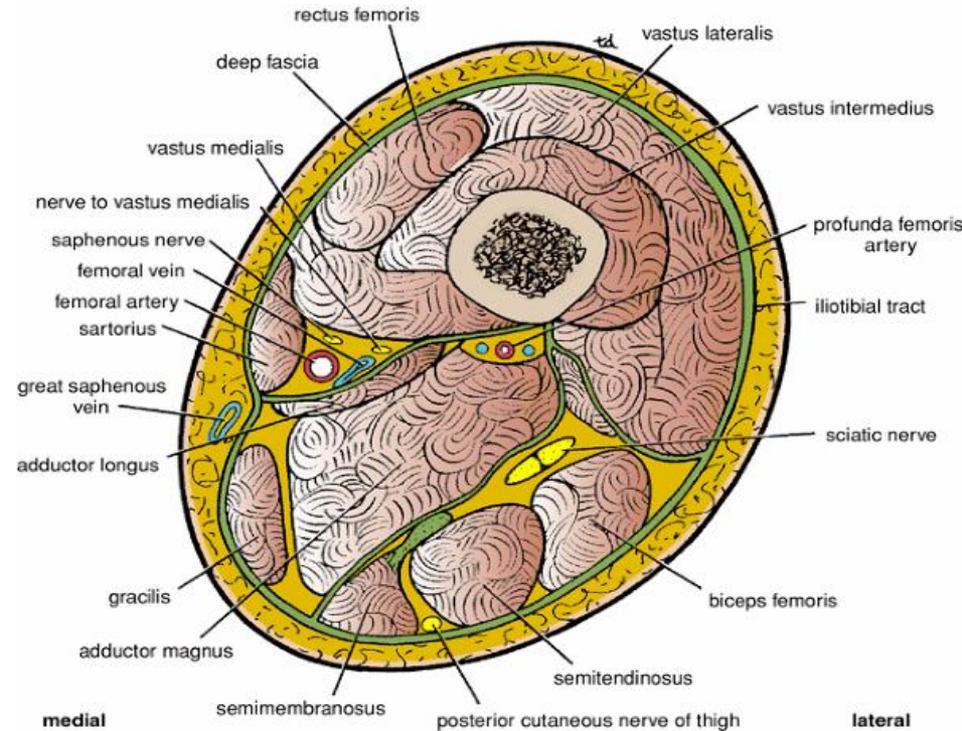


The Thigh

facial compartment

Fascial Compartments of the Thigh

- Three fascial septa pass from the inner aspect of the deep fascial sheath of the thigh to the linea aspera of the femur
- By this means, the thigh is divided into three compartments, each having muscles, nerves, and arteries.
- The compartments are anterior, medial, and posterior in position.



Contents of the Anterior Fascial Compartment of the Thigh

- **Muscles:** Sartorius, iliacus, psoas, pectineus, and quadriceps femoris
- **Blood supply:** Femoral artery
- **Nerve supply:** Femoral nerve

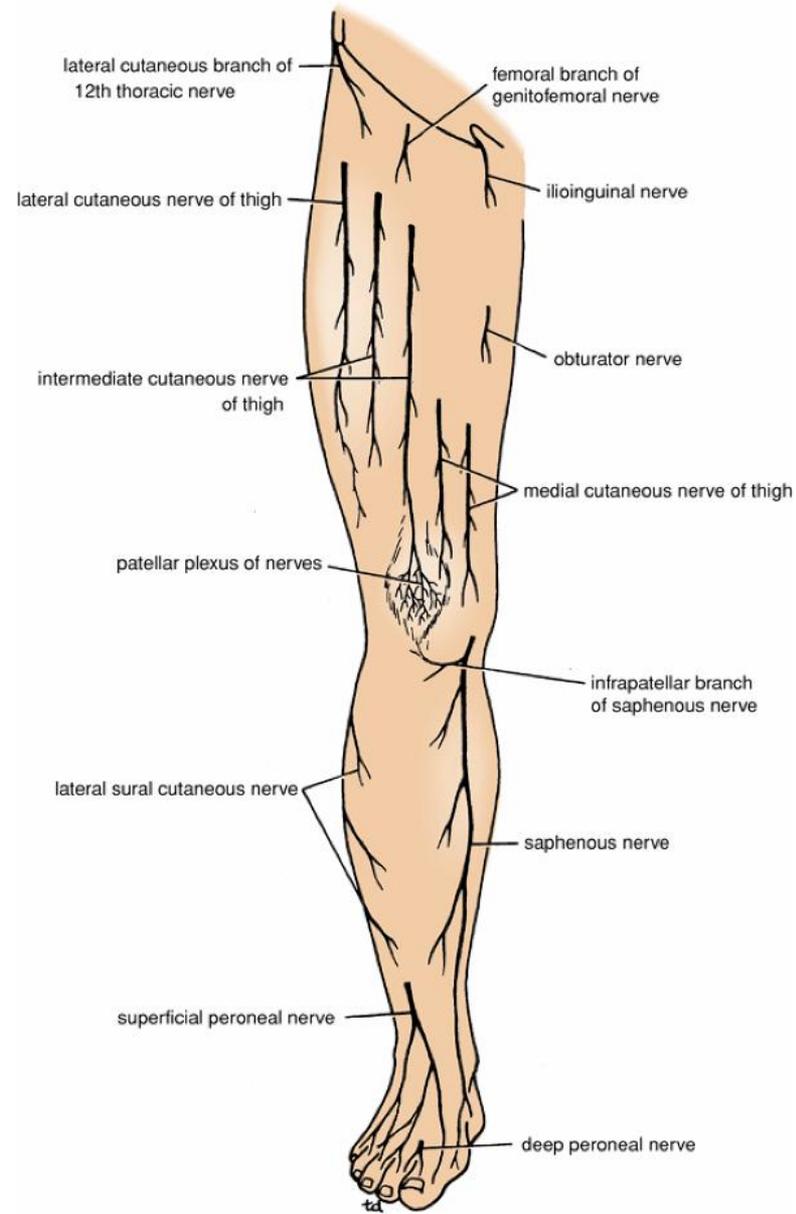
The Front and Medial Aspects of the Thigh

Skin of the Thigh

Cutaneous Nerves:

The lateral cutaneous nerve of the thigh

- a branch of the lumbar plexus (L2 and 3), enters the thigh behind the lateral end of the inguinal ligament
- divided into anterior and posterior branches, it supplies the skin of the lateral aspect of the thigh and knee.
- It also supplies the skin of the lower lateral quadrant of the buttock

