

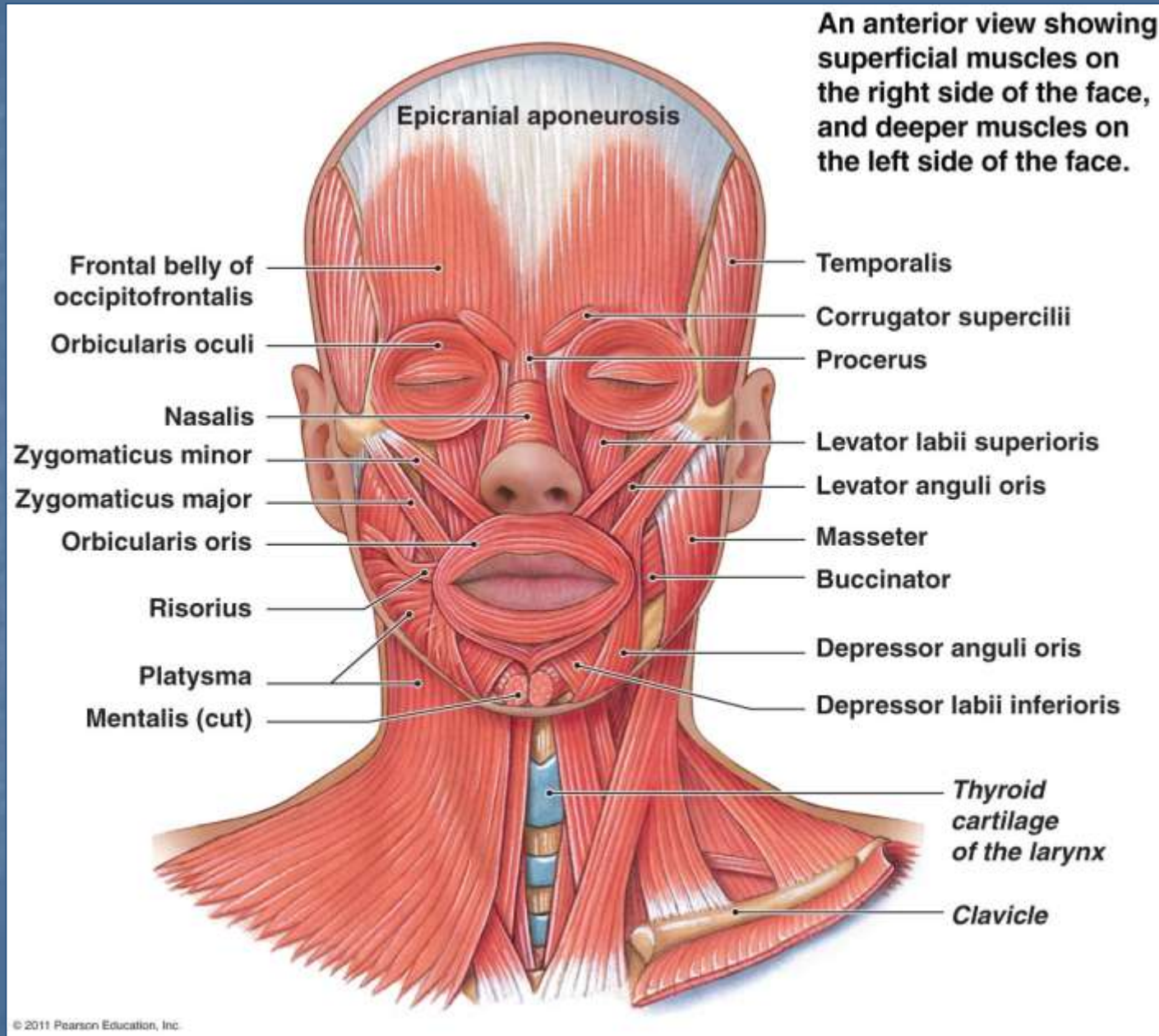
Fasciae and topography

2019

Fasciae of head

- Superficial fascia (superficial musculo-aponeurotic system)
- Temporal fascia
- Parotid-masseteric fascia
- Buccopharyngeal fascia

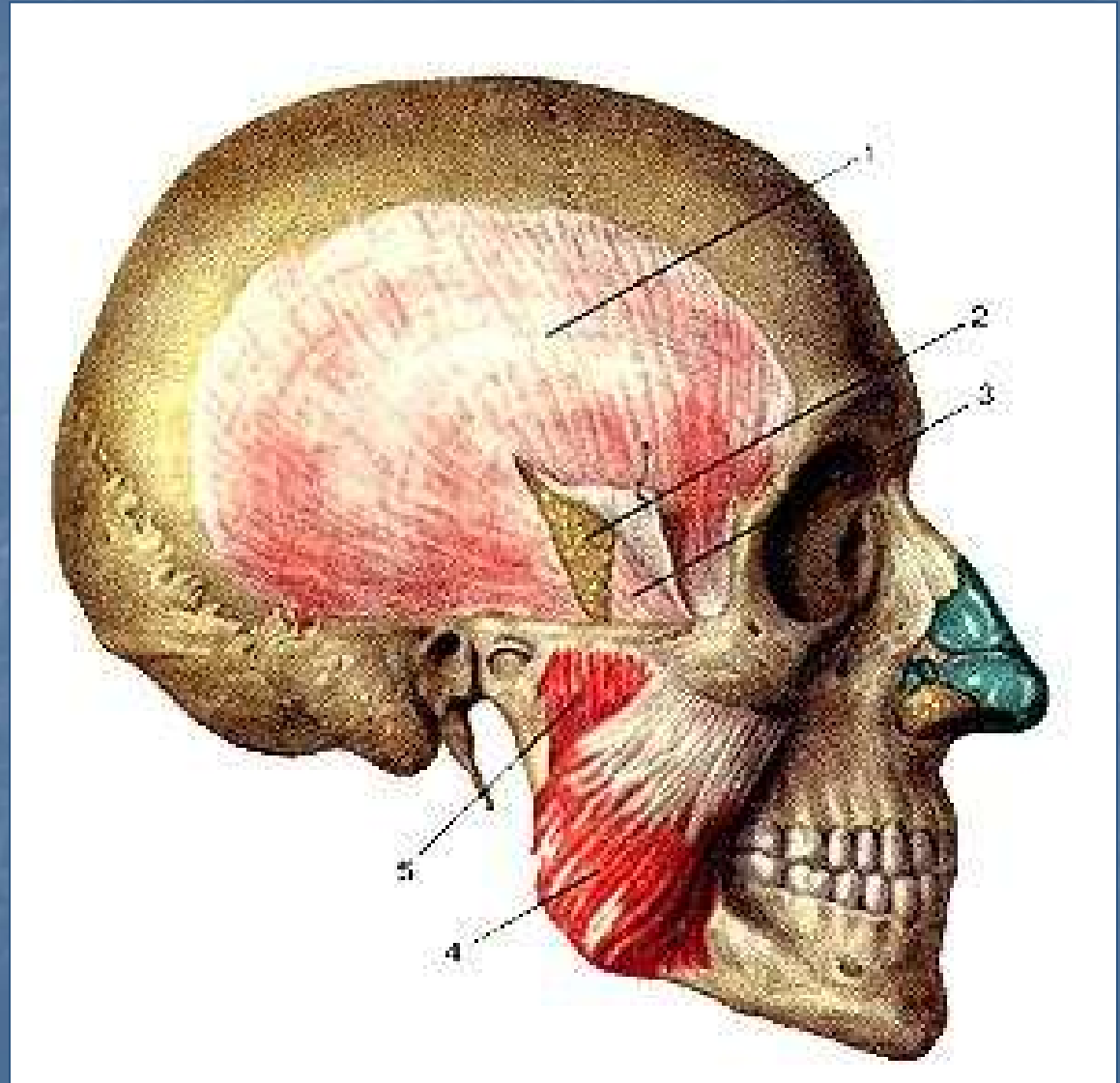
Superficial musculo-aponeurotic system



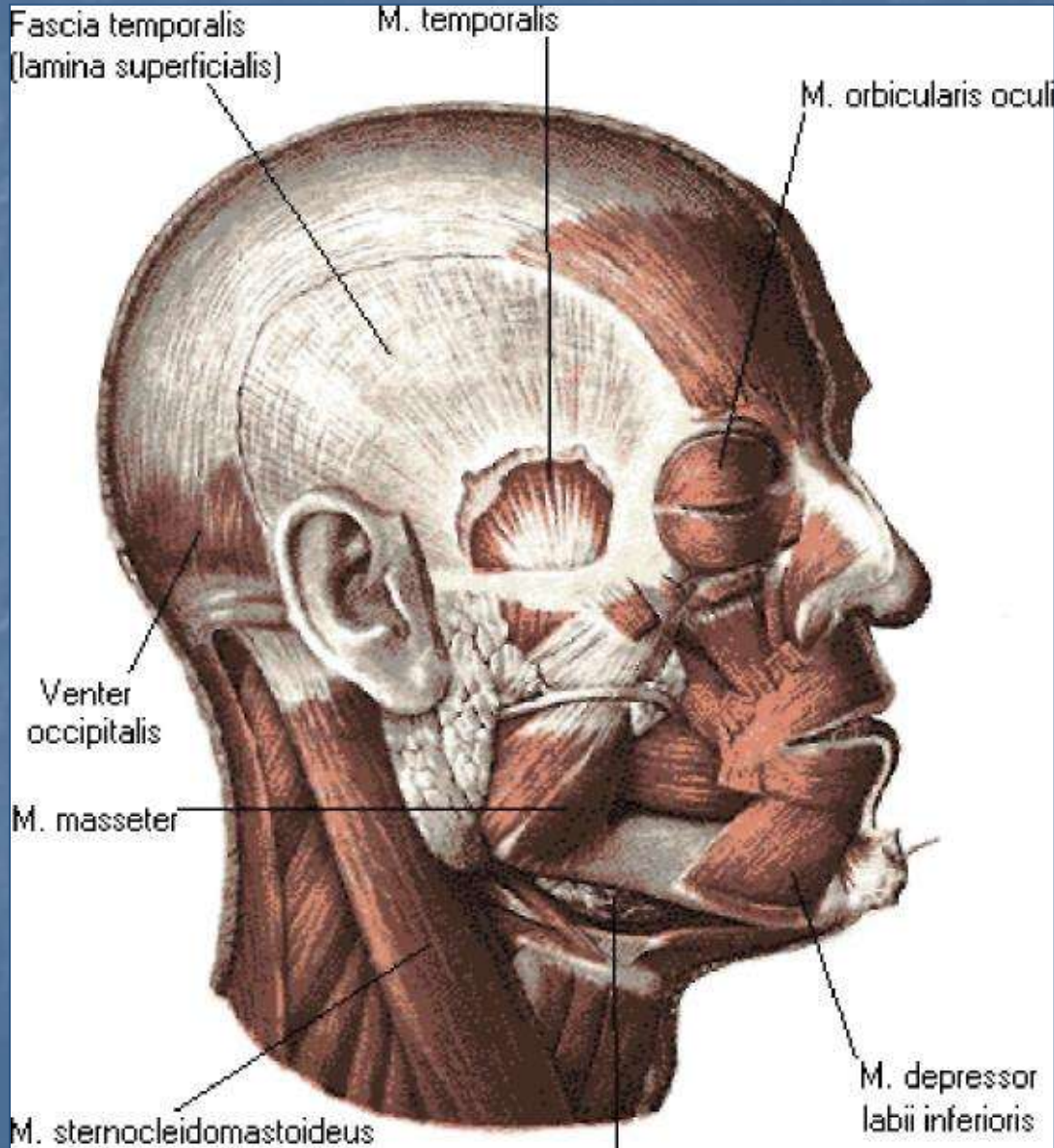
Temporal fascia

- Lamina superficialis
- Lamina profunda

Between these two layers there is a temporal space, filled with cellulose and fatty tissue (2).

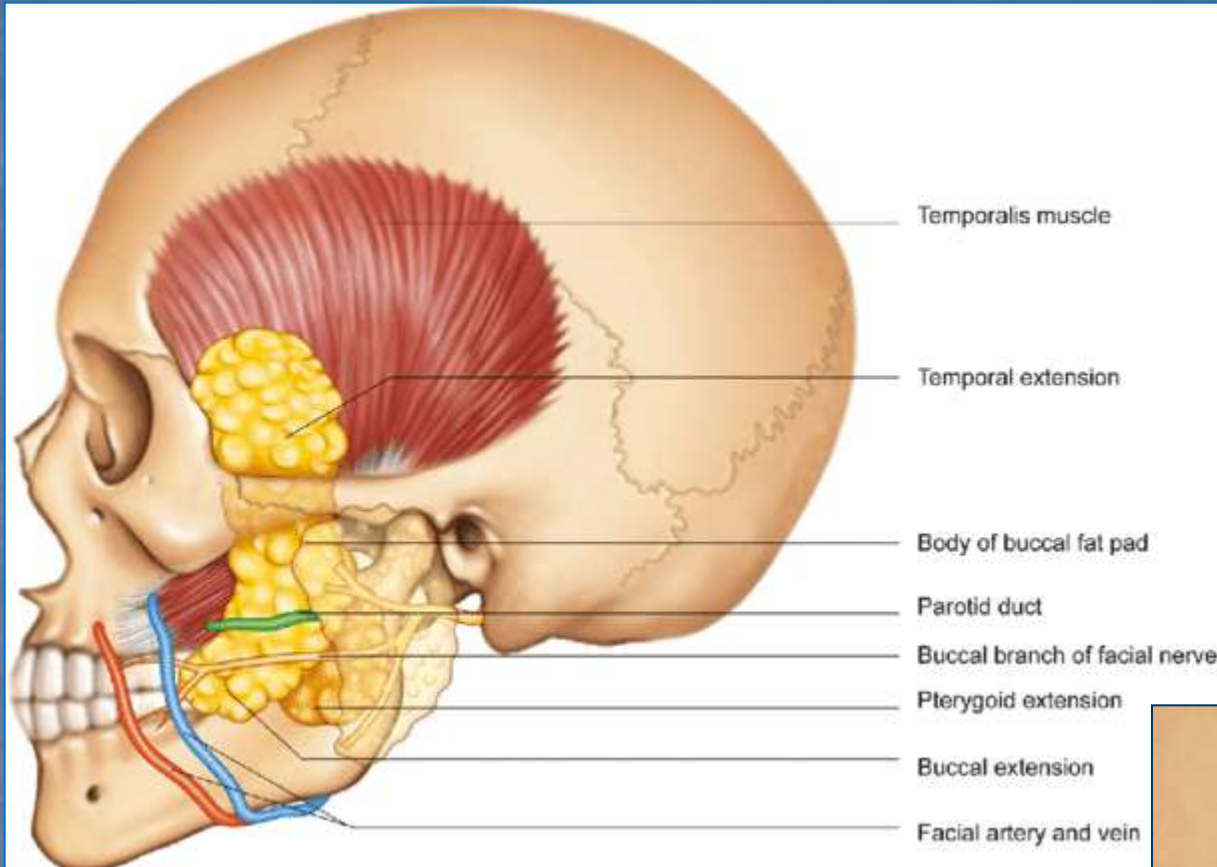


Parotid-masseteric fascia



Unique fascia that forms a capsule for parotid salivary gland and covers m. masseter

Buccal fat pad (Bichat's fat pad)

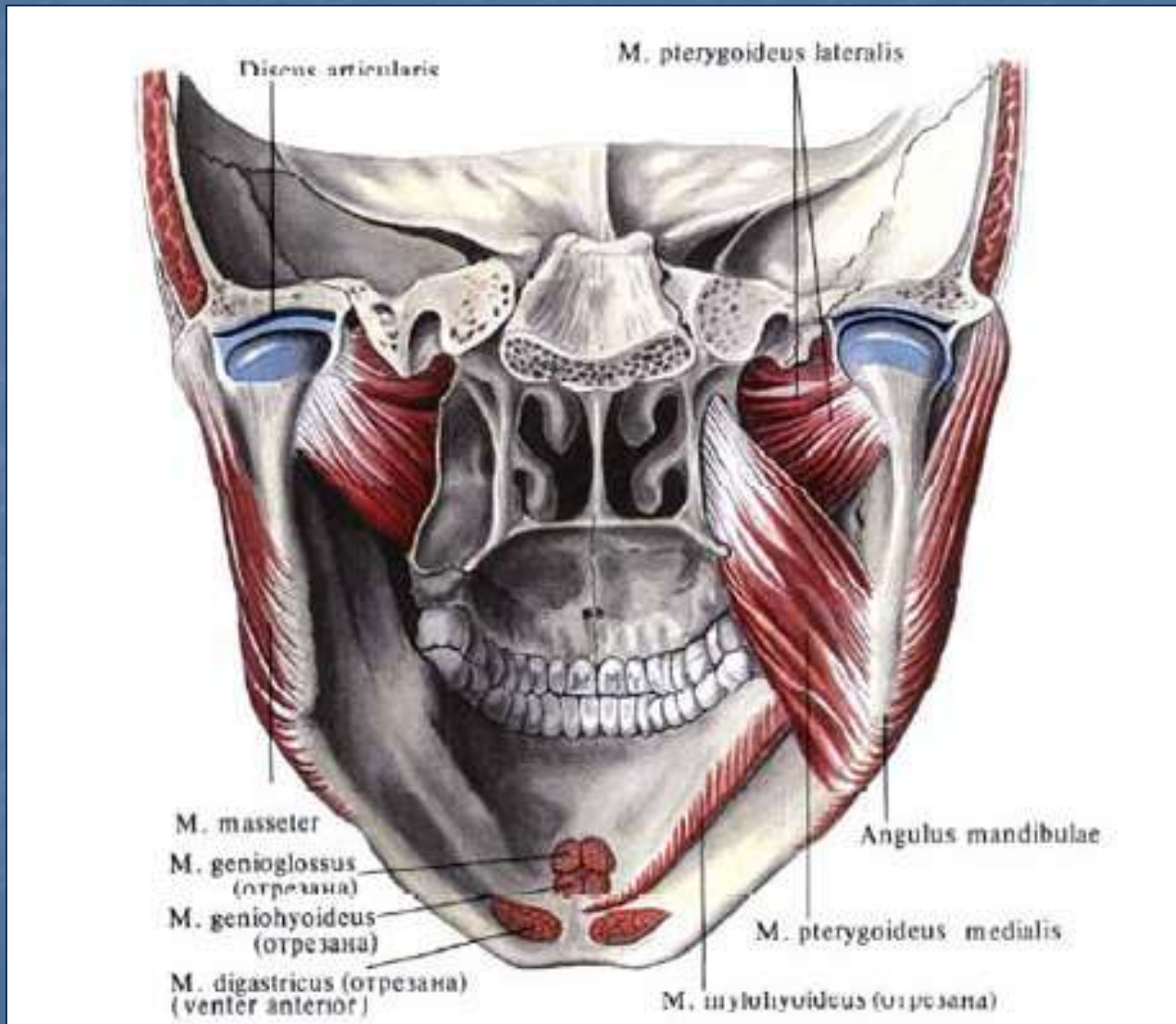


Extensions:

- Temporal
- Buccal
- Pterygoid



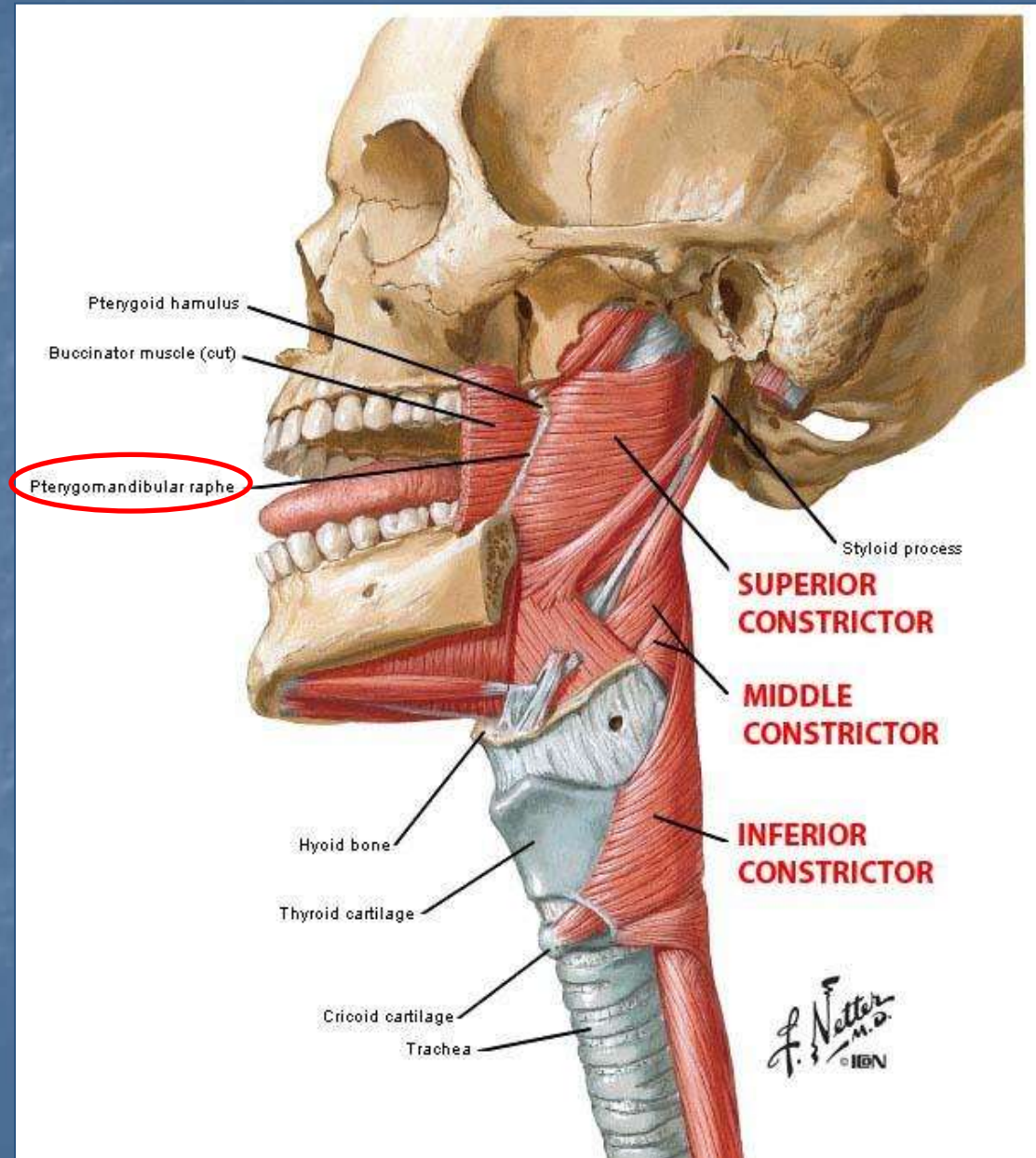
Pterygoid fascia and interpterygoid space



Buccopharyngeal fascia

Buccopharyngeal fascia covers the posterior section of m.buccinator and superior constrictor of the pharynx

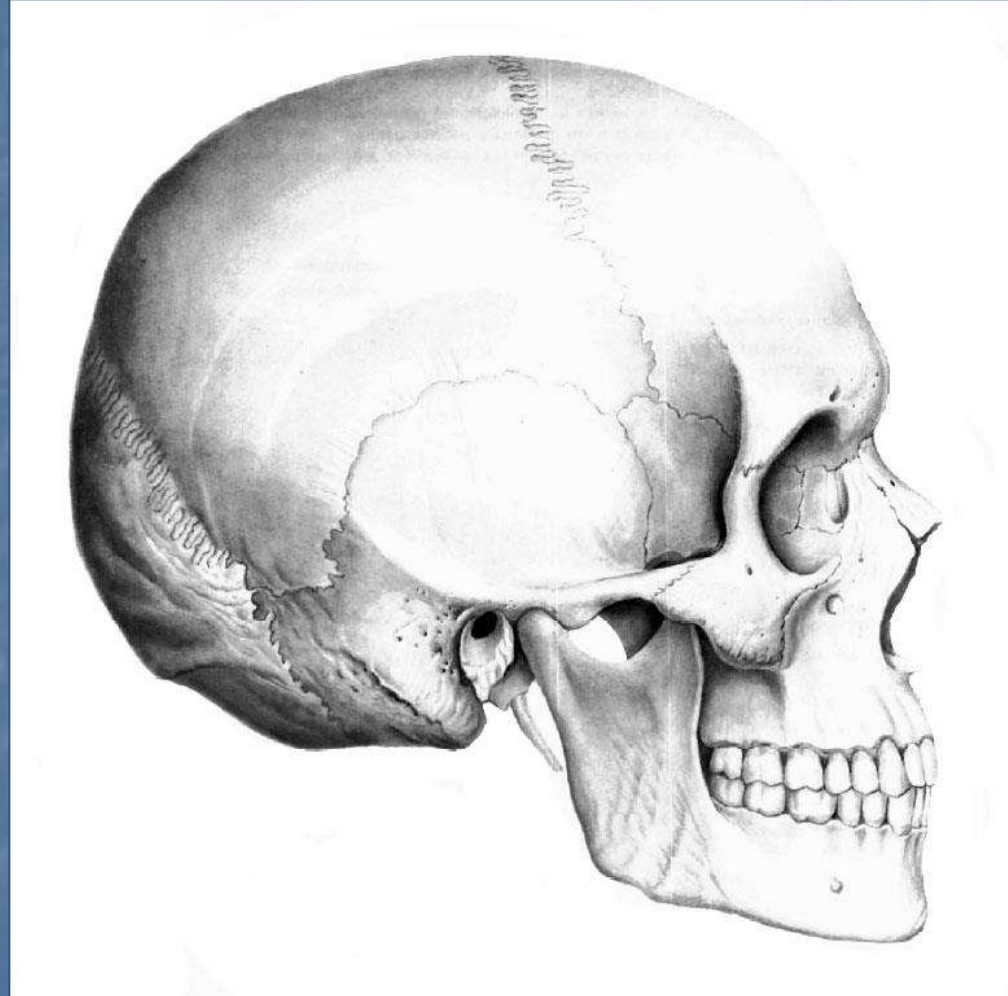
Place, where buccopharyngeal fascia inserts into pterygoid process of sphenoid bone, is called **pterygomandibular raphe**



Anatomic borders of the neck

Upper border:

- Protuberantia occipitalis externa
- Linea nuchae superior
- Top of the mastoid process of the temporal bone
- Ramus and base of the mandible

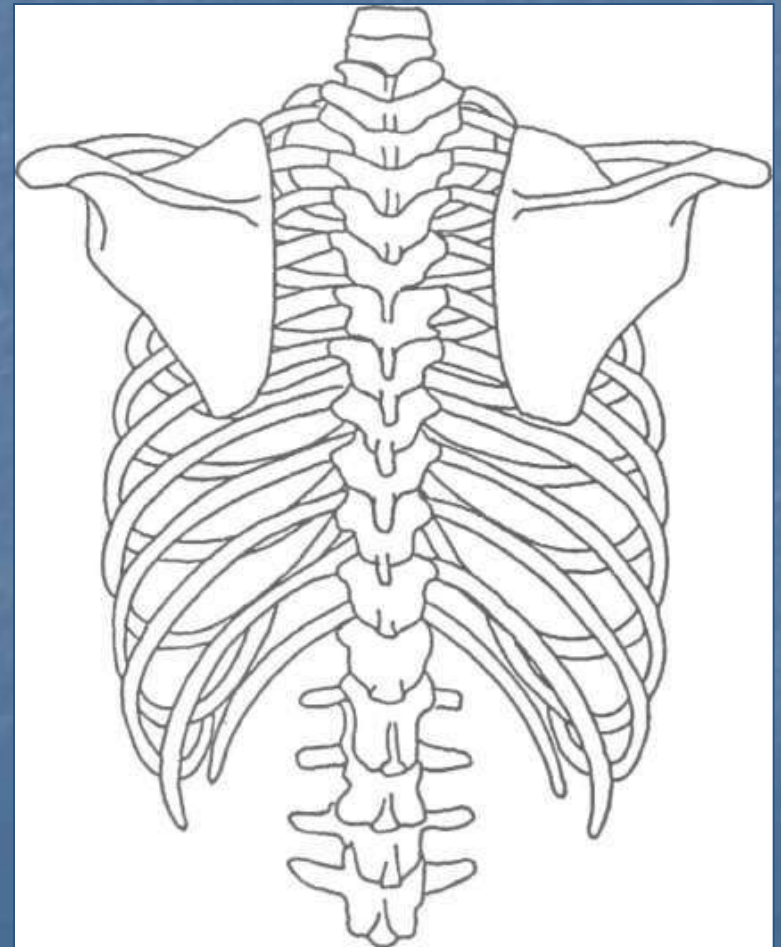
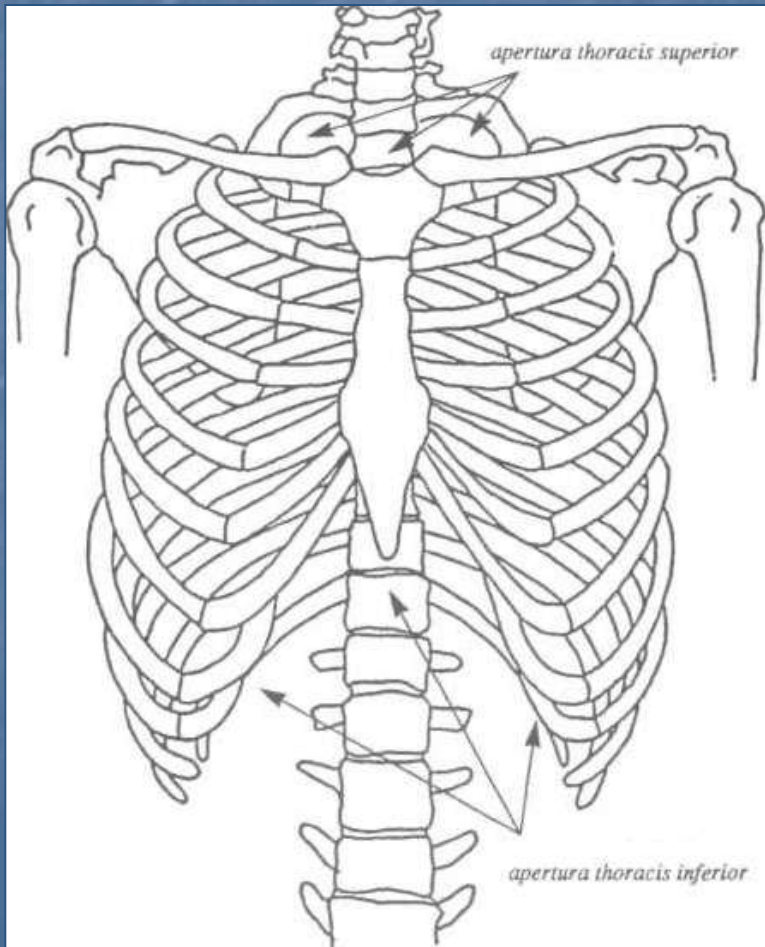


Anatomic borders of the neck

Inferior border:

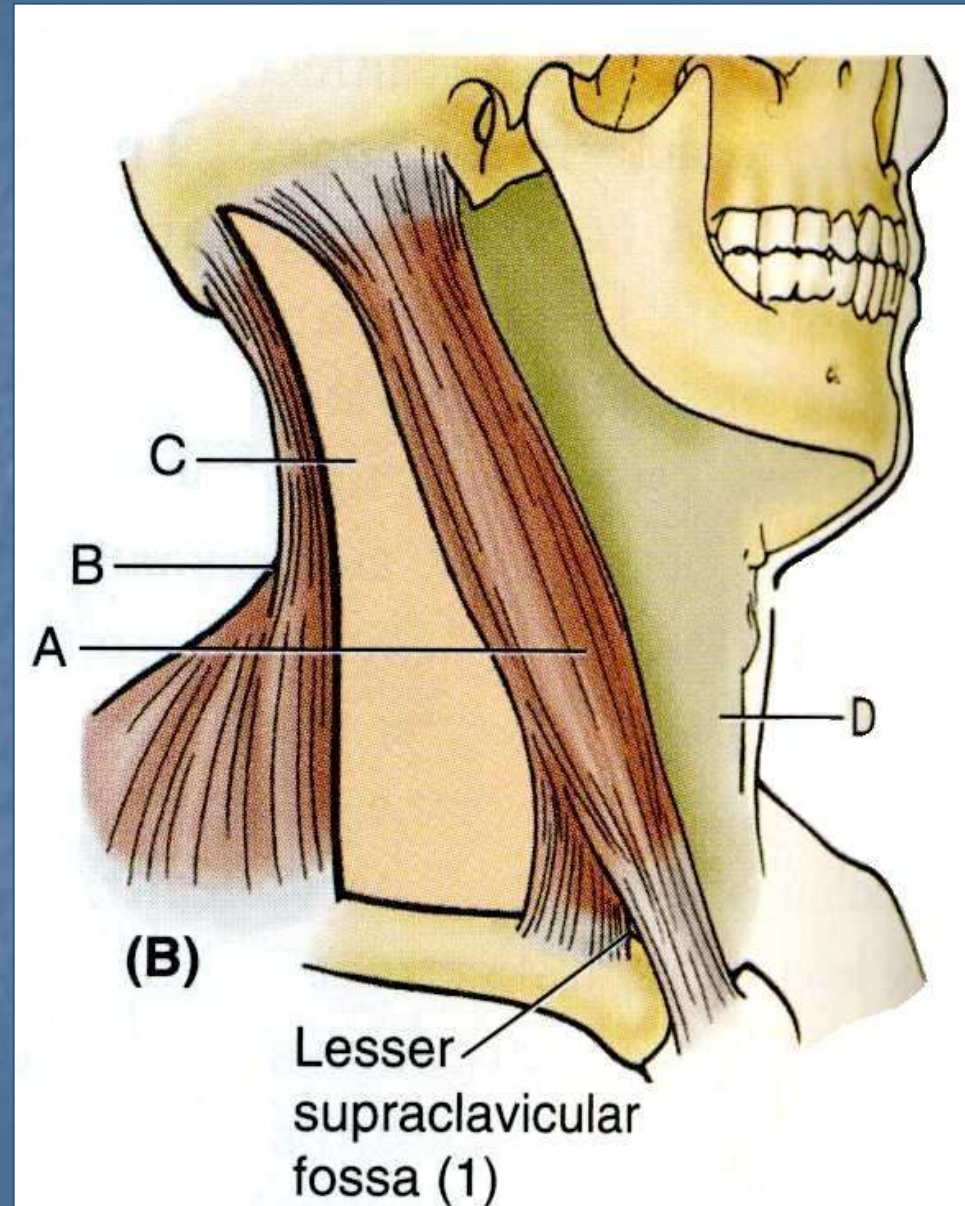
- Line passing along clavicles and jugular notch of the sternum

- Line connecting acromial ends of clavicles and spinous process of the VII cervical vertebrae

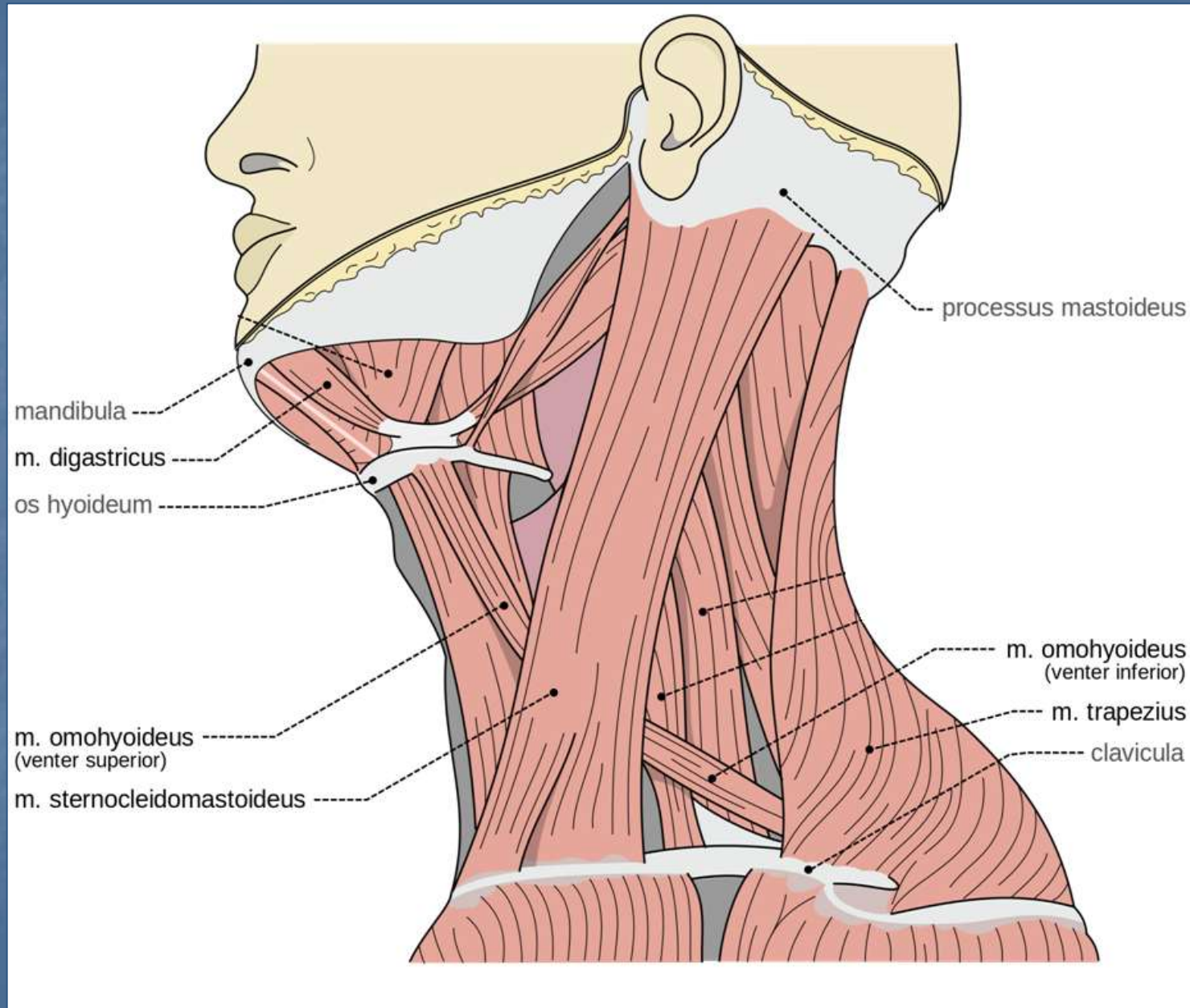


Regions of the neck

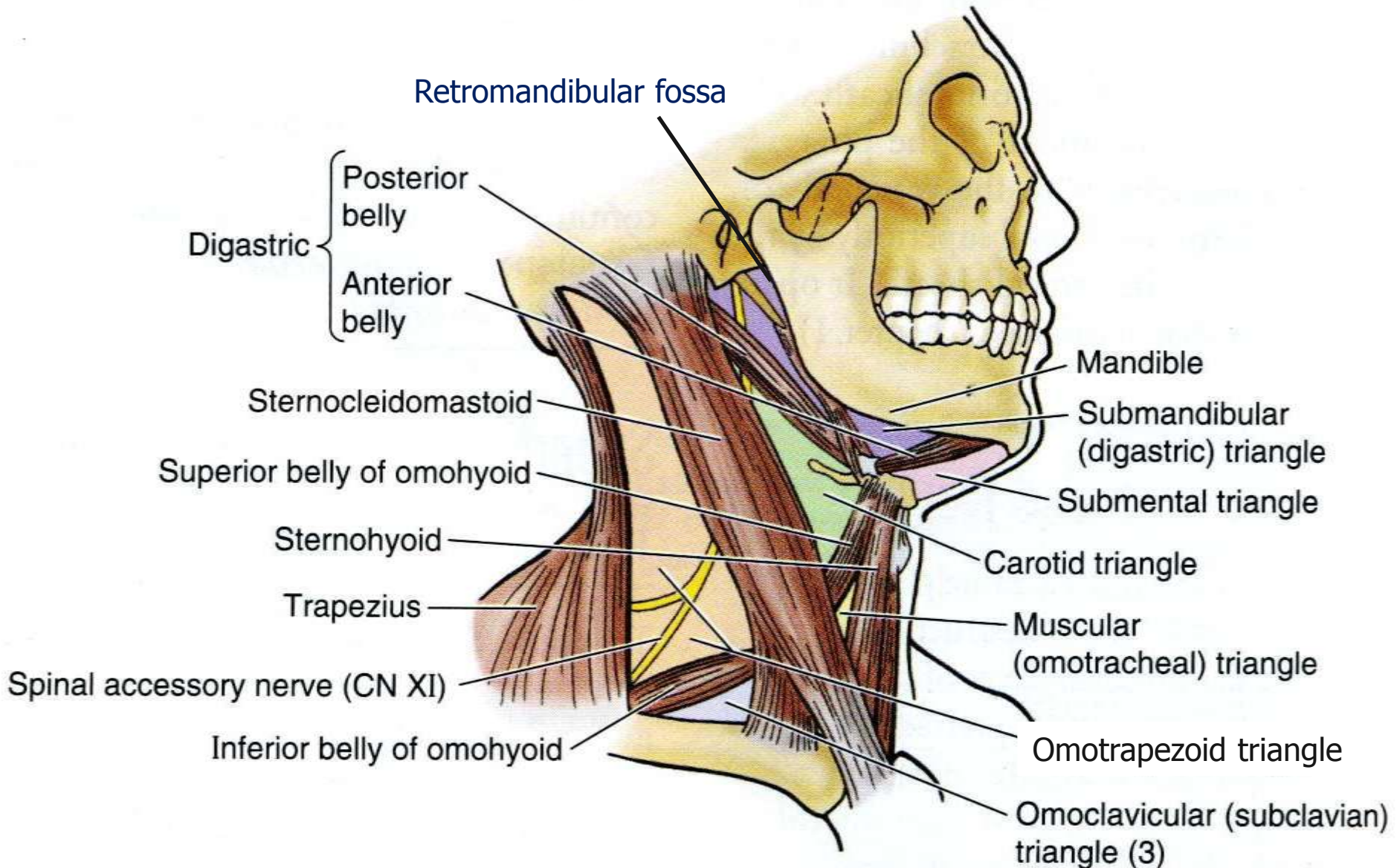
- A - Regio sternocleidomastoidea
- B - Regio cervicalis posterior
- C - Regio cervicalis lateralis
- D - Regio cervicalis anterior



