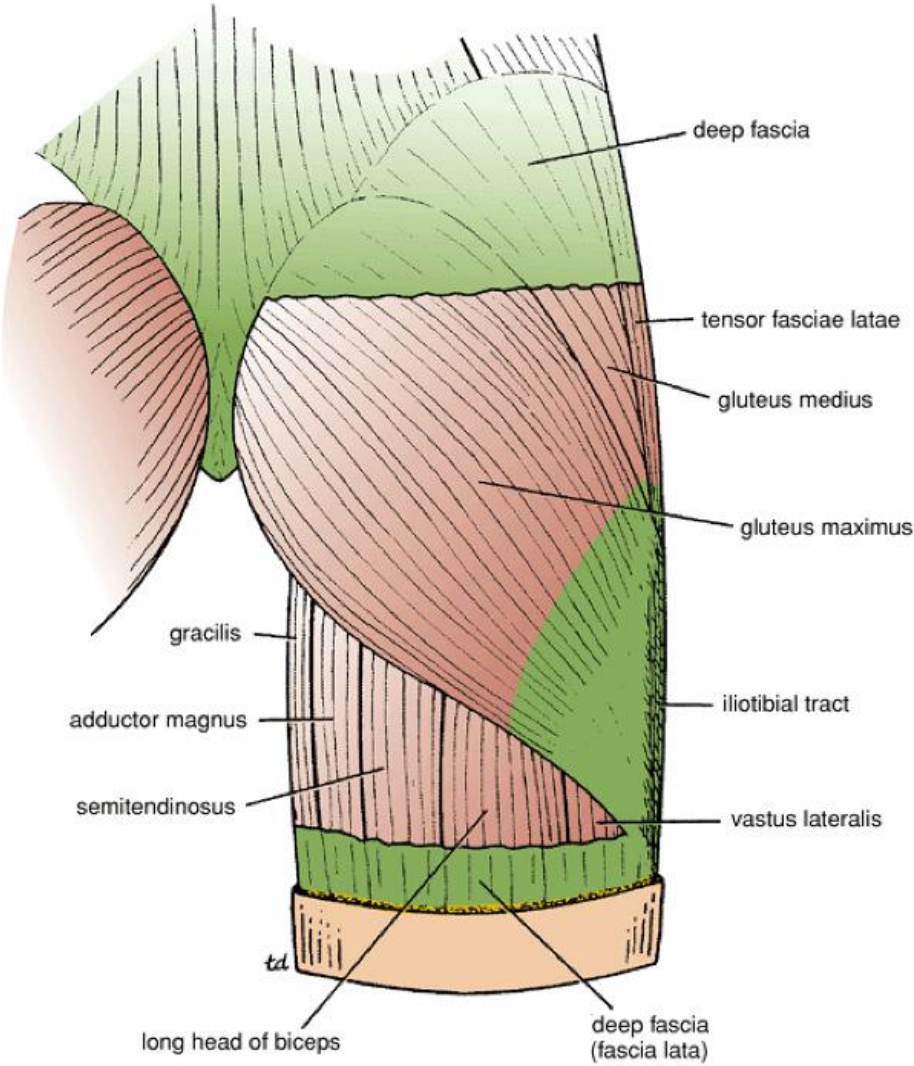
Gluteal region

The Gluteal Region

- The gluteal region, or buttock, is bounded:
- **superiorly** by the iliac crest
- **inferiorly** by the fold of the buttock.

The region is largely made up of:

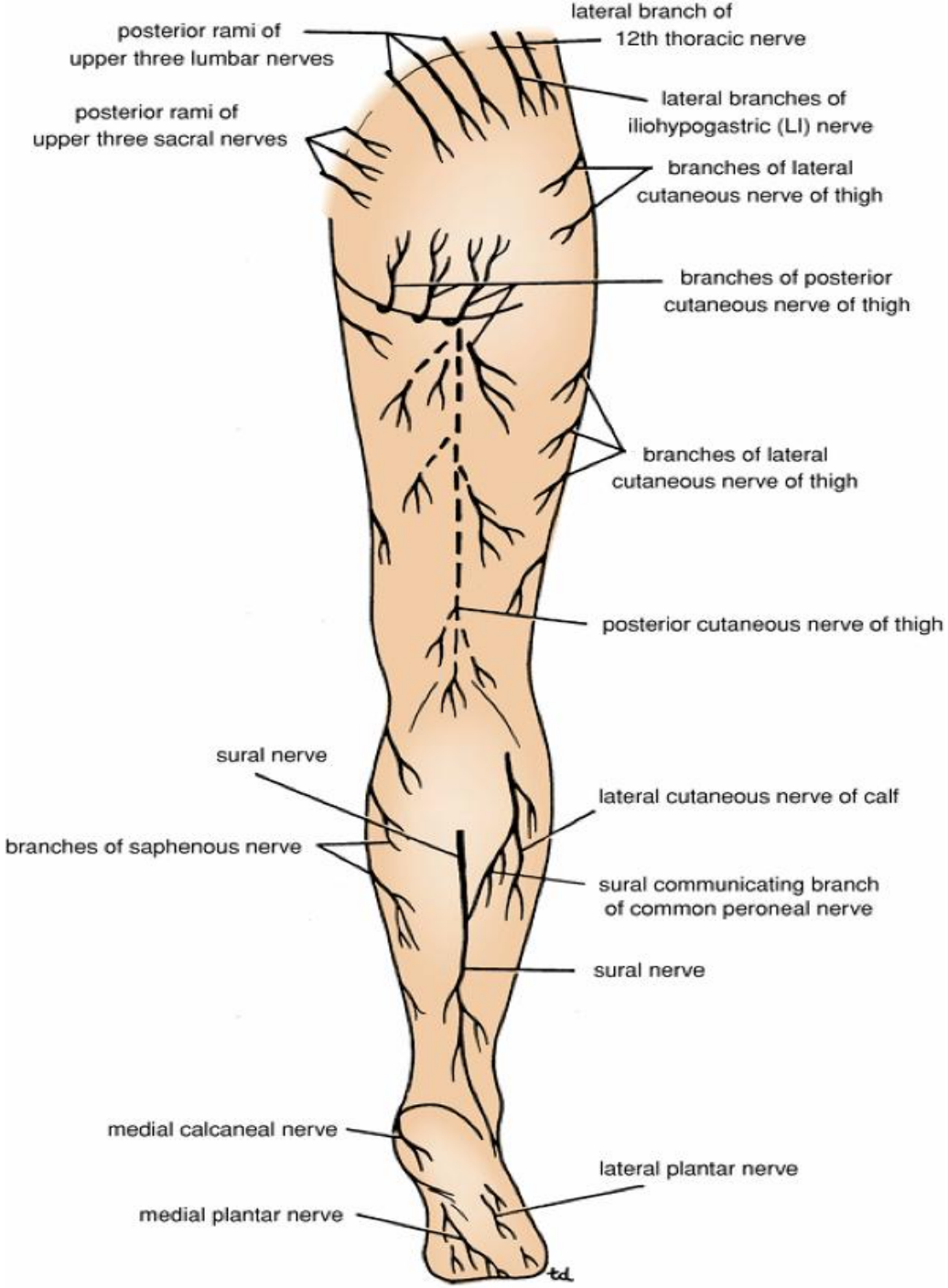
- the gluteal muscles
- a thick layer of superficial fascia.



The Skin of the Buttock:

- The cutaneous nerves are derived from posterior and anterior rami of spinal nerves, as follows:
- **The upper medial quadrant** is supplied by the posterior rami of the upper three lumbar nerves and the upper three sacral nerves.

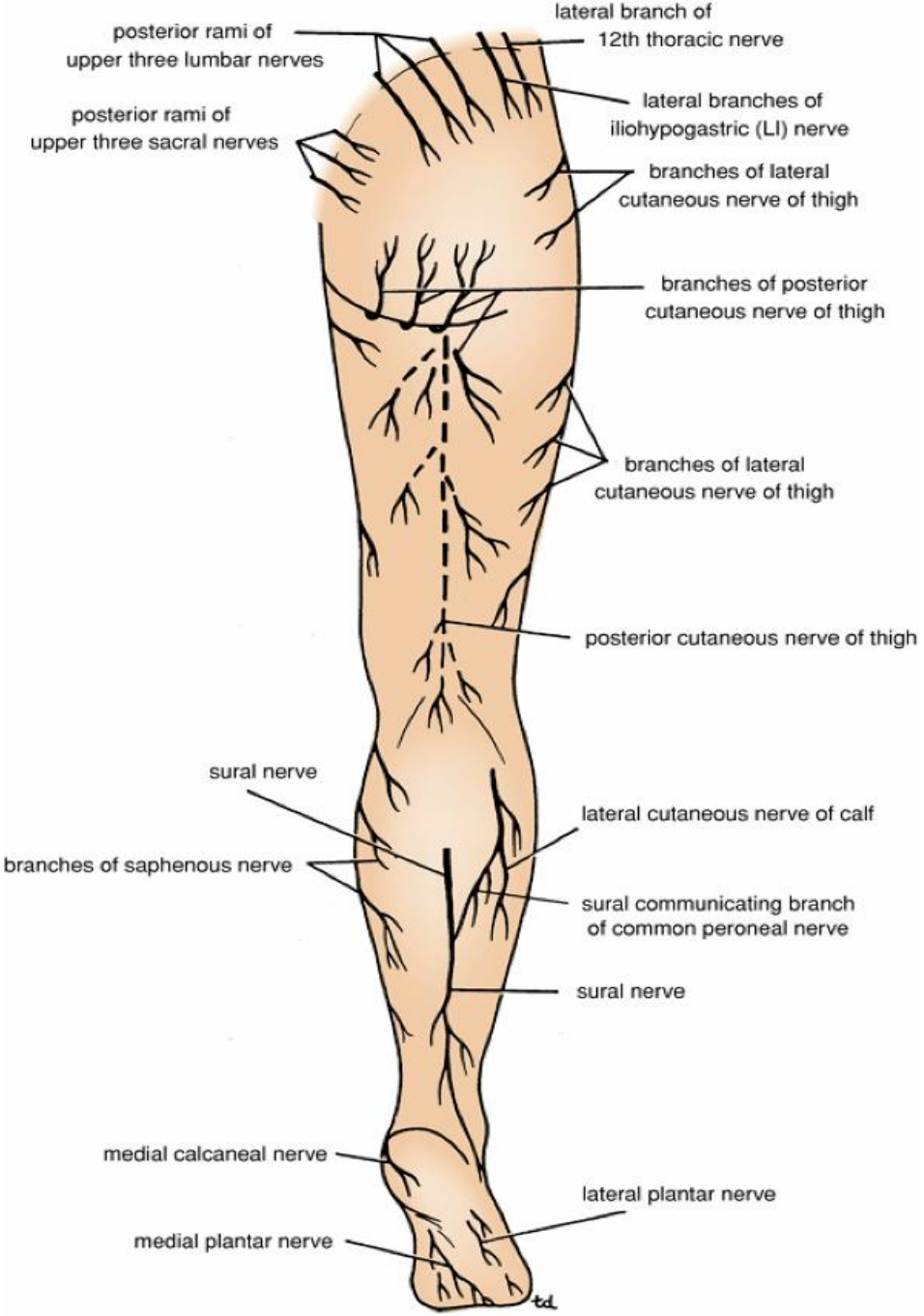
- **The upper lateral quadrant** is supplied by the lateral branches of the iliohypogastric (L1) and 12th thoracic nerves (anterior rami).



