Systemic Module

MSS

"Anatomy"

Extensor Compartment of the Thigh

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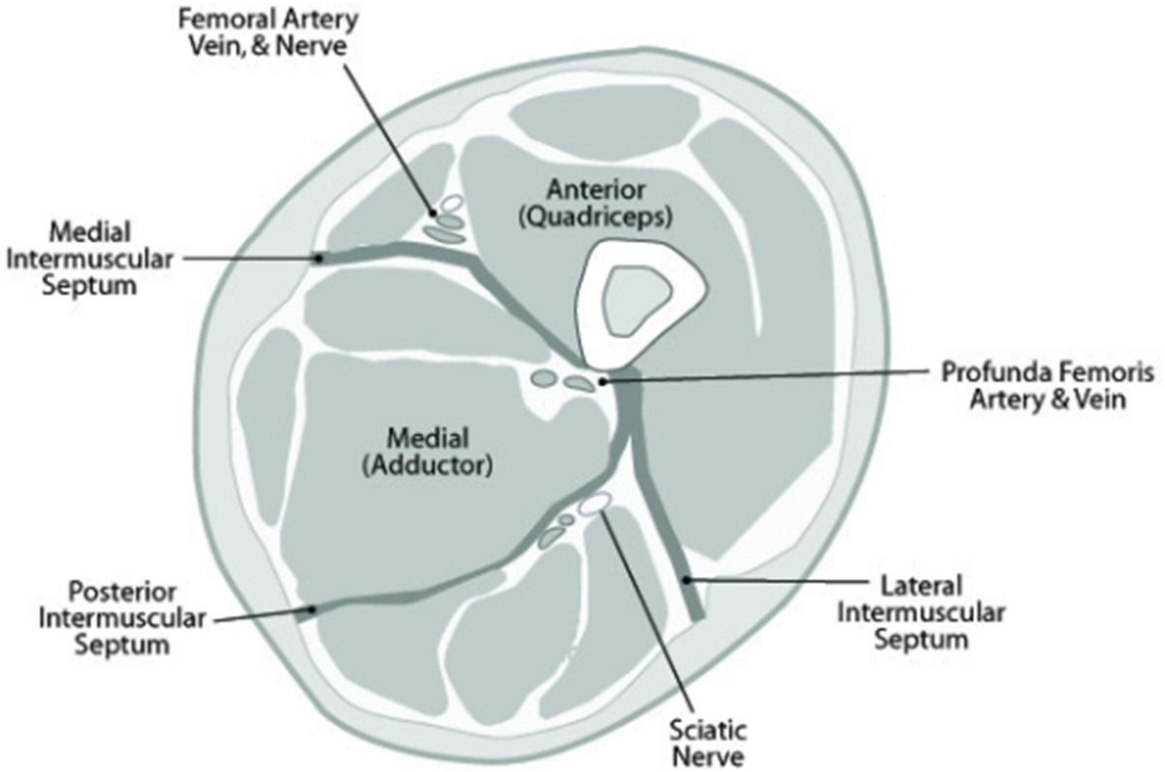
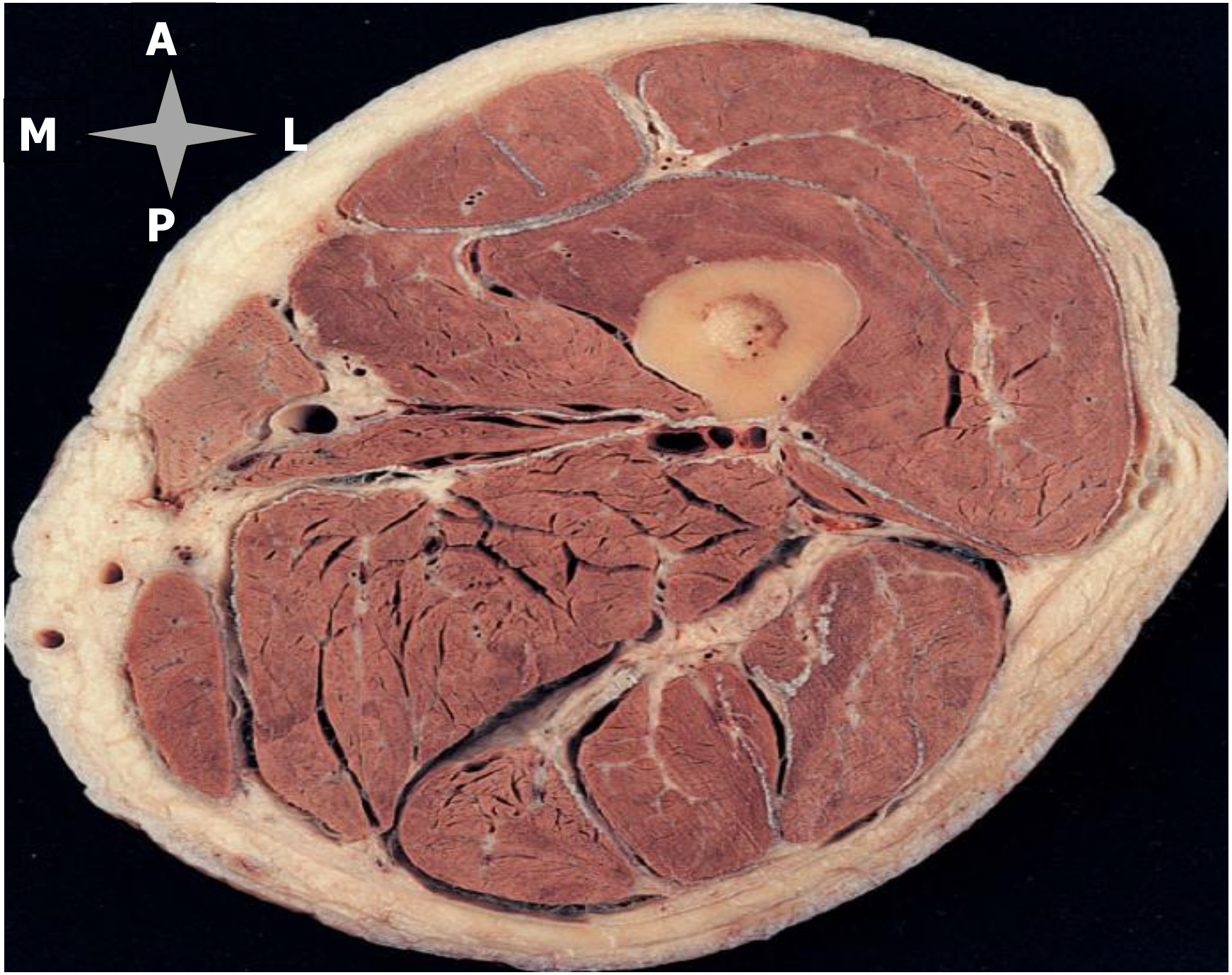
Fascial Compartments of the Thigh

- The thigh is divided into three compartments (**anterior**, **posterior**, and **medial**) by medial, lateral and posterior intermuscular septa which pass from the inner aspect of the deep fascial sheath of the thigh to the linea aspera of the femur.

- Each compartment has a distinct innervation and function

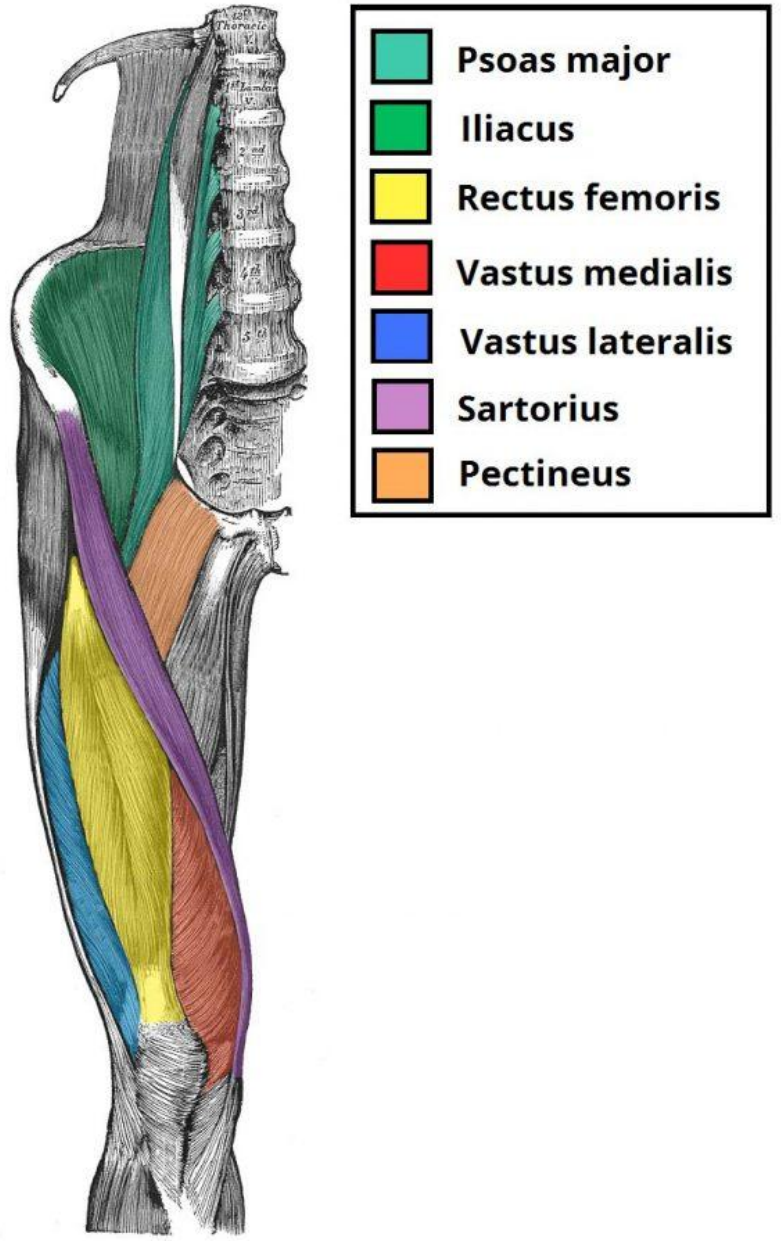



A
M
L
P

Muscles of the Anterior Compartment of the Thigh

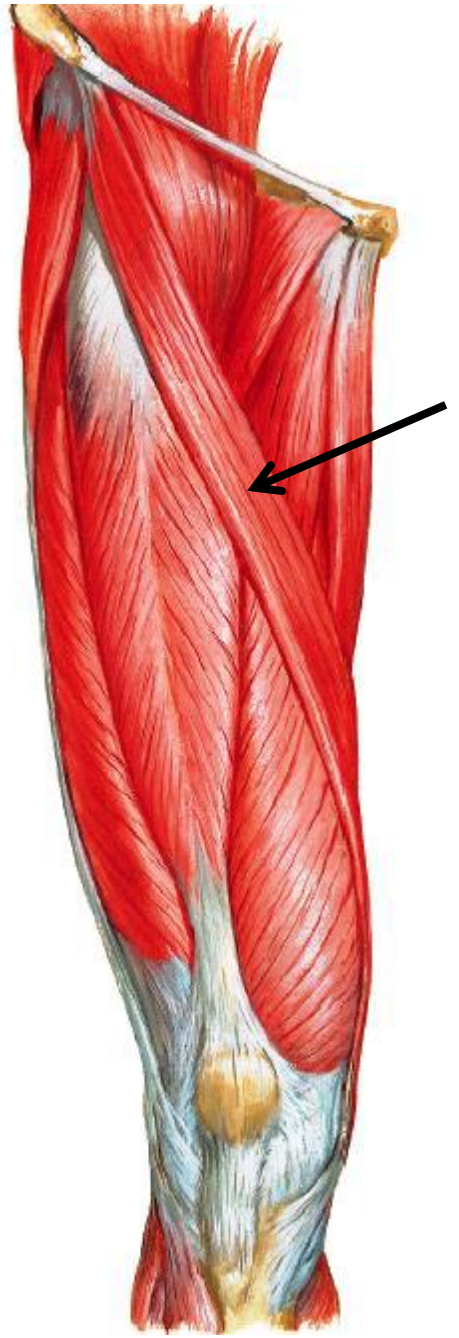
1. Sartorius.
2. Iliopsoas (psoas major and iliacus)
3. Quadriceps Femoris.

- The muscles in the anterior compartment are innervated by the **femoral nerve (L2-L4)**, and as a general rule, act to **extend the leg at the knee joint**.