Anatomic reference points of the neck



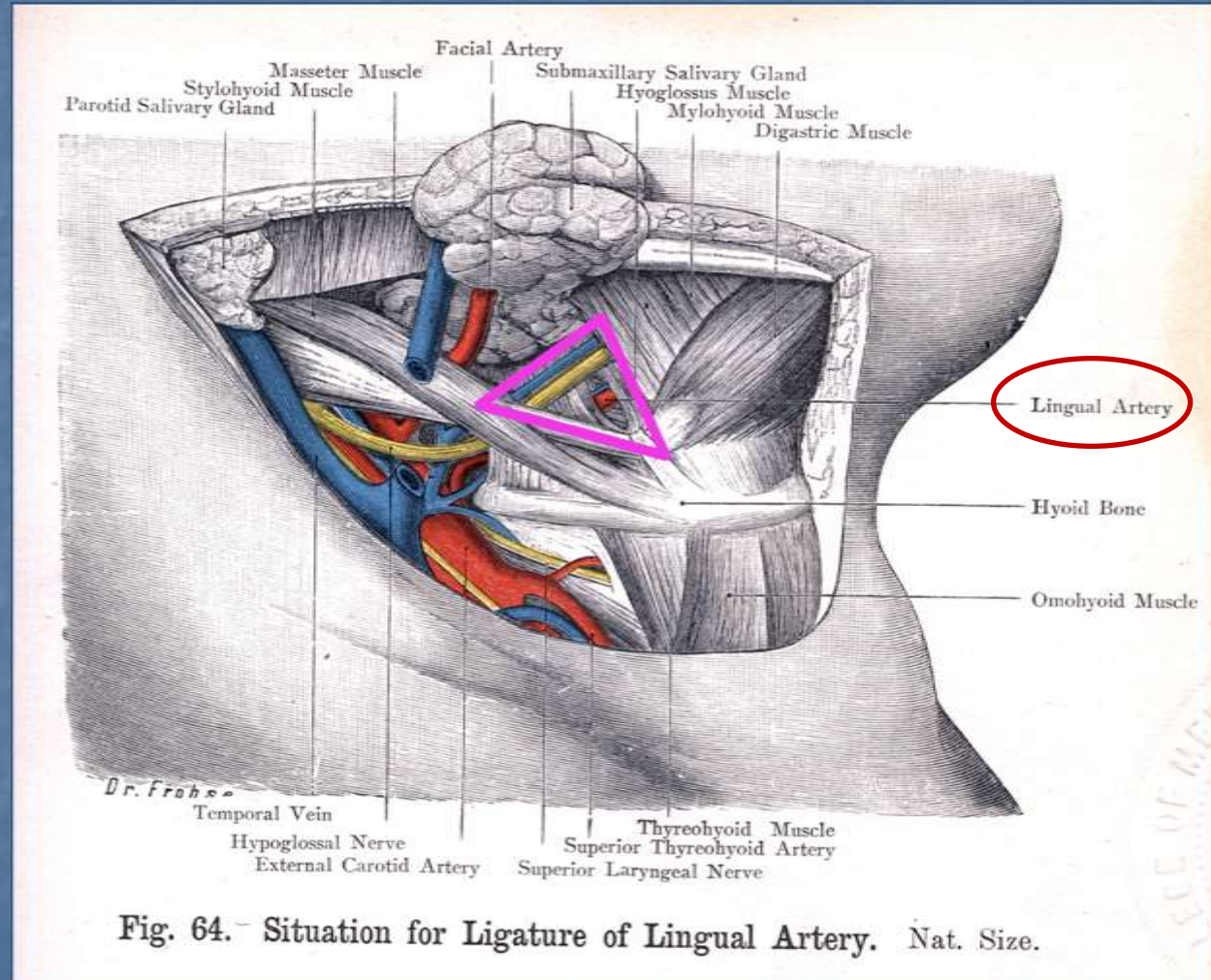
Triangles of neck



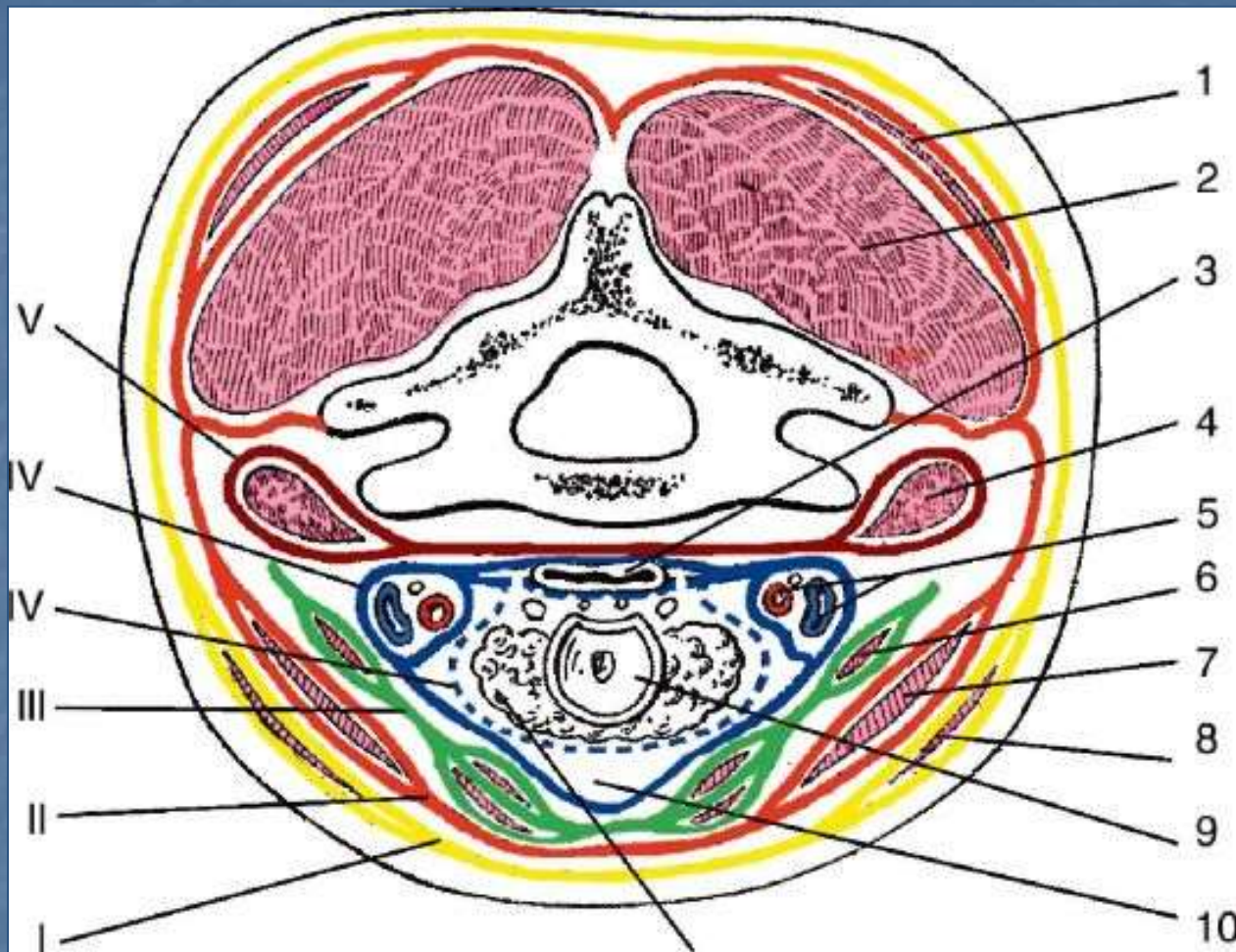
Lingual triangle (Pirogov`s triangle)

Borders:

- the posterior border of the mylohyoid
- intermediate tendon and posterior belly of the digastricus
- the hypoglossal nerve

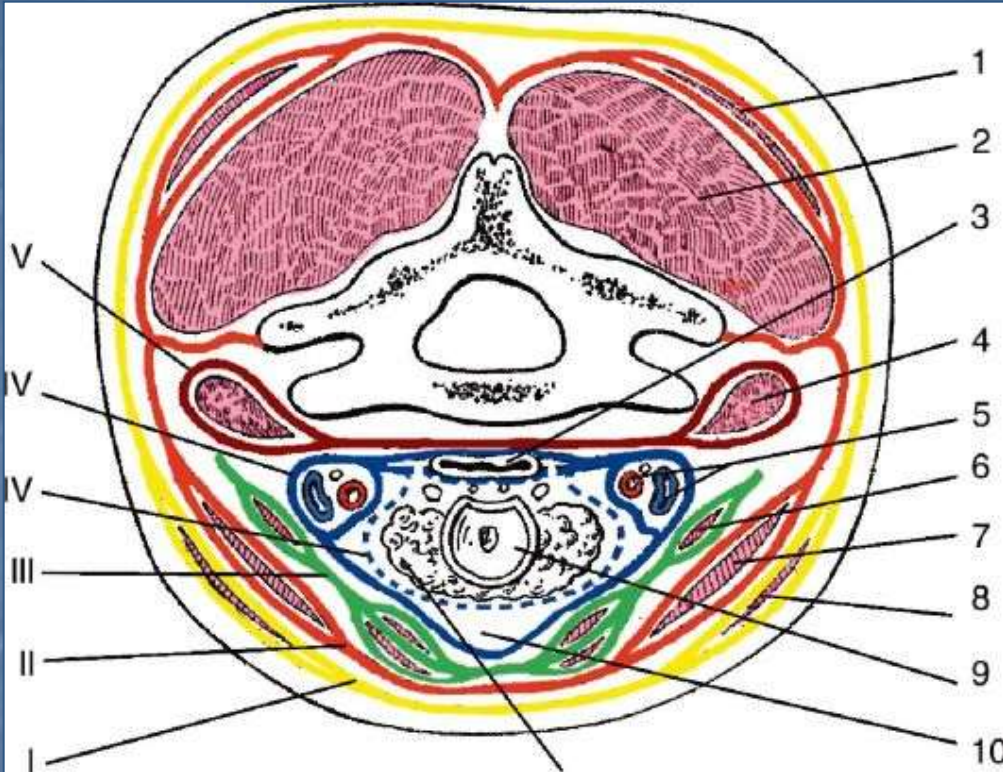


Fasciae of neck



- 1 - m. trapezius; 2 - deep muscles of the neck; 3 - oesophagus; 4 - mm. scaleni;
5 - a. carotis communis, v. jugularis interna et n. vagus; 6 - m. omohyoideus;
7 - m. sternocleidomastoideus; 8 - platysma; 9 - trachea; 10 - spatium previscerale;
11 - gl. thyroidea

Fasciae of neck



I - superficial

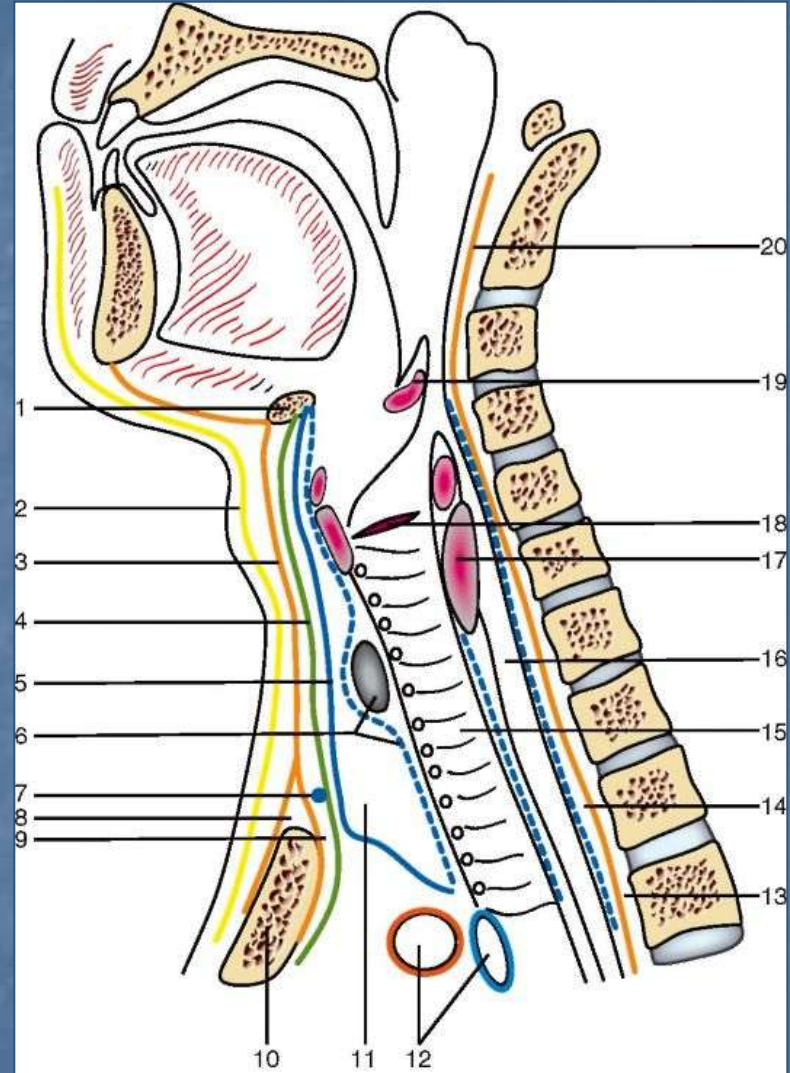
F. propria

- II - superficial layer

- III - deep layer

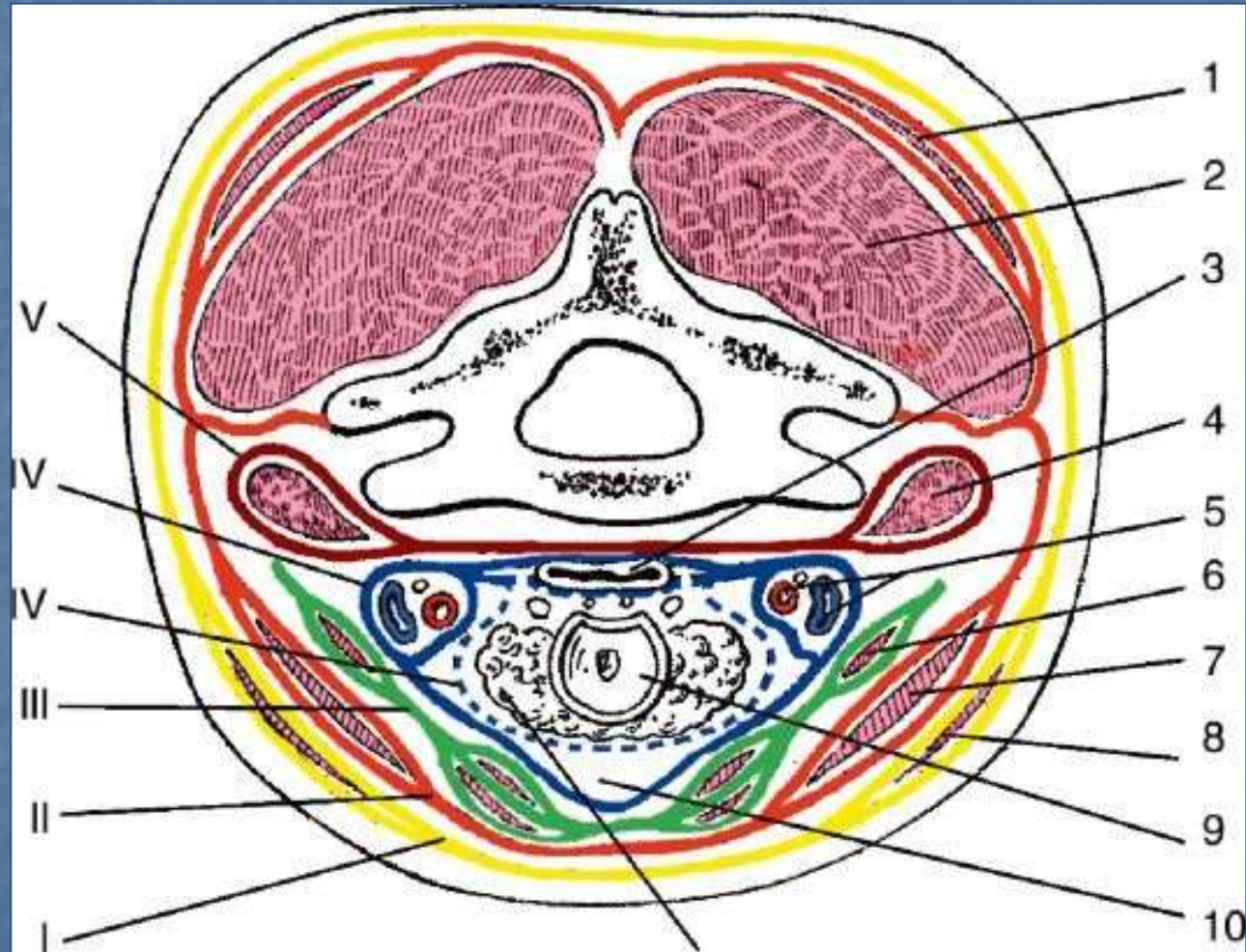
IV - endocervical

V - prevertebral



Fascia superficialis

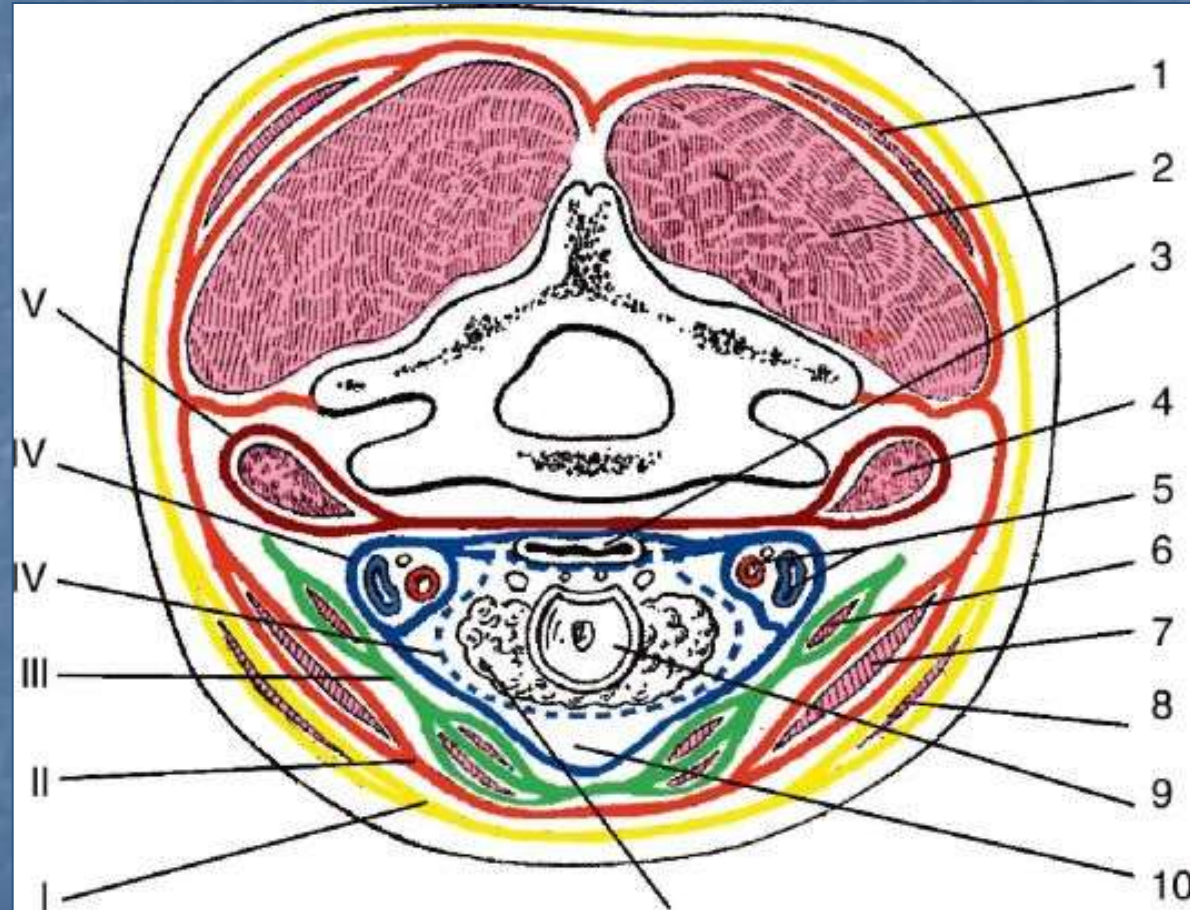
- Part of the common superficial fascia of the body
- Contains platysma



Fascia propria

superficial layer

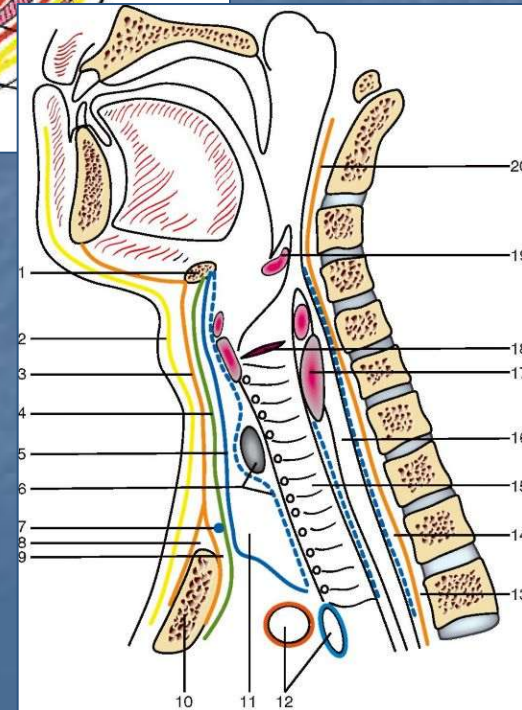
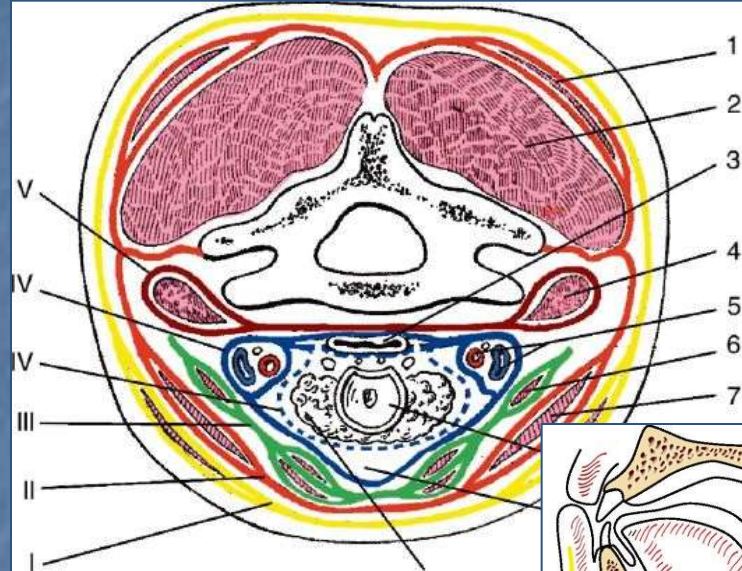
- From base of mandible till anterior surface of clavicle and sternum
- Forms fibrous sheaths for m.trapezius and m.sternocleidomastoideus



Fascia propria

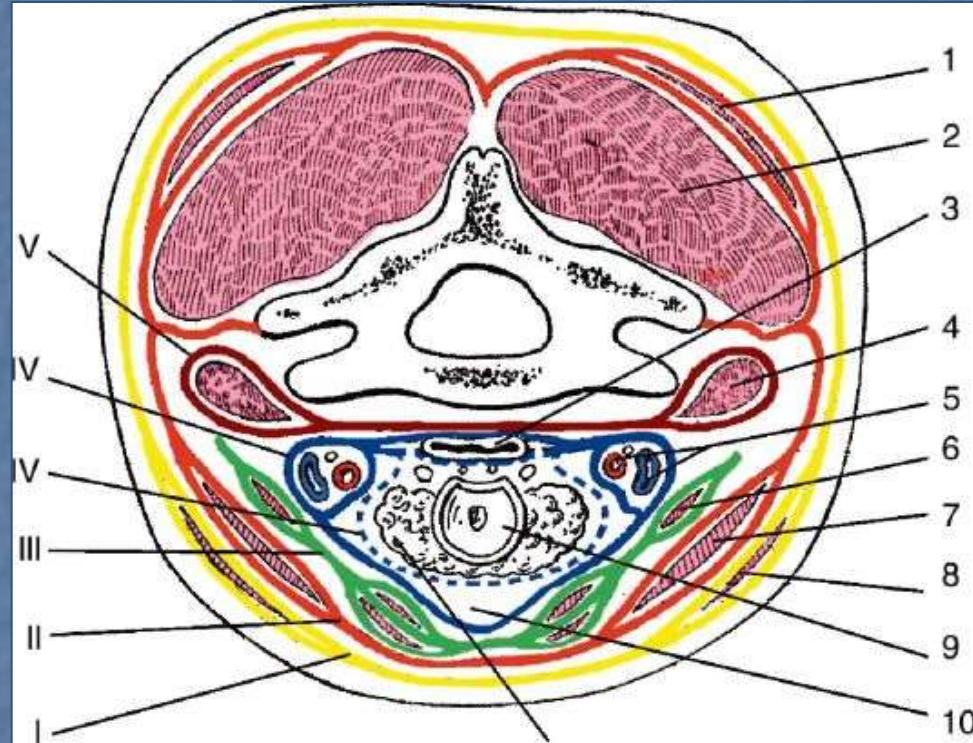
deep layer

- From hyoid bone till posterior surface of clavicle and sternum
- Is present only in middle part of neck
- Forms fibrous sheaths for infrahyoid muscles
- Joins with the superficial layer along the m. omohyoideus and linea alba of neck.

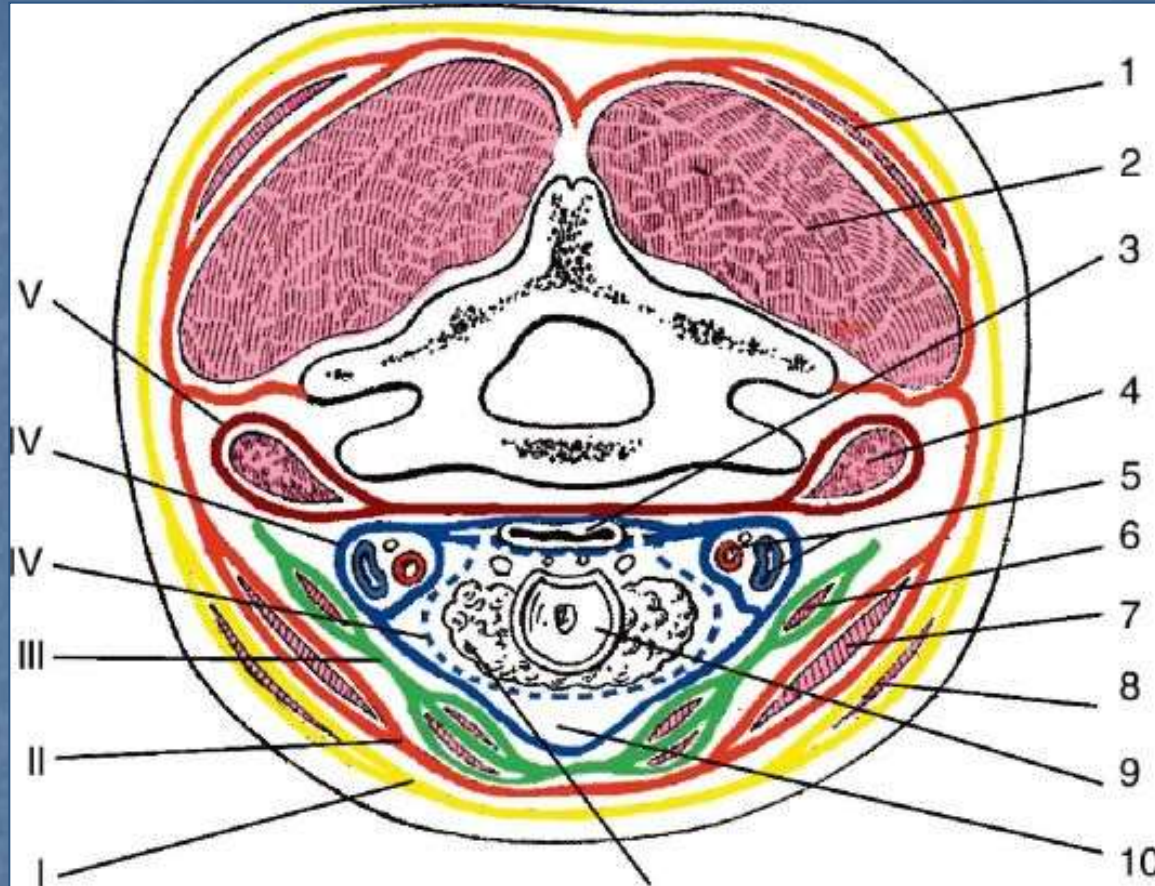


Endocervical fascia

- Covers intercervical space
- It has 2 layers
 - Parietal (cover all organs together). Forms fibrous canal for nerves and vessels of neck.
 - Visceral (covers each organ separately) – dotted line.
 - Pretracheal (previsceral) space - in front of layers.



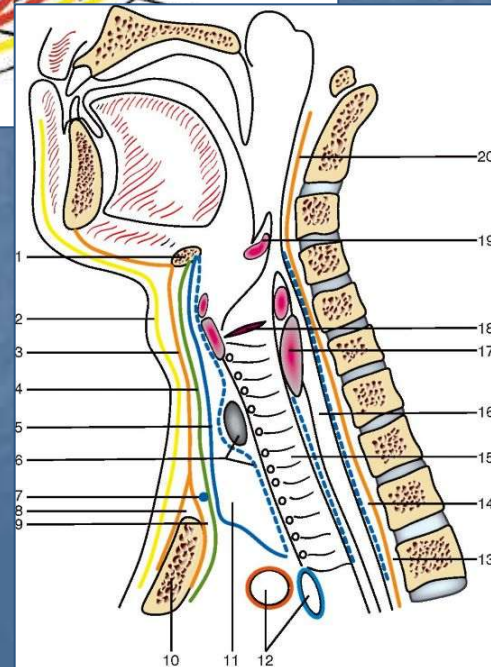
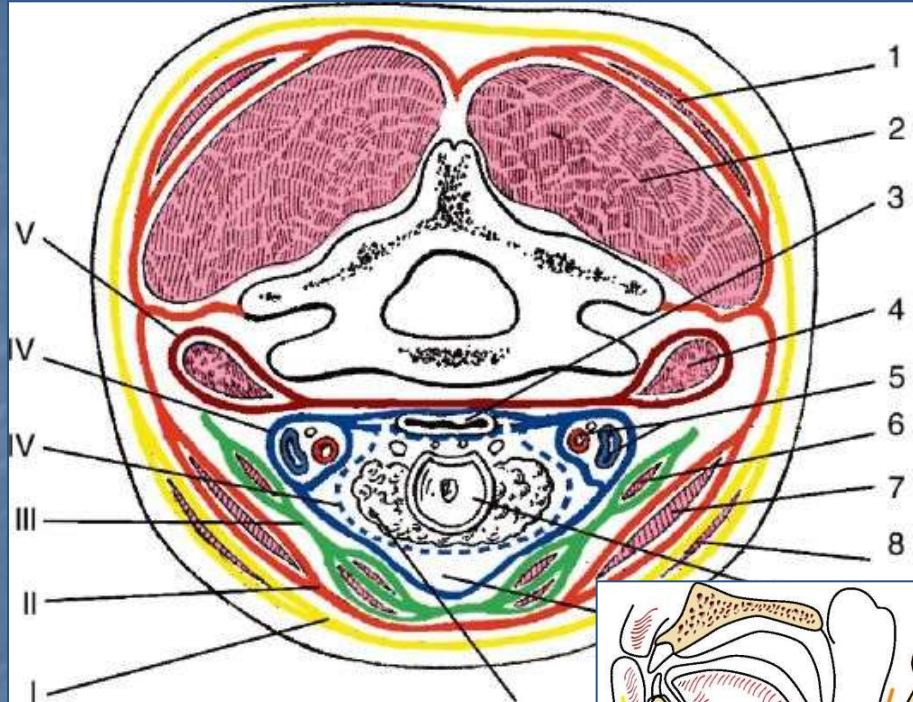
Prevertebral fascia

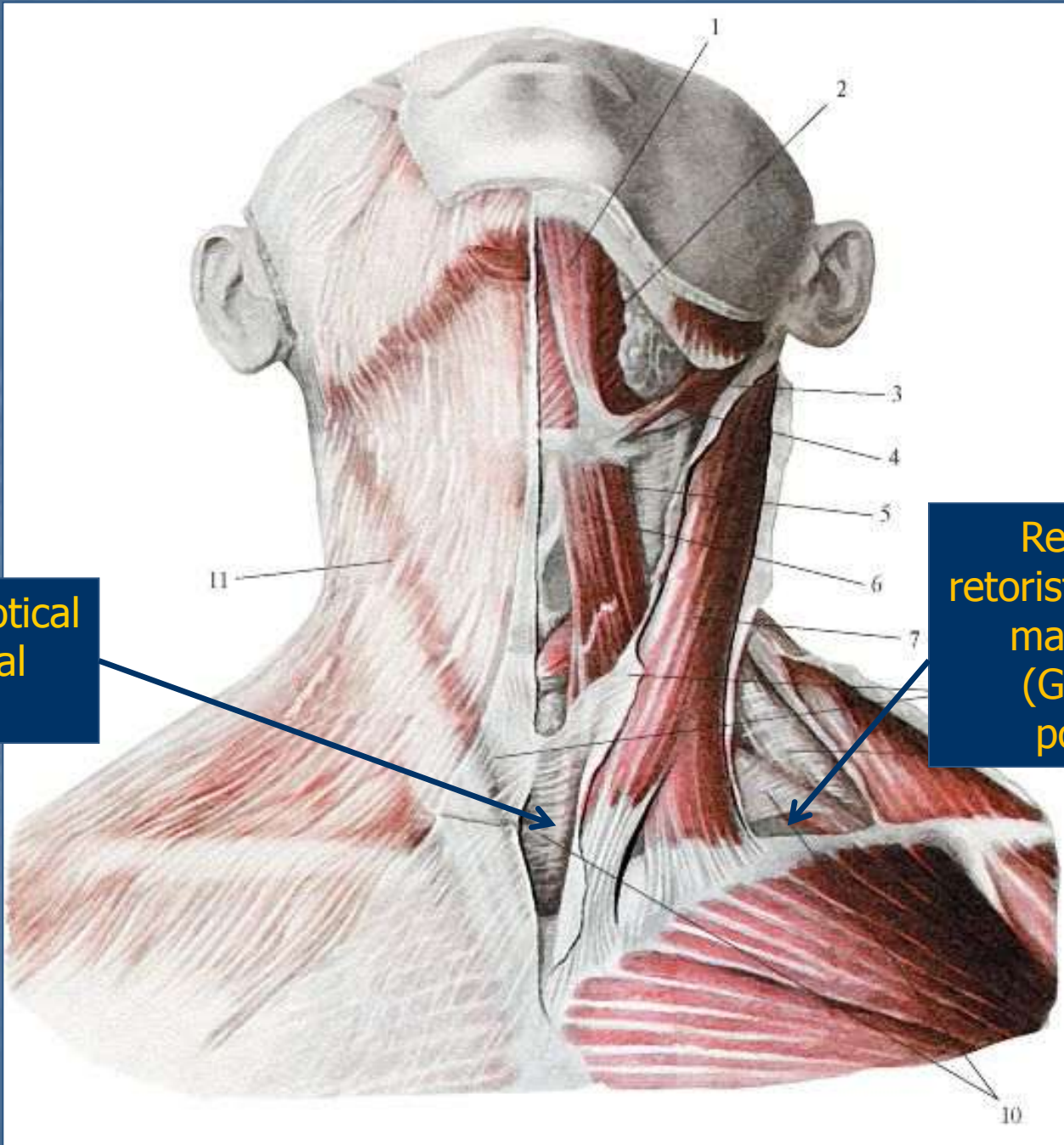


- Covers deep muscles of neck anteriorly
- Retrovisceral space – between prevertebral and endocervical fasciae

Spaces of neck

- **Interaponeurotocal suprasternal space** (between the layers of f.propria – II and III)
- Cellulose tissue with lymphatic nodules and arcus venosus juguli
- Recessus retoristernocleidomastoideus (Gruber`s pockets)





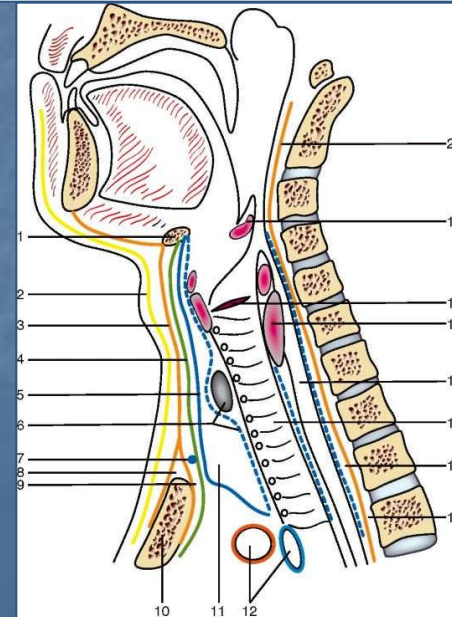
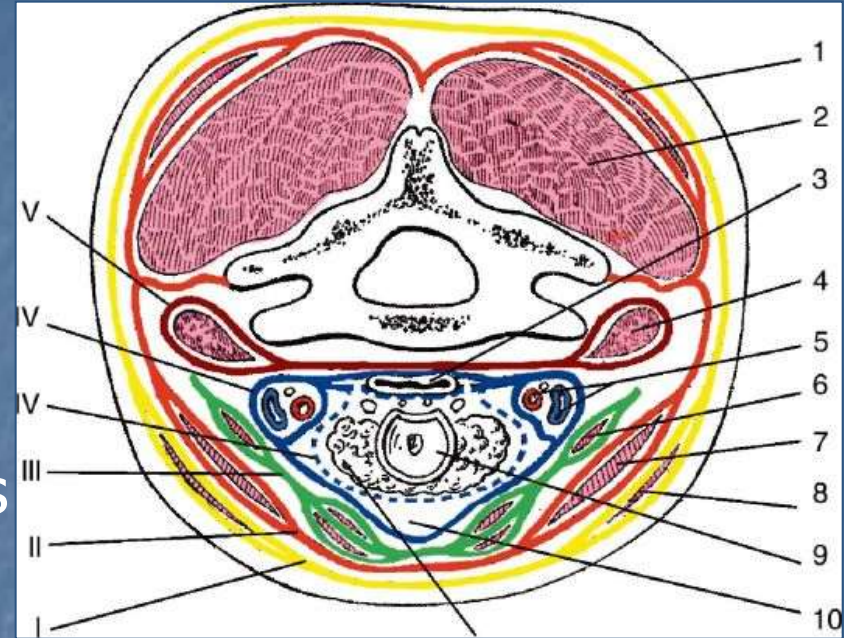
Interaponeurotic
suprasternal
space

Recessus
retorsternocleido-
mastoideus
(Gruber`s
pockets)

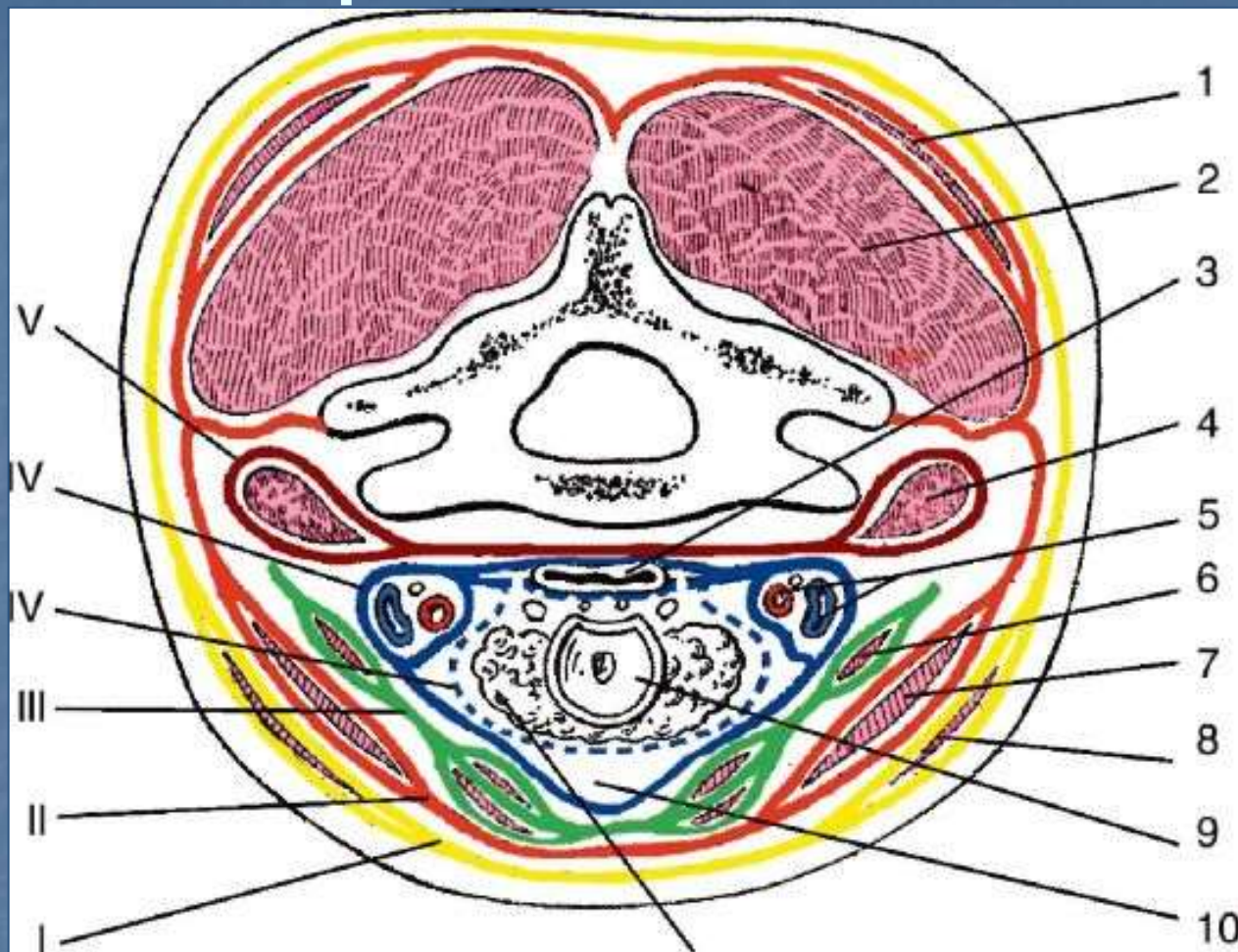


Spaces of neck

- **Spatium previscerale**
(pretracheale) - between the layers of endocervical fascia
- Lymphatic vessels and nodules, a.thyroidea and plexus thyroideus
- Borders:
 - anterior* – mm. sternohyoideus, sternothyroideus;
 - posterior* – larynx and trachea;
 - lateral* – neurovascular bundle;
 - inferior* – **no wall, freely extends into anterior mediastinum (!)**

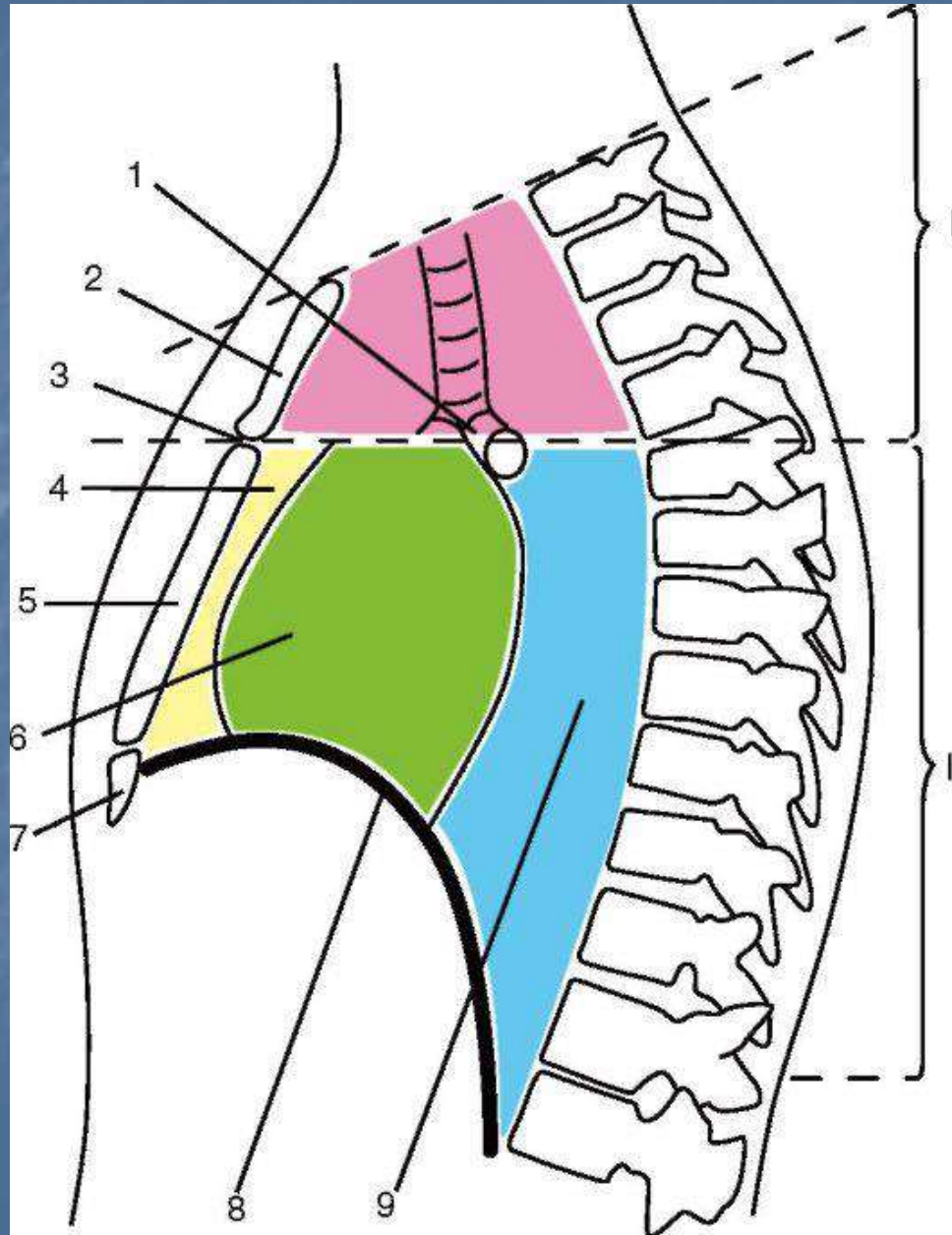


Spaces of neck

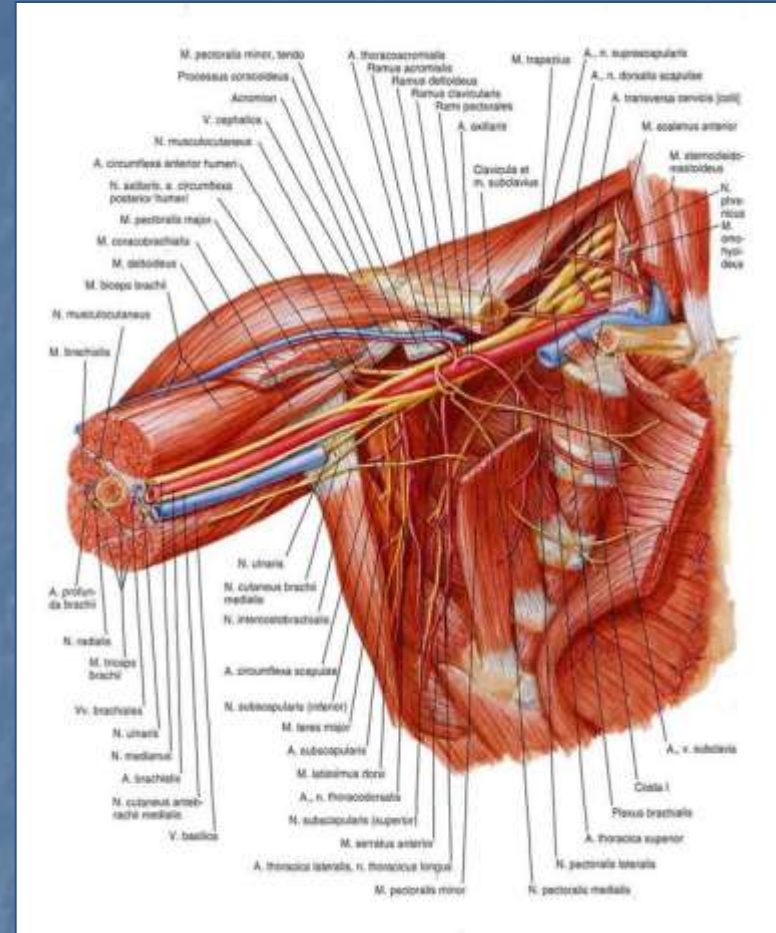
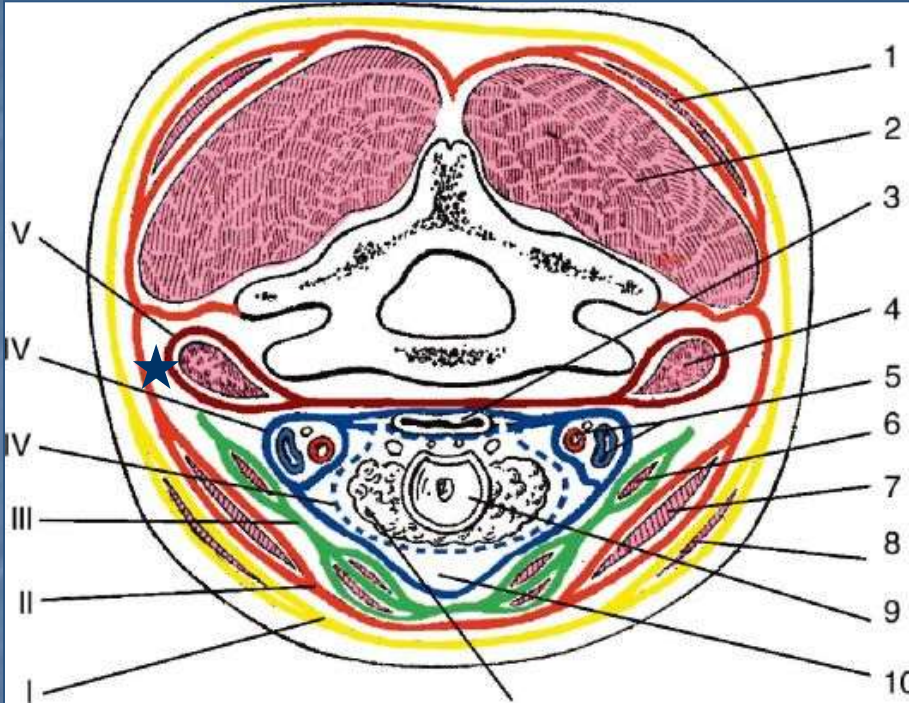


- **Spatium retroviscerale** (retropharingeale) – between endocervical (IV) and prevertebral (V) fascias
- It continuous with the posterior mediastinum (!)