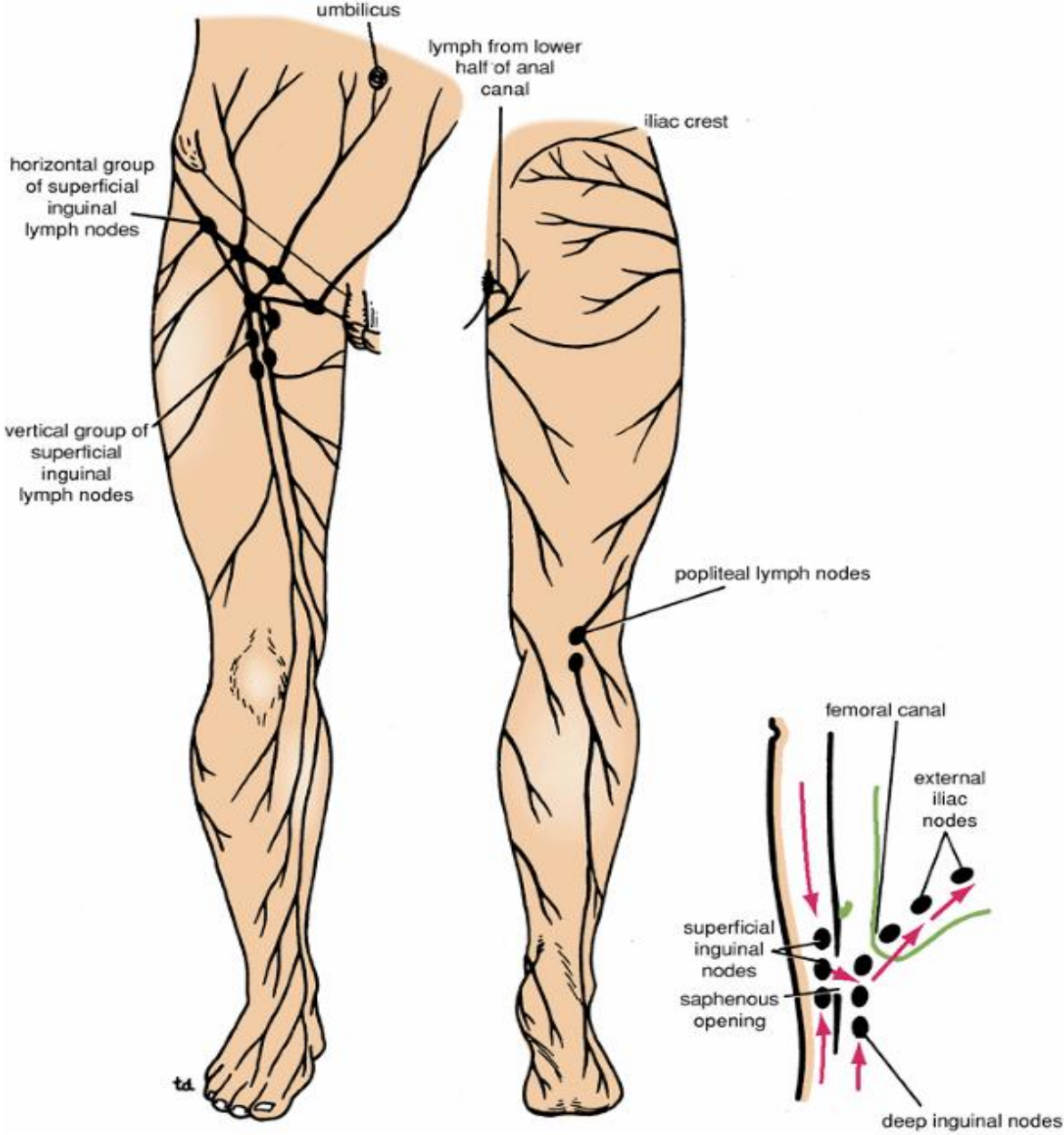
- **The lower lateral quadrant** is supplied by branches from the lateral cutaneous nerve of the thigh (L2 and 3, anterior rami).

