Systemic Module

MSS

"Anatomy"

Adductors and Hamstrings of the Thigh

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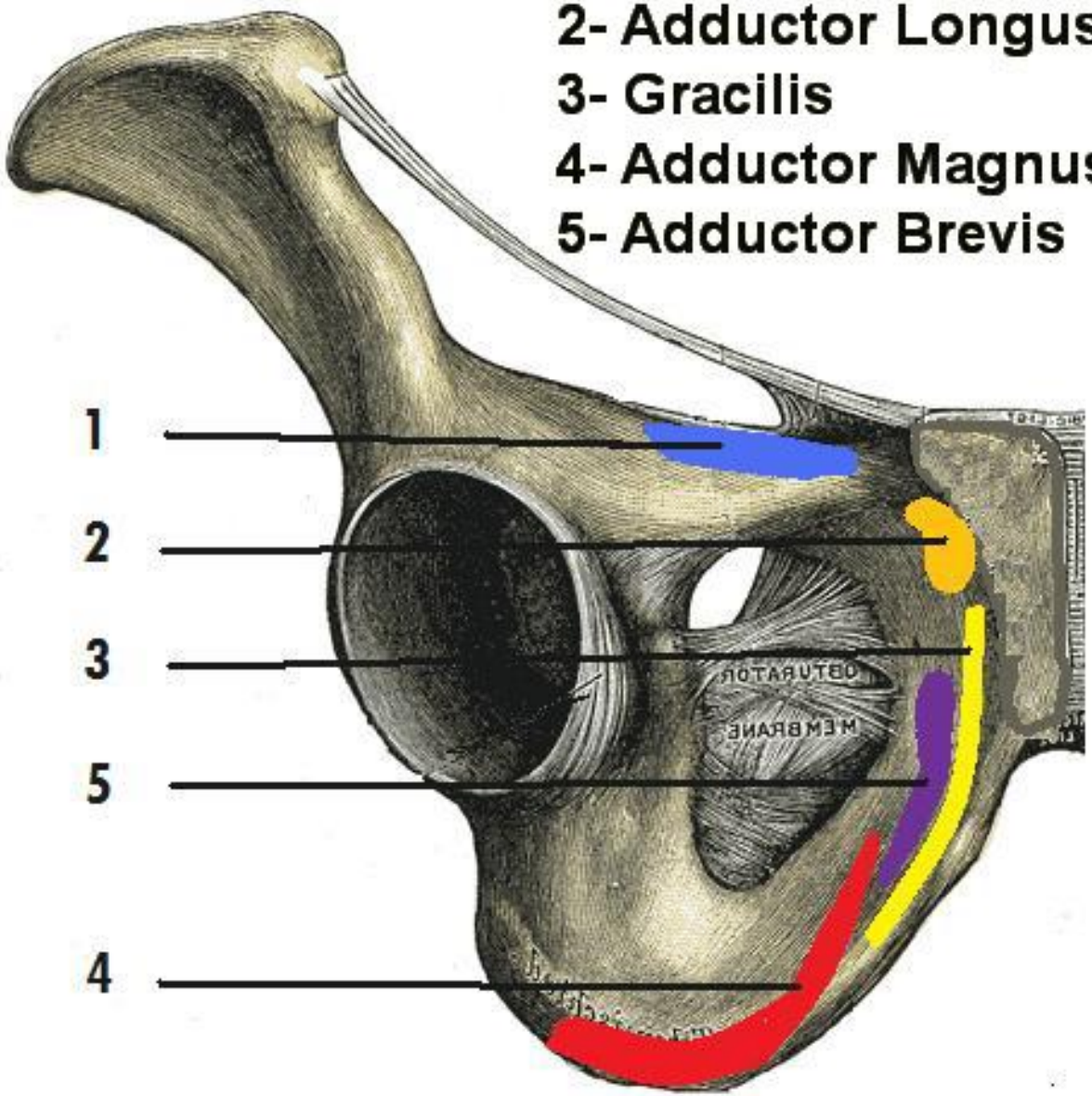
Adductor Compartment

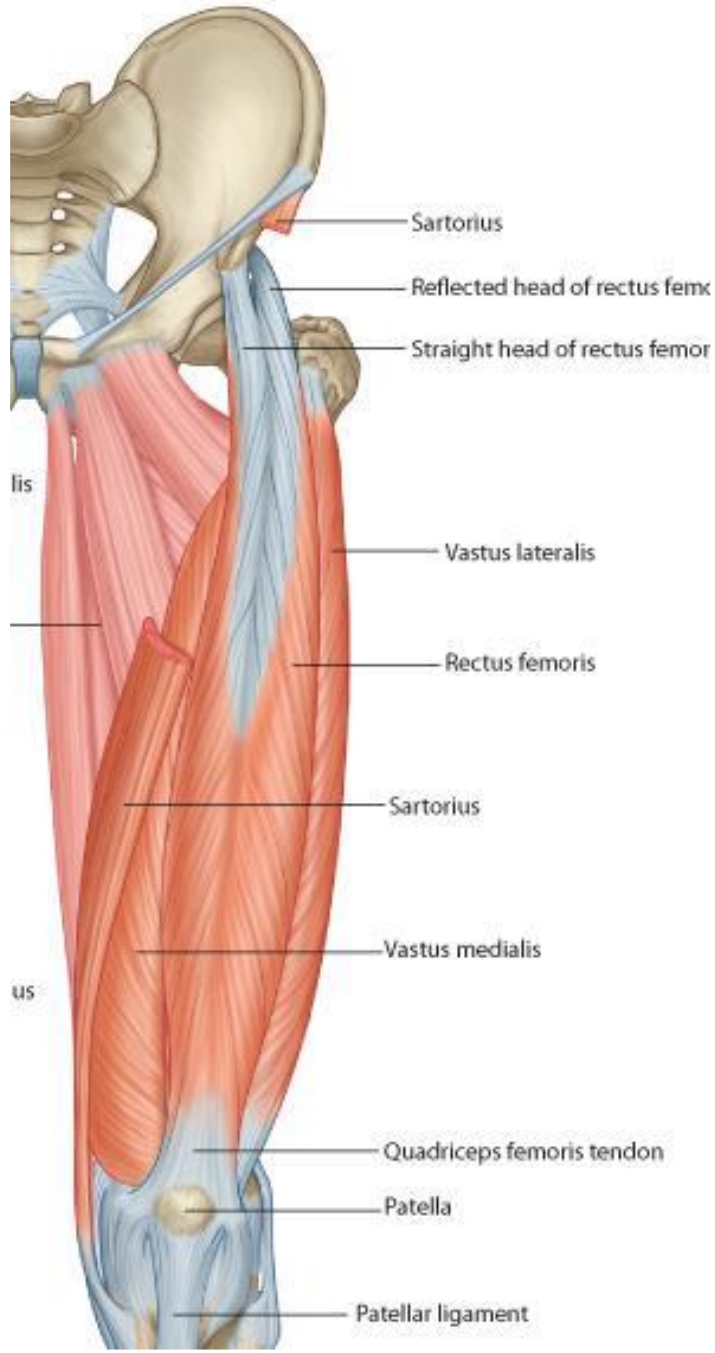
Muscles of the Adductor Compartment

- The muscles in the medial compartment of the thigh are collectively known as the **hip adductors**.

- There are five muscles in this group, arranged into 3 layers:
  1. **Anterior layer: Pectineus, Adductor Longus, Gracilis**.
  2. **Middle layer: Adductor Brevis, Obturator Externus**
  3. **Posterior layer**: **Adductor Magnus.**

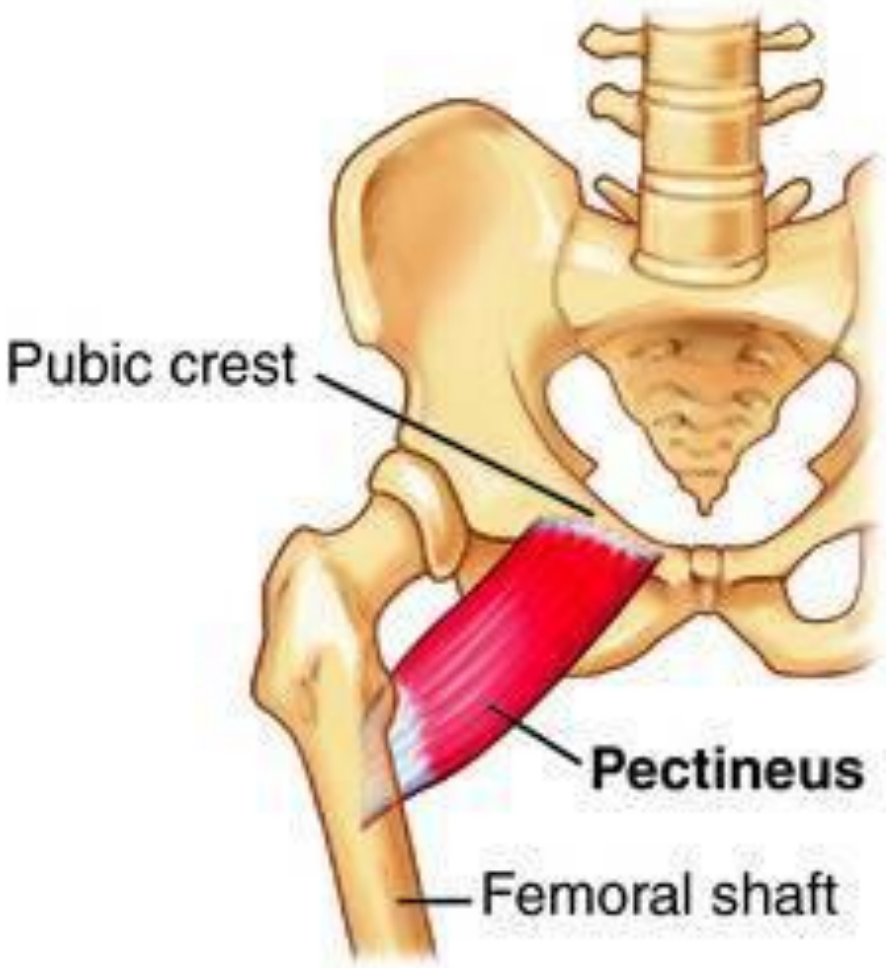
1- Pectineus
2- Adductor Longus
3- Gracilis
4- Adductor Magnus
5- Adductor Brevis

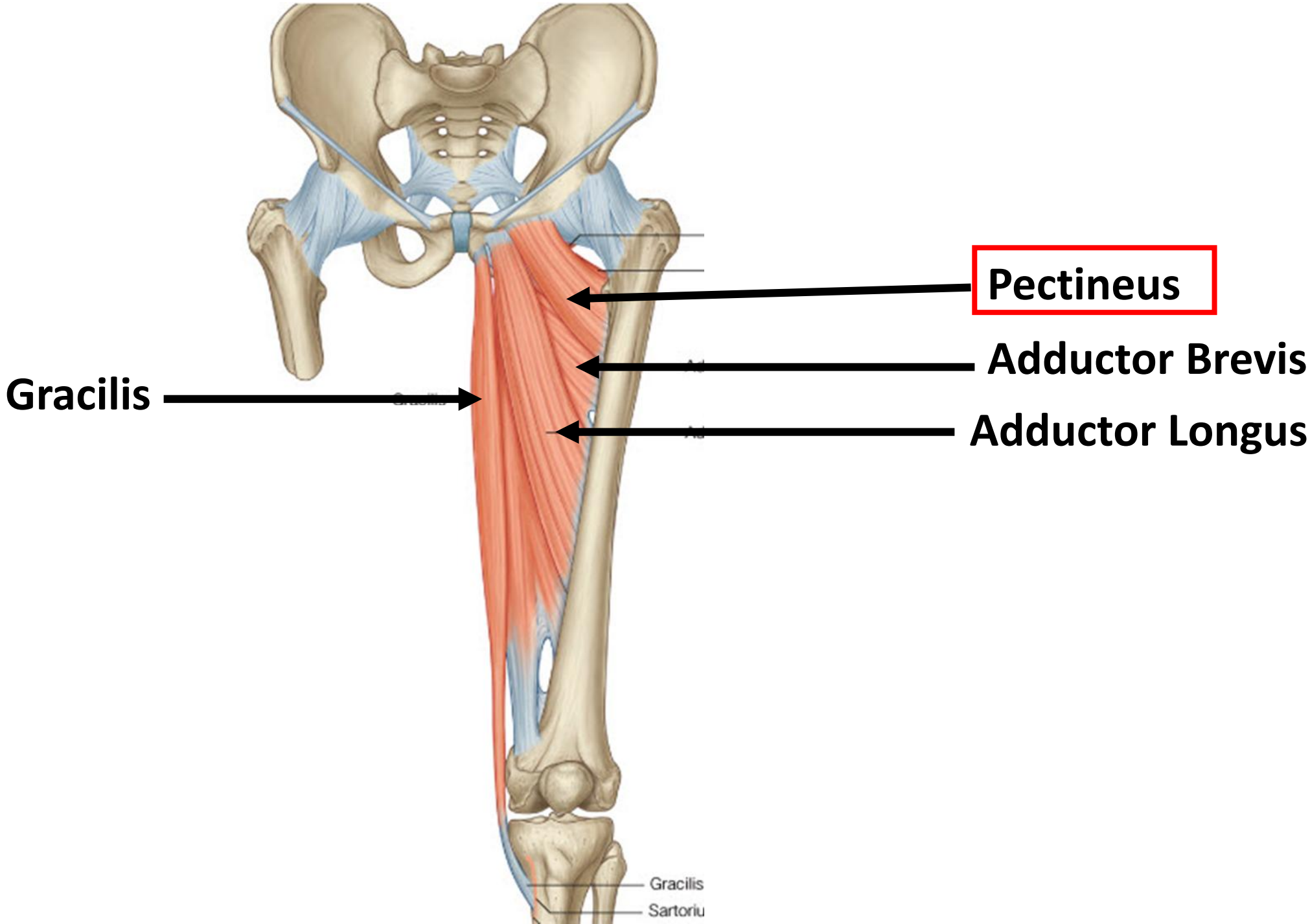


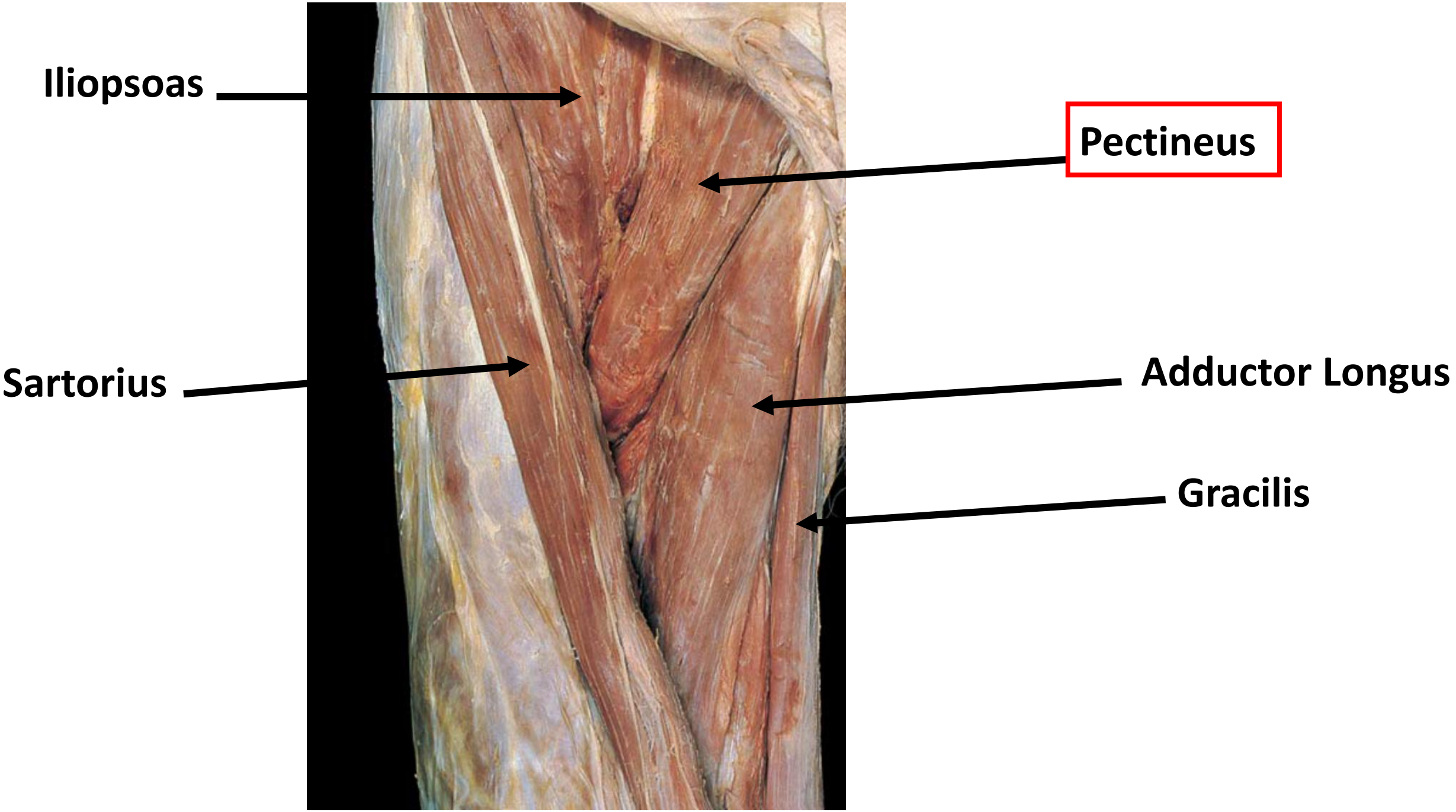


Pectineus

- **Origin: S**uperior pubic ramus.
- **Insertion:** In line extending from lesser trochanter to linea aspera.
- **Action:** Adduction & flexion of thigh at hip
- **Nerve supply**: Femoral nerve