Mediastinum



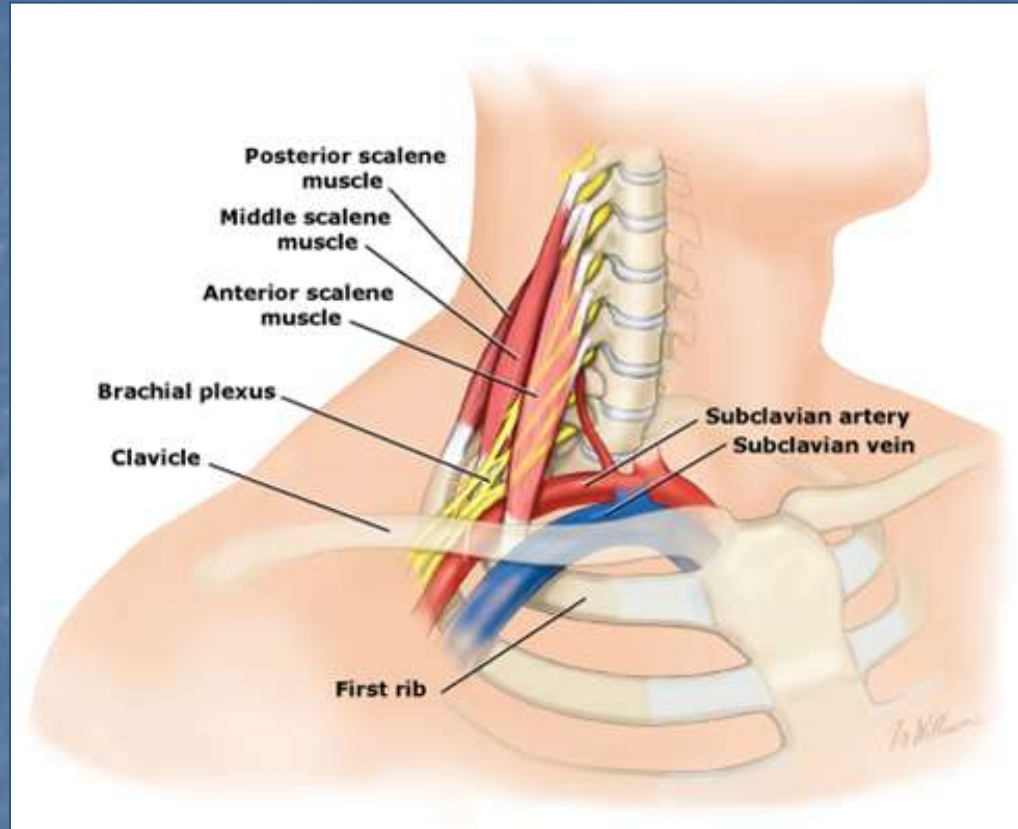
Spaces of neck



■ **Spatium interaponeuroticum laterale** – between lamina superficialis fasciae colli propriae (II) and fascia prevertebralis (V)

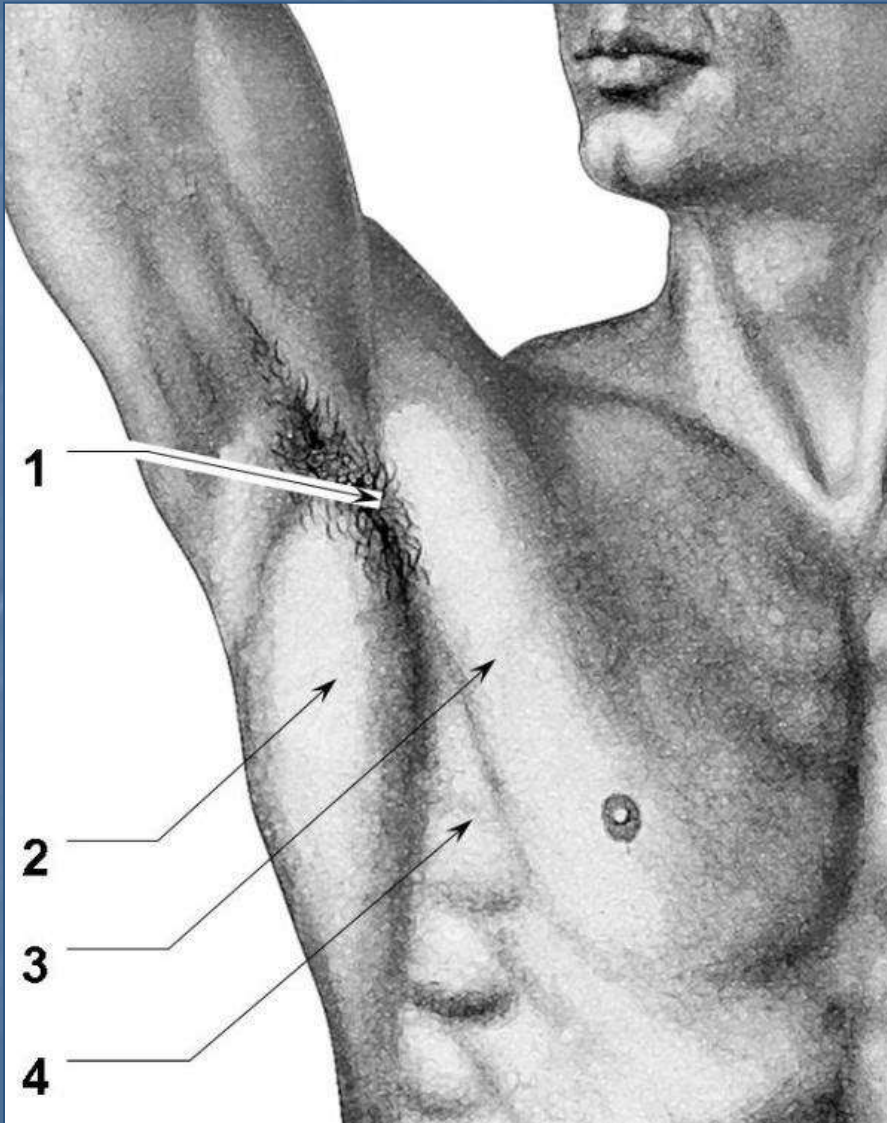
■ Connected with axillary fossa

Spaces of neck



- **Spatium interscalenum** – between the anterior, middle scalene muscles and the first rib. It transmits the subclavian artery and the brachial plexus.
- **Spatium antescalenum** – in front of the anterior scalene muscle. It transmits the subclavian vein.

Axillary fossa

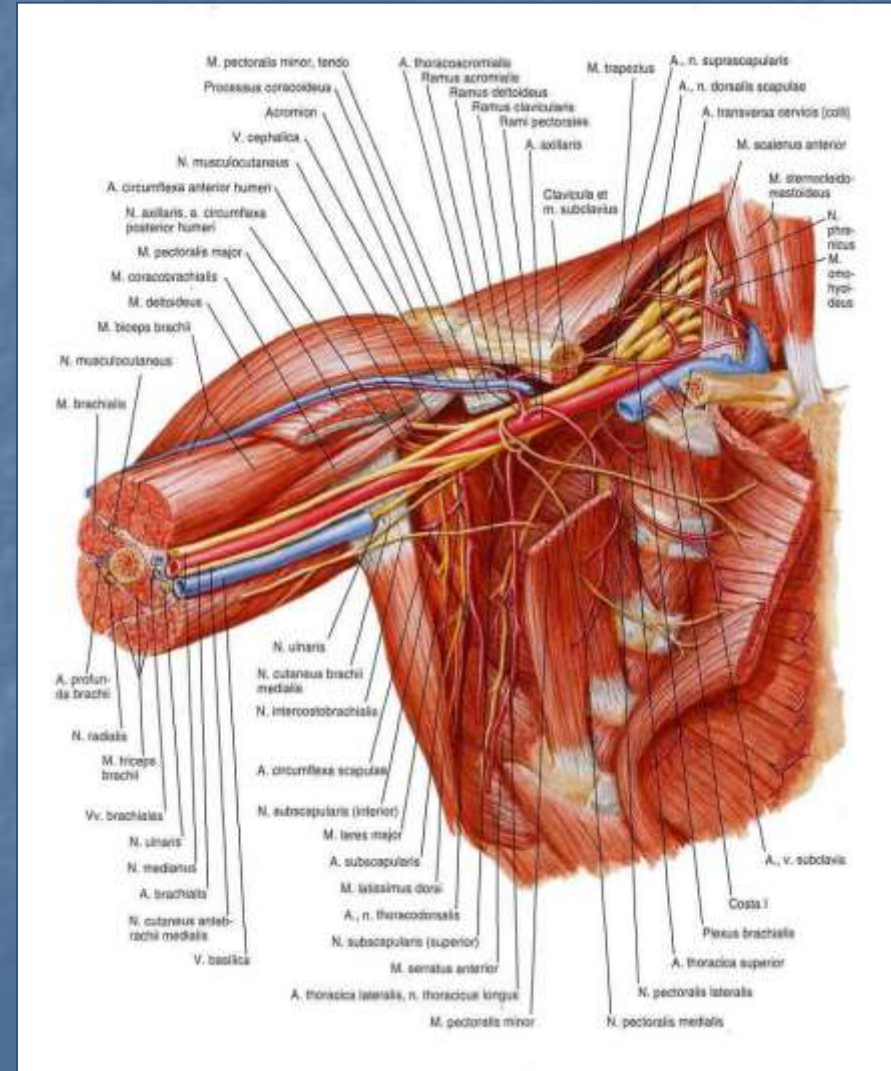


- 1 – **axillary fossa**
- 2 – border of
m. latissimus dorsi
- 3 – border of
m. pectoralis major
- 4 – m. serratus anterior

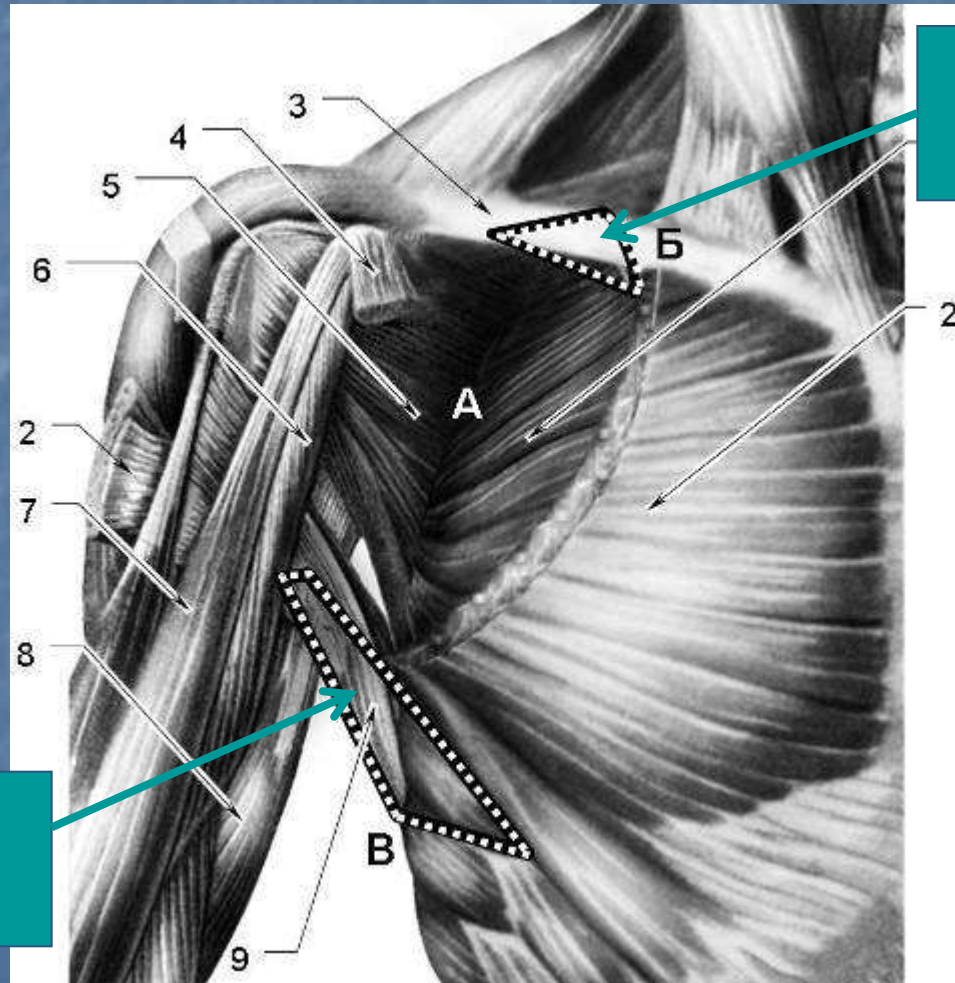
Axillary cavity

is bordered by:

- **anteriorly** – mm. pectorales major et minor
- **posteriorly** – m. latissimus dorsi, m. teres major and m. subscapularis
- **medially** – m. serratus anterior
- **laterally** – humerus and mm. of anterior side of the arm



Axillary cavity

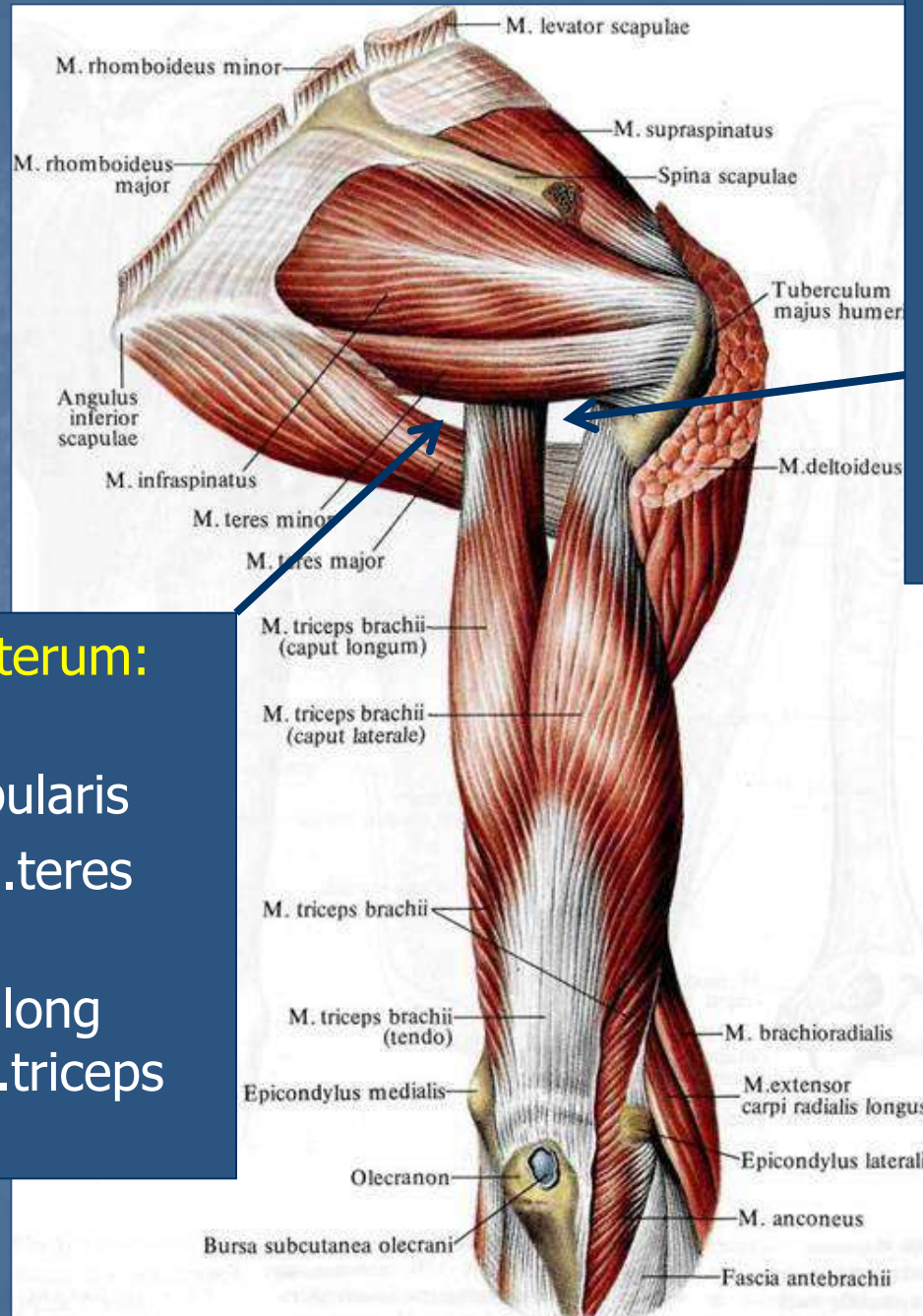


Apertura superior

Apertura inferior

Foramen quadrilaterum:

- **above** – m.subscapularis
- **below** – m.teres major
- **medially** – long head of m.triceps brachii
- **laterally** – humerus

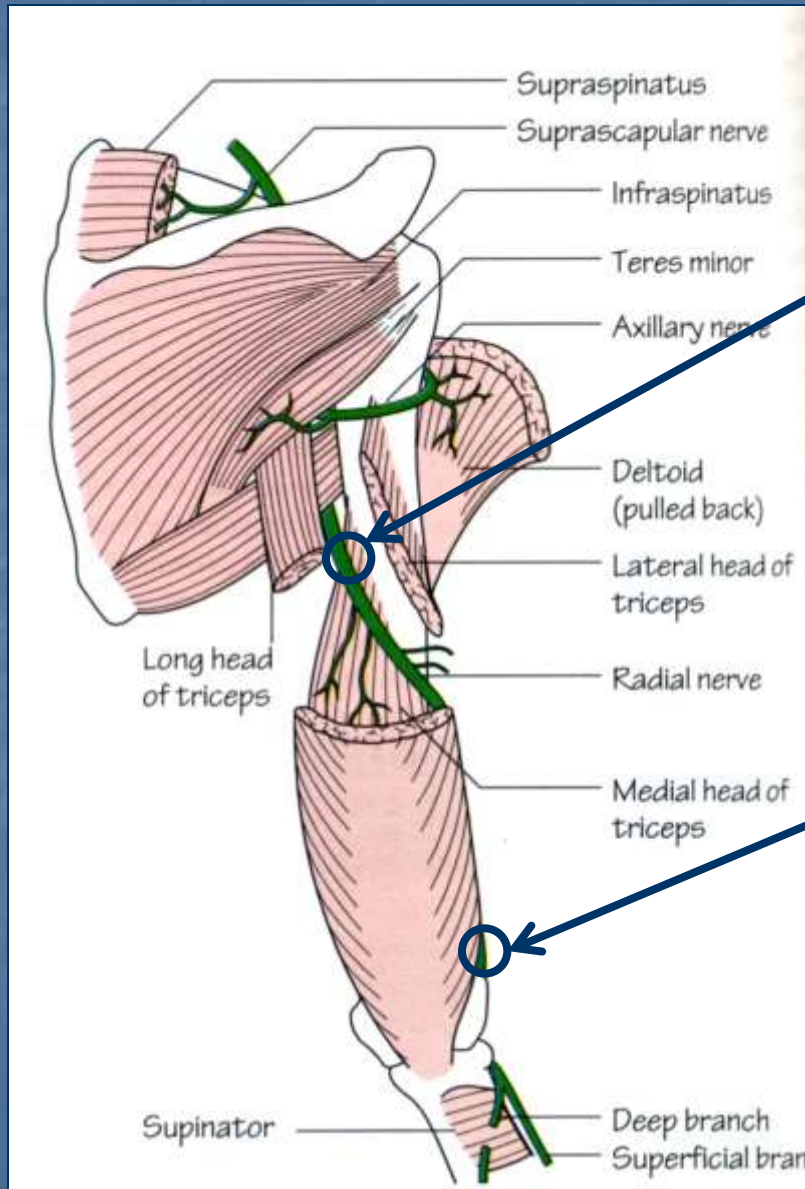


Foramen trilaterum:

- **above** – m.subscapularis
- **below** – m.teres major
- **laterally** – long head of m.triceps brachii

Canalis nervi radialis (canalis humeromuscularis)

- anteriorly – humerus
- posteriorly – m. triceps brachii



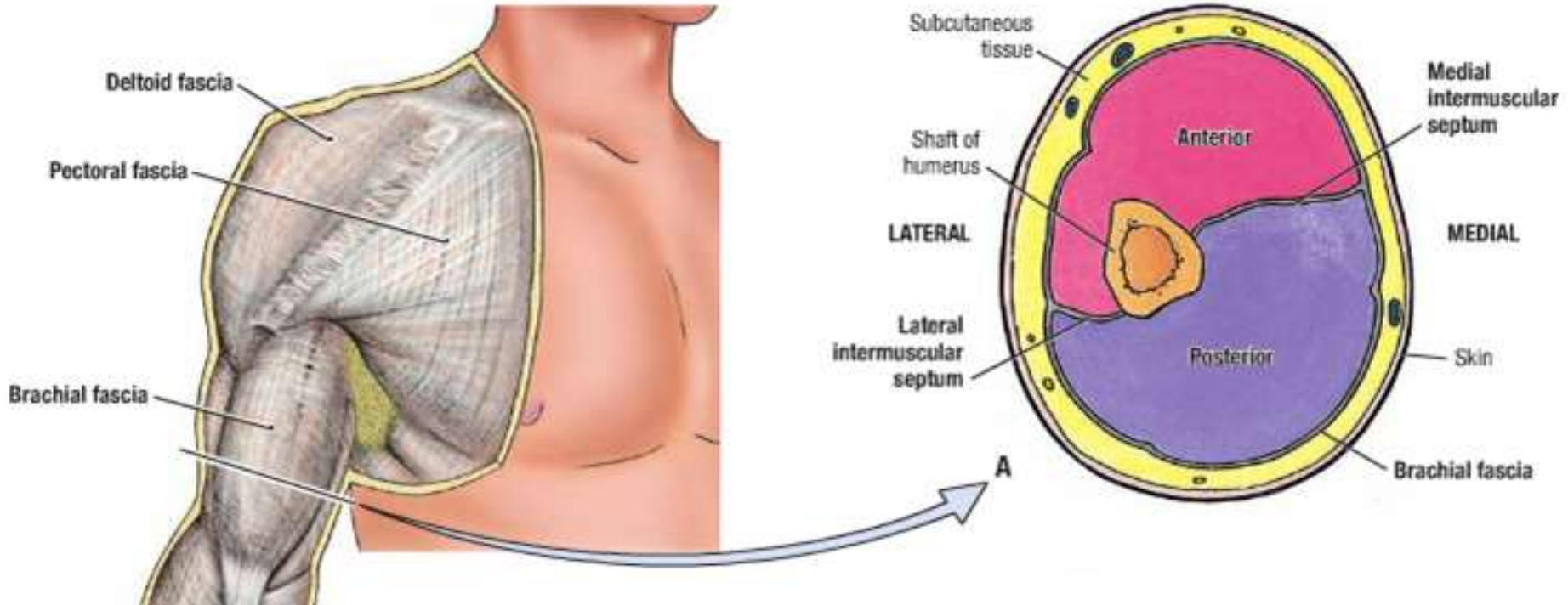
Inlet:

- between the upper and middle thirds of the arm on medial side
- humerus and the medial and lateral heads of the triceps muscle

Outlet:

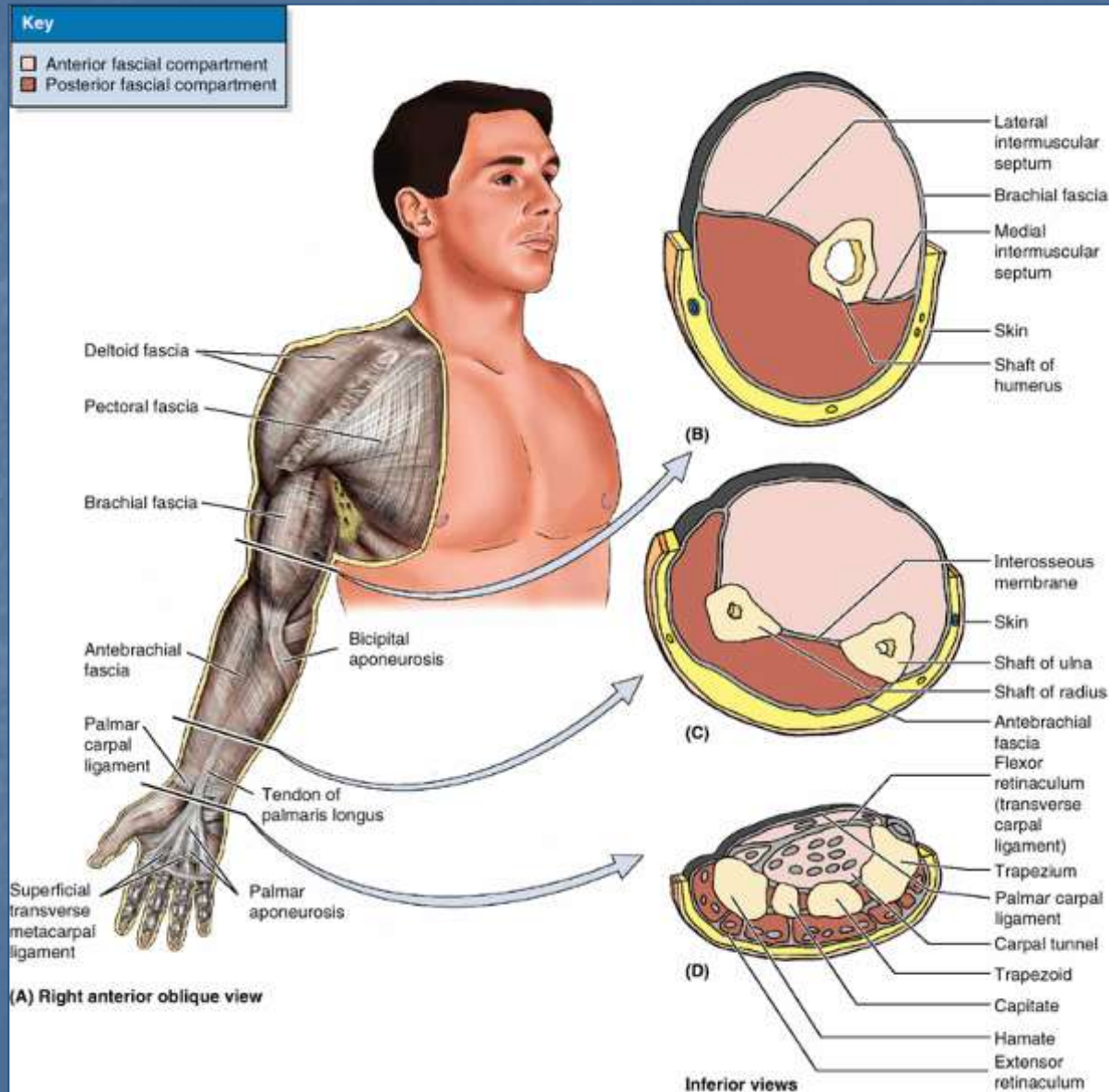
- between the middle and lower thirds of the arm on lateral side
- It is bounded by the brachialis and brachioradialis muscles

Fasciae of the arm

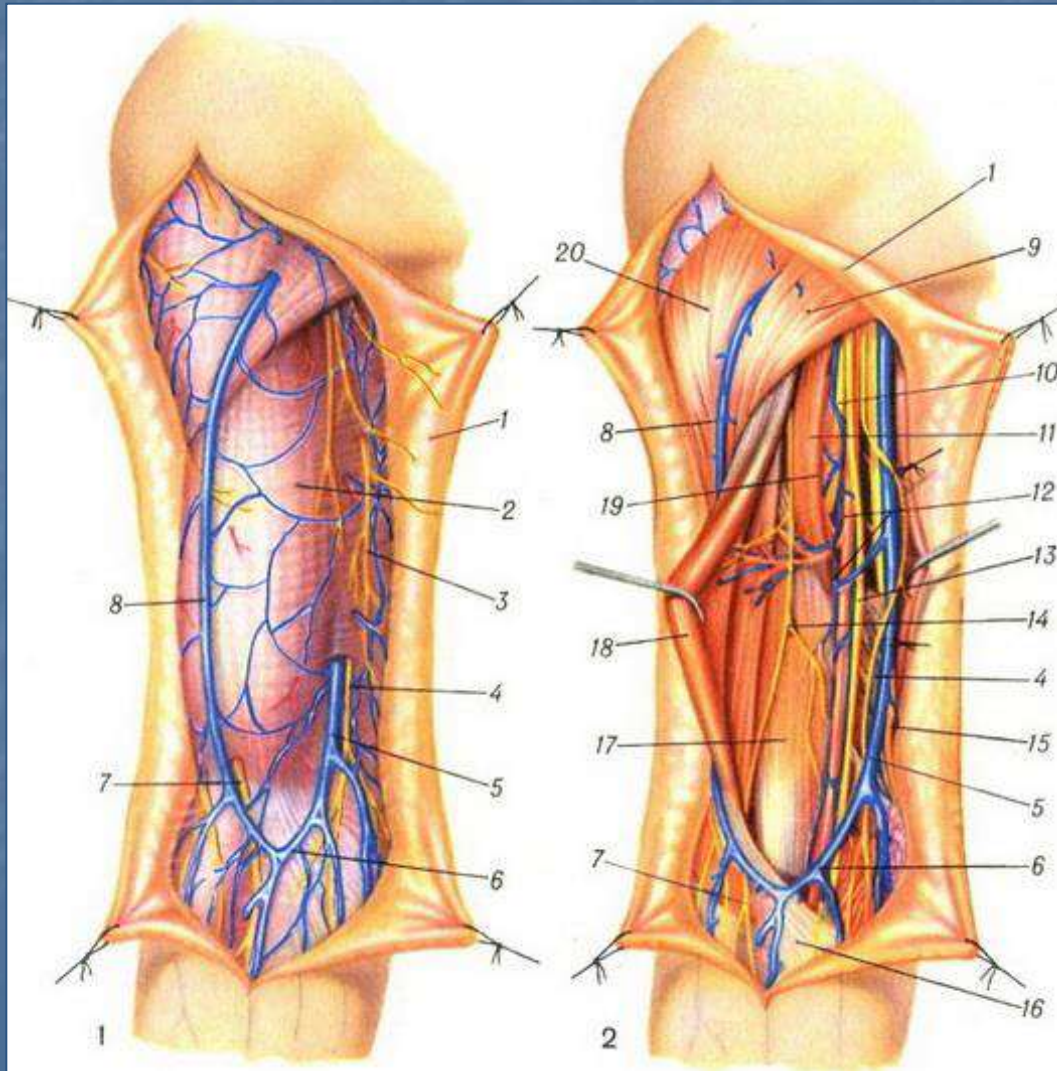


- The axillary fascia
- The deltoid fascia
- The brachial fascia (*medial and lateral intermuscular septum*)

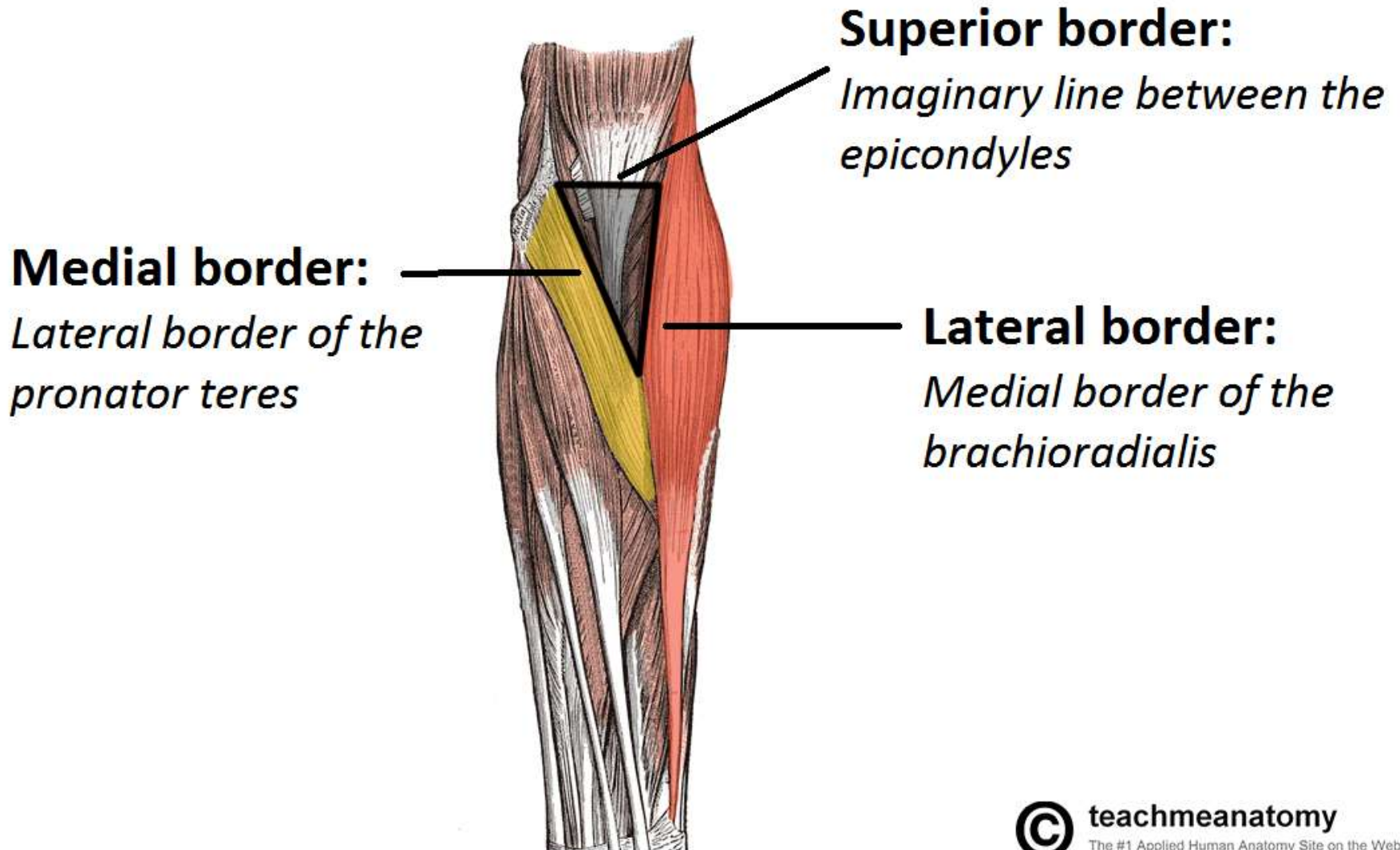
Fasciae of the arm



The lateral and medial bicipital grooves (*sulcus bicipitalis lateralis et medialis*)

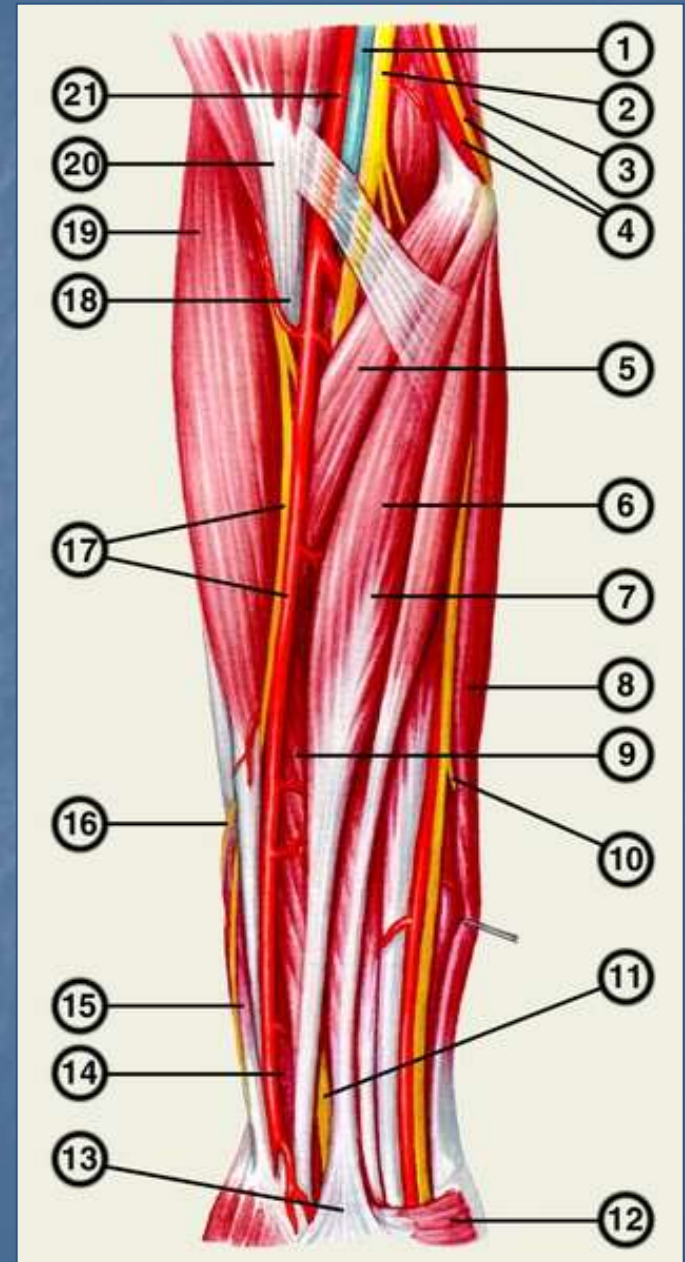


Cubital fossa



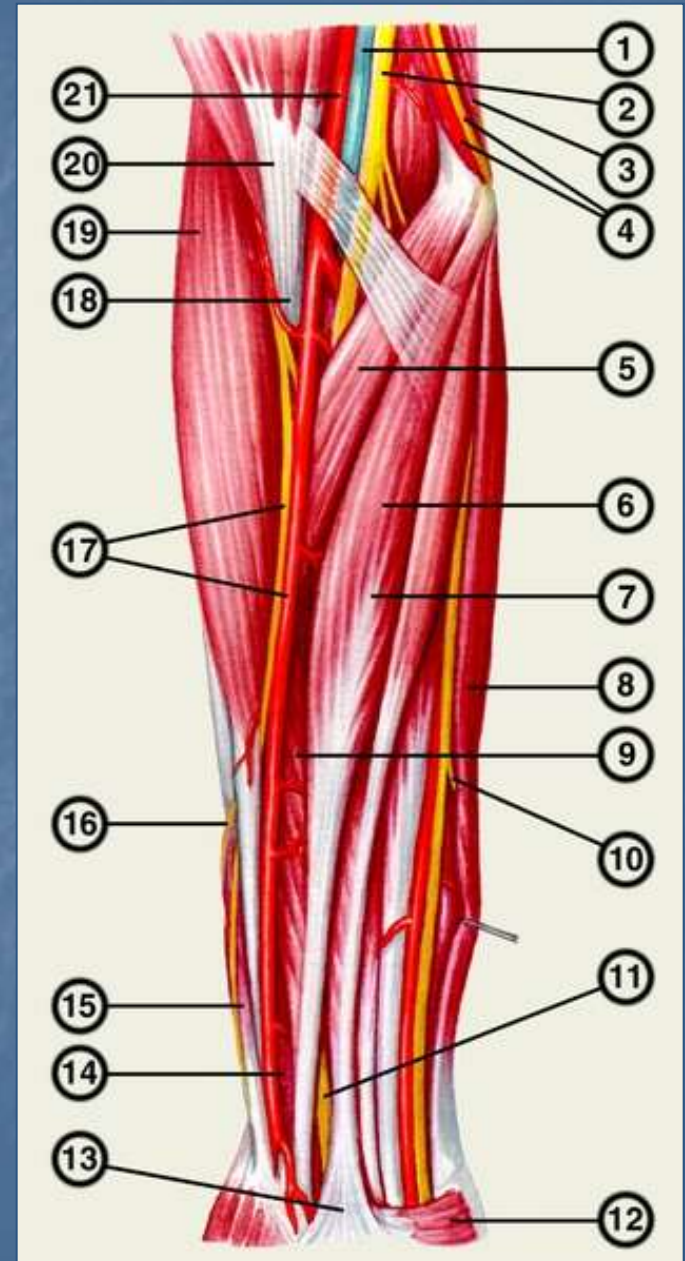
Grooves between forearm muscles

The medial **ulnar groove (10)** lies between flexor carpi ulnaris and the flexor digitorum superficialis (laterally). It transmits the ulnar nerve, artery and veins.