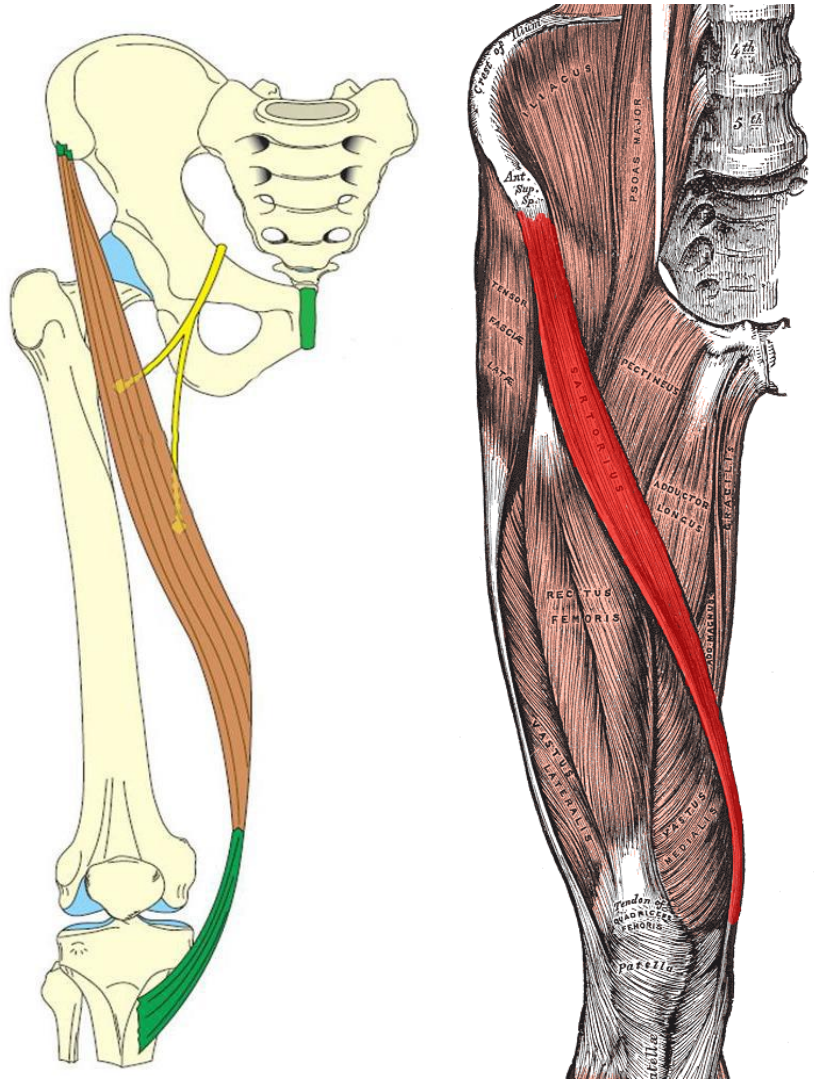
Sartorius

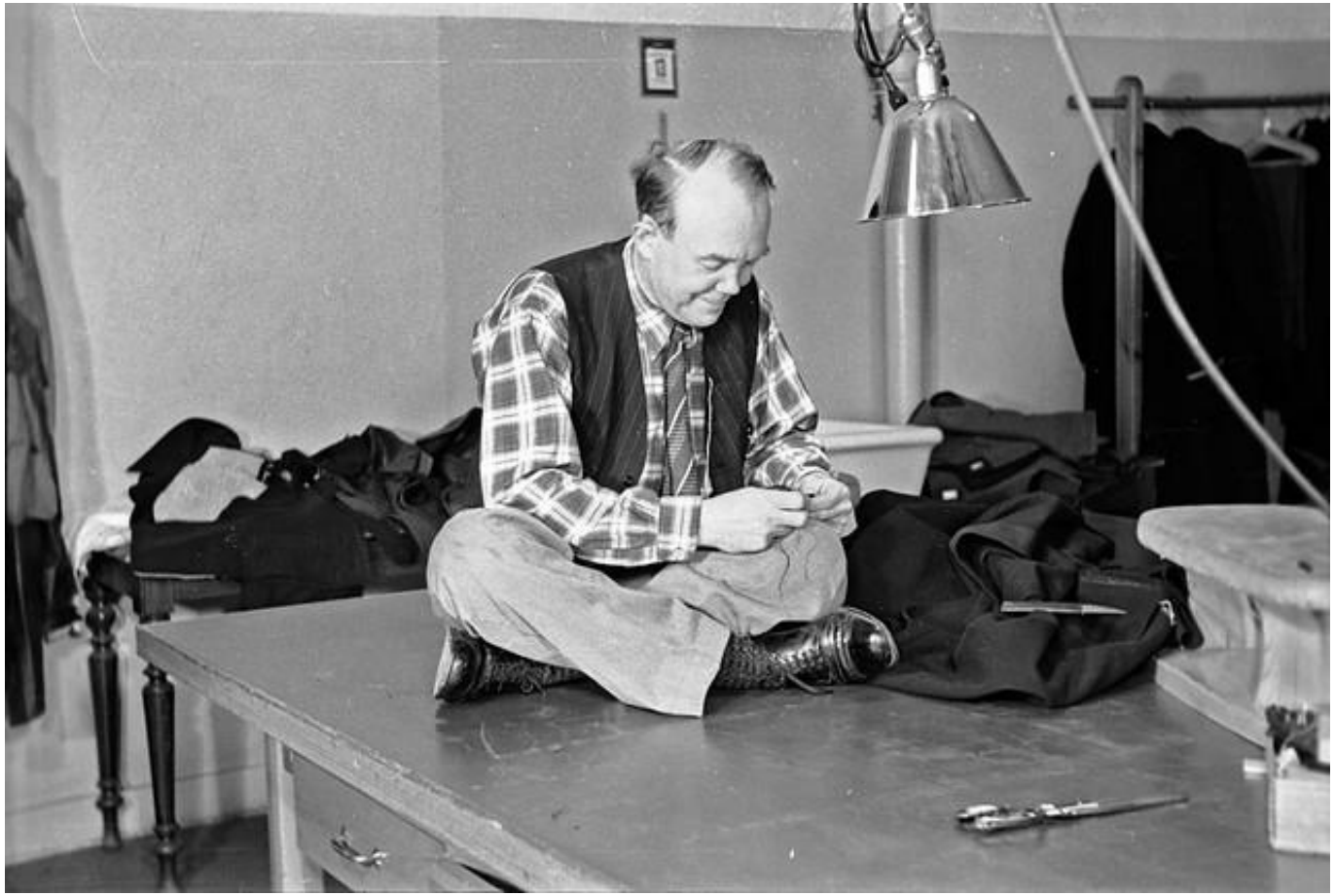
- It is a strap-like muscle with parallel fibers representing the longest muscle in the body.



Sartorius

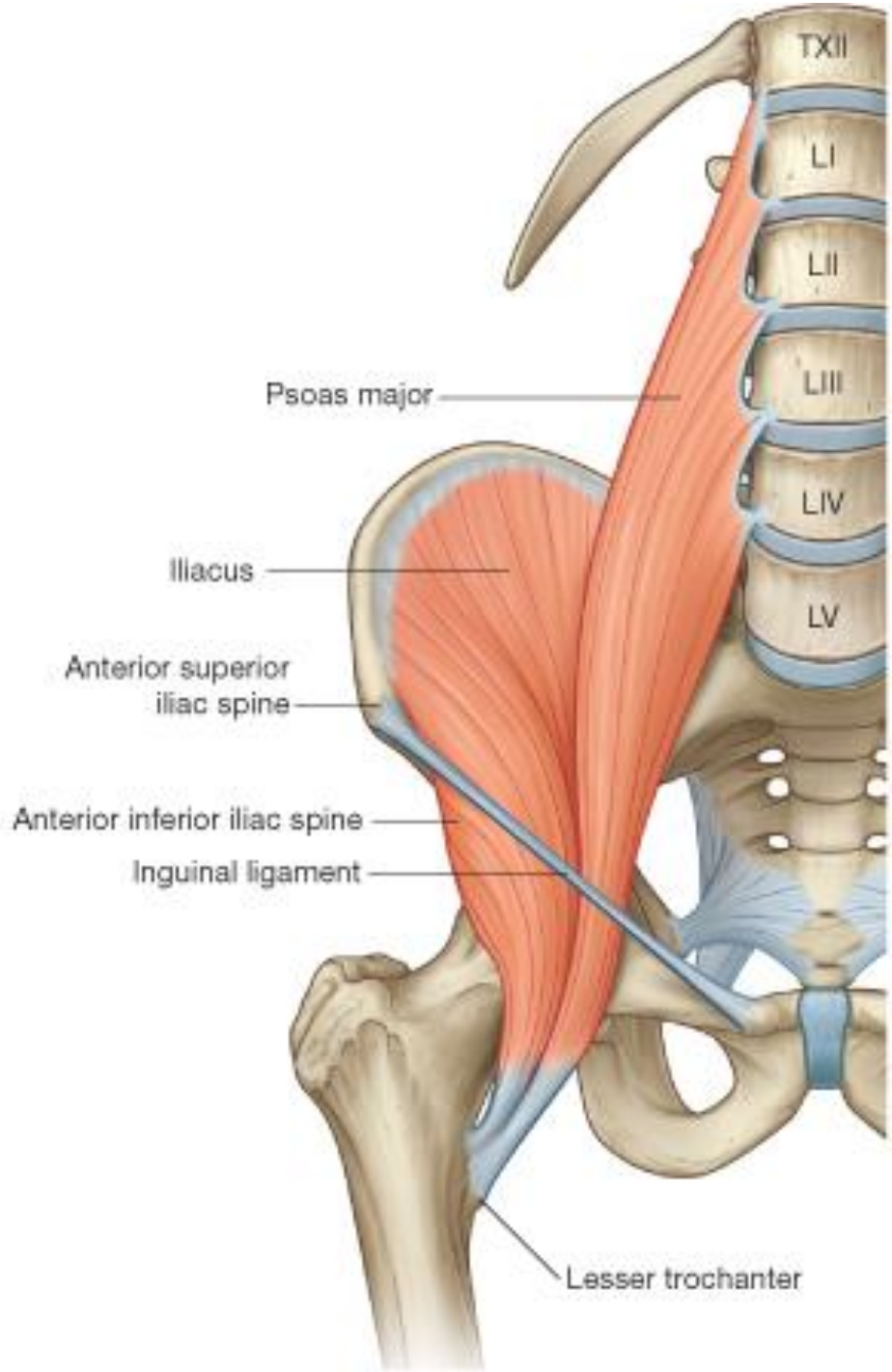
- **Origin:** anterior superior iliac spine
- **Insertion:** Upper part of the medial surface of the shaft of the tibia.
- **Nerve supply:** Branches of femoral nerve
- **Action:**
  - **On hip-** flexion, abduction & lat. rotation (tailor's position = cross leg position).
  - **On knee-** flexion & medial rotation.





Iliopsoas

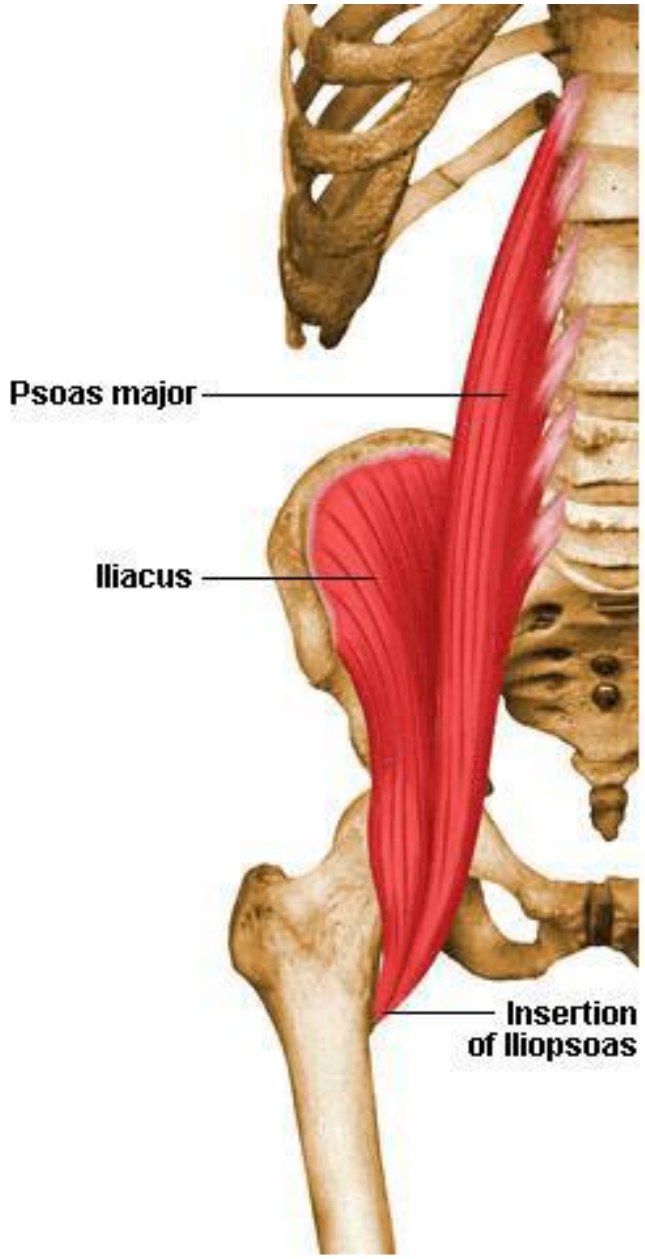
- This term refers to the fused lower parts of **psoas major** & **iliacus** muscles as they reach the front of the thigh.
- Psoas major arises from lumbar vertebrae
- Iliacus arises from iliac fossa.
- They are posterior abdominal wall muscles that are inserted into the **lesser trochanter of femur**.