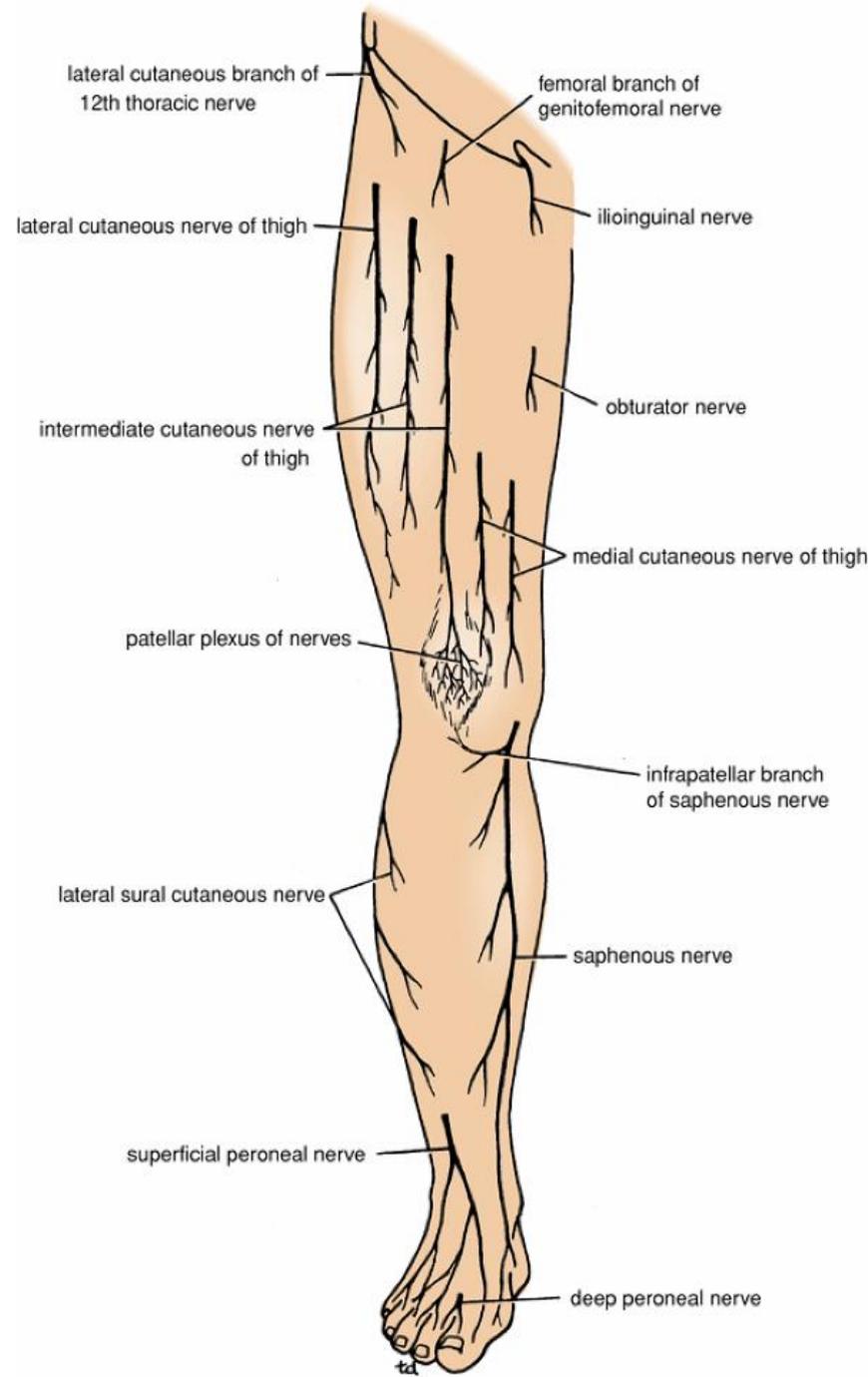


The femoral branch of the genitofemoral nerve

- a branch of the lumbar plexus (L1 and 2), enters the thigh behind the middle of the inguinal ligament and supplies a small area of skin
- The genital branch supplies the cremasteric muscle

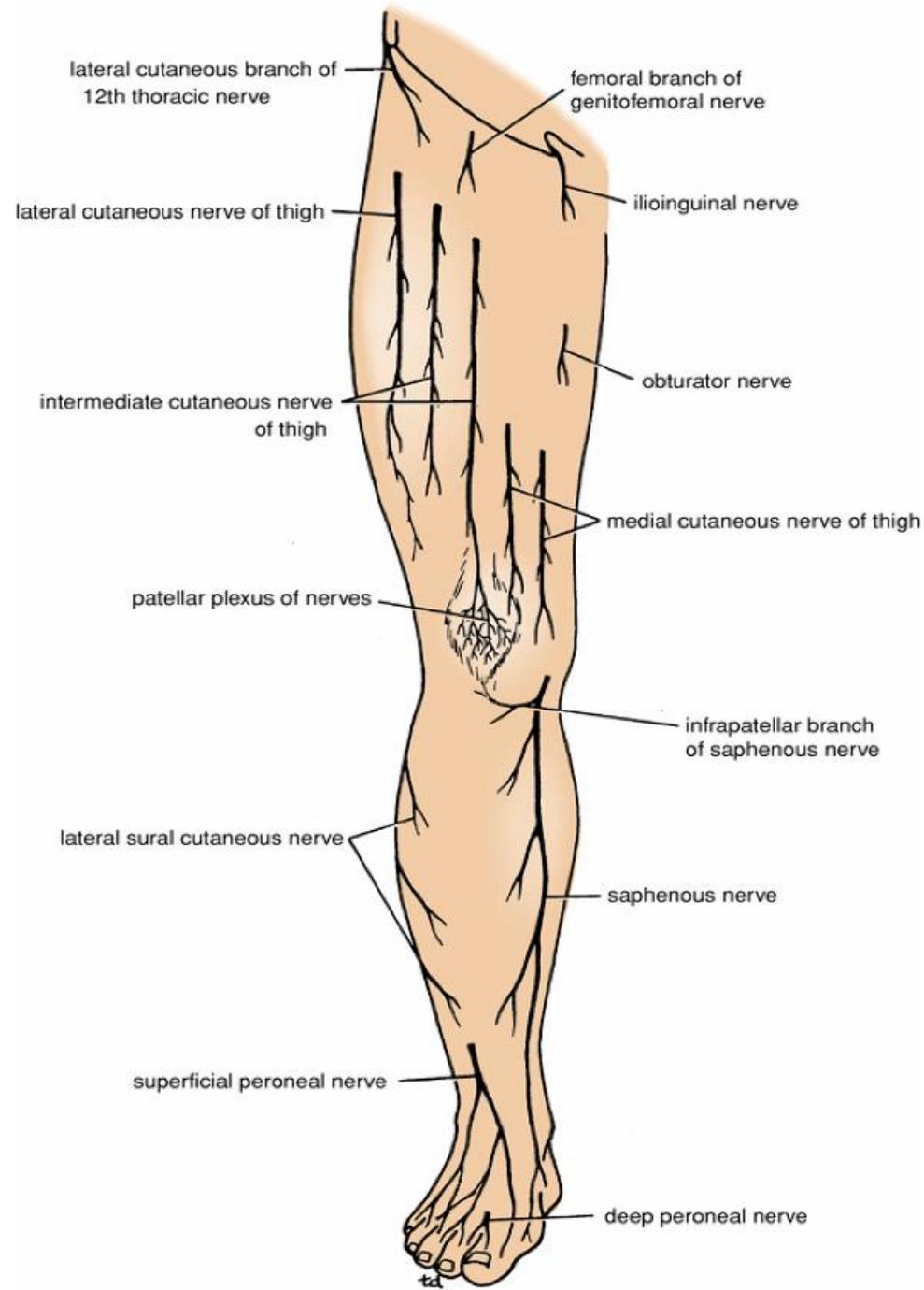
The ilioinguinal nerve

- a branch of the lumbar plexus (L1)
- enters the thigh through the superficial inguinal ring
- It is distributed to the skin of the root of the penis and adjacent part of the scrotum (or root of the clitoris and adjacent part of the labium majus in the female) and to a small skin area below the medial part of the inguinal ligament.



The medial cutaneous nerve of the thigh

- a branch of the femoral nerve
- supplies the medial aspect of the thigh and joins the patellar plexus



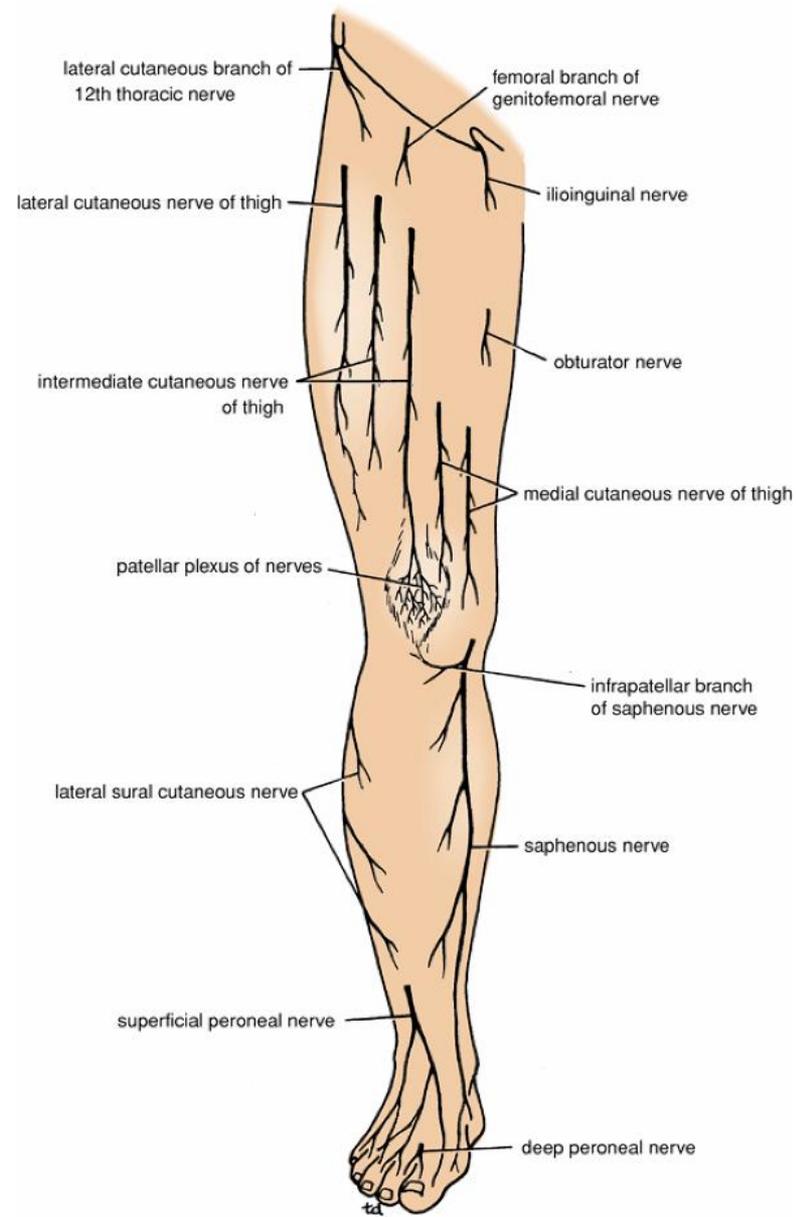
The intermediate cutaneous nerve of the thigh