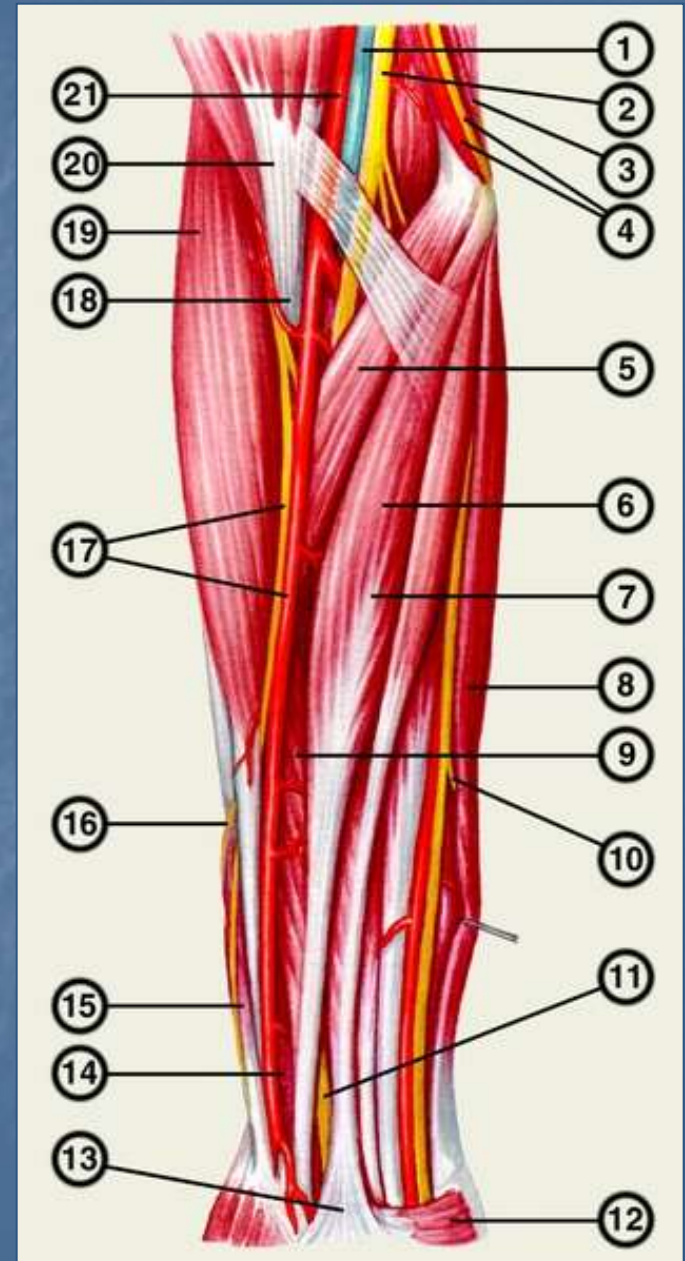
Grooves between forearm muscles

The lateral **radial groove (17)** lies between brachioradialis (laterally) and the flexor carpi radialis (medially). It transmits the radial nerve, artery and veins.

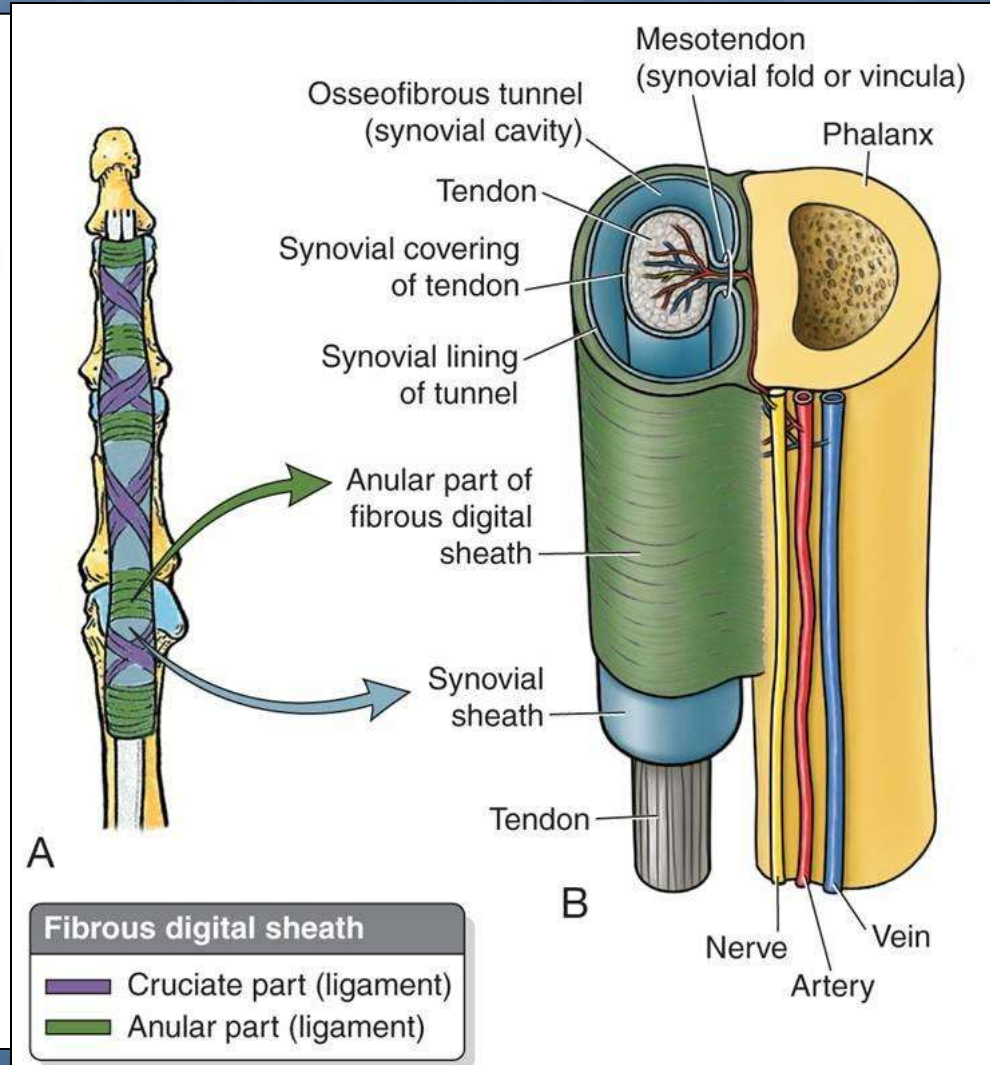
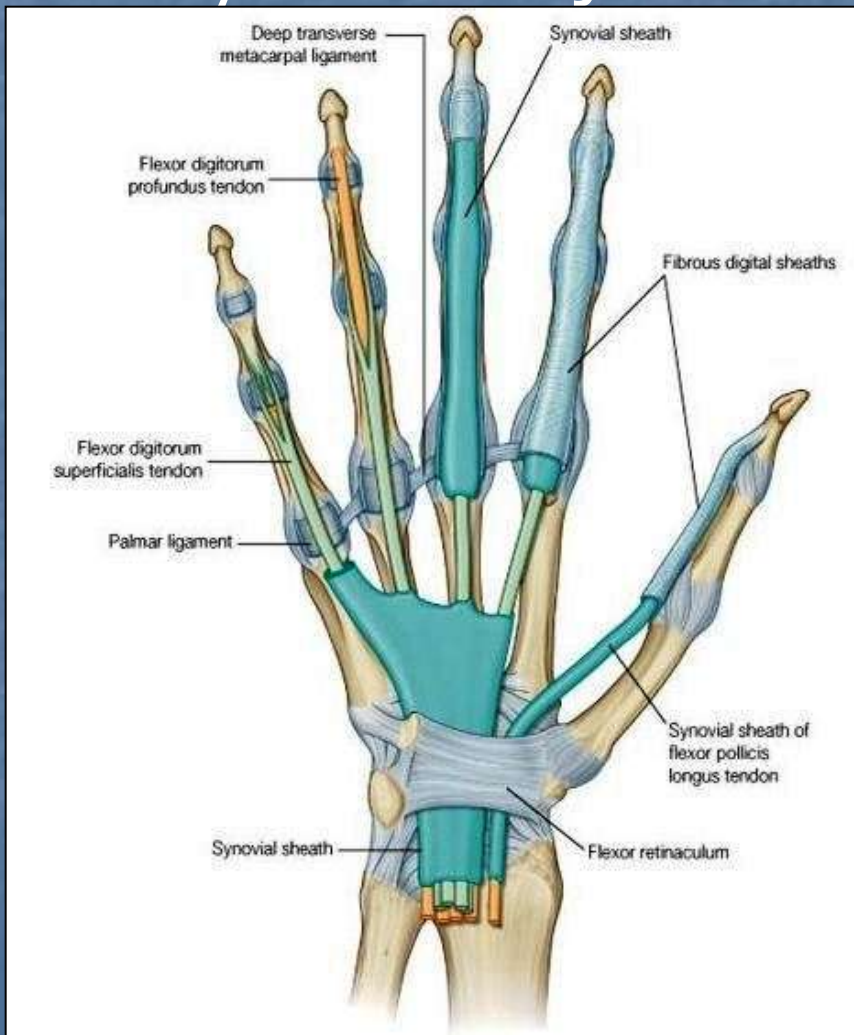


Grooves between forearm muscles

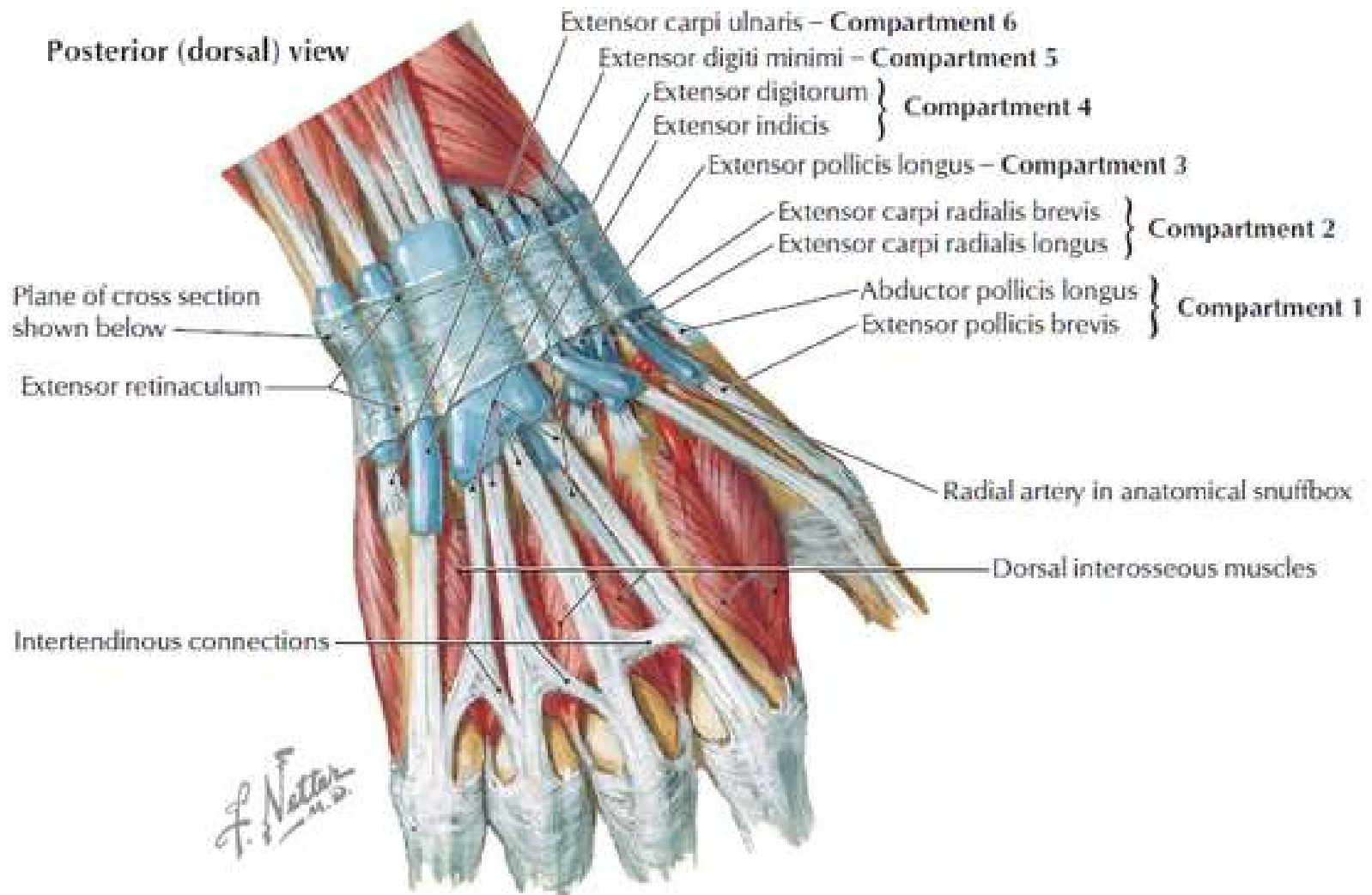
The **median groove (11)** lies between the flexor carpi radialis (laterally) and the flexor digitorum superficialis (medially). It transmits the median nerve.

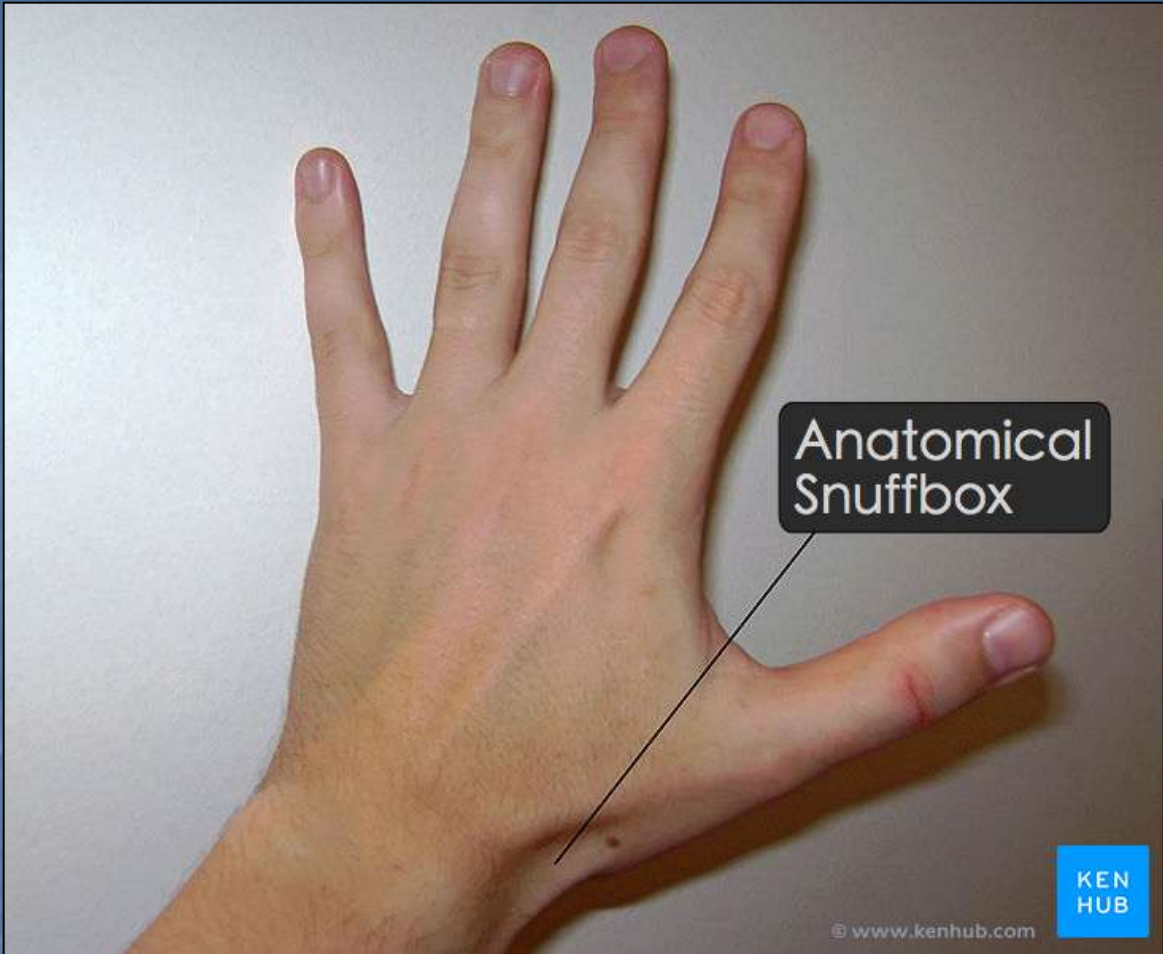


Retinacula are strong fascial bands in the regions of joints that prevent tendons from "bowstringing" away from the joint.



Fasciae of the arm (dorsal surface)

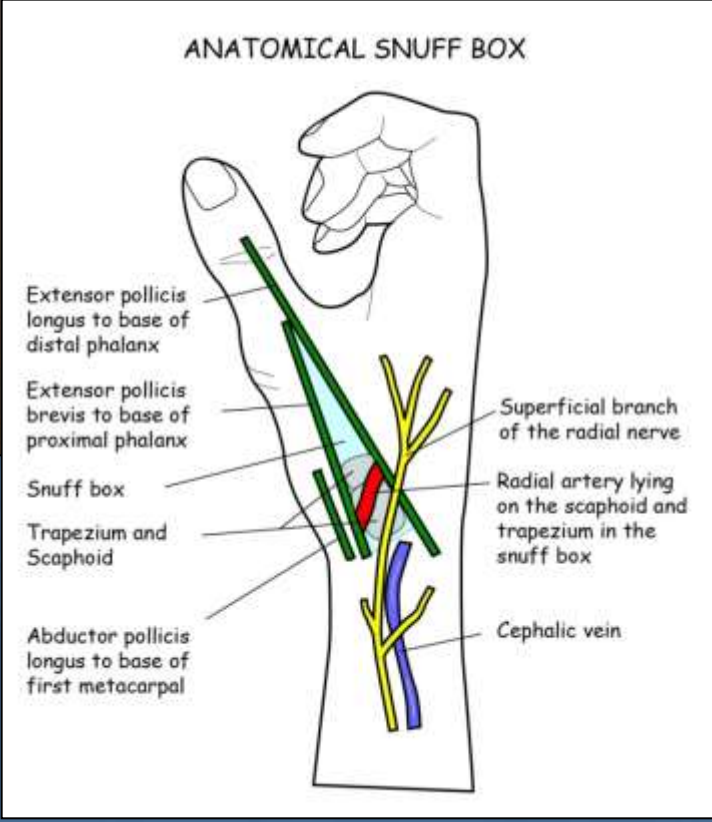




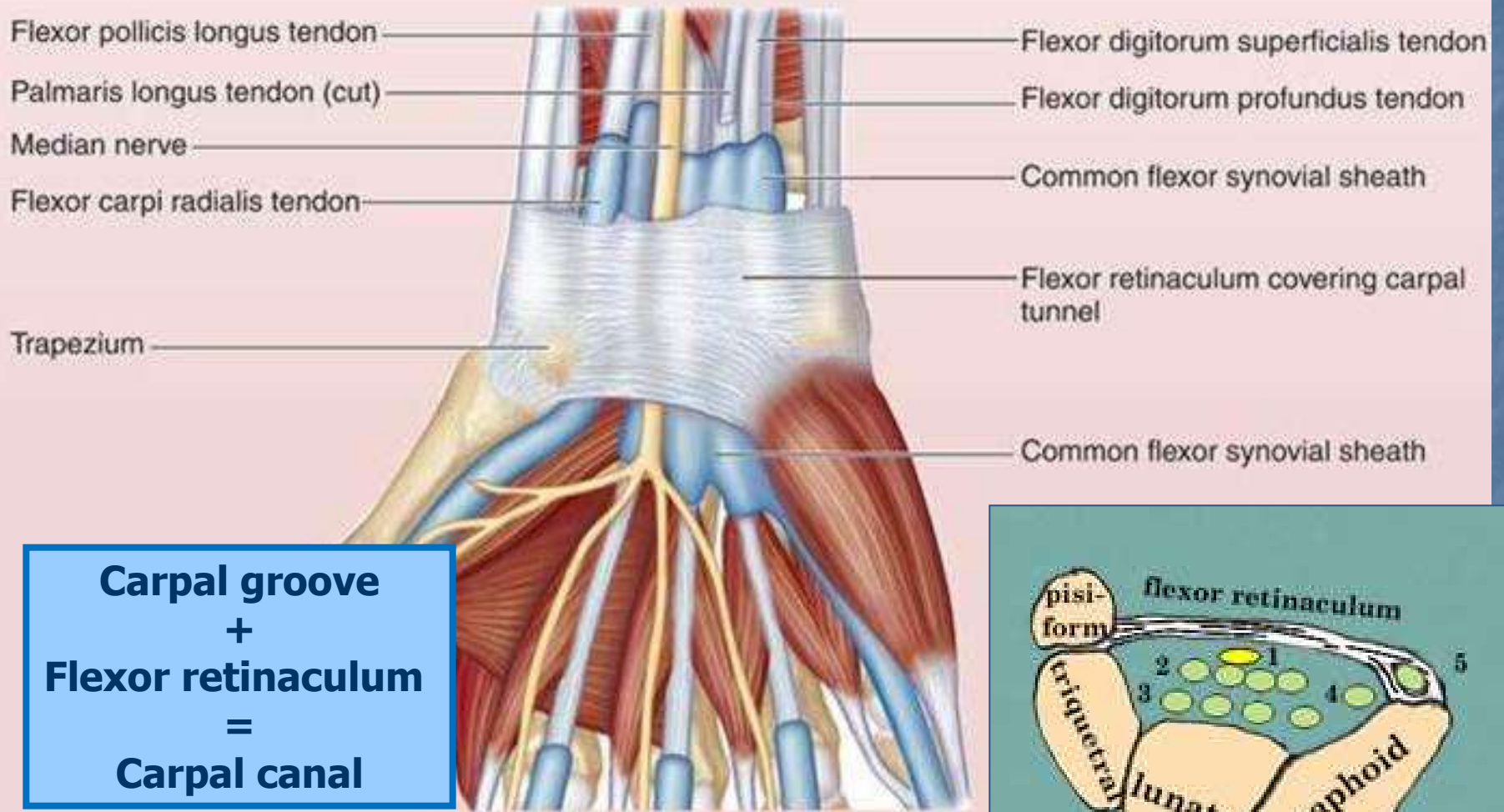
Anatomical Snuffbox



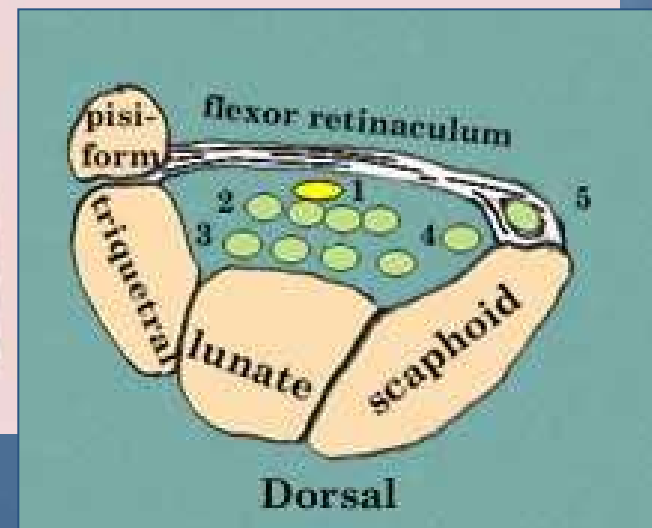
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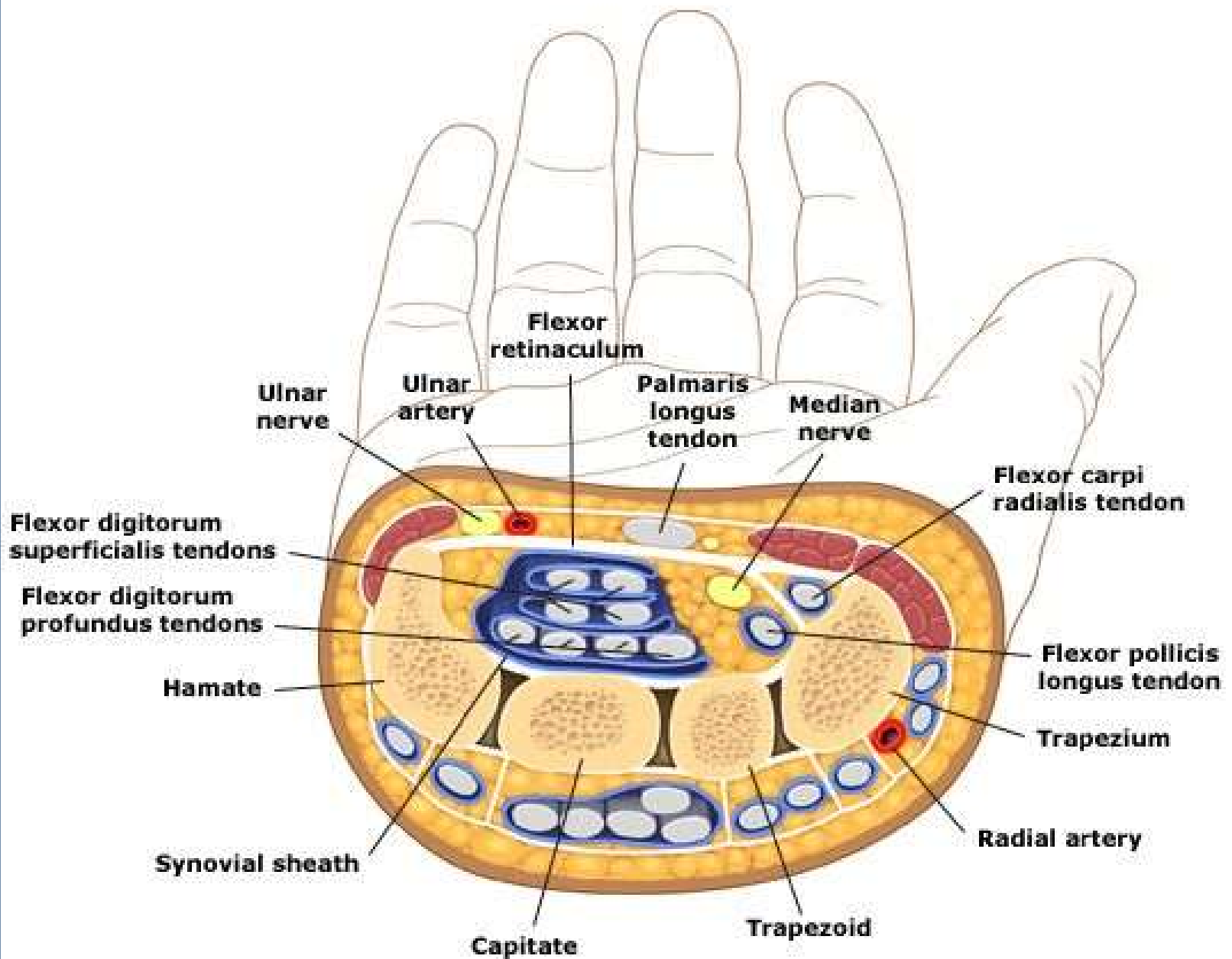


Fasciae of the arm (palmar surface)

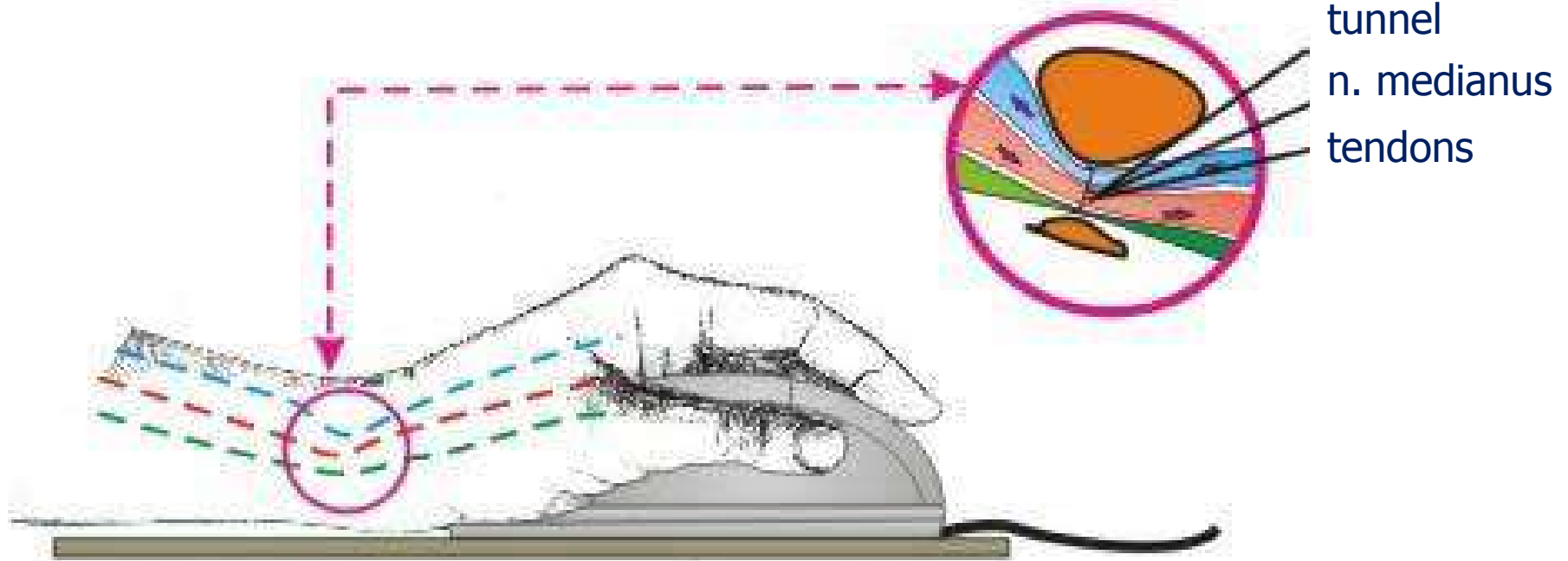


(a) Carpal tunnel, anterior view

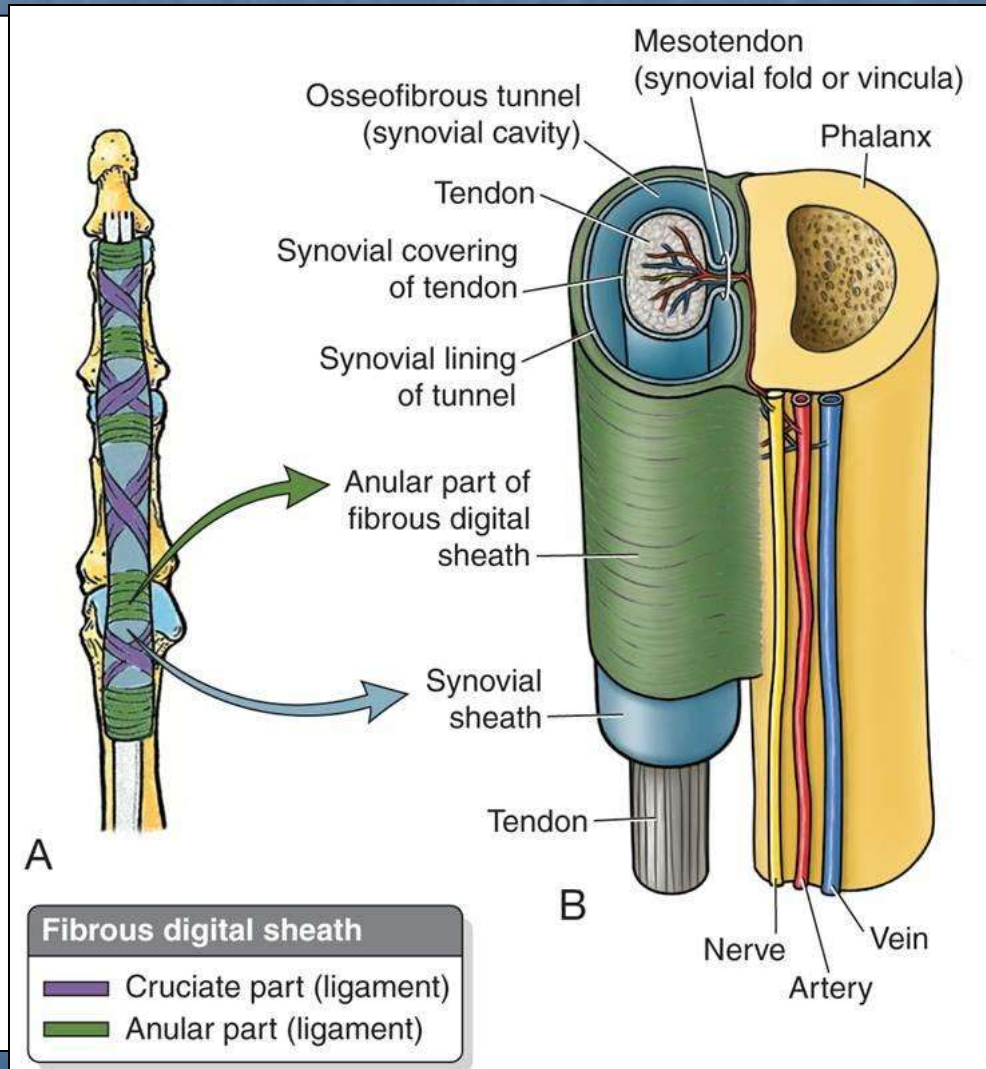
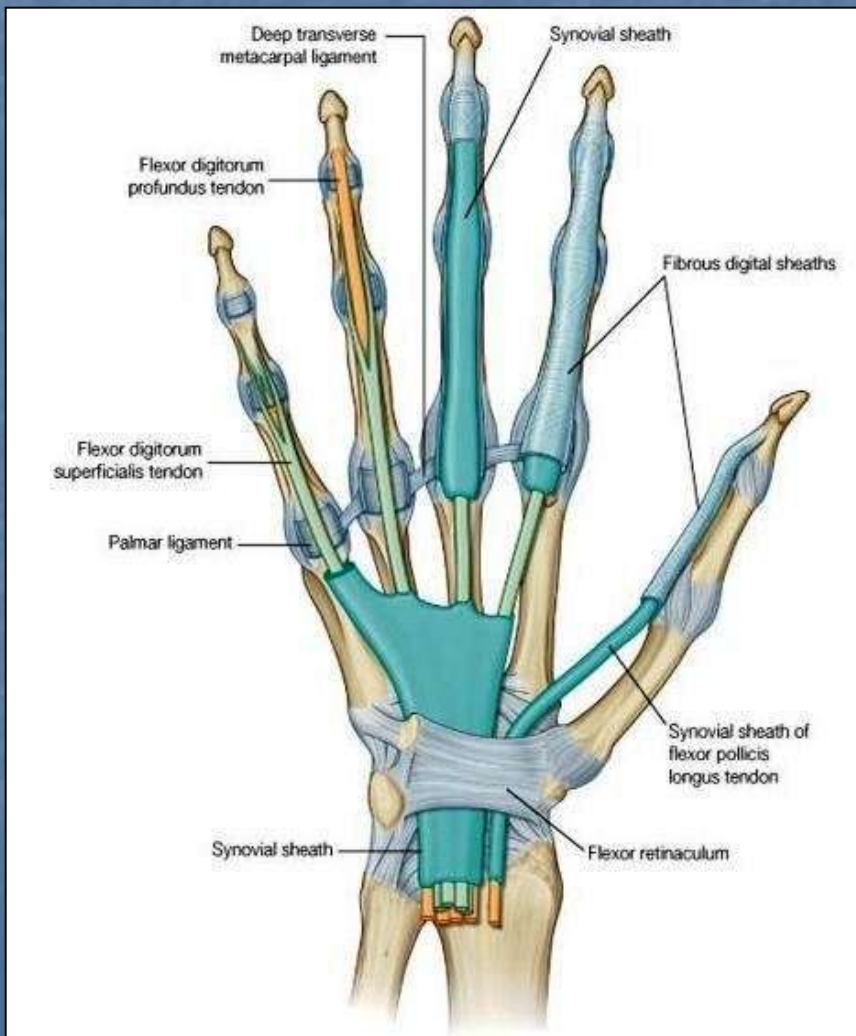


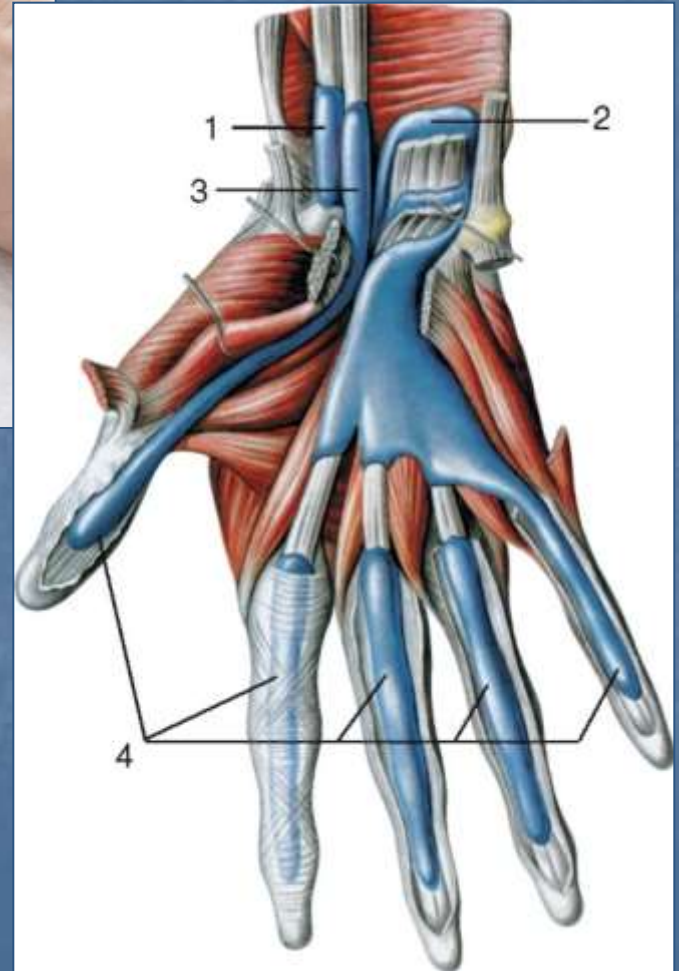


Carpal tunnel syndrome

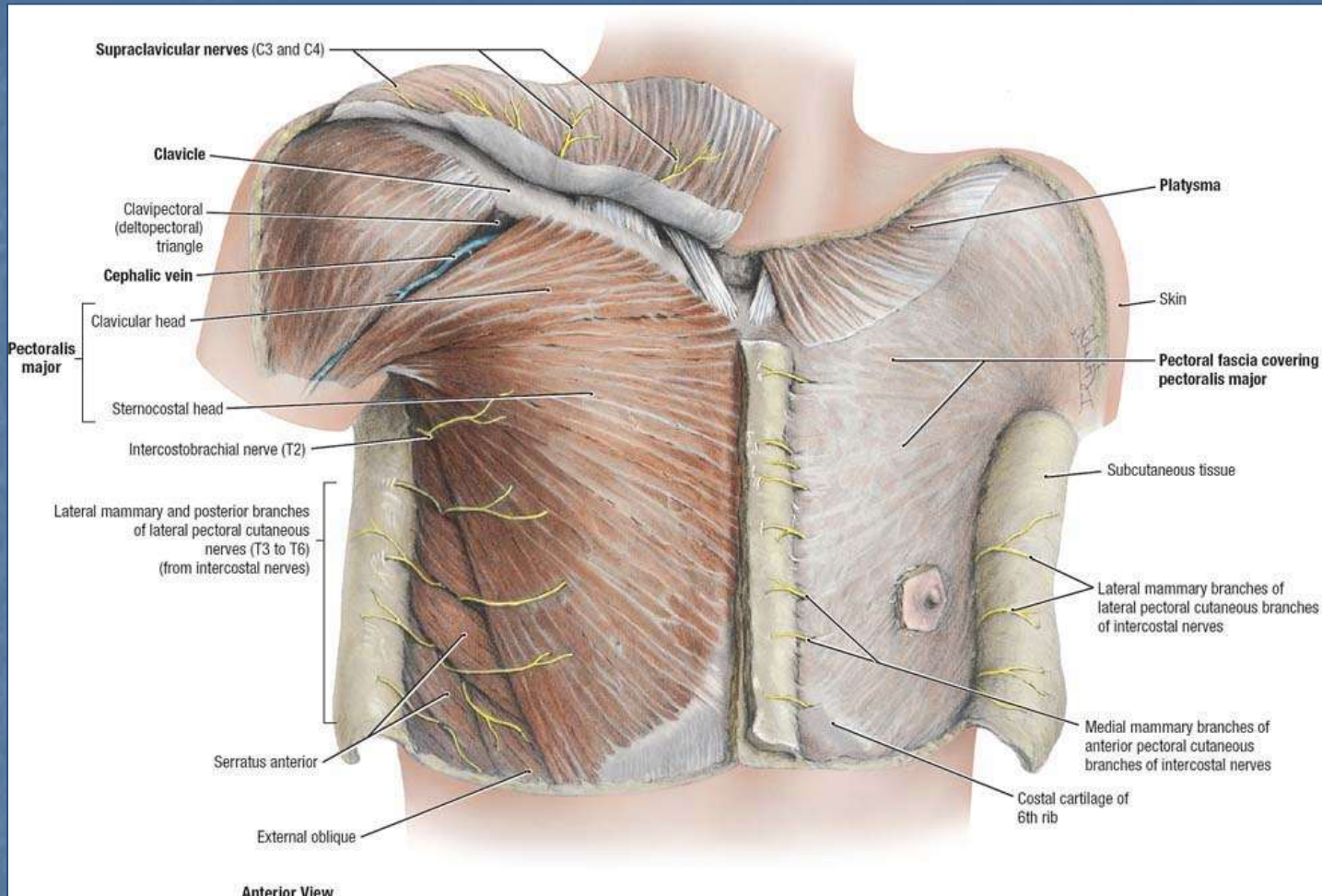


Synovial sheaths (covering) of tendons





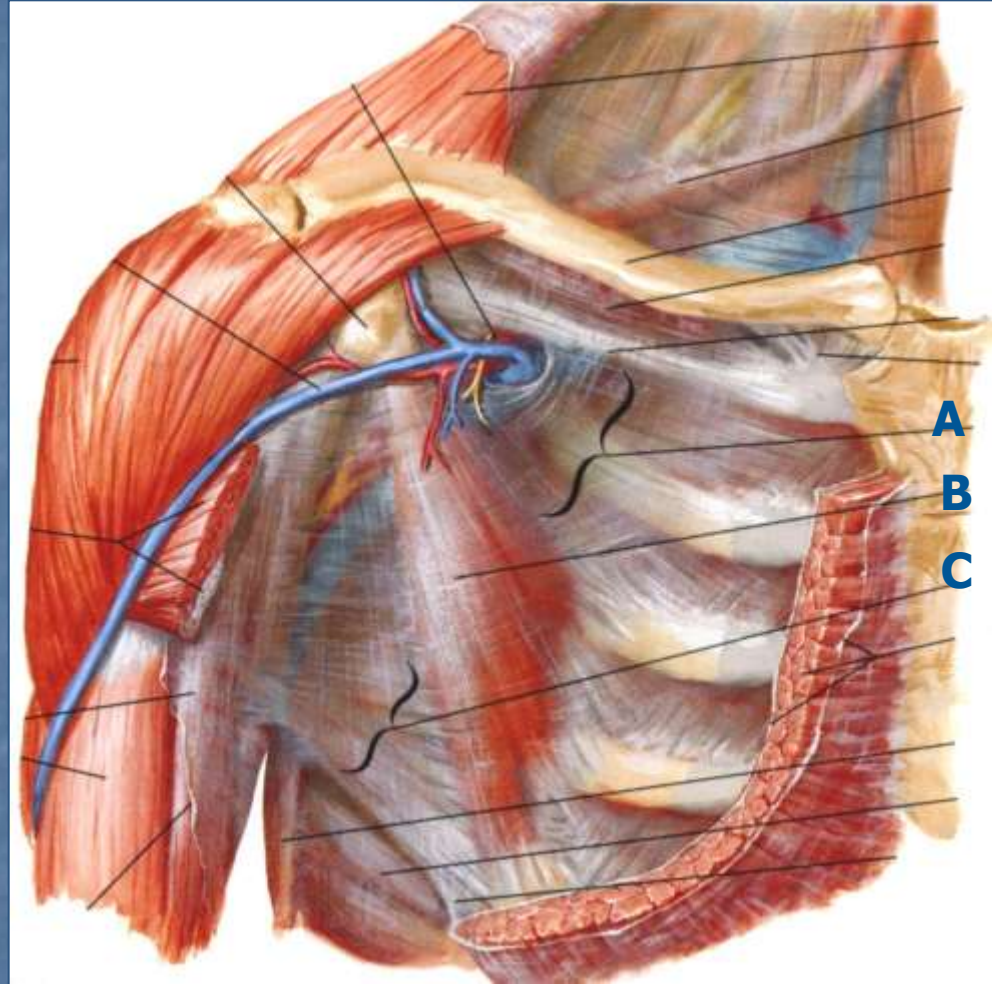
Fasciae of thorax



- The superficial fascia
- The thoracic fascia
- The pectoral fascia
- The endothoracic fascia