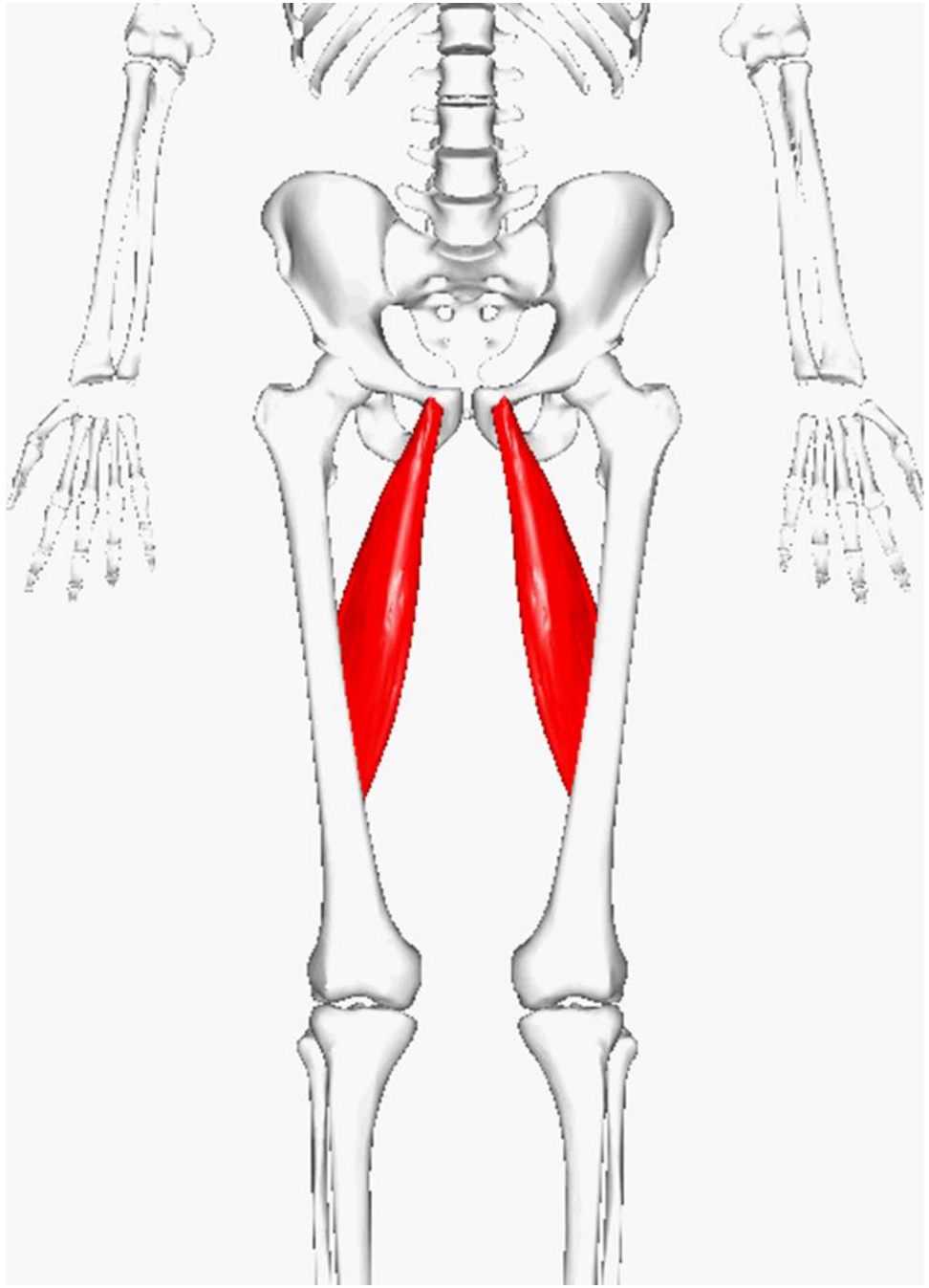


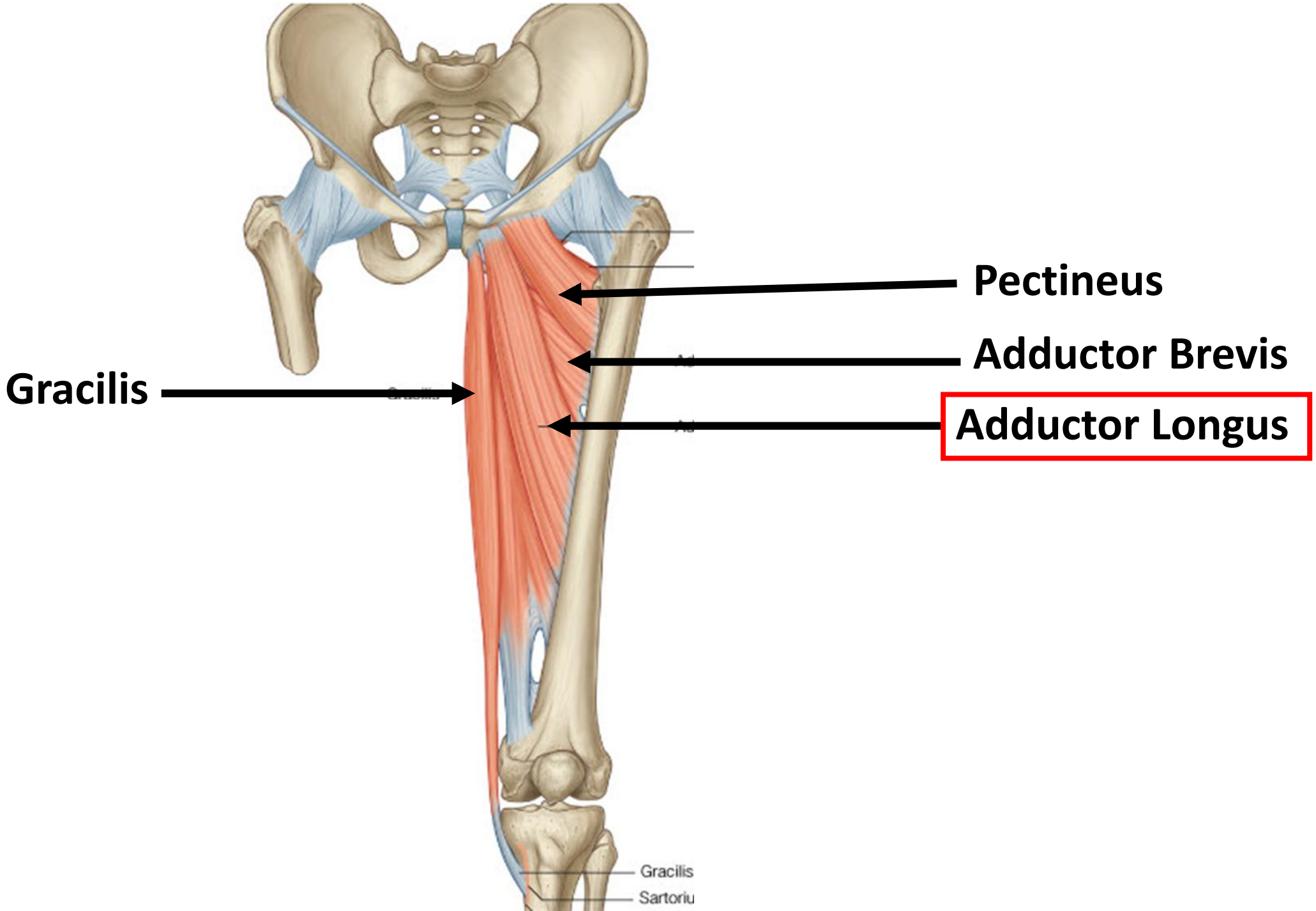

Pectineus
Adductor Brevis
Adductor Longus
Gracilis
Gracilis
Sartoriu

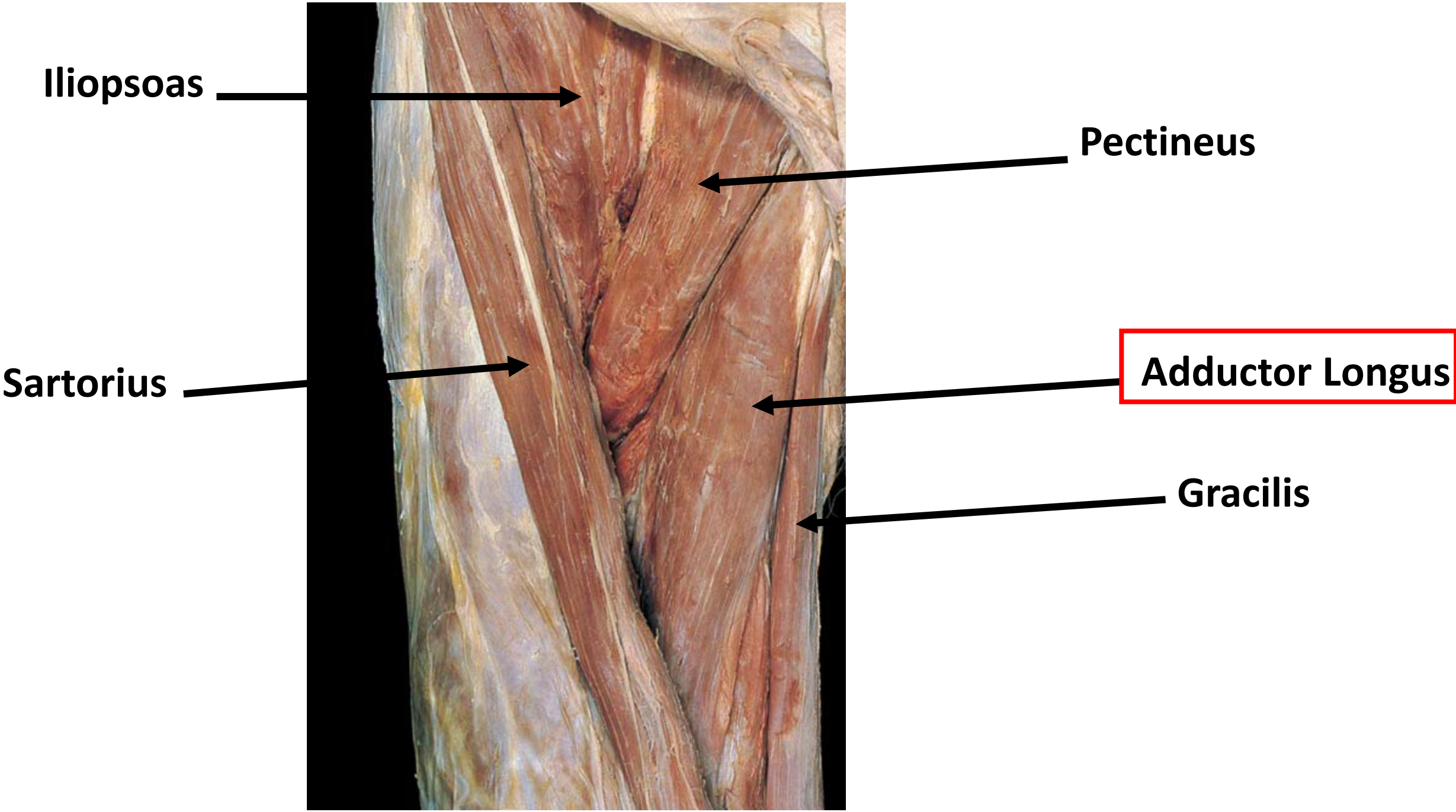

Iliopsoas
Pectineus
Sartorius
Adductor Longus
Gracilis

Adductor Longus

- **Origin:** Outer surface of body of pubis
- **Insertion:** Linea aspera on middle one-third of shaft of femur
- **Action:** Adducts and laterally rotates thigh at hip joint
- **Nerve Supply:** Anterior division of obturator nerve