- **The lower medial quadrant** is supplied by branches from the posterior cutaneous nerve of the thigh (S1, 2, and 3, anterior rami).

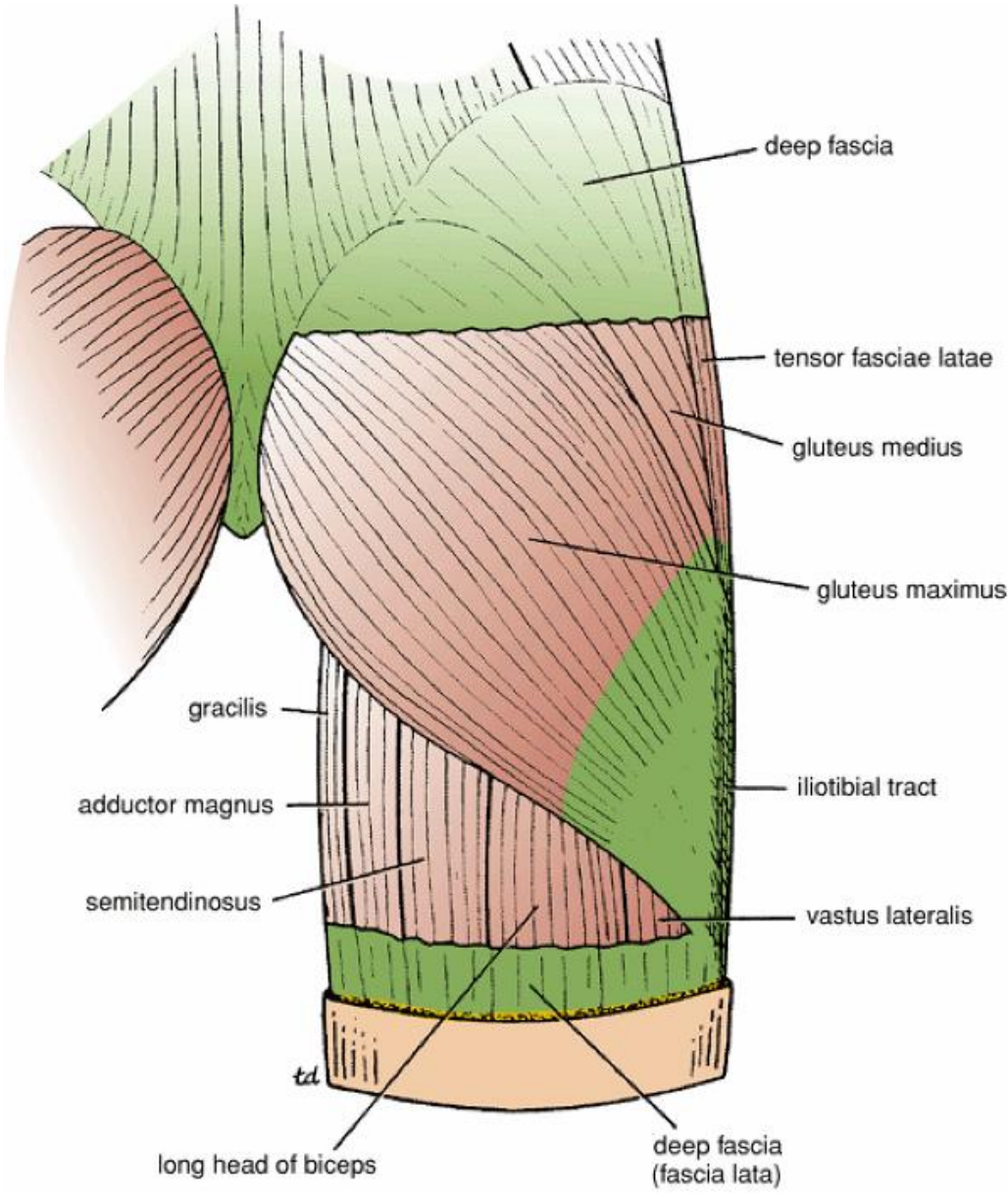
- **The skin over the coccyx** in the floor of the cleft between the buttocks is supplied by small branches of the lower sacral and coccygeal nerves.



- **The lymphatic drainage through vessels drain into the lateral group of the superficial inguinal nodes**



