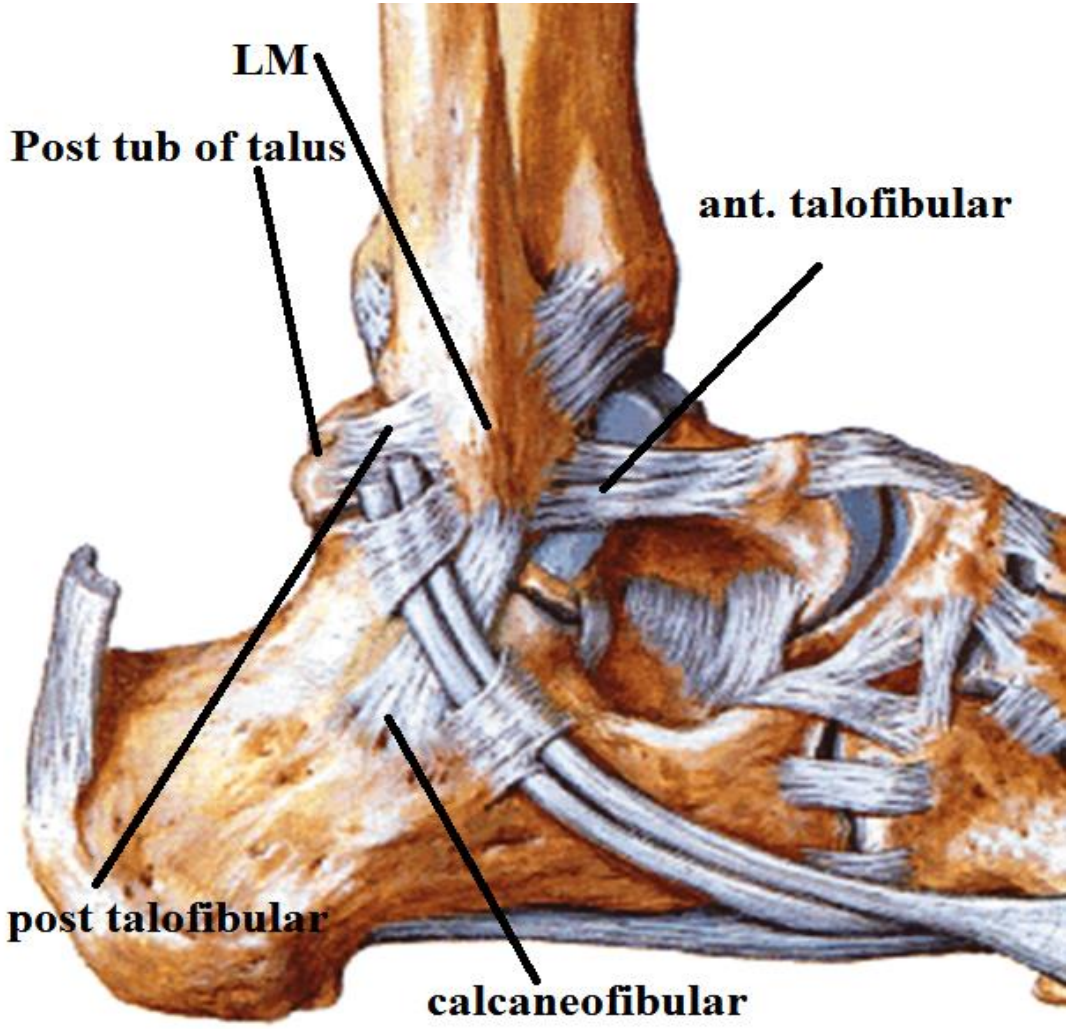


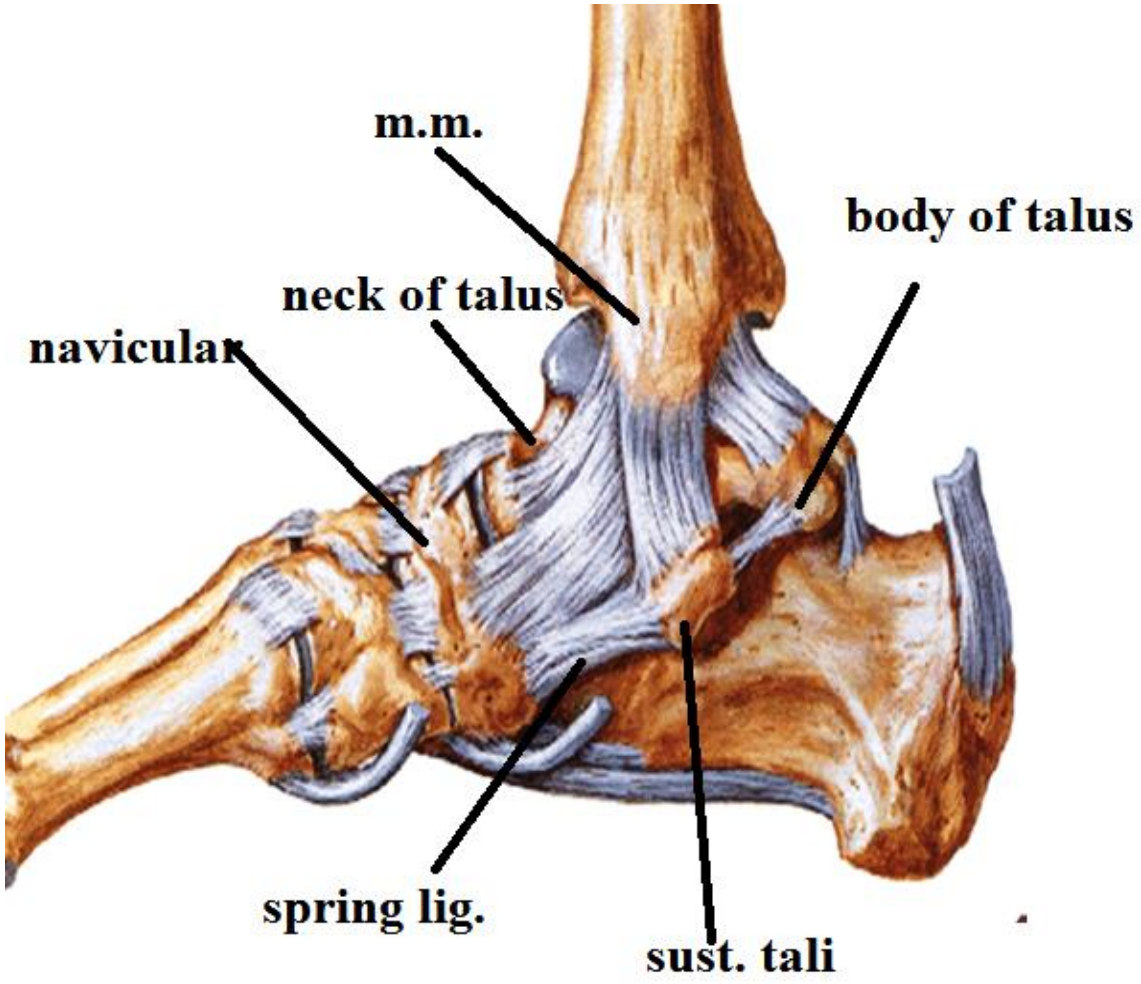




ANKLE JOINT

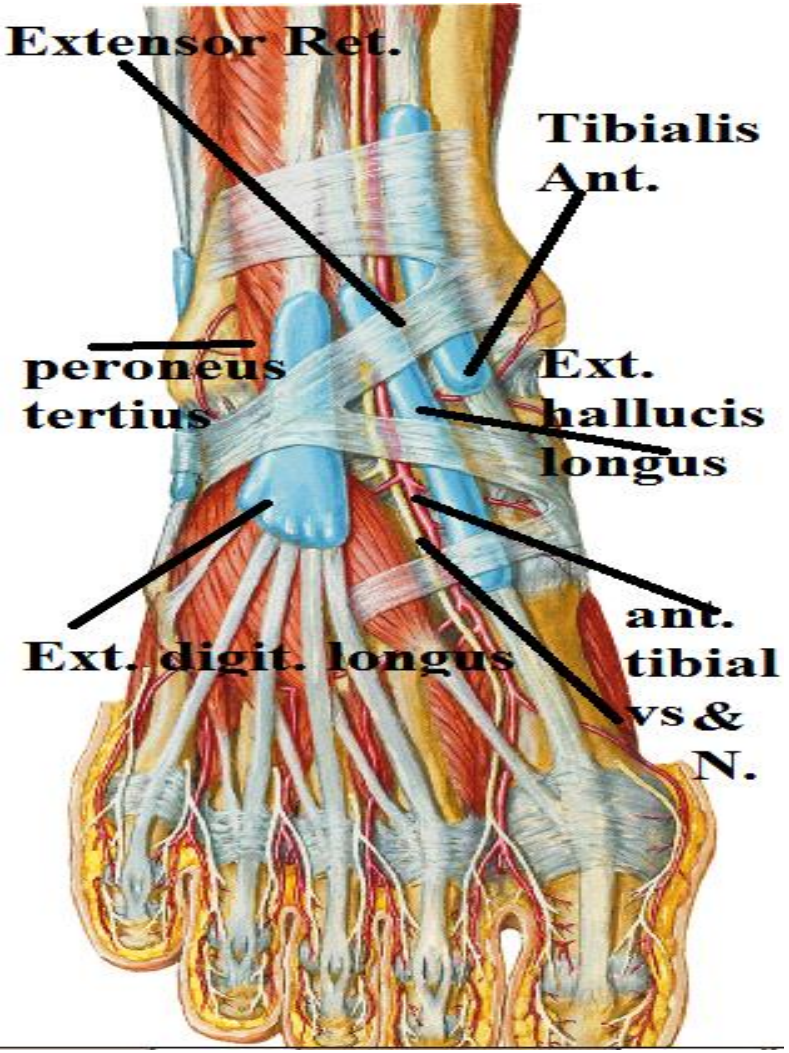
Ligaments:





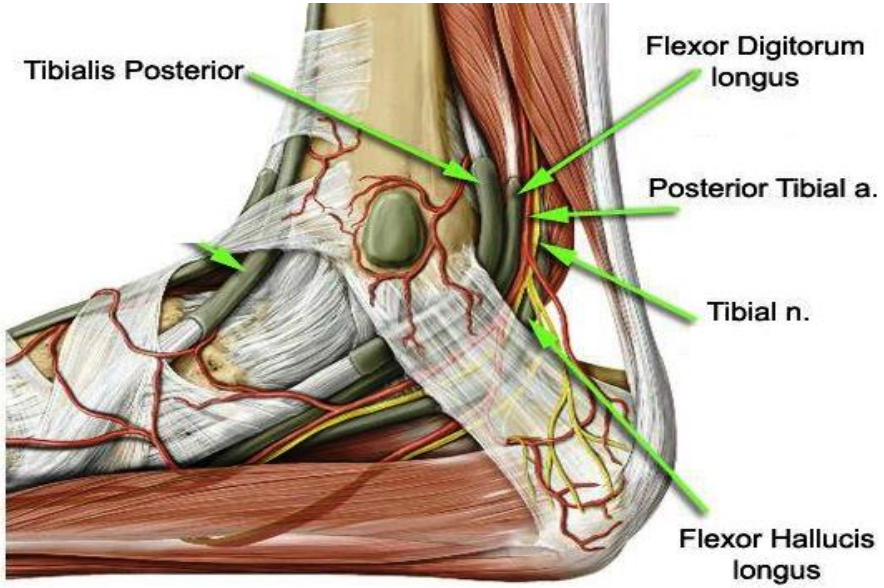
ANKLE JOINT

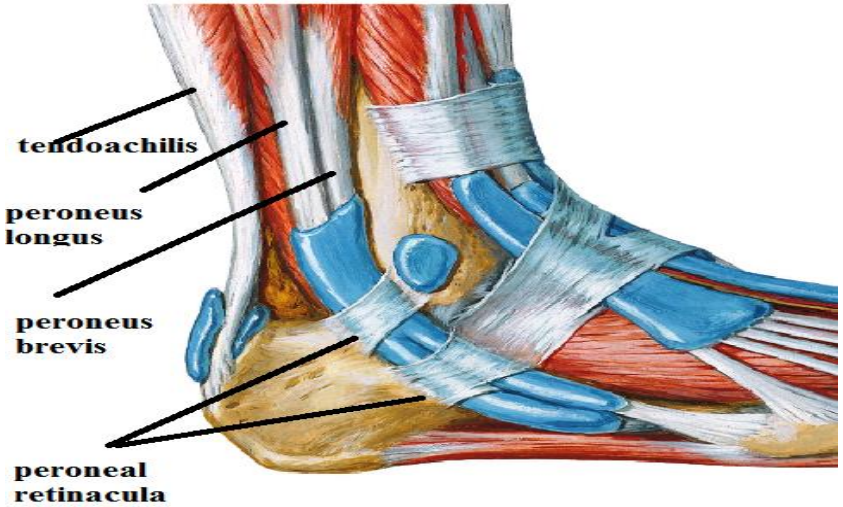
Relations:



Anteriorly

posteromedially

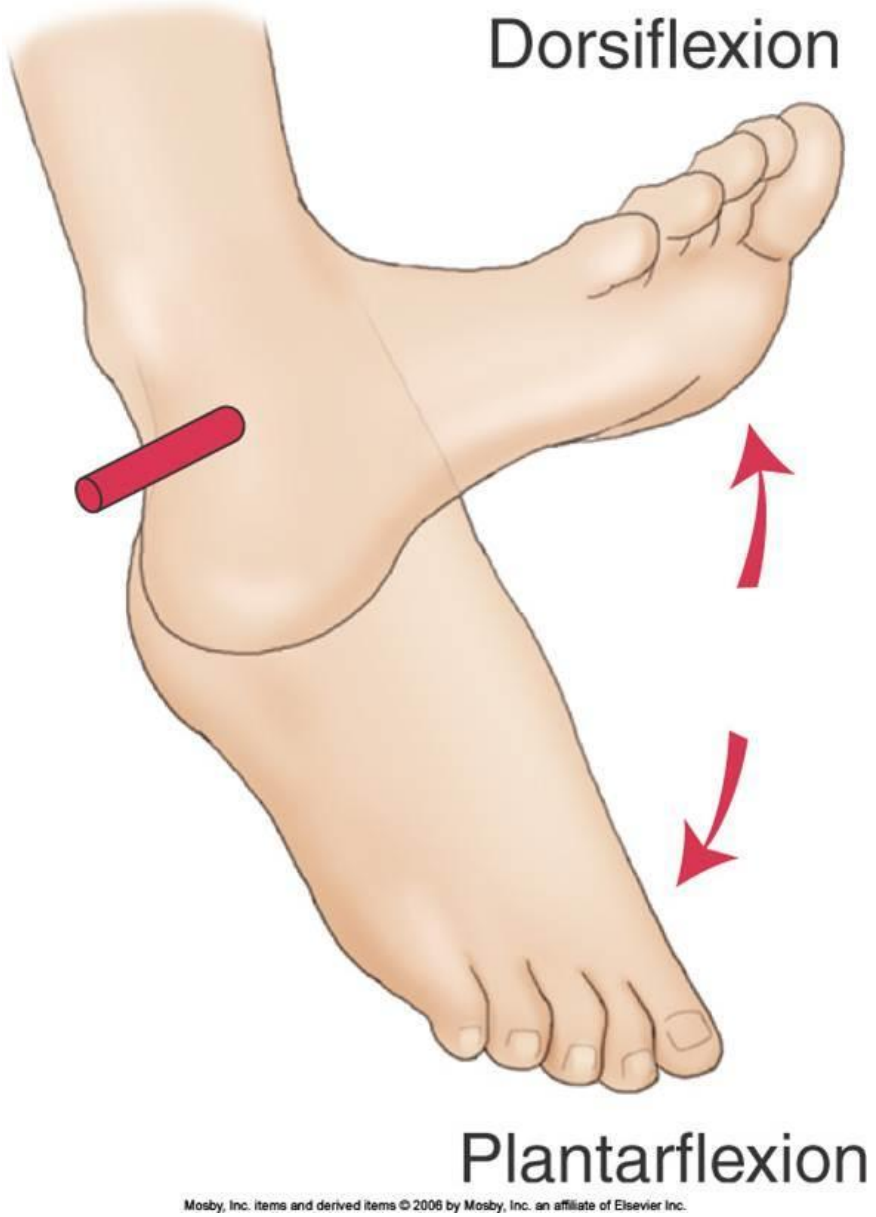




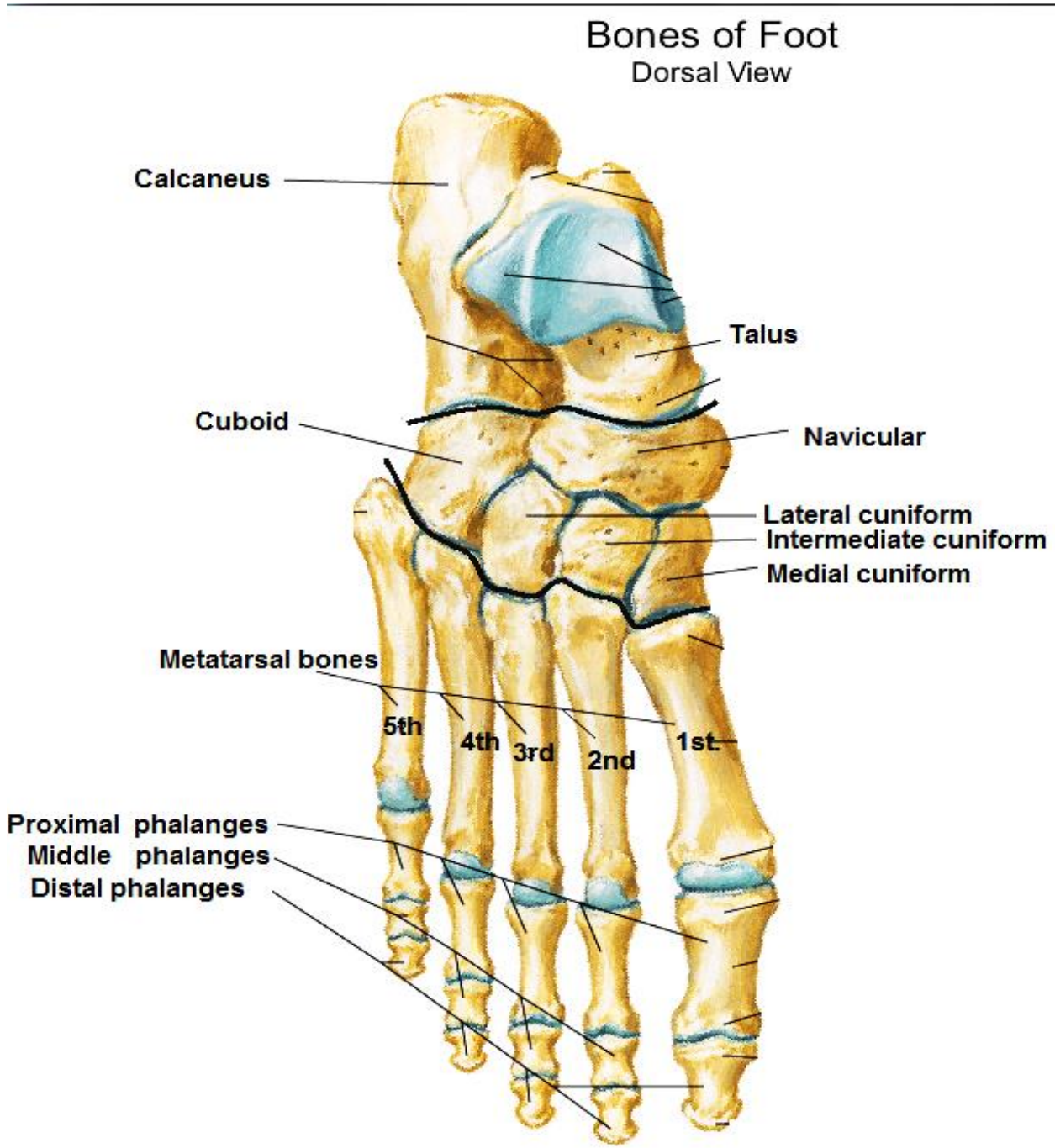
Posterolaterally

ANKLE JOINT

Movements:

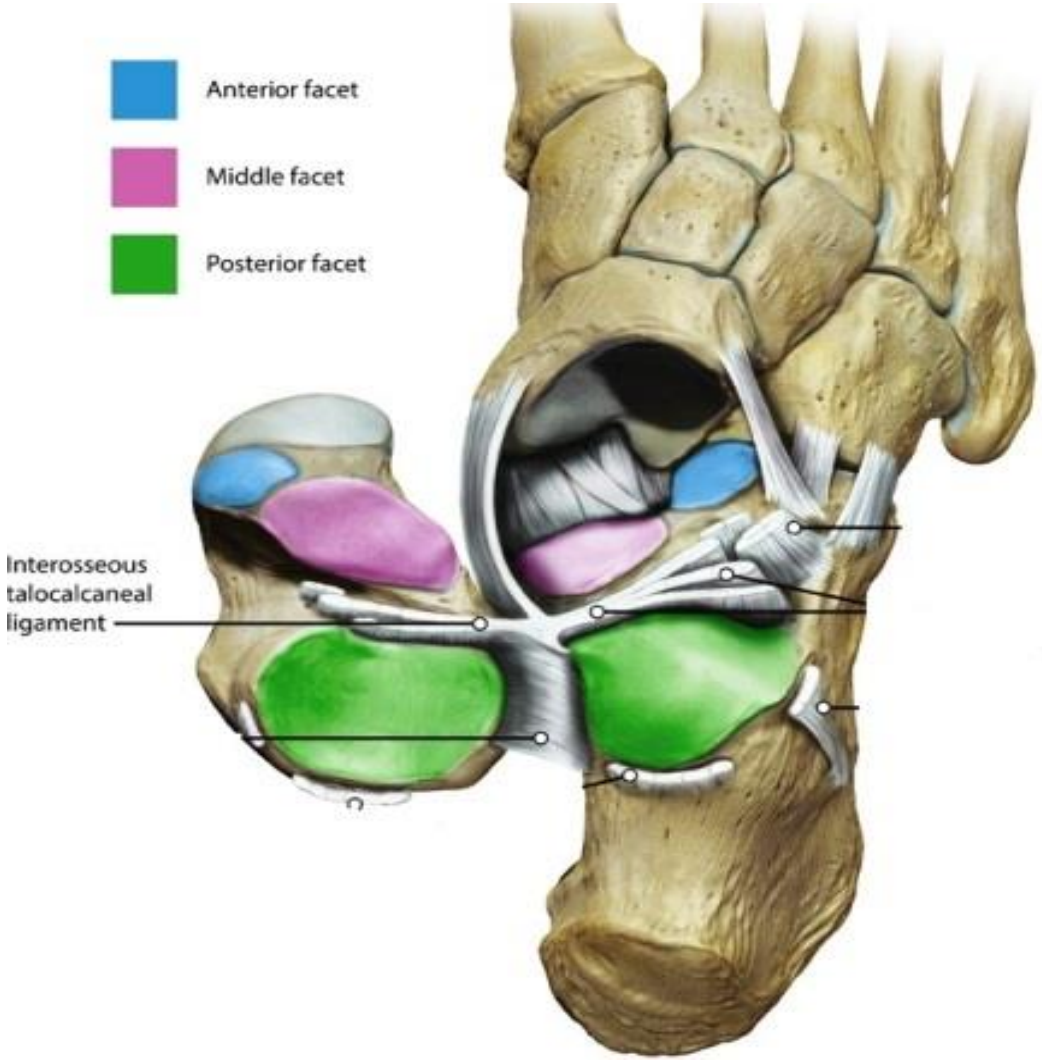


JOINTS OF FOOT

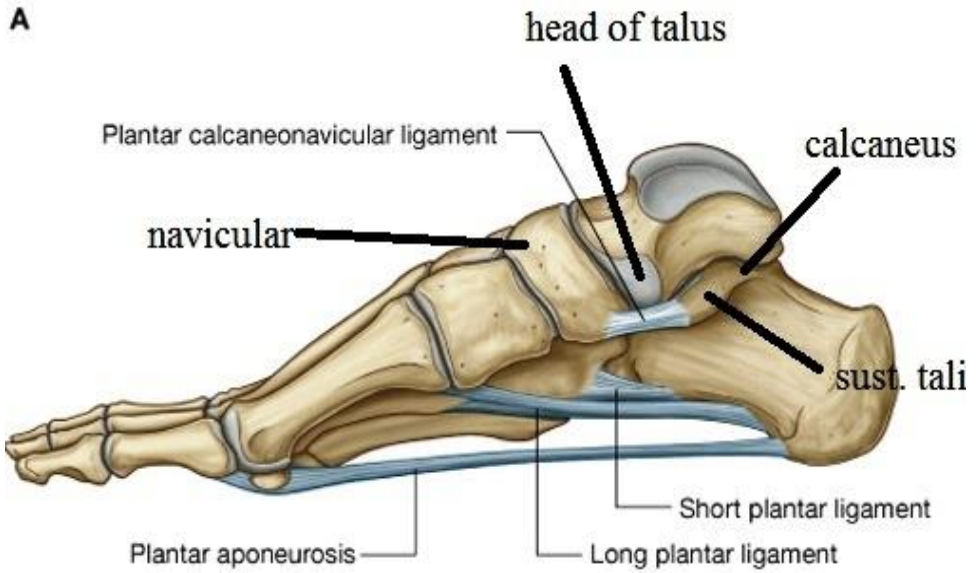


JOINTS OF FOOT

1- SUBTALAR JOINT

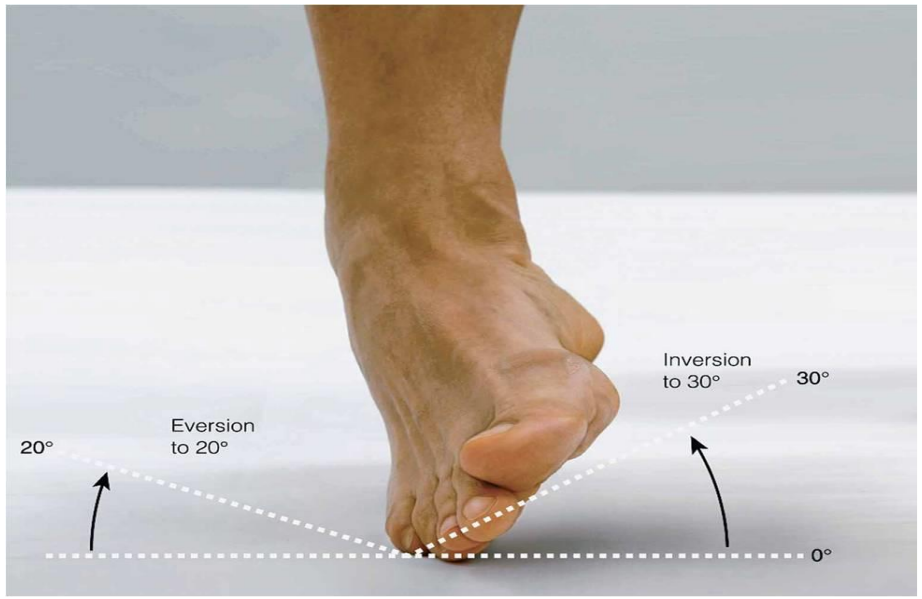


2- TALOCALCANEONAVICULAR



JOINTS OF FOOT

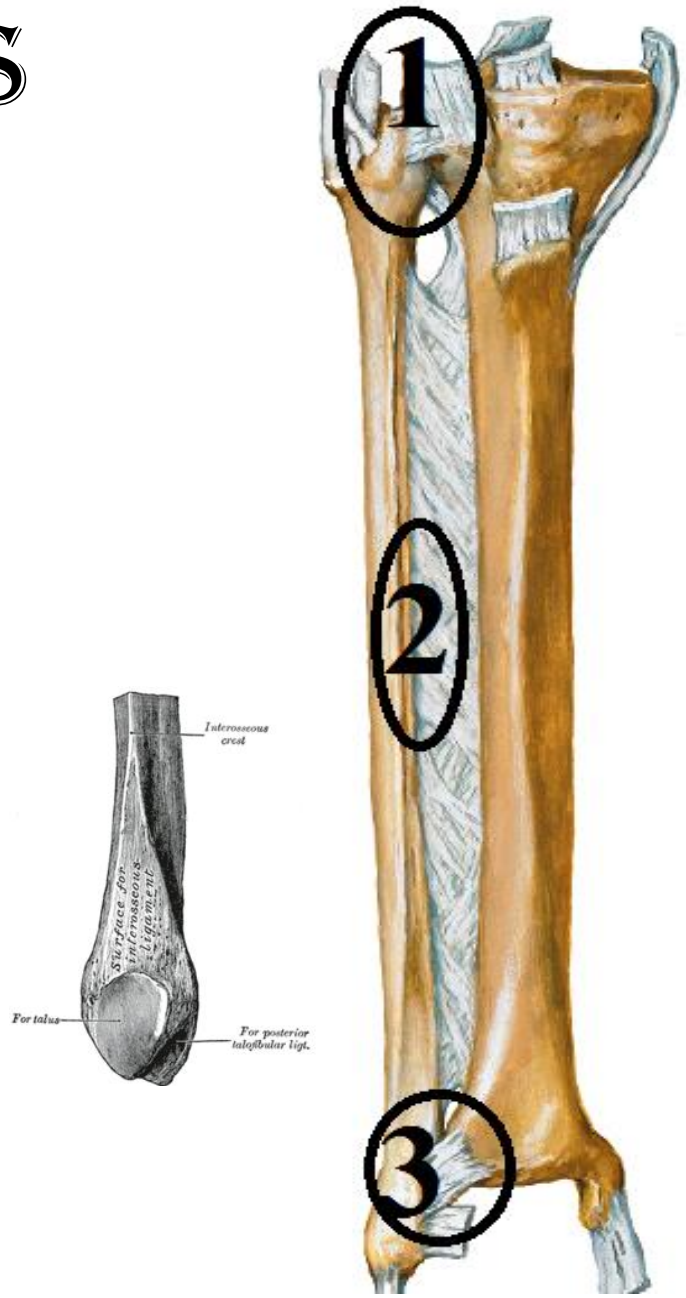
Movements

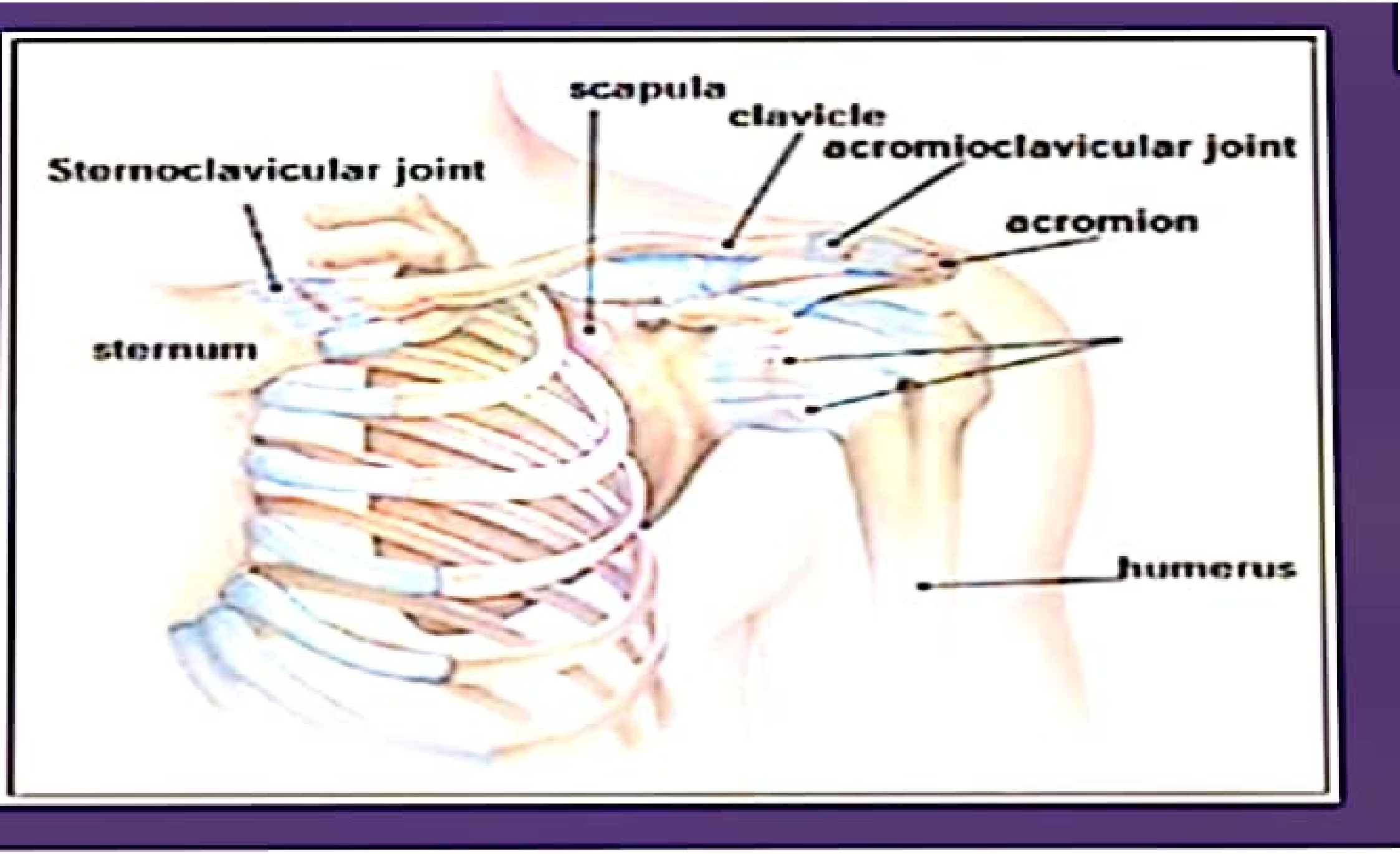


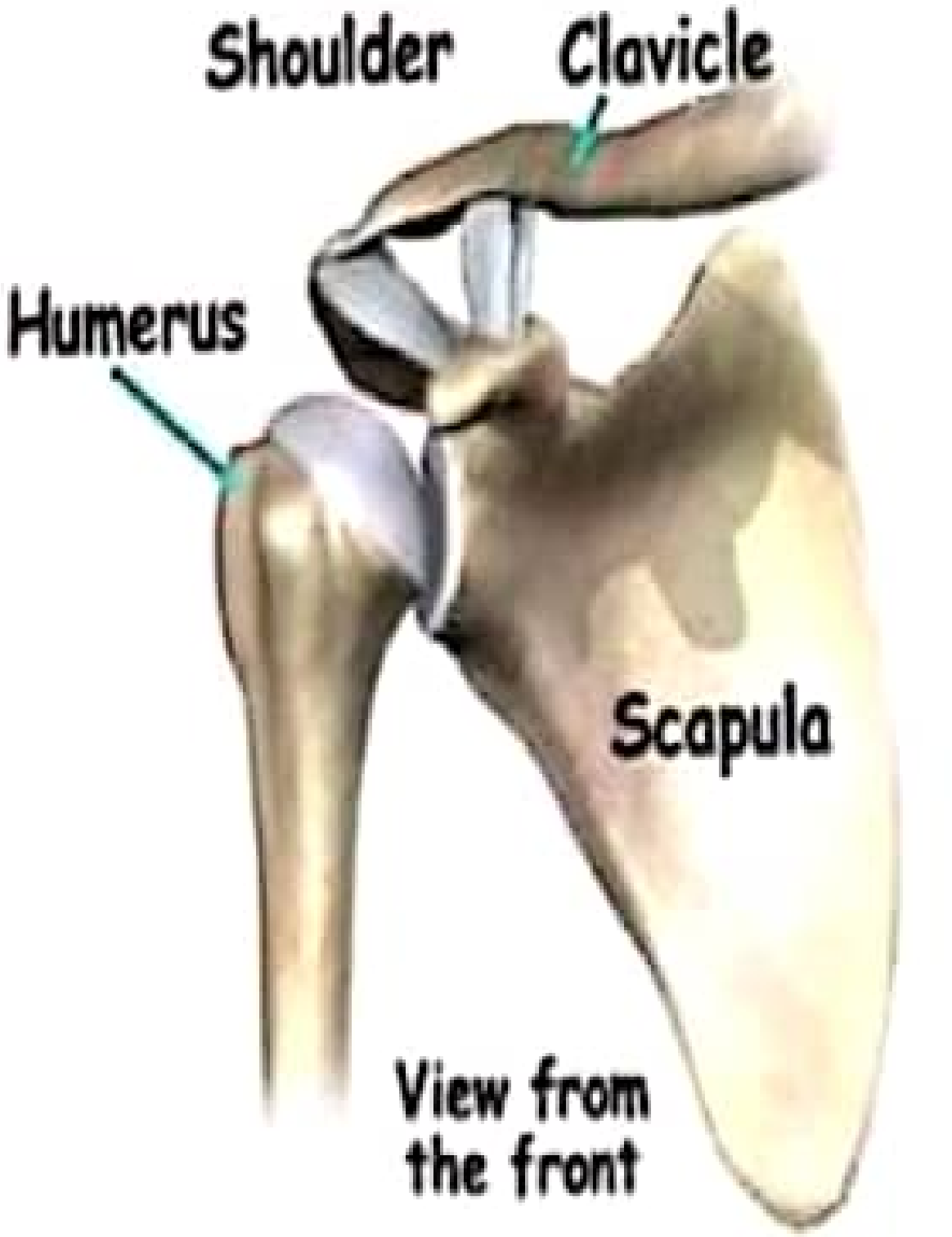
1- Inversion

TIBIOFIBULAR JOINTS

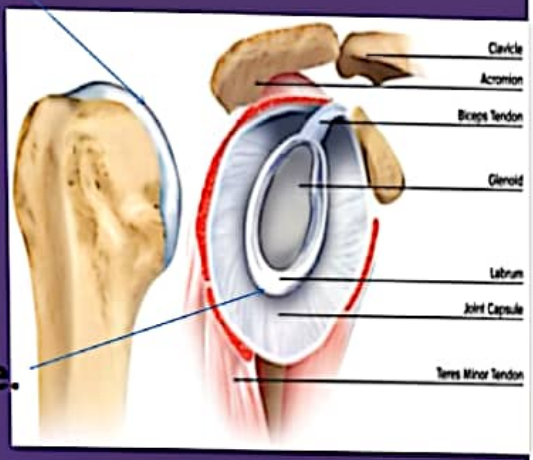
1- superior tibiofibular







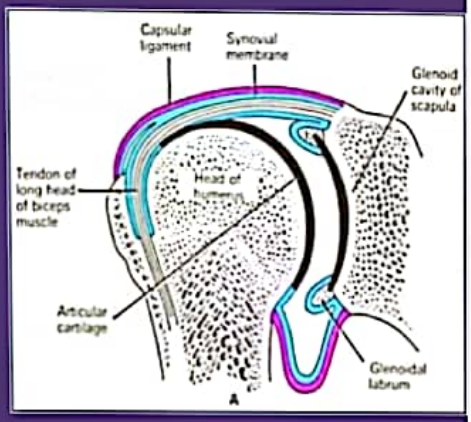
- **hyaline cartilage.**



- **labrum glenoidale.**

Capsule

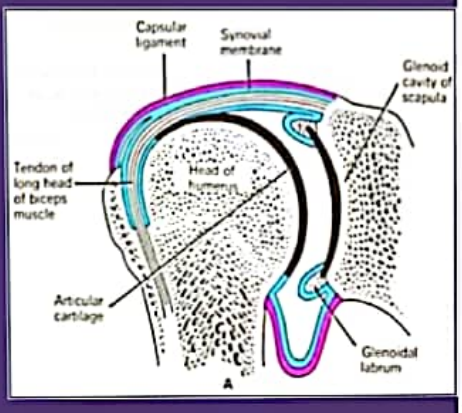
- attached to the margins of the glenoid cavity outside the labrum glenoidal.
- Laterally is attached to the anatomical neck of the humerus, except inferiorly where it extends about 1 cm to the shaft.



Synovial membrane

It lines all the structures– inside the capsule of the shoulder joint EXCEPT the .articular cartilage

It forms a tubular– sheath around the tendon of long head of biceps so it is an intra-capsular, .extra-synovial structure



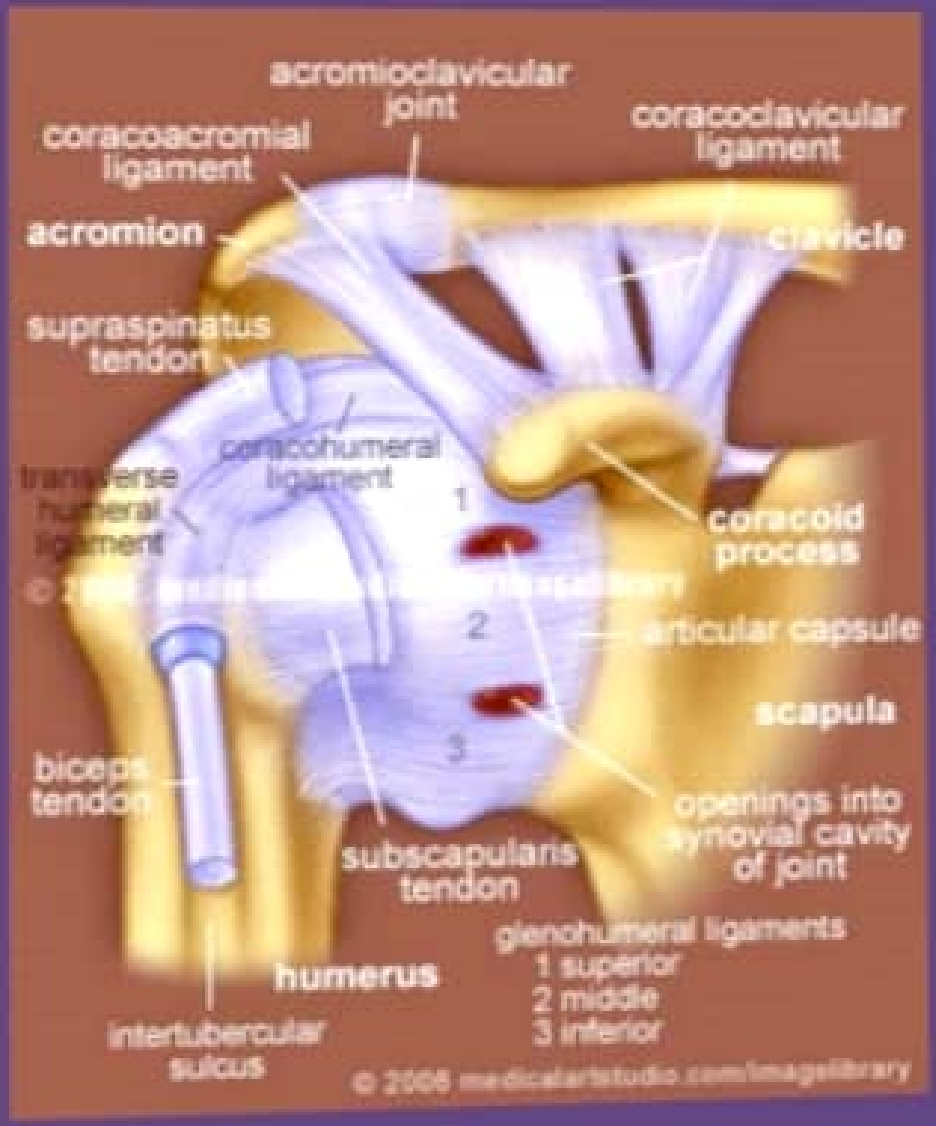
JOINT(---- humeral)

1- False ligaments:

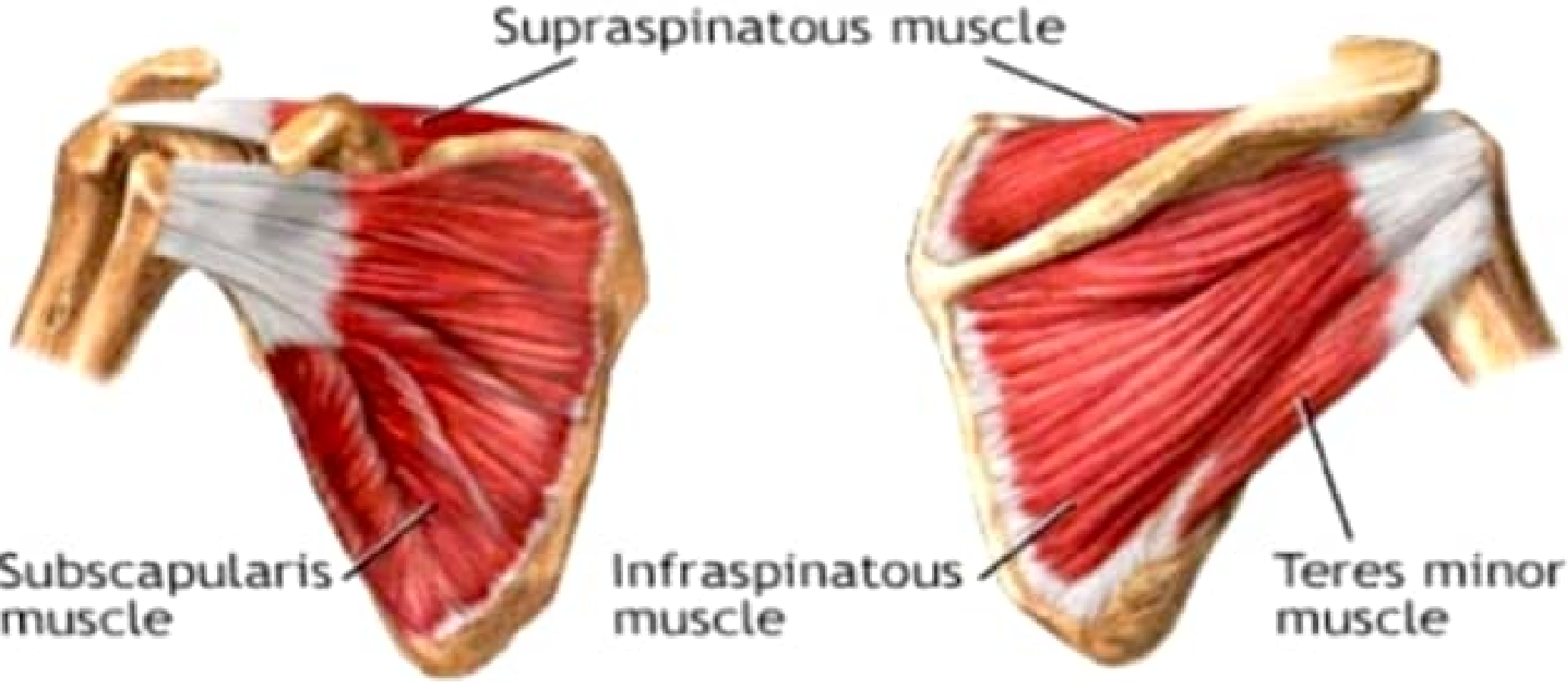
glenohumeral ligaments (Thickenings of the Capsule)

2- True ligaments:

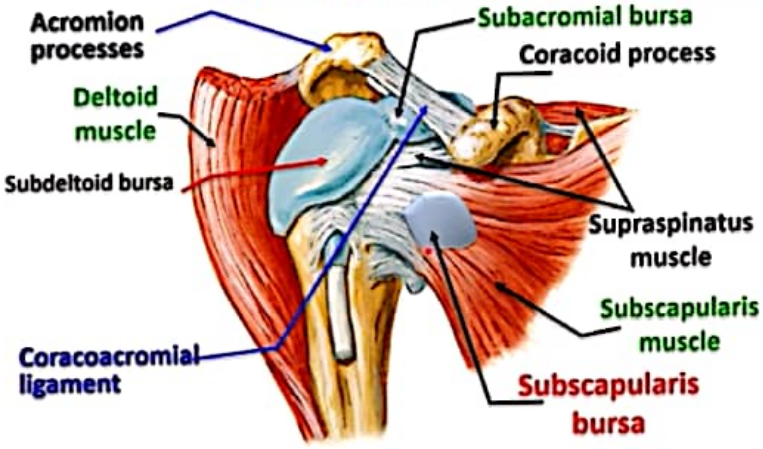
- Coraco-humeral ligament.
- Transverse humeral ligament (bridges over the bicipital groove).