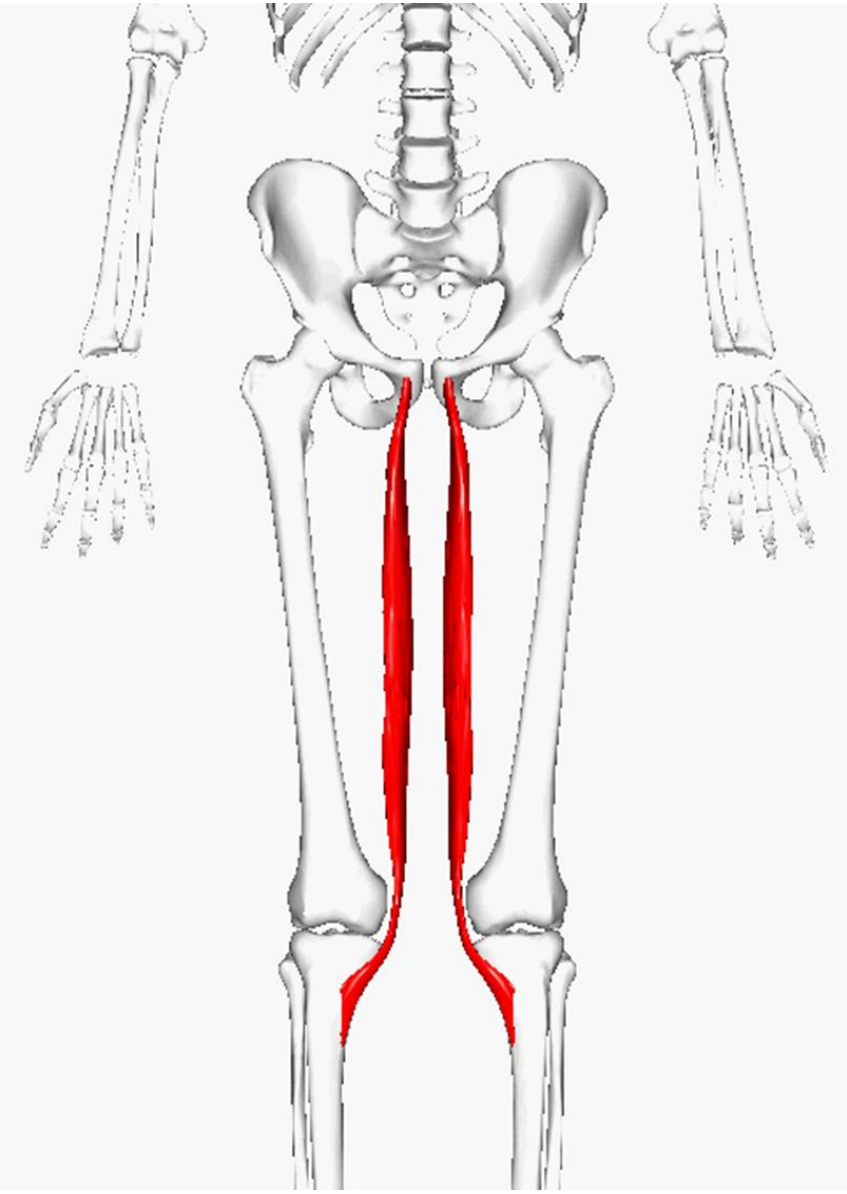


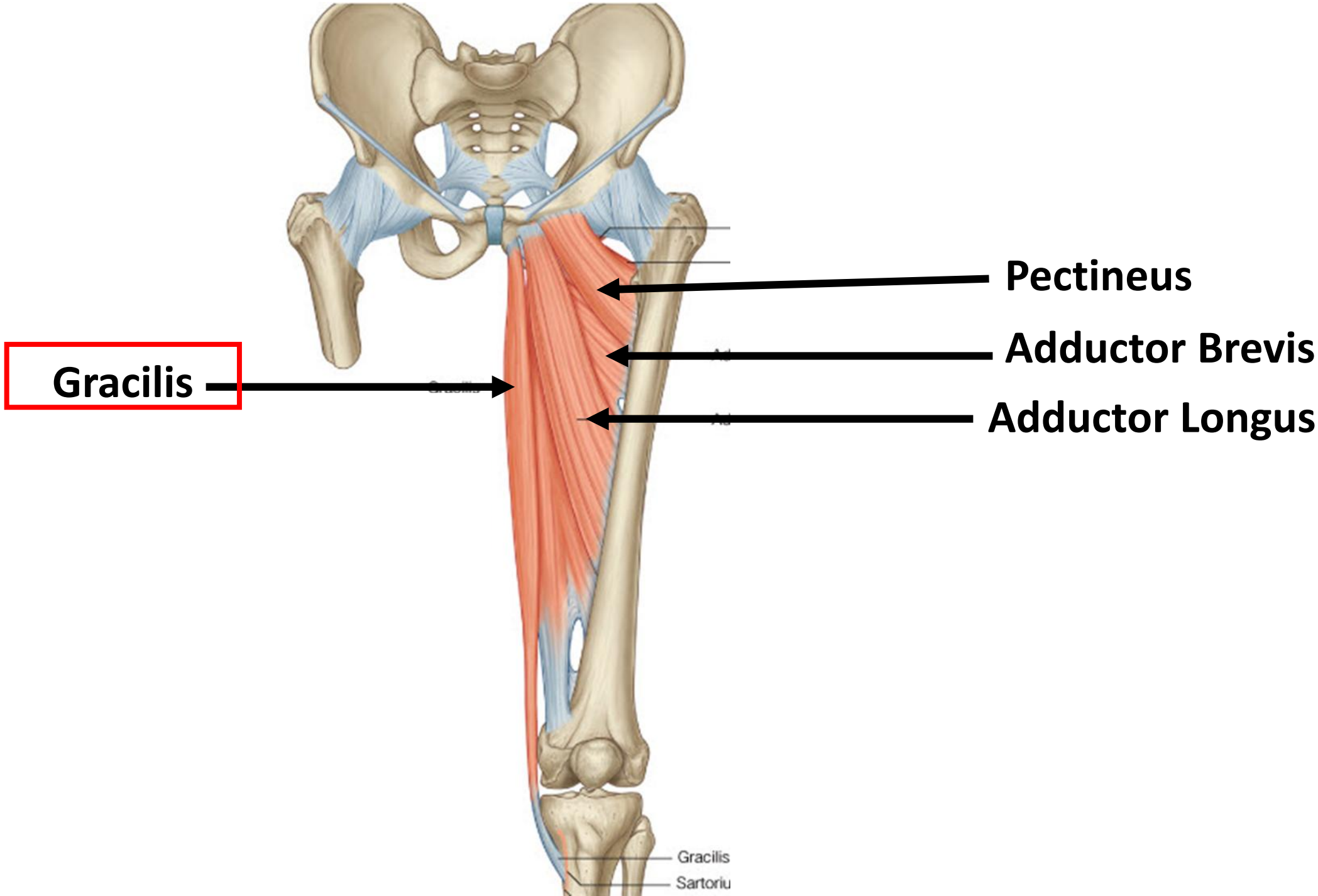

Pectineus
Adductor Brevis
Adductor Longus
Gracilis
Gracilis
Sartoriu

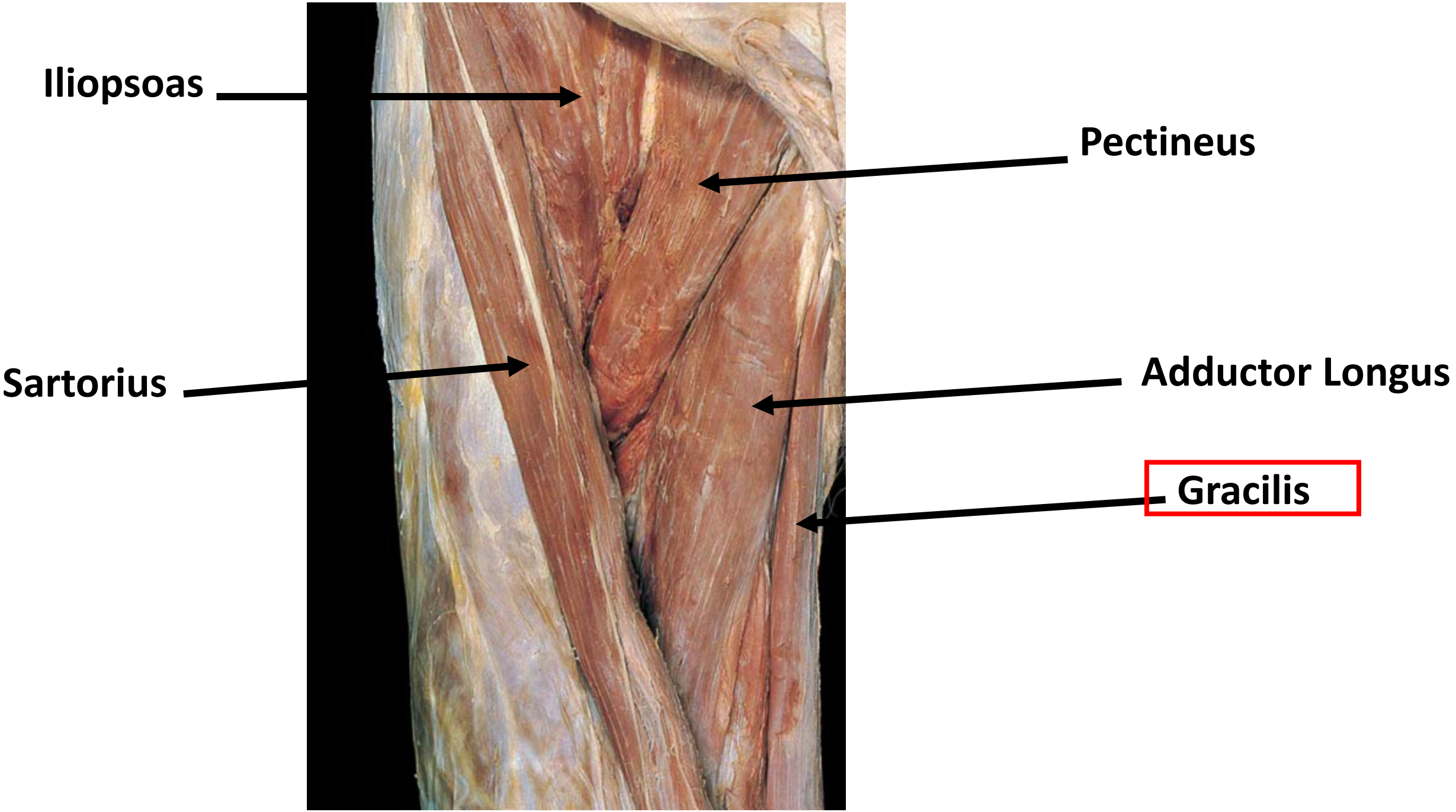

Iliopsoas
Pectineus
Sartorius
Adductor Longus
Gracilis

Gracilis

- **Origin:** Inferior pubic ramus
- **Insertion:** Upper part of medial surface of tibia
- **Action:**
  - Adduction of thigh
  - Flexion of knee & medial rotation of leg.
- **Nerve Supply:** Anterior division of obturator nerve




Pectineus
Adductor Brevis
Adductor Longus
Gracilis
Gracilis
Sartoriu

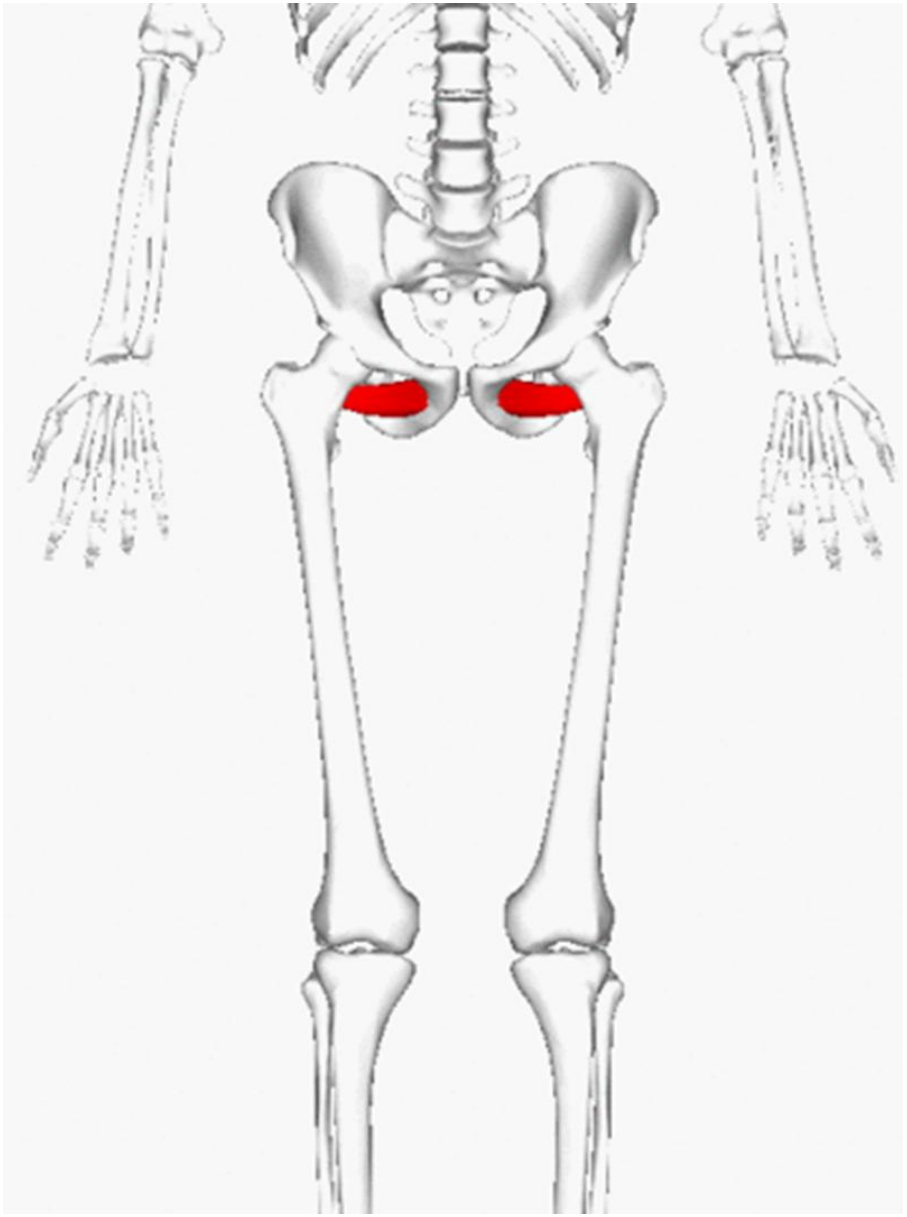

Iliopsoas
Pectineus
Sartorius
Adductor Longus
Gracilis

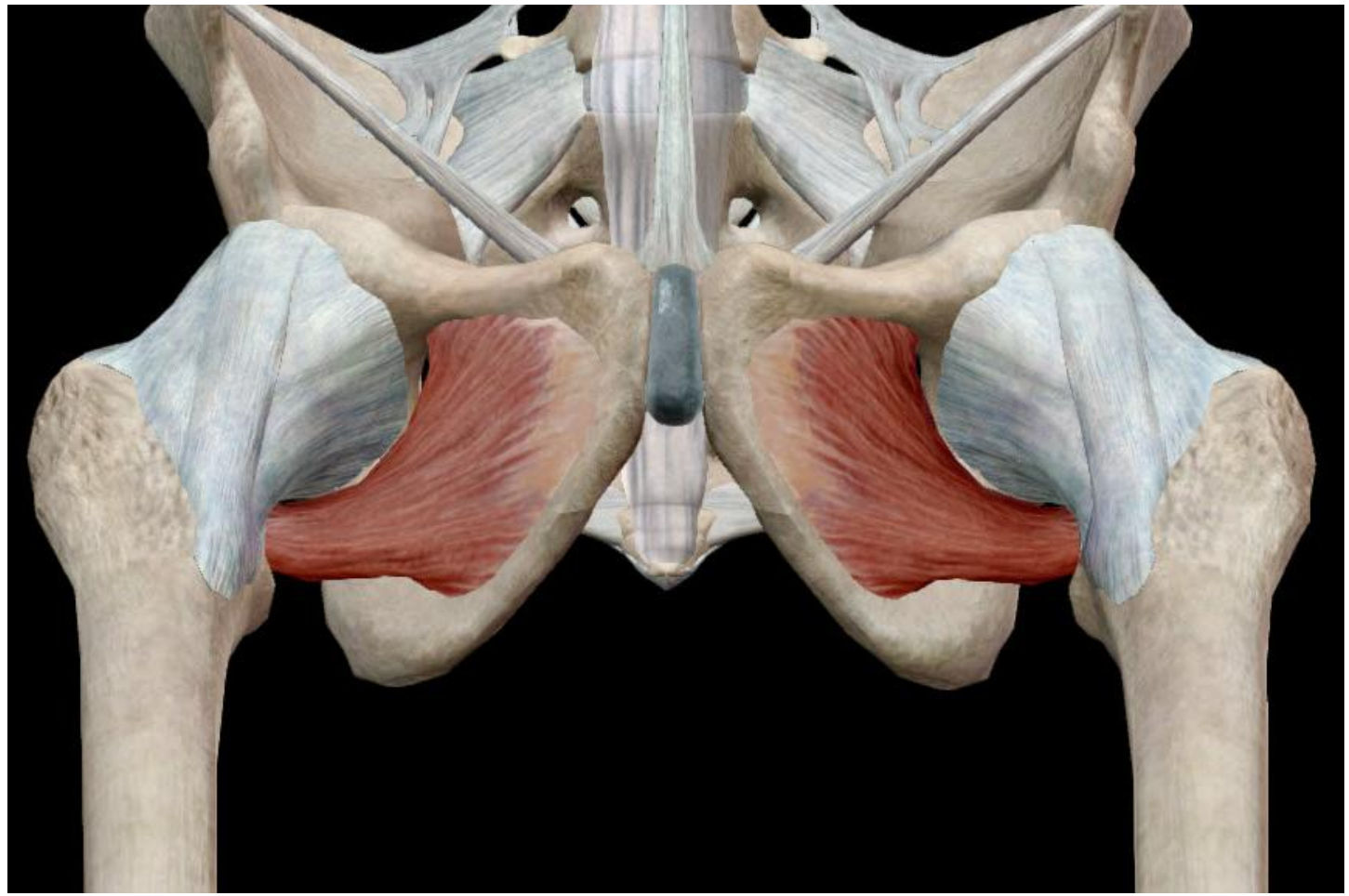
Obturator Externus

- It is located most superiorly

- **Origin:** External surface of obturator membrane and adjacent bone.
- **Insertion:** posterior aspect of the greater trochanter.
- **Action:** Adduction and lateral rotation of the thigh.

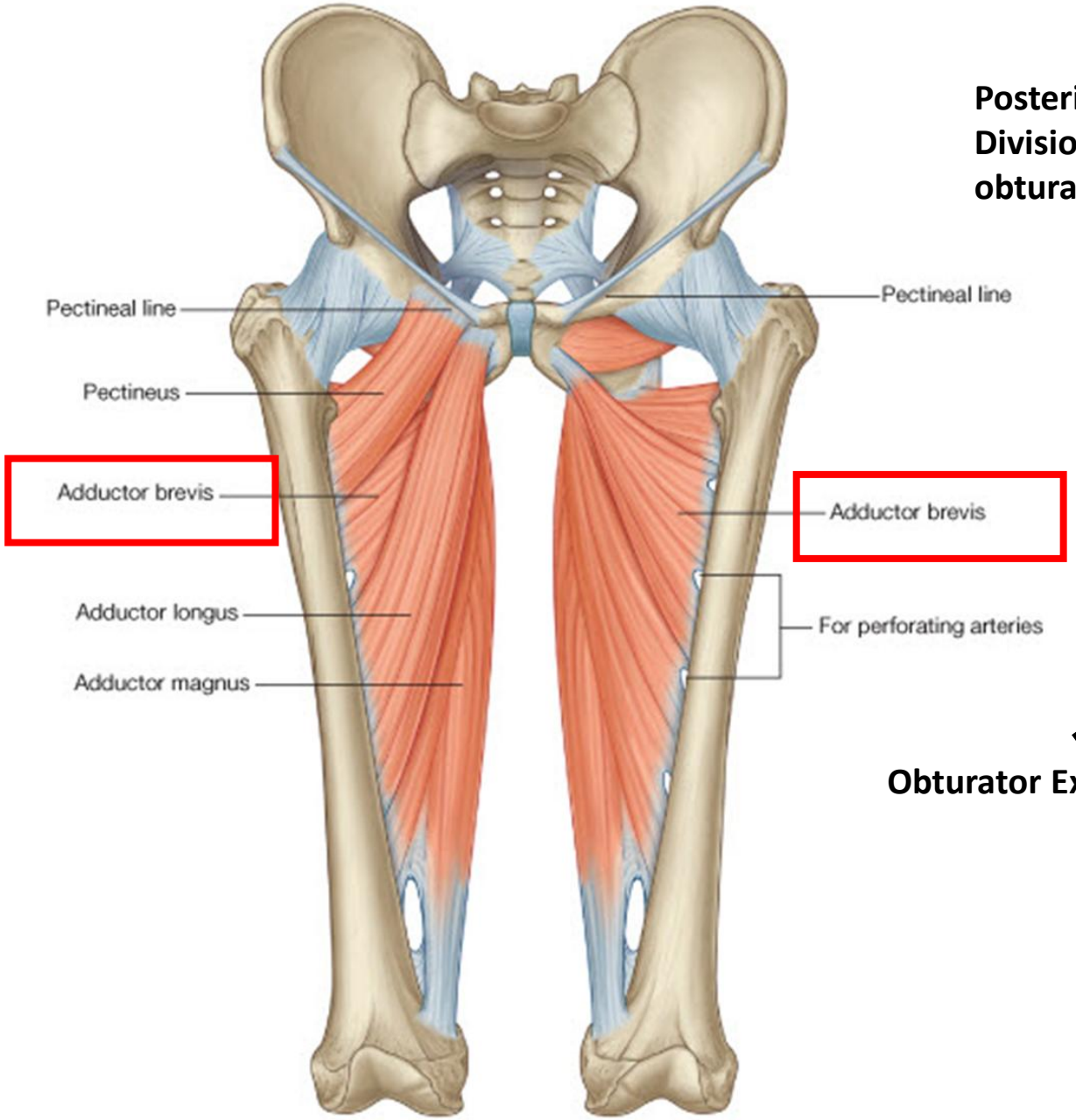
- **Nerve Supply:** Posterior division of obturator N.