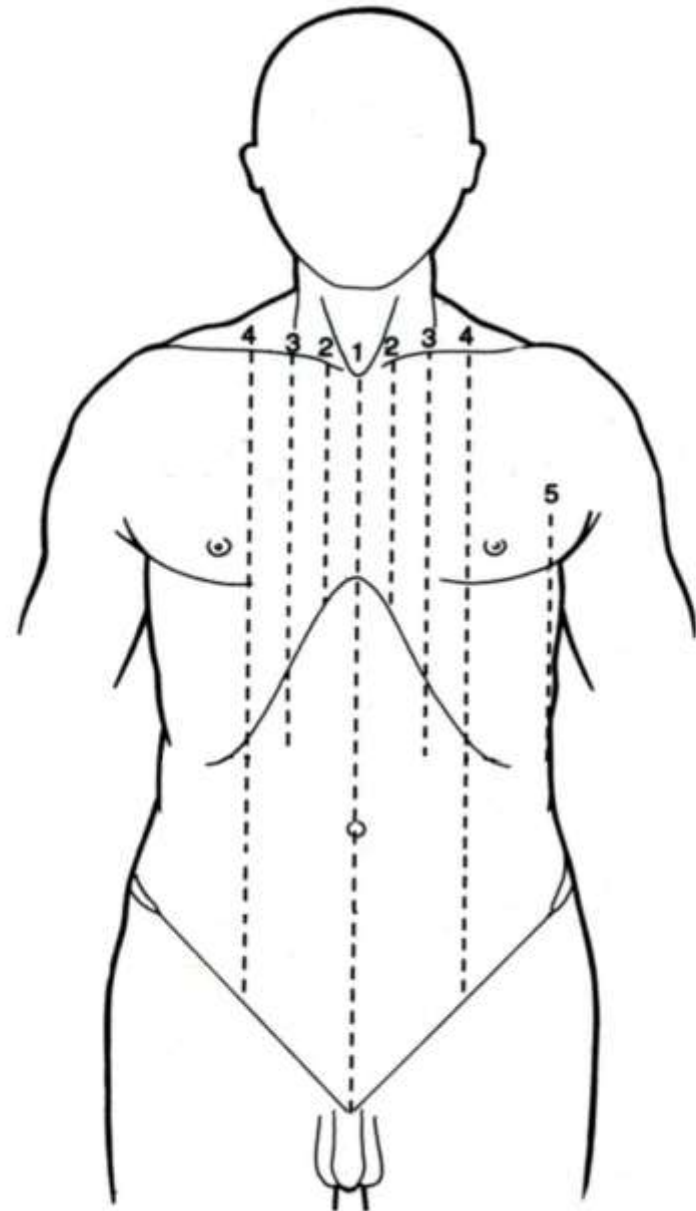
Topography of thorax

- A - Tr. clavipectorale
- B - Tr. pectorale
- C - Tr. subpectorale

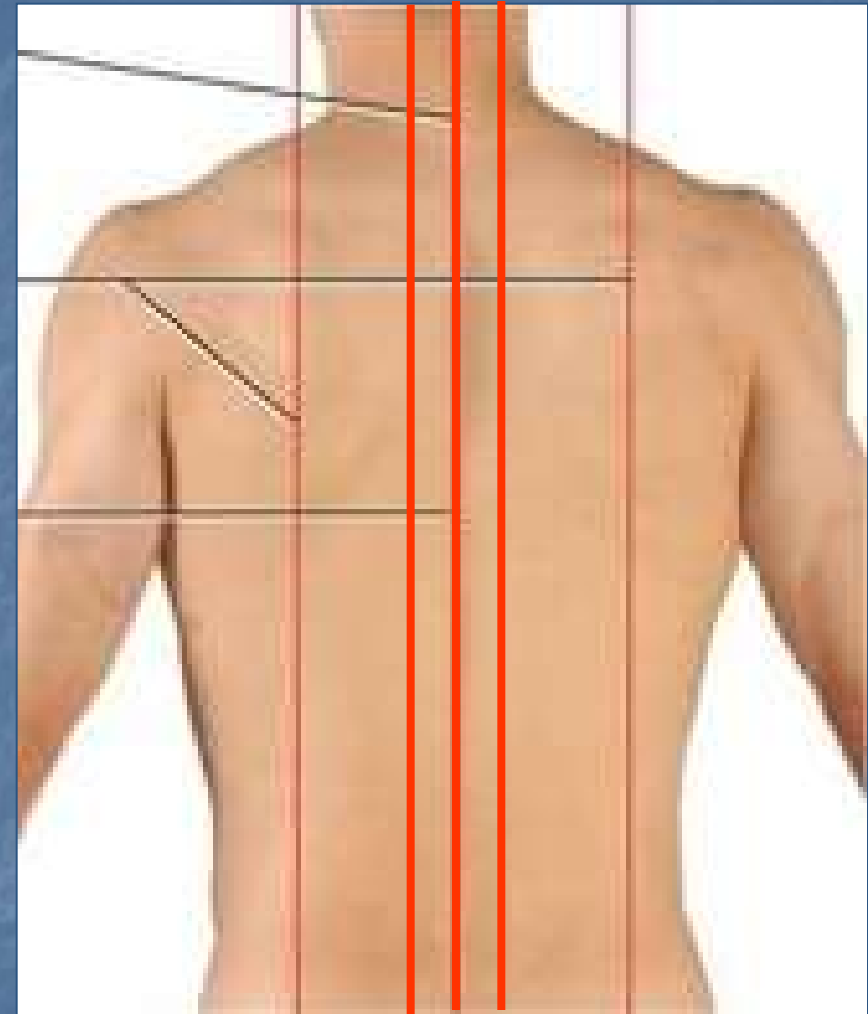
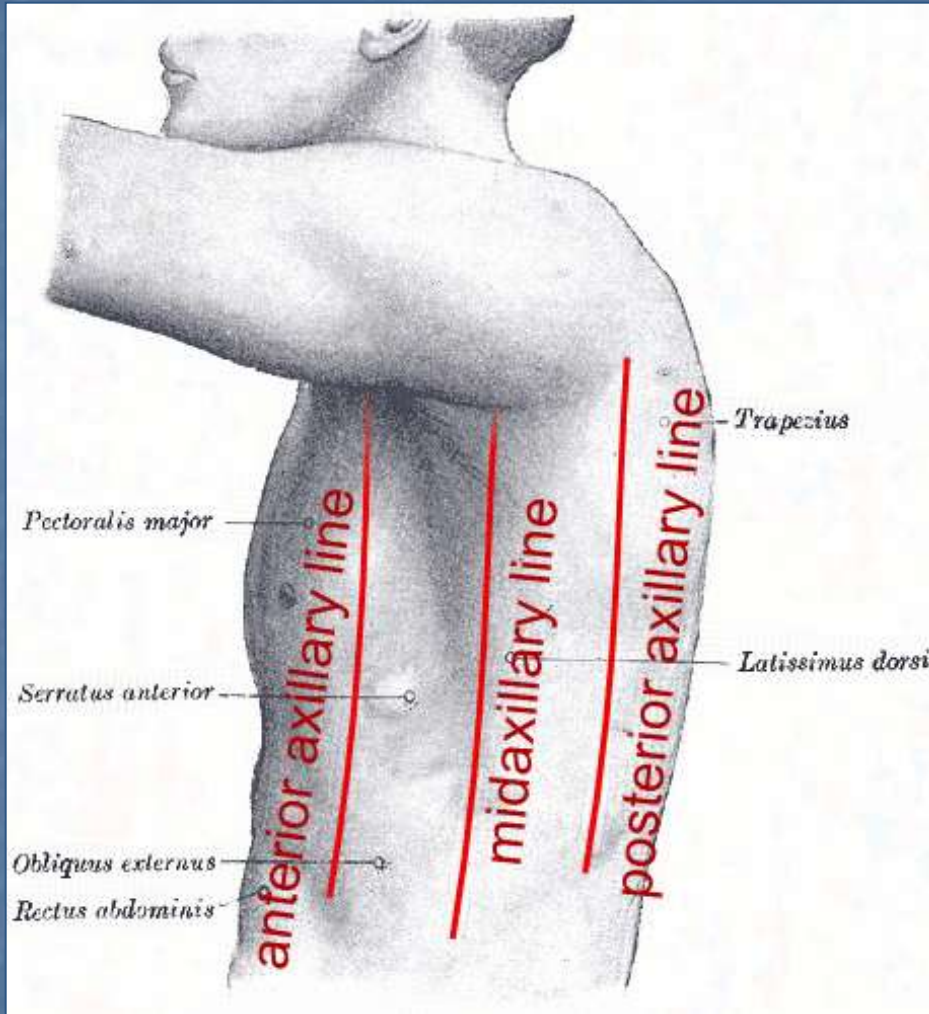


Lines of thorax

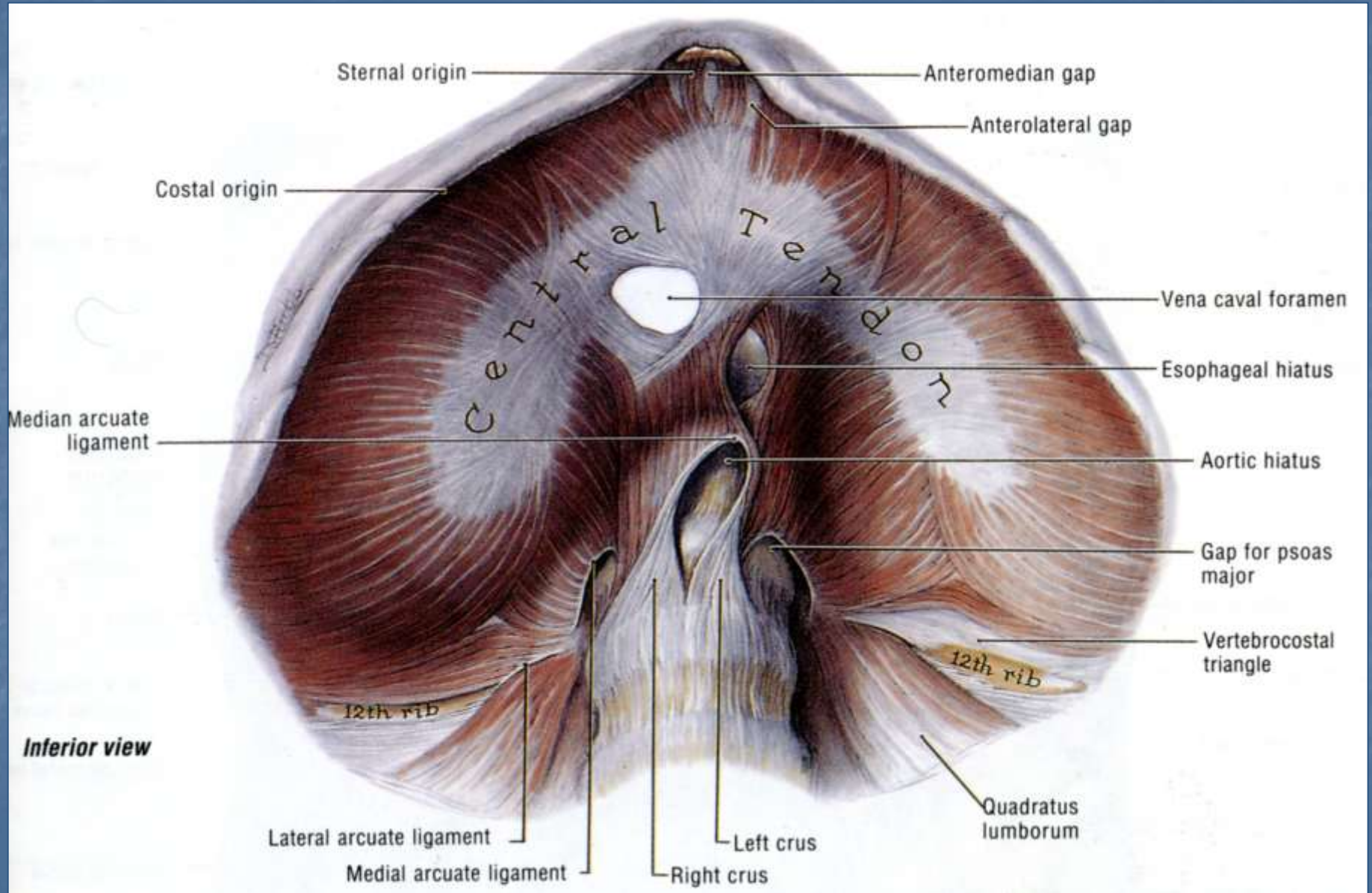
- Anterior median
- sternalis
- parasternalis
- medioclavicularias
- anterior, median, posterior axial
- scapularis
- paravertebralis
- Posterior median



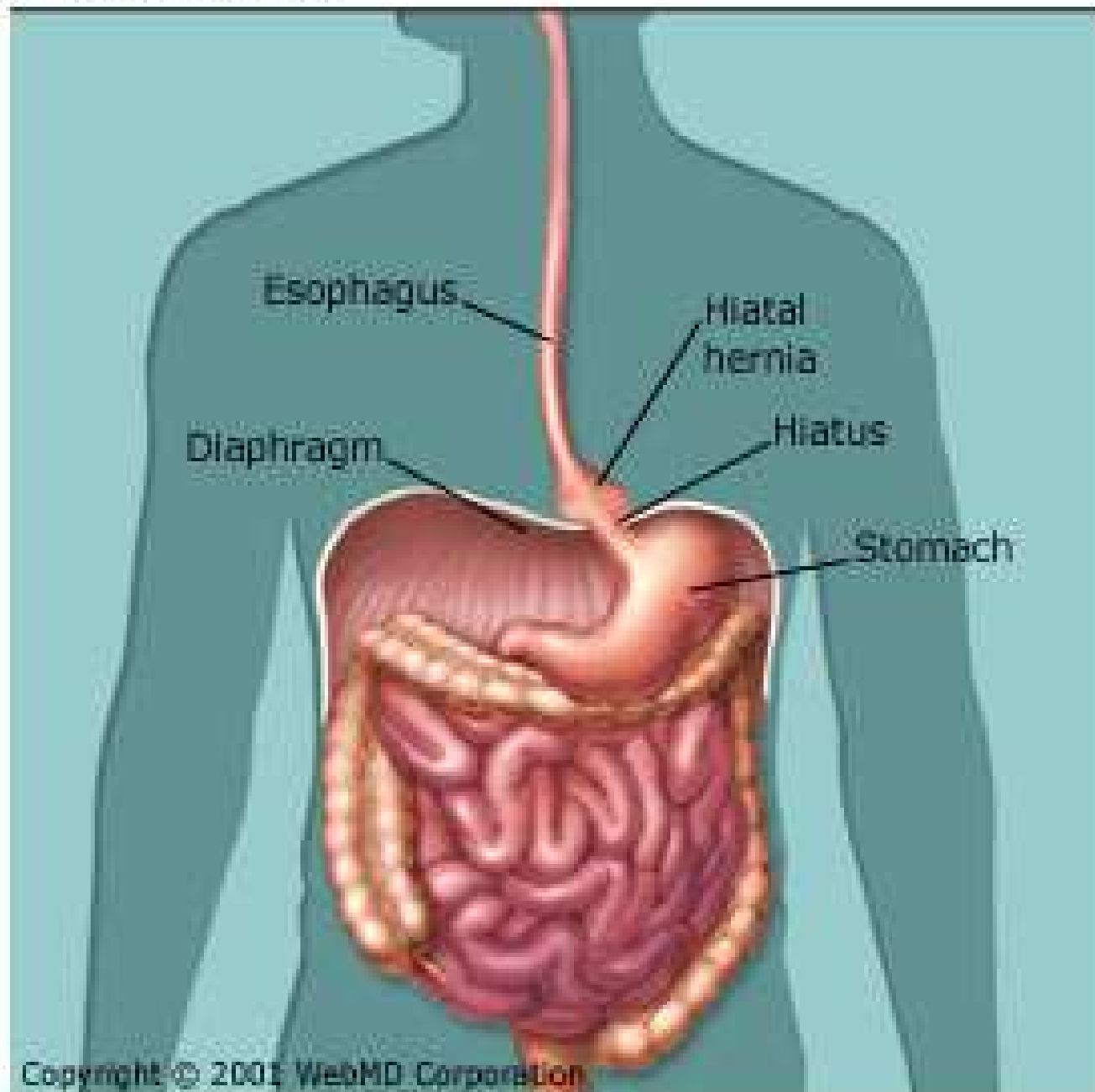
Lines of thorax



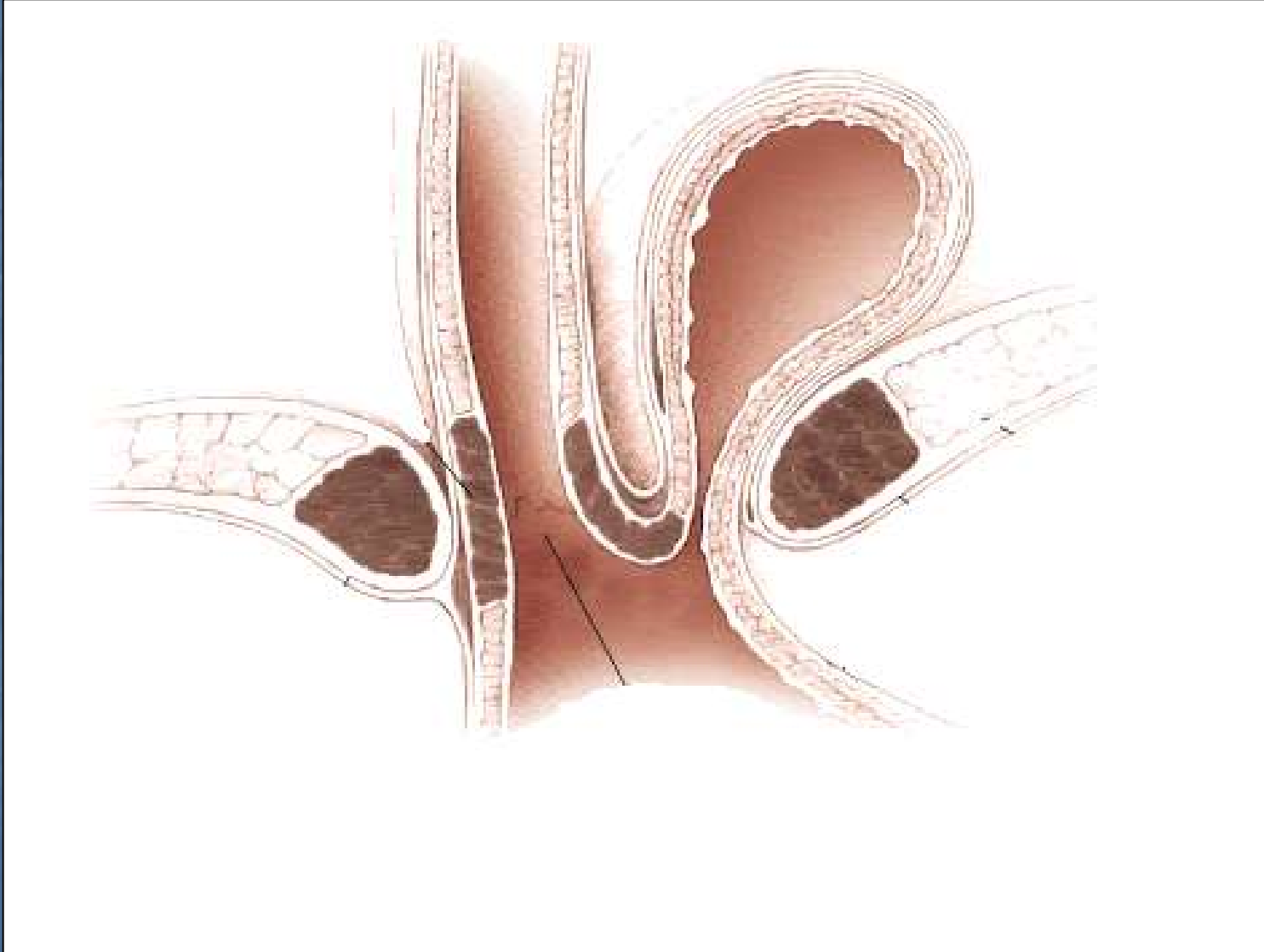
Diaphragm



Hiatal Hernia



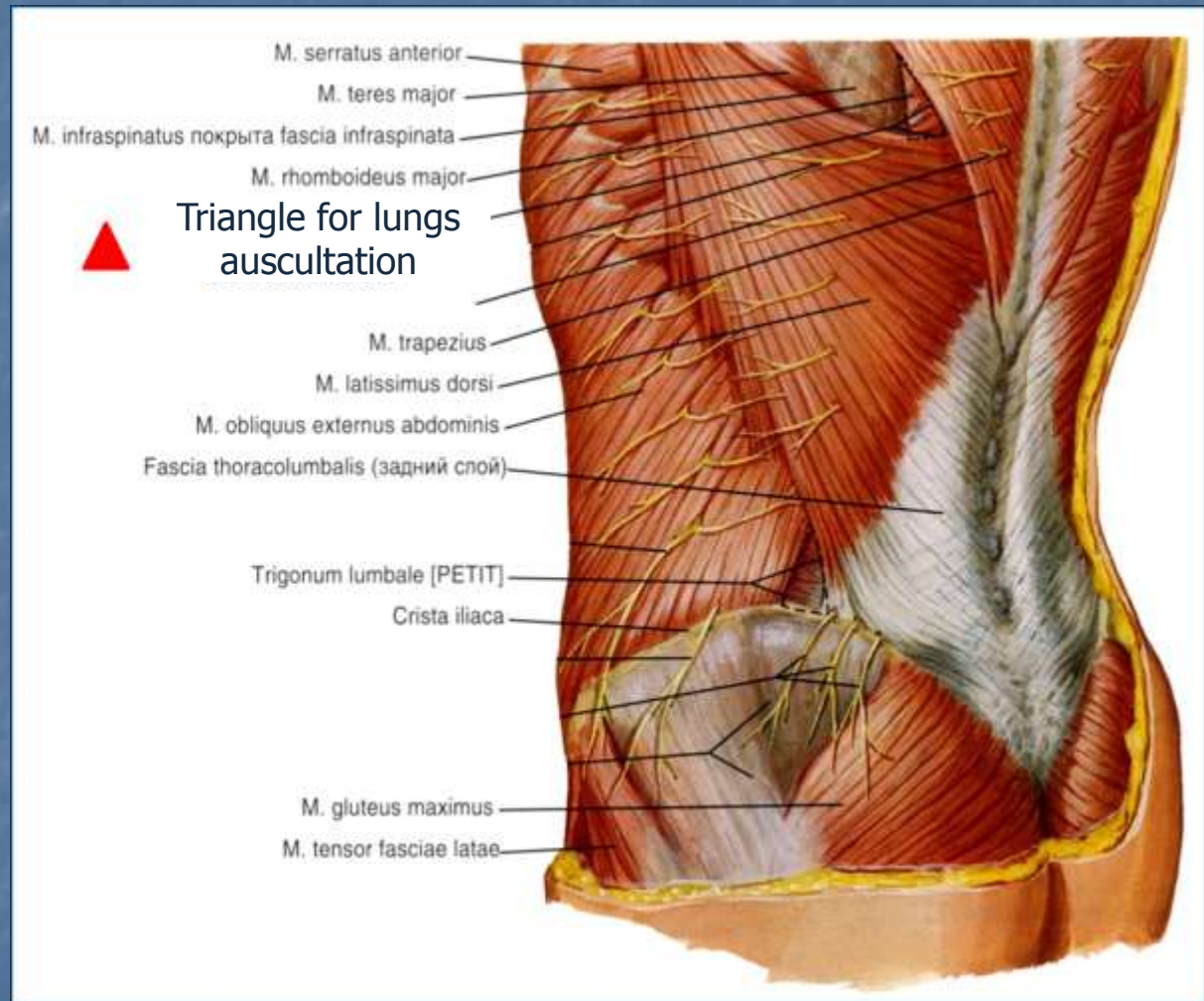
Hiatal hernia



Triangles of back

Triangle for lungs auscultation

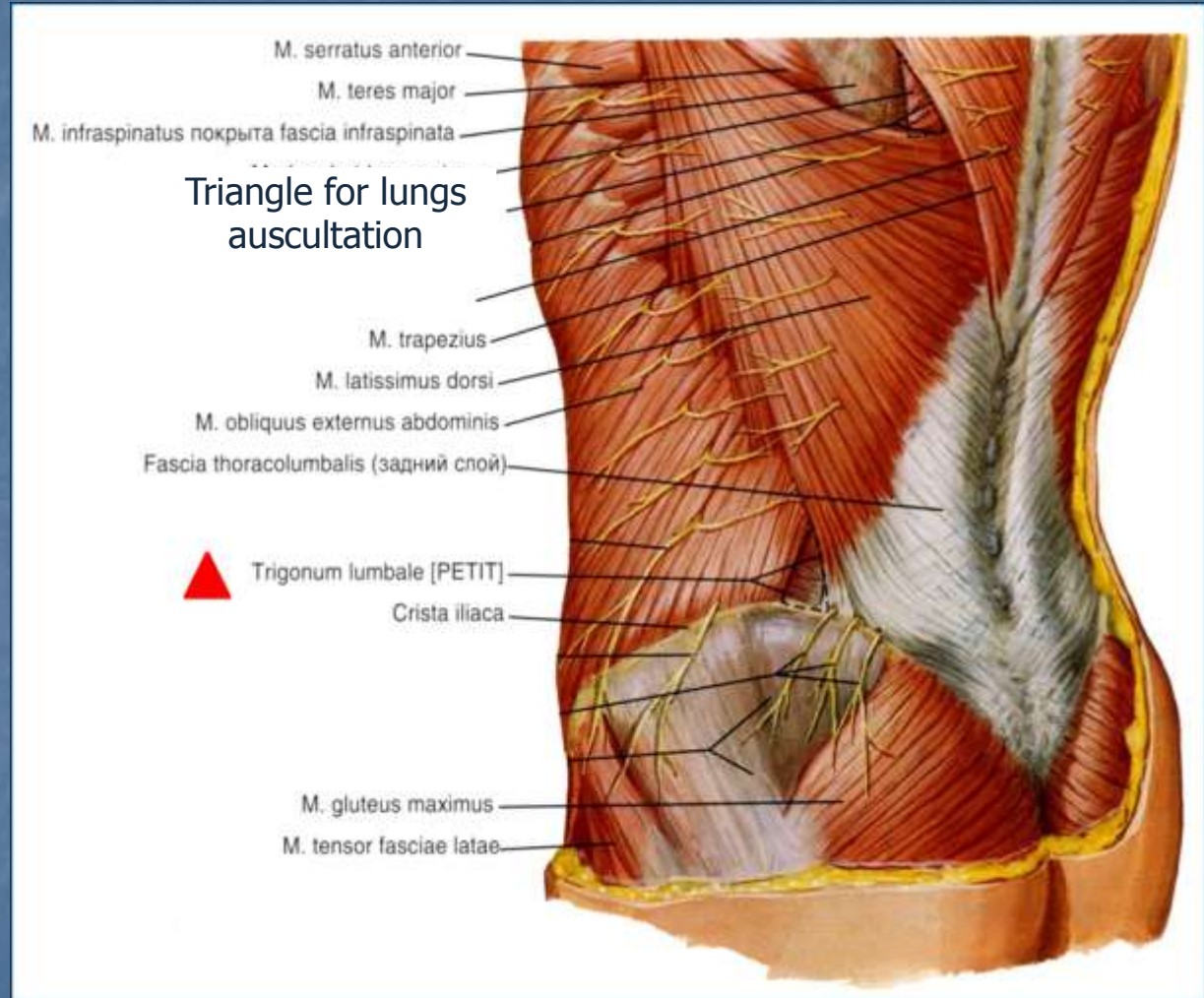
- **Inferior** – superior border of m.latissimus dorsi
- **Medial** – inferior border of m.trapezius
- **Lateral** – posterior border of m.infraspinatus



Triangles of back

Trigonum lumbale (Petit trigonum)

- **Inferior** – crista iliaca
- **Medial** – anterior border of m. latissimus dorsi
- **Lateral** – posterior border of m. obliquus externus abdominis

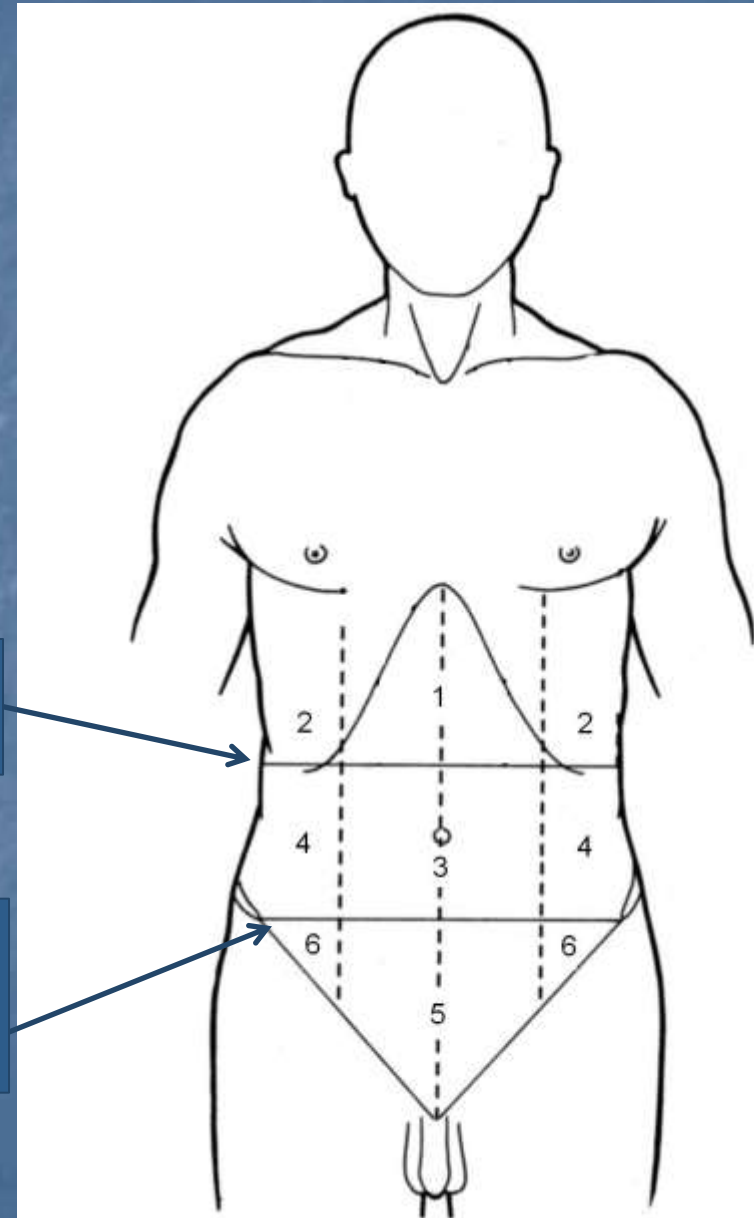


Regions of the abdomen

- epigastrium
- mesogastrium
- hypogastrium

Linea bicostarum
(X costae)

Linea bispinarum
(spina iliaca
anterior superior)

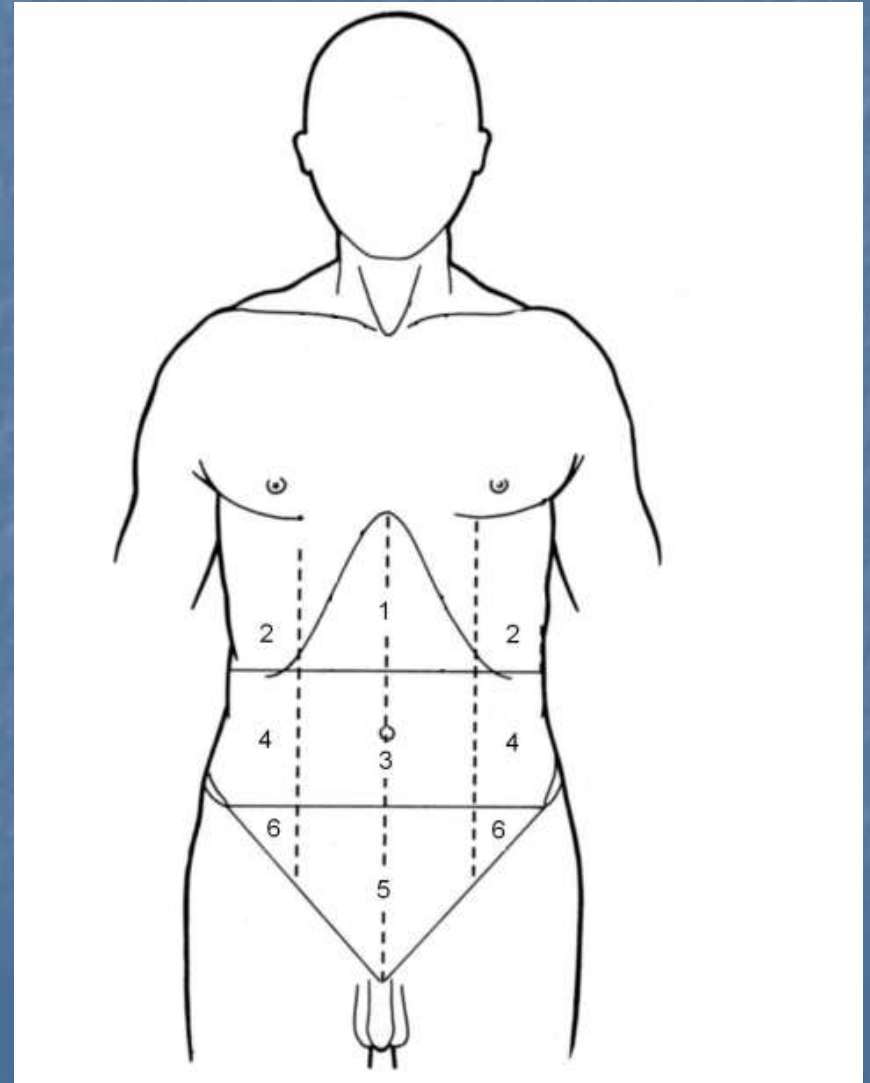


Epigastrium

- right hypochondric
- left hypochondric
- epigastric

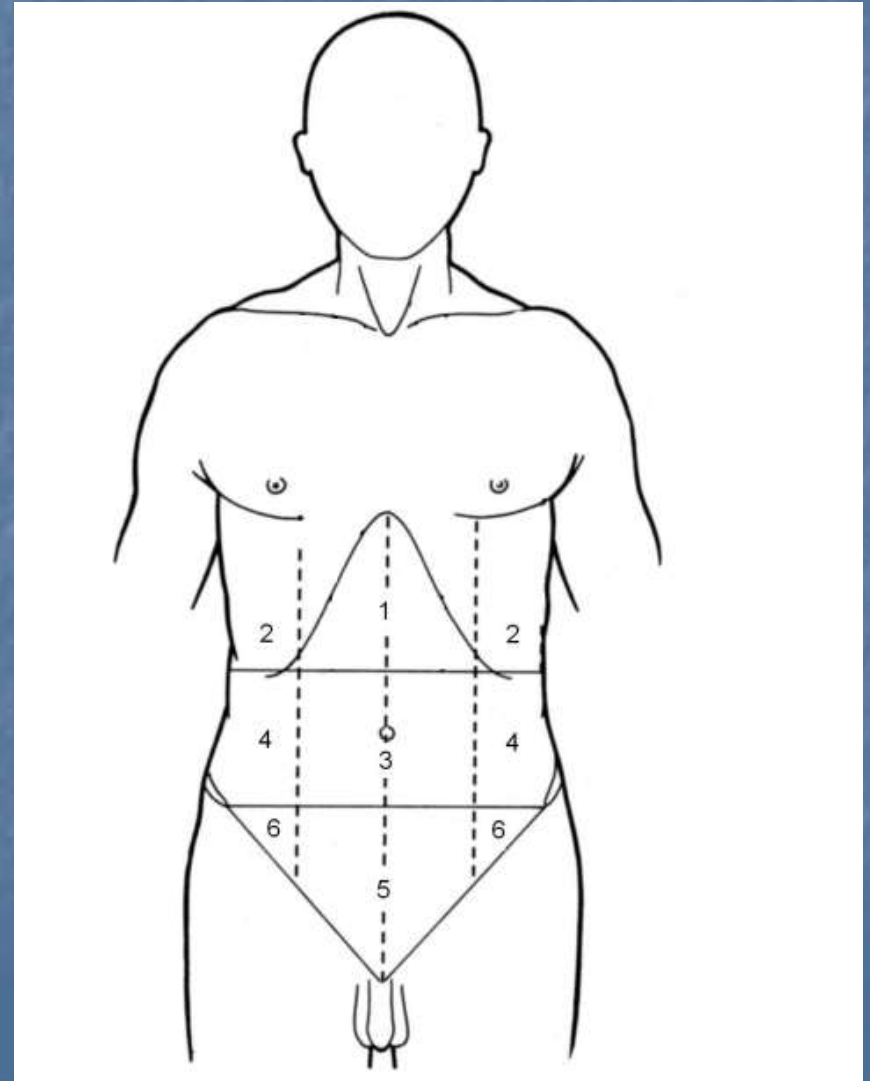
Vertical lines:

- midclavicular line (mammary line)
- correspond to the lateral borders of m.rectus abdominis



Mesogastrium

- umbilical
- right lateral
- left lateral



Hypogastrium

- pubic
- right inguinal
- left inguinal

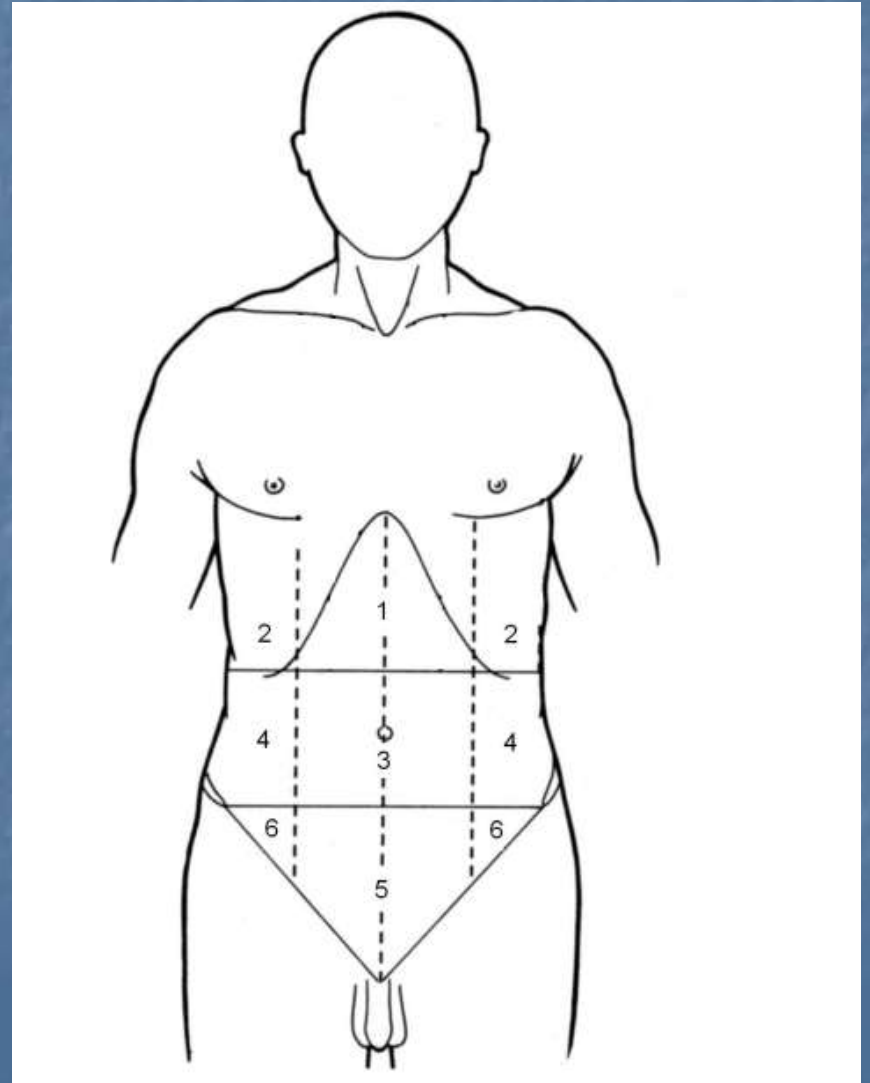
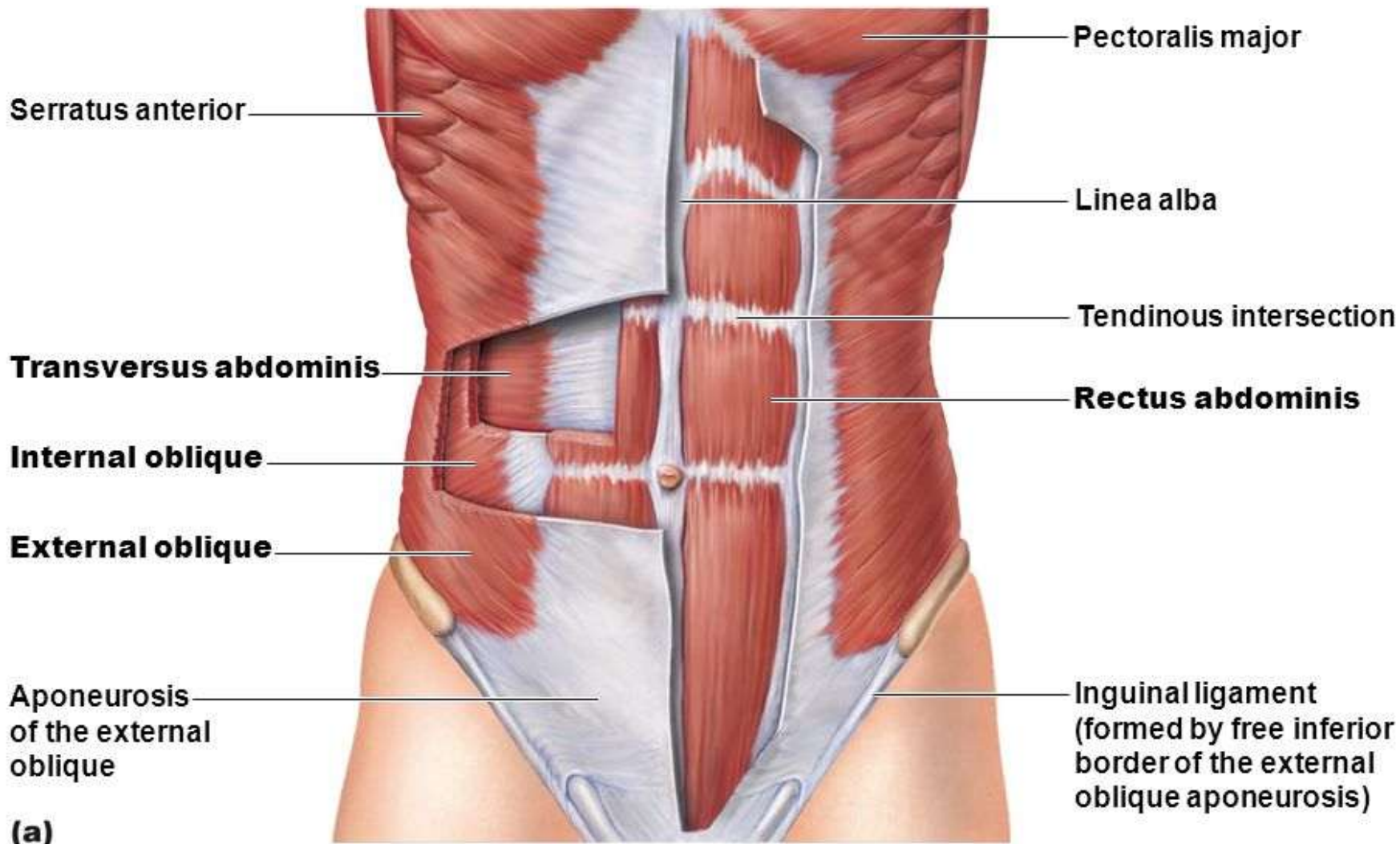
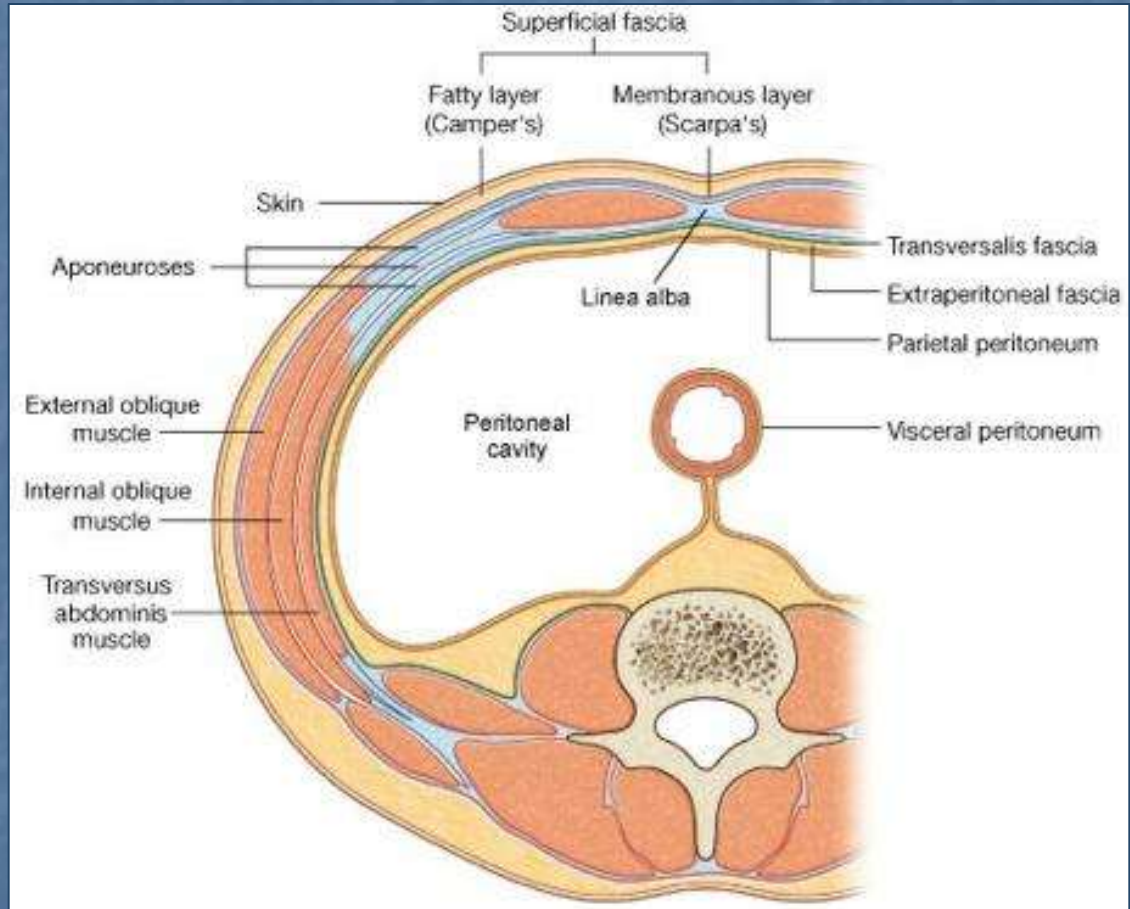


Figure 10.12a Muscles of the abdominal wall.