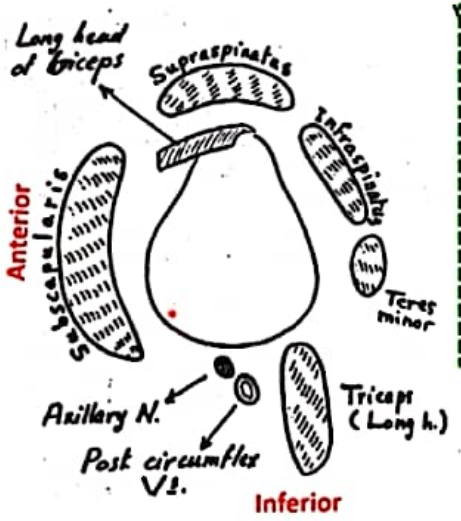


Rotator cuff muscles



Bursae related to shoulder joint





❖Relations of the shoulder joint

1) **Anteriorly;** anterior fibers of the deltoid and subscapularis.
2) **Superiorly:** middle fibers of the deltoid, supraspinatus, and long head of biceps.
3) **Posteriorly:** posterior fibers of the deltoid, infraspinatus, and teres minor.
4) **Inferiorly**: Long head of triceps, axillary nerve and posterior circumflex humeral vessels.

❖ Movements of shoulder joint

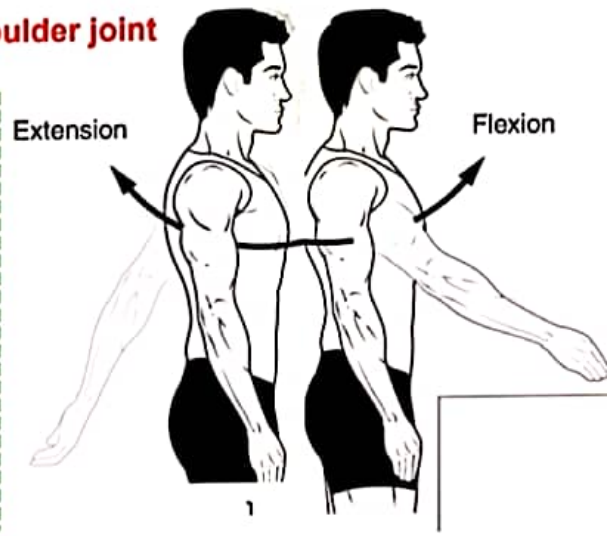
❖ **Flexion**

❖ (Muscles infront):

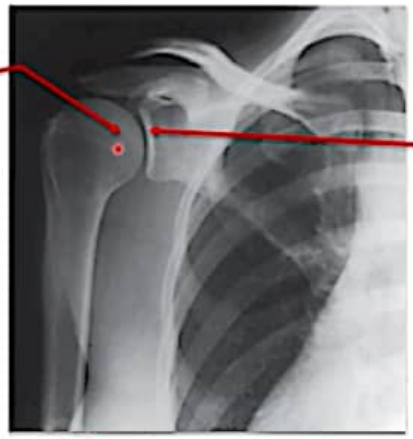
- Anterior fibers of the deltoid and Pectoralis major.
- Coracobrachialis and short head of biceps.

❖ **Extension**

❖ (Muscles in the back): Posterior fibers of the deltoid, teres major and latissimus dorsi.



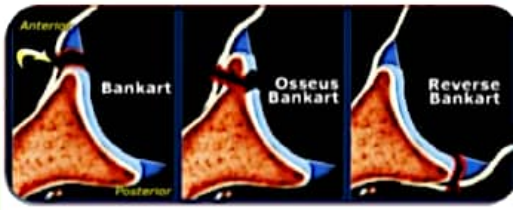
Shoulder (Glenohumeral Joint)

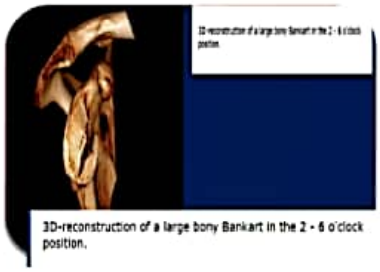


X ray of shoulder joint

Shoulder Instability

Bankart
Detachment of the anteroinferior labrum (3-6 o'clock) with complete tearing of the anterior scapular periosteum with or without an osseus fragment of the glenoid.
Reverse Bankart
Detachment of the posteroinferior labrum (6-9 o'clock) with tearing of the posterior scapular periosteum with or without an osseus fragment of the glenoid.




3D-reconstruction of a large bony Bankart in the 2 - 6 o'clock position.

Anterior shoulder dislocation

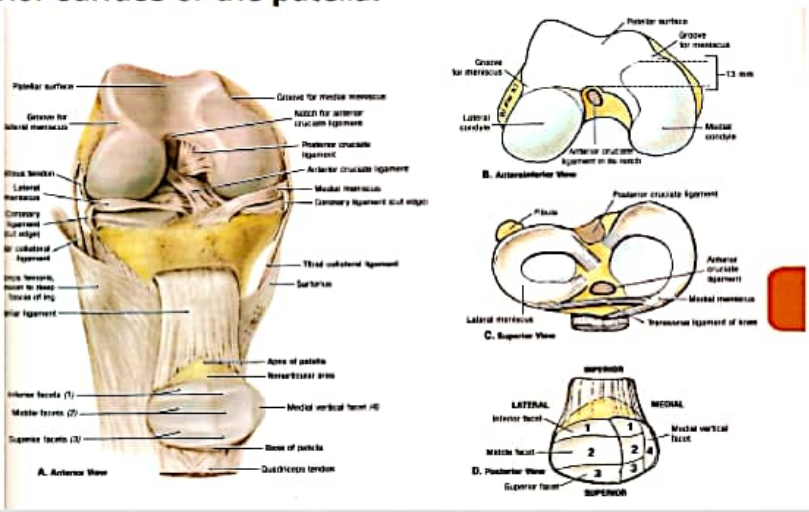
- by far the most common, accounting for up to 95% of all cases
- In most of those, the head of the humerus comes to rest under the coracoid process, referred to as sub-coracoid dislocation
- usually results from anterior glenolabra injury, particularly from disruption of the anterior band of the inferior glenohumeral ligament (IGHL) e.g. Bankart lesion

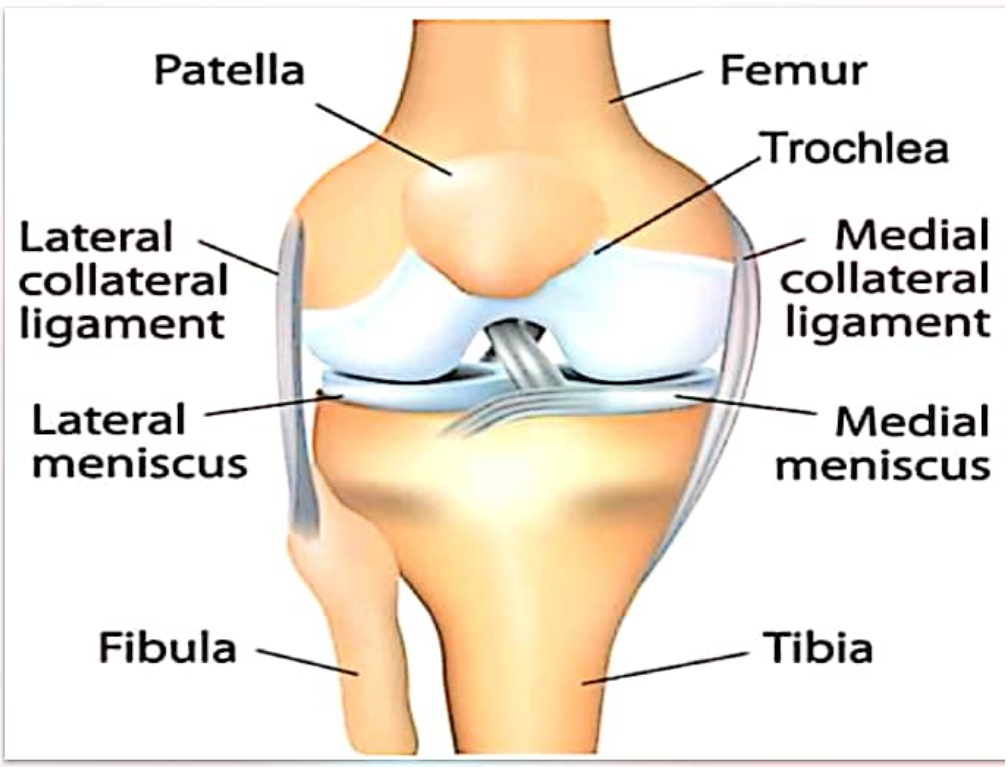
Bankart lesions are disruptions of the glenoid labrum with or without an avulsion of bone fragment.

The Knee Joint

Type: comound,Synovial, modified hinge

Articular surfaces: Lower end femur, upper end tibia, & posterior surface of the patella.

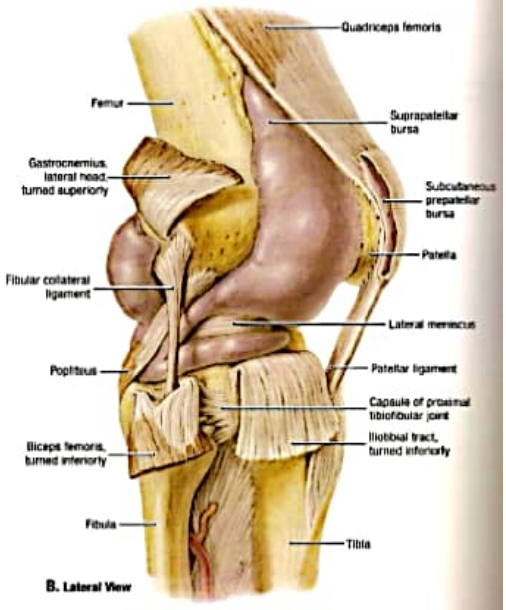




Patellofemoral Joint

The capsule is thin:

1- In front: It is absent and replaced by quadriceps tendon, patella, and ligamentum patellae.

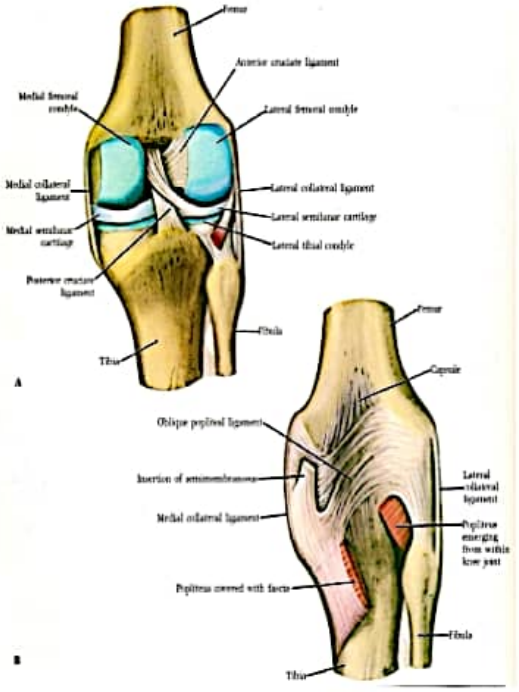


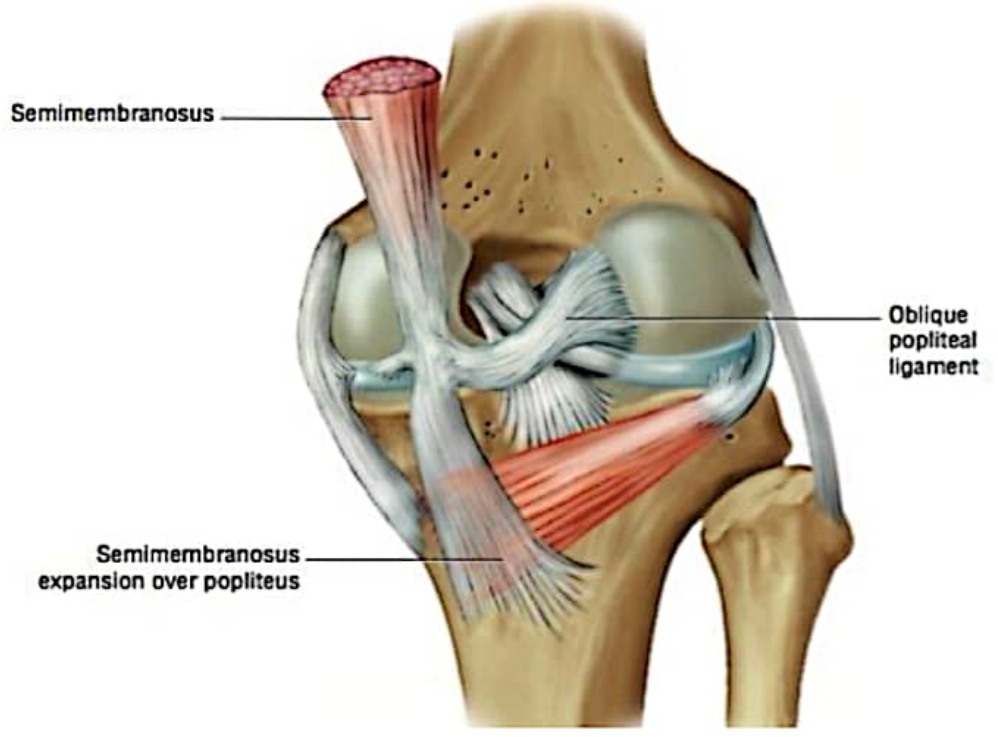
2- Behind: the capsule is thin,

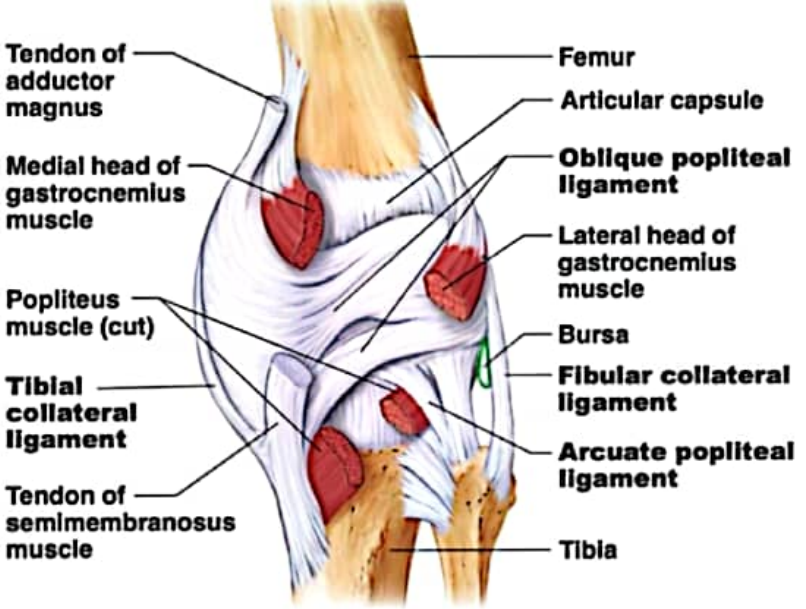
- It is thickened by the posterior oblique ligament (strong ligament, prevents hyper extension.
- It is perforated by the popliteus tendon.

Ligaments (outside the joint):

1- The patellar lig. (ant),
2- The posterior oblique lig.
3- The lateral collateral lig.
4- The medial collateral lig.
5- arcuate lig

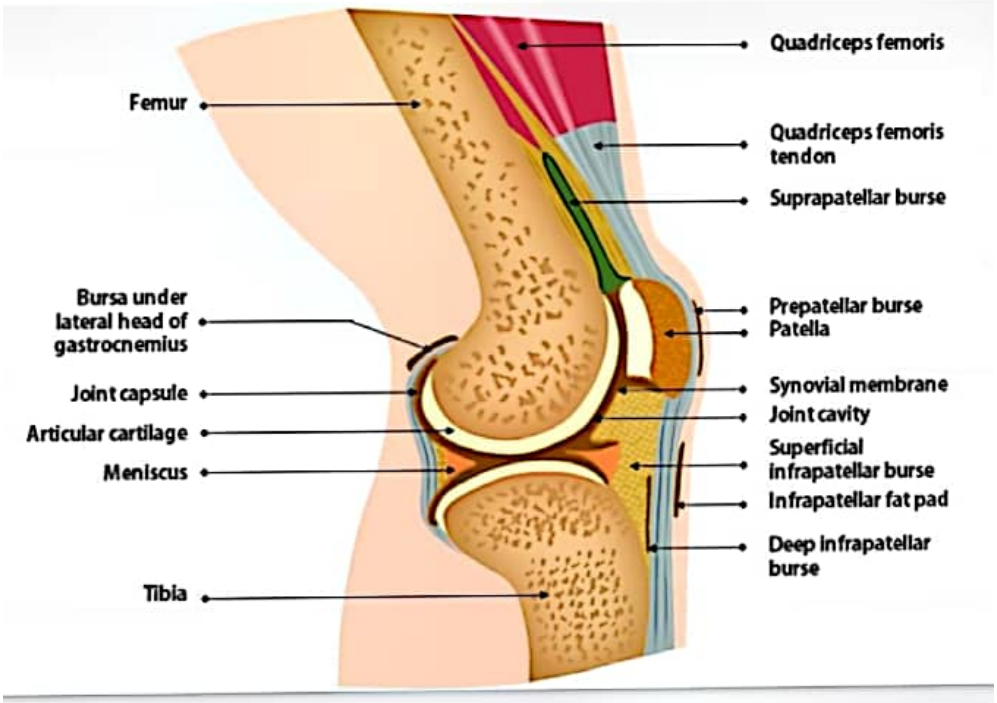






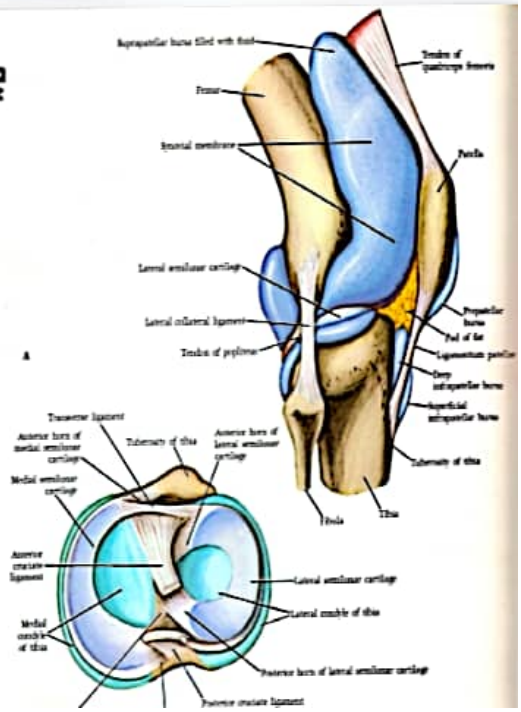
(d) Posterior view of the joint capsule, including ligaments

Anatomy Of The Knee Joint



The synovial membrane

1- lines the capsule,
2- attaches to the peripheral edges of the menisci (semilunar cartilages),
3- covers the front of the ant. cruciate ligament, and the back of posterior cruciate ligament.
4- communicates with:
- suprapatellar bursa,
- popliteus bursa,
- semimembranosus burse,
- gastrocnemius bursa.



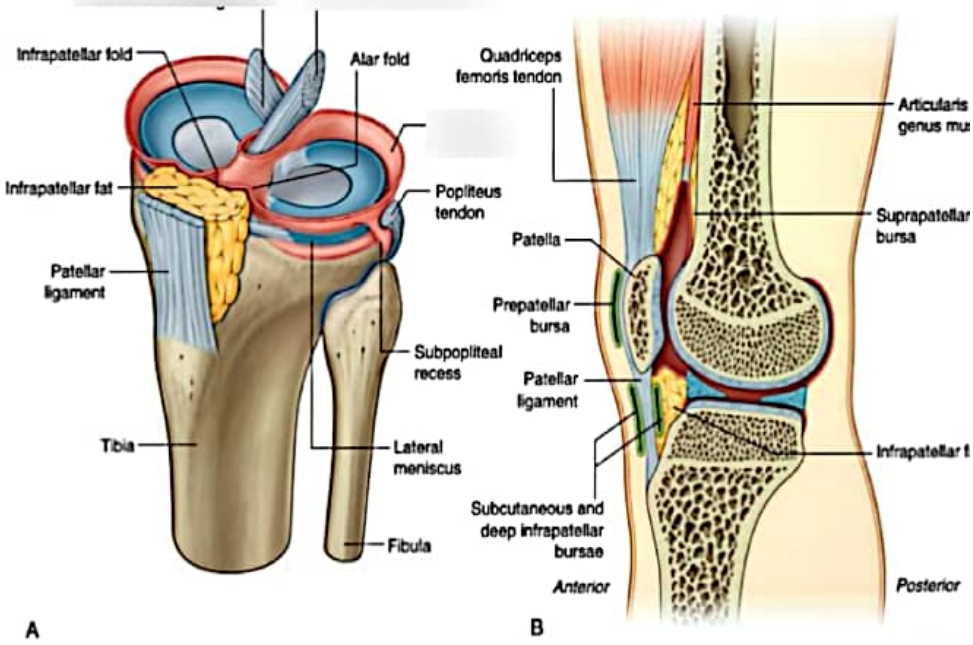
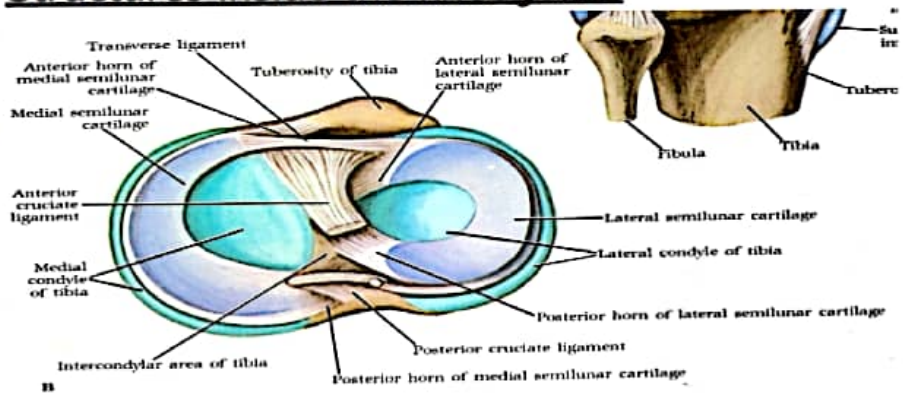


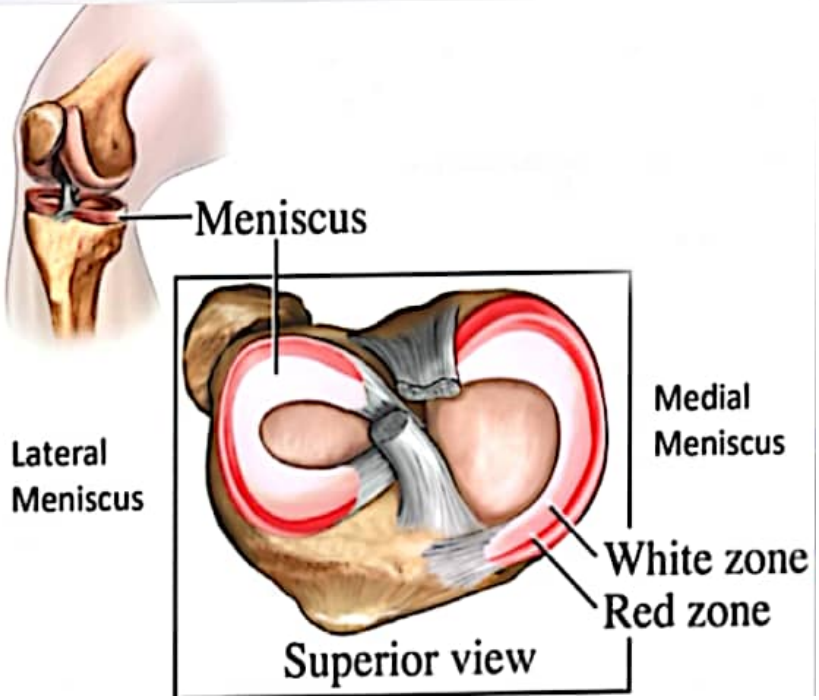
Fig. 6.72 Synovial membrane of the knee joint and associated bursae. A. Superolateral view; patella and femur not shown. B. Paramedial sagittal section through the knee.