Iliopsoas

- **Nerve supply:**
  - Psoas major: Branches from lumbar plexus
  - Iliacus: Femoral nerve

- **Action:** main flexors of the hip joint.
  - flex thigh on trunk – If thigh is fixed
  - flex trunk on thigh – if trunk is fixed

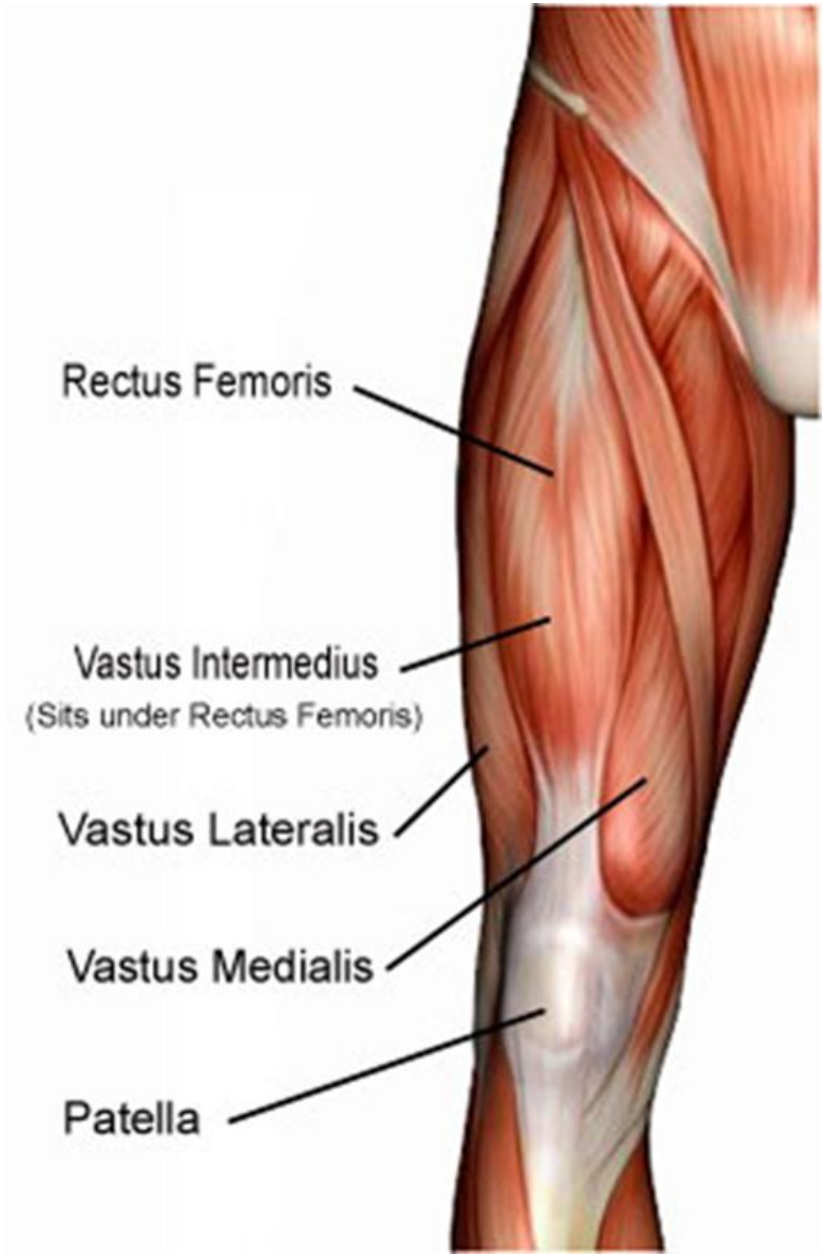


Quadriceps Femoris

- It is the main extensor of the knee joint.

- Has 4 heads which have different origins but same insertion:

    1. **Rectus Femoris**
    2. **Vastus lateralis**
    3. **Vastus medialis**
    4. **Vastus intermedius**



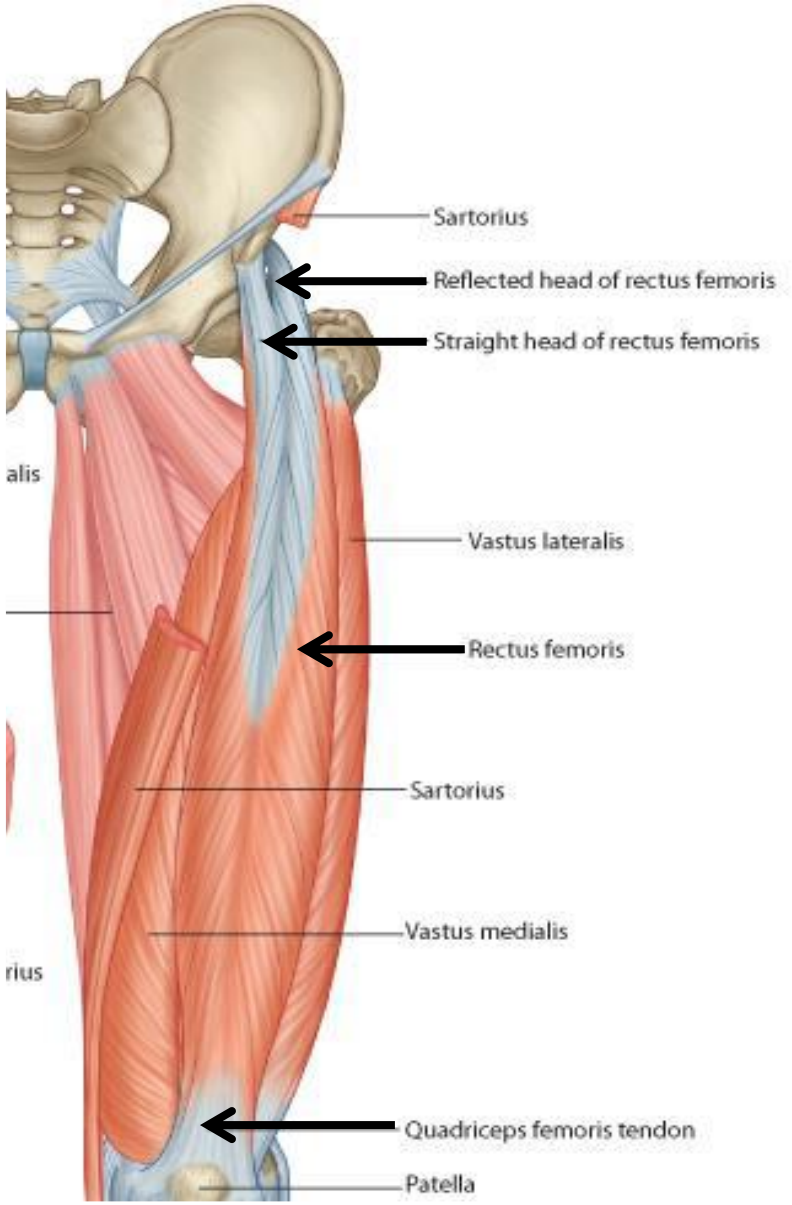
Rectus Femoris

- **Origin:**
  - **Straight head**: AIIS (ant. inf. iliac spine).
  - **Reflected head**: groove above acetabulum

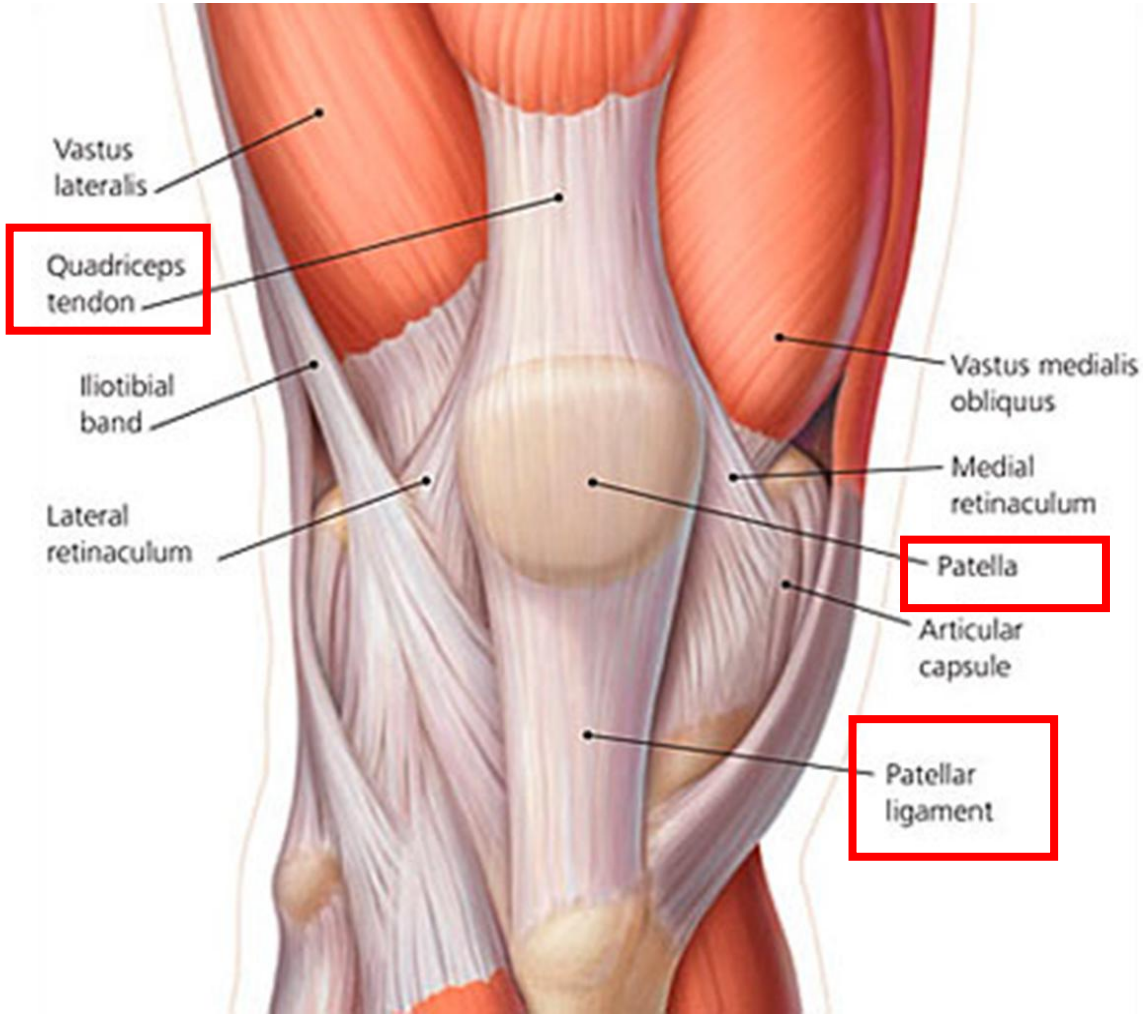
- **Insertion**: Via the common quadriceps femoris tendon into patella then via patellar ligament into the tibial tuberosity.

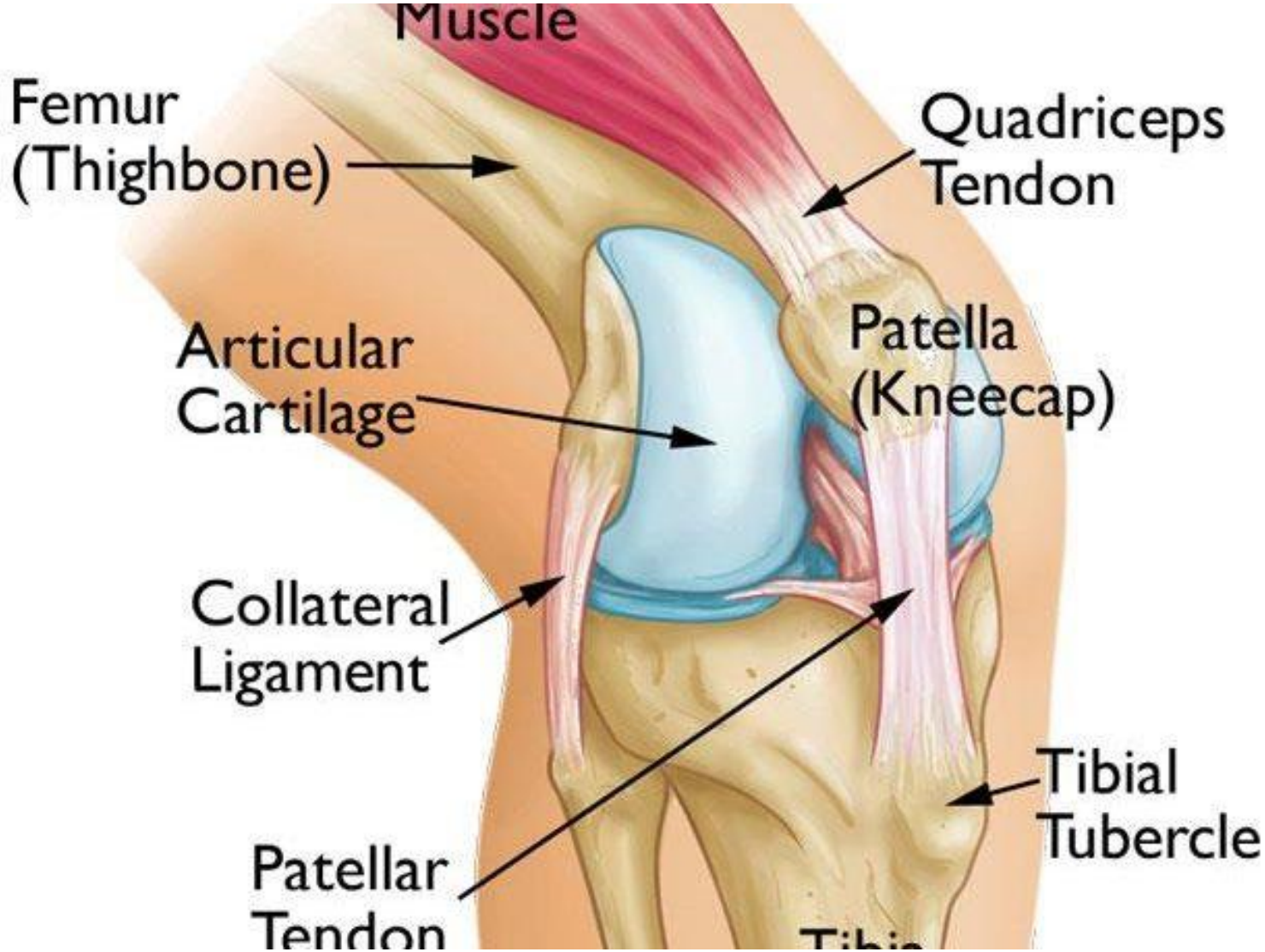
- **Action:** Extension of leg at knee joint and flexes thigh at hip joint