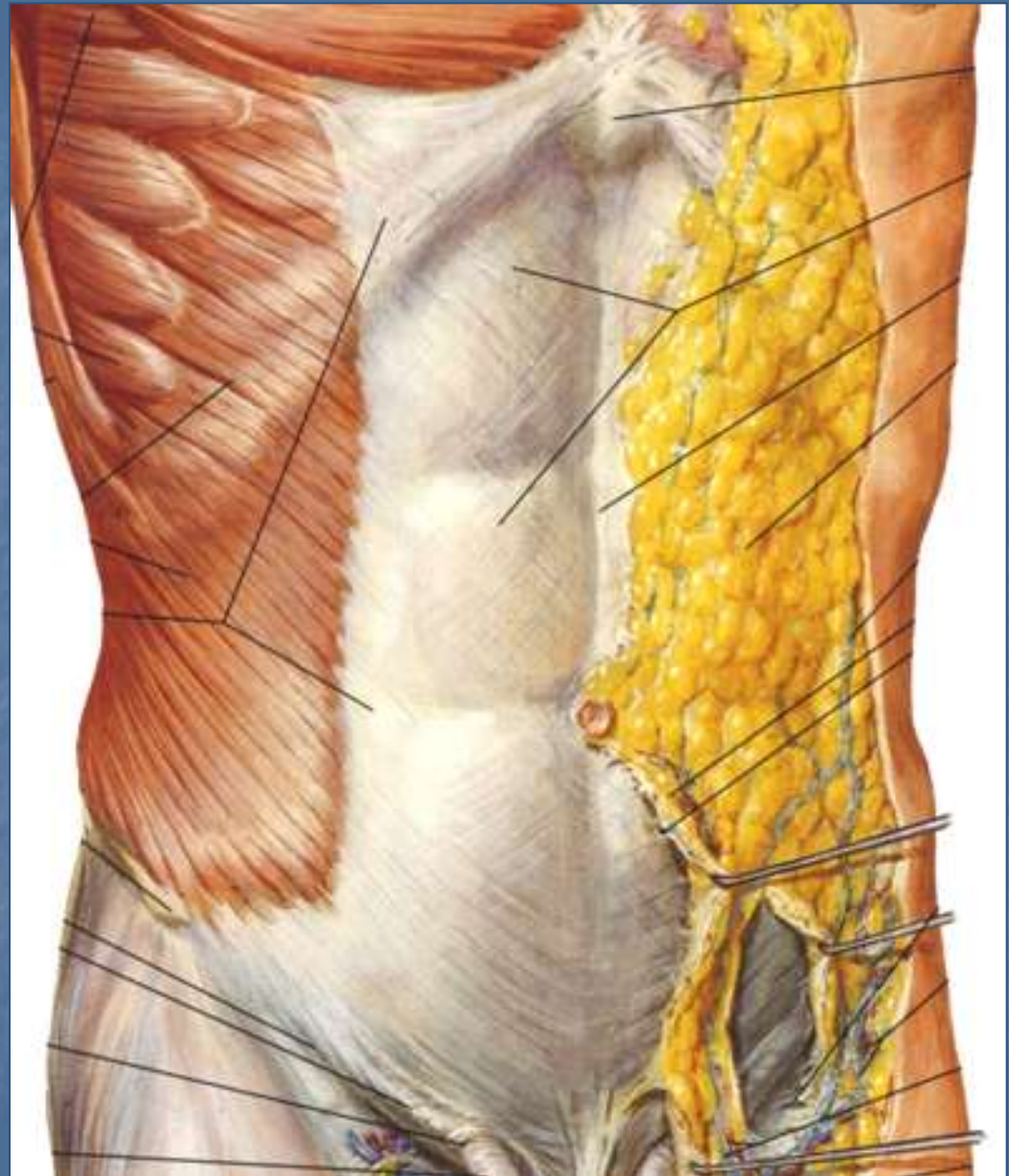
Fasciae of abdomen

- Fascia superficialis
- Fascia propria
(covers muscular part of m. obliquus externus abdominis and fuses with aponeurosis of this muscle)
- Fascia transversalis

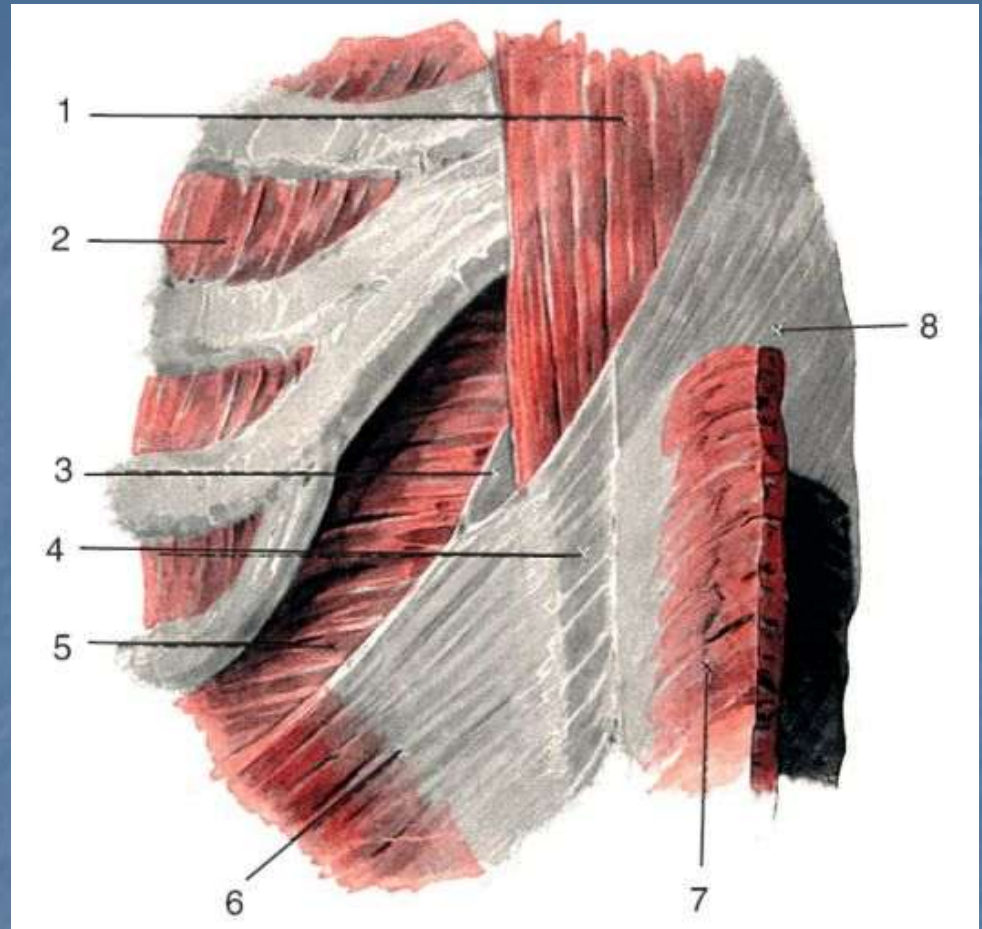


Rectal sheath

- It is formed by aponeuroses of wide muscles of abdomen and transverse fascia
- Its structure is different in upper and lower parts of the abdomen

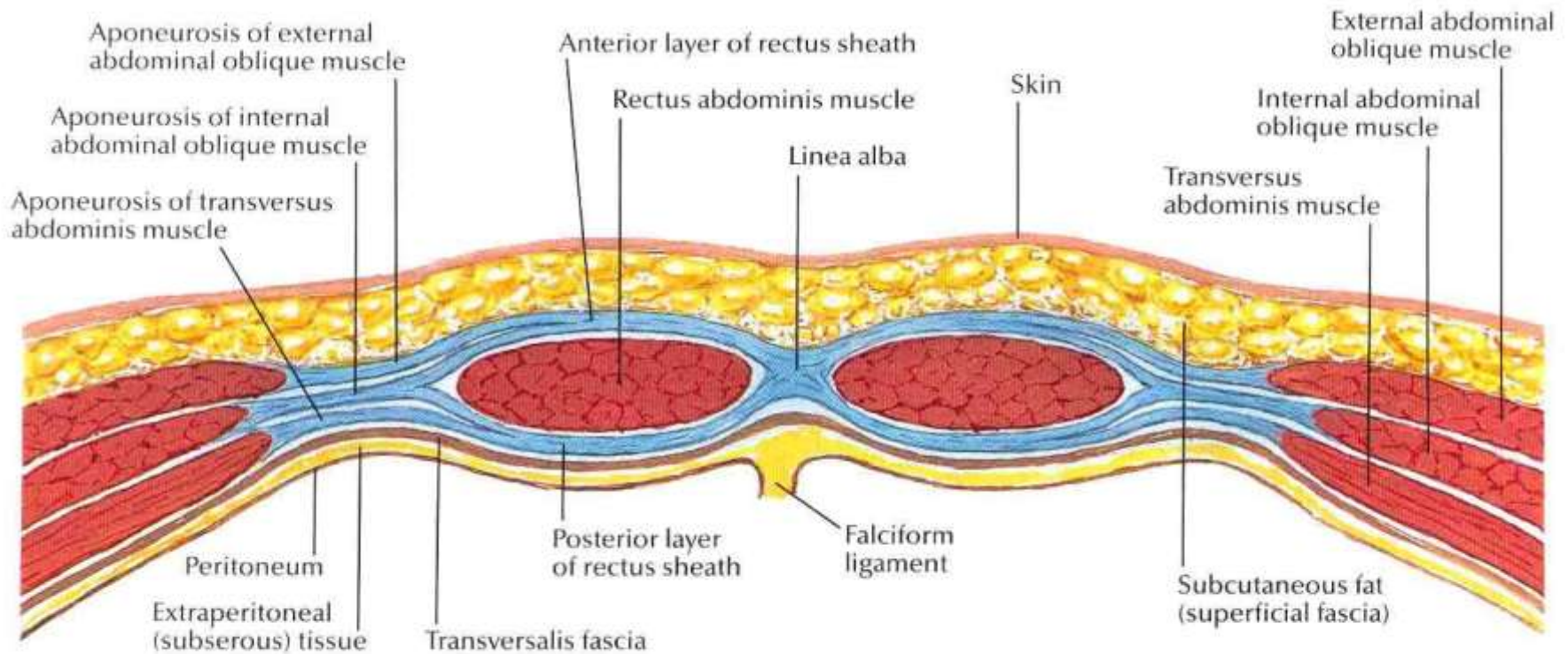


Split of the aponeurosis of m.obliquus internus abdominis to 2 layers (anterior and posterior) with further formation of the sheath of m.rectus abdominis



1 - m. rectus abdominis; 2 - mm. intercostales; 3 – posterior layer of aponeurosis of m. obliquus internus abdominis; 4 – anterior layer of aponeurosis of m. obliquus internus abdominis; 5 - m. transversus abdominis; 6 - m. obliquus internus abdominis; 7 - m. obliquus externus abdominis; 8 – anterior plate of m.rectus abdominis sheath

Section above arcuate line



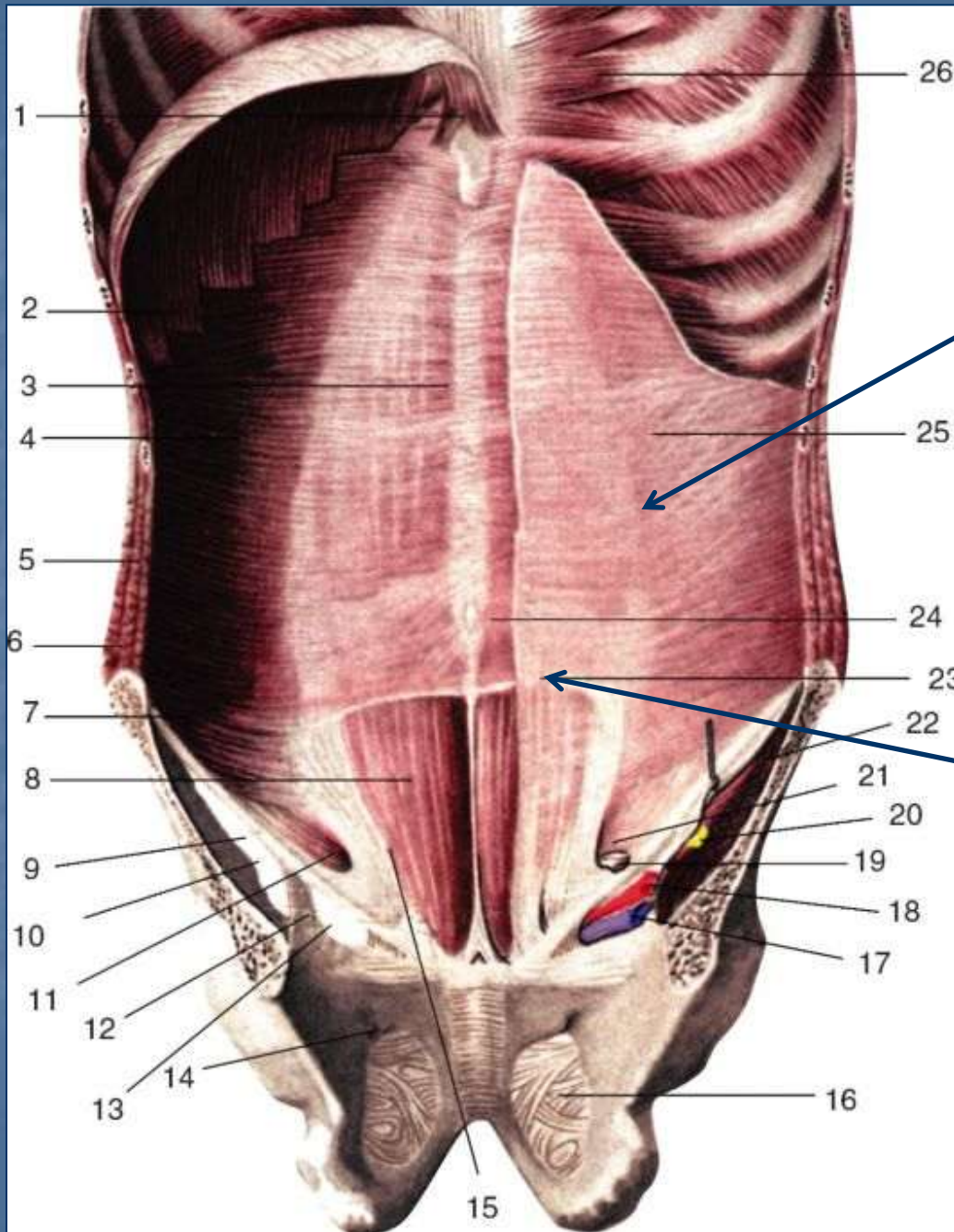
Aponeurosis of internal abdominal oblique muscle splits to form anterior and posterior layers of rectus sheath. Aponeurosis of external abdominal oblique muscle joins anterior layer of sheath; aponeurosis of transversus abdominis muscle joins posterior layer. Anterior and posterior layers of rectus sheath unite medially to form linea alba

Anterior wall

- Aponeurosis of m.obliquus abdominis externus
- 1/2 of aponeurosis of m.obliquus abdominis internus

Posterior wall

- 1/2 of aponeurosis of m.obliquus abdominis internus
- Aponeurosis of m.transversus abdominis
- Fascia transversalis

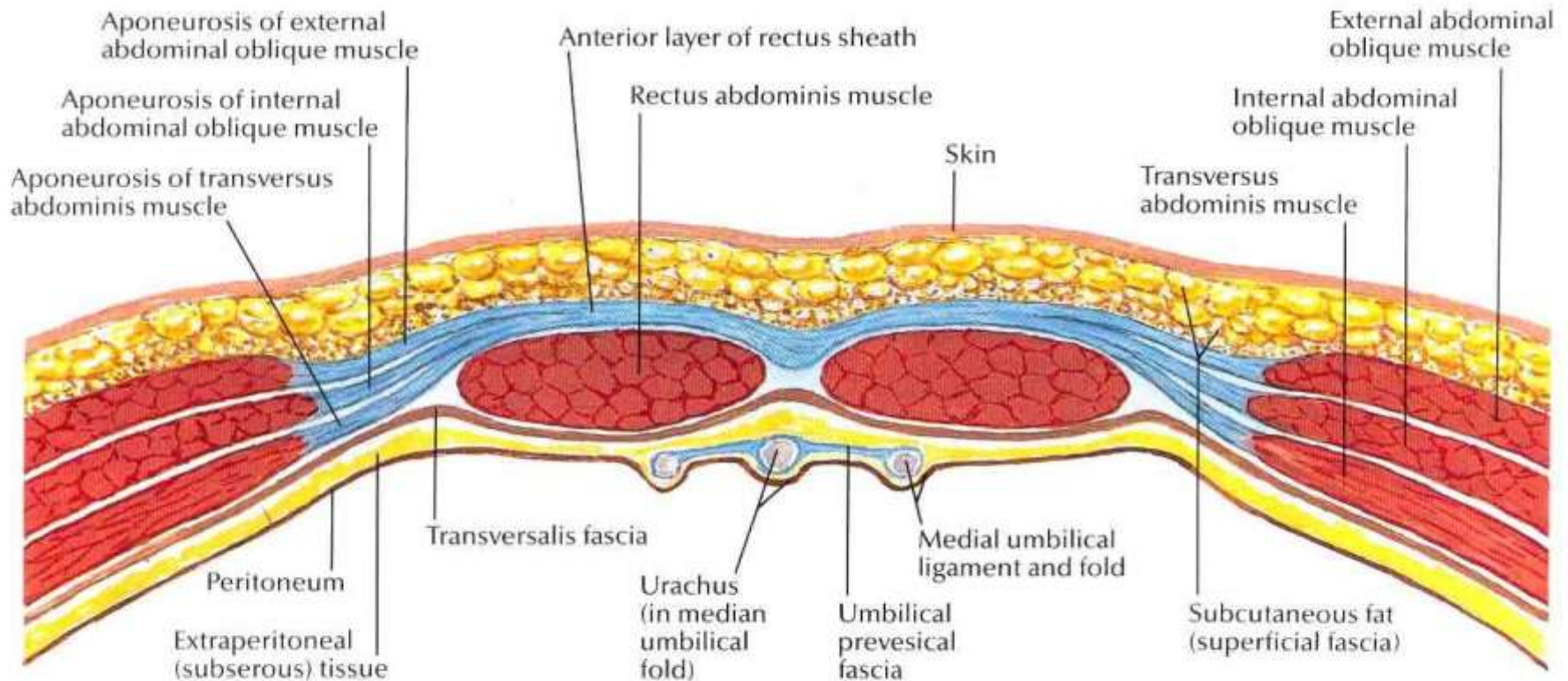


Linea semilunaris
(Spiegel line)
- border between
muscle fibers and
aponeurosis of
m.transversus
abdominis

Linea arcuata
(Douglas line)

Internal view on
anterior abdominal wall

Section below arcuate line



Aponeurosis of internal abdominal oblique muscle does not split at this level but passes completely anterior to rectus abdominis muscle and is fused there with both aponeurosis of external abdominal oblique muscle and that of transversus abdominis muscle. Thus posterior wall of rectus sheath is absent below arcuate line and rectus abdominis muscle lies on transversalis fascia

Anterior wall

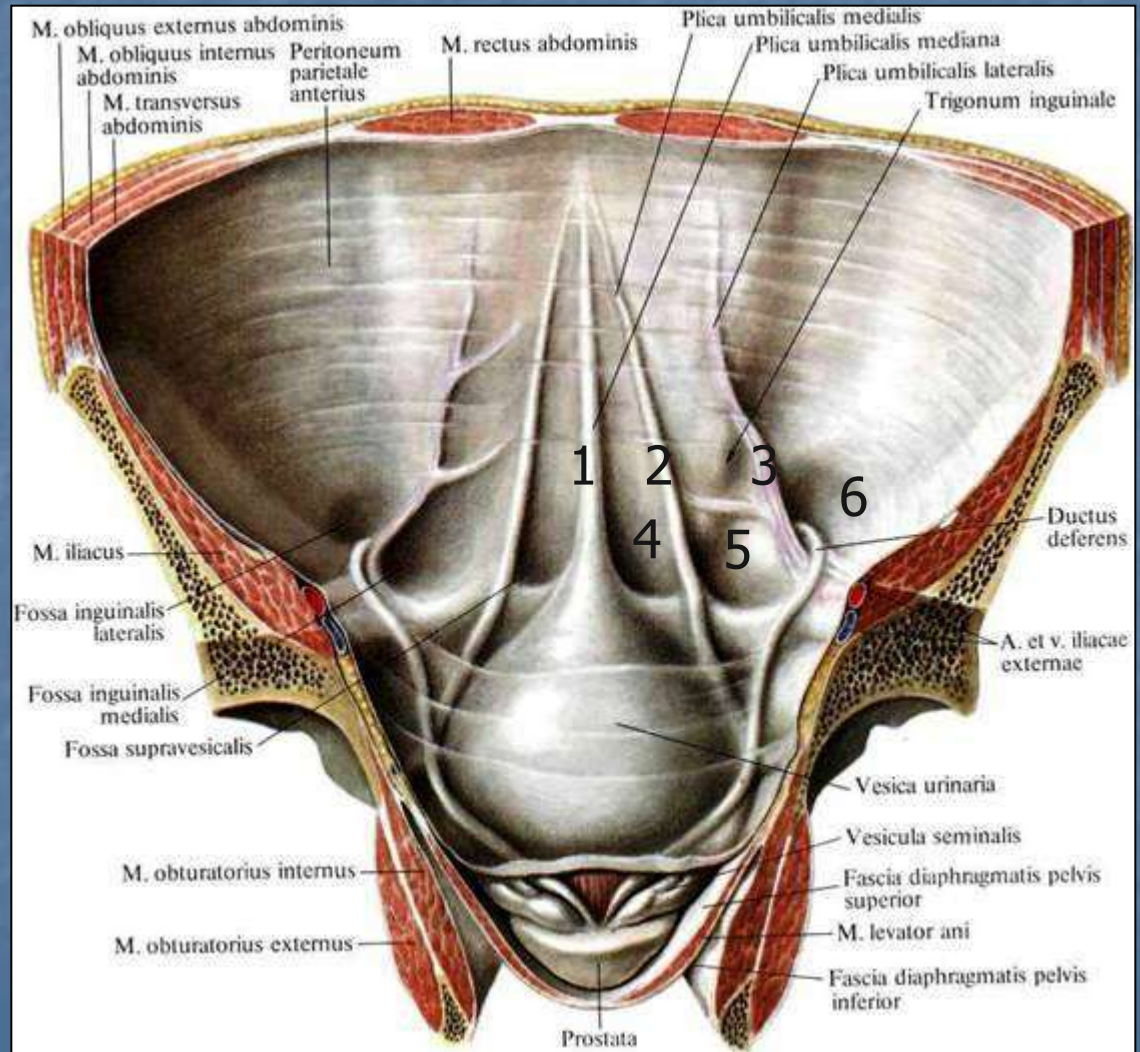
- Aponeuroses of all 3 muscles

Posterior wall

- Fascia transversalis

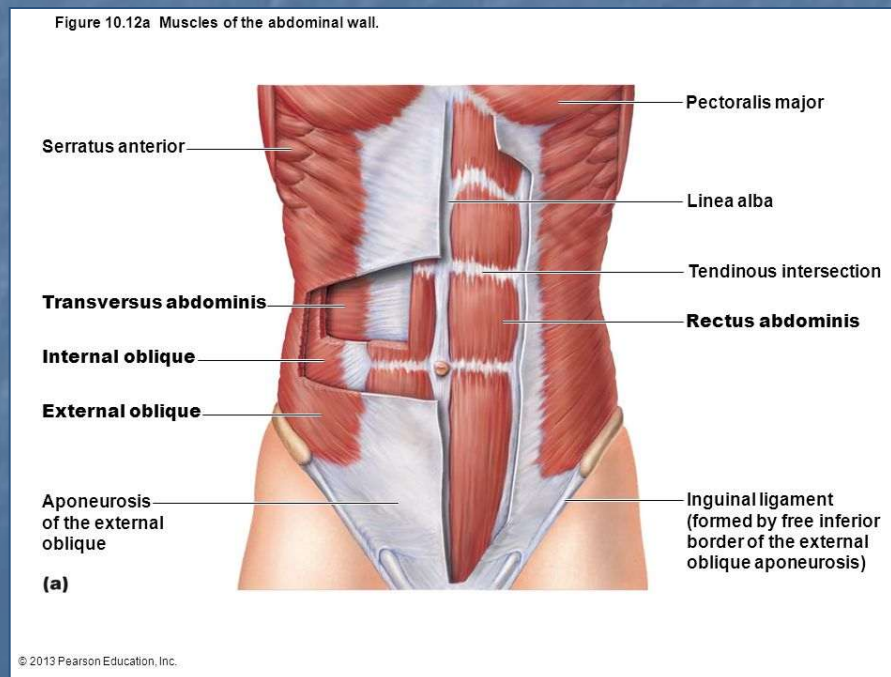
Internal surface, the lower part of the anterior abdominal wall

- 1 – plica umbilicalis mediana (obliterated urachus)
- 2 – plica umbilicalis medialis
- 3 – plica umbilicalis lateralis
- 4 – fossa supravescicalis
- 5 – fossa inguinalis medialis
- 6 – fossa inguinalis lateralis



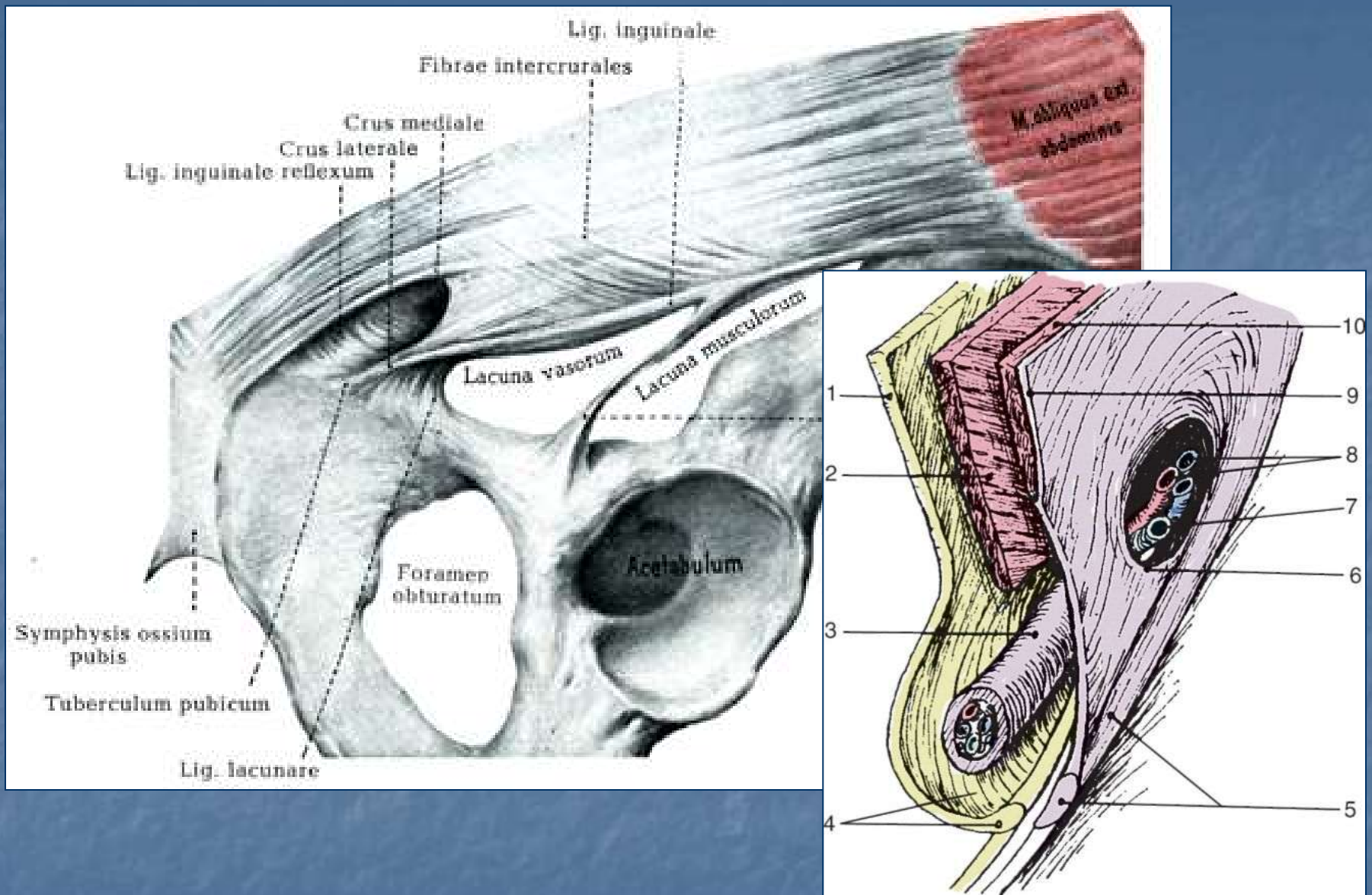
Linea alba abdominis

- tendinous raphe extending from xiphoid process to the symphysis pubis and pubic crest
- formed by interlacing of wide muscles of the abdomen
- it is used for laparotomy in surgery
- umbilical ring is usually bypassed at the left side during the surgery



Umbilical hernia

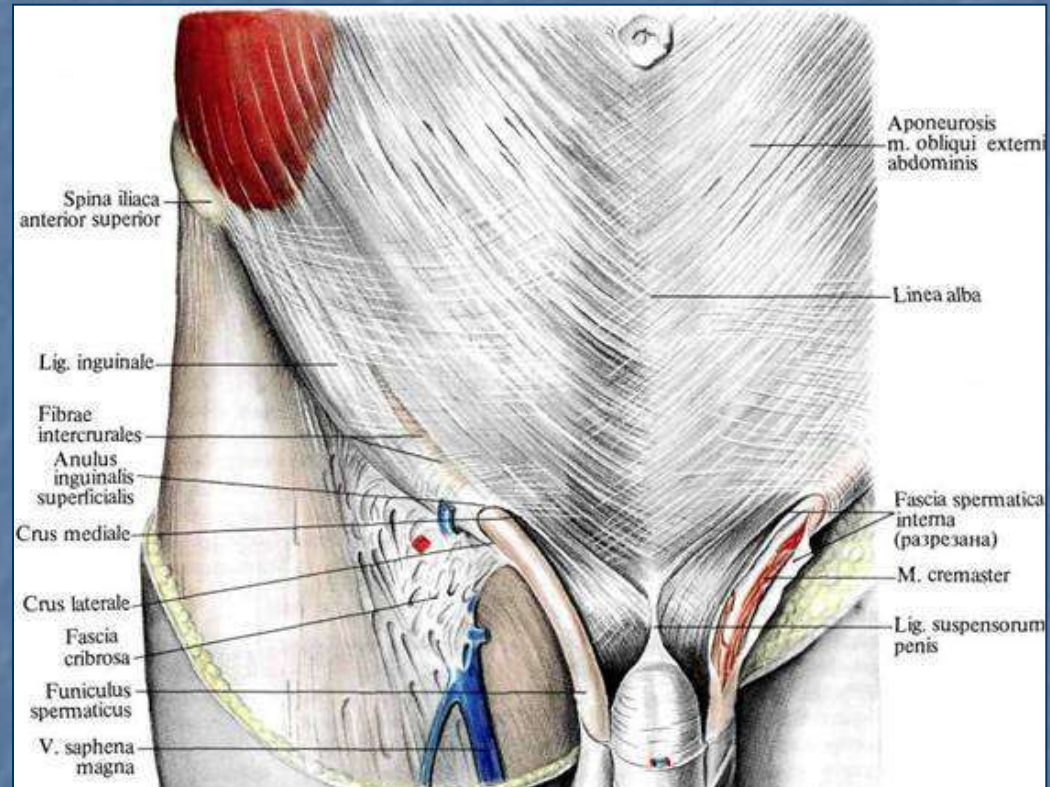


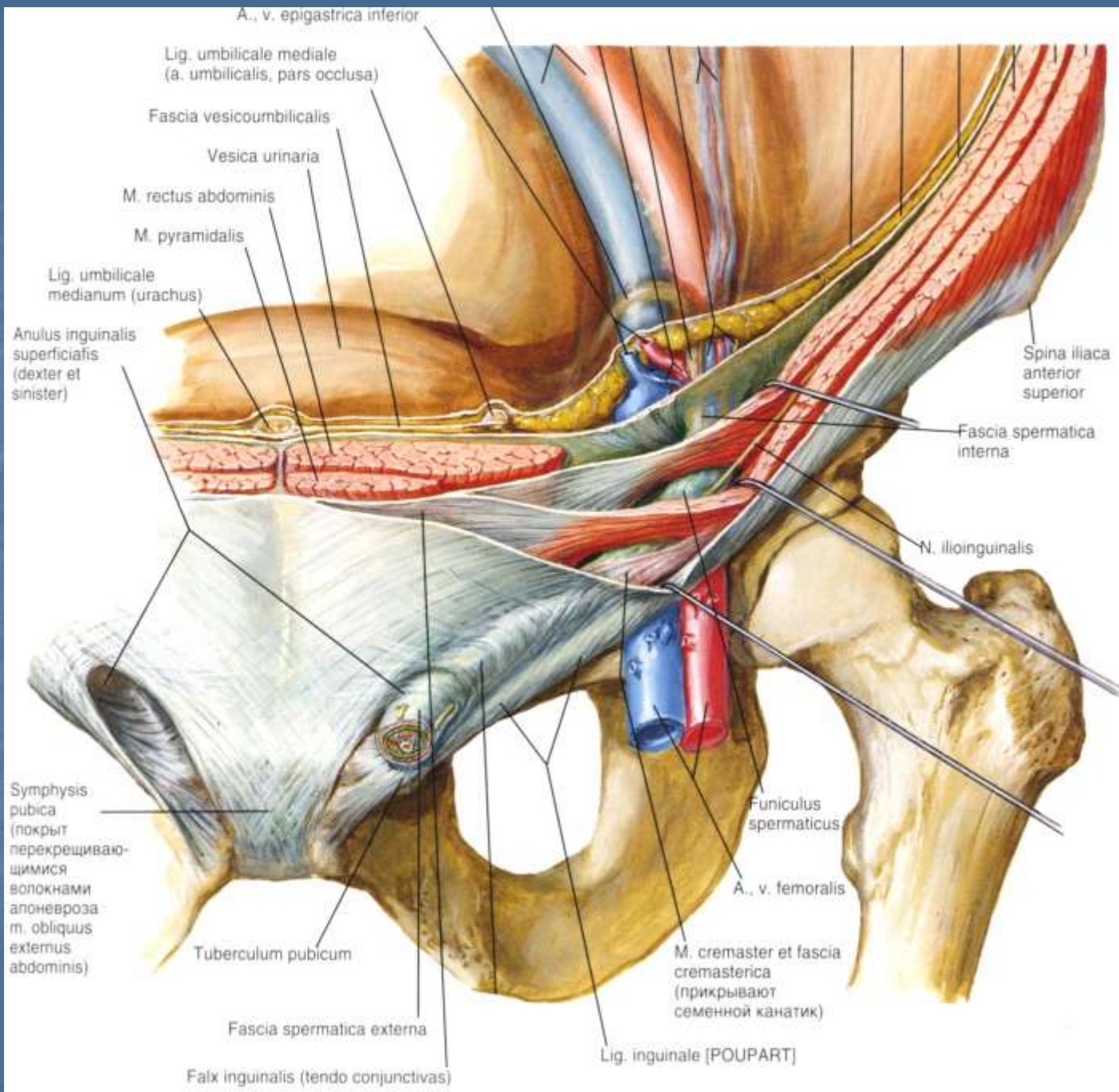


The inguinal ligament (Poupart ligament) is formed by the margin of the aponeurosis of m.obliquus externus abdominis between the superior iliac spine and the pubic tubercle.