Structures inside the knee joint:



1- The medial semilunar cartilage (Medial meniscus): C-shaped, fixed to the capsule of the knee joint and to the medial collateral ligament (liable to injury), its ant. Horn is attached to the most ant. part of the intercondylar area of the upper end tibia and connected to the lat. semilunar cartilage by the transverse lig.

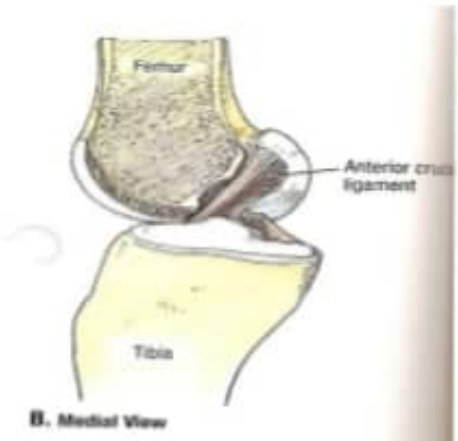
2- The lateral semilunar cartilage (lat. Meniscus): Circular in shape, more mobile (separated from capsule and lat. collateral lig. by popliteus tendon, so it is more adaptive to twisting movement and less liable to injury.



Structures inside the knee joint (cont.)

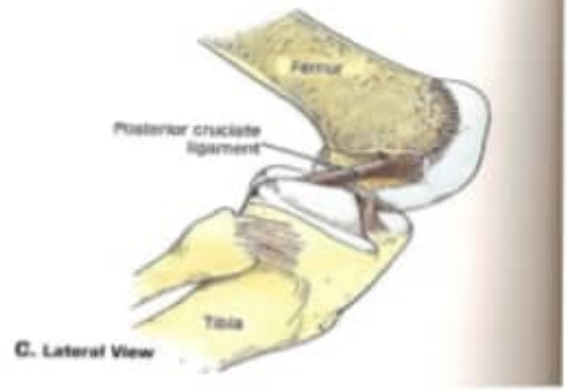
3- Anterior cruciate ligament:

- From ant. intercondylar area of tibia -- → upward, backward and laterally to the lat. condyle of the femur.
- It is relaxed in knee flexion, tense in extension so it prevents hyper-extension.



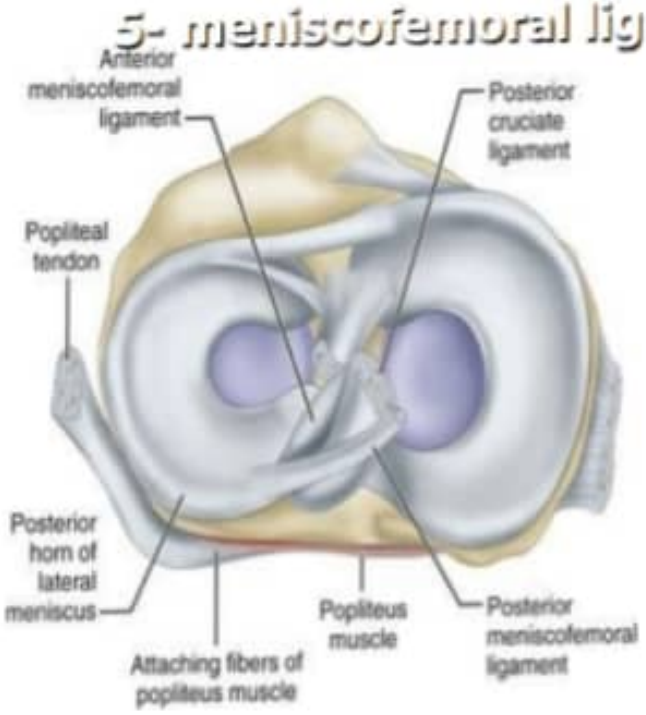
4- Posterior cruciate ligament:

- From post. Intercondylar area of tibia → upwards, forward and medially to ant. part of medial femoral condyle.
- It is relaxed in extension, tense in flexion so it prevents anterior femoral dislocation.



Structures inside the knee joint (cont.)

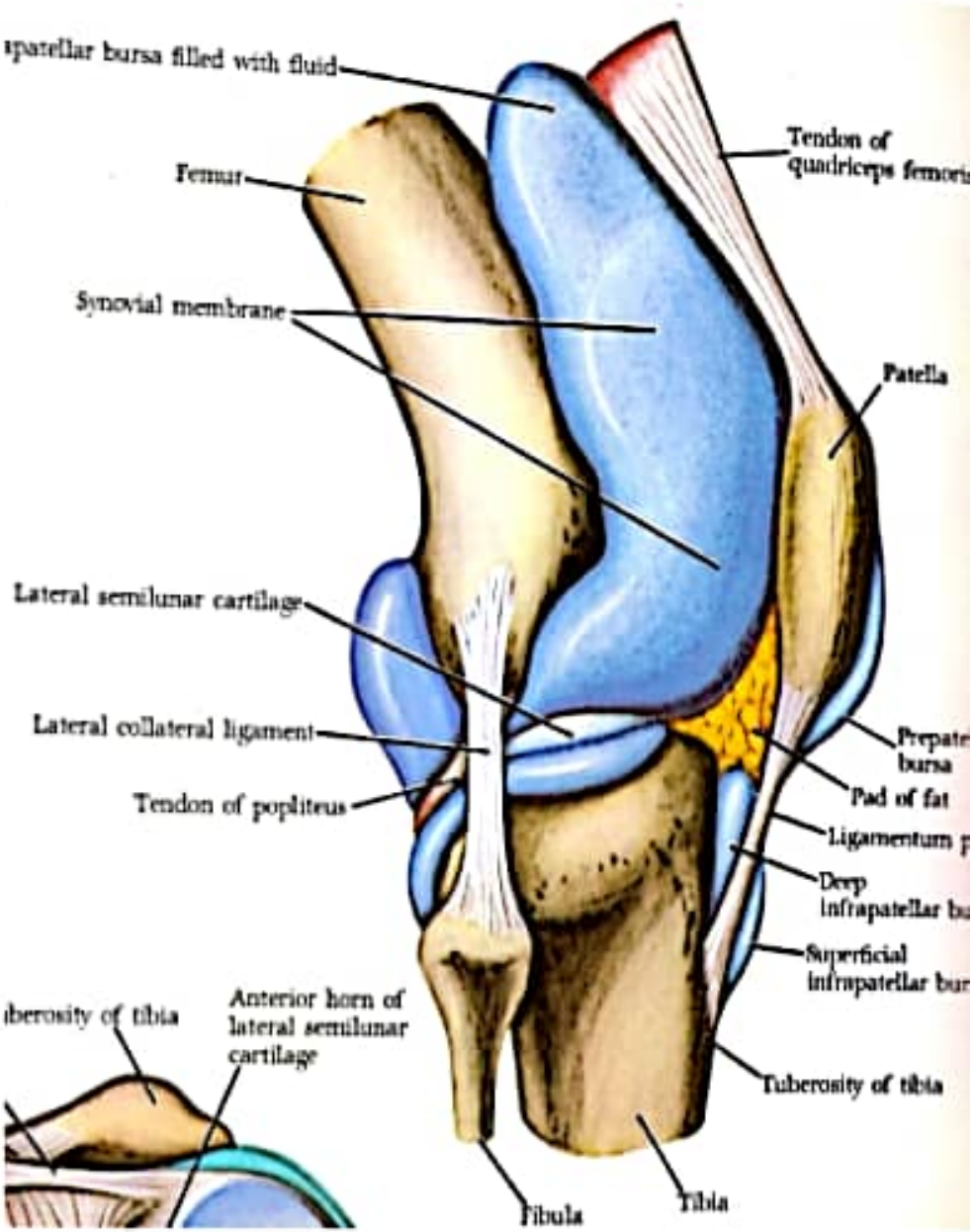
5- meniscofemoral lig



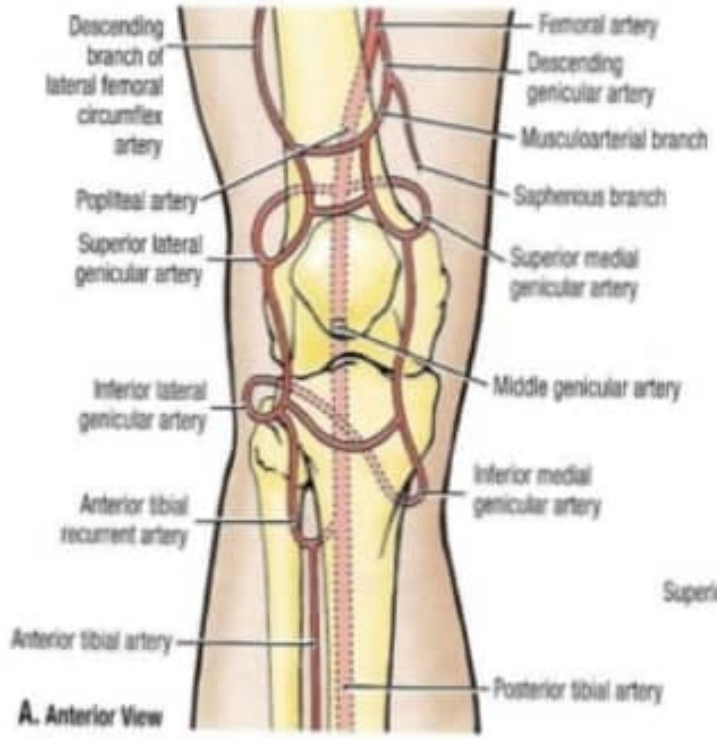
Bursae related to the knee joint:

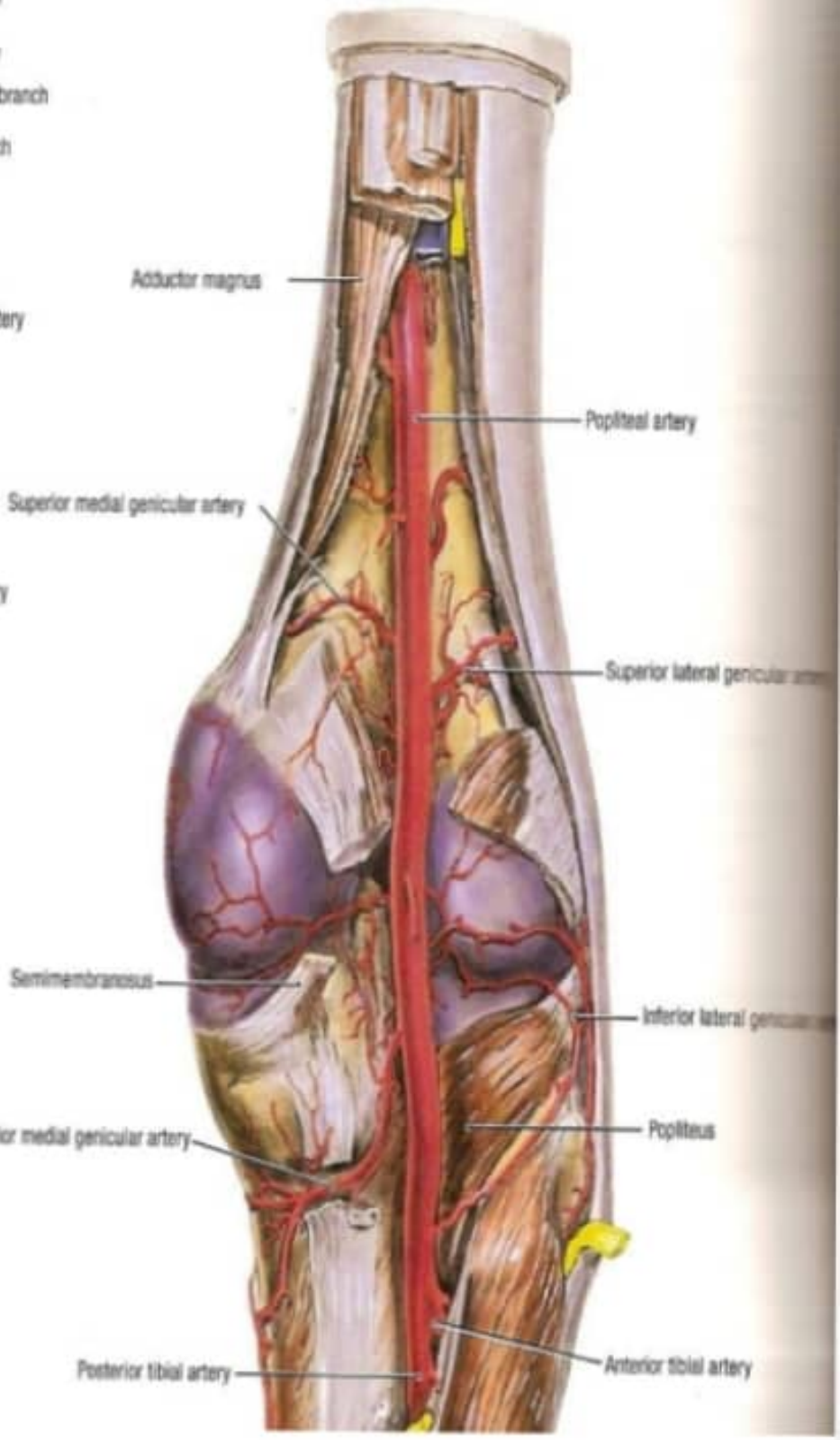
- Anterior to the knee:
  1. supra-patellar bursa
  2. prepatellar bursa
  3. superficial infra-patellar bursa
  4. deep infrapatellar bursa

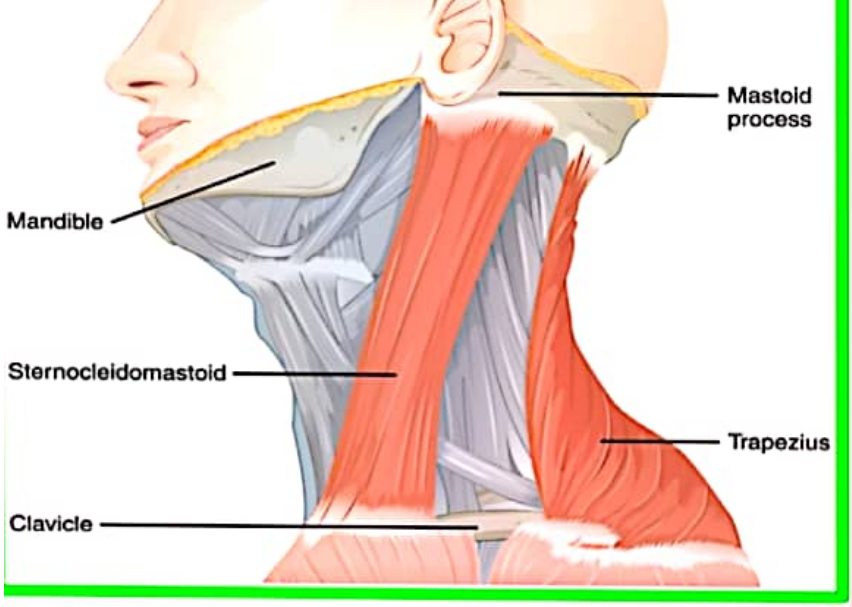
- Posterior to the knee:
  1. popliteus bursa
  2. semimembrenosus bursa
  3. semitendinosus bursa
  4. gastrocnemius bursa
  5. gracilis bursa
  6. biceps bursa
  7. sartorius bursa

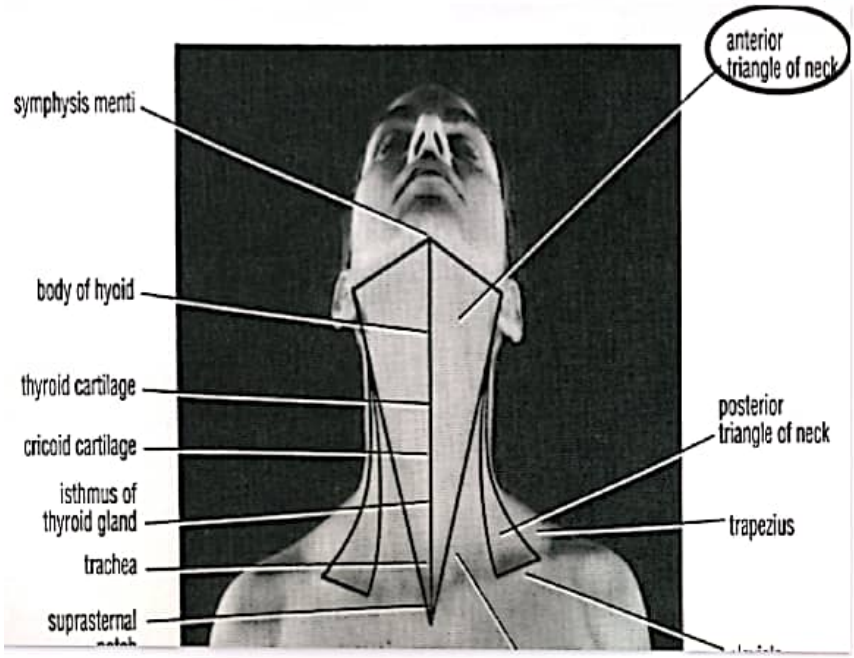


...e Knee joint:









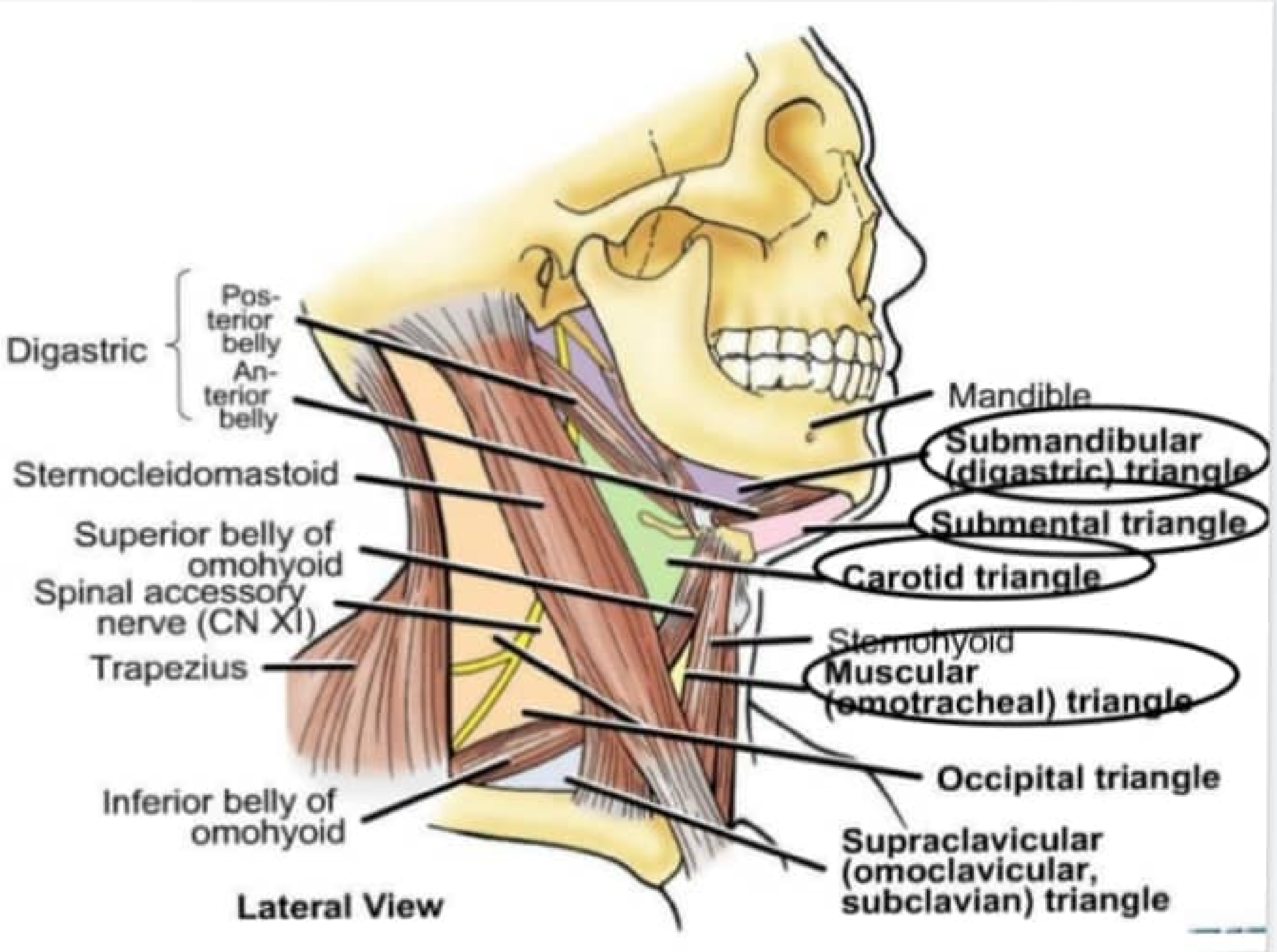
Muscle: Platysma
Origin: Deep fascia over pectoralis major and deltoid
Insertion: Body of mandible and angle of mouth
N. Supply: Facial nerve cervical branch
Action: Depresses mandible and angle of mouth