- a branch of the femoral nerve
- It divides into two branches that supply the anterior aspect of the thigh and joins the patellar plexus

Branches from the anterior division of the obturator nerve supply a variable area of skin on the medial aspect of the thigh

The patellar plexus

- lies in front of the knee and is formed from **the terminal branches of the lateral intermediate, and medial cutaneous nerves of the thigh and the infrapatellar branch of the saphenous nerve**



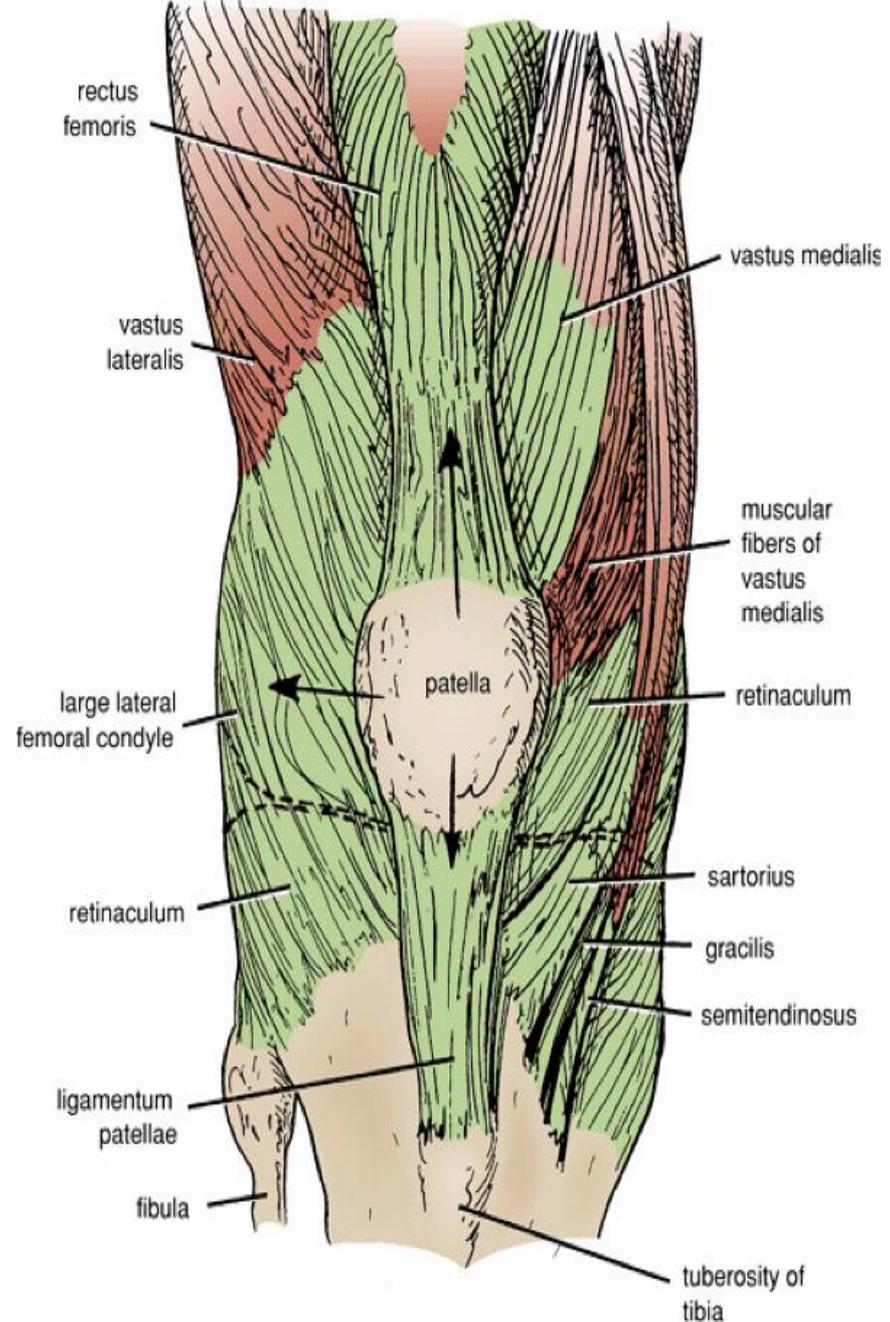
Muscles of the Anterior Facial Compartment of the Thigh

Muscles of the Anterior Fascial Compartment of the Thigh

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots	Action
Sartorius	Anterior superior iliac spine	Upper medial surface of shaft of tibia	Femoral nerve	L2, 3	Flexes, abducts, laterally rotates thigh at hip joint; flexes and medially rotates leg at knee joint
Iliacus	Iliac fossa of hip bone	With psoas into lesser trochanter of femur	Femoral nerve	L2, 3	Flexes thigh on trunk; if thigh is fixed, it flexes the trunk on the thigh as in sitting up from lying down
Psoas	Transverse processes, bodies, and intervertebral discs of the 12th thoracic and five lumbar vertebrae	With iliacus into lesser trochanter of femur	Lumbar plexus	L1, 2, 3	Flexes thigh on trunk; if thigh is fixed, it flexes the trunk on thigh as in sitting up from lying down
Pectineus	Superior ramus of pubis	Upper end of linea aspera of shaft of femur	Femoral nerve	L2, 3	Flexes and adducts thigh at hip joint
Quadriceps femoris					
Rectus femoris	Straight head: anterior inferior iliac spine Reflected head: ilium above acetabulum	Quadriceps tendon into patella, then via ligamentum patellae into tubercle of tibia	Femoral nerve	L2, 3, 4	Extension of leg at knee joint; flexes thigh at hip joint
Vastus lateralis	Upper end and shaft of femur	Quadriceps tendon into patella, then via ligamentum patellae into tubercle of tibia	Femoral nerve	L2, 3, 4	Extension of leg at knee joint
Vastus medialis	Upper end and shaft of femur	Quadriceps tendon into patella, then via ligamentum patellae into tubercle of tibia	Femoral nerve	L2, 3, 4	Extension of leg at knee joint; stabilizes patella
Vastus intermedius	Anterior and lateral surfaces of shaft of femur	Quadriceps tendon into patella, then via ligamentum patellae into tubercle of tibia	Femoral nerve	L2, 3, 4	Extension of leg at knee joint; articularis genus retracts synovial membrane

Action of Quadriceps Femoris Muscle (Quadriceps Mechanism)

- The quadriceps femoris muscle, consisting of the rectus femoris, the vastus intermedius, the vastus lateralis, the vastus medialis, is inserted into the patella and, via the ligamentum patellae, is attached to the tibial tuberosity
- Together they provide a powerful extensor of the knee joint.
- Some of the tendinous fibers of the vastus lateralis and vastus medialis form bands, or retinacula, that join the capsule of the knee joint and strengthen it.



- The lowest muscle fibers **of the vastus medialis** are almost horizontal and prevent the patella from being pulled laterally during contraction of the quadriceps muscle.
- The tone of the quadriceps muscle greatly strengthens the knee joint.
- The rectus femoris muscle also flexes the hip joint.

Clinical Notes

- **Quadriceps Femoris as a Knee Joint Stabilizer**
- The quadriceps femoris is the most important extensor muscle for the knee joint. Its tone greatly strengthens the joint; therefore, this muscle mass must be carefully examined when disease of the knee joint is suspected. Both thighs should be examined, and the size, consistency, and strength of the quadriceps muscles should be tested. Reduction in size caused by muscle atrophy can be tested by measuring the circumference of each thigh a fixed distance above the superior border of the patella.
- The vastus medialis muscle extends farther distally than the vastus lateralis. Remember that the vastus medialis is the first part of the quadriceps muscle to atrophy in knee joint disease and the last to recover.
- **Rupture of the Rectus Femoris**
- The rectus femoris muscle can rupture in sudden violent extension movements of the knee joint. The muscle belly retracts proximally, leaving a gap that may be palpable on the anterior surface of the thigh. In complete rupture of the muscle, surgical repair is indicated.
- Rupture of the Ligamentum Patellae
- This can occur when a sudden flexing force is applied to the knee joint when the quadriceps femoris muscle is actively contracting

Contents of the Medial Fascial Compartment of the Thigh

- **Muscles:** Gracilis, adductor longus, adductor brevis, adductor magnus, and obturator externus
- **Blood supply:** Profunda femoris artery and obturator artery
- **Nerve supply:** Obturator nerve
- Muscles of the Medial Fascial Compartment of the Thigh
- **Note the following:**
 - The adductor magnus is a large, triangular muscle consisting of adductor and hamstring portions.
 - The adductor hiatus is a gap in the attachment of this muscle to the femur, which permits the femoral vessels to pass from the adductor canal downward into the popliteal space.