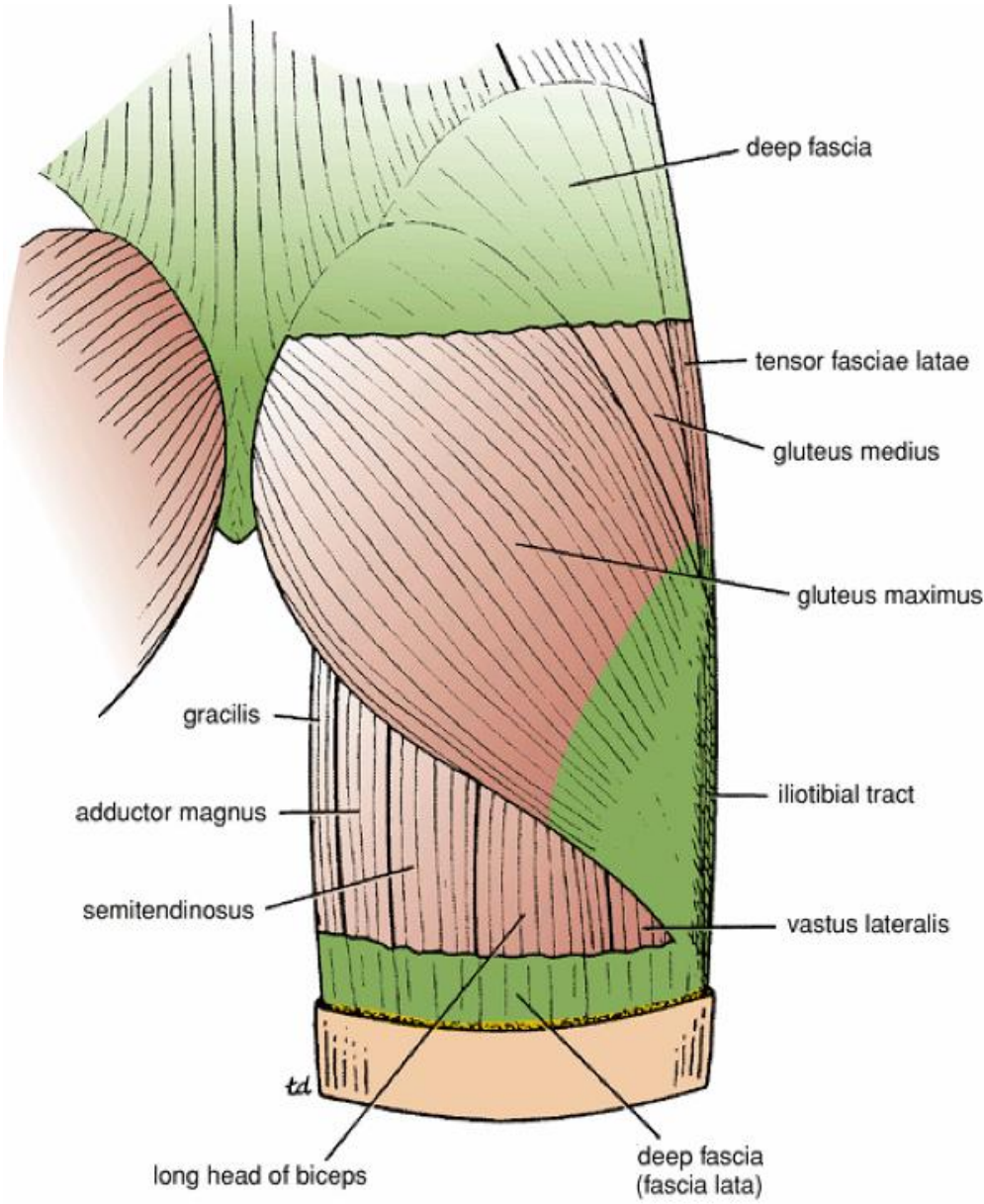
- The superficial fascia is thick, especially in women
- It is impregnated with large quantities of fat.
- It contributes to the prominence of the buttock.
- The deep fascia is continuous below with the deep fascia, or fascia lata, of the thigh.
- In the gluteal region, it splits to enclose the gluteus maximus muscle
- Above the gluteus maximus it continues as a single layer that covers the outer surface of the gluteus medius and is attached to the iliac crest.



- **On the lateral surface of the thigh,** the fascia is thickened to form a strong, wide band, the iliotibial tract

- **This is attached above to the tubercle of the iliac crest and below to the lateral condyle of the tibia**.

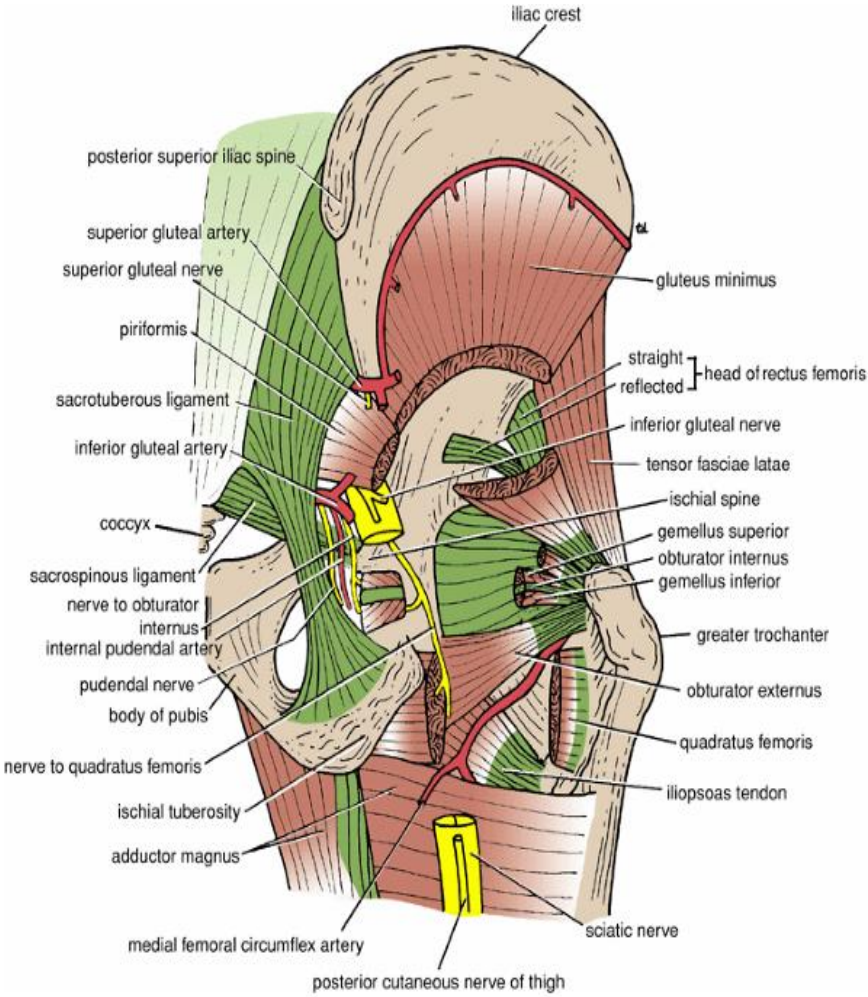
- **The iliotibial tract** forms a sheath for the tensor fasciae latae muscle and receives the greater part of the insertion of the gluteus maximus.