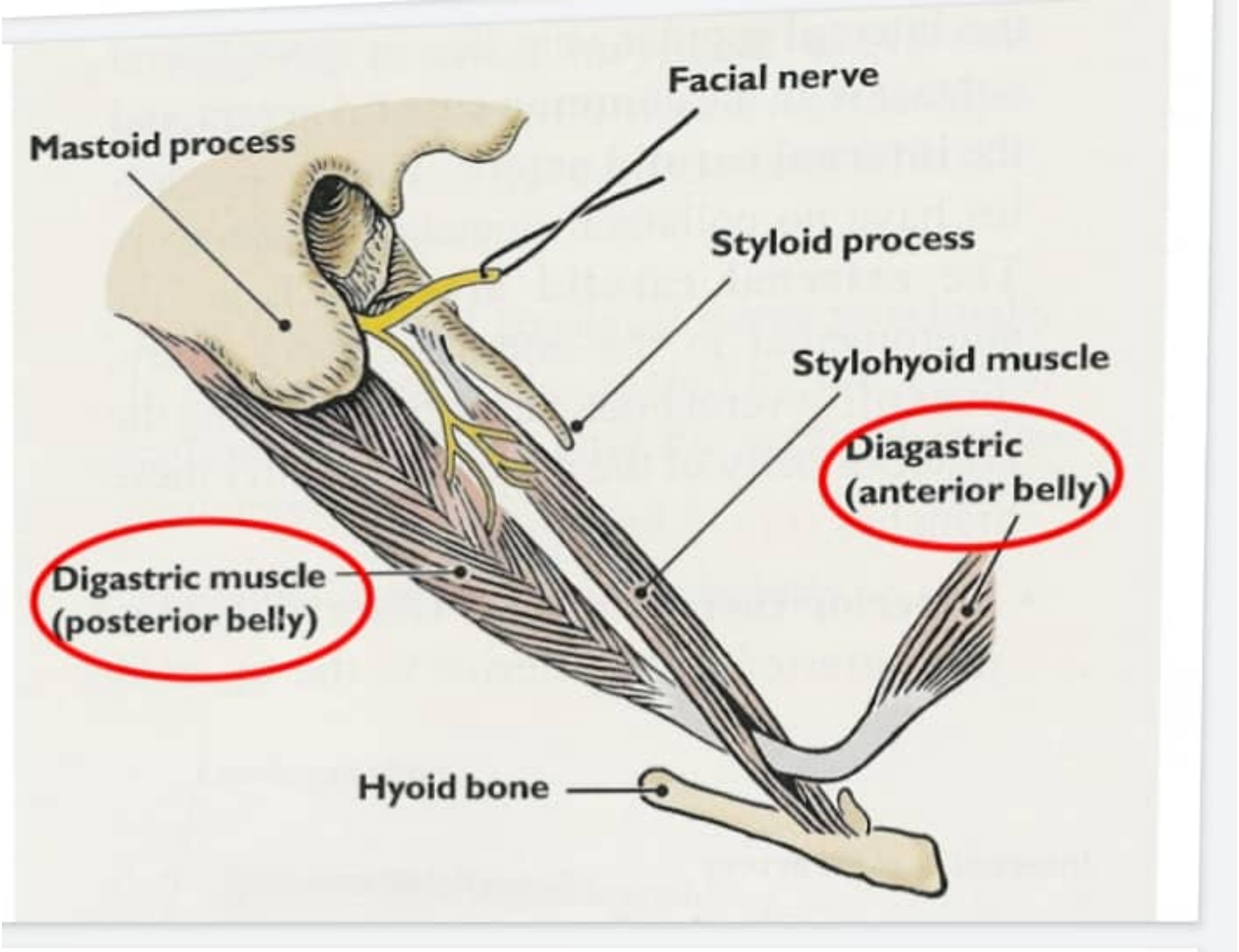
ANTERIOR TRIANGLE

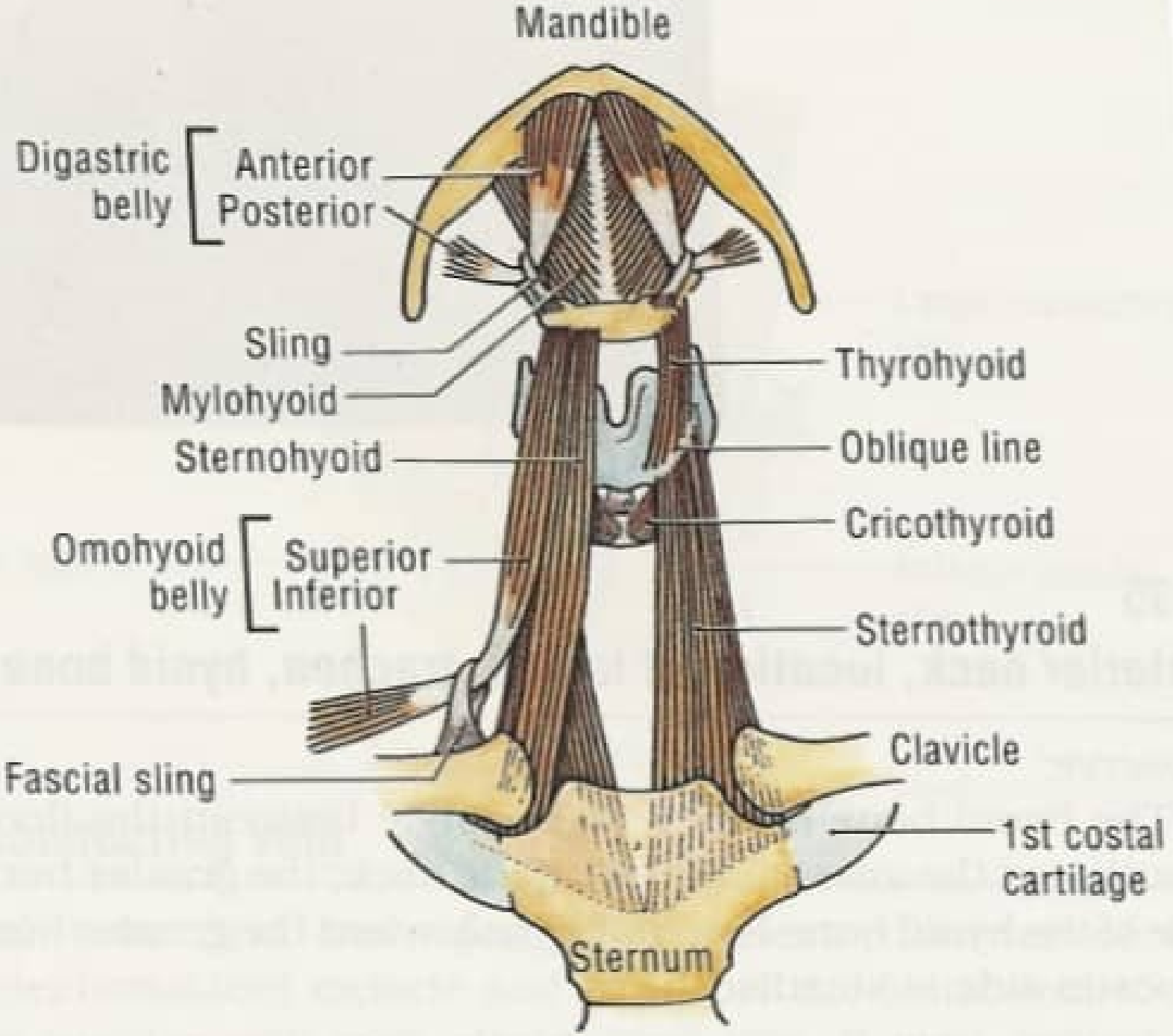
Boundaries

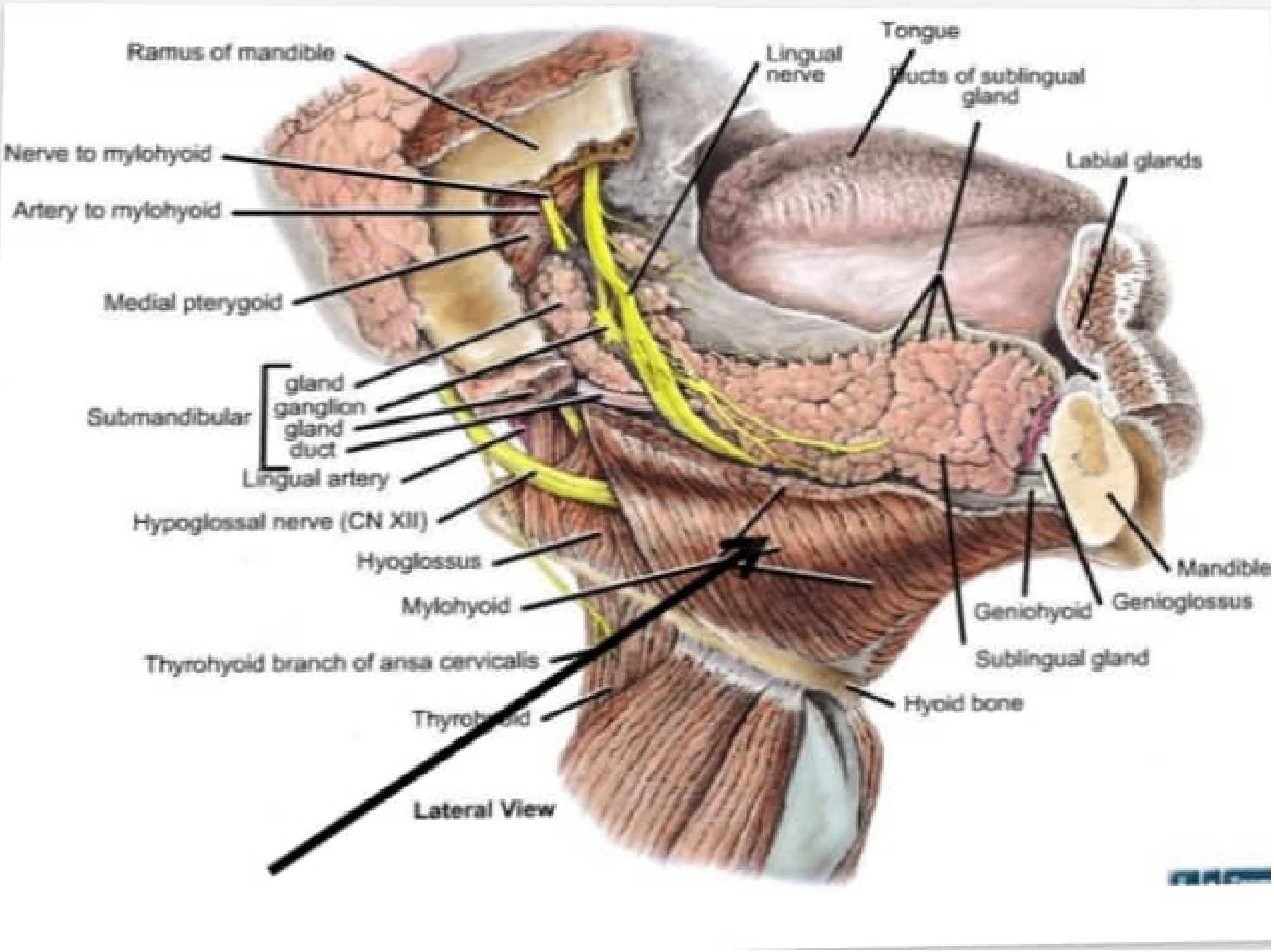
Anteriorly: Midline of the neck.