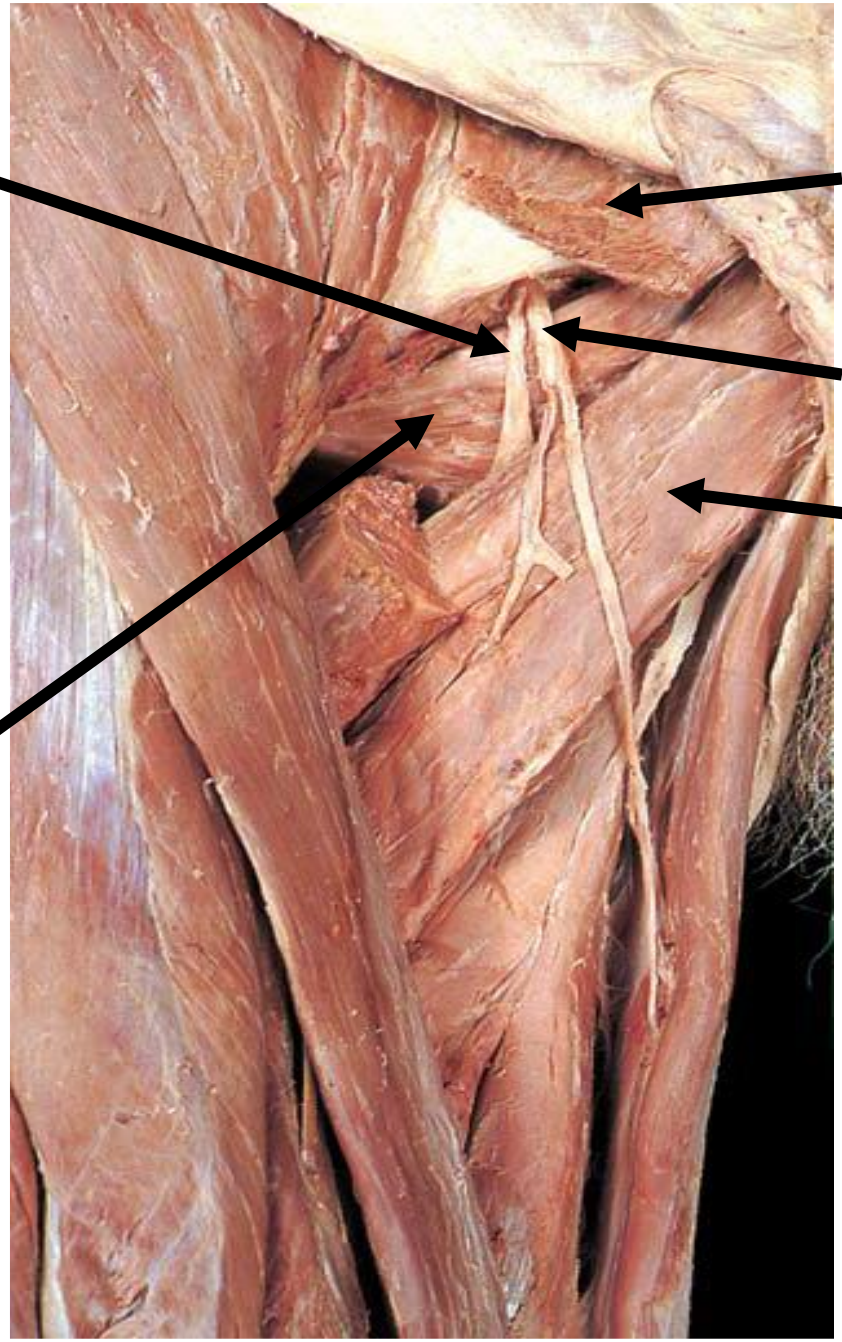




Adductor Brevis

- **Origin:** body of pubis and inferior pubic ramus
- **Insertion:** Posterior surface of proximal femur and upper one-third of linea aspera
- **Action:** Adduction and lateral rotation of thigh.
- **Nerve Supply:** Anterior and posterior division of obturator nerve
- **It lies in between the anterior and posterior divisions of the obturator nerve**





Posterior Division of obturator N.

Pectineus (cut)

Anterior Division of obturator N.

Adductor Brevis

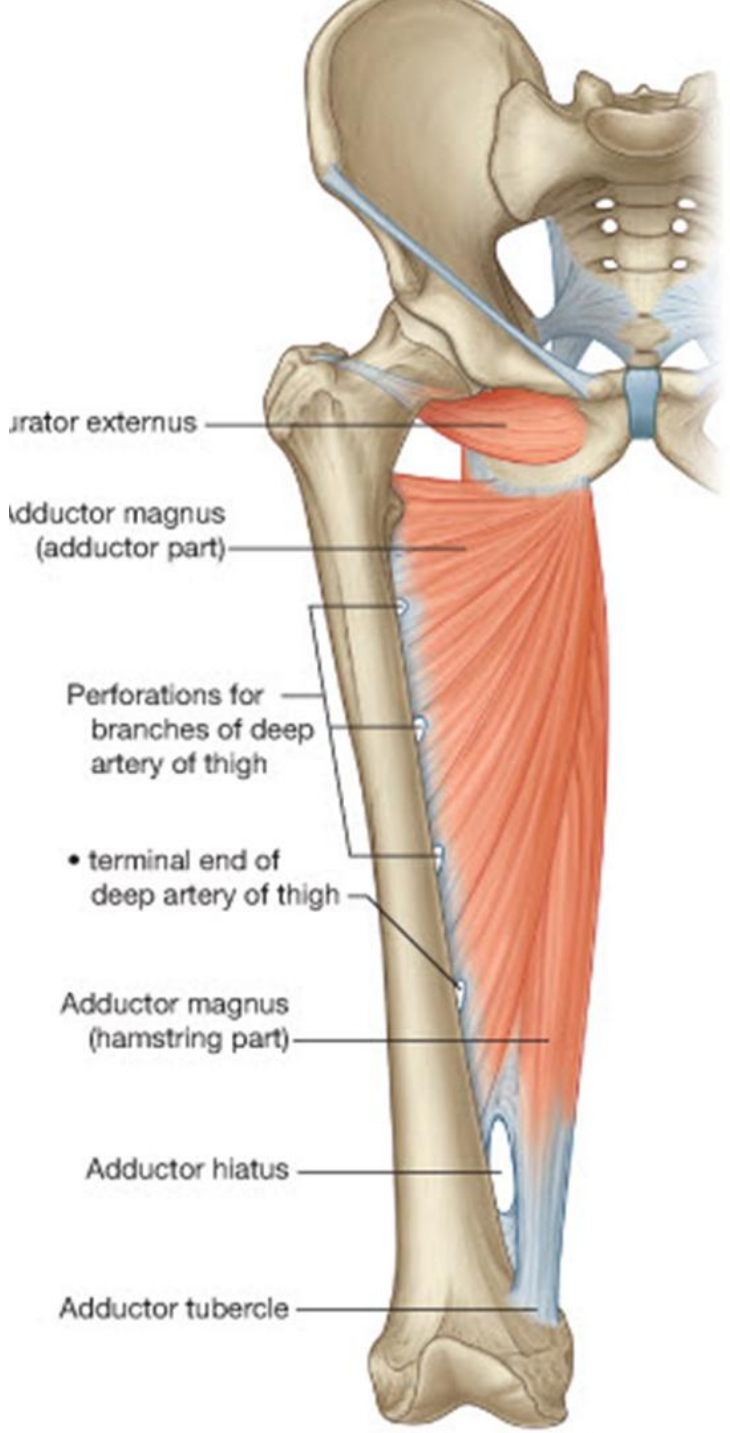
Obturator Externus

Adductor longus removed

Adductor Magnus

- It is the largest muscle in the medial compartment.

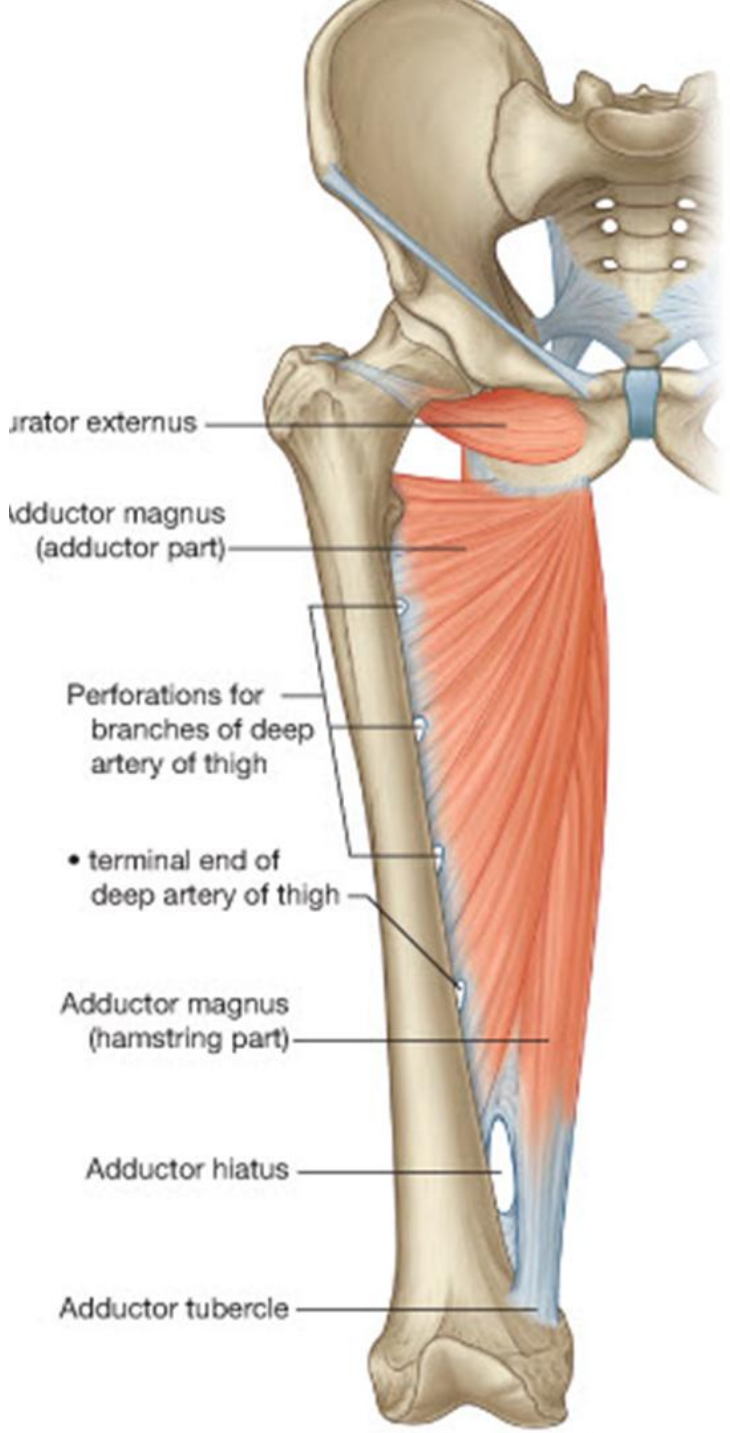
- Functionally, the muscle can be divided into two parts;
  1. The **adductor part** **(Pubic part)**
  2. The **hamstring part** **(ischial part).**

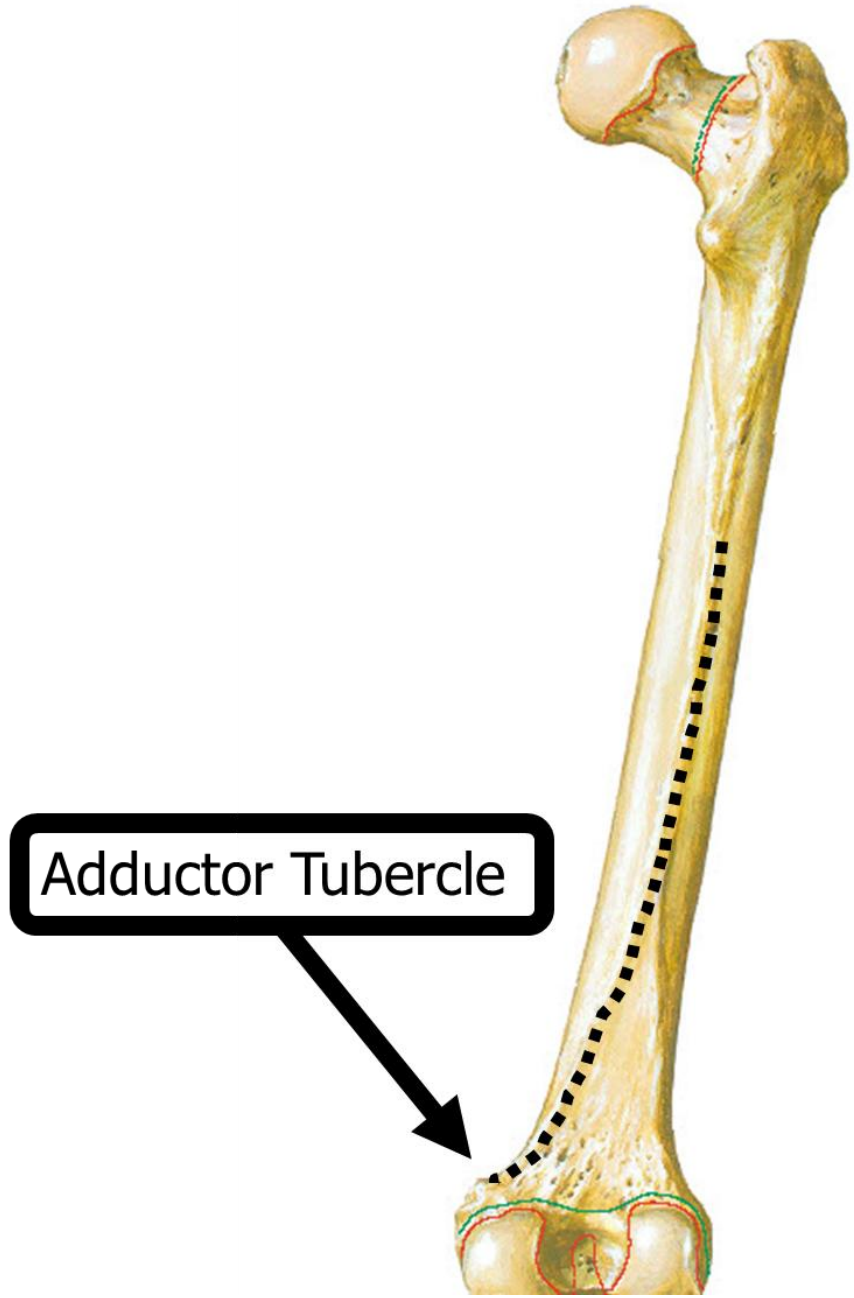


Adductor Magnus

- **Origin:**
  - **Pubic part:** Ischiopubic ramus
  - **Ischial part:** Ischial tuberosity

- **Insertion:**
  - **Pubic part:** Posterior surface of proximal femur, linea aspera, medial supracondylar line.
  - **Ischial part:** Adductor tubercle of femur.




Adductor Tubercle

Adductor Magnus

- **Action:**
  - **Pubic part:** Adduction & lateral rotation of thigh at hip joint.
  - **Ischial part:** Extension of thigh at hip joint .