Ligaments of the Gluteal Region

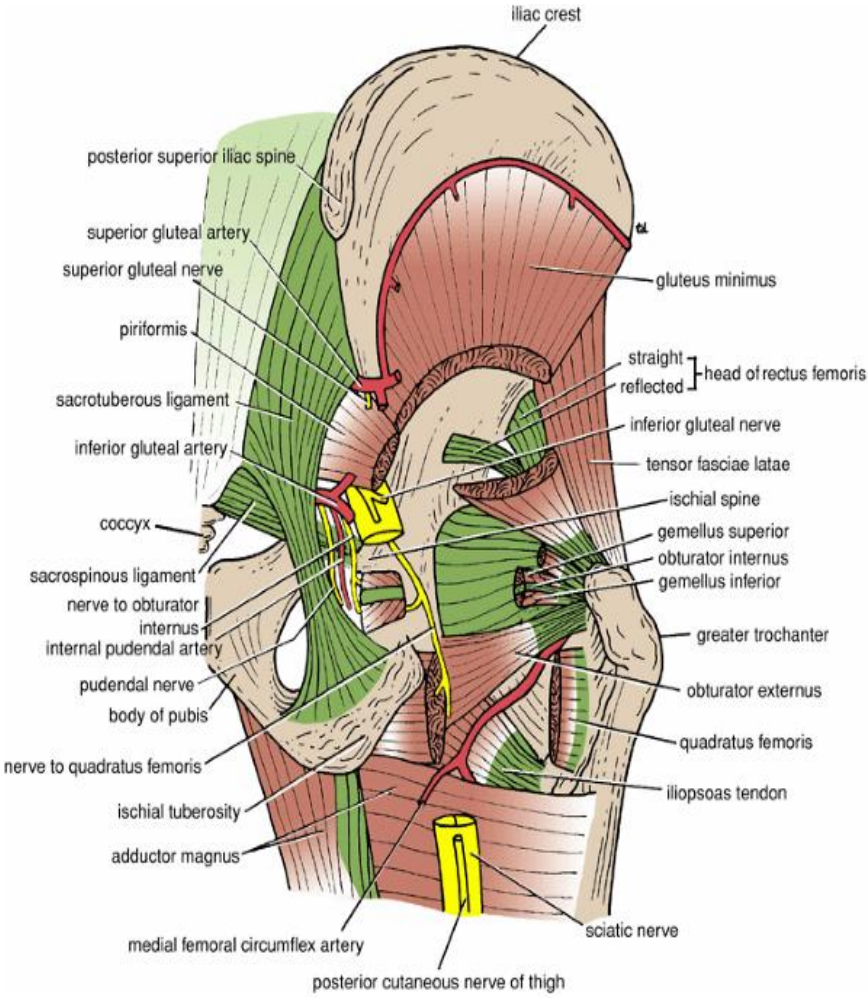
- The two important ligaments in the gluteal region are:
- the sacrotuberous
- sacrospinous ligaments.

- The function of these ligaments is to stabilize the sacrum and prevent its rotation at the sacroiliac joint by the weight of the vertebral column.



Sacrotuberous Ligament

- The sacrotuberous ligament connects the back of the sacrum to the ischial tuberosity



Sacrospinous Ligament

- The sacrospinous ligament connects the back of the sacrum to the spine of the ischium