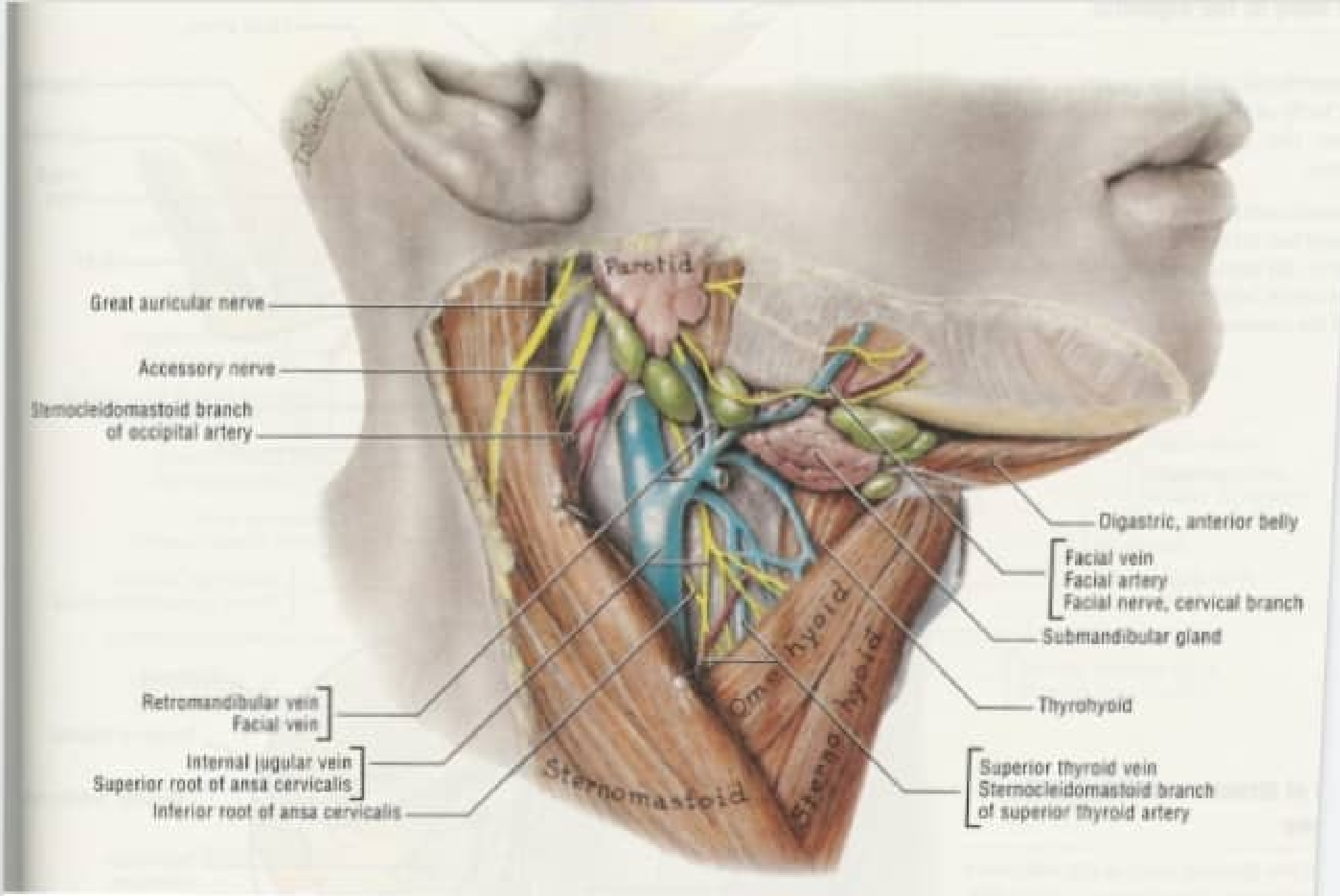
Posteriorly: Anterior border of

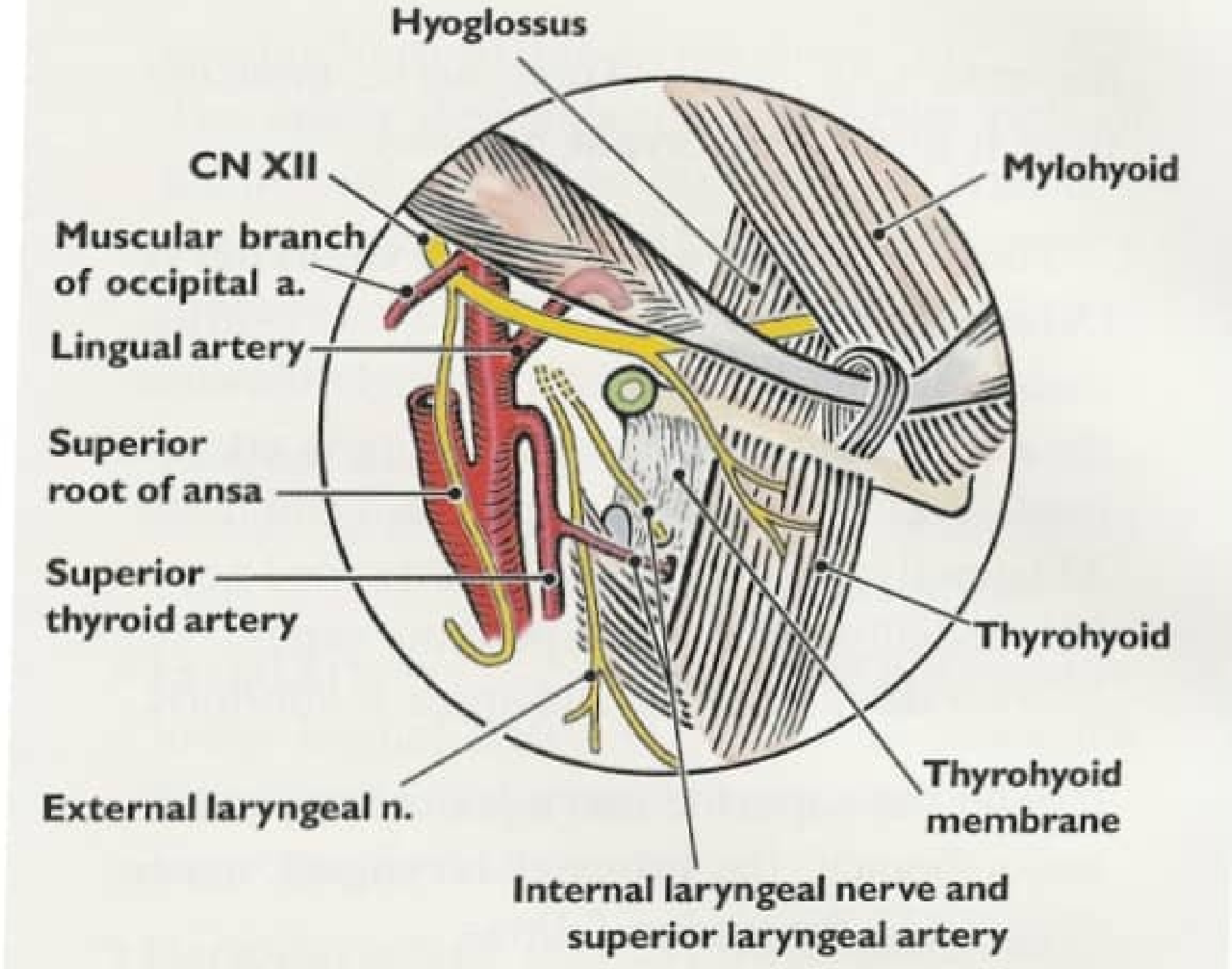


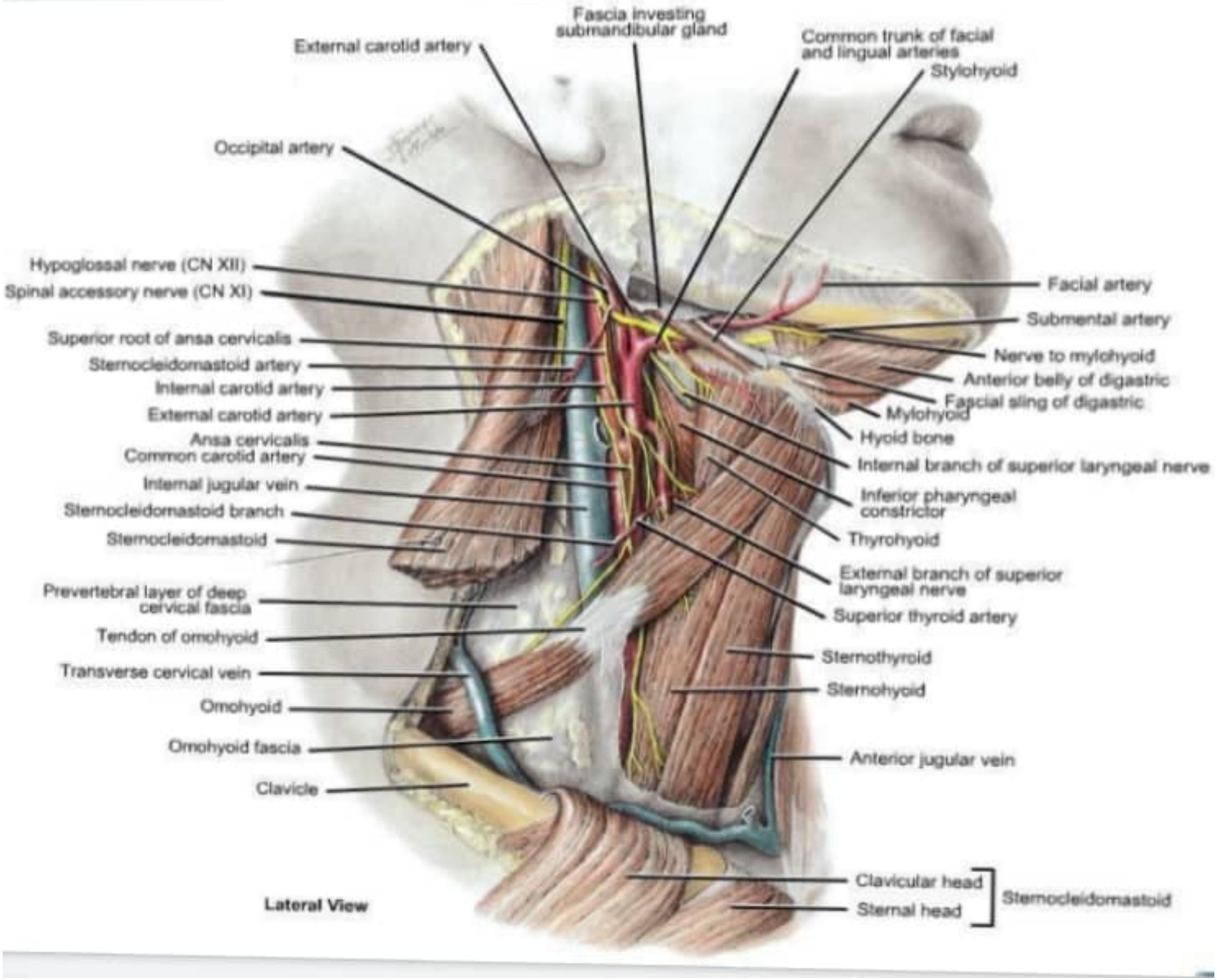


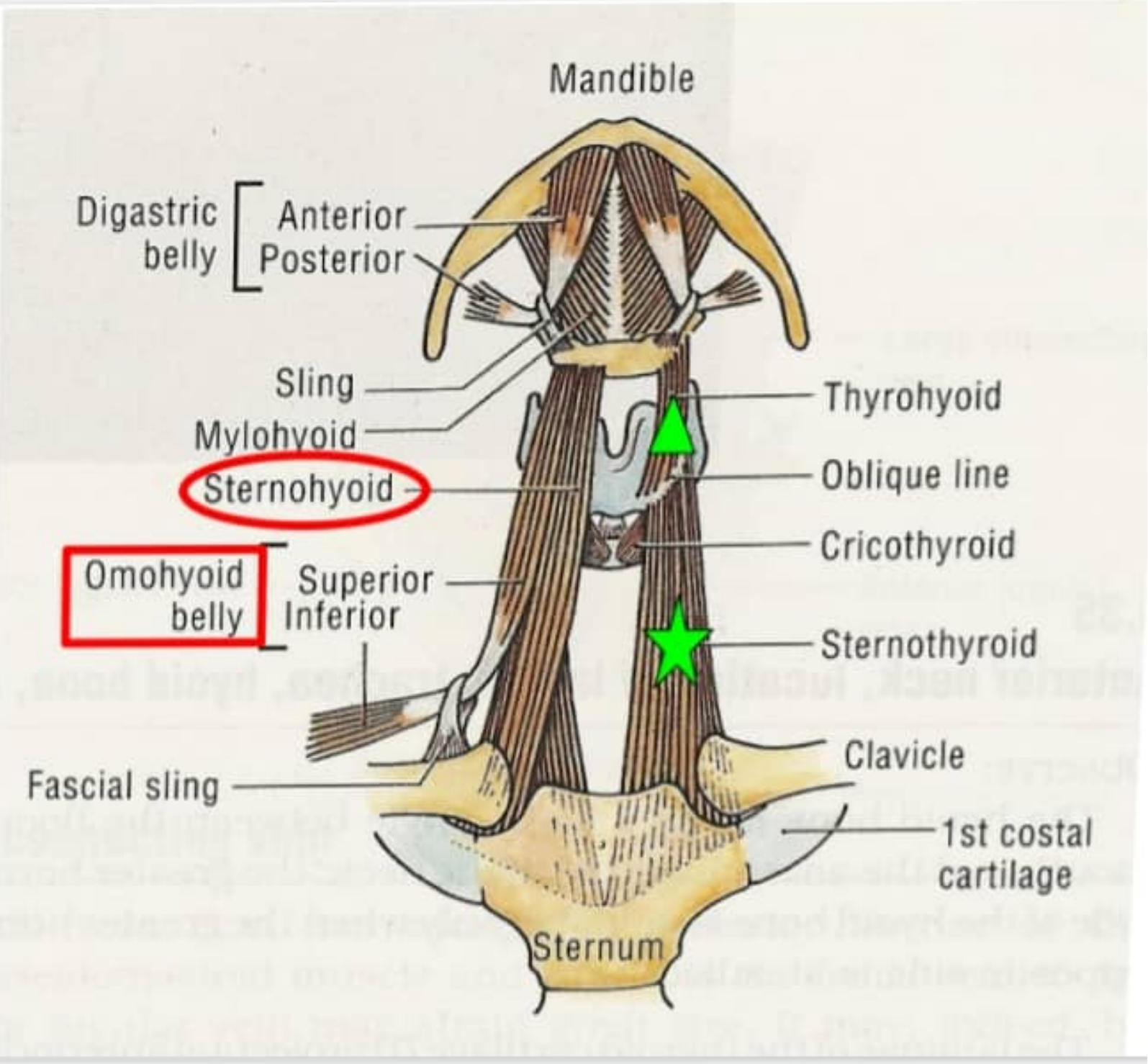












Muscle: Omohyoid

Inferior belly

Origin: Upper margin of scapula and suprascapular liga

Insertion: Intermediate tendon is held to clavicle and fi

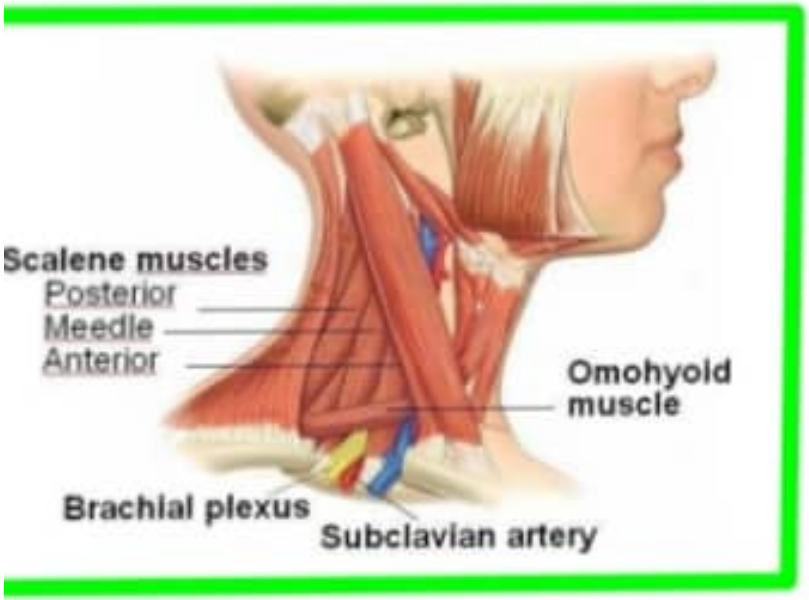
by fascial sling

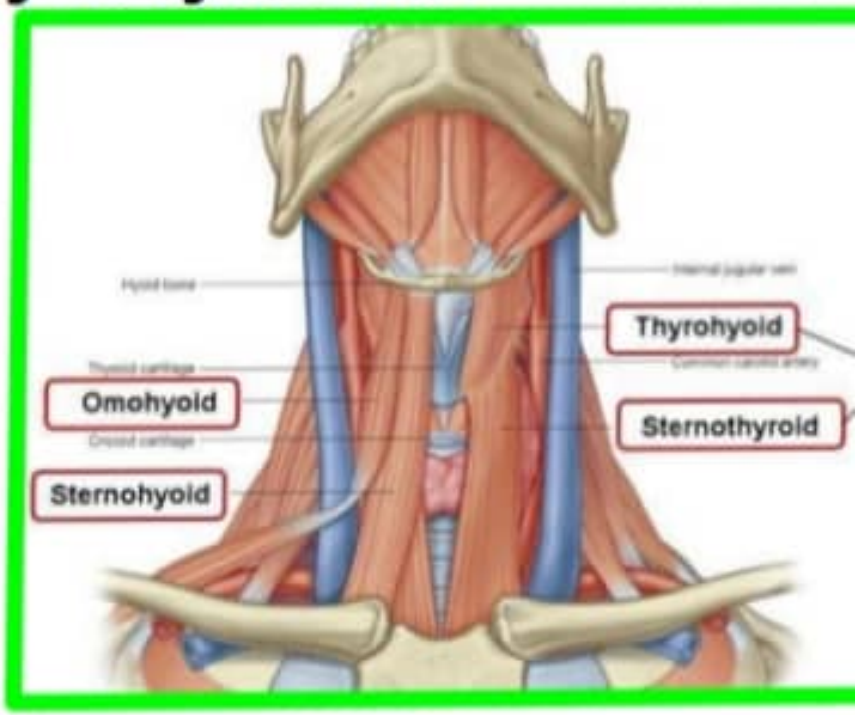
N. Supply: Ansa cervicalis; C1, 2, and 3

Action: Depresses hyoid bone

Superior belly

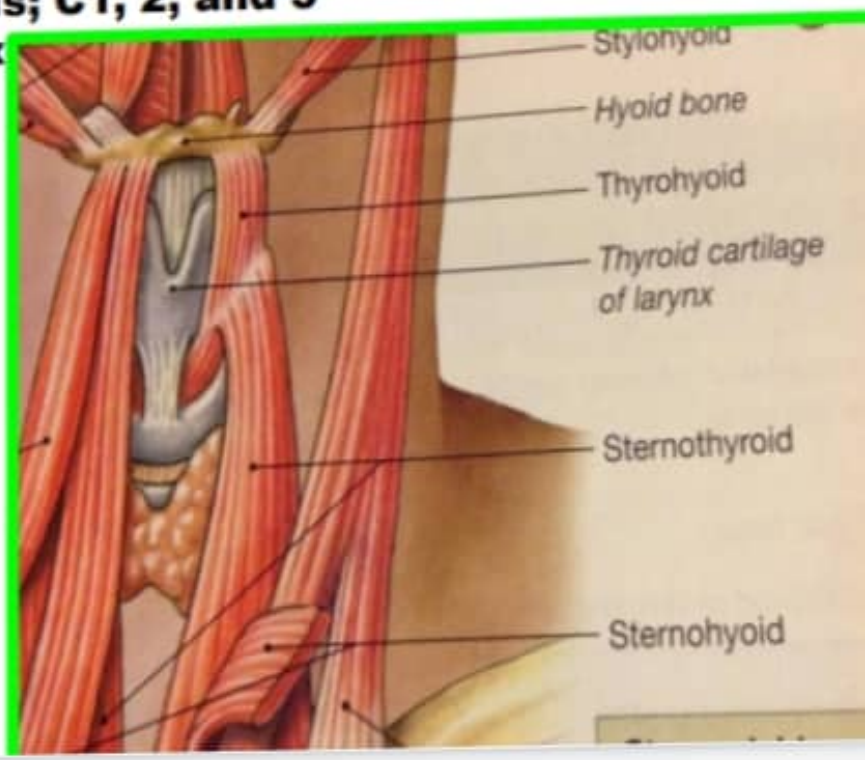
Origin: Lower border of body of hyoid bone

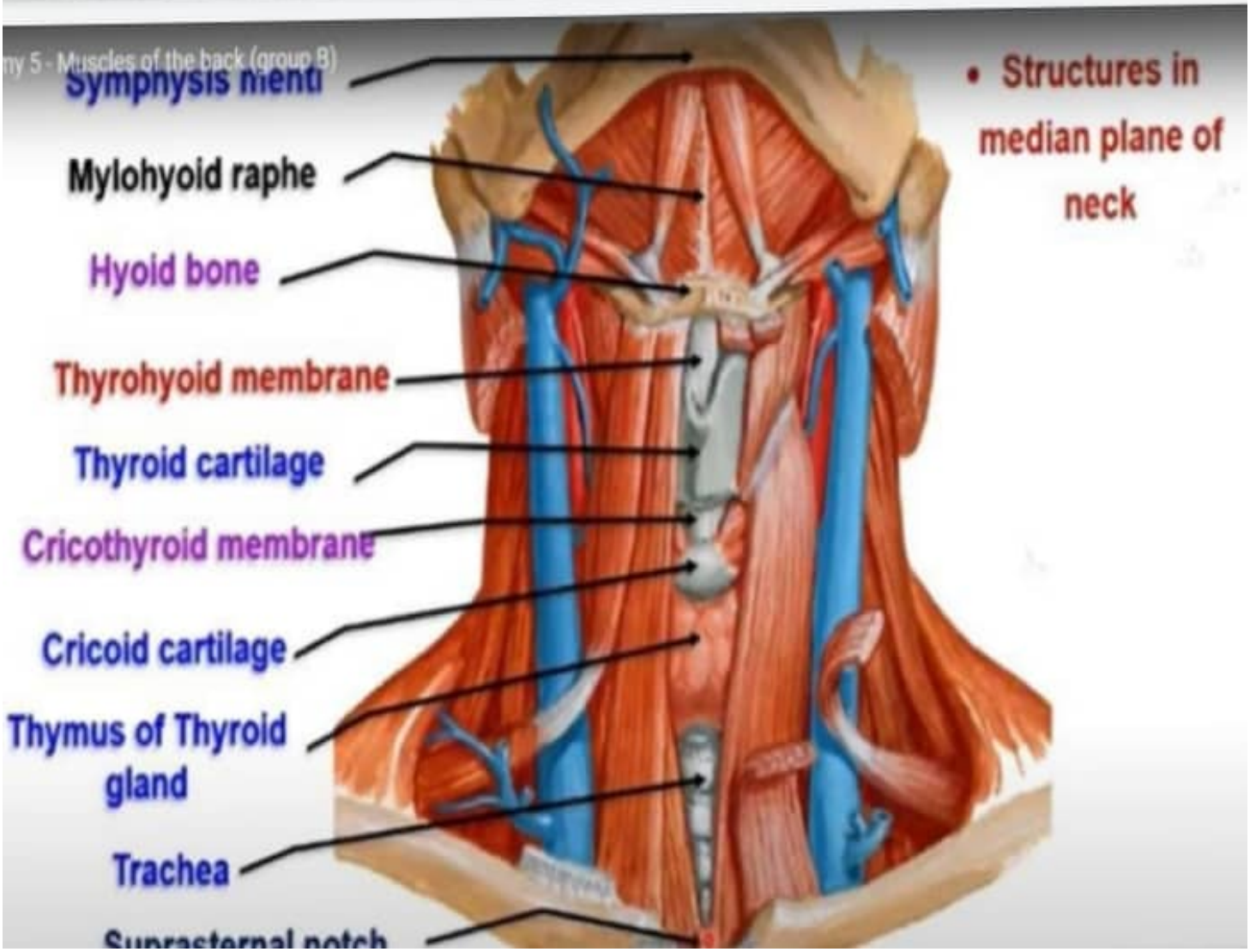


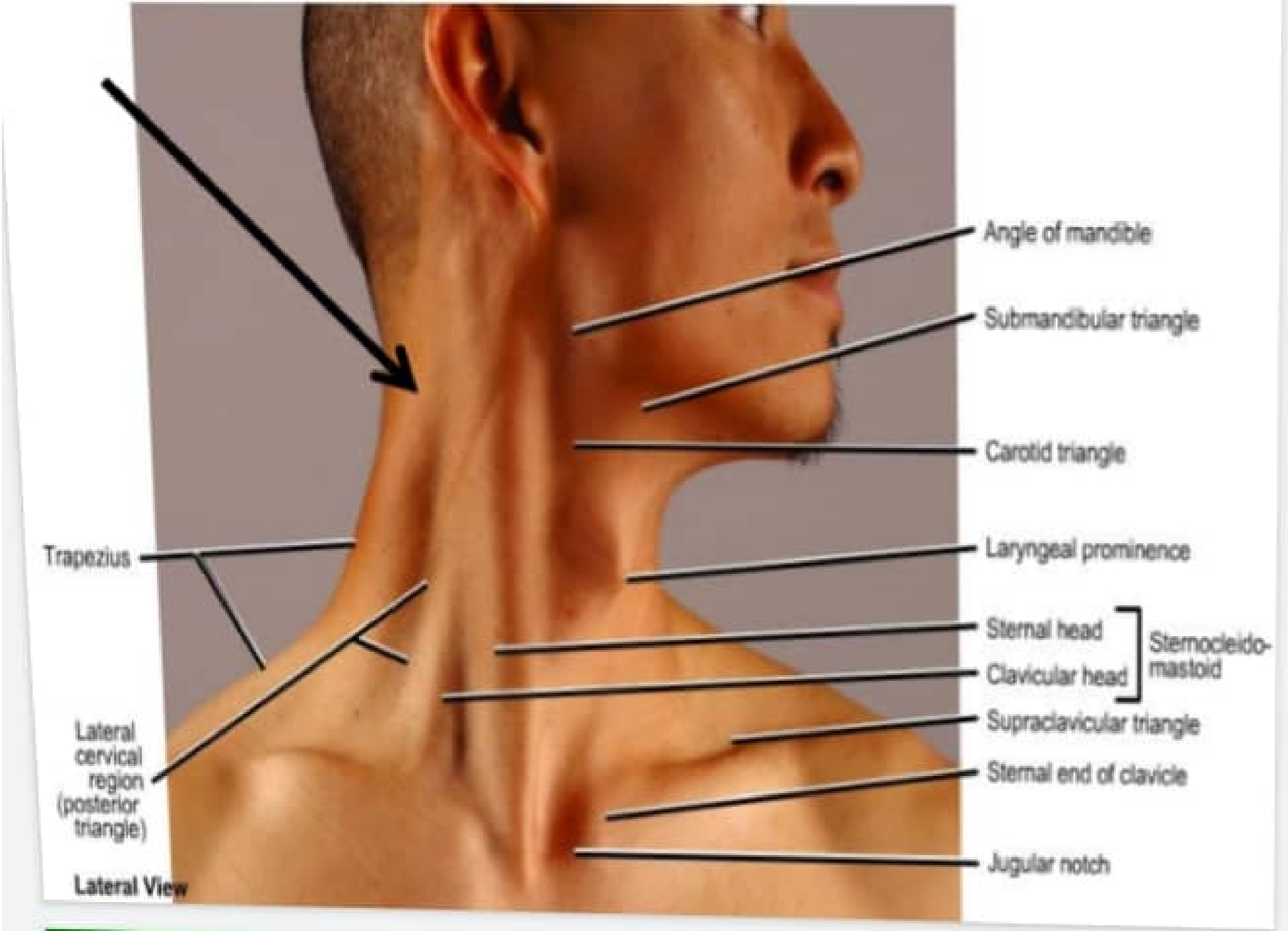


Muscle: Sternothyroid
Origin: Manubrium sterni
Insertion: Oblique line on lamina of thyroid cartilage
N. Supply: Ansa cervicalis; C1, 2, and 3
Action: Depresses larynx

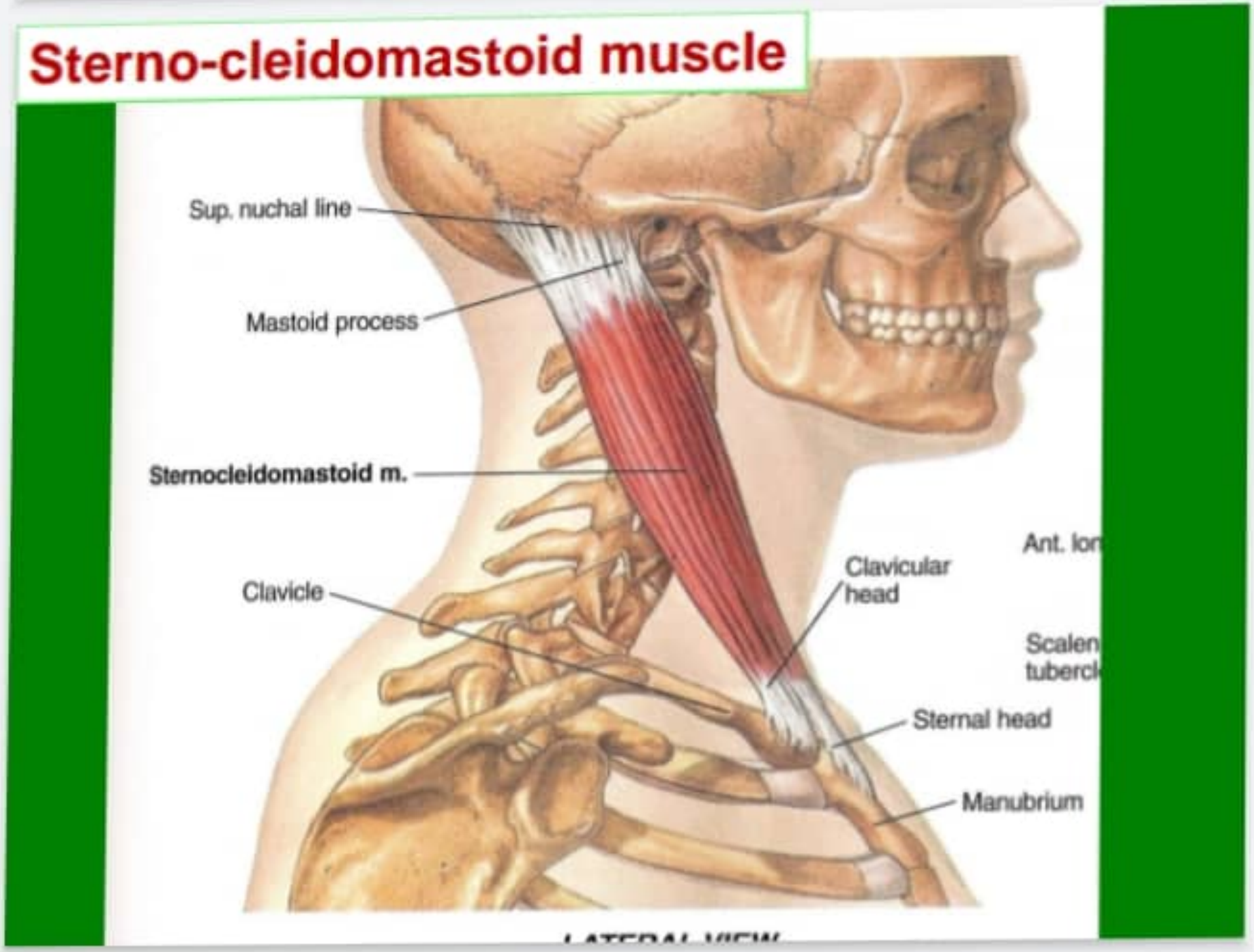
Muscle: Thyrohyoid
Origin: Oblique line on lamina of thyroid cartilage
Insertion: Lower border of body of hyoid bone
N. Supply: 1st cervical nerve
Action: Depresses hyoid bone or elevates larynx