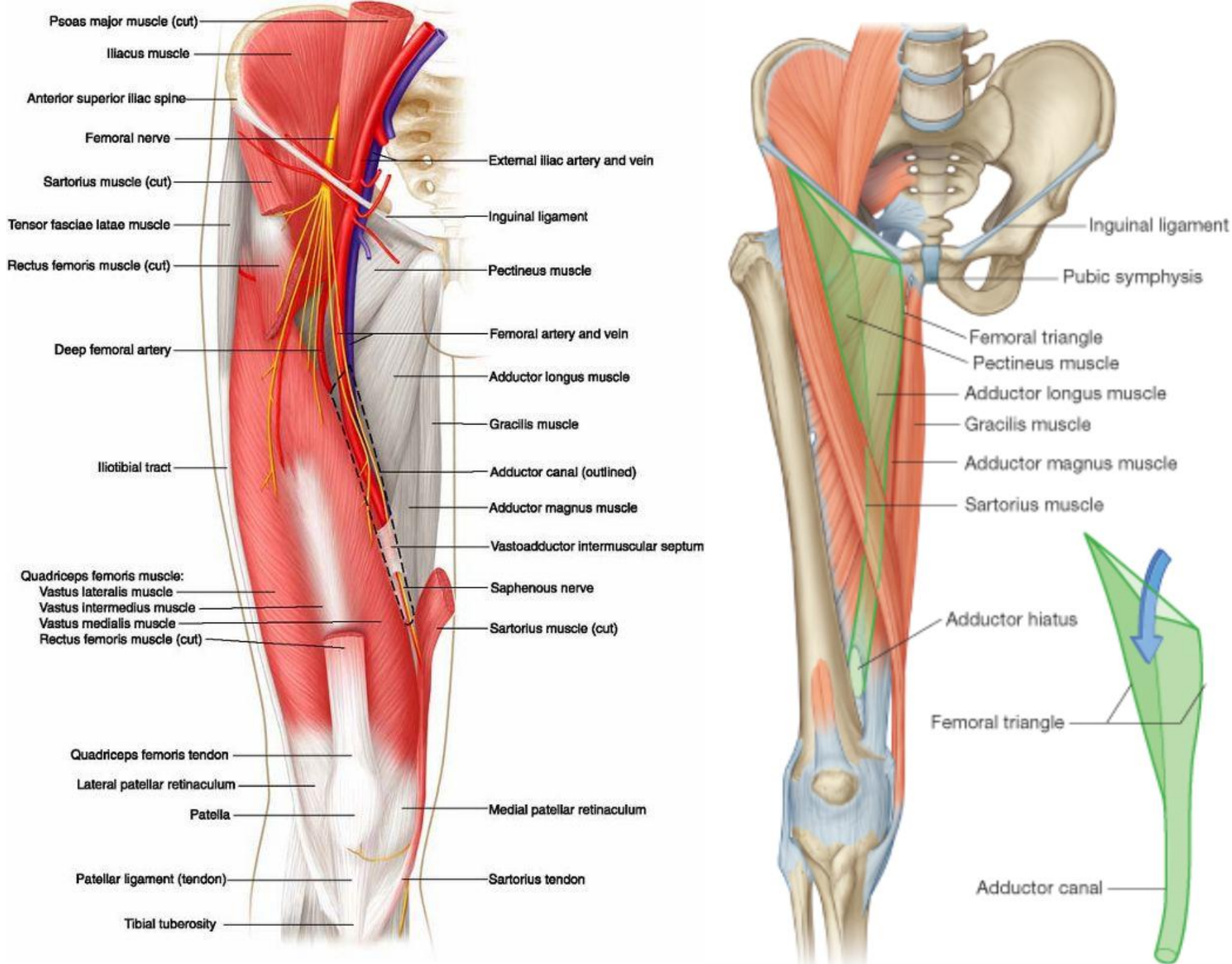
- **Nerve Supply :**
  - **Pubic part:** Posterior division of obturator nerve
  - **Ischial part:** Sciatic nerve.

Adductor (Subsartorial) Canal

- The adductor canal is an inter-muscular cleft (canal) situated on the medial aspect of the middle third of the thigh.

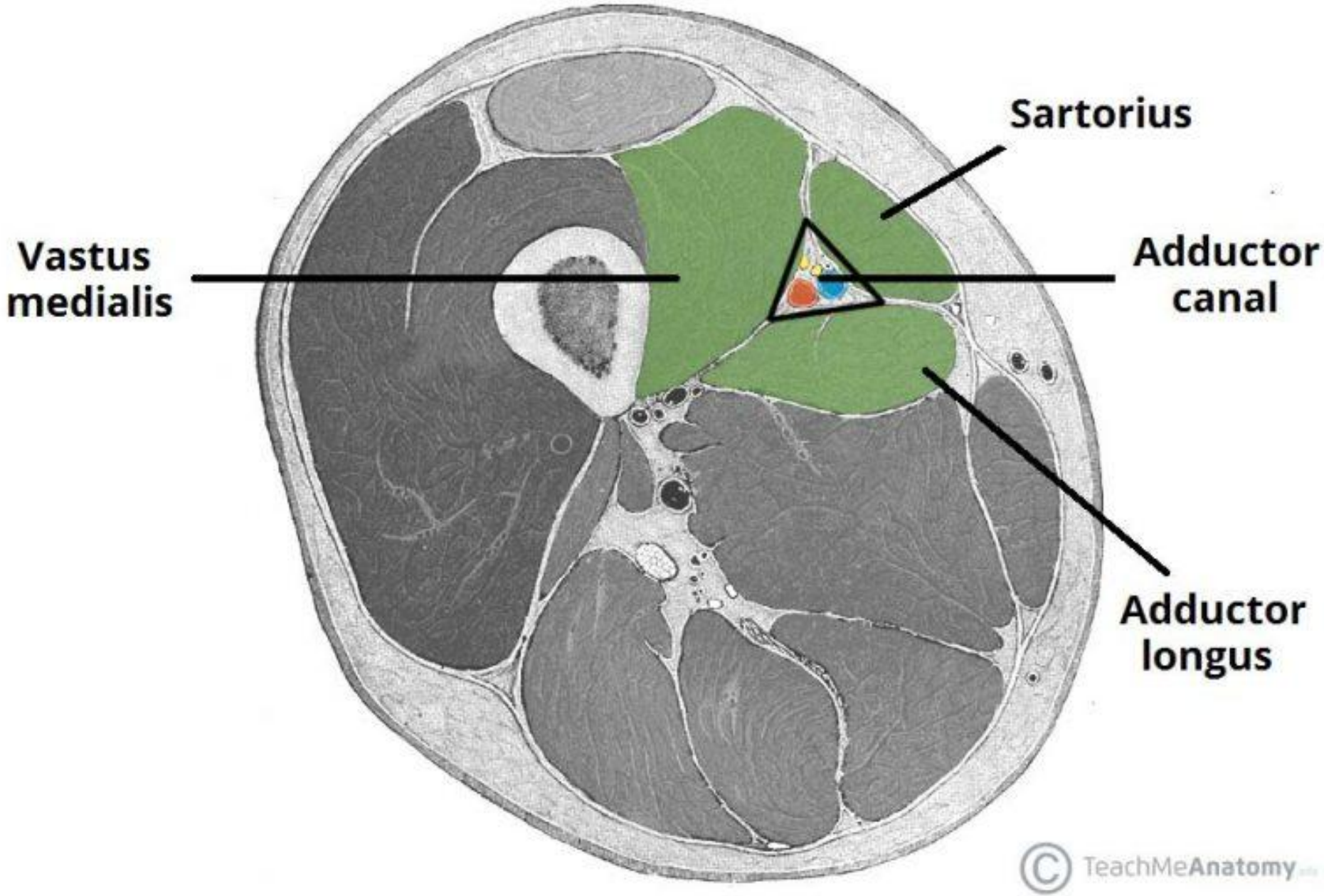
- It is approximately 15cm long, extending from **the apex of the femoral triangle** to the **adductor hiatus of the adductor magnus**

- The canal serves as a passageway from structures moving **between the anterior thigh and posterior leg.**


Psoas major muscle (cut)
Iliacus muscle
Anterior superior iliac spine
Femoral nerve
Sartorius muscle (cut)
Tensor fasciae latae muscle
Rectus femoris muscle (cut)
Deep femoral artery
Iliotibial tract
Quadriceps femoris muscle:
Vastus lateralis muscle
Vastus intermedius muscle
Vastus medialis muscle
Rectus femoris muscle (cut)
Quadriceps femoris tendon
Lateral patellar retinaculum
Patella
Patellar ligament (tendon)
Tibial tuberosity
External iliac artery and vein
Inguinal ligament
Pectineus muscle
Femoral artery and vein
Adductor longus muscle
Gracilis muscle
Adductor canal (outlined)
Adductor magnus muscle
Vastoadductor intermuscular septum
Saphenous nerve
Sartorius muscle (cut)
Medial patellar retinaculum
Sartorius tendon
Inguinal ligament
Pubic symphysis
Femoral triangle
Pectineus muscle
Adductor longus muscle
Gracilis muscle
Adductor magnus muscle
Sartorius muscle
Adductor hiatus
Femoral triangle
Adductor canal

Boundaries of Adductor Canal

- The adductor canal is bordered by muscular structures:
  - **The anteromedial wall :** sartorius
  - **The posterior wall:** adductor longus and magnus.
  - **The lateral wall:** vastus medialis.


Sartorius
Vastus medialis
Adductor canal
Adductor longus
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Contents of Adductor Canal

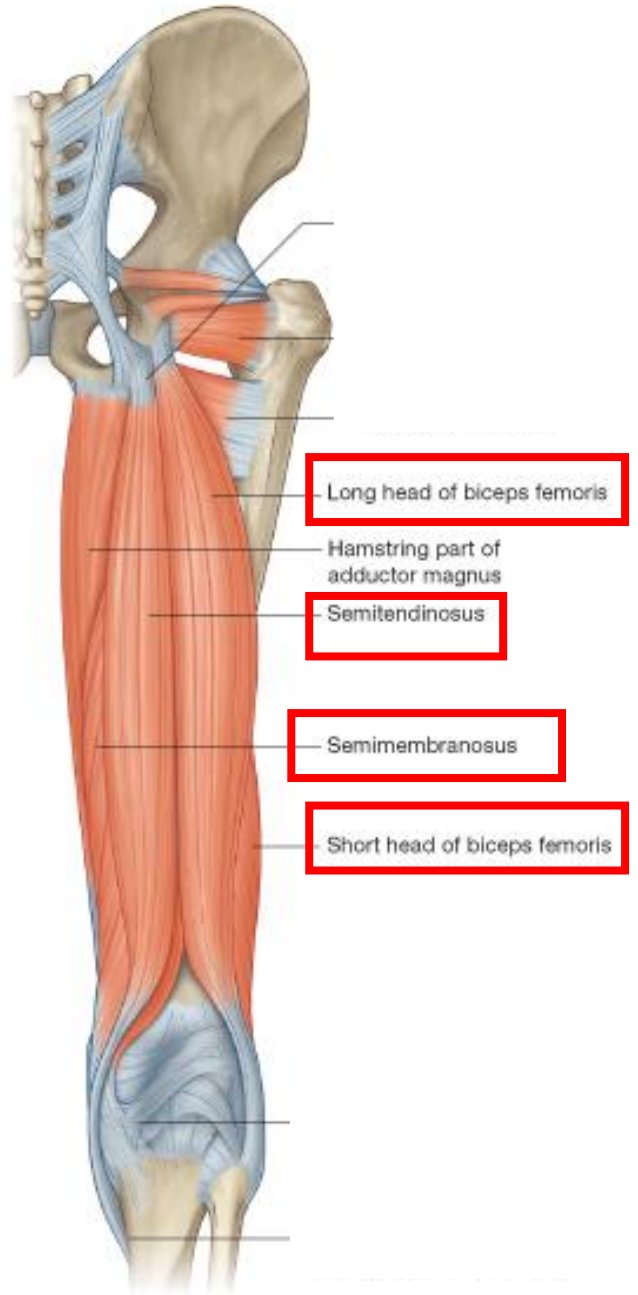
- It transmits:
  1. **Femoral artery**
  2. **Femoral vein (posterior to the artery)**
  3. **Nerve to the vastus medialis**
  4. **Saphenous nerve**

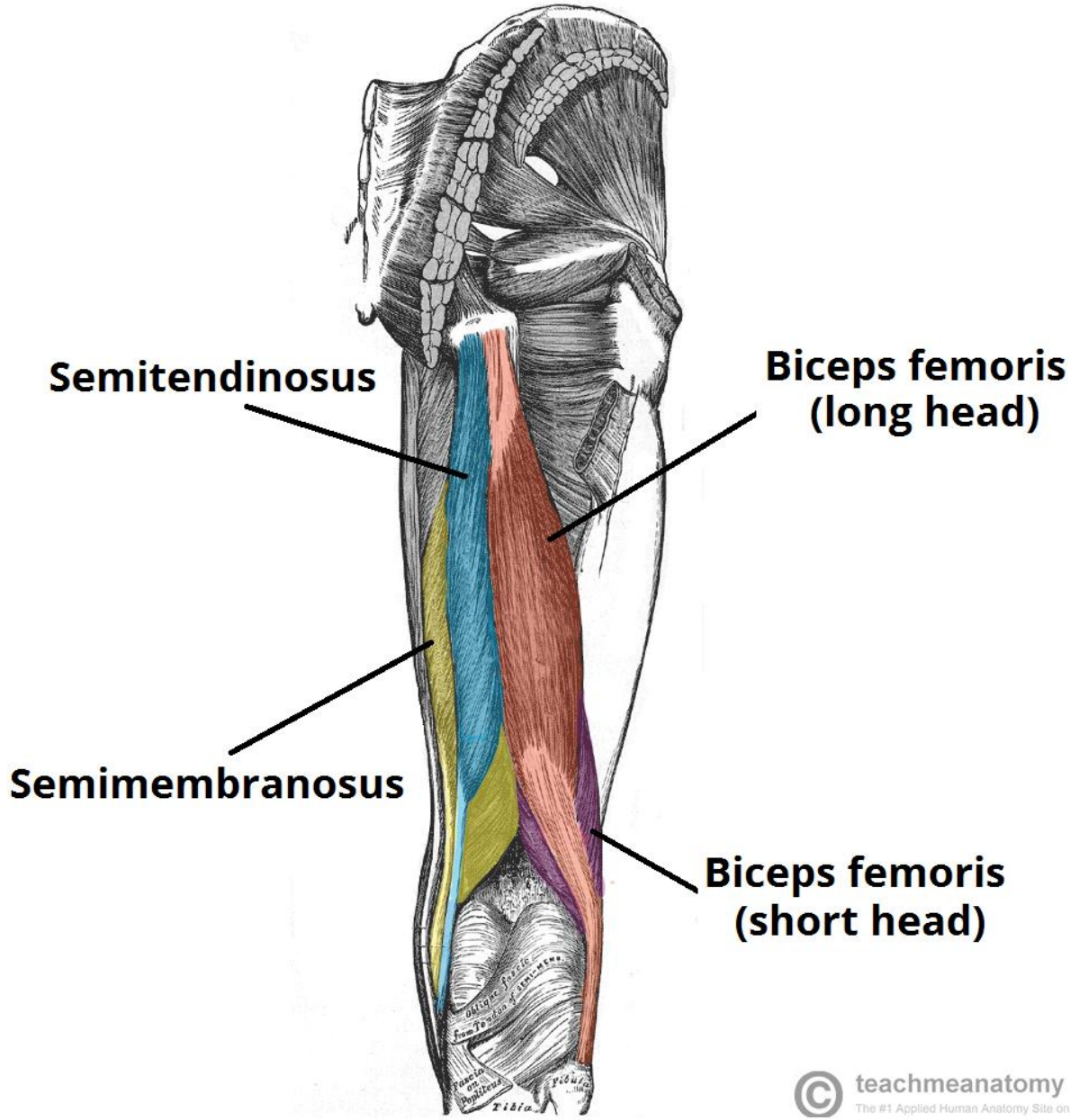
- As the femoral artery and vein exit the canal, they are called the popliteal artery and vein respectively.