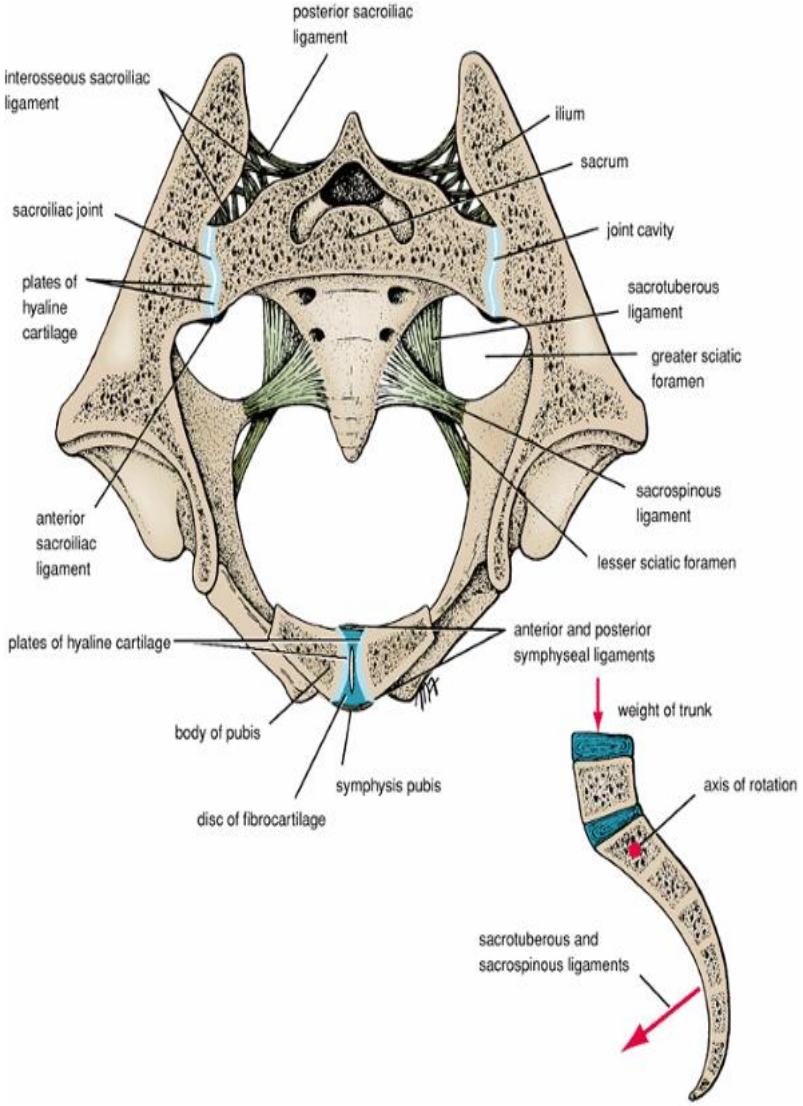
Foramina of the Gluteal Region

- The two important foramina in the gluteal region are:
- **the greater sciatic foramen**
- **the lesser sciatic foramen.**

Greater Sciatic Foramen

- The greater sciatic foramen is formed by the greater sciatic notch of the hip bone and the sacrotuberous and sacrospinous ligaments.
- It provides an exit from the pelvis into the gluteal region.

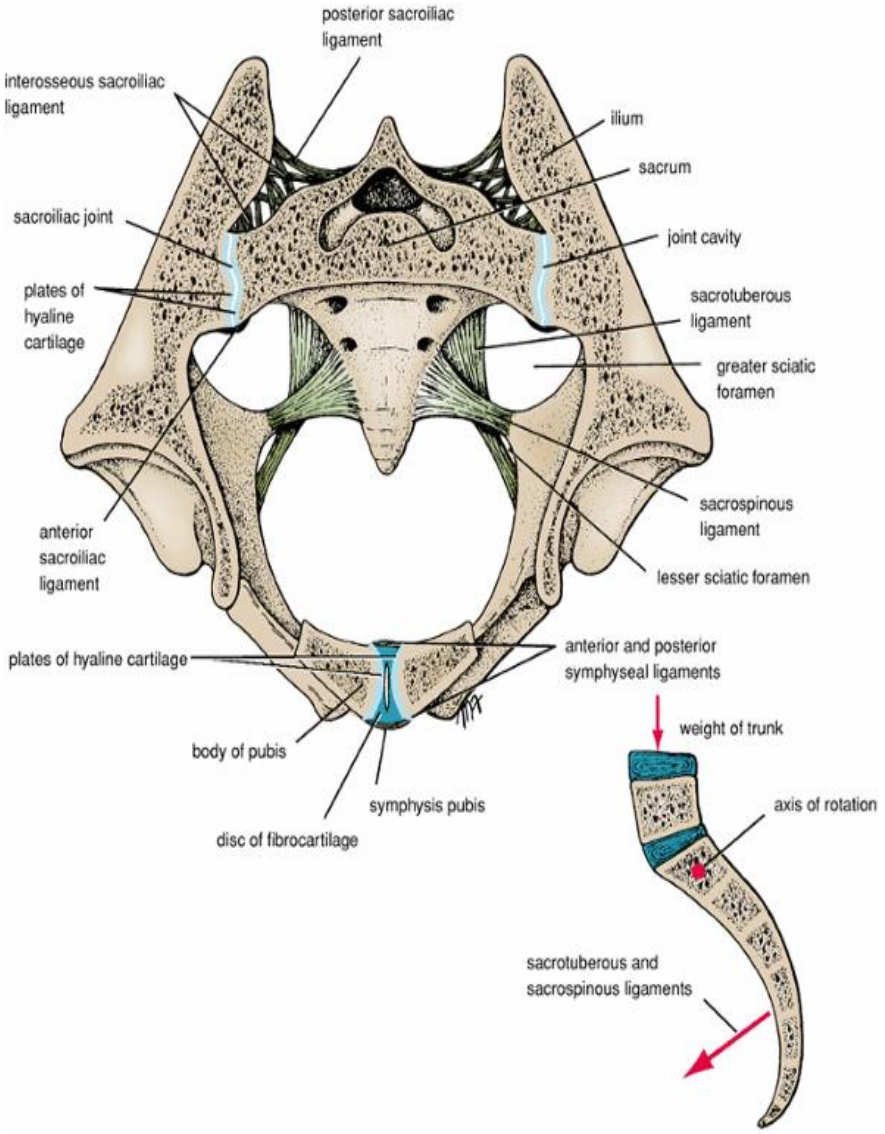
- **The following structures exit the foramen :**
- Piriformis
- Sciatic nerve
- Posterior cutaneous nerve of the thigh
- Superior and inferior gluteal nerves
- Nerves to the obturator internus and quadratus femoris
- Pudendal nerve
- Superior and inferior gluteal arteries and veins
- Internal pudendal artery and vein