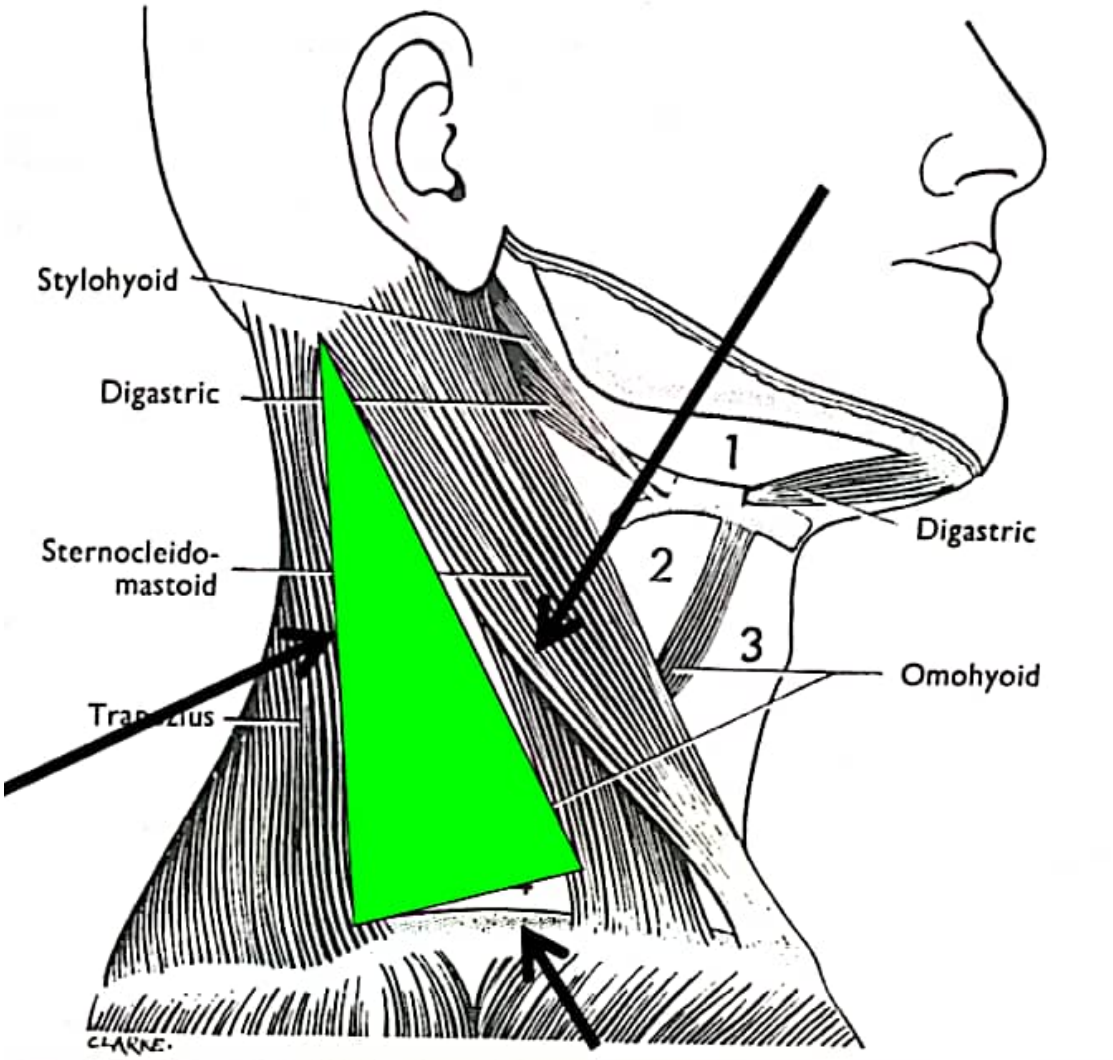


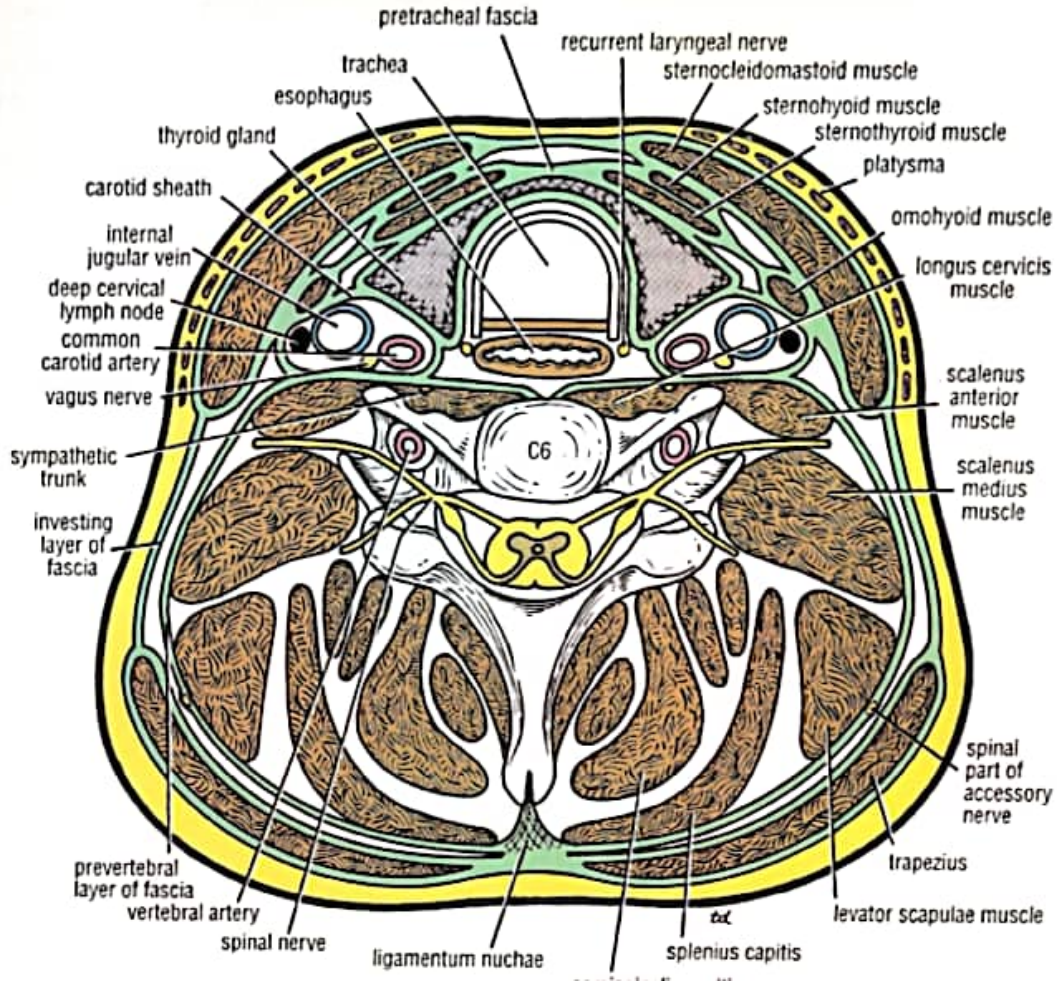


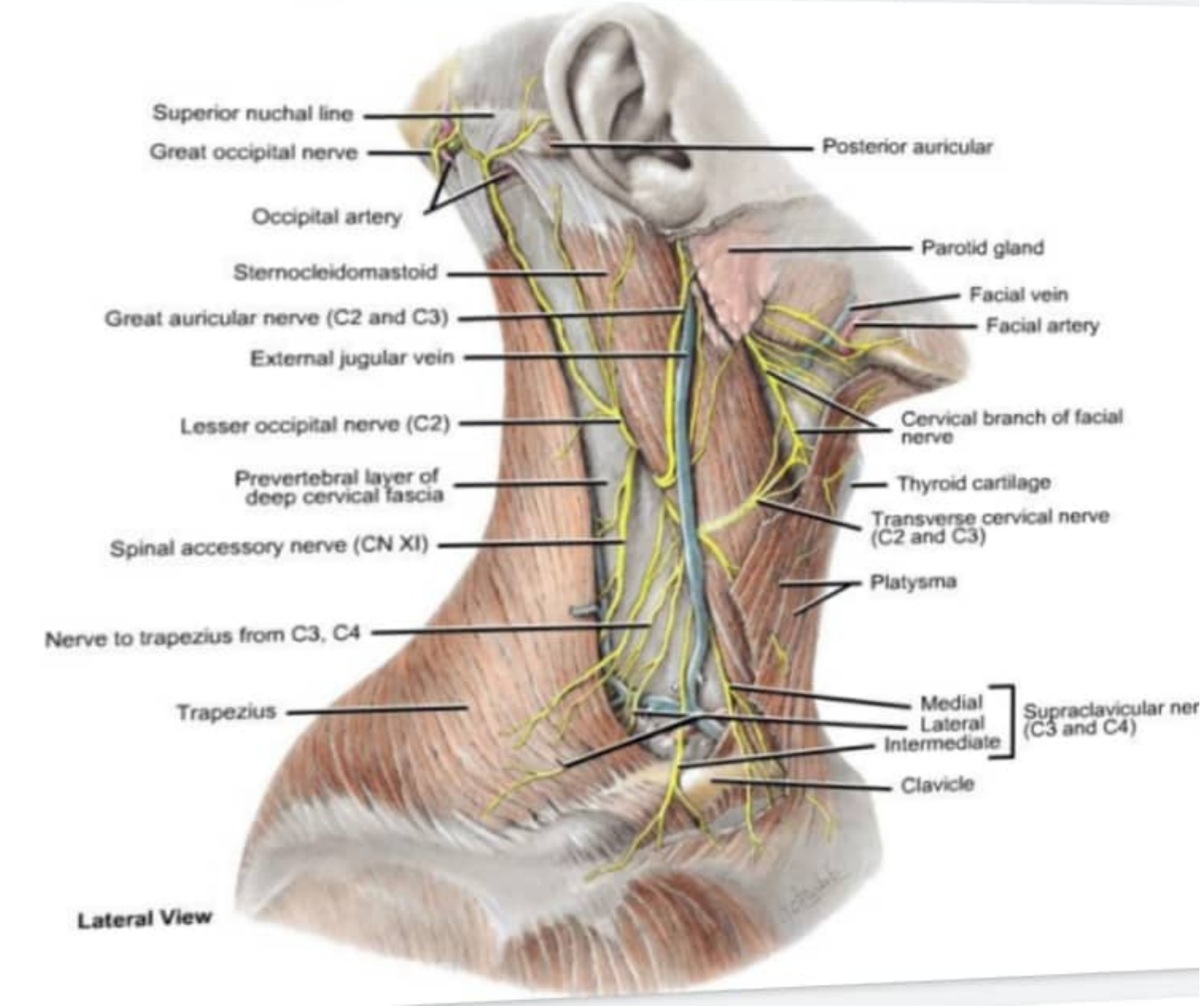


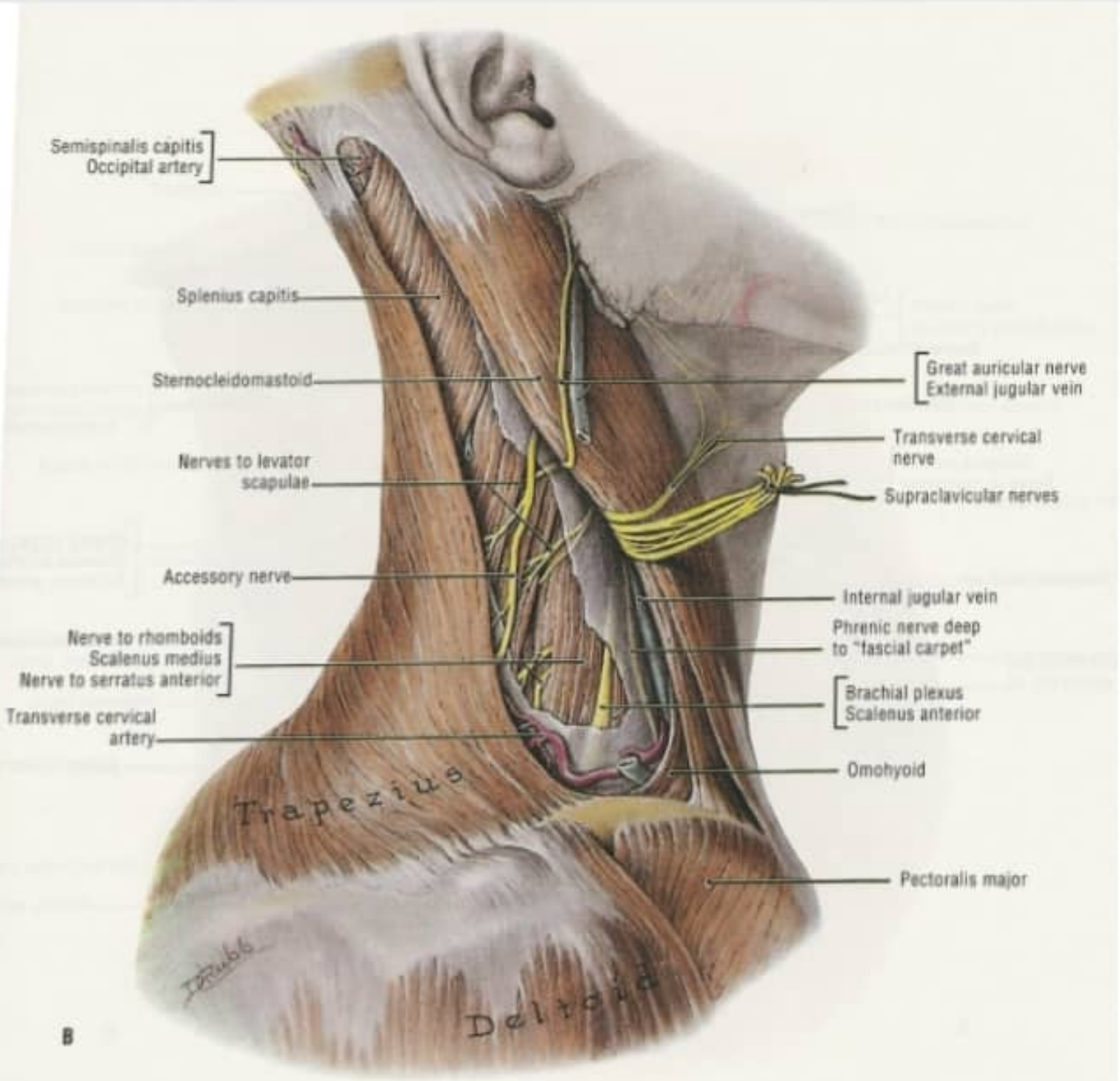
Sterno-cleidomastoid muscle





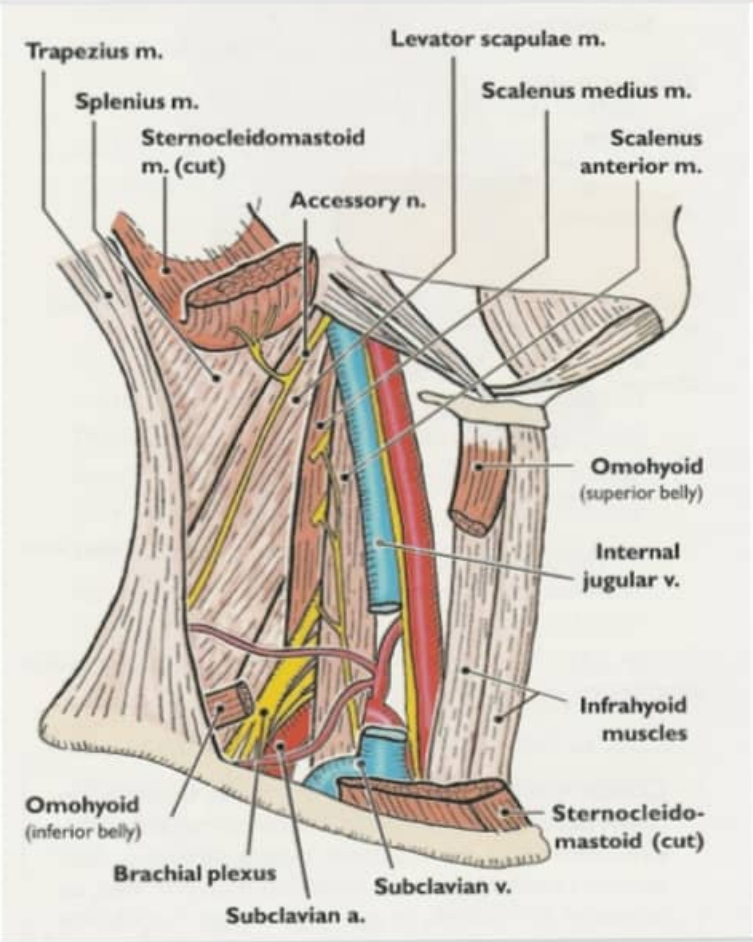


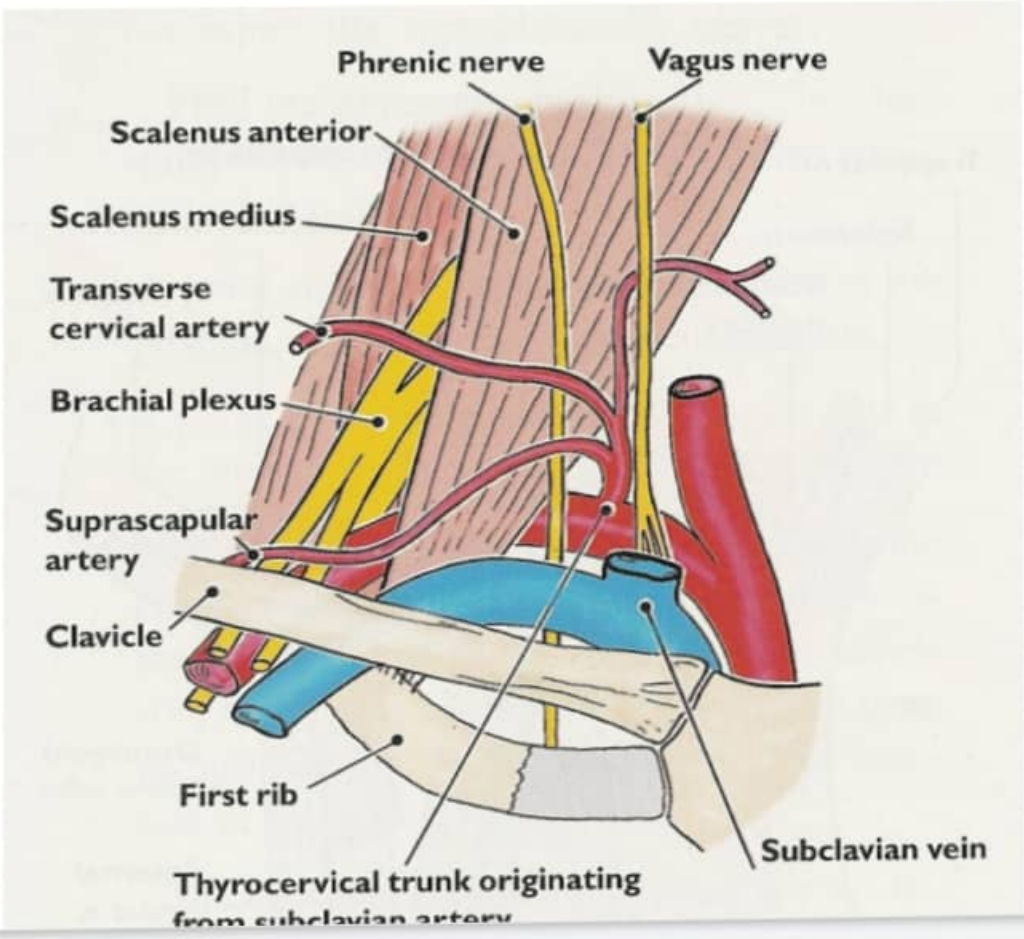




Muscle:

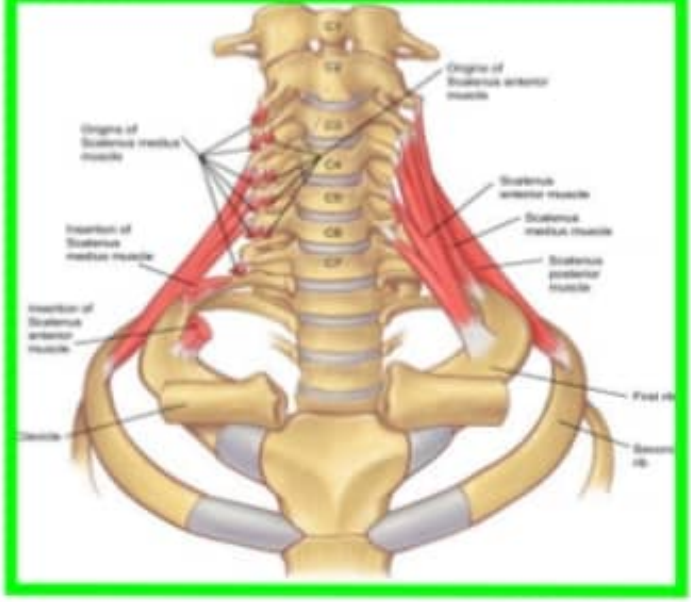
1. Inferior belly of omohyoid muscle.



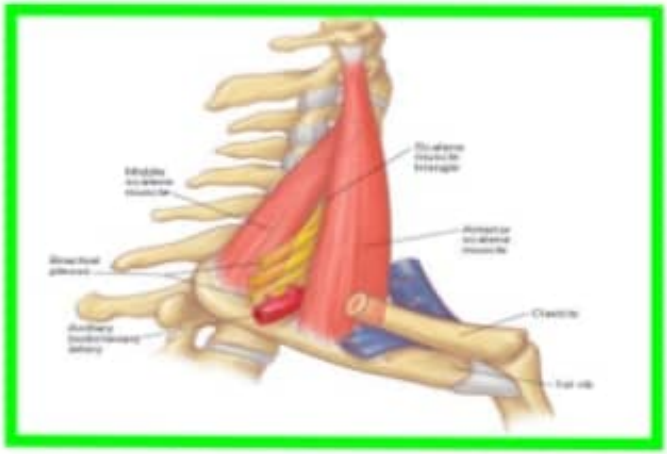


Muscles of the Neck

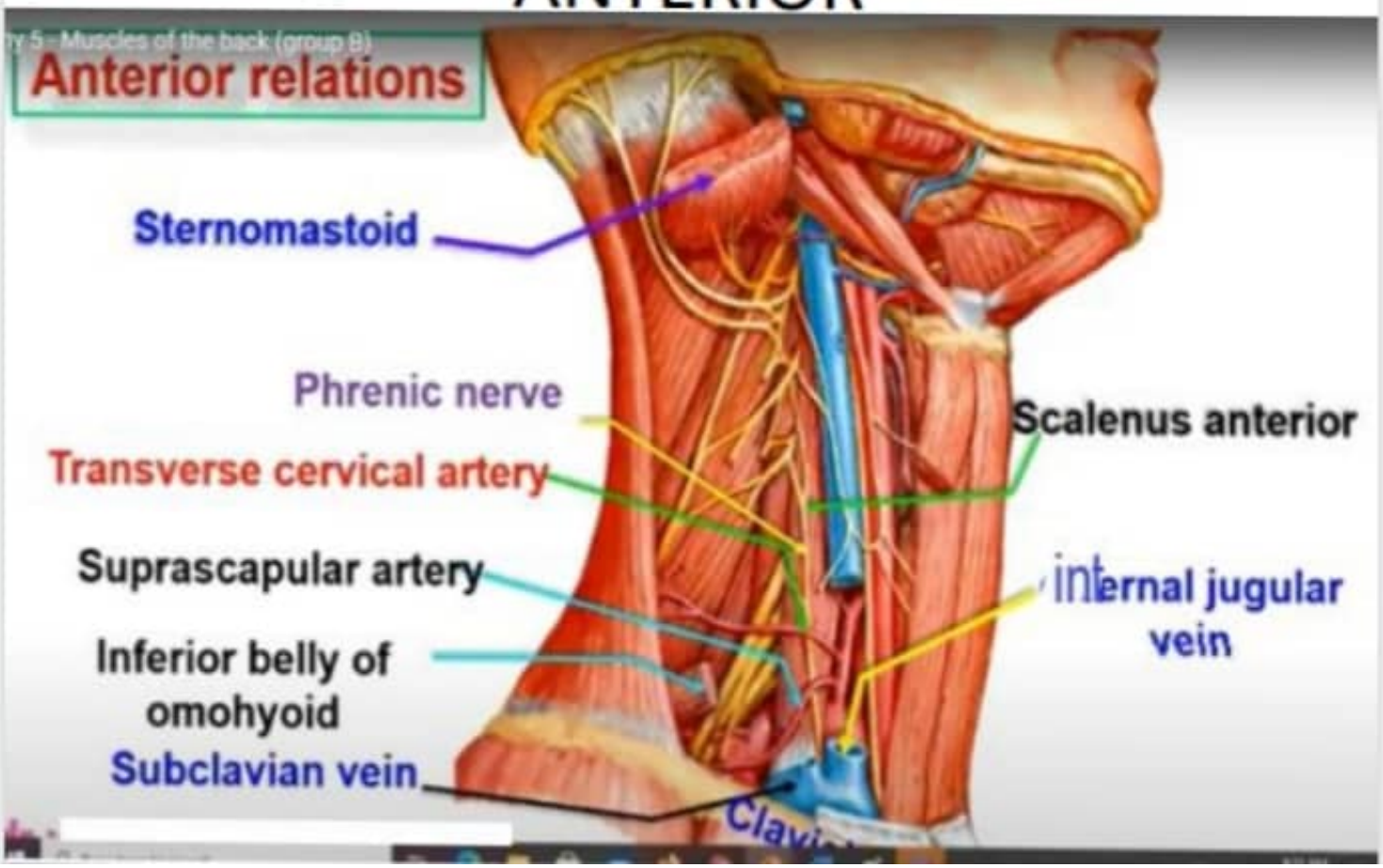
Muscle: Scalenus anterior
Origin: Transverse processes of 3rd, 4th, 5th, and 6th cervical vertebrae
Insertion: 1st rib
N. Supply: **ventral rami** C4, 5, and 6
Action: Elevates 1st rib; laterally flexes cervical part of vertebral column

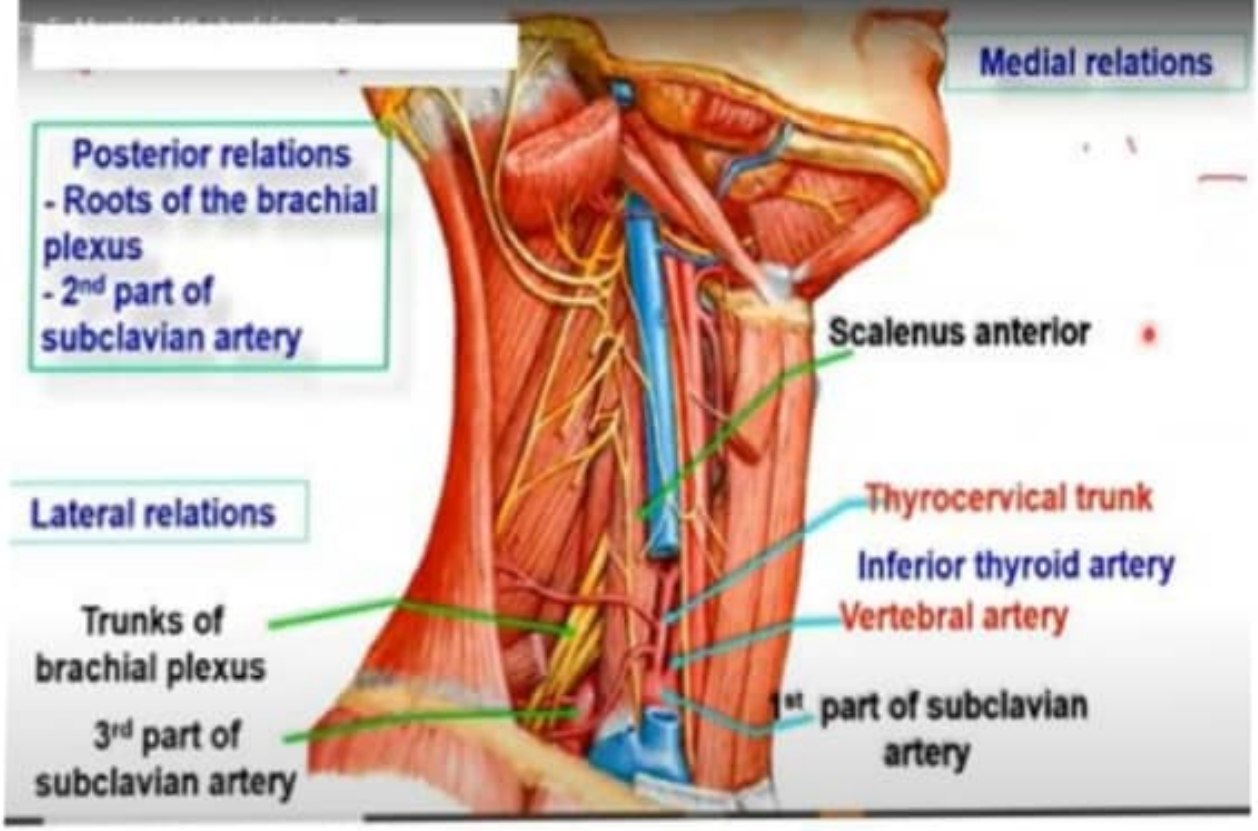


Muscle: Scalenus medius
Origin: Transverse processes of upper six cervical vertebrae
Insertion: 1st rib
N. Supply: Anterior rami of cervical nerves
Action: Elevates 1st rib; laterally flexes and rotates cervical part of vertebral column