- **Nerve supply:** Branches of femoral nerve



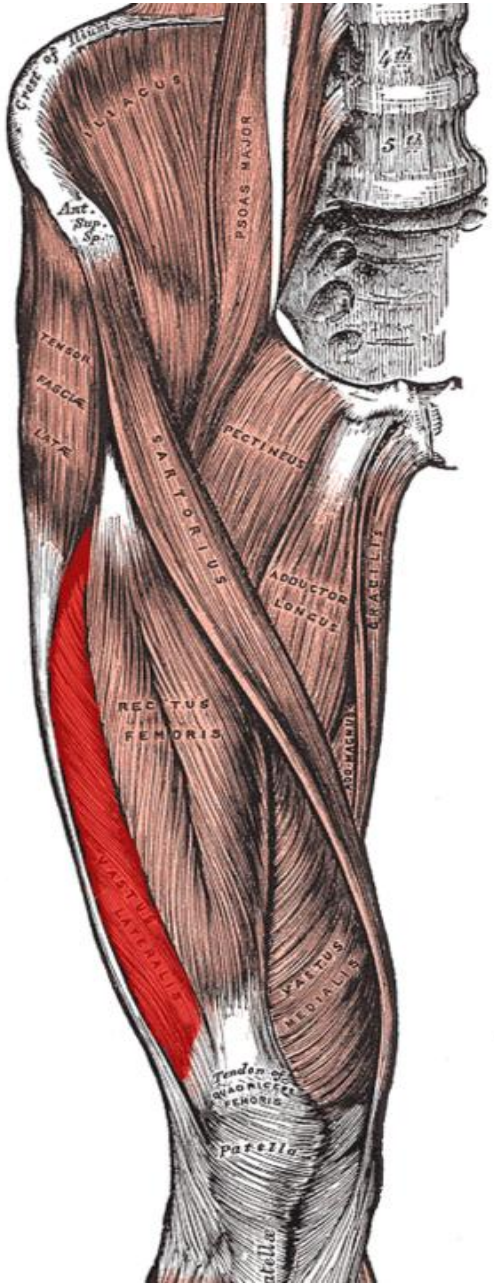
Insertion of Quadriceps Muscle




Muscle
Femur
(Thighbone)
Quadriceps
Tendon
Articular
Cartilage
Patella
(Kneecap)
Collateral
Ligament
Tibial
Tubercle
Patellar
Tendon

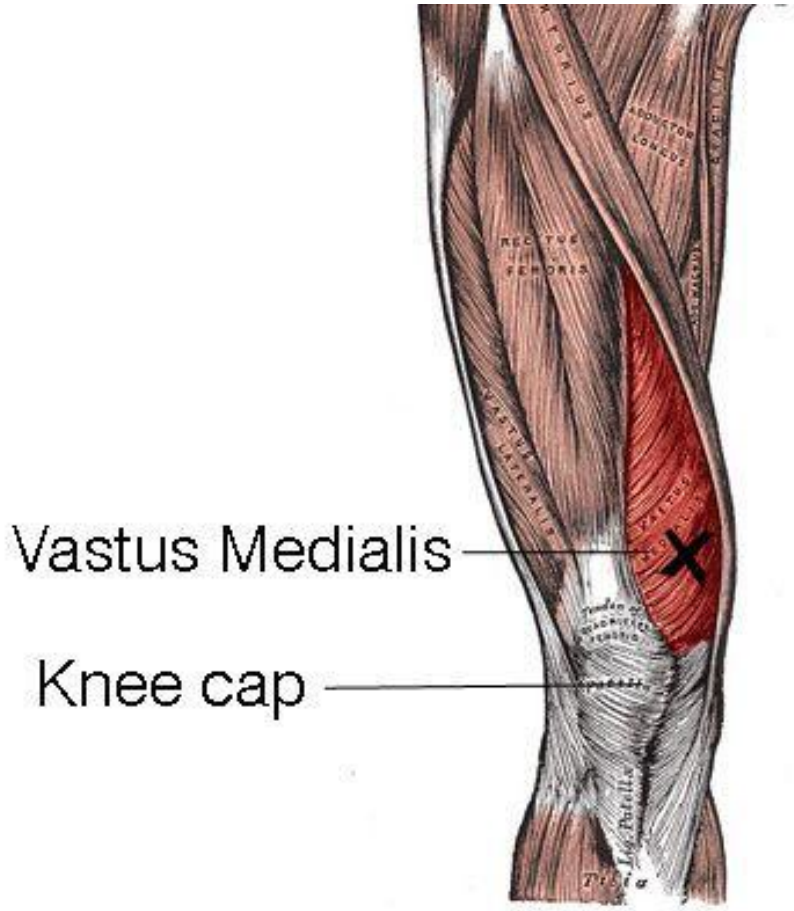
Vastus Lateralis

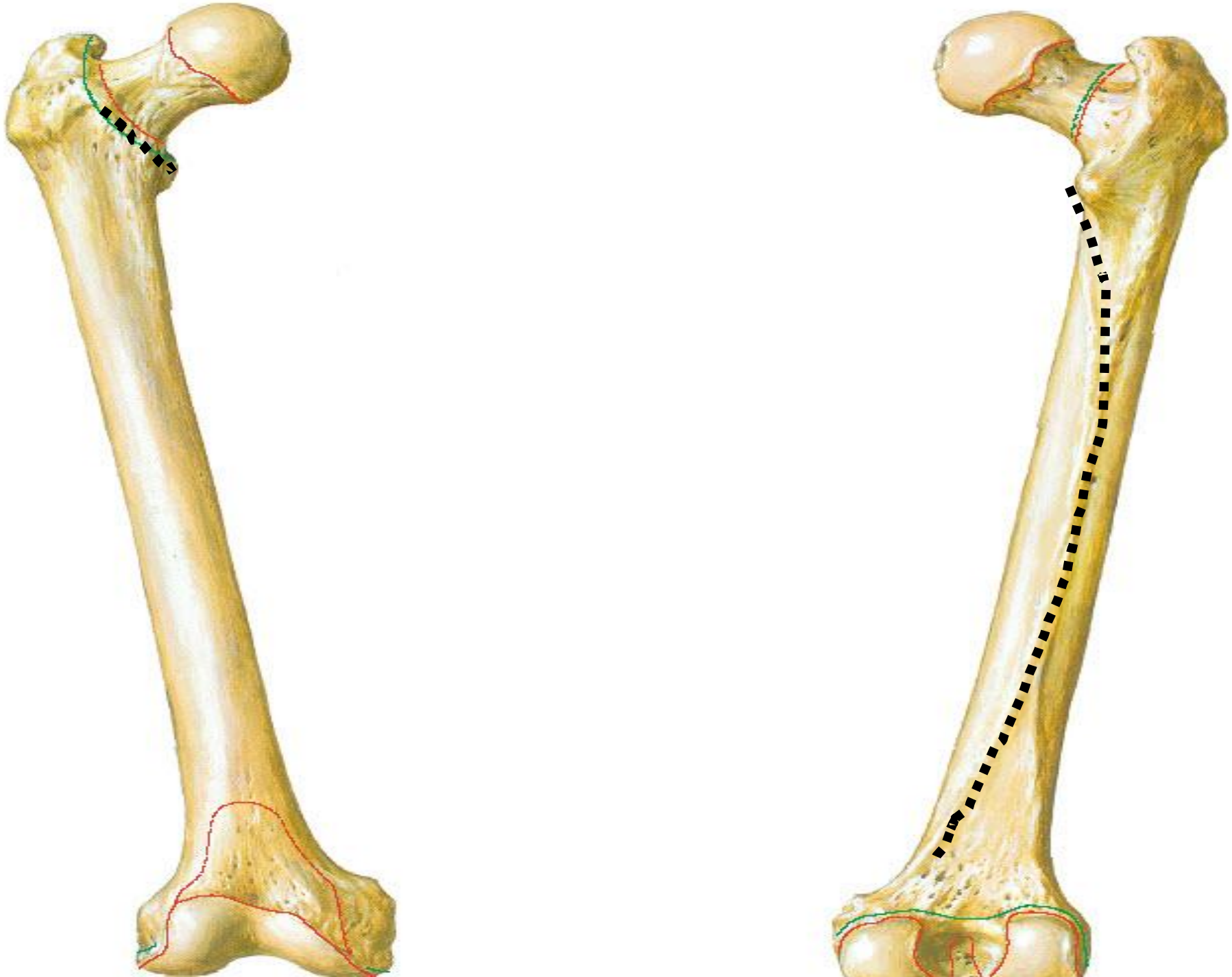
- **Origin:** The upper part of intertrochanteric line and lateral lip of linea aspera.
- **Insertion:** quadriceps femoris tendon
- **Action:** Extension of leg at knee joint
- **Nerve supply:** Branches of femoral nerve



Vastus Medialis

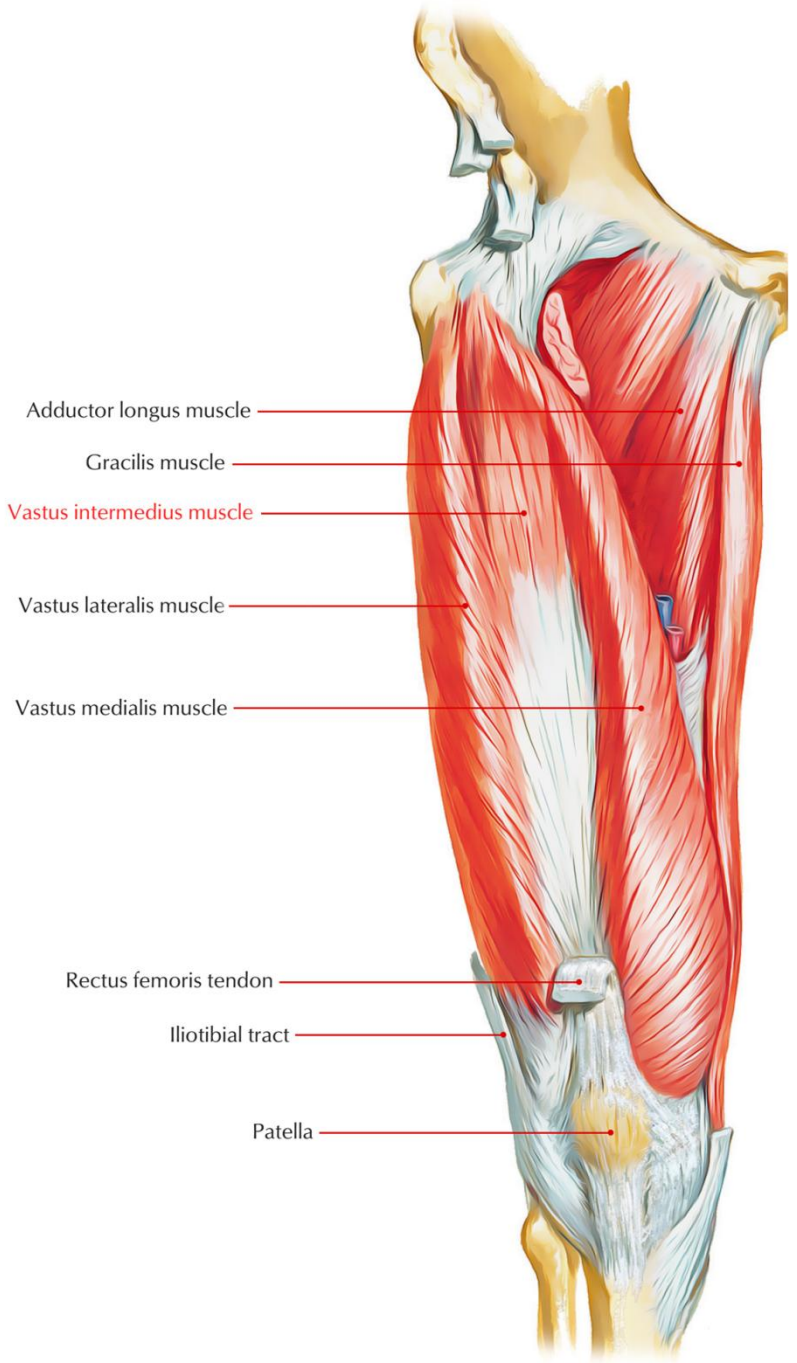
- **Origin:** The lower part of intertrochanteric line and medial lip of linea aspera.
- **Insertion:** Quadriceps femoris tendon
- **Action:** Extension of leg at knee joint
- **Nerve supply:** Branches of femora nerve