Inguinal canal

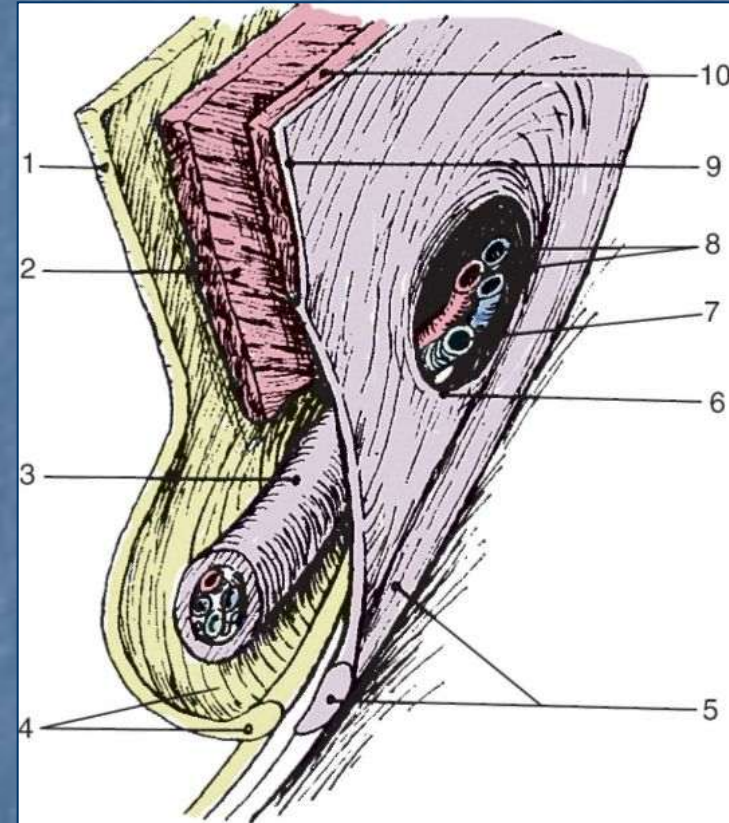
- It is located above medial half of inguinal ligament
- It has 4 walls and 2 openings (apertures)
- Contains round ligament of uterus (ligamentum teres) or spermatic cord (funiculus spermaticus)





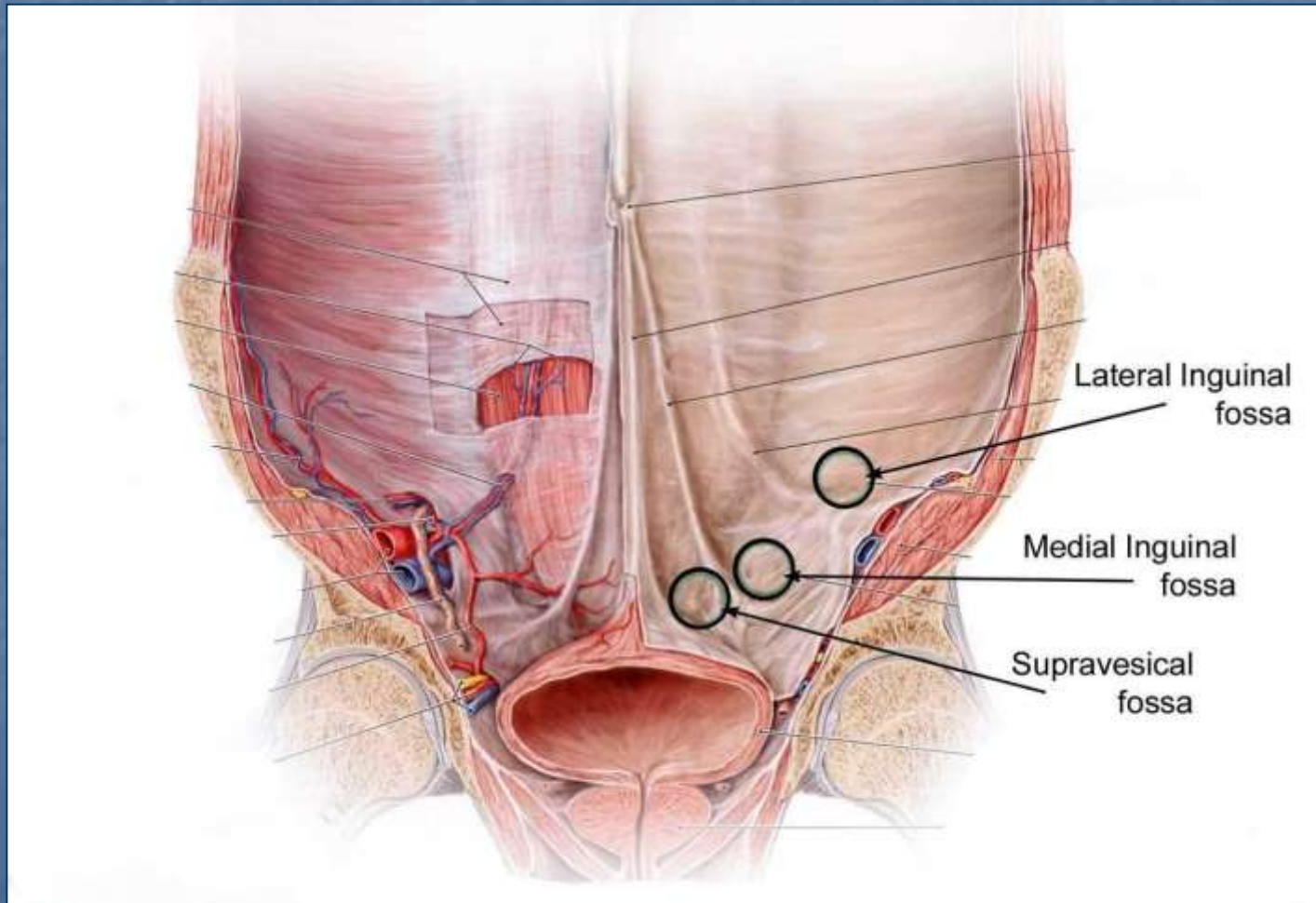
Walls of inguinal canal

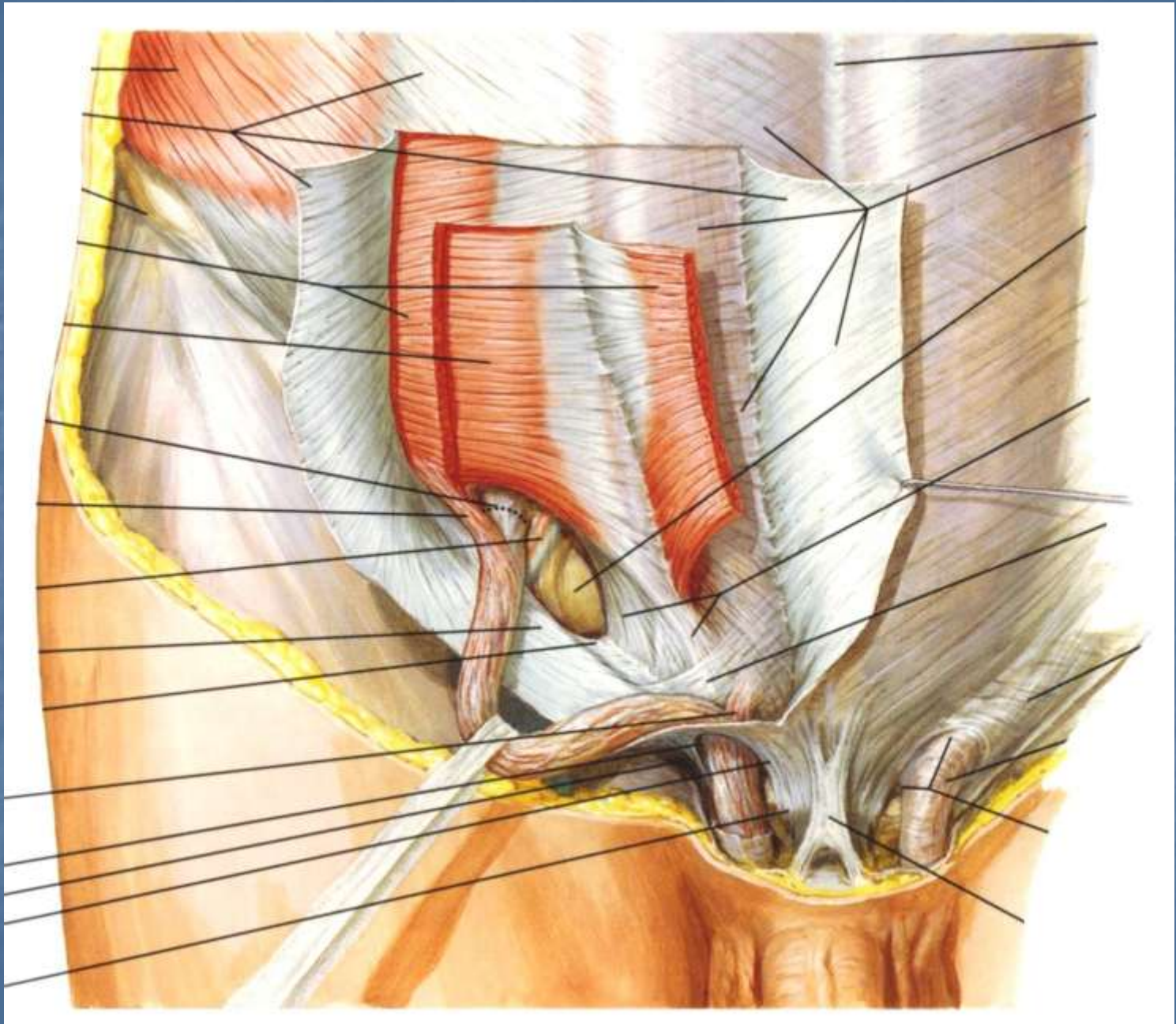
- **Anterior** – aponeurosis of m.obliquus abdominis externus (1)
- **Inferior** – lig.inguinale (4)
- **Superior** – borders of m.obliquus abdominis internus (10) and m.transversus abdominis (2)
- **Posterior** – fascia transversalis (9)



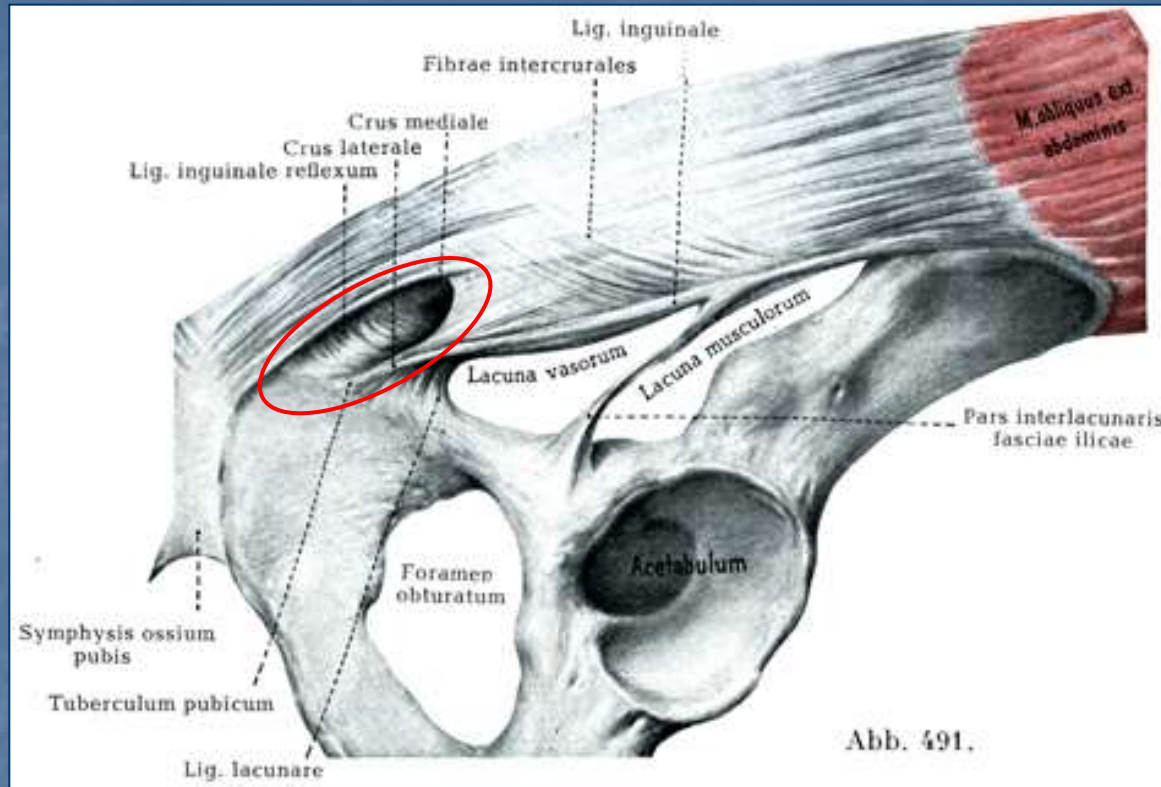
Deep ring

- Depression of transverse fascia (corresponds to fossa inguinalis lateralis)

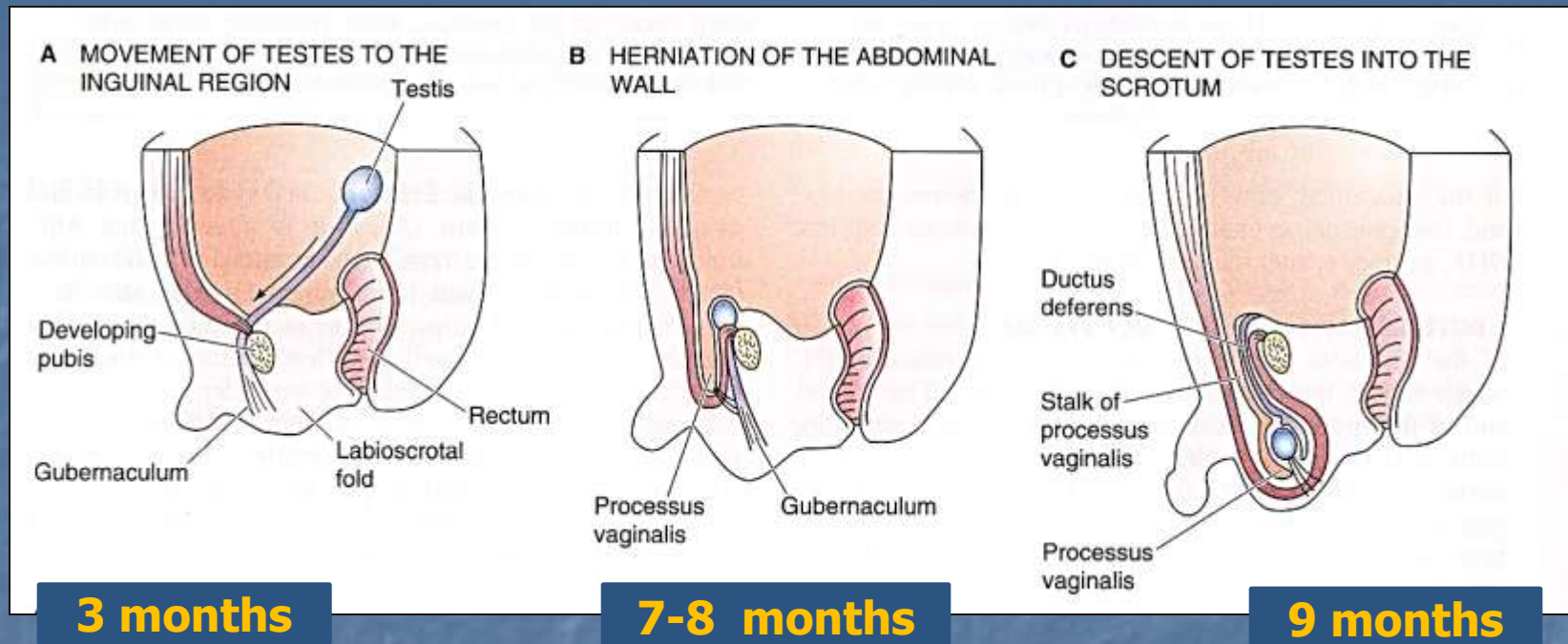




Superficial ring (4 walls)

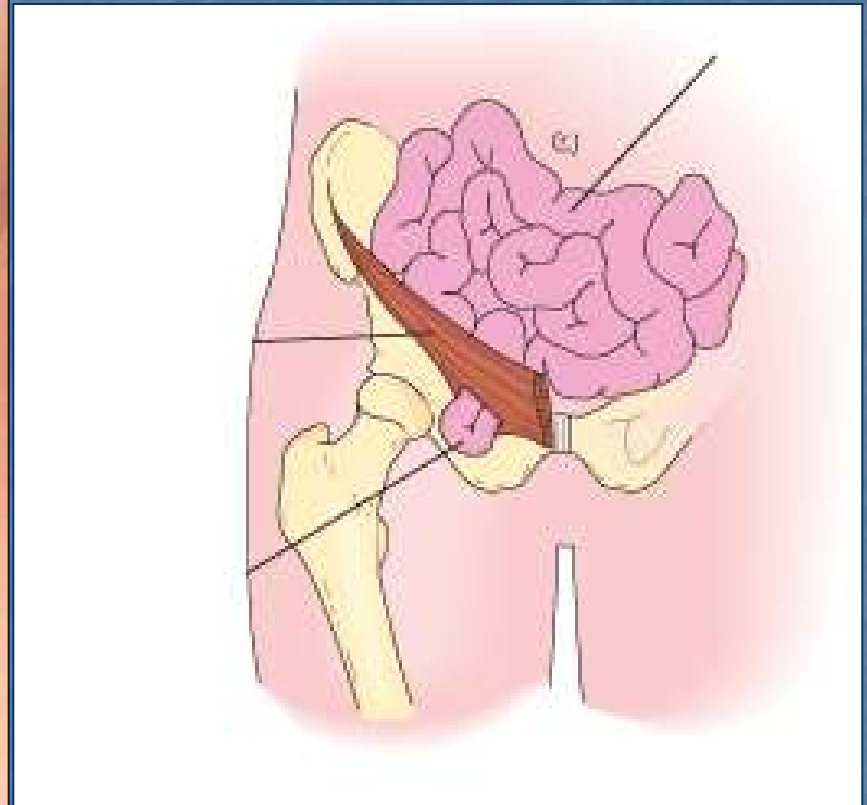
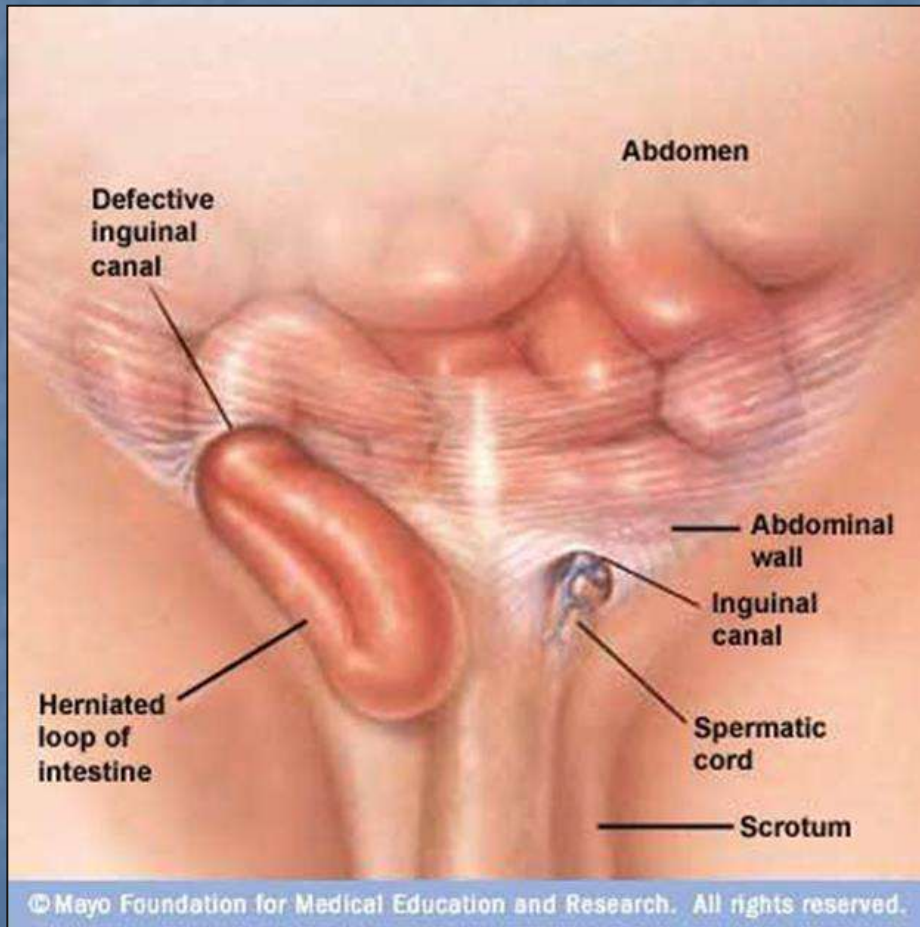


- **Superior** – crus mediale of lig.inguinale
- **Inferior** – crus lateral of lig.inguinale
- **Lateral** – fibrae intercrurales
- **Medial** – lig.reflexum

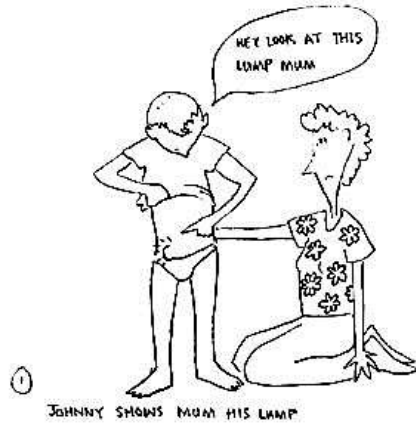


- The testis develops as part of the urogenital ridge on the posterior body wall inside the abdominal cavity.
- The testis is attached to the scrotum by a band of connective tissue – **gubernaculum testis**.
- 3rd month – start to descend with concomitant shortening of the gubernaculum.
- The scrotum is merely an outpocketing of the body wall.

Inguinal hernia



"HEY LOOK, I'VE GOT A HERNIA..." SAID JOHNNY

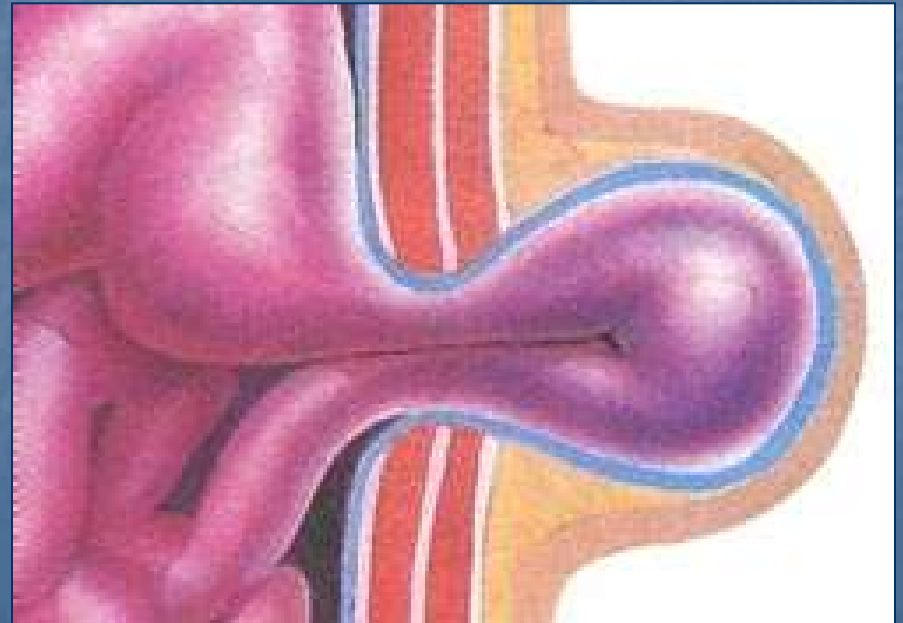


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Consultant General and Vascular Surgeon

www.surgerysouthwest.co.uk

Weak places of the abdominal wall

1. White line
2. Umbilical ring
3. Inguinal canal
4. Triangles (sternocostal and lumbocostal), hiatuses of diaphragm
5. Lumbar triangle



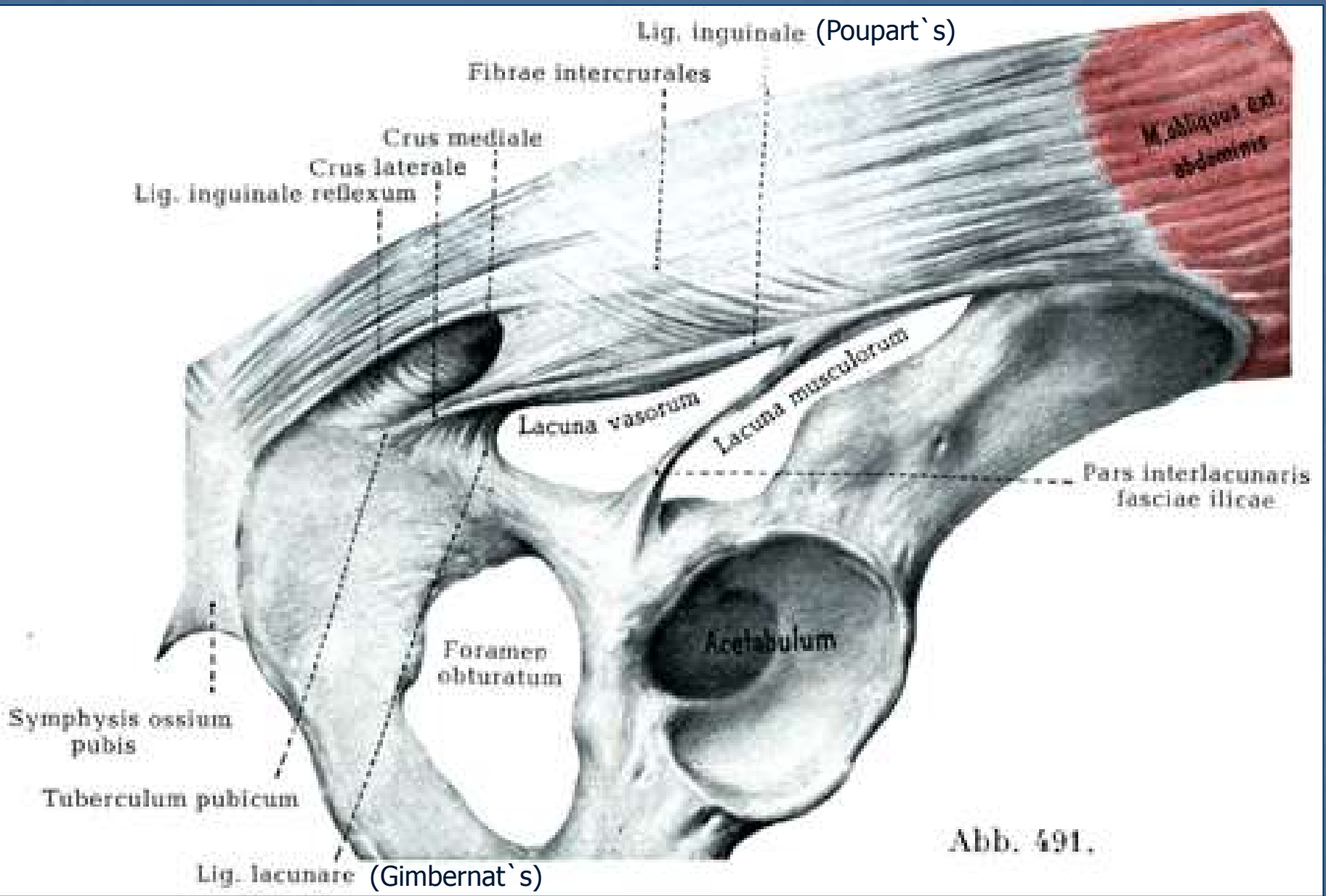
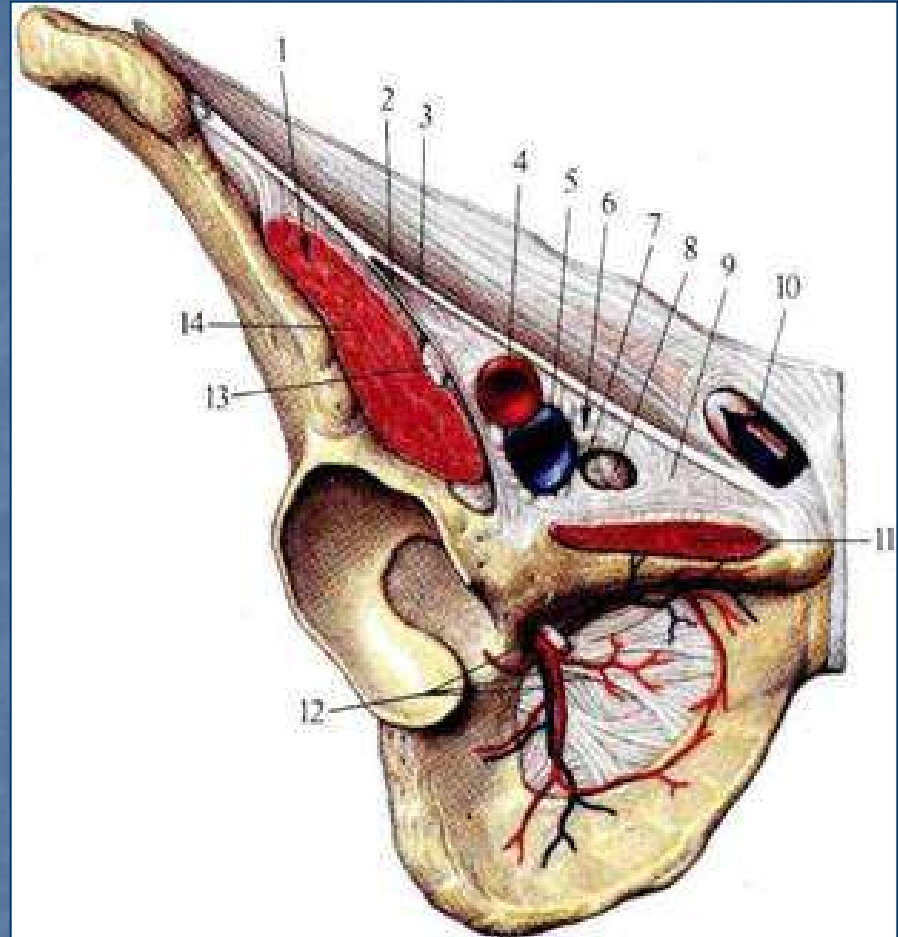


Abb. 491.

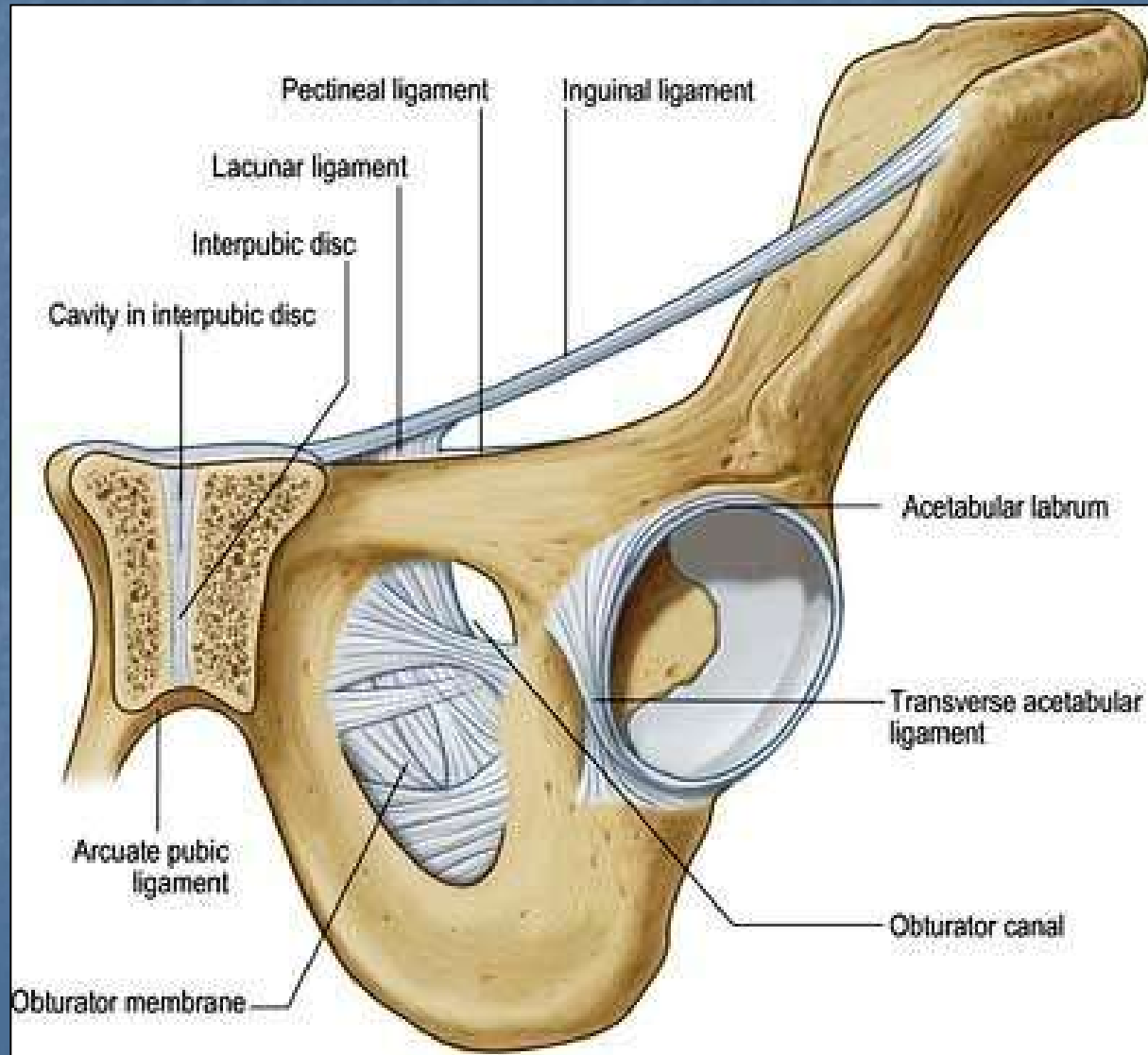
Lacuna musculorum

- located laterally
- m. iliopsoas and n. femoralis pass through it

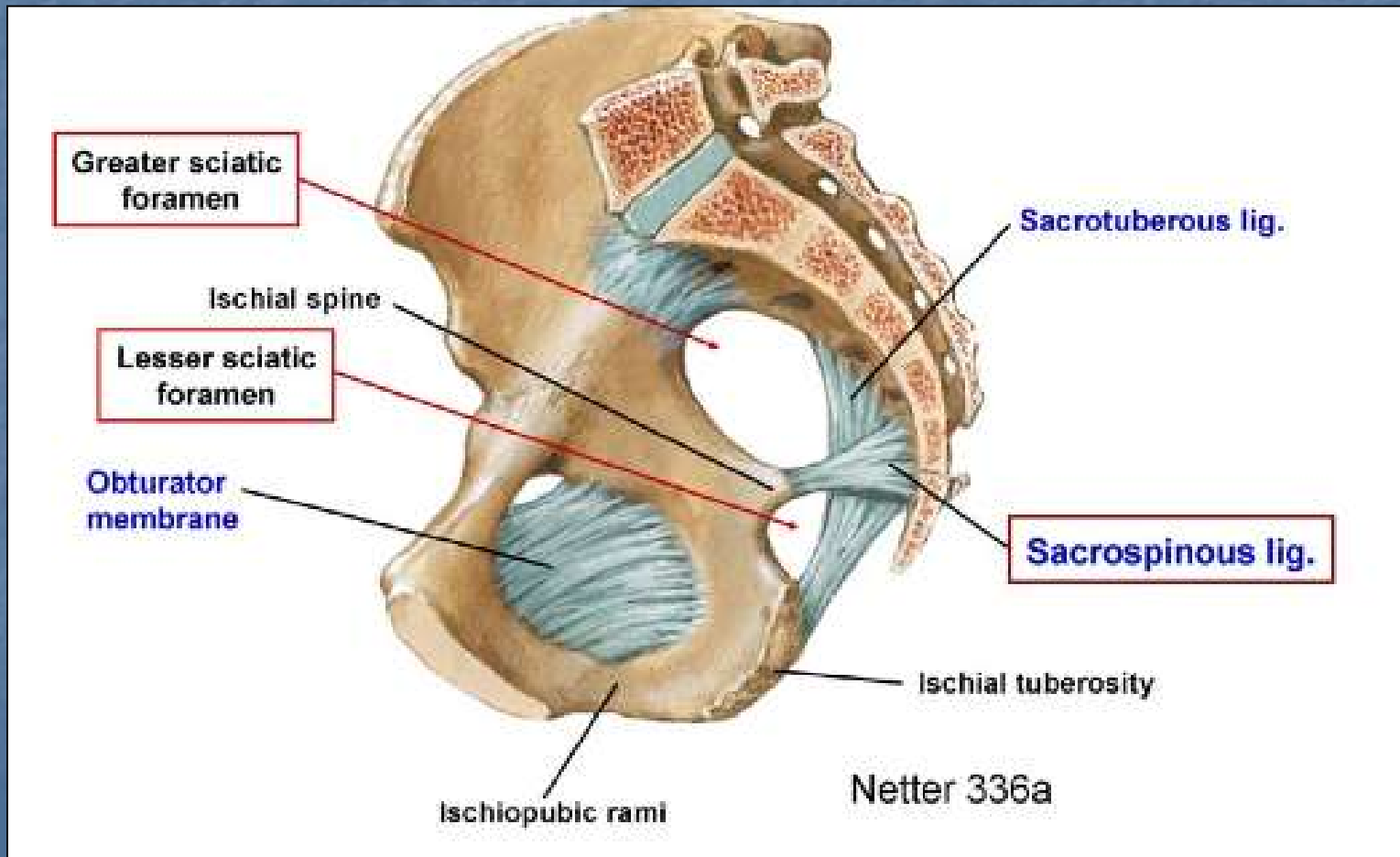


1 – lacuna musculorum; 2 – arcus ilipectineus; 3 – lig. inguinale; 4 – a. femoralis; 5 – v. femoralis; 6 – lacuna vasorum; 7 – anulus femoralis; 8 – deep inguinal lymphatic nodule; 9 – lig. Lacunare; 10 – funiculus spermaticus; 11 – m. pectineus; 12 – n., a. et v. obturatoriae; 13 – n. femoralis; 14 – m. iliopsoas

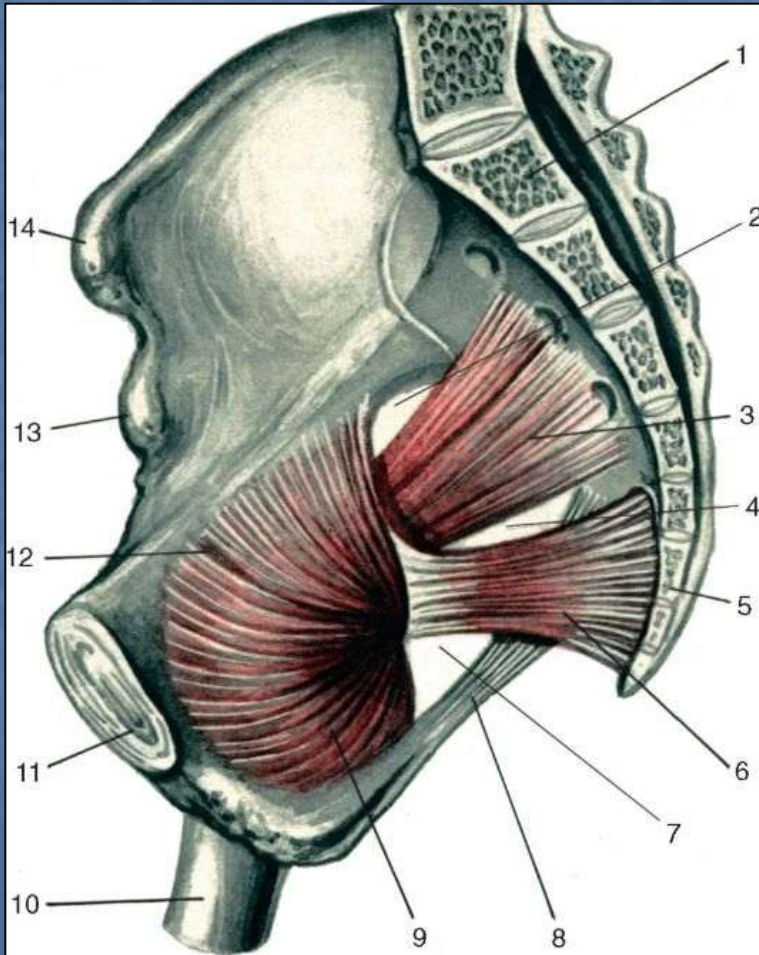
Obturator canal



Foramina ischiadica minor et major



Foramen suprapiriforme et foramen infrapiriforme

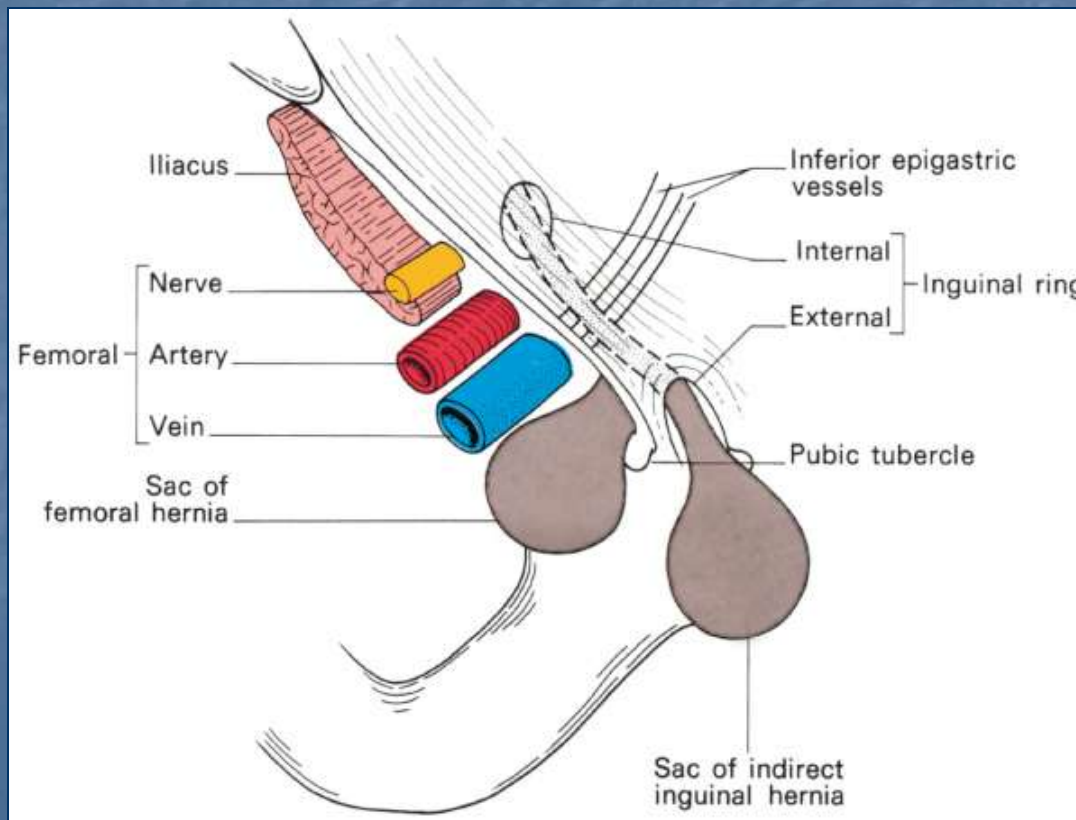


Greater sciatic foramen is divided by piriform muscle (3) into:

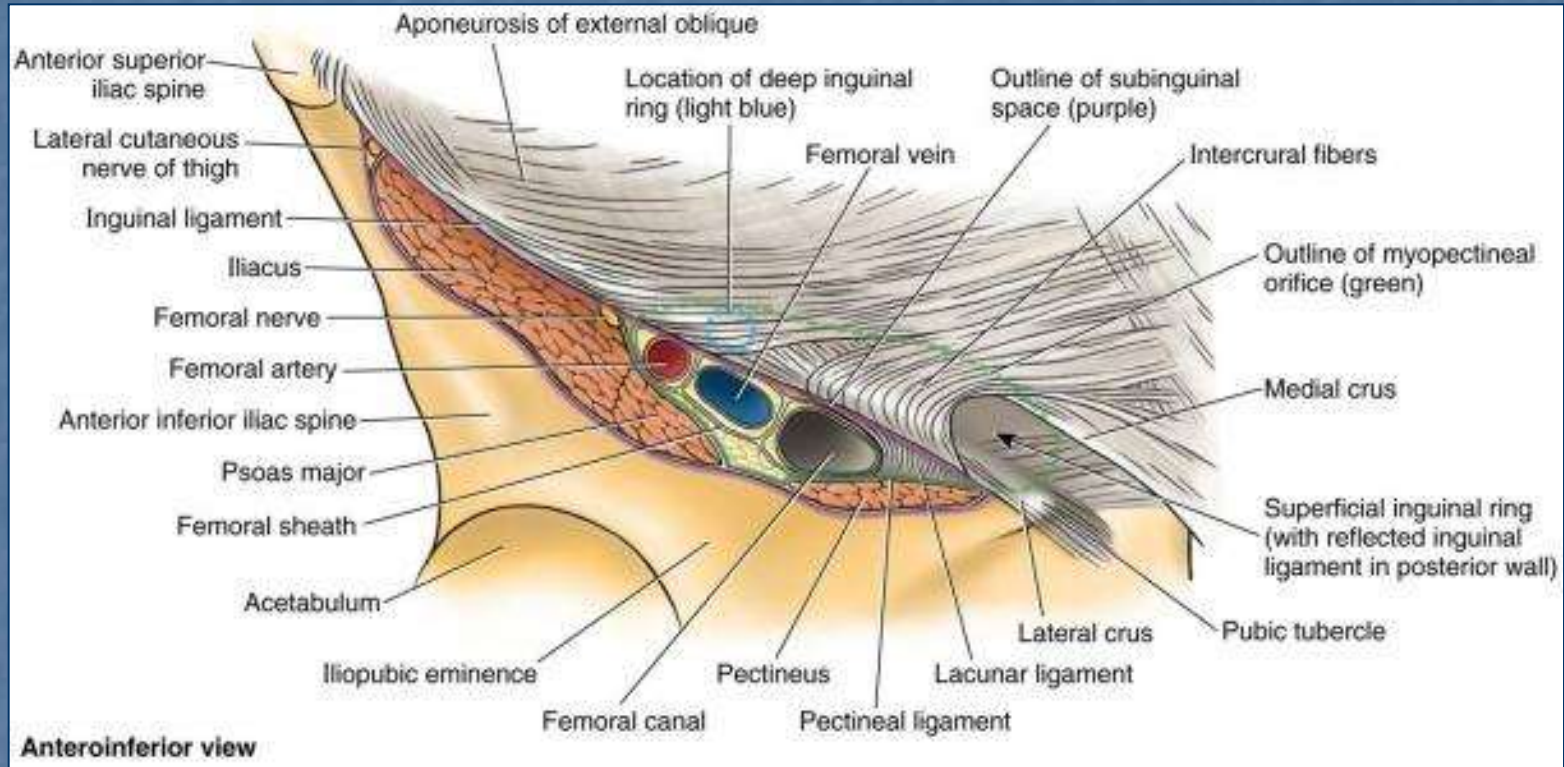
- foramen suprapiriforme (2)
- foramen infrapiriforme (4)