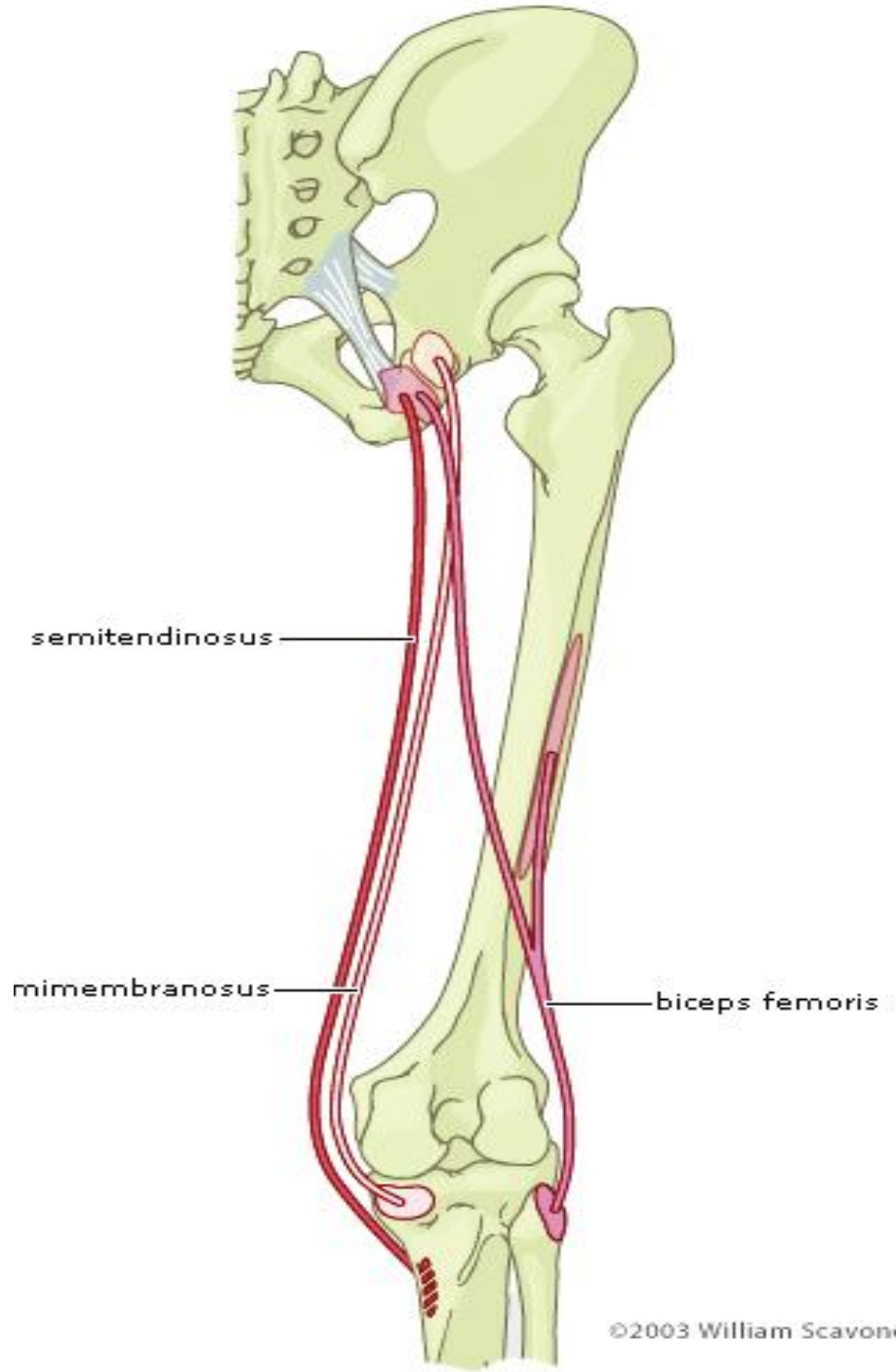
Hamstrings of the Thigh

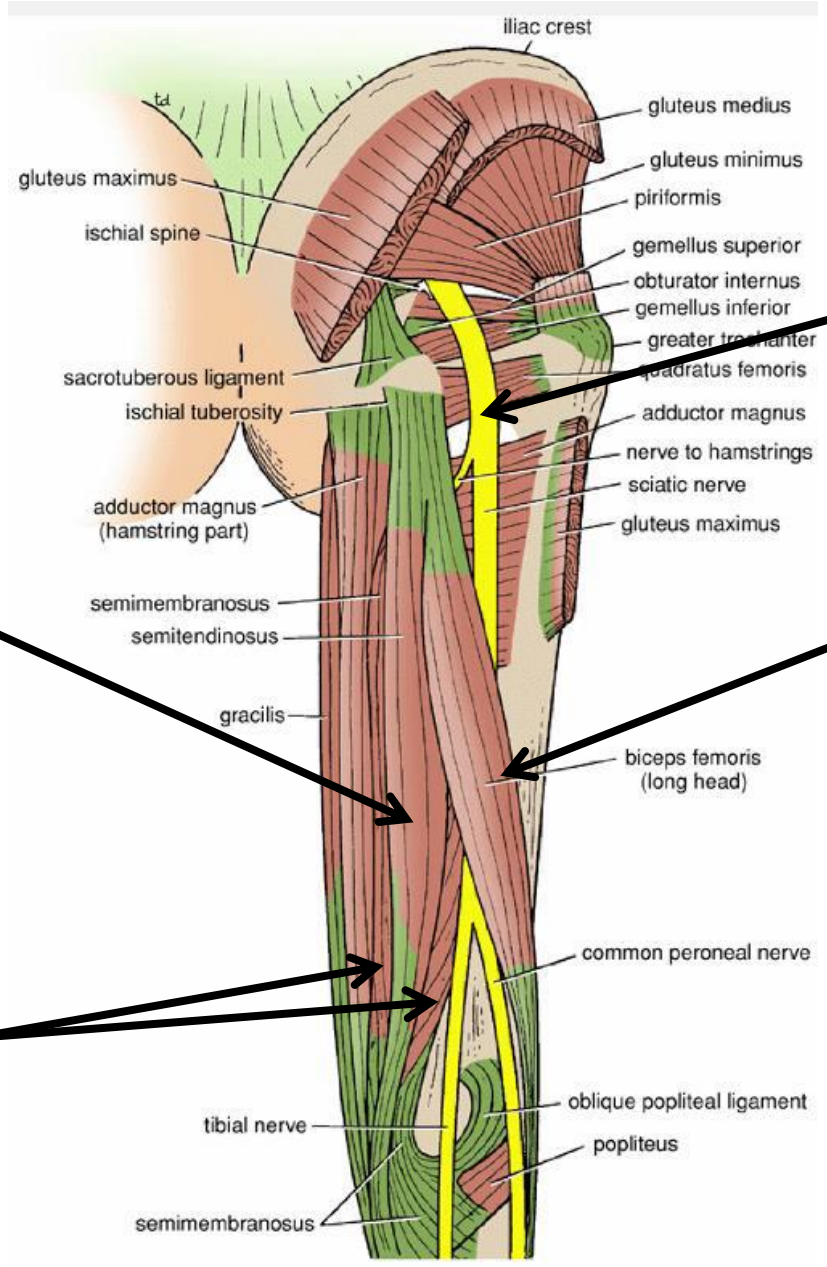
Posterior Compartment of Thigh

- There are three long muscles:
  1. **Biceps femoris**
  2. **Semitendinosus**
  3. **Semimembranosus**
- Called the **hamstrings**
- All except the short head of biceps femoris cross both the hip and knee joints
- They ***flex the leg at the knee joint*** and ***extend the thigh at the hip joint***
- All are supplied by the **sciatic nerve**.







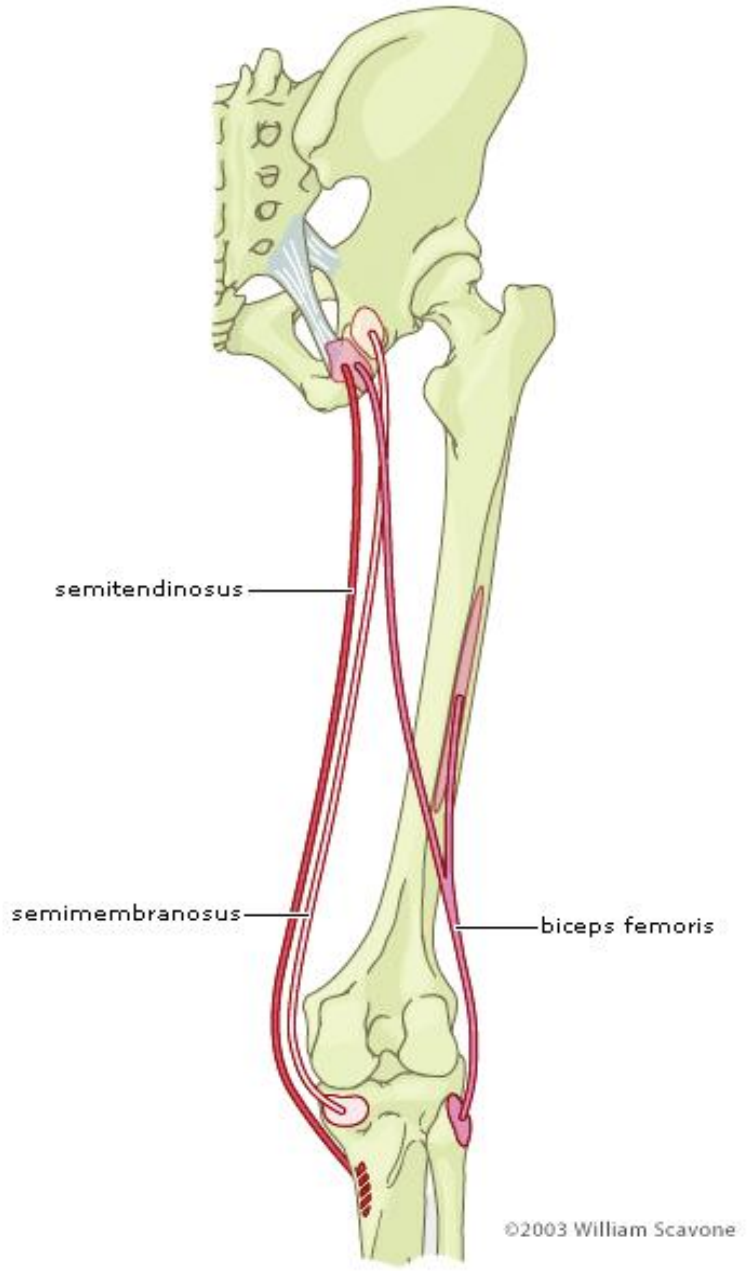

iliac crest
gluteus medius
gluteus minimus
piriformis
gemellus superior
obturator internus
gemellus inferior
greater trochanter
quadratus femoris
adductor magnus
nerve to hamstrings
sciatic nerve
gluteus maximus
gluteus maximus
ischial spine
sacrotuberous ligament
ischial tuberosity
adductor magnus
(hamstring part)
semimembranosus
semitendinosus
gracilis
biceps femoris
(long head)
common peroneal nerve
oblique popliteal ligament
popliteus
tibial nerve
semimembranosus
Sciatic Nerve
Semitendinosus
Biceps femoris
Semimembranosus

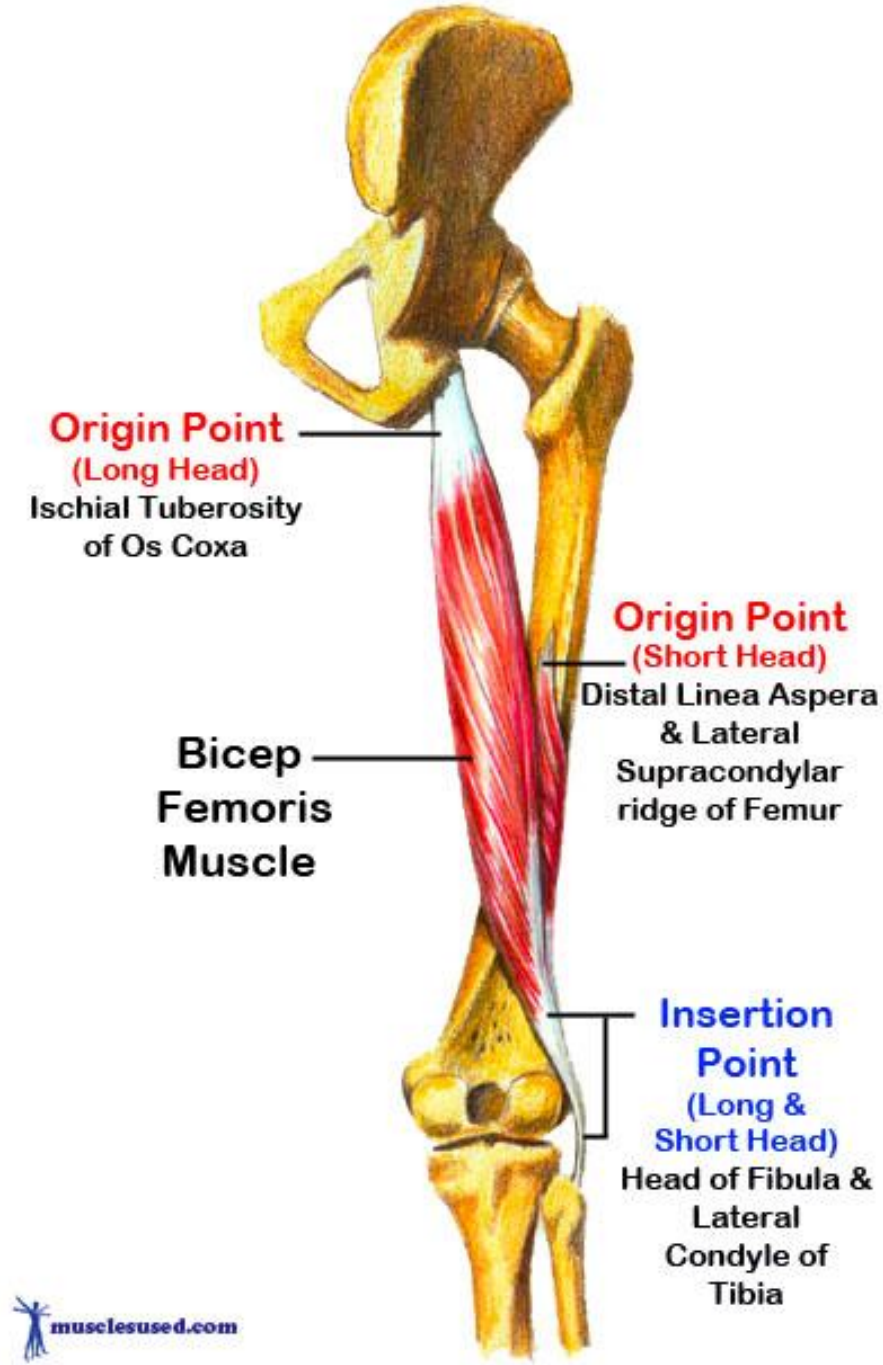
Biceps femoris

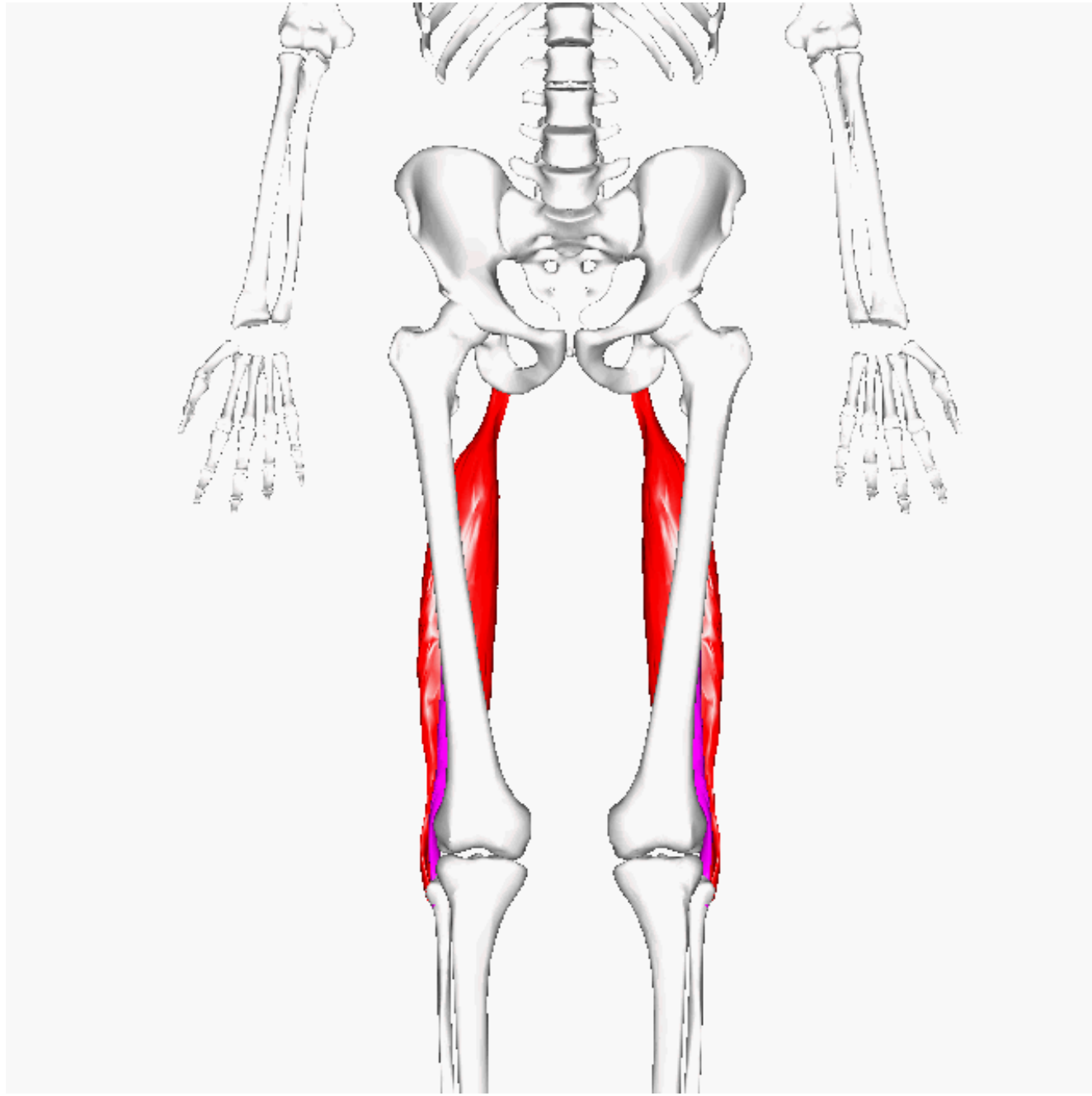
- The biceps femoris muscle is **lateral** in the posterior compartment of the thigh and **has two heads**

- **Origin:**
  - **Long head :** In common tendon with semitendinosus from the lower medial part of ischial tuberosity
  - **Short head:** Linea aspera

- **Insertion:** Head of the fibula




Origin Point
(Long Head)
Ischial Tuberosity
of Os Coxa
Origin Point
(Short Head)
Distal Linea Aspera
& Lateral
Supracondylar
ridge of Femur
Bicep
Femoris
Muscle
Insertion
Point
(Long &
Short Head)
Head of Fibula &
Lateral
Condyle of
Tibia
musclesused.com



Biceps femoris

- **Action:**
  - Extension of hip
  - Flexion of knee
  - Lateral rotation of the semiflexed knee