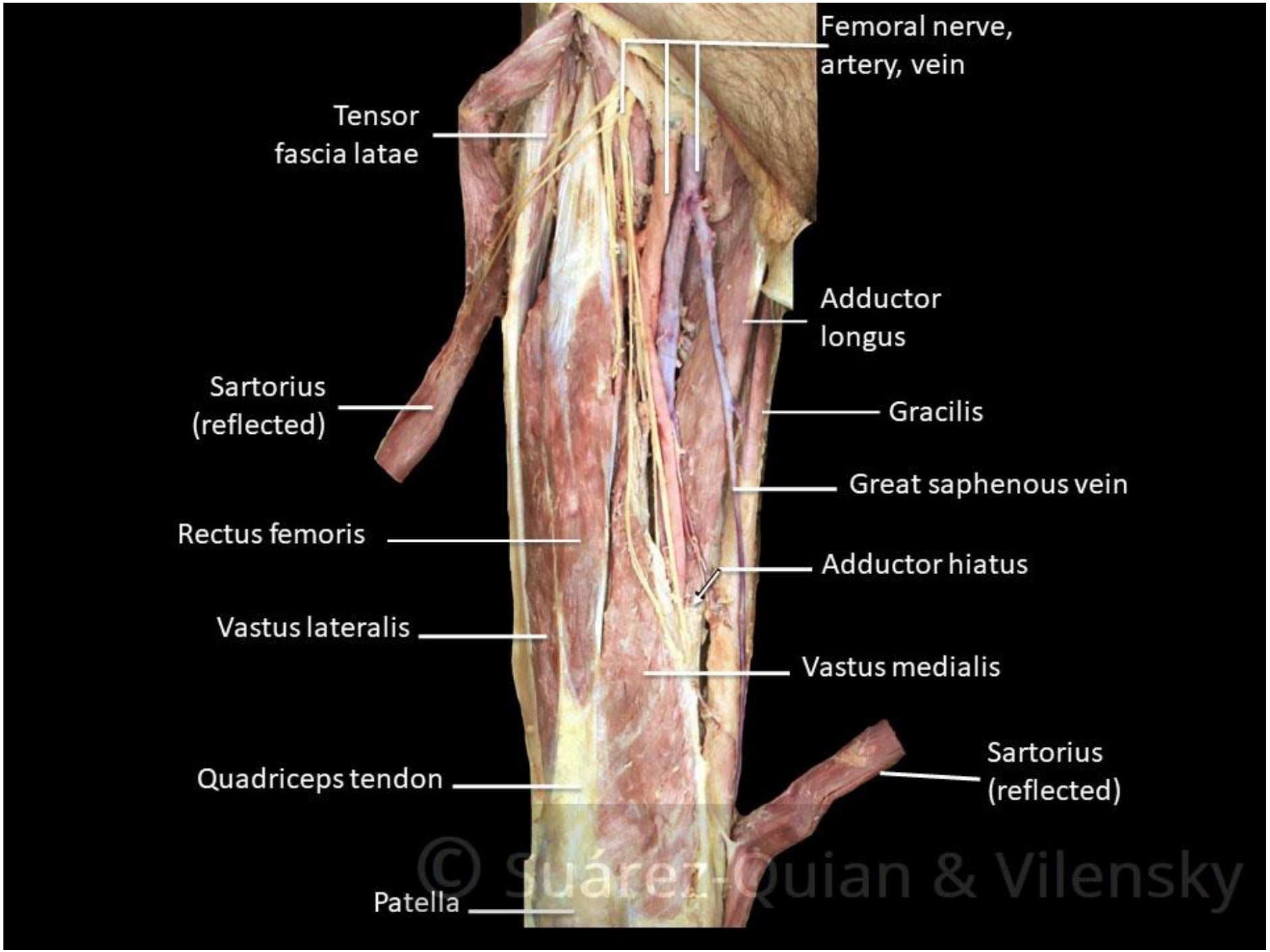


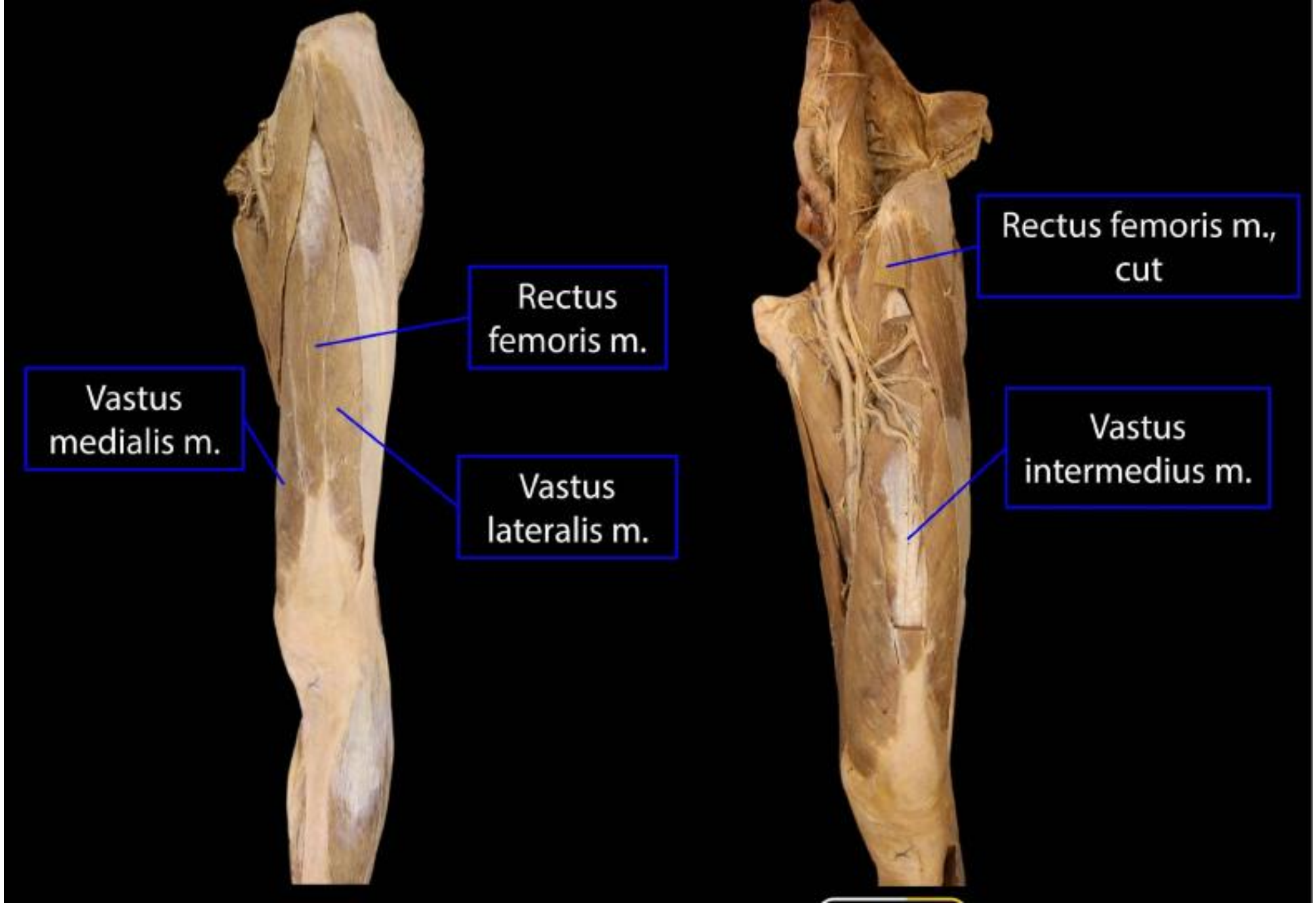


Vastus Intermedius

- **Origin:** Anterior and lateral surfaces of the femoral shaft
- **Insertion:** Quadriceps femoris tendon
- **Action:** Extension of leg at knee joint
- **Nerve supply:** Branches of femoral nerve



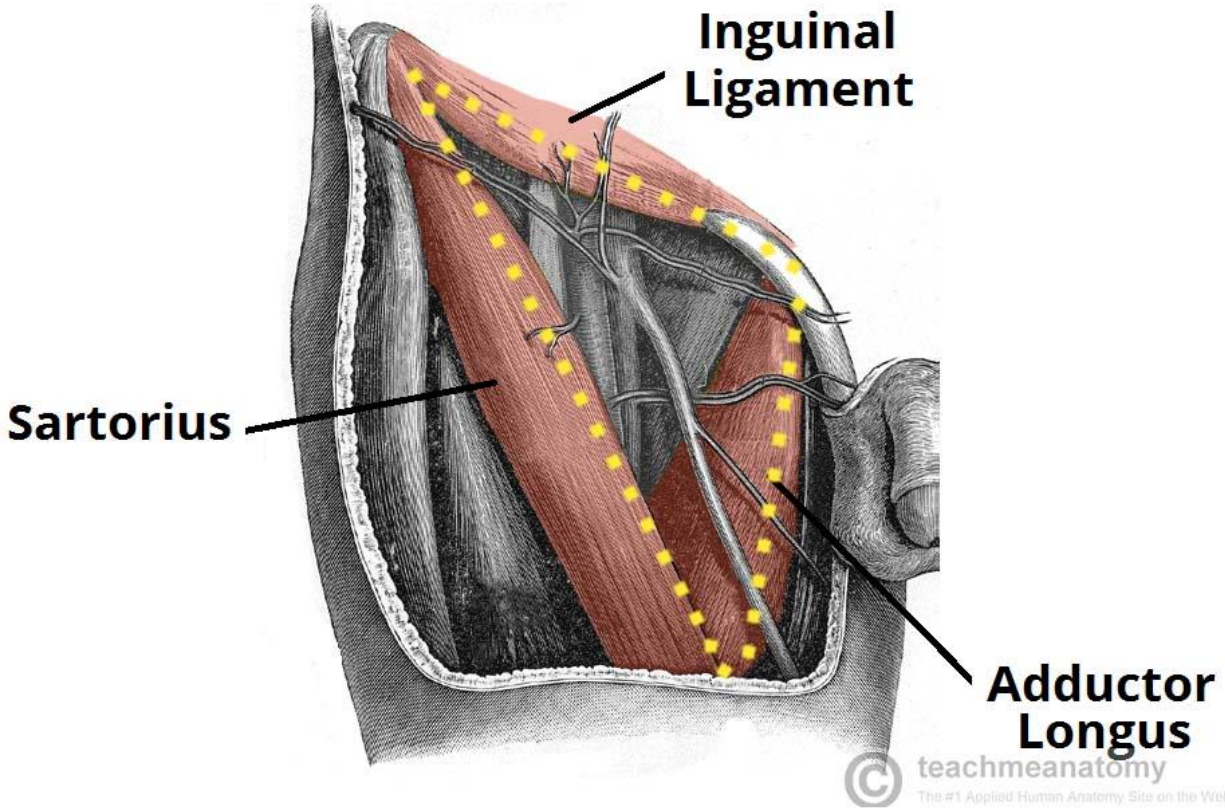

Femoral nerve, artery, vein
Tensor fascia latae
Adductor longus
Sartorius (reflected)
Gracilis
Great saphenous vein
Rectus femoris
Adductor hiatus
Vastus lateralis
Vastus medialis
Sartorius (reflected)
Quadriceps tendon
Patella
© Suárez-Quian & Vilensky


Rectus femoris m.
Vastus medialis m.
Vastus lateralis m.
Rectus femoris m., cut
Vastus intermedius m.

Femoral Triangle

- A triangular depression in front of upper 1/3 of thigh just below inguinal ligament

- Contains **Femoral Artery**, **Femoral Vein**, **Femoral Nerve**, and **Femoral Canal**