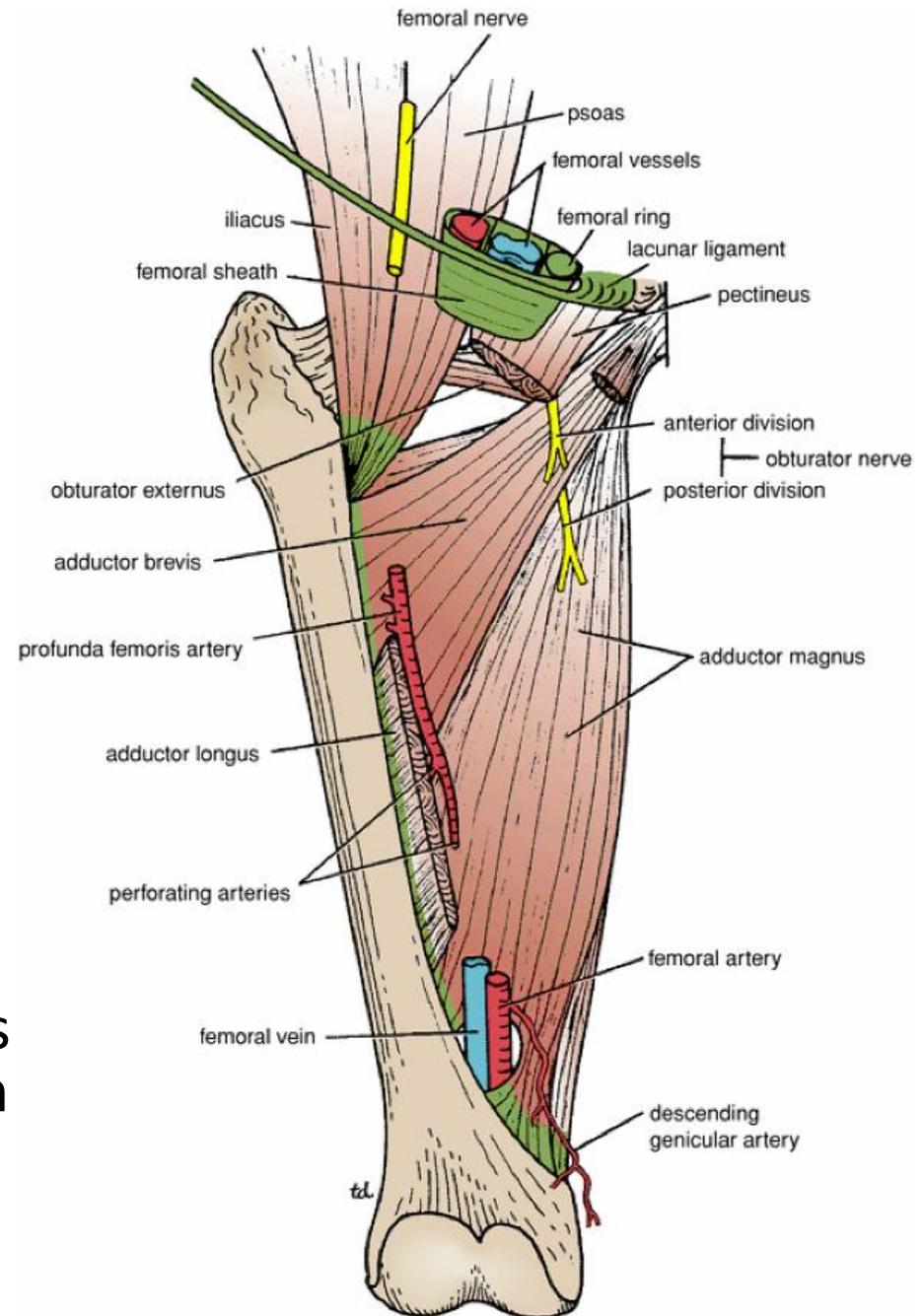
Muscles of the Medial Fascial Compartment of the Thigh

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots ^a	Action
Gracilis	Inferior ramus of pubis, ramus of ischium	Upper part of shaft of tibia on medial surface	Obturator nerve	L2, 3	Adducts thigh at hip joint; flexes leg at knee joint
Adductor longus	Body of pubis, medial to pubic tubercle	Posterior surface of shaft of femur (linea aspera)	Obturator nerve	L2, 3, 4	Adducts thigh at hip joint and assists in lateral rotation
Adductor brevis	Inferior ramus of pubis	Posterior surface of shaft of femur (linea aspera)	Obturator nerve	L2, 3, 4	Adducts thigh at hip joint and assists in lateral rotation
Adductor magnus	Inferior ramus of pubis, ramus of ischium, ischial tuberosity	Posterior surface of shaft of femur, adductor tubercle of femur	Adductor portion: obturator nerve Hamstring portion: sciatic nerve	L2, 3, 4	Adducts thigh at hip joint and assists in lateral rotation; hamstring portion extends thigh at hip joint
Obturator externus	Outer surface of obturator membrane and pubic and ischial rami	Medial surface of greater trochanter	Obturator nerve	L3, 4	Laterally rotates thigh at hip joint

Blood Supply of the Medial Fascial Compartment of the Thigh

Profunda Femoris Artery

- The profunda femoris is a large artery that arises from the lateral side of the femoral artery in the femoral triangle, about 1.5 in. (4 cm) below the inguinal ligament
- It descends in the interval between the adductor longus and adductor brevis and then lies on the adductor magnus, where it ends as 4 perforating arteries



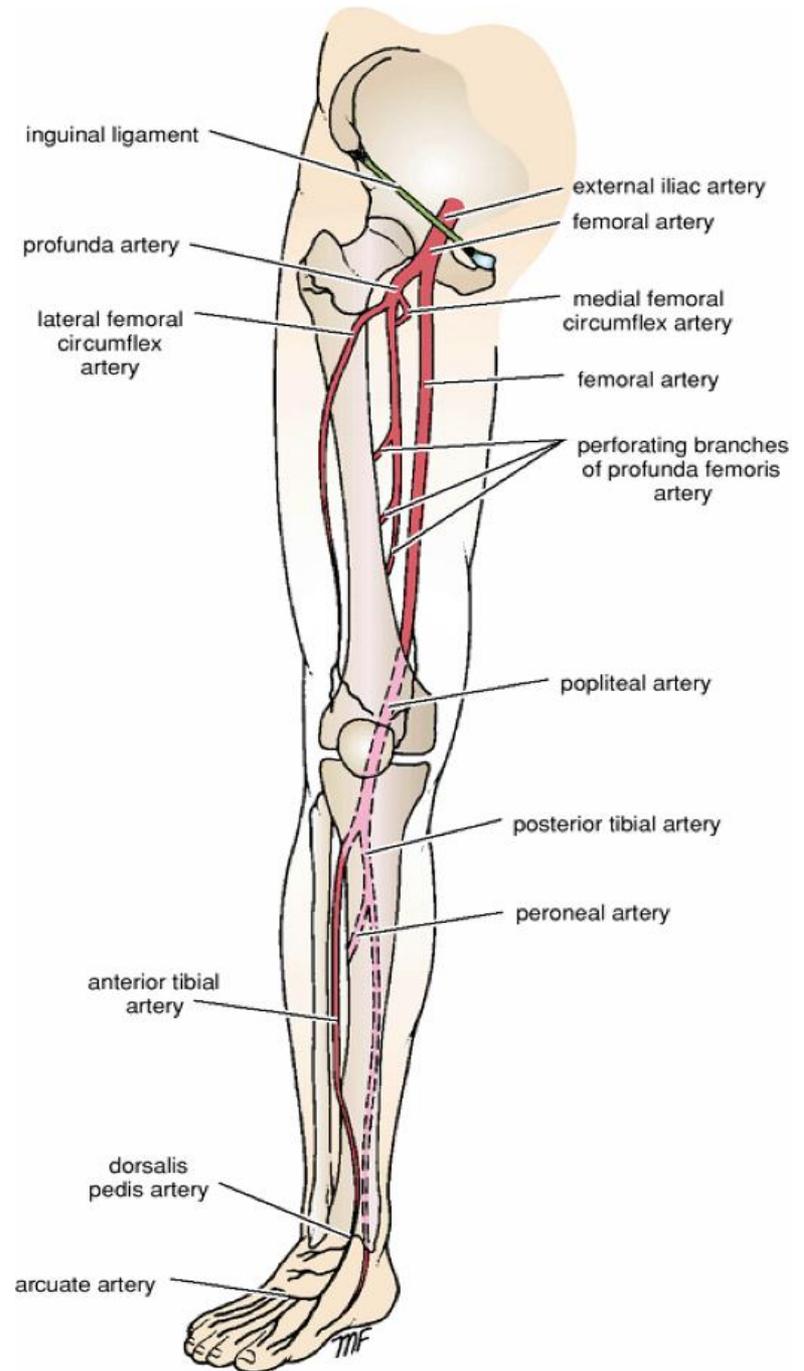
Branches

Medial femoral circumflex artery:

- This passes backward between the muscles that form the floor of the femoral triangle and gives off muscular branches in the medial fascial compartment of the thigh
- It takes part in the formation of the cruciate anastomosis.