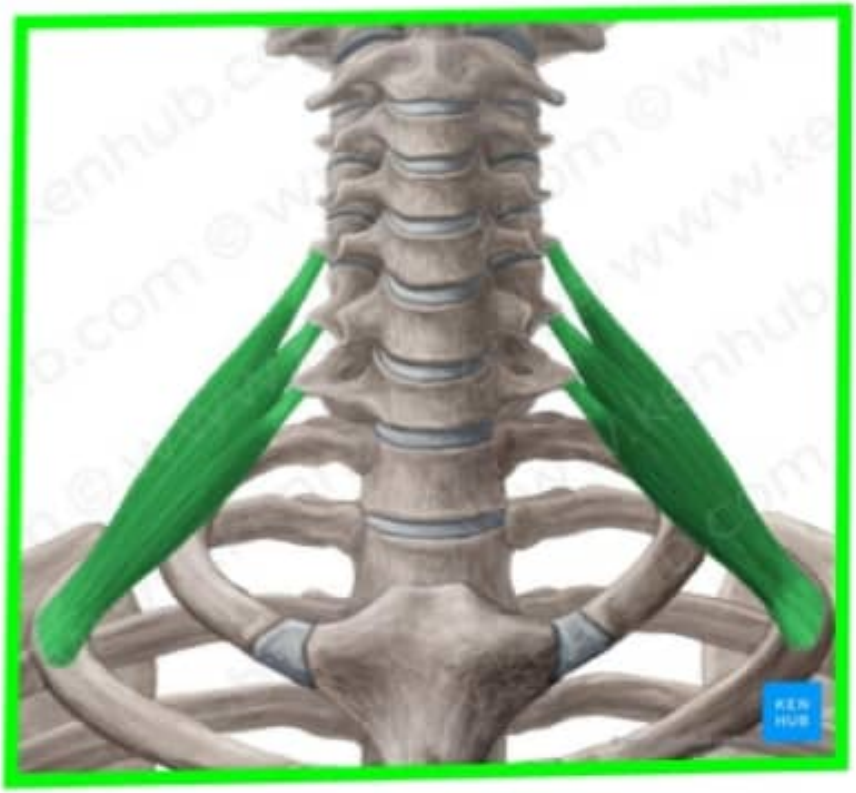
RELATIONS OF SCALENUS ANTERIOR





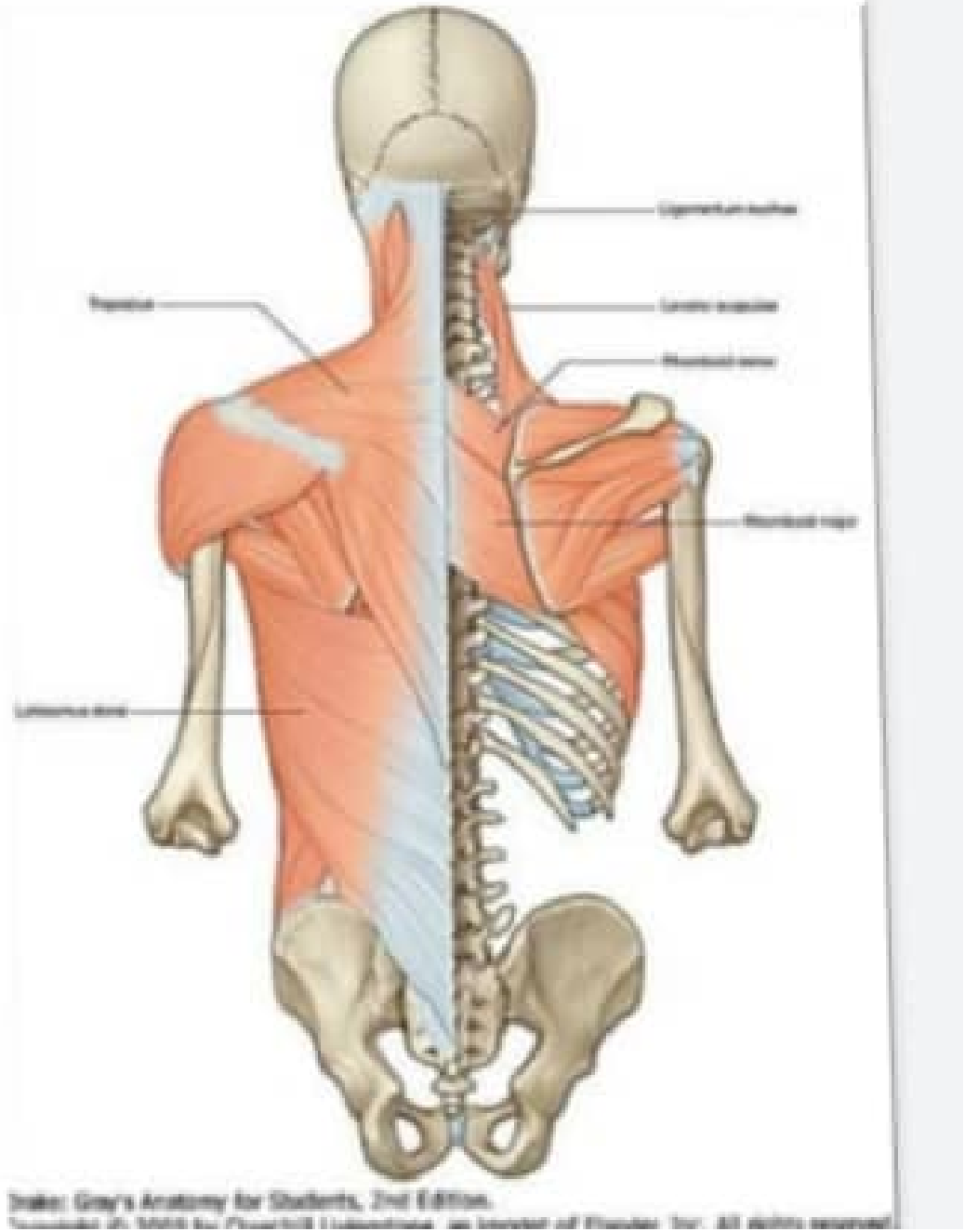
Muscles of the Neck

Muscle: Scalenus posterior
Origin: Transverse processes of lower cervical vertebrae
nsertion: 2nd rib
. Supply: Anterior rami of cervical nerves
ction: Elevates 2nd rib; laterally flexes cervical part of vertebral olumn



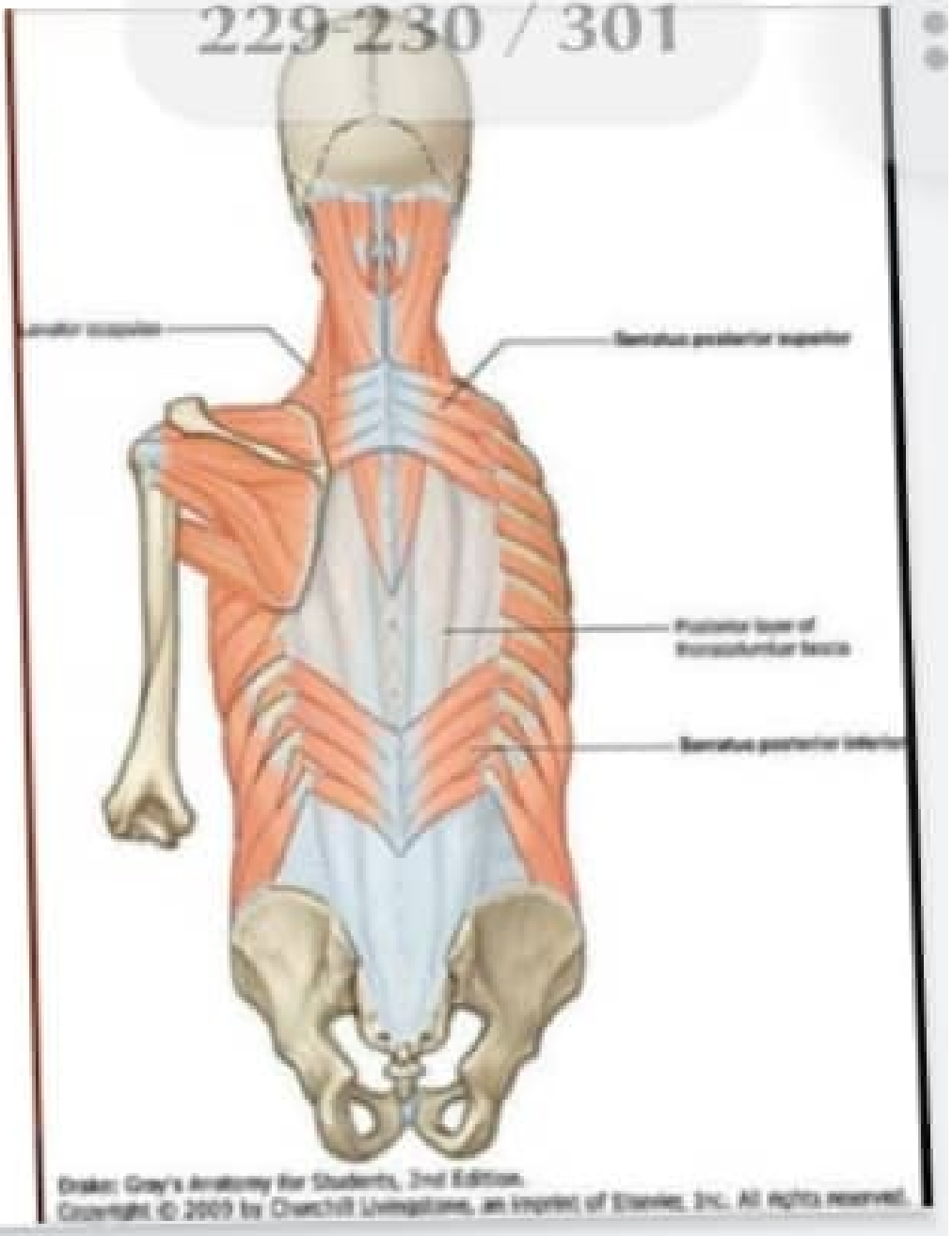
Superficial extrinsic BACK MUSCLES

Trapezius
Latissimus dorsi
Levator scapulae
Rhomboids major & minor

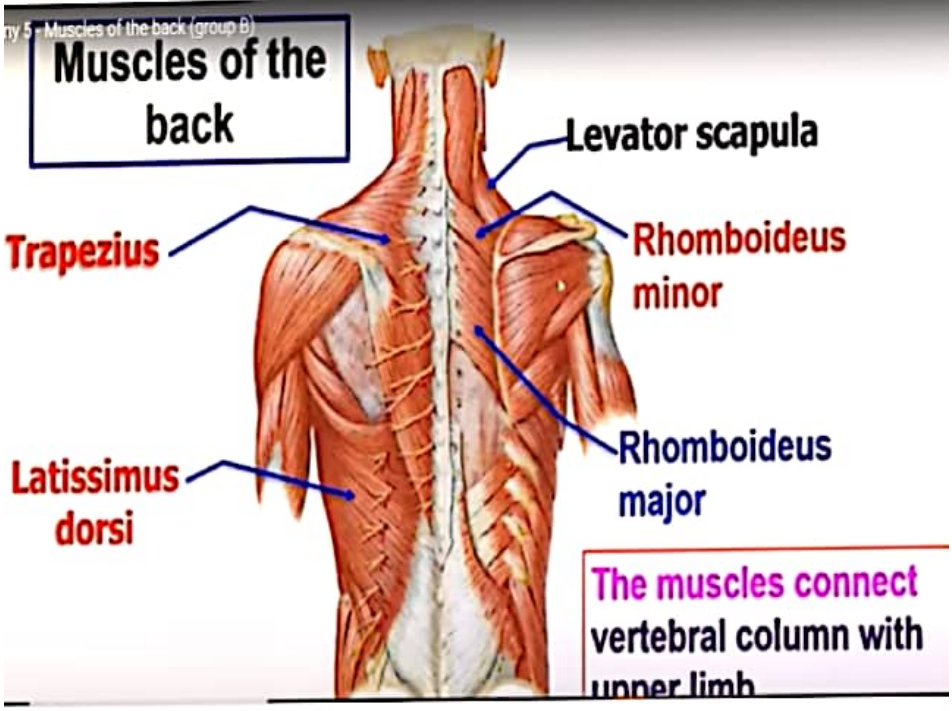


Intermediate extrinsic back muscles

Serratus posterior superior &
Serratus posterior inferior



Muscles of the back



The muscles connect vertebral column with upper limb

- **Trapezius** شبه منحرفة

** **Origin:**

1- **Back of the skull**; external occipital protuberance and medial 1/3 of superior nuchal line.

2- **Back of the neck**; ligamentum nuchae and spine of the 7th cervical.

3- **Back of the thorax**; all thoracic spines.

** **Insertion:**

1- **Upper fibers** into posterior border of the lateral third of the clavicle.

2- **Middle fibers** into medial border of the acromion of the scapula.

3- **Lower fibers** into upper lip of the spine Of the scapula

** **Nerve supply (double)**

1- **Motor**; spinal part of accessory nerve.

2- **Sensory** (Proprioceptive sensation) from the cervical plexus.

** **Actions:**

1. **Upper fibers** elevate the scapula.
2. **Middle fibers** retract the scapula.
3. **Lower fibers** Depress the scapula.
4. upper ** **fibers** Abduction of the arm more than 90 degree (with lower 5 digitations of the serratus anterior).

N.B; It is the **only muscle of upper limb**

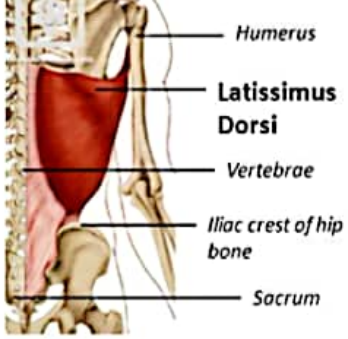
a- Arises from the skull.

b- Not supplied by the brachial plexus.

- **Wasting of the muscles leading to loss the normal lateral slope of the neck with drop shoulder on affected side**

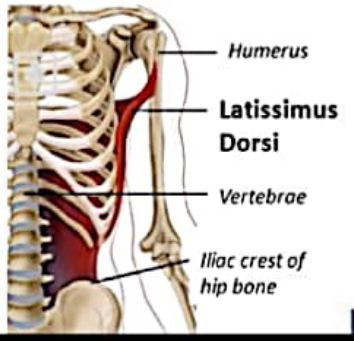
Latissimus Dorsi

Origin
- thoracolumbar aponeurosis
- lower 6 thoracic spinous processes
- sacrum and iliac crest
- lower 3 to 4 ribs
- inferior angle of scapula



Insertion
- bicipital groove of humerus

Action
- extension
- medial rotation of humerus
- adduction of humerus



• Latissimus Dorsi

- ** **Nerve supply:** nerve to latissimus dorsi (thoracodorsal nerve) from posterior cord.
- ** **Actions:**
- Adduction, extension and medial rotation of the arm (as teres major) **Used in Swimming**
- It pulls the trunk towards the arm used in **climbing and Gymnastics** with pectoralis major.
- It assists in deep expiration (**cough**).

- The only muscles of upper limb has pelvic attachment
- Accessory muscle of expiration
- It has triple relations to teres major (it lies behind, below and finally in front)

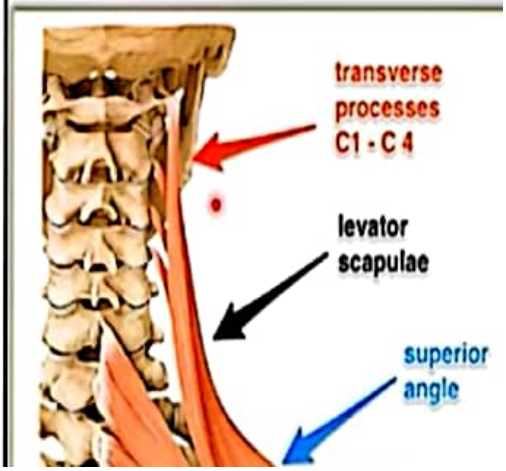
• Levator Scapulae

Origin: transverse processes of **C1-C4**

Insertion, dorsal surface of medial order of scapula from superior angle to ıe spine.

Nerve supply (double):

- Dorsal scapular nerve (nerve to ıomboideus C5).
- Nerve to levator scapulae from cervical



** **Origin:** transverse processes of **C1-C4**

** **Insertion**, dorsal surface of medial border of scapula from superior angle to the spine.

** **Nerve supply (double):**

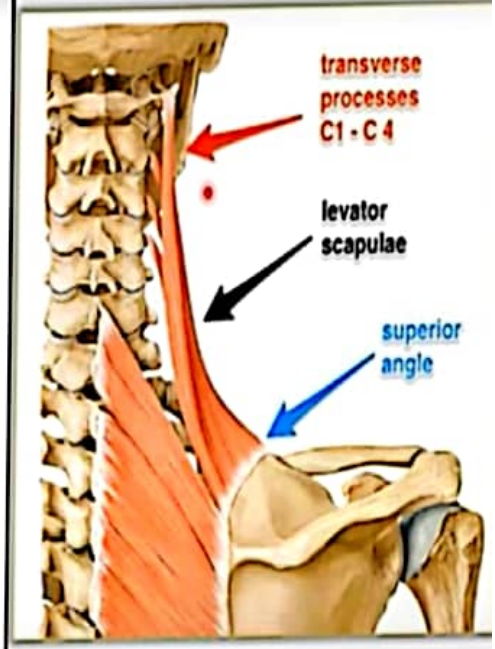
a- Dorsal scapular nerve (nerve to rhomboideus C5).

b- Nerve to levator scapulae from cervical plexus (C3&4)

** **Actions:**

1- Elevates the scapula.

2- Tilts the neck to the same side when shoulder is fixed.



• **Rhomboideus Minor**

** **Origin:** From the lower part of the ligamentum nuchae, spines of **C7 - T1.**

** **Insertion:** dorsal aspect of medial border of scapula opposite root of spine.

• **Rhomboideus Major**

** **Origin:** thoracic spines of **T 2, 3, 4, 5.**

** **Insertion;** dorsal aspect of medial border of scapula from spine to inferior angle.

• **Nerve supply**

- **Dorsal scapular nerve** (nerve to rhomboideus C5).

• **Action of Rhomboideus Minor and major**

Retraction of the scapula

SUBOCCIPITAL TRIANGLE:

These are a pair of muscular triangles situated on each side of the midline in the suboccipital region.

BOUNDARIES:

Supero-medially :

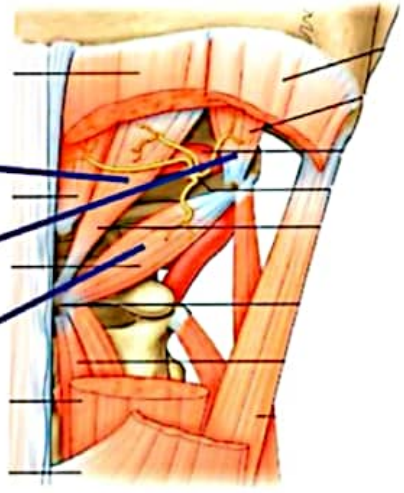
Rectus capitis posterior major

Supero-laterally :

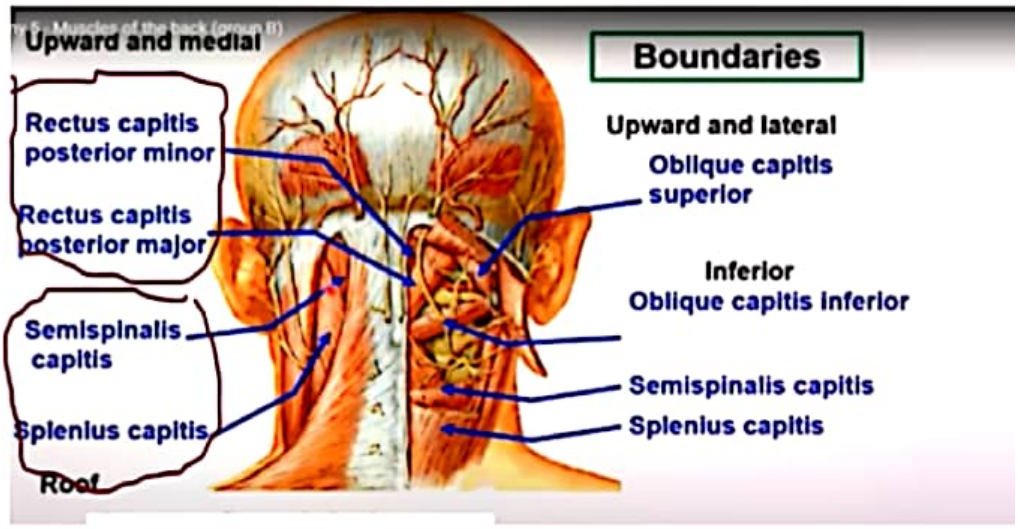
Obliquus capitis superior

Inferiorly :

Obliquus capitis inferior



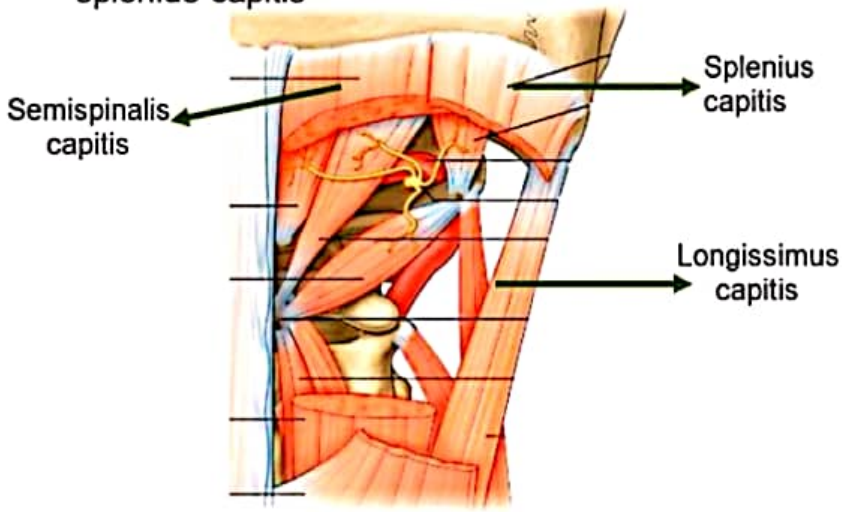
SUBOCCIPITAL TRIANGLE



Roof:

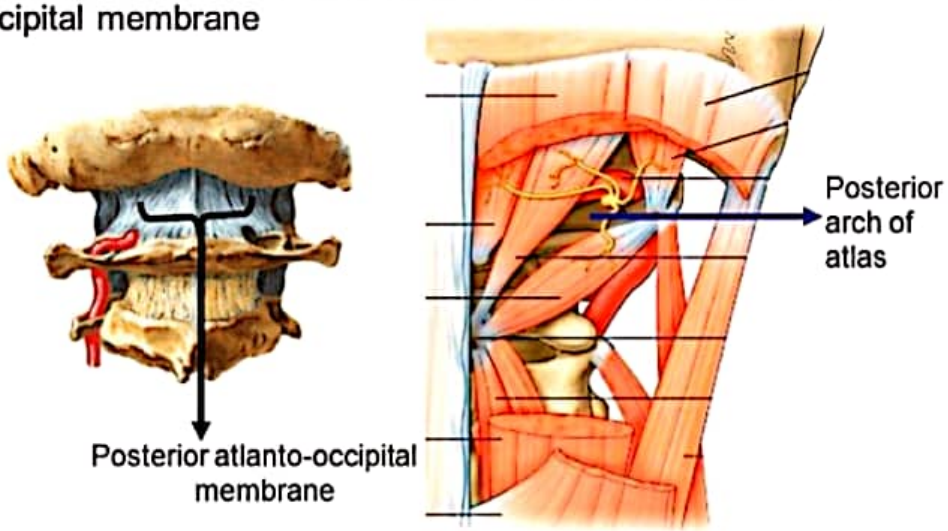
Medially : Dense fibrous tissue covered by the semispinalis capitis

Laterally : By the longissimus capitis and occassionally the splenius capitis



FLOOR:

Formed by the posterior arch of atlas and posterior atlanto-occipital membrane



Contents:

- Third part of vertebral artery
- First cervical nerve (suboccipital nerve)
- Suboccipital plexus of veins