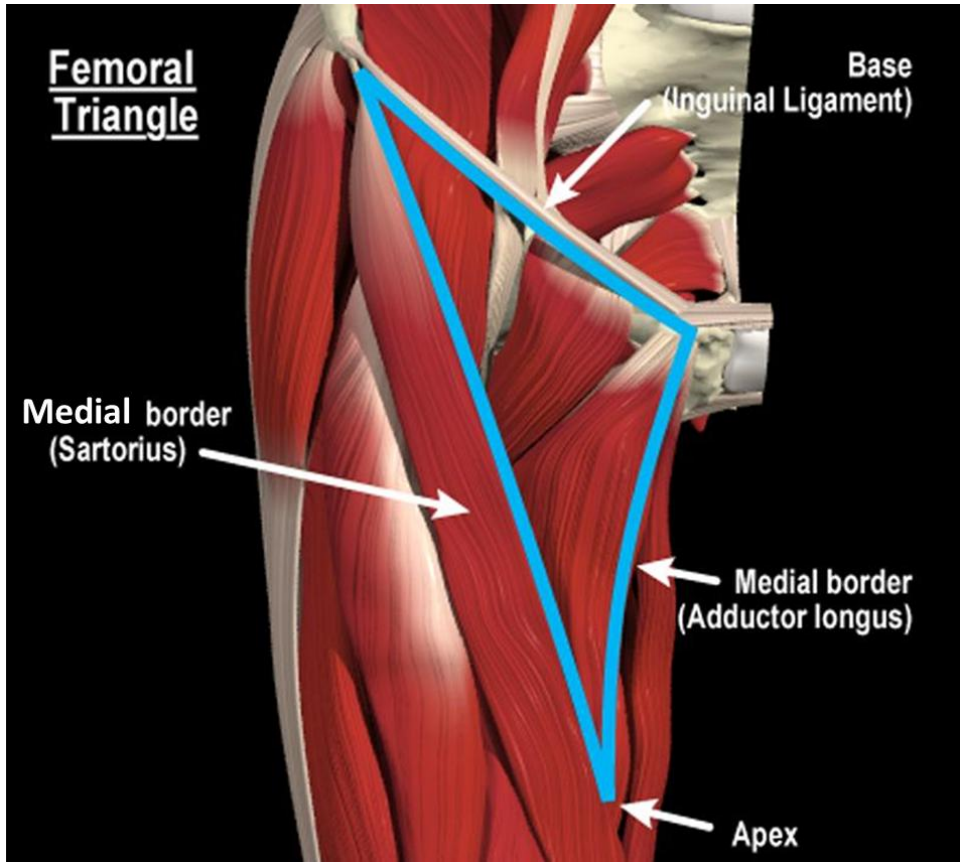


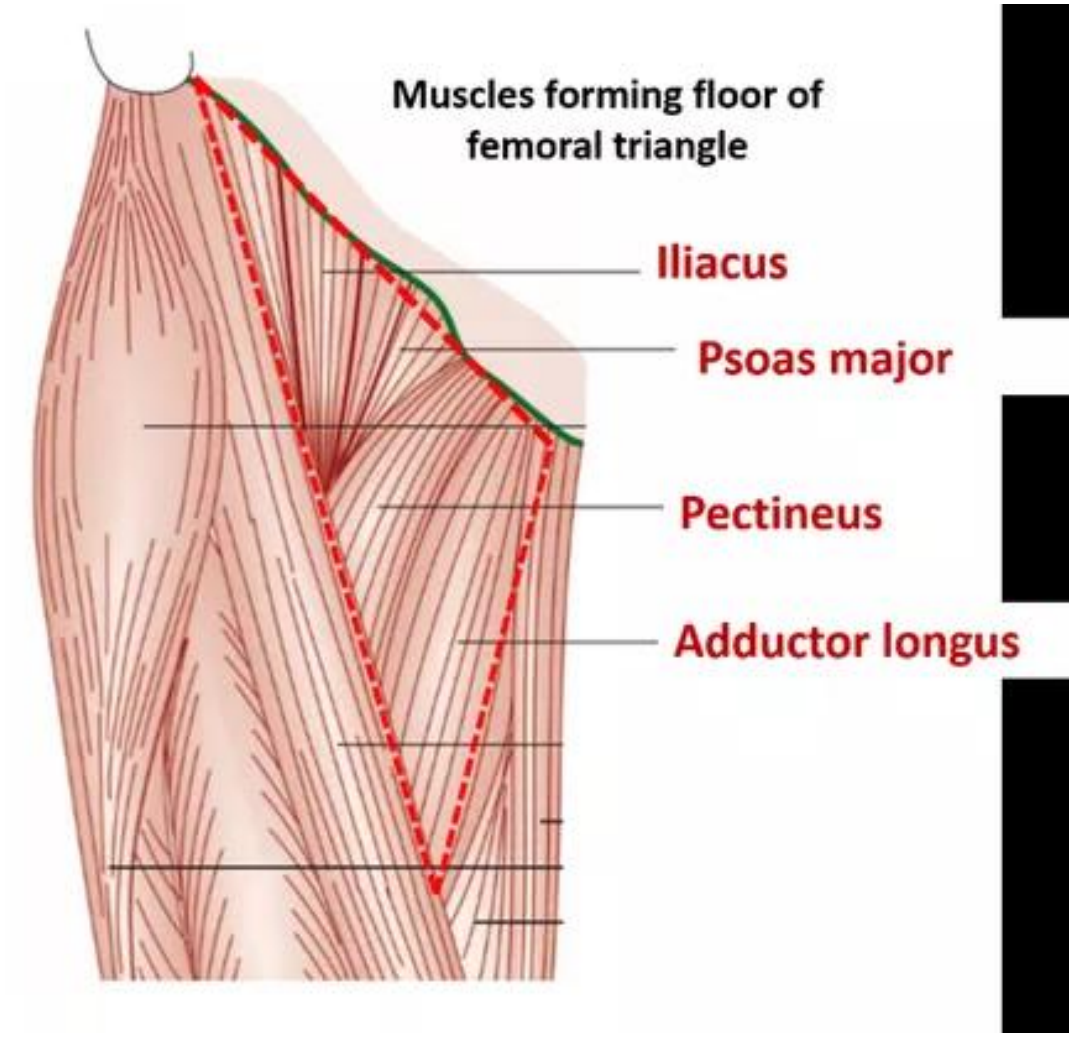
Boundaries of Femoral Triangle

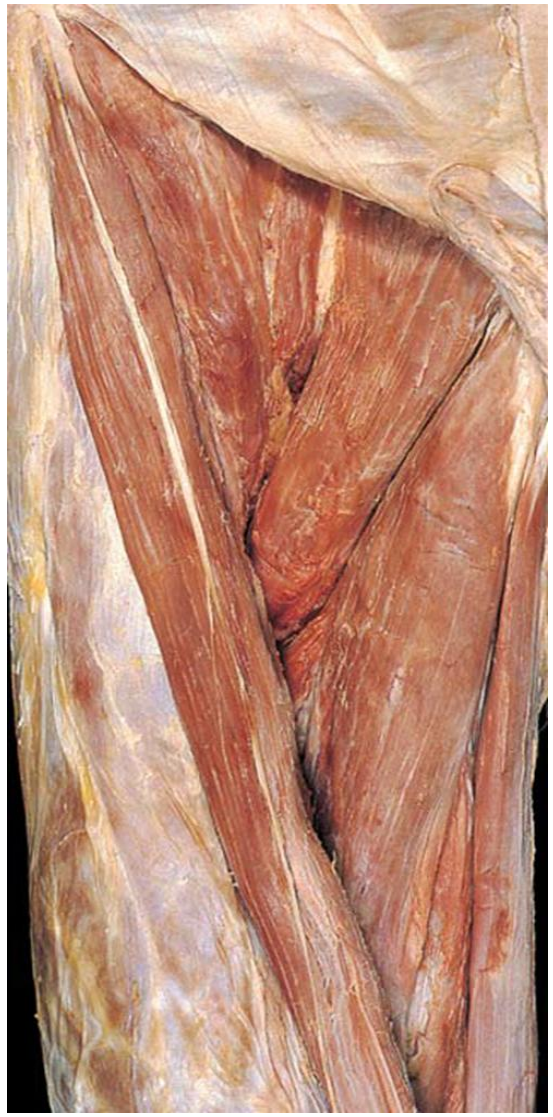
- **Superiorly (base):** inguinal ligament
- **Laterally:** medial border of sartorius
- **Medially:** medial border of adductor longus

- **Anterior wall (roof):** fascia lata
- **Posterior wall (floor)** - from medial to lateral: adductor longus, pectineus, psoas major and iliacus

- **Apex:** continuous with adductor canal



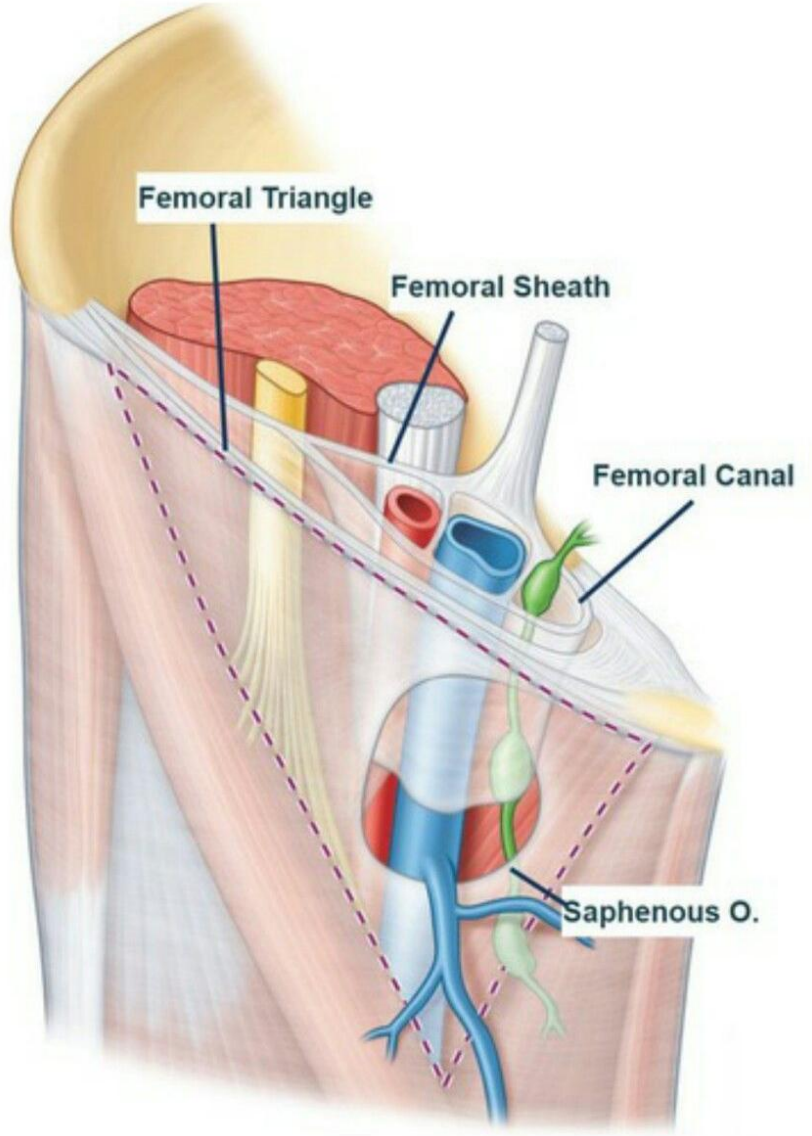

Muscles forming floor of femoral triangle
Iliacus
Psoas major
Pectineus
Adductor longus



Contents of Femoral Triangle

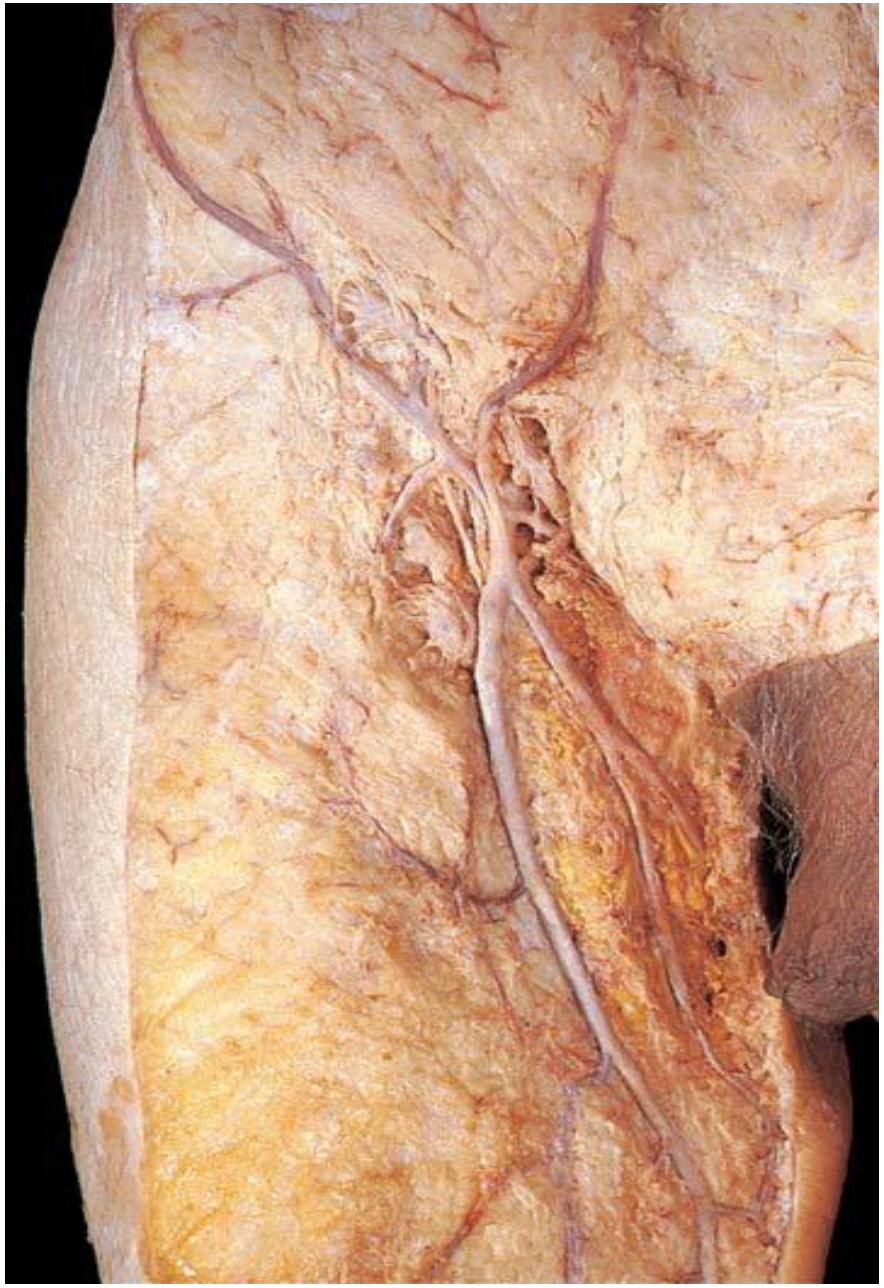
- Contain:
  1. **Femoral nerve**
  2. **Femoral artery**
  3. **Femoral vein**
  4. **Femoral canal –** contains deep inguinal lymph nodes and vessels**.**

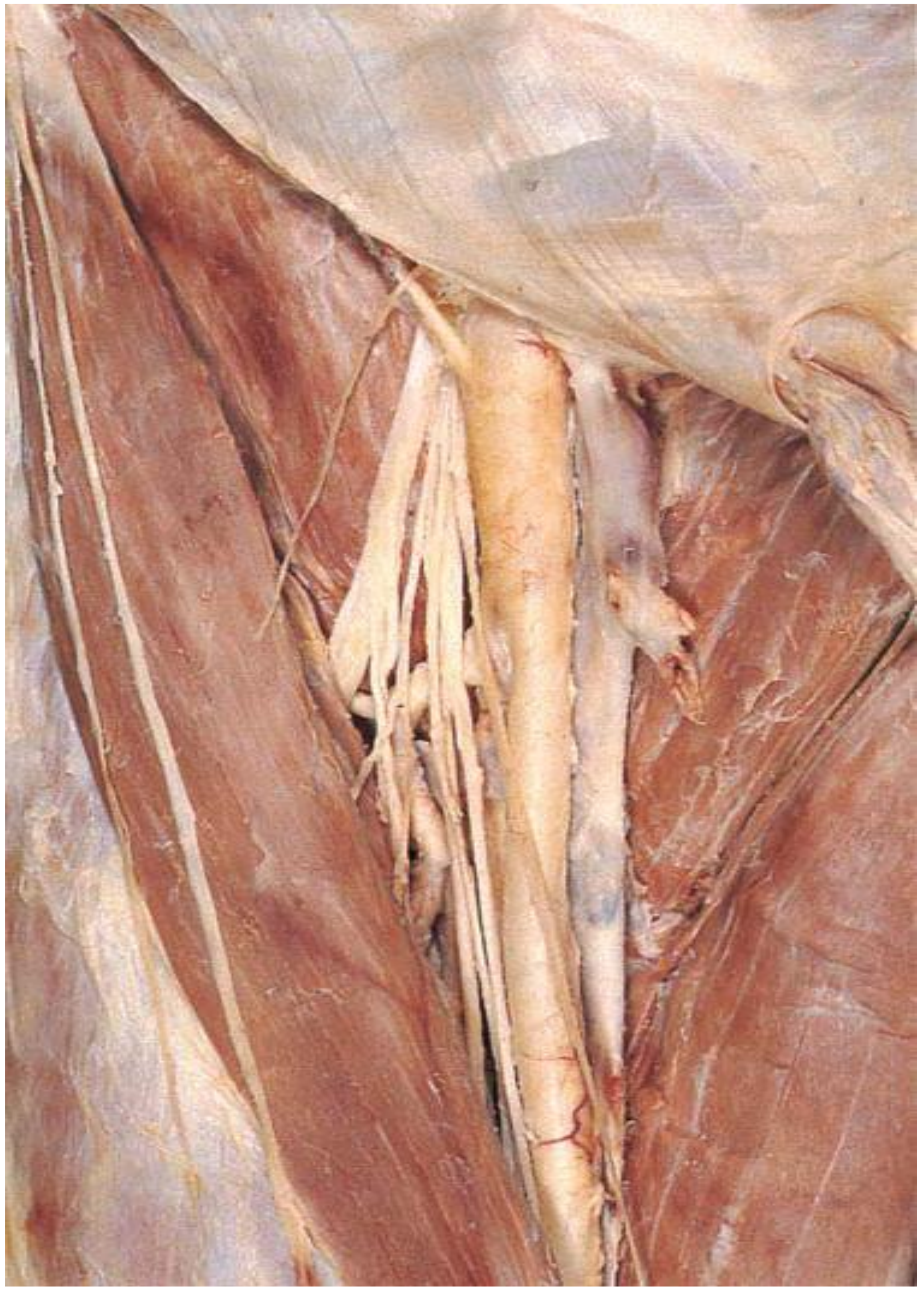
- The femoral artery, vein and canal are contained within a fascial compartment – known as the **femoral sheath**



Note 'femoral sheath' does NOT cover the femoral nerve.
othetwise from medial to lateral (*) NAV...