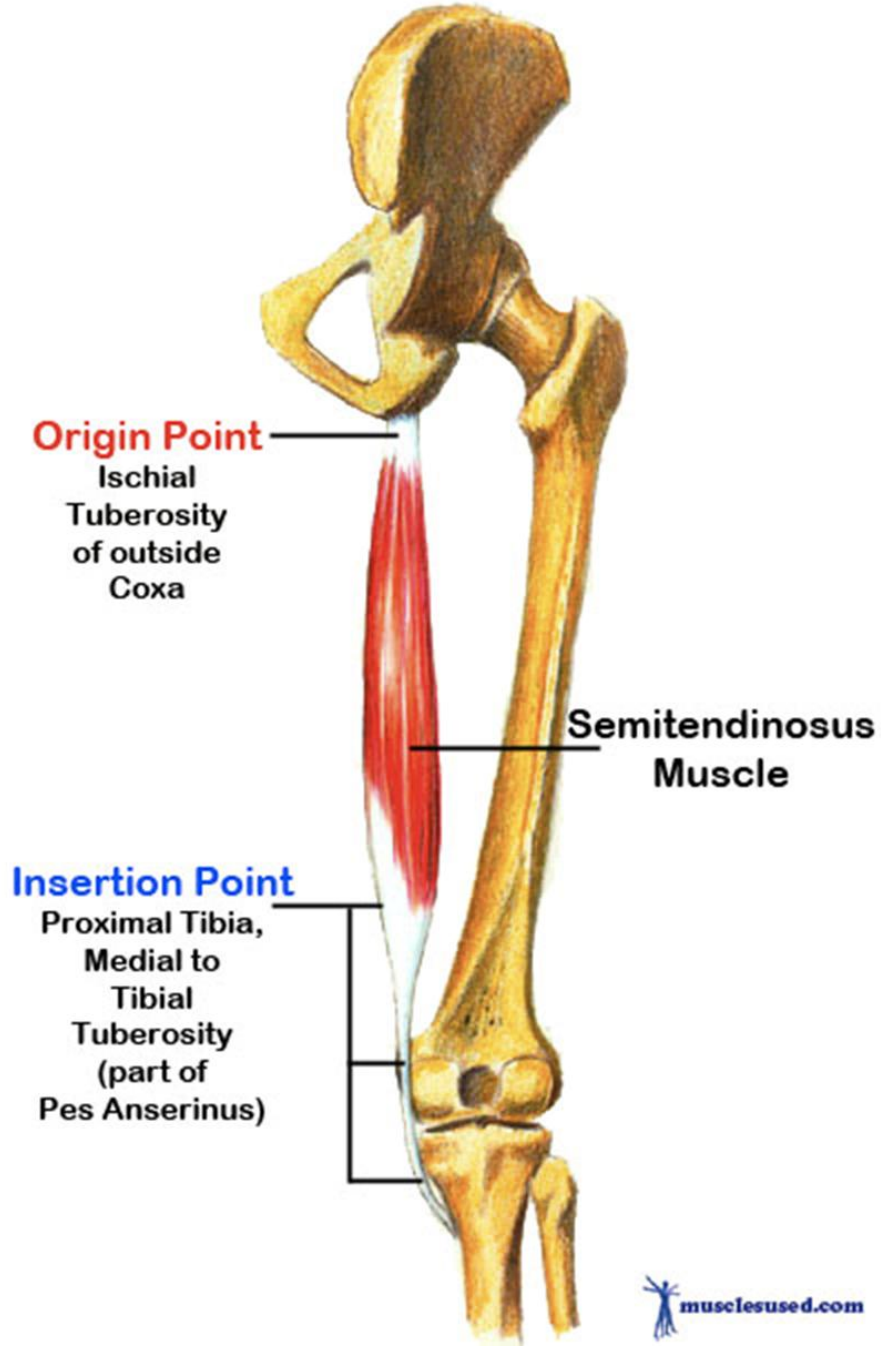
- **Nerve supply:**
  - **Long Head:** Tibial division of the sciatic nerve
  - **Short head:** Common fibular division of the sciatic nerve

Semitendinosus

- Lies medial to the biceps femoris muscle in the posterior compartment of thigh

- **Origin:** In common tendon with biceps femoris from the lower medial part of ischial tuberosity

- **Insertion:** By a cord like tendon into the upper part of medial surface of the tibia behind tendons of sartorius & gracilis



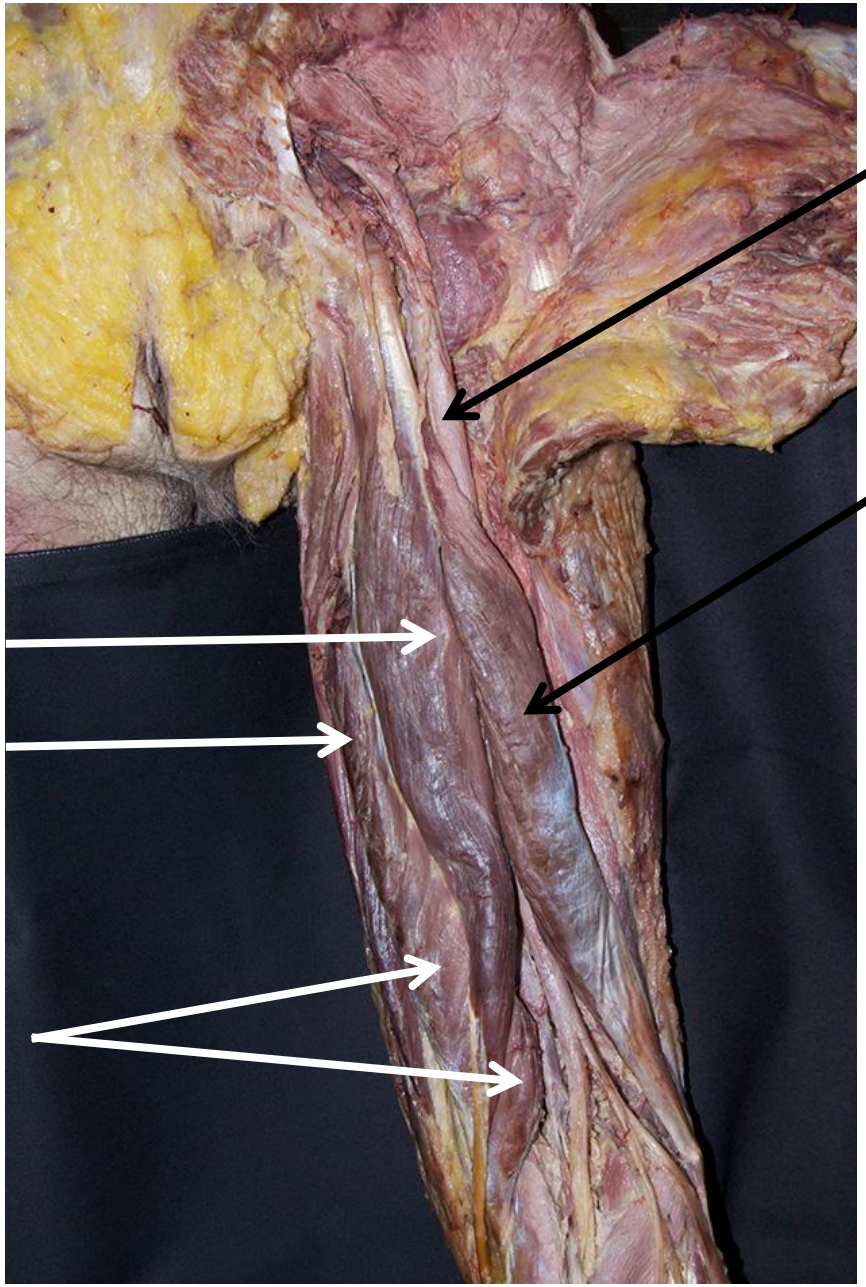
Semimembranosus

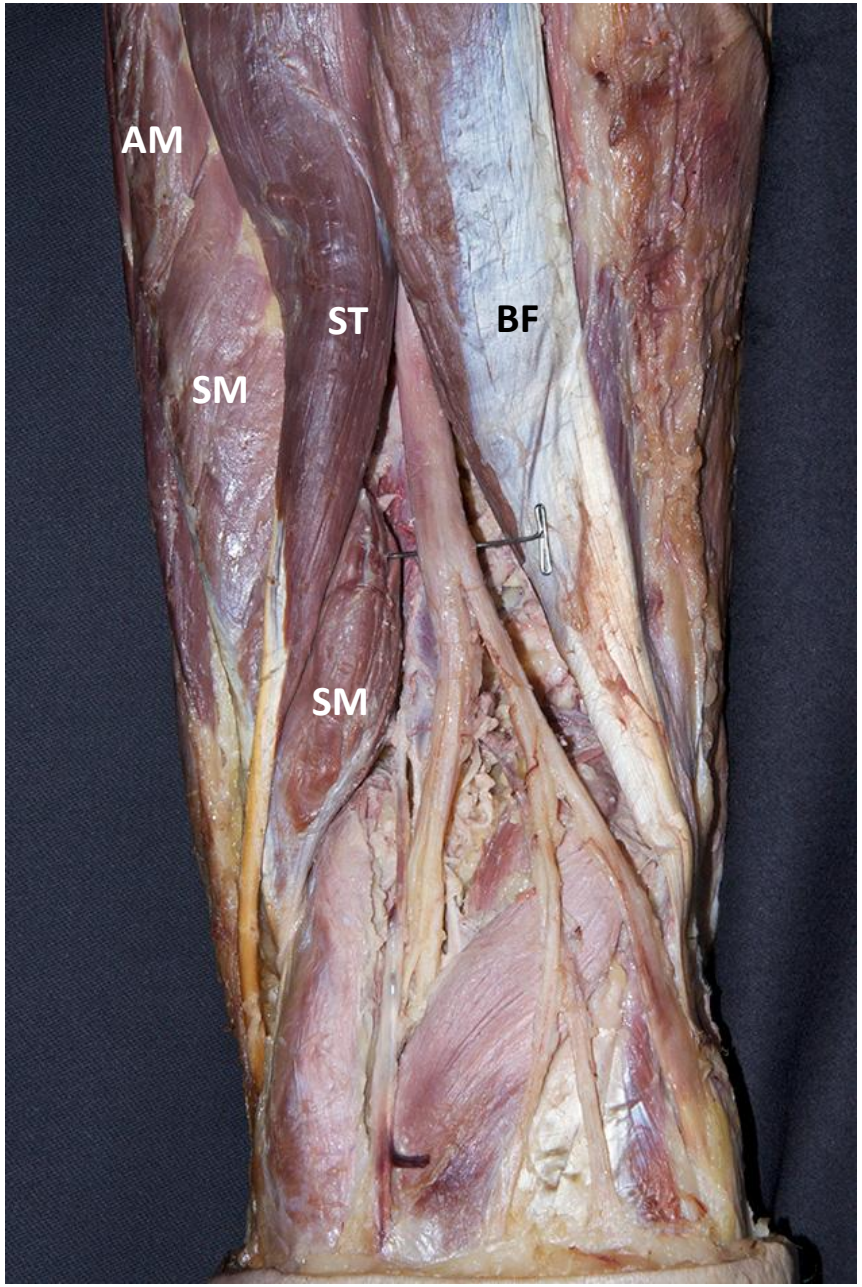
- Lies deep to the semitendinosus muscle in the posterior compartment of thigh
- **Origin:** Upper lateral part of ischial tuberosity
- **Insertion:** Groove on back of medial condyle of tibia

Both muscles (Semitendinosus and Semimembranosus) have the same action and share the same nerve supply

- **Action:**
  - Extension of hip joint
  - Flexion of knee joint
  - Medial rotation of semiflexed knee.

- **Nerve Supply:** Tibial division of sciatic nerve


Sciatic Nerve
Biceps femoris
Semitendinosus
Hamstring part of adductor Magnus
Semimembranosus


AM
ST
BF
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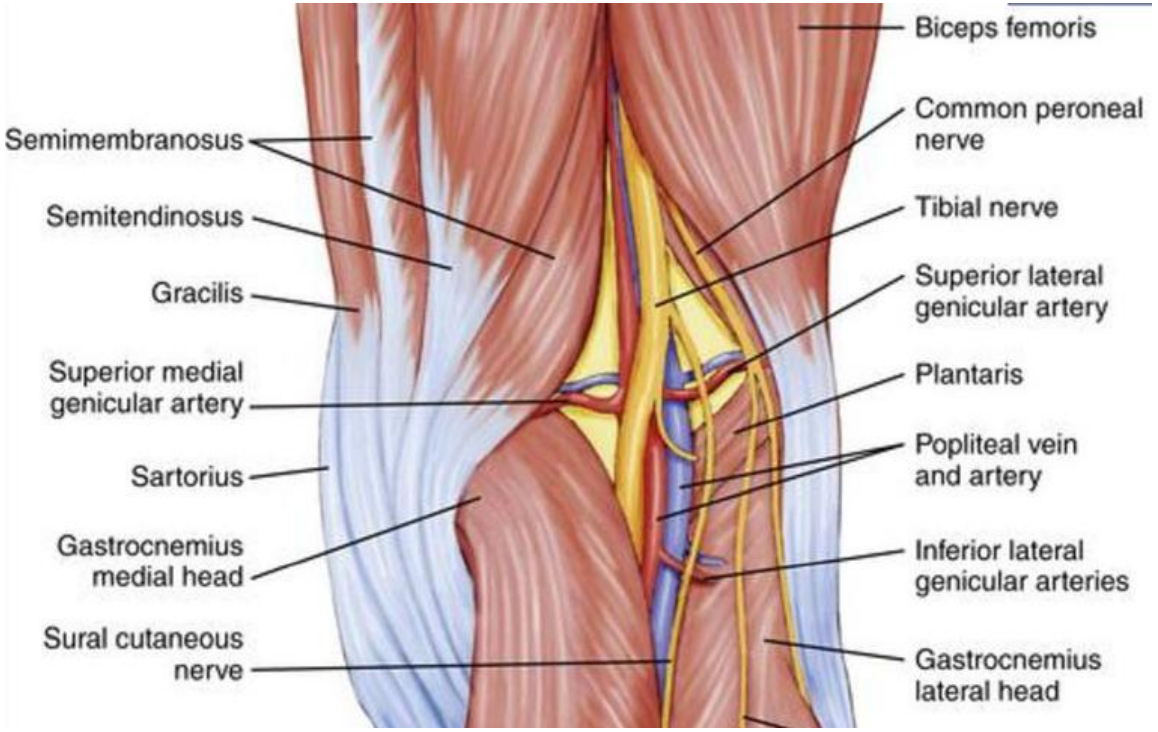
SM

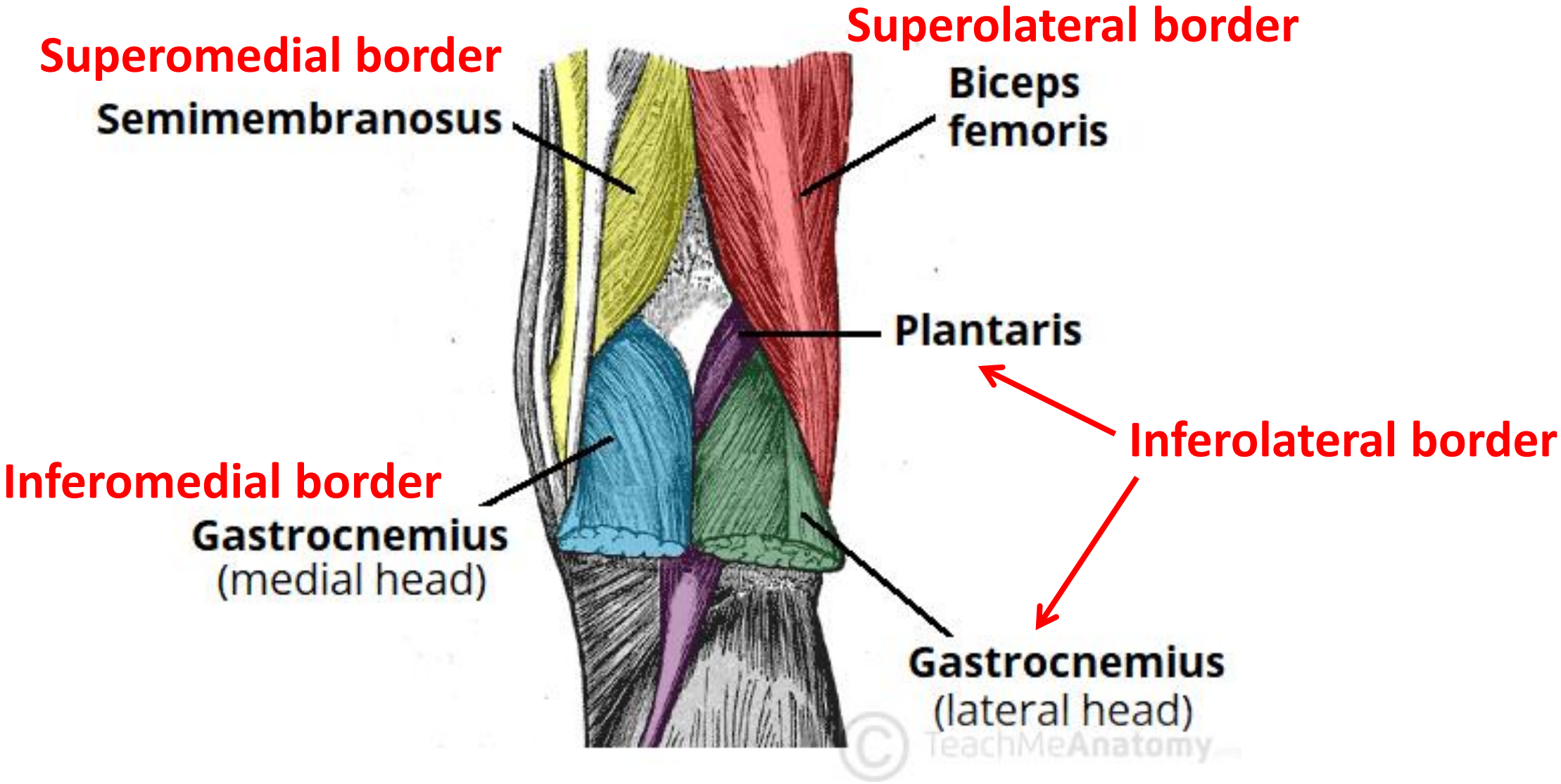
The Popliteal Fossa

- The Popliteal Fossa is **diamond-shaped intermuscular space** located on the posterior aspect of the knee

- It is the main path by which vessels and nerves pass between the thigh and the leg.