Lateral femoral circumflex artery:

- This passes laterally between the terminal branches of the femoral nerve
- It breaks up into branches that supply the muscles of the region and takes part in the formation of the cruciate anastomosis.



- **Branches of obturator artery:**
- Muscular branches to:
 - 1- Adductor magnus(pubic part)
 - 2- Gracilis
 - 3- Pectineus
- Anastomosis with medial circumflex artery
- Anastomosis with inferior gluteal artery
- Acetabular branch to hip joint supply the head of femur through the ligamentum teres

Obturator Vein

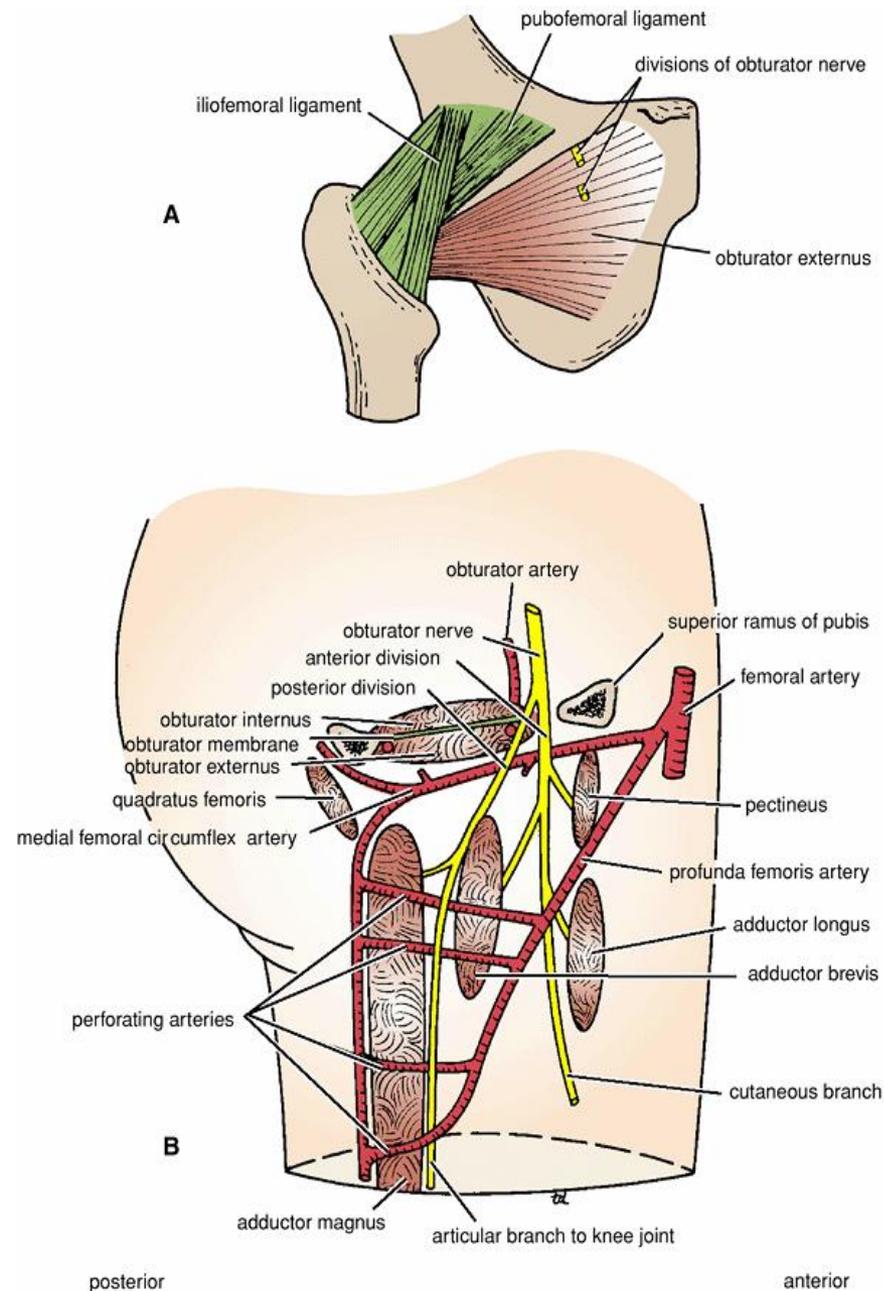
- The obturator vein receives tributaries that correspond to the branches of the artery.
- It drains into the internal iliac vein.

- **Nerve Supply of the Medial Fascial Compartment of the Thigh**

- **Obturator Nerve**

- The obturator nerve arises from the lumbar plexus (L2, 3, and 4) and emerges on the medial border of the psoas muscle within the abdomen

- It runs forward on the lateral wall of the pelvis to reach the upper part of the obturator foramen, where it divides into anterior and posterior divisions



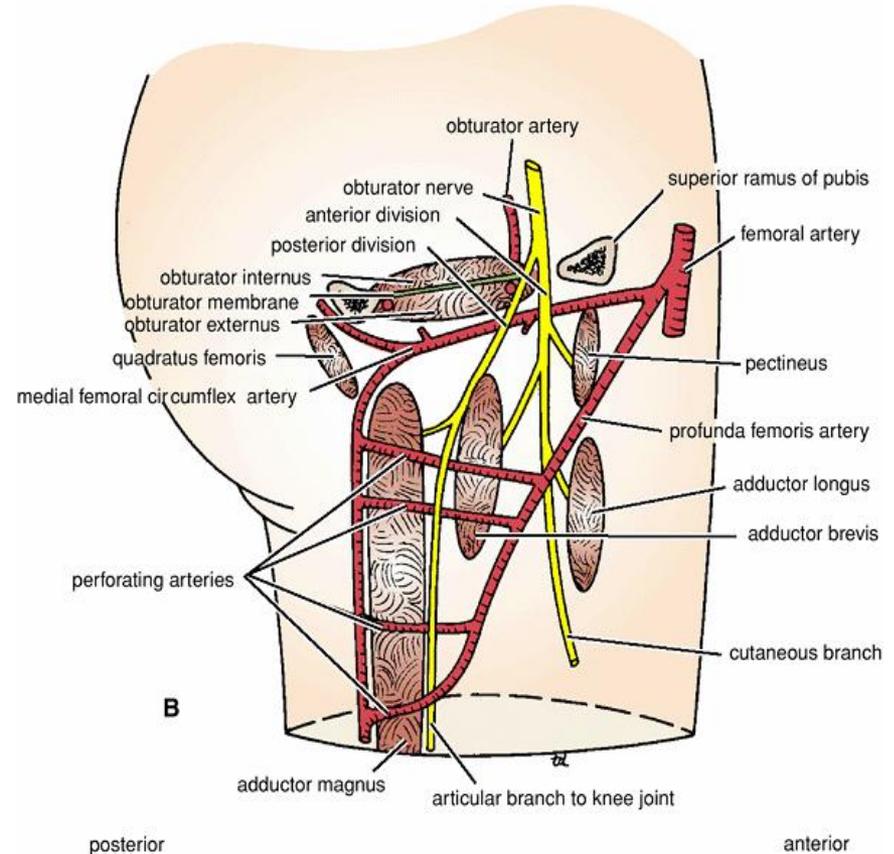
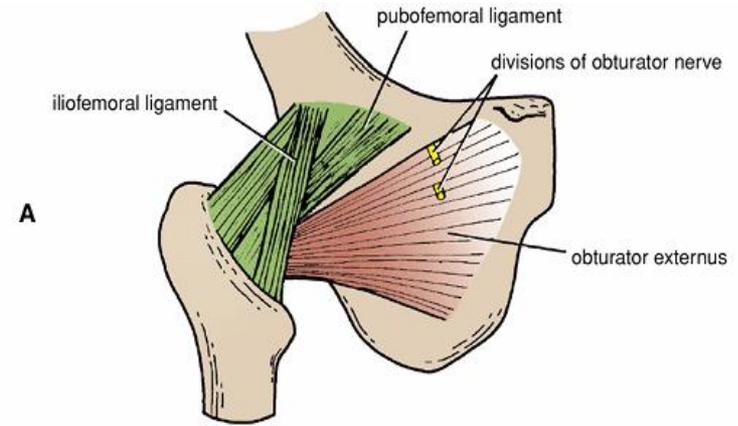
Branches of obturator nerve:

The anterior division:

- passes downward in front of the obturator externus and the adductor brevis and behind the pectineus and adductor longus
- **It gives muscular branches** to the gracilis, adductor brevis, and adductor longus, and occasionally to the pectineus.
- **It gives articular branches** to the hip joint and terminates as a small nerve that supplies the femoral artery.
- It contributes a variable branch **to the sub sartorial plexus** and **supplies the skin on the medial side of the thigh.**

The posterior division :

- pierces the obturator externus
- passes downward behind the adductor brevis and in front of the adductor magnus
- It terminates by descending through the opening in the adductor magnus to supply the knee joint.
- **It gives muscular branches to the obturator externus, to the adductor part of the adductor magnus, and occasionally to the adductor brevis.**



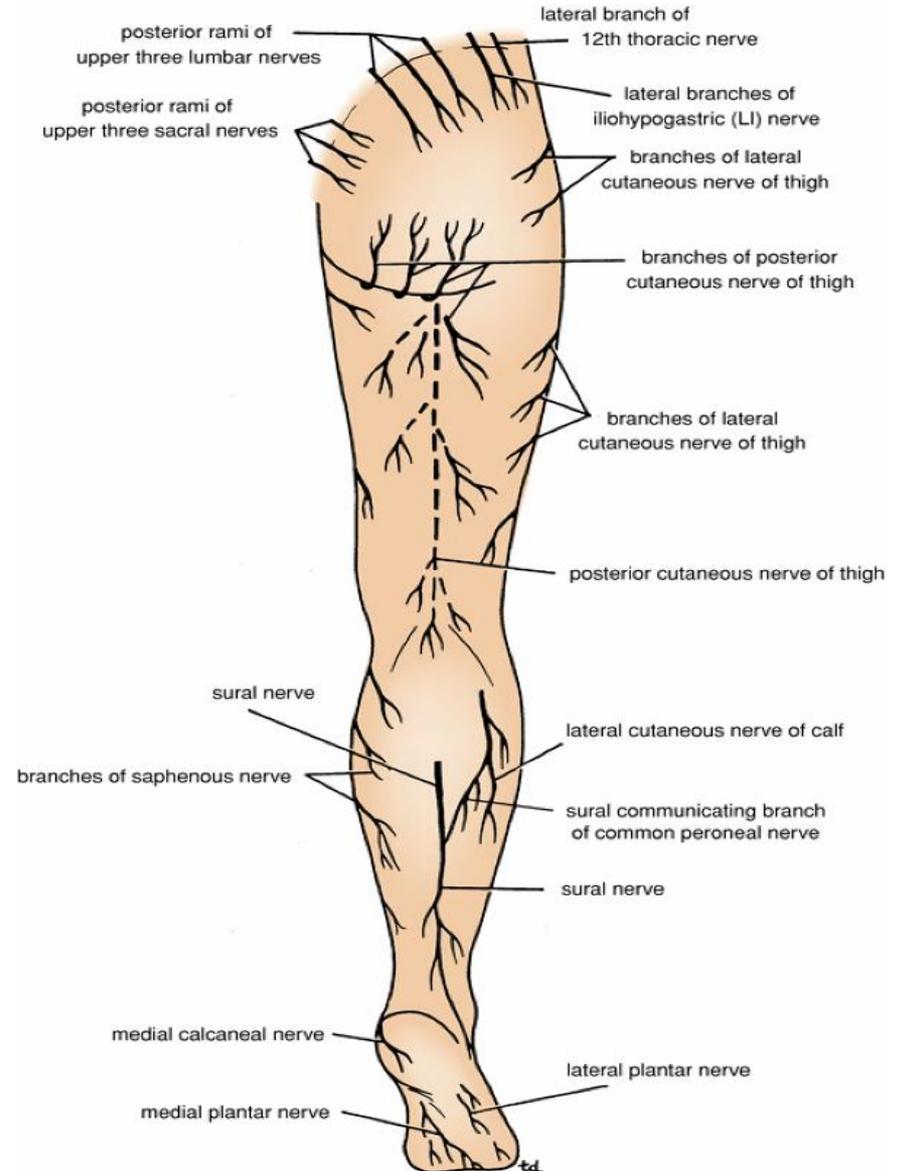
The Back of the Thigh

Skin

Cutaneous Nerves

1- The posterior cutaneous nerve of the thigh,

- a branch of the sacral plexus
- leaves the gluteal region by emerging from beneath the lower border of the gluteus maximus muscle
- It descends on the back of the thigh, and in the popliteal fossa it pierces the deep fascia and supplies the skin.
- It gives off numerous branches to the skin on the back of the thigh and the upper part of the leg

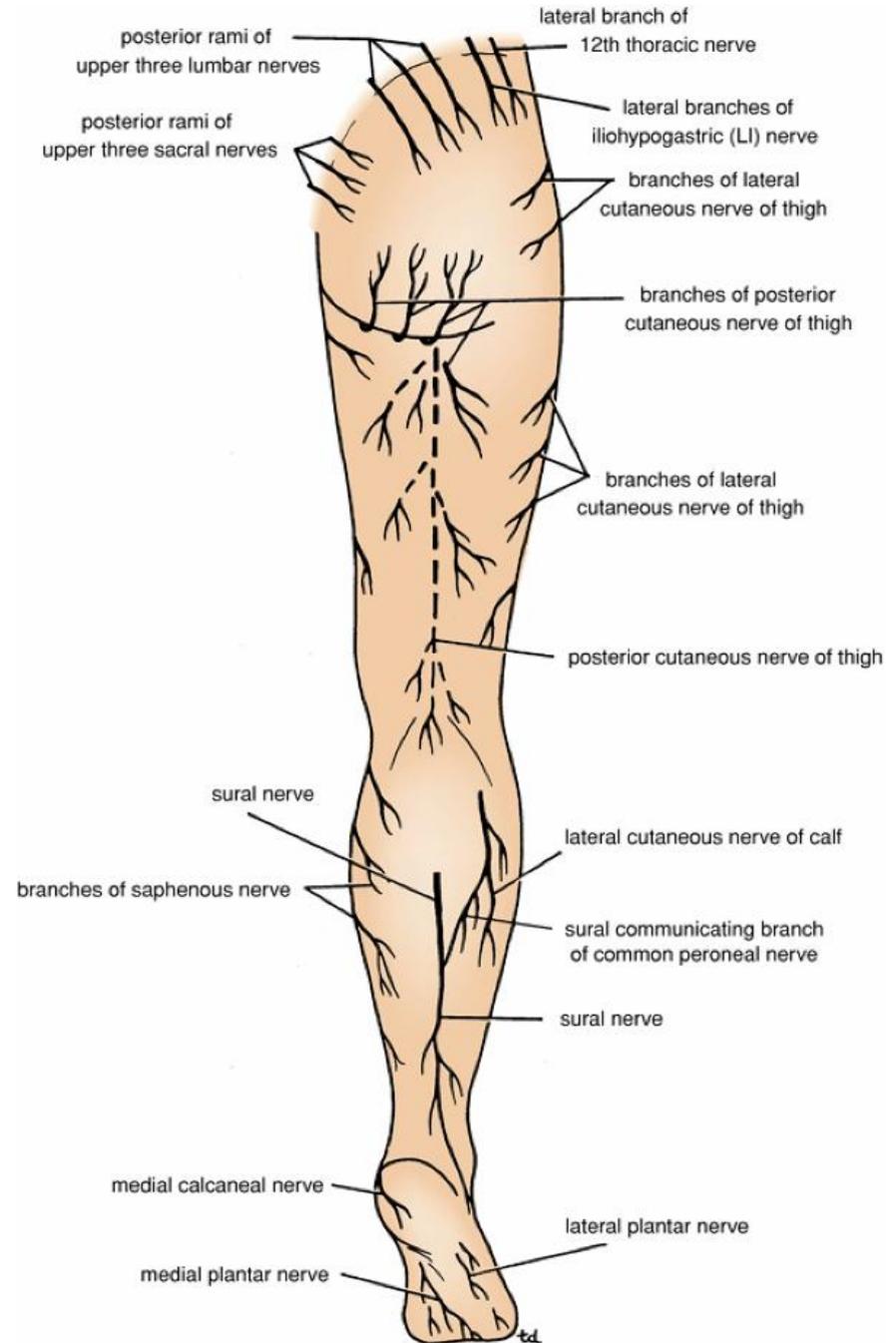


2- Posterior Cutaneous Nerve of the Thigh:

- It terminates by supplying the skin over the popliteal fossa

3- Obturator Nerve:

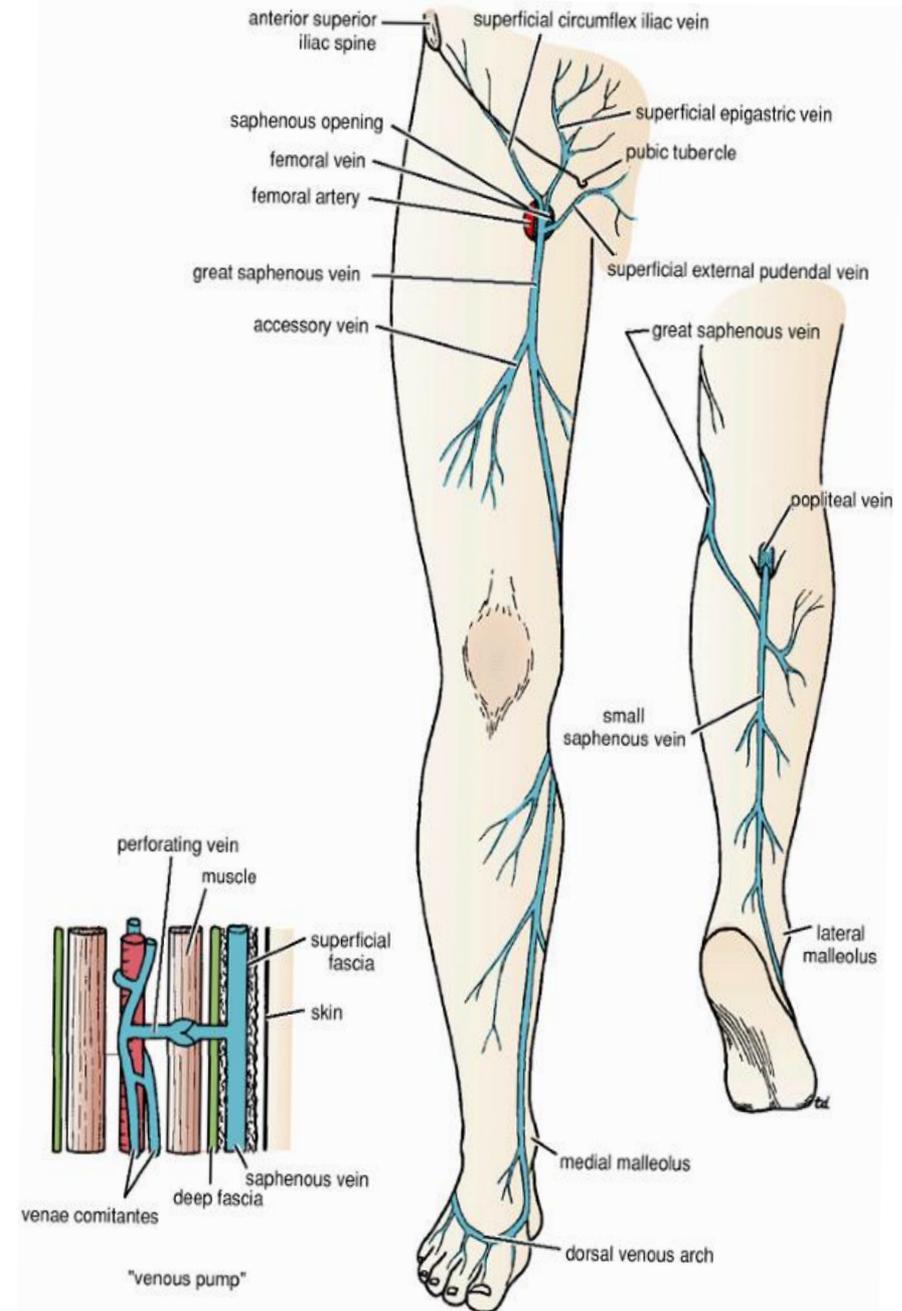
- The course of the posterior division of the obturator nerve in the medial compartment
- It leaves the subsartorial canal with the femoral artery by passing through the opening in the adductor magnus
- The nerve terminates by supplying the knee joint.



Superficial Veins

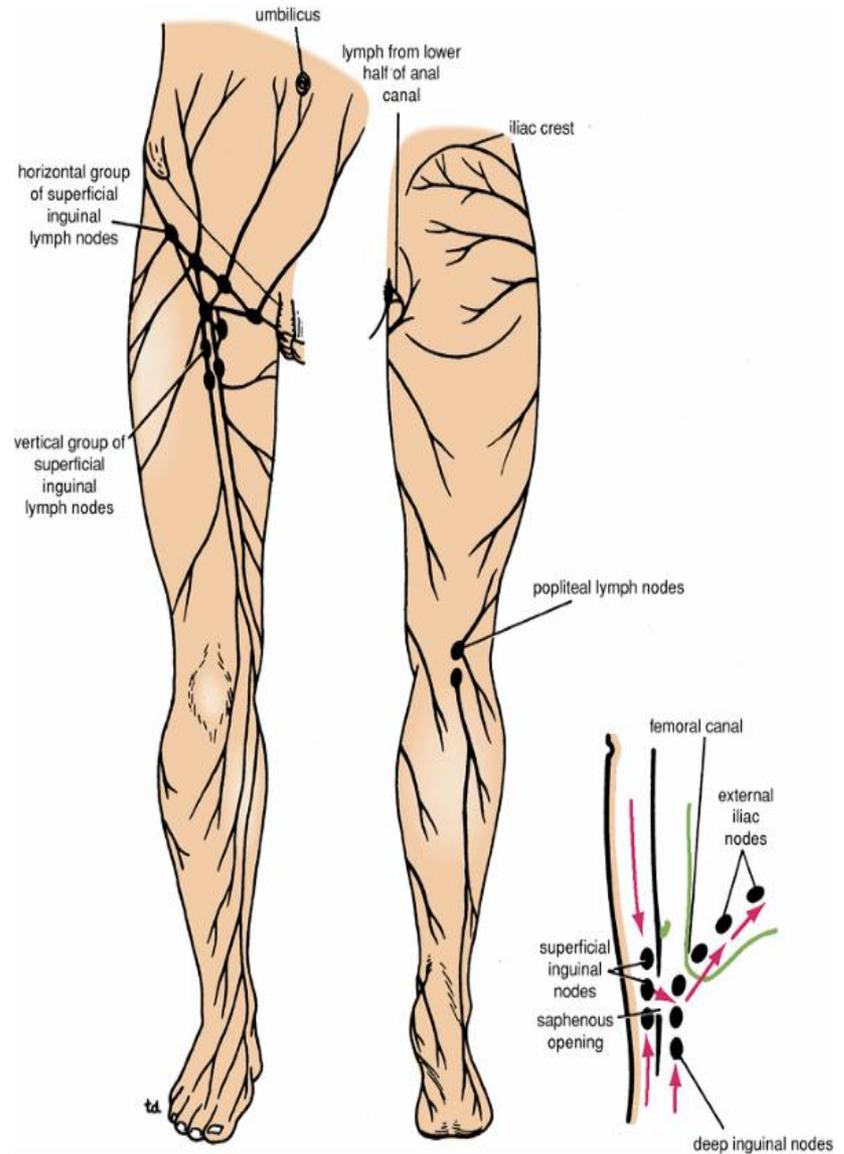
Great saphenous and Small saphenous vein

- Many small veins curve around the medial and lateral aspects of the thigh and ultimately drain into the great saphenous vein
- Superficial veins from the lower part of the back of the thigh join the small saphenous vein in the popliteal fossa.