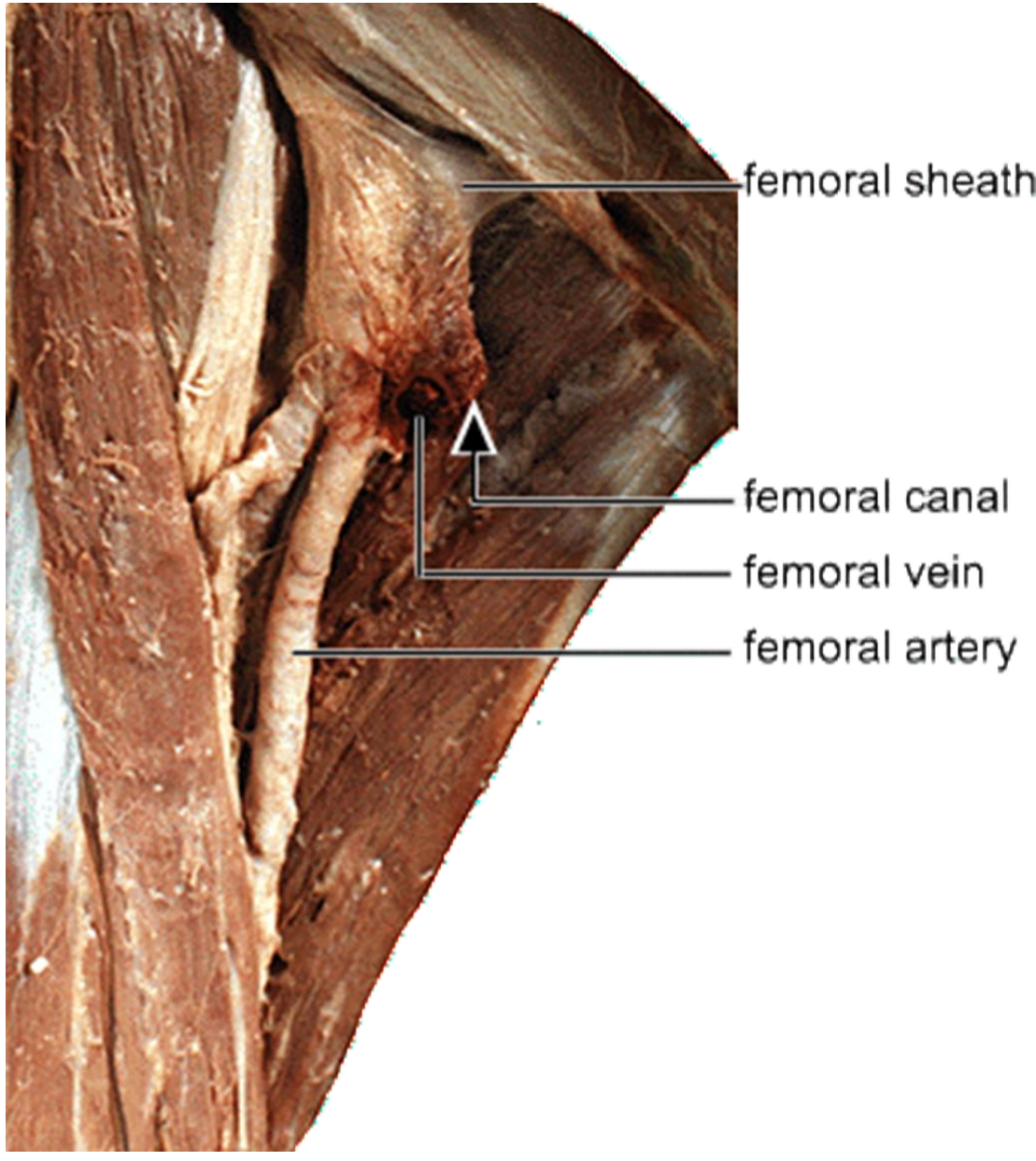
Femoral canal contains "Lymph node of cloquet"





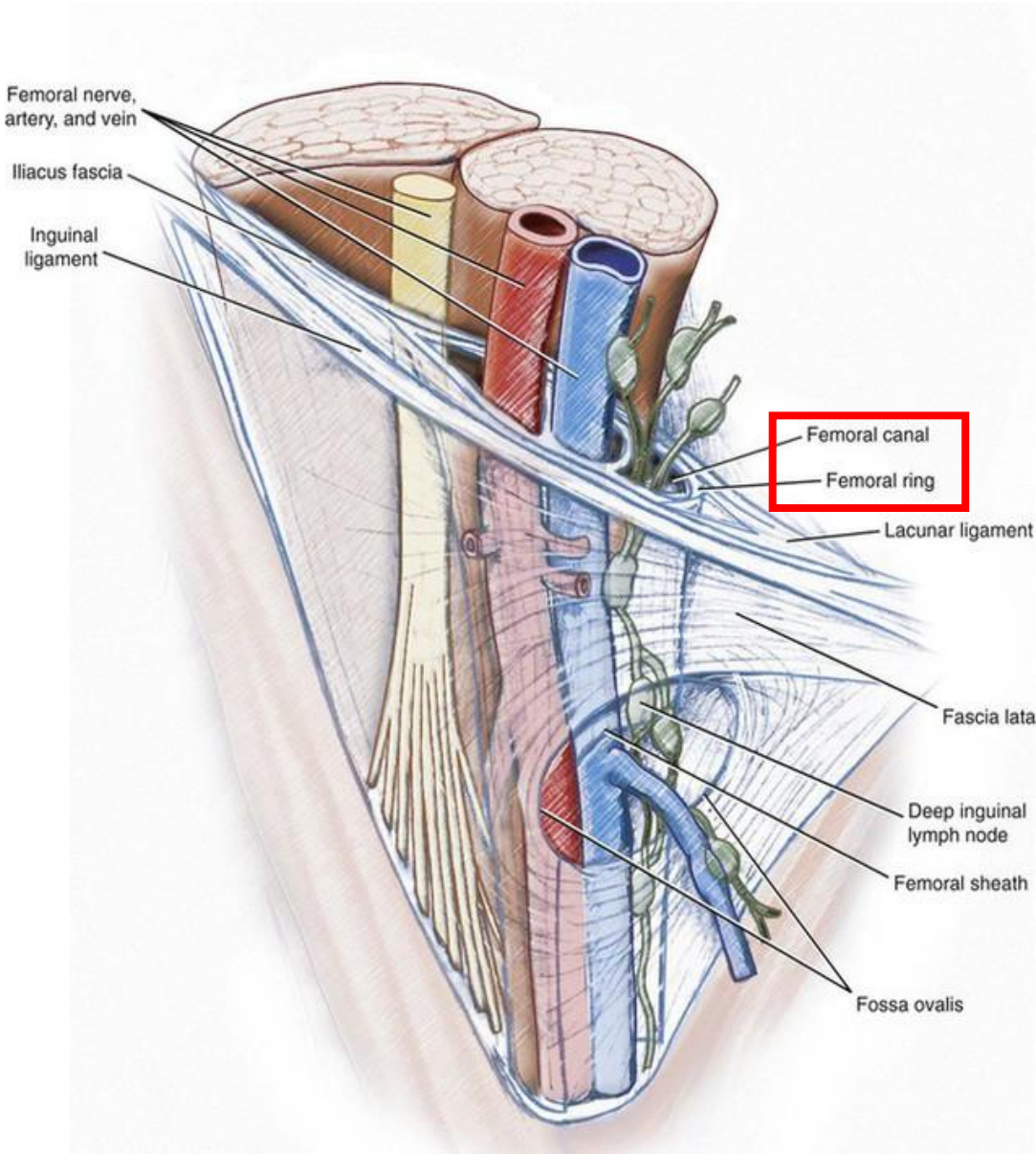
Femoral Sheath

- A funnel- shaped sheath
- Derived from transversalis fascia anteriorly and iliac fascia posteriorly
- It surrounds the femoral vessels and lymphatic about 2.5cm below the inguinal ligament



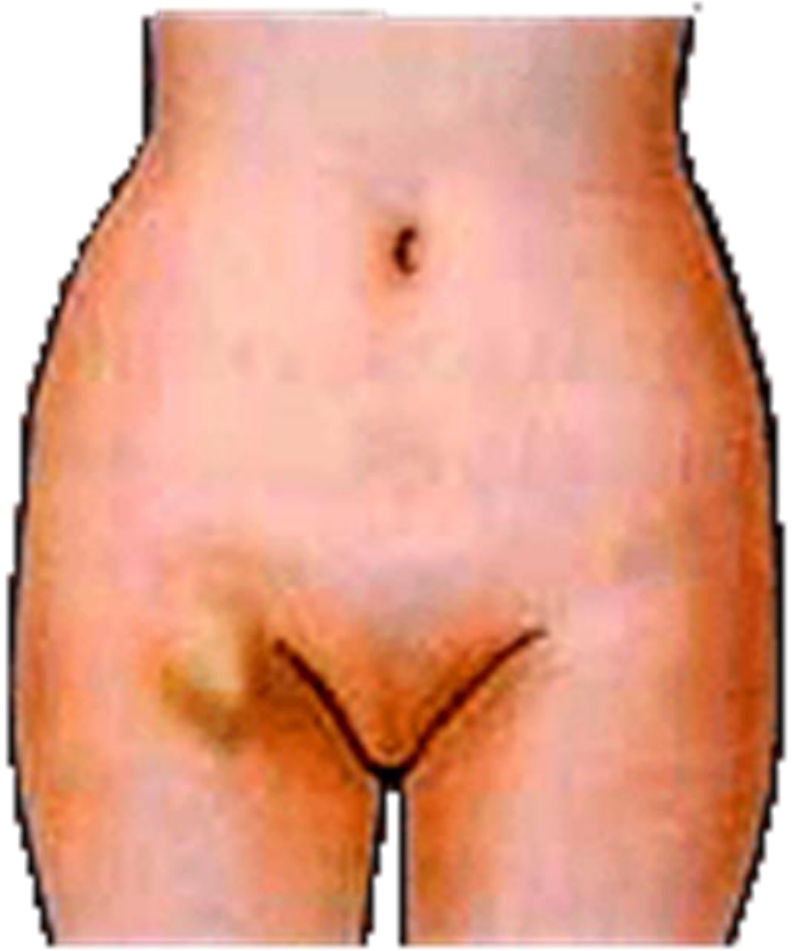
Femoral Canal

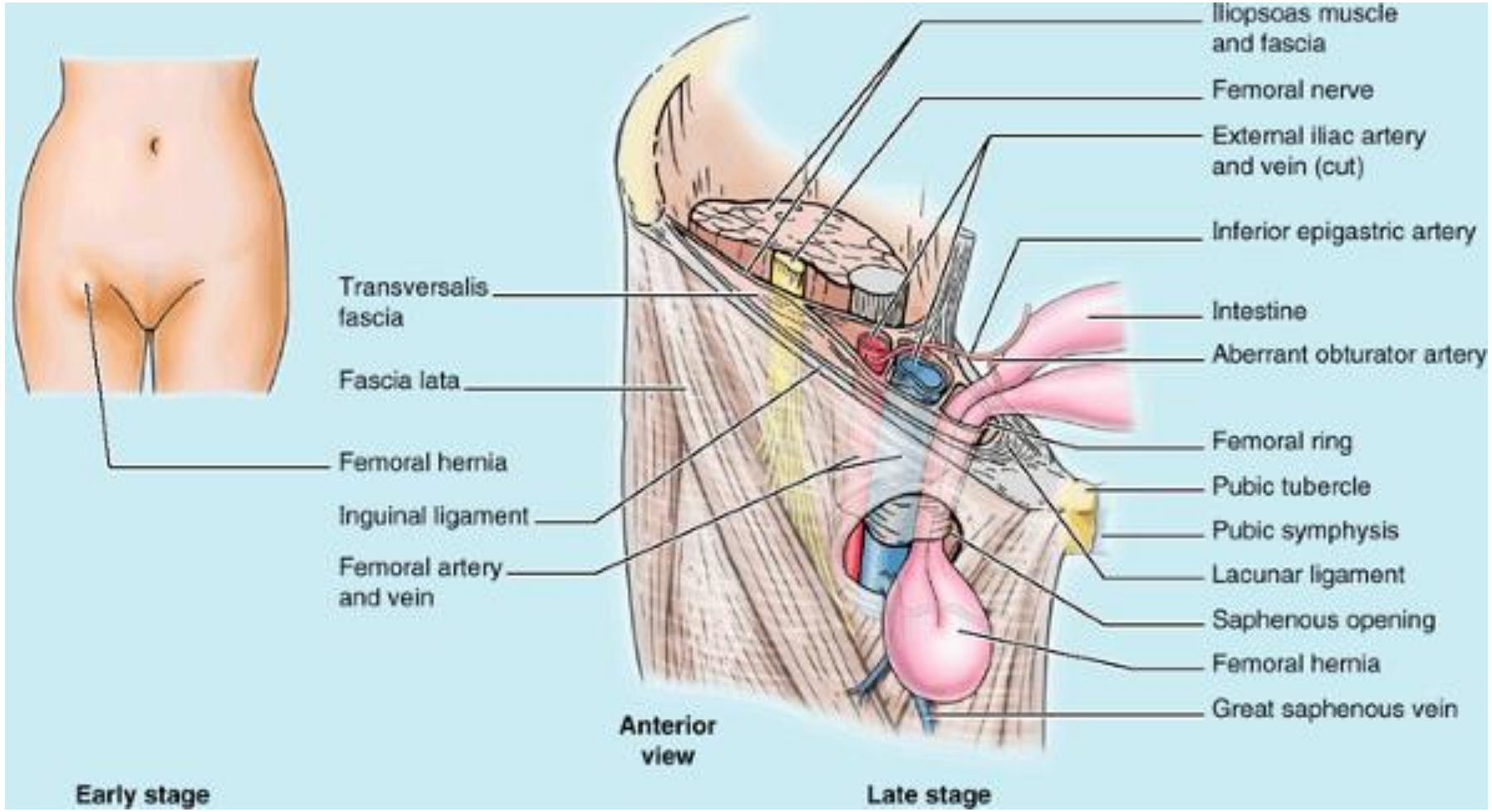
- It is the medial compartment of the femoral sheath
- About 1.3cm long , and its upper opening is called the **femoral ring**
- Contains: a little loose fatty tissue, a small lymph node, and some lymph vessels.
- Being relatively empty, the femoral canal accommodates the distension of the femoral vein due to increased venous return from the lower limb during muscular exercise.