Boundaries of popliteal Fossa

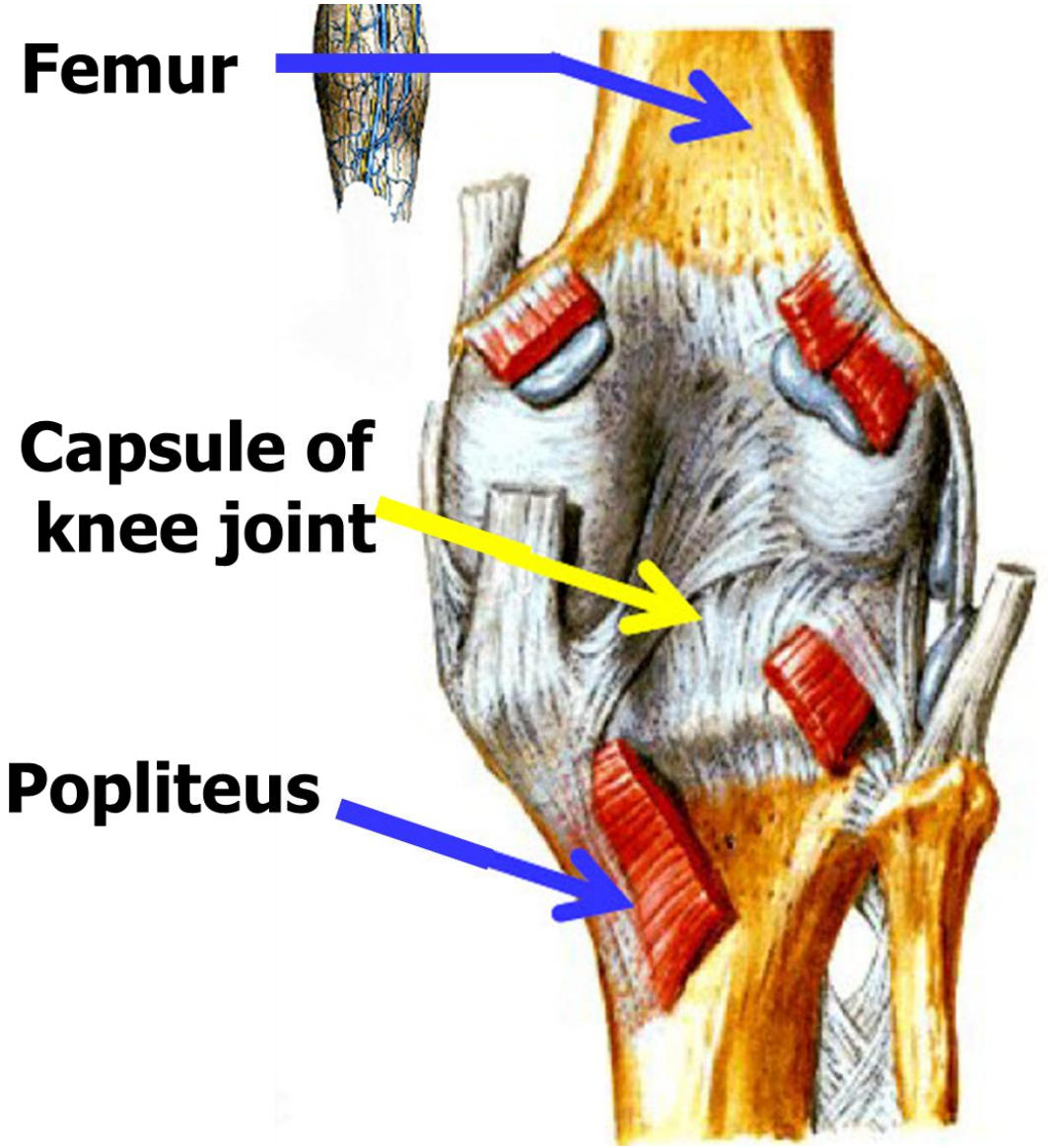


The Floor and Roof of Popliteal Fossa

- The floor of the fossa is formed by:

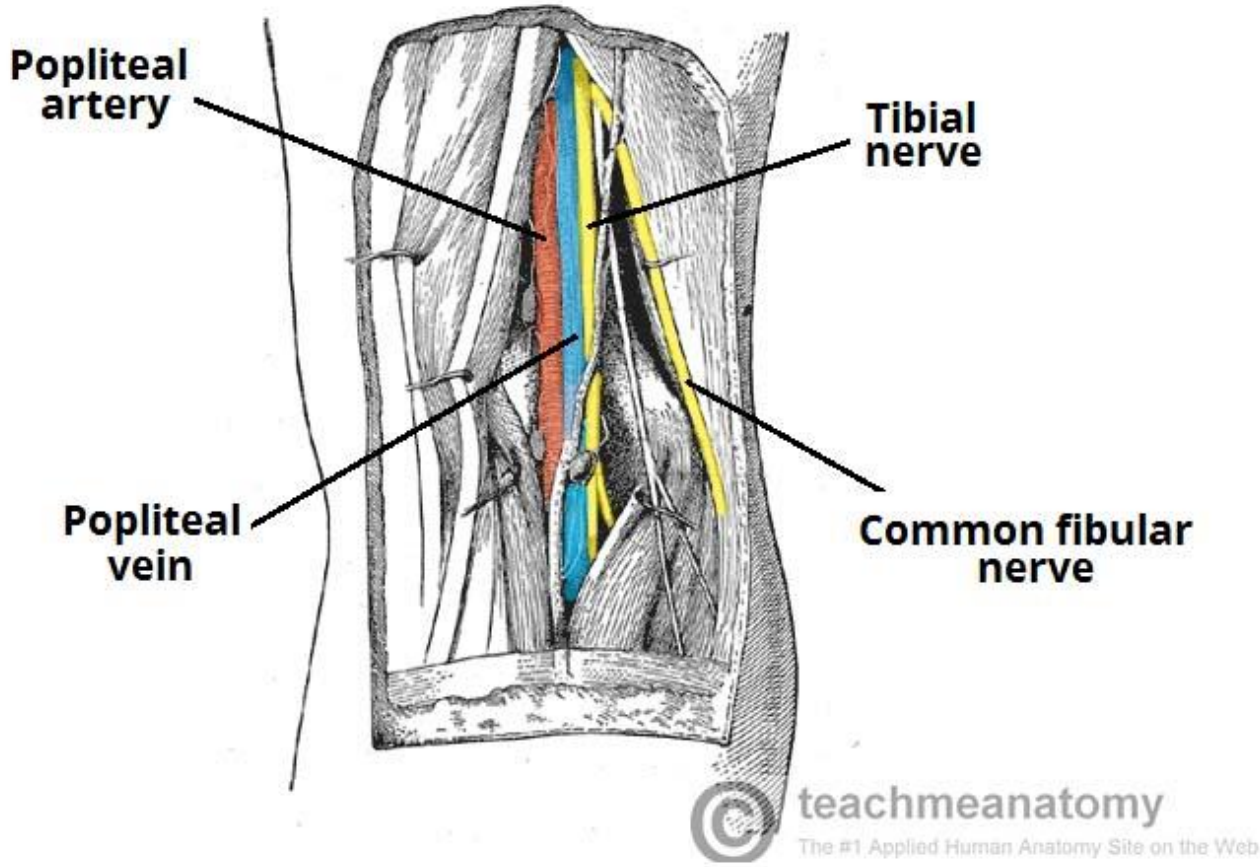
  1. The popliteal surface of the femur
  2. The capsule of the knee joint
  3. The popliteus muscle

- The roof is formed by skin, superficial fascia, and the deep fascia of the thigh



The Content of Popliteal Fossa

1. Popliteal artery & its branches
2. Popliteal vein & its tributaries
3. Tibial nerve
4. Common peroneal nerve
5. Popliteal L.N.
6. Fat



Popliteal Artery

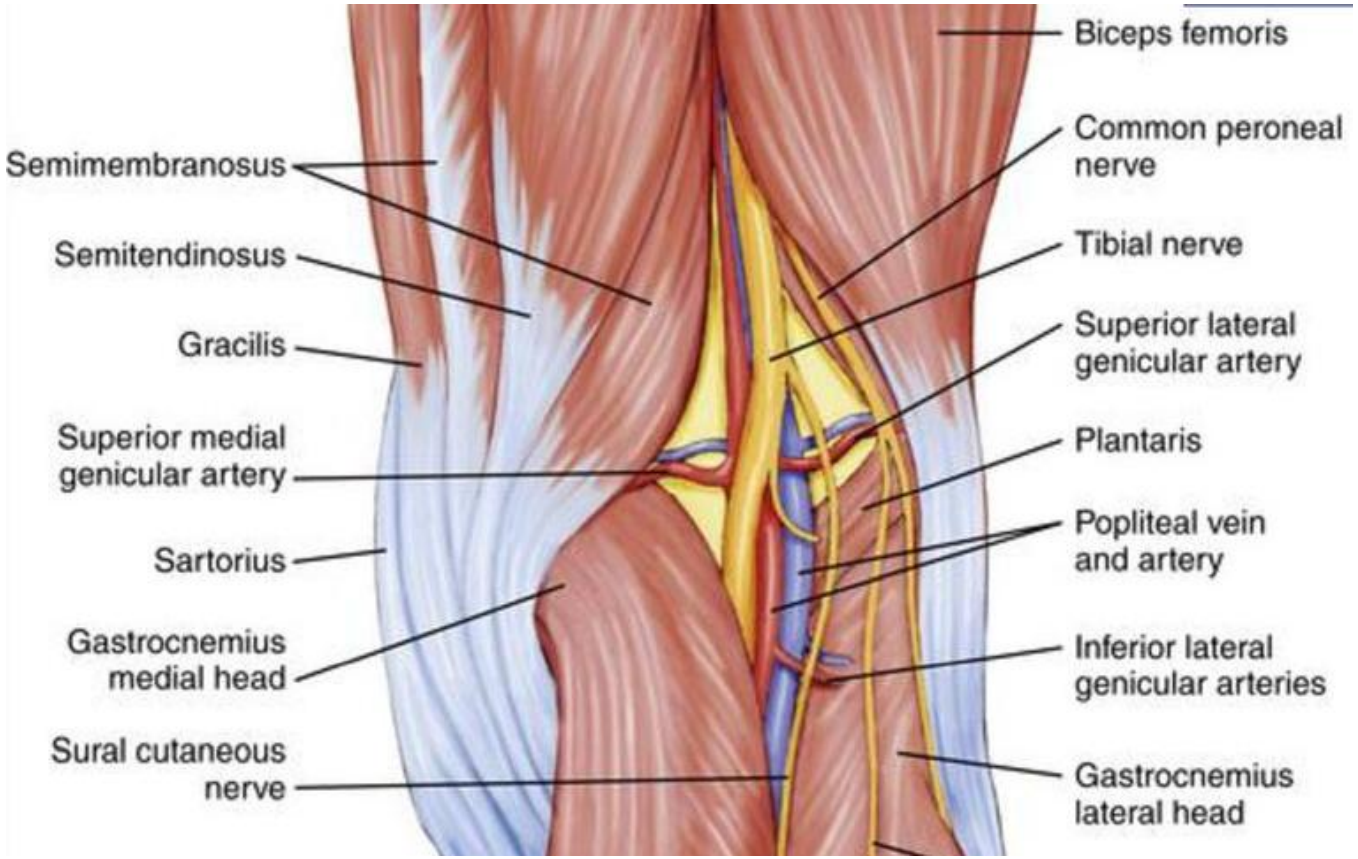
- The popliteal artery is deeply placed
- It is a continuation of the ***femoral artery***
- It enters the popliteal fossa through the opening in the adductor magnus (adductor hiatus)
- It ends at the level of the lower border of the popliteus muscle by dividing into ***anterior*** *and* ***posterior tibial arteries***

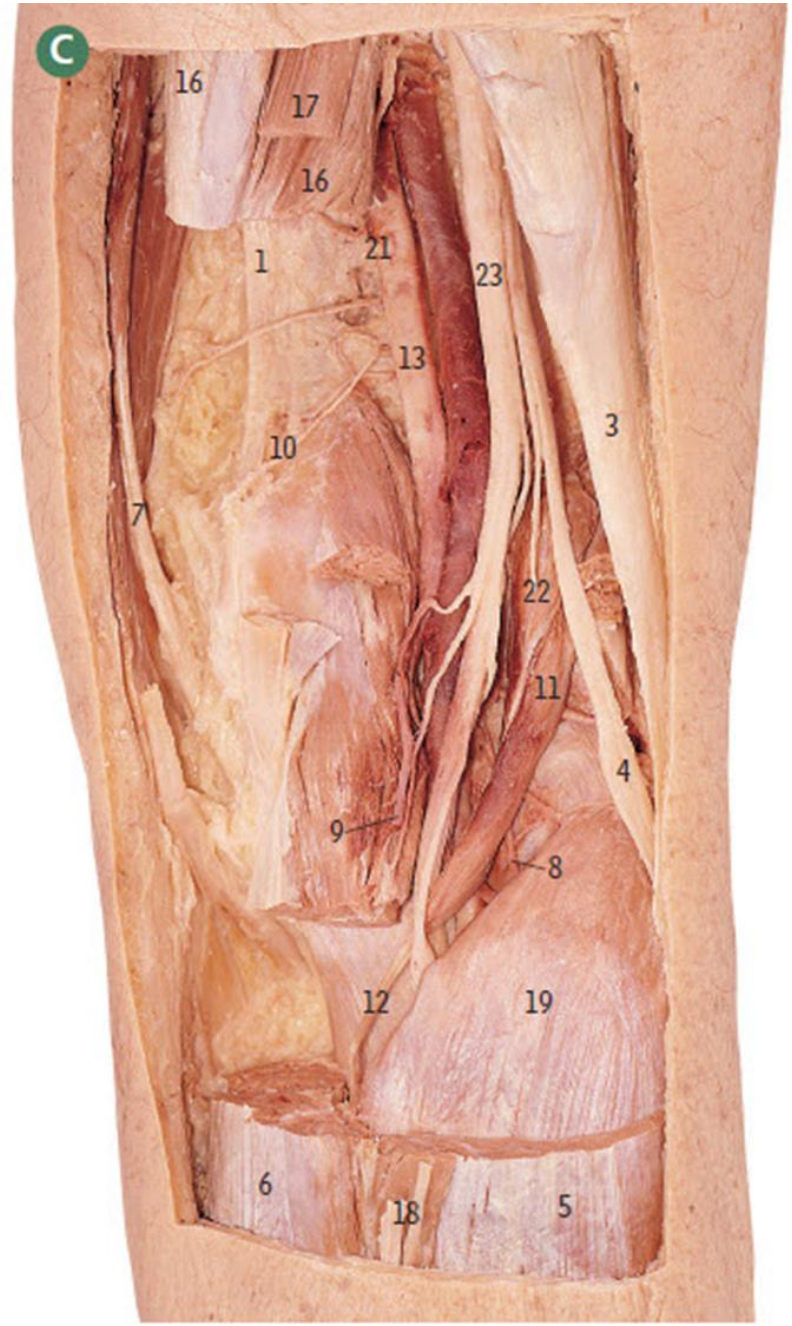
Popliteal Vein

- The popliteal vein is superficial to and travels with the popliteal artery
- Forms at the lower border of the popliteus
- Exits the popliteal fossa superiorly to become the femoral vein by passing through the adductor hiatus

Tibial and common fibular nerves

- They are the **most superficial of the content of the popliteal fossa**
- They are both branches of the **sciatic nerve**
- The tibial nerve descends vertically through the popliteal fossa and exits deep to the margin of plantaris muscle to enter the posterior compartment of leg.
- The common fibular nerve follows the biceps femoris tendon, travelling along the lateral margin of the popliteal fossa, and continues to the lateral side of the leg.


Biceps femoris
Common peroneal nerve
Tibial nerve
Superior lateral genicular artery
Plantaris
Popliteal vein and artery
Inferior lateral genicular arteries
Gastrocnemius lateral head
Semimembranosus
Semitendinosus
Gracilis
Superior medial genicular artery
Sartorius
Gastrocnemius medial head
Sural cutaneous nerve


C
16
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Thank you

Ayman.alzubi@yu.edu.jo