Femoral canal

- Appears only in case of femoral herniation
- It is located below the inguinal ligament
- It has 3 walls and 2 openings



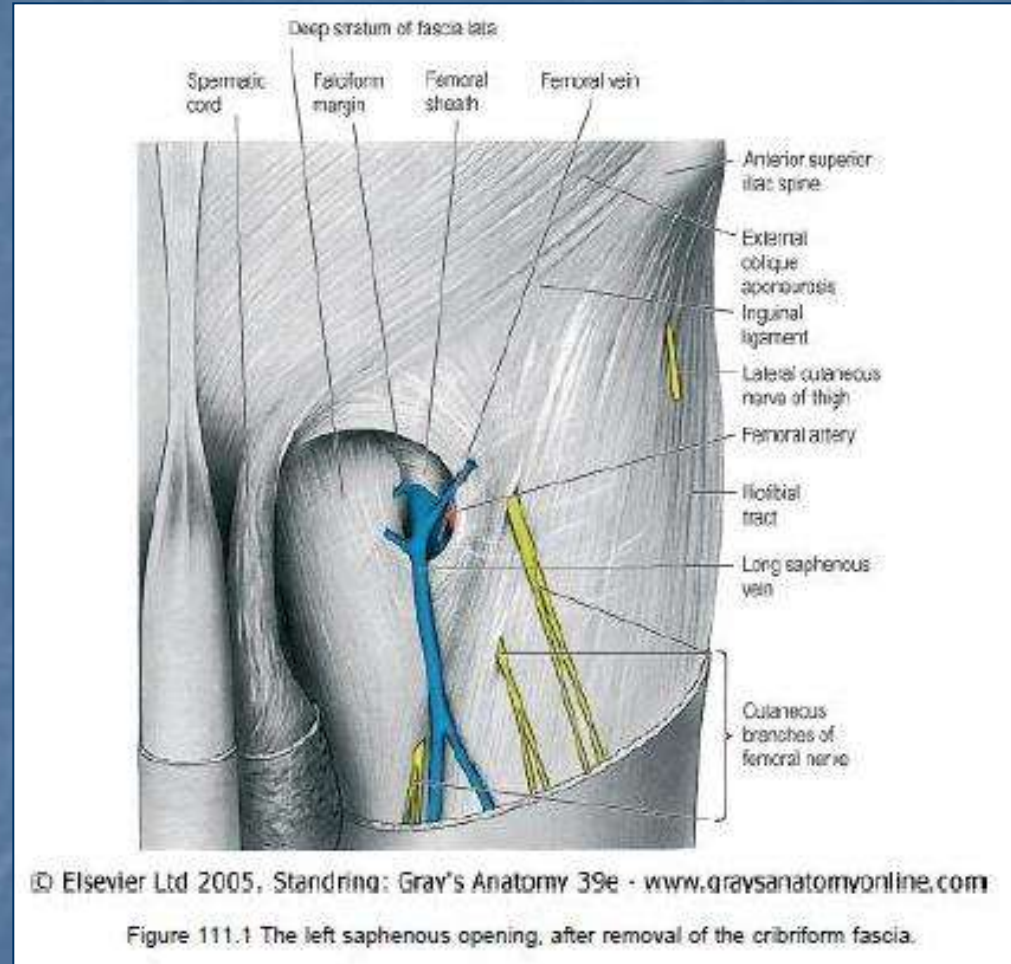
Deep (femoral) ring is bordered by:



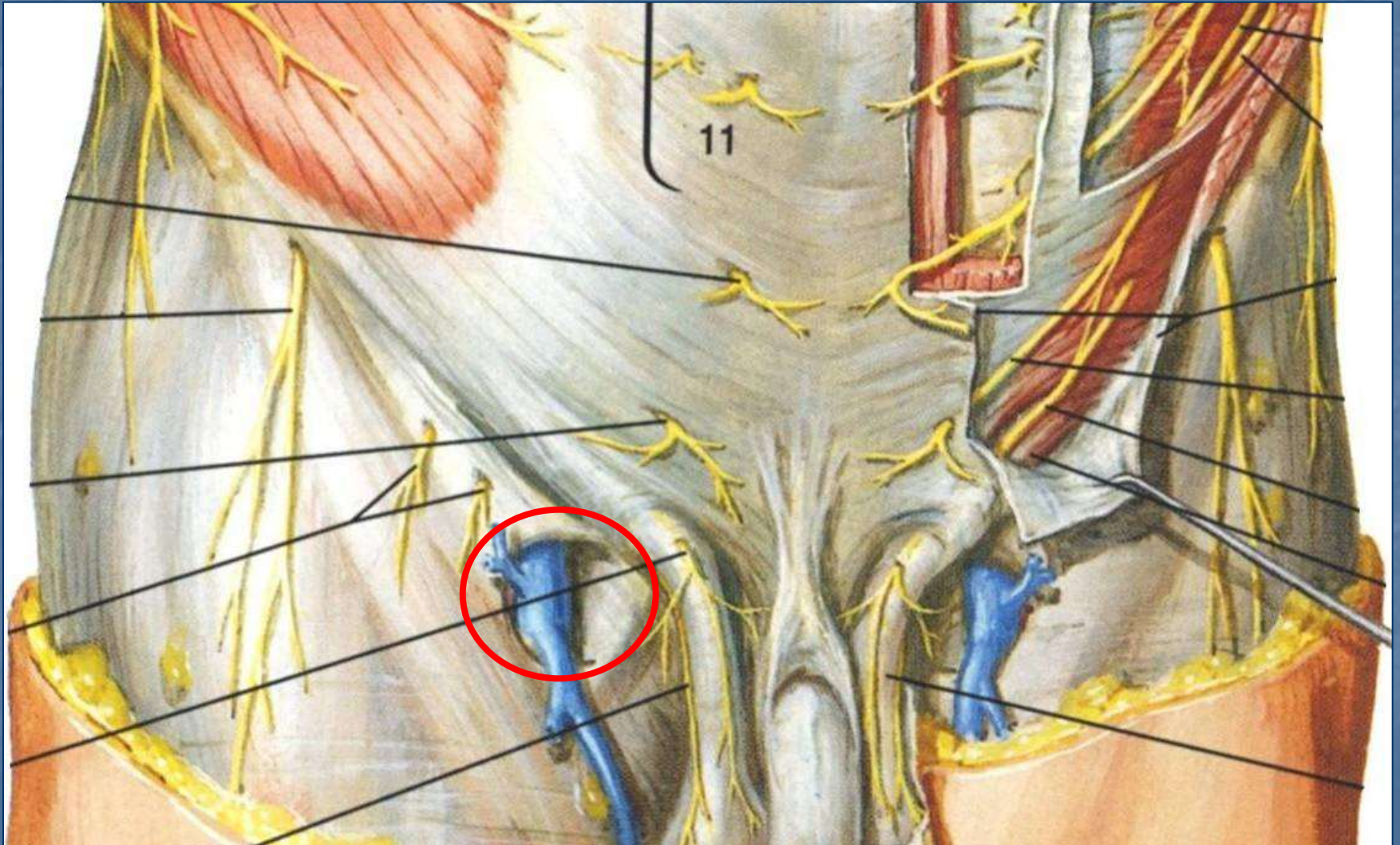
- anteriorly – lig.inguinale
- posteriorly – pectineal ligament
- laterally – vena femoralis
- medially – lig.lacunare

Walls of femoral canal

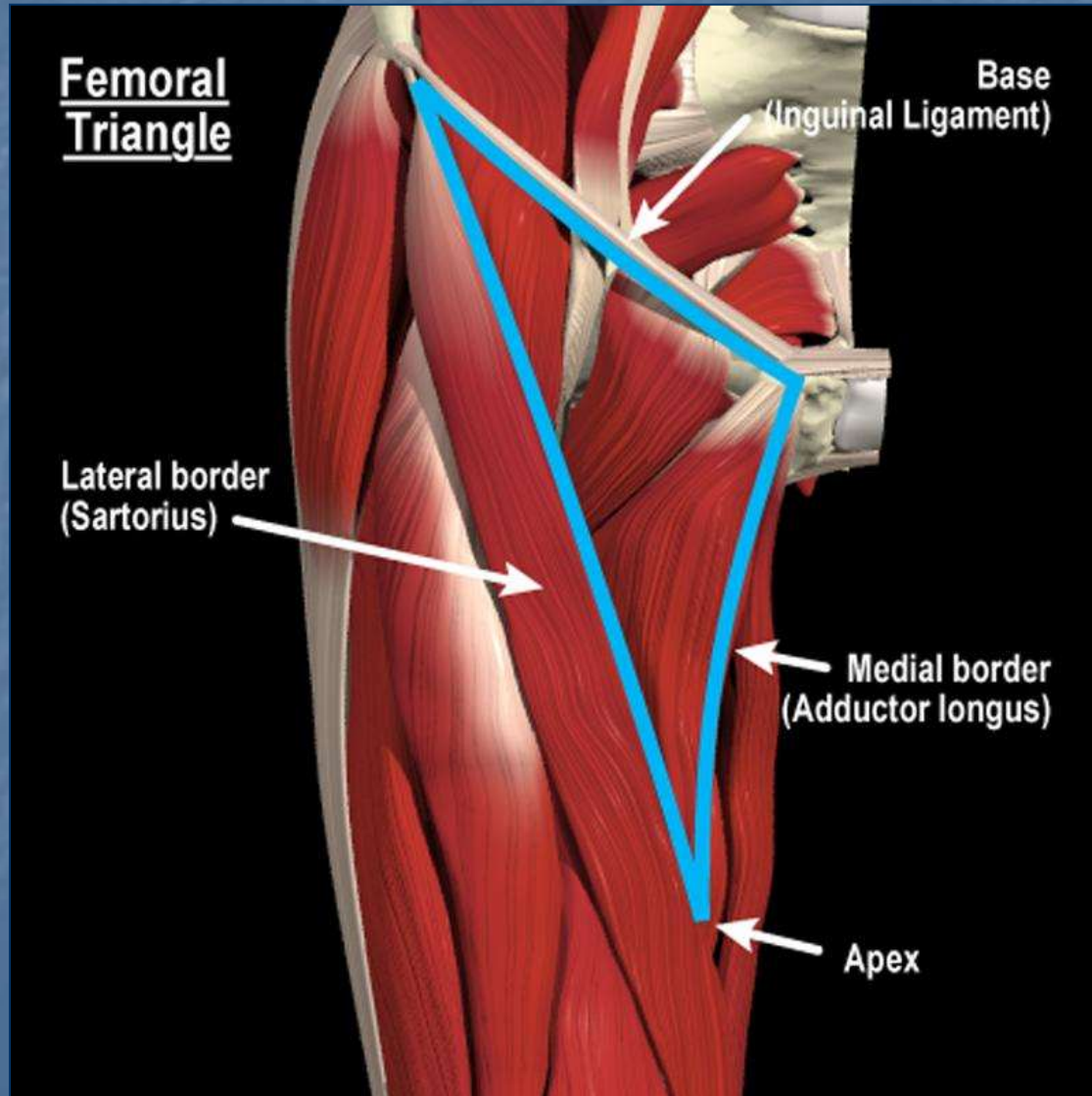
- **in front** – fusion of lig.inguinale with cornu superius of hiatus saphenus
- **posteriorly** – fascia pectinea
- **laterally** – vena femoralis



Superficial ring - hiatus saphenus

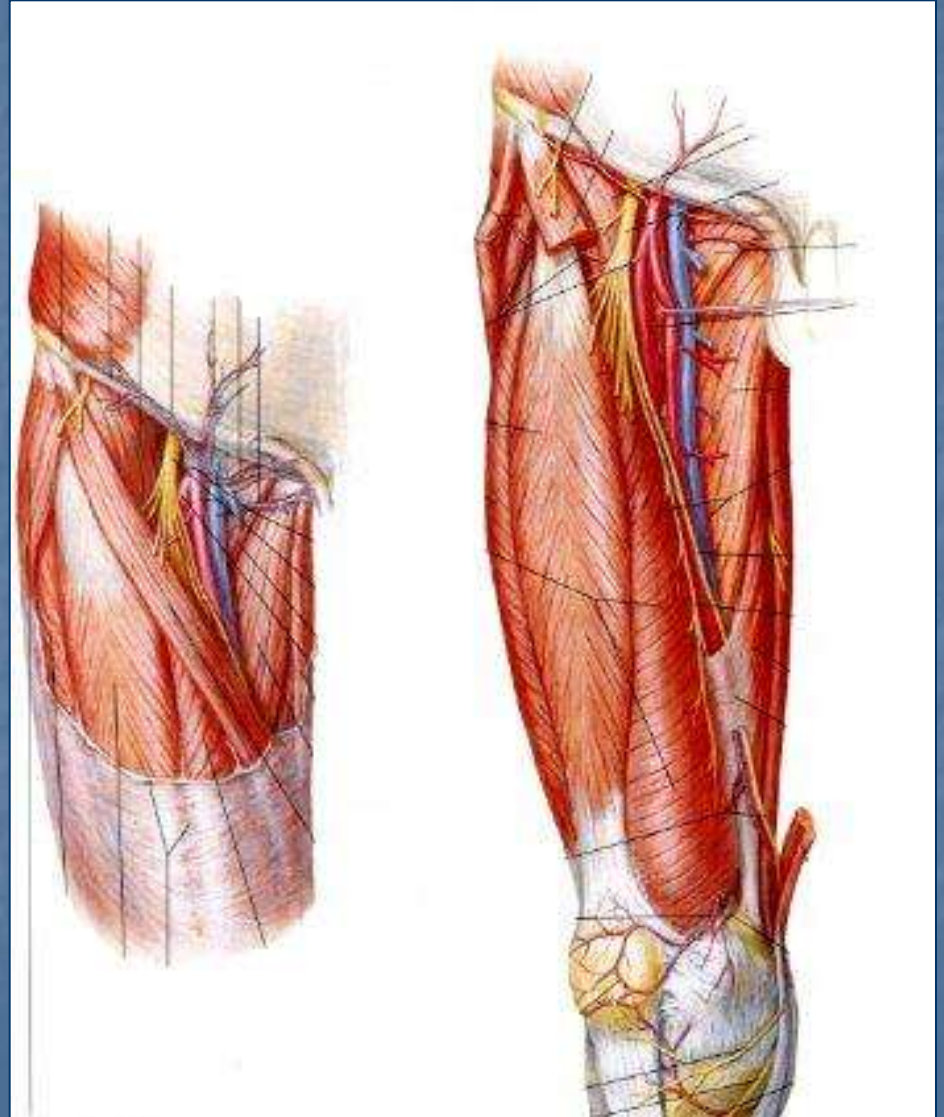


Trigonum femorale (Scarpa's trigonum)



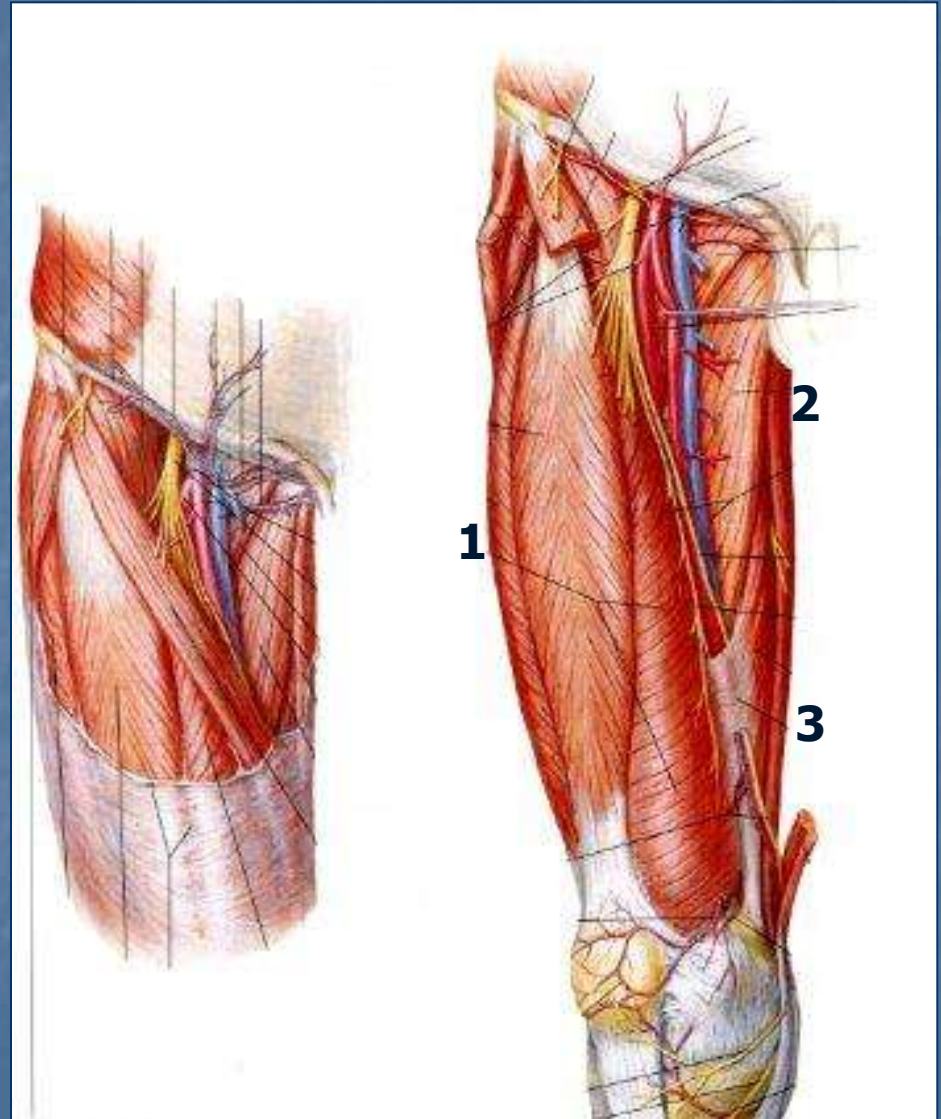
Canalis adductorius

- located at the thigh
- has 3 walls and 3 openings
- vessels and nerves pass through it from anterior side of the thigh to popliteal fossa



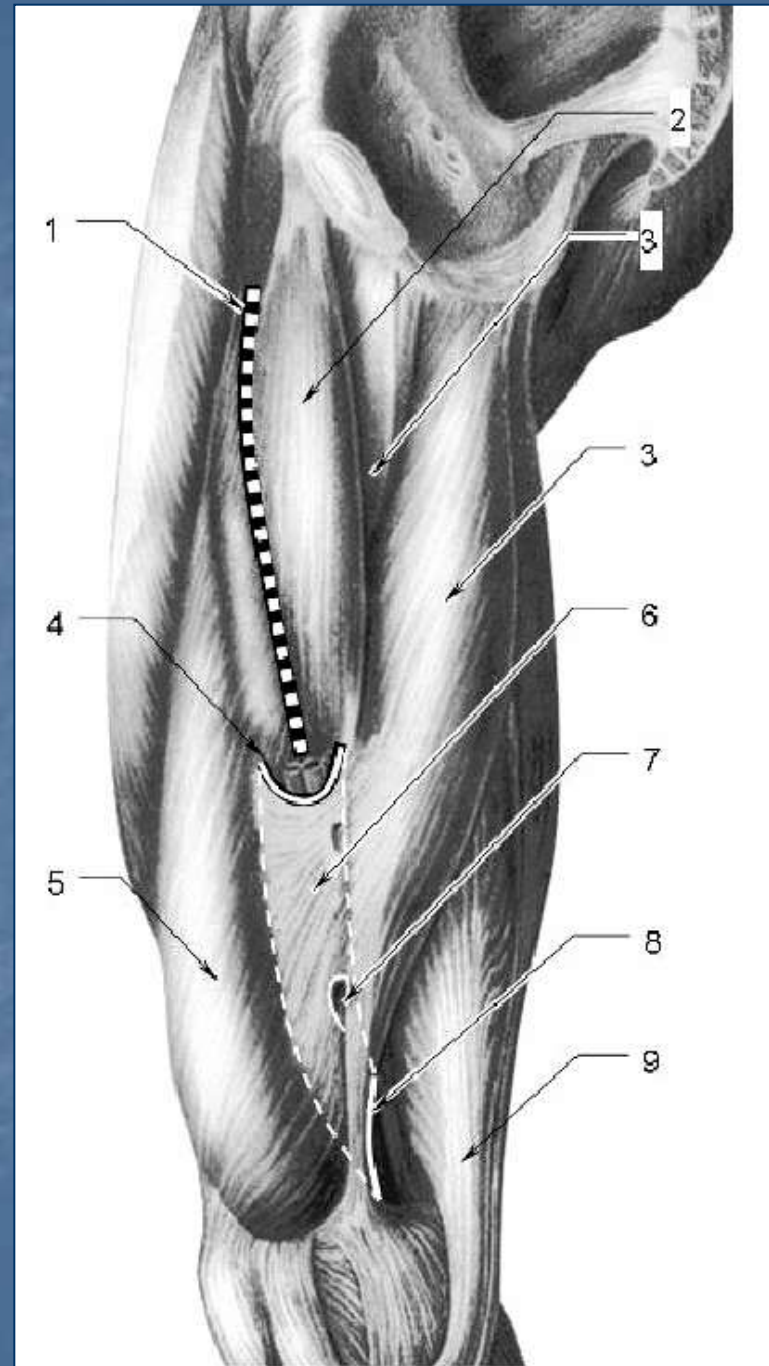
Walls of canalis adductorius

- **lateral** – m.vastus medialis (1)
- **medial** – m.adductor magnus (2)
- **anterior** – septum between these muscles (3)



Openings of canalis adductorius

- **proximal** (entrance) – continuation of femoral groove (4)
- **distal** (exit) – tendinous fissure of m. adductor magnus (8)
- **anterior** – in anterior wall (in septum, 7)



Semitendinosus

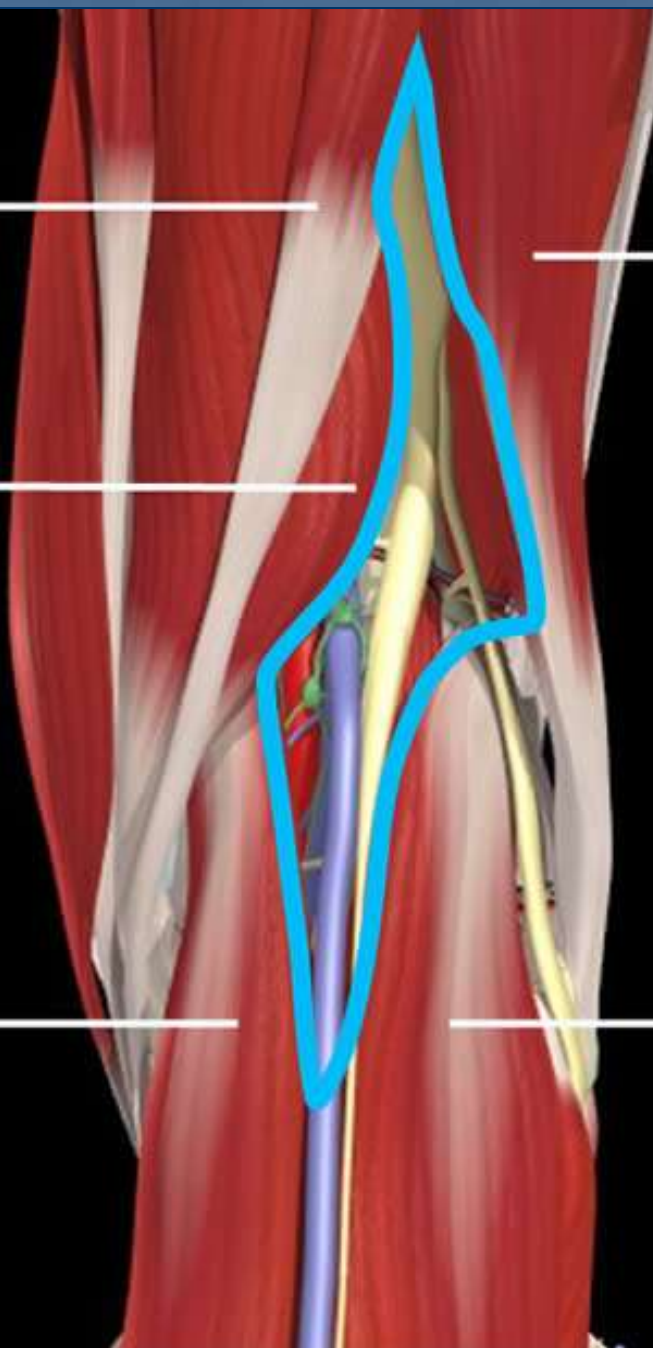
Biceps femoris
(long head)

Semimembranosus

Popliteal
Fossa

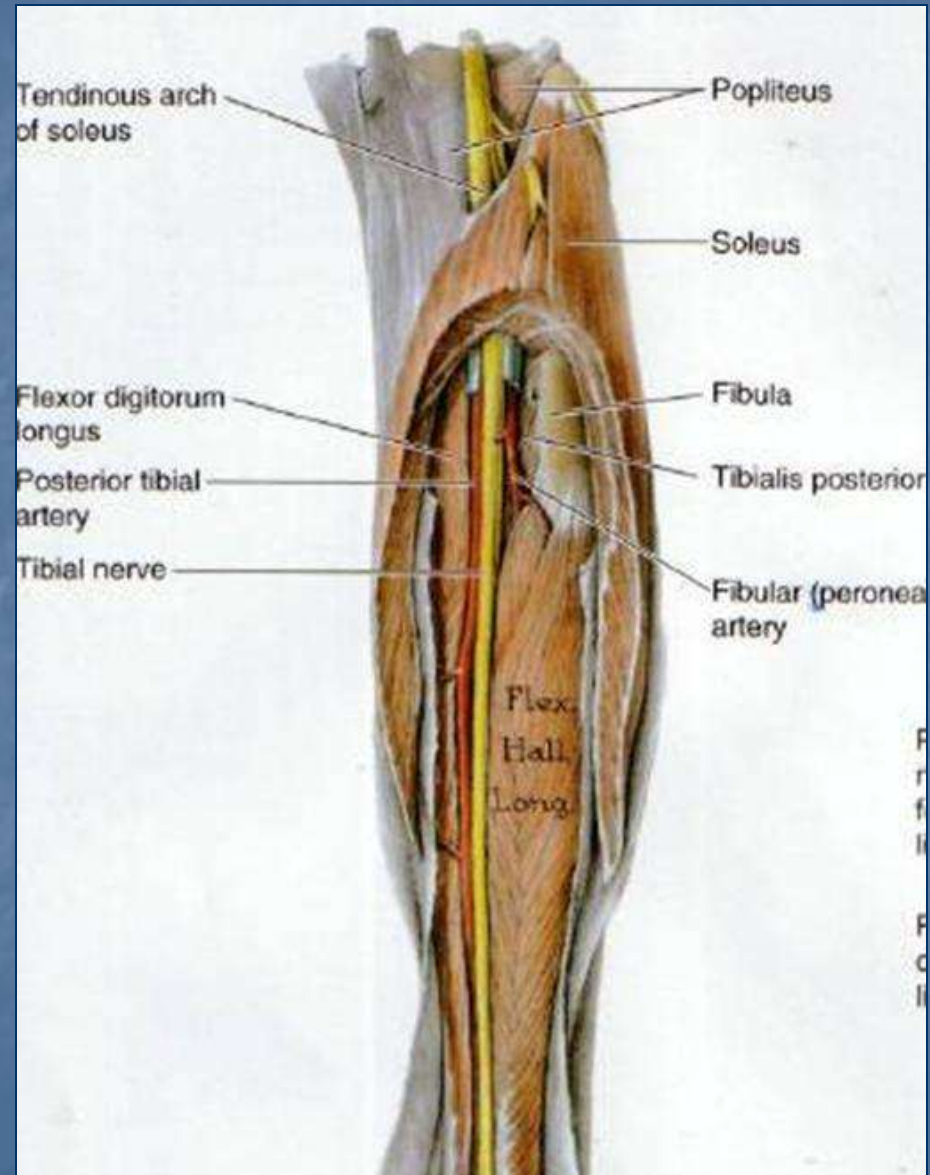
Gastrocnemius
(medial head)

Gastrocnemius
(lateral head)



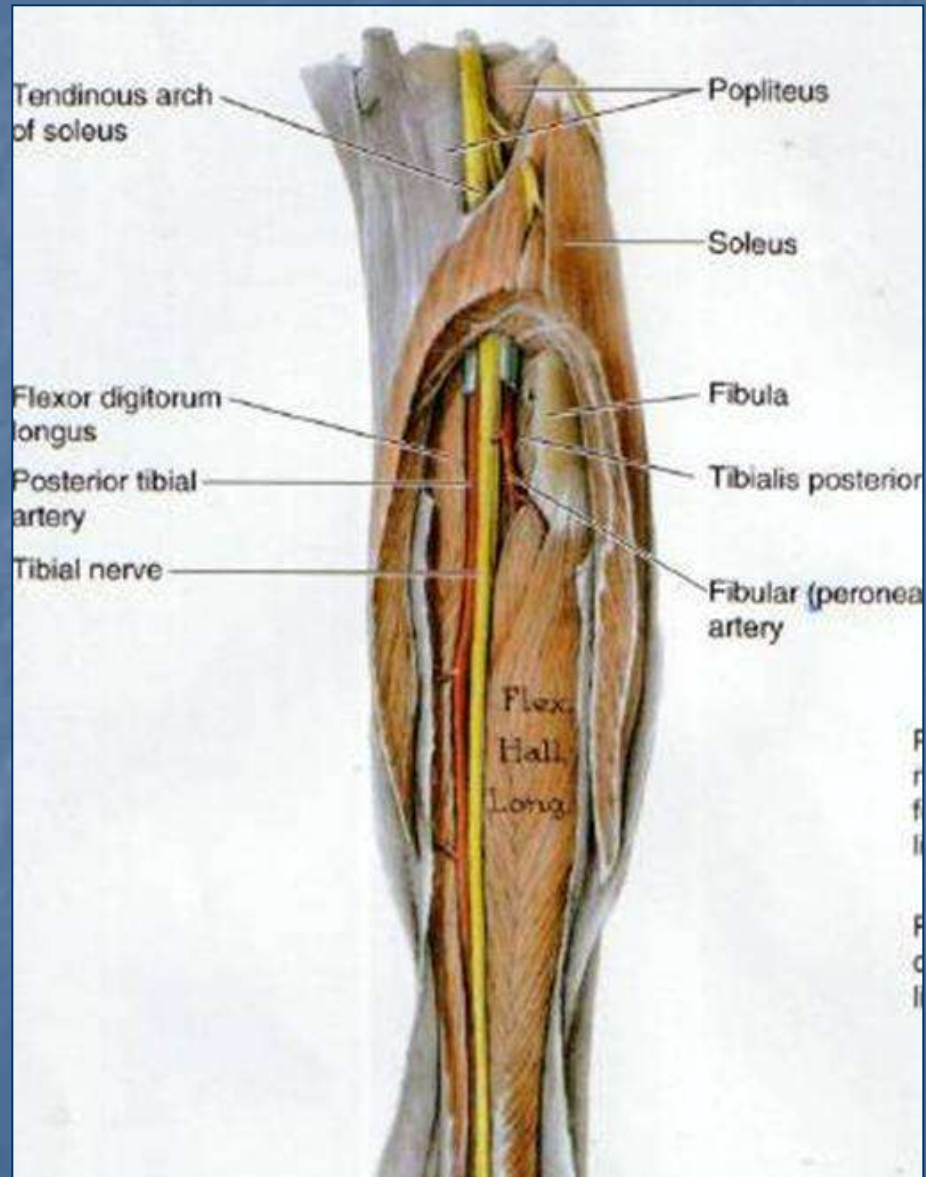
Canalis cruropopliteus

- Between deep (m.tibialis posterior) and superficial (m.soleus) muscles
- Has two walls and three openings
- Transmits tibial vessels and nerves



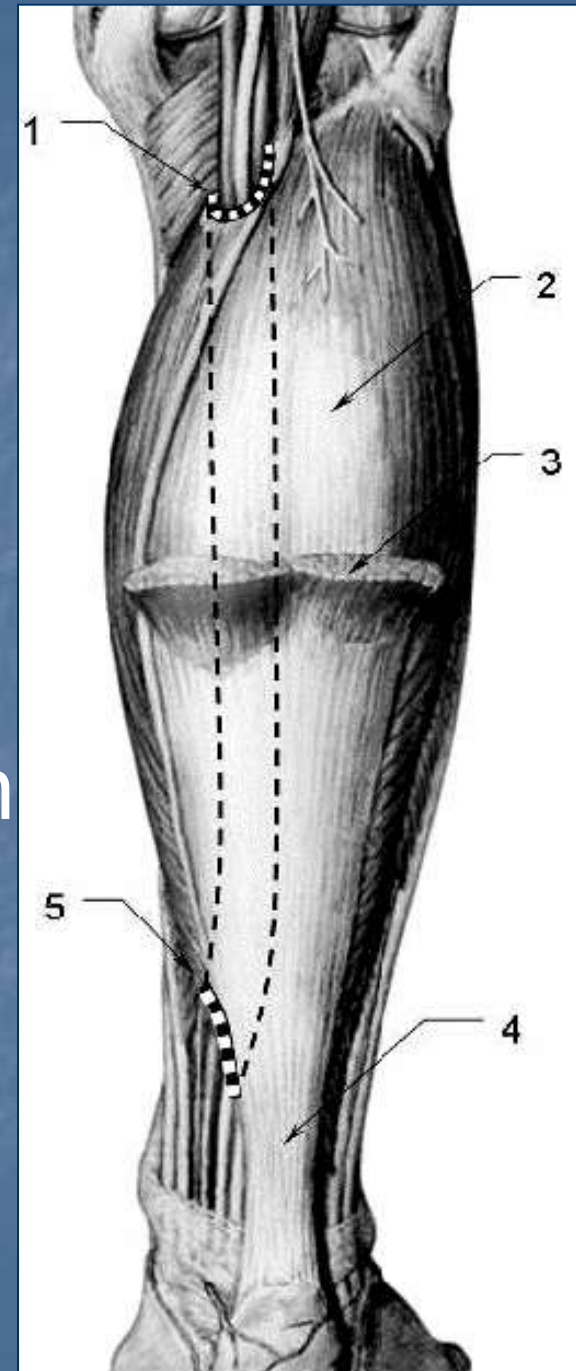
Walls of canalis cruropopliteus

- **anterior** – m.tibialis posterior
- **posterior** – m.soleus



Openings of canalis cruropopliteus

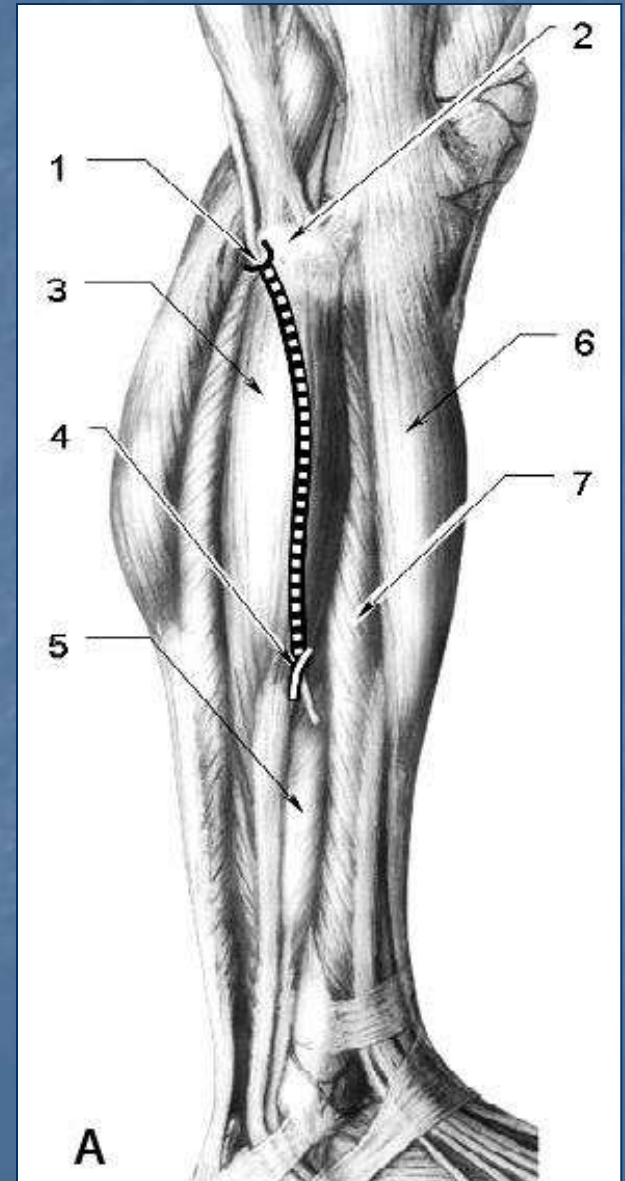
- **Entrance** – below the arcus tendineus of m. soleus (1)
- **Exit** – medially from lig. calcaneus (5) (medially from Achill tendon - 4)
- **Anterior** – in membrana interossea cruris (not shown)



Canalis musculoperoneus superior

- located between:
 - Upper part of fibula
 - m.fibularis (peroneus) longus

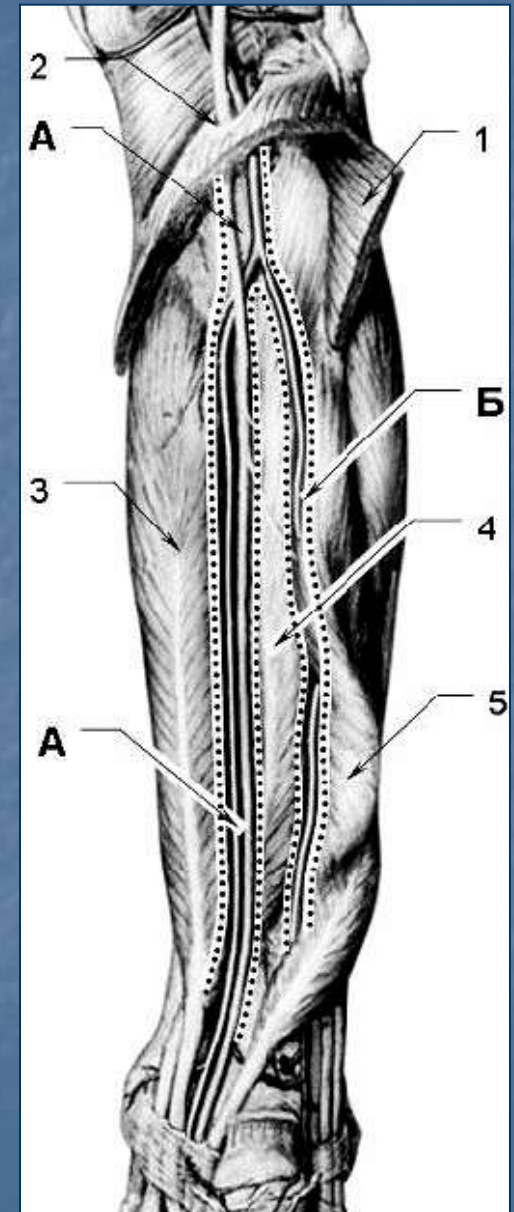
Transmits n. fibularis
(peroneus) superficialis

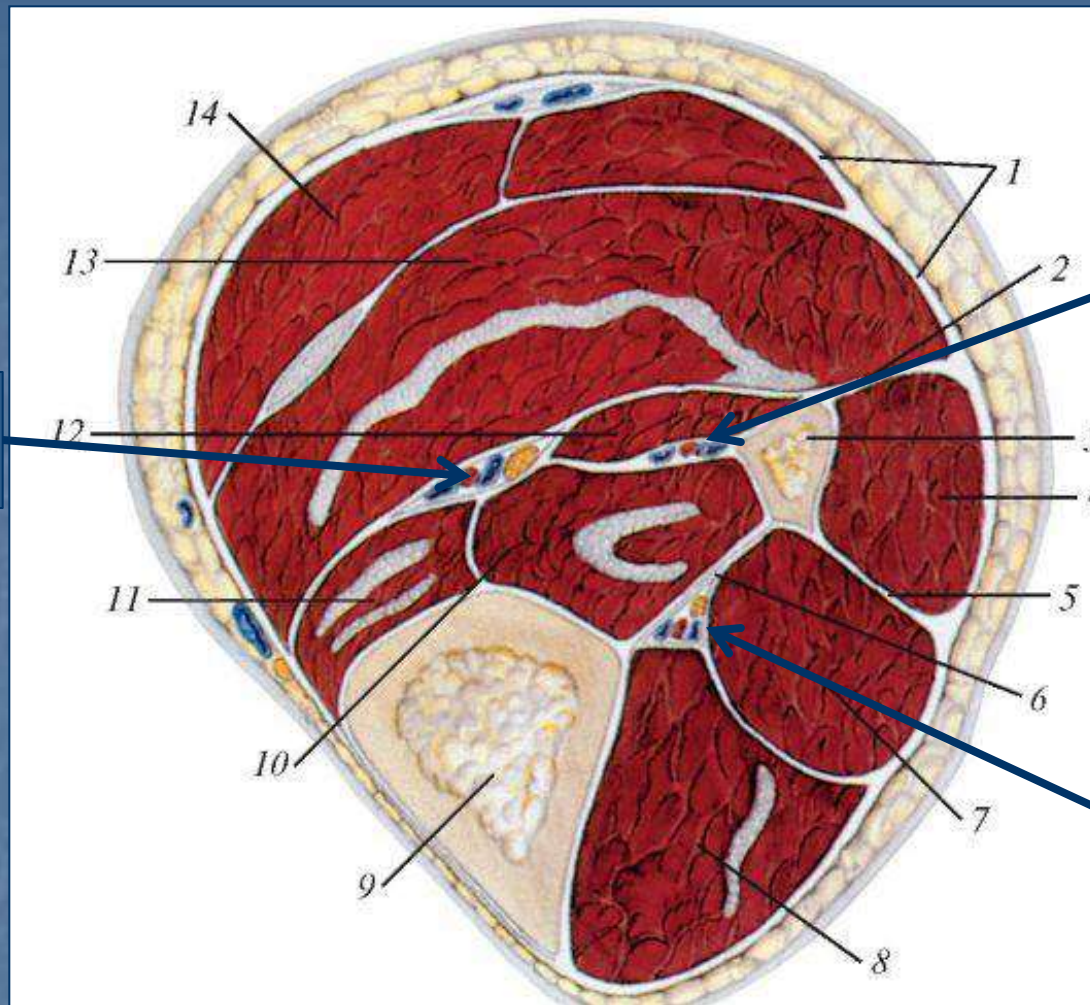


Canalis musculoperoneus inferior

- located (Б) between:
 - inferior part of fibula
 - m. flexor hallucis longus
 - m. tibialis posterior

Transmits a. et v. fibulares





Canalis
cruropopliteus

Canalis
musculo-peroneus
inferior

Canalis
musculo-peroneus
superior

Cross section through the shin in the middle third :

1 – fascia of the shin; 2 – posterior intermuscular partition of the shin; 3 - fibula;
 4 – m. peroneus longus; 5 – anterior intermuscular partition of the shin;
 6 – membrana interossea; 7 – m. extensor digitorum longus; 8 – m. tibialis anterior;
 9 - tibia; 10 – m. tibialis posterior; 11 – m. flexor digitorum longus; 12 – m. flexor
 hallucis longus; 13 – m. soleus; 14 – m. gastrocnemius