Femoral Hernia

- Femoral ring is a weak part in the abdominal wall
- Under increased intra abdominal pressure, small intestines or peritoneum may protrude into the femoral canal causing **femoral hernia**
- A femoral hernia **is more common in women** than in men (possibly because their wider pelvis and femoral canal).



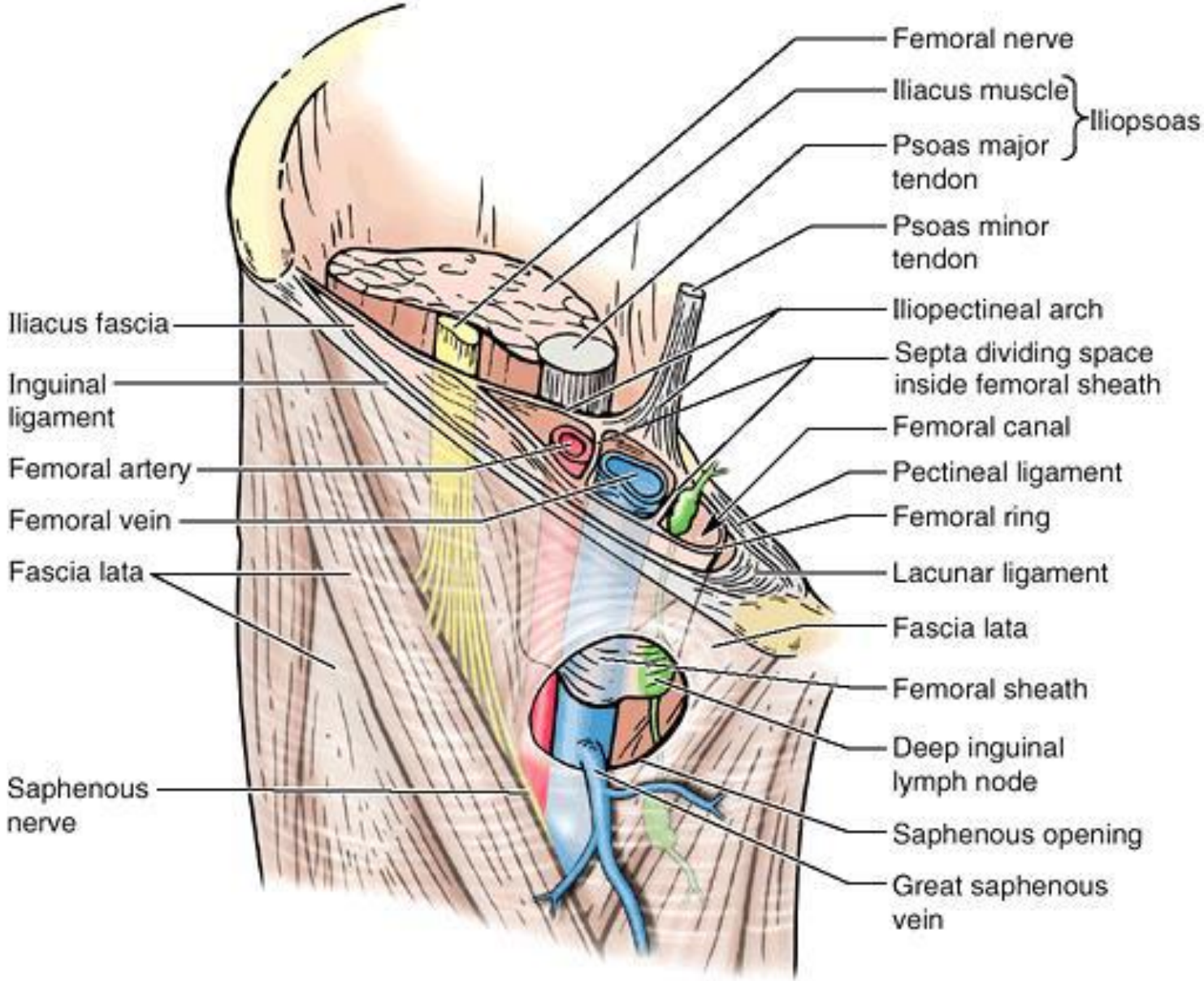

Iliopsoas muscle and fascia
Femoral nerve
External iliac artery and vein (cut)
Inferior epigastric artery
Intestine
Aberrant obturator artery
Femoral ring
Pubic tubercle
Pubic symphysis
Lacunar ligament
Saphenous opening
Femoral hernia
Great saphenous vein
Transversalis fascia
Fascia lata
Femoral hernia
Inguinal ligament
Femoral artery and vein
Anterior view
Early stage
Late stage

Cont..

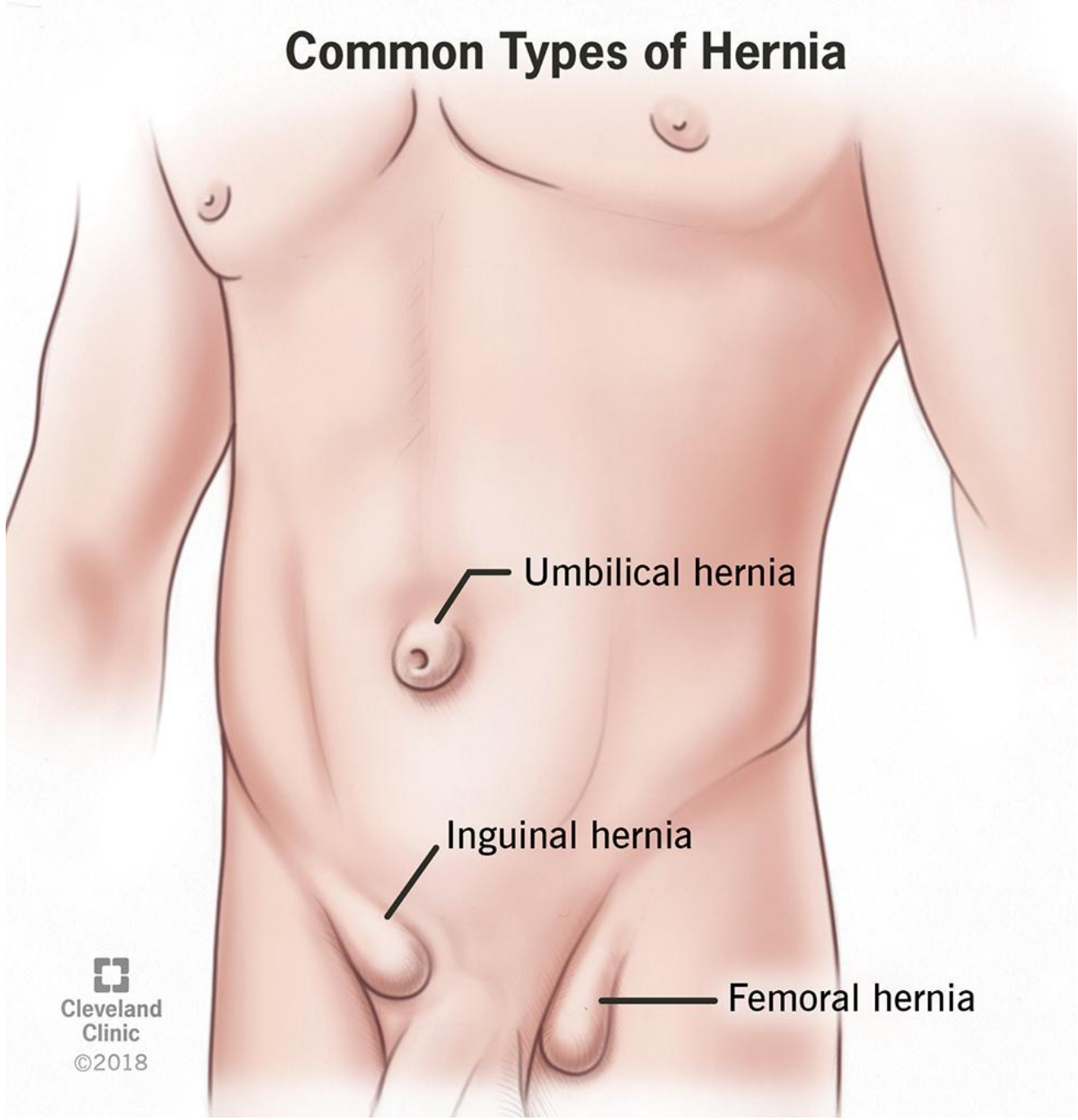
- The neck of the sac is narrow and lies at the femoral ring.

- The ring is related:
  1. **Anteriorly** to the inguinal ligament
  2. **Posteriorly** to the pectineal ligament and the pubis
  3. **Medially** to the sharp free edge of the lacunar ligament
  4. **Laterally** to the femoral vein.

  - Because of the presence of these anatomic structures, the neck of the sac is unable to expand.



Anterior view


Common Types of Hernia
Umbilical hernia
Inguinal hernia
Femoral hernia
Cleveland Clinic
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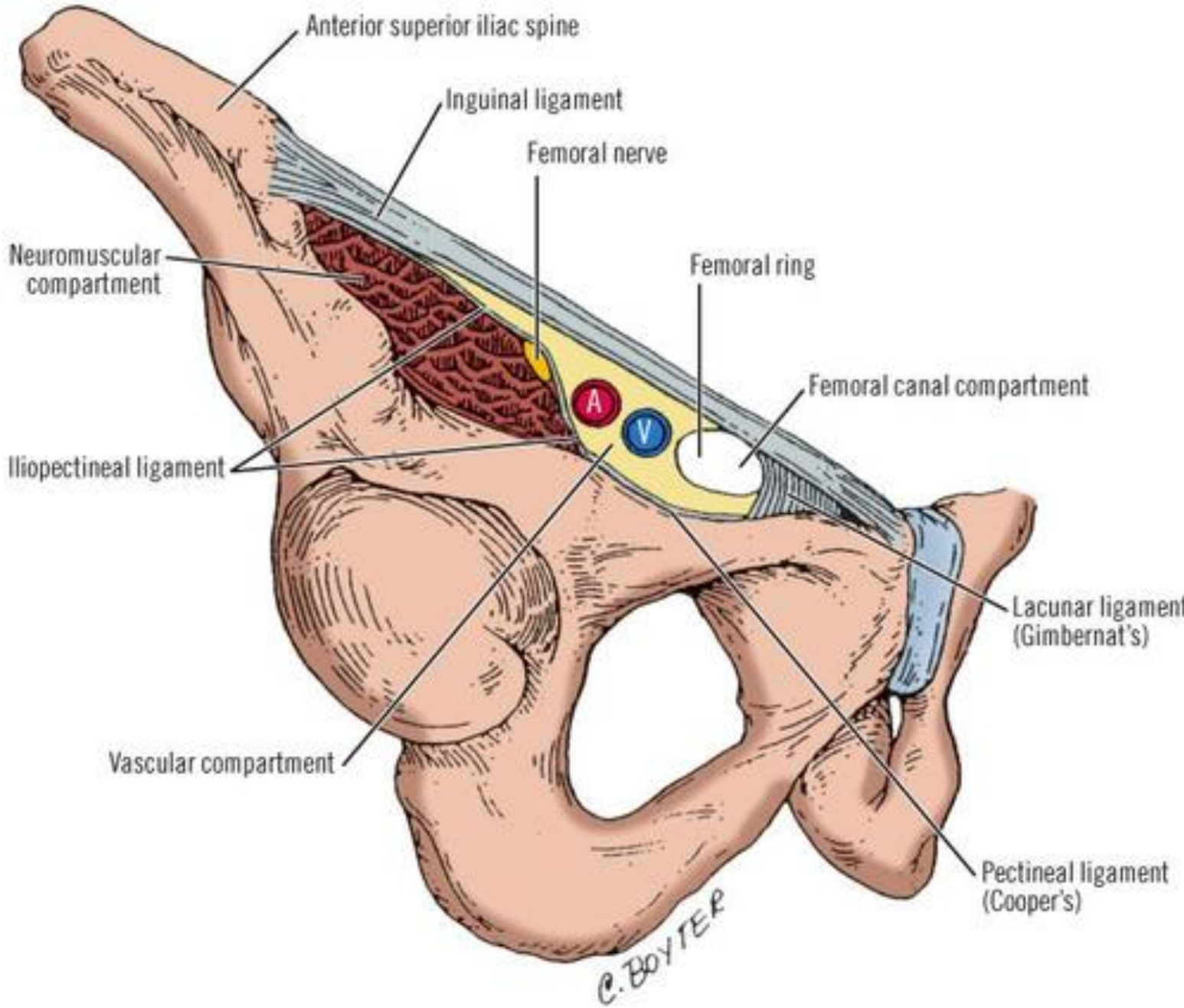
Femoral Hernia – Surgical Consideration

- During hernial reduction, lacunar ligament is resected to widen the femoral ring.

- **Before resection, lacunar ligament should be examined for the presence of an abnormal obturator artery passing just behind it, to avoid its injury and the risk of patient bleeding**


Anterior superior iliac spine
Inguinal ligament
Femoral nerve
Neuromuscular compartment
Femoral ring
Femoral canal compartment
A
V
Iliopectineal ligament
Lacunar ligament (Gimbernat's)
Vascular compartment
Pectineal ligament (Cooper's)
C. BOYTER

Thank you

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