Lymph Vessels

- Lymph from the skin and superficial fascia on the back of the thigh drains upward and forward into the **vertical group of superficial inguinal lymph nodes**

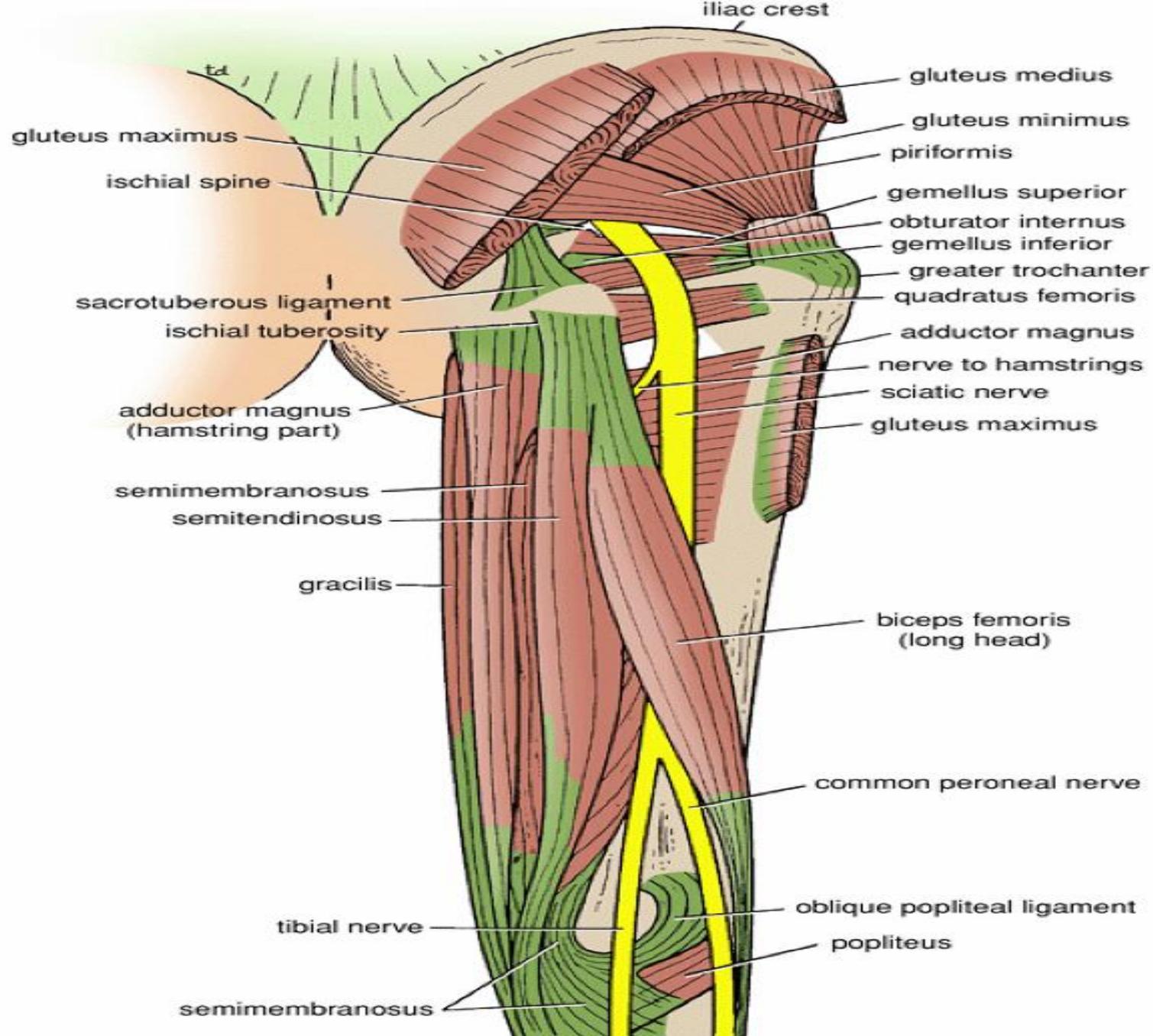


Contents of the Posterior Fascial Compartment of the Thigh

- **Muscles:** Biceps femoris, semitendinosus, semimembranosus, and a hamstring part of the adductor magnus (hamstring muscles)
- **Blood supply:** Branches of the profunda femoris artery
- **Nerve supply:** Sciatic nerve
- **Note the following:**
 - The biceps femoris muscle receives its nerve supply from the sciatic nerve, the long head from the tibial portion and the short head from the common peroneal portion.
 - The hamstring part of the adductor magnus muscle receives its nerve supply from the tibial portion of the sciatic nerve and the adductor part from the obturator nerve.
 - The semimembranosus insertion sends a fibrous expansion upward and laterally, which reinforces the capsule on the back of the knee joint; the expansion is called the oblique popliteal ligament.

Muscles of the Posterior Facial Compartment of the Thigh

Muscle	Origin	Insertion	Nerve Supply	Nerve Roots ^a	Action
Biceps femoris	Long head: ischial tuberosity	Head of fibula	Long head: tibial portion of sciatic nerve	L5; S1, 2	Flexes and laterally rotates leg at knee joint; long head also extends thigh at hip joint
	Short head: linea aspera, lateral supracondylar ridge of shaft of femur		Short head: common peroneal portion of sciatic nerve		
Semitendinosus	Ischial tuberosity	Upper part of medial surface of shaft of tibia	Tibial portion of sciatic nerve	L5; S1, 2	Flexes and medially rotates leg at knee joint; extends thigh at hip joint
Semimembranosus	Ischial tuberosity	Medial condyle of tibia	Tibial portion of sciatic nerve	L5; S1, 2	Flexes and medially rotates leg at knee joint; extends thigh at hip joint
Adductor magnus (hamstring portion)	Ischial tuberosity	Adductor tubercle of femur	Tibial portion of sciatic nerve	L2, 3, 4	Extends thigh at hip joint



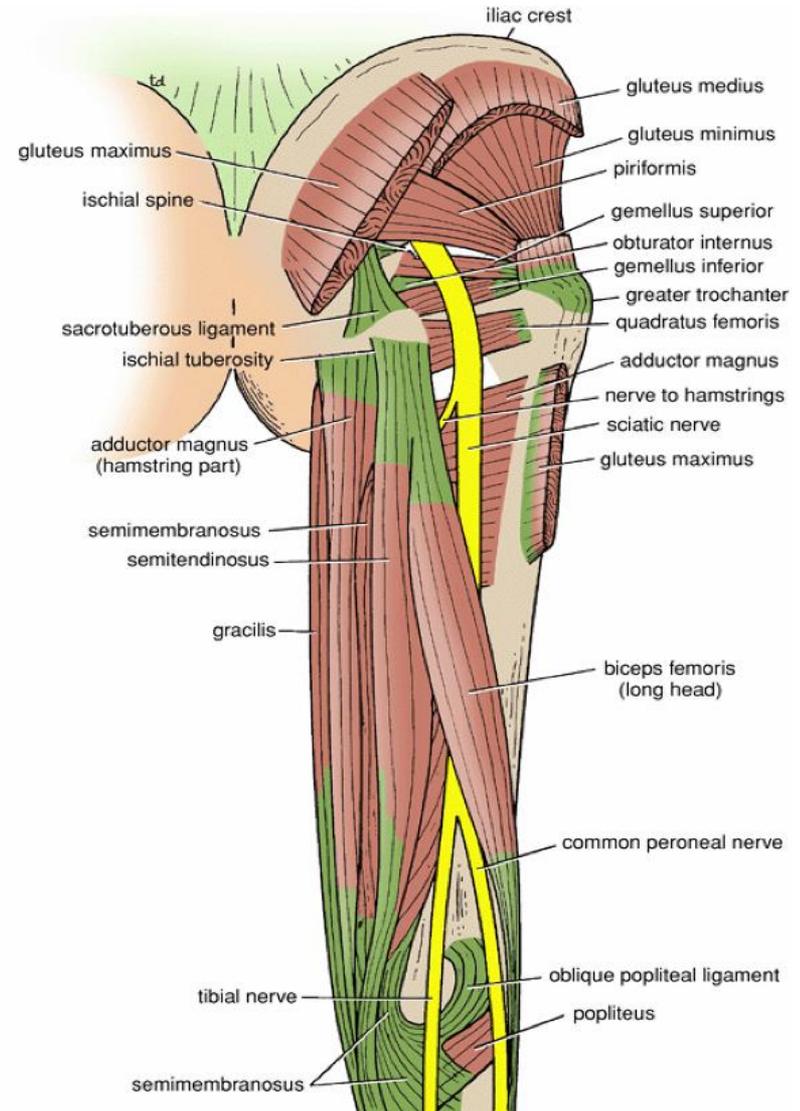
Blood Supply of the Posterior Compartment of the Thigh:

- The 4 perforating branches of the profunda femoris artery provide a good blood supply to this compartment
- The profunda femoris vein drains the greater part of the blood from the compartment.

Nerve Supply of the Posterior Compartment of the Thigh

Sciatic Nerve:

- The sciatic nerve, a branch of the sacral plexus (L4 and 5; S1, 2, and 3), leaves the gluteal region as it descends in the midline of the thigh
- It is overlapped posteriorly by the adjacent margins of the biceps femoris and semimembranosus muscles.



- It lies on the posterior aspect of the adductor magnus muscle. In the lower third of the thigh it ends by dividing into the tibial and common peroneal nerve
- Occasionally, the sciatic nerve divides into its two terminal parts at a higher level in the upper part of the thigh, the gluteal region, or even inside the pelvis.

Branches of sciatic nerve:

- **The tibial nerve**, a terminal branch of the sciatic nerve enters the popliteal fossa.
- **The common peroneal nerve**, a terminal branch of the sciatic nerve enters the popliteal fossa on the lateral side of the tibial nerve.
- **Muscular branches** to the long head of the biceps femoris, the semitendinosus, the semimembranosus, and the hamstring part of the adductor magnus. These branches arise from the tibial component of the sciatic nerve and run medially to supply the muscles