Lesser Sciatic Foramen

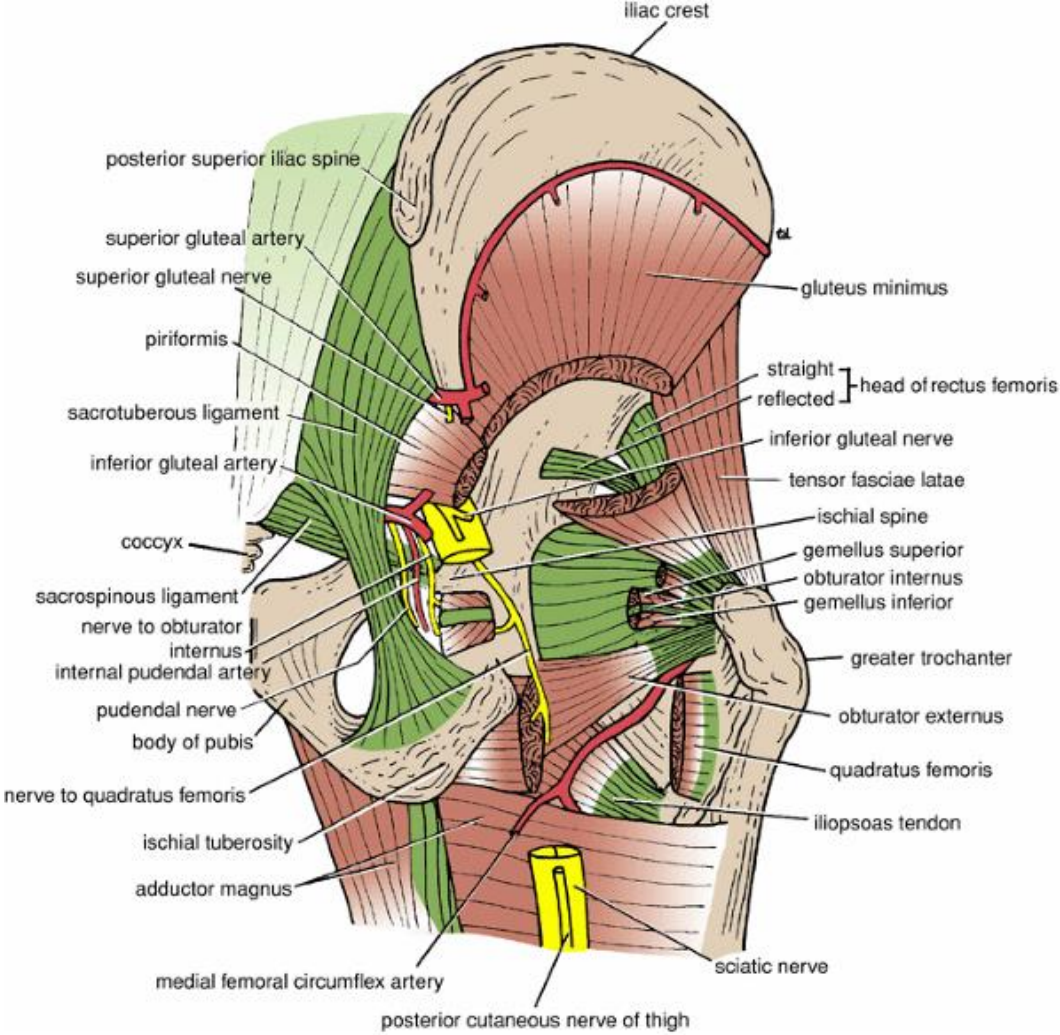
- The lesser sciatic foramen is formed by the lesser sciatic notch of the hip bone and the sacrotuberous and sacrospinous ligaments.
- It provides an entrance into the perineum from the gluteal region.

- Its presence enables nerves and blood vessels that have left the pelvis through the greater sciatic foramen above the pelvic floor to enter the perineum below the pelvic floor.



The following structures pass through the lesser sciatic foramen :

- Tendon of obturator internus muscle
- Nerve to obturator internus
- Pudendal nerve
- Internal pudendal artery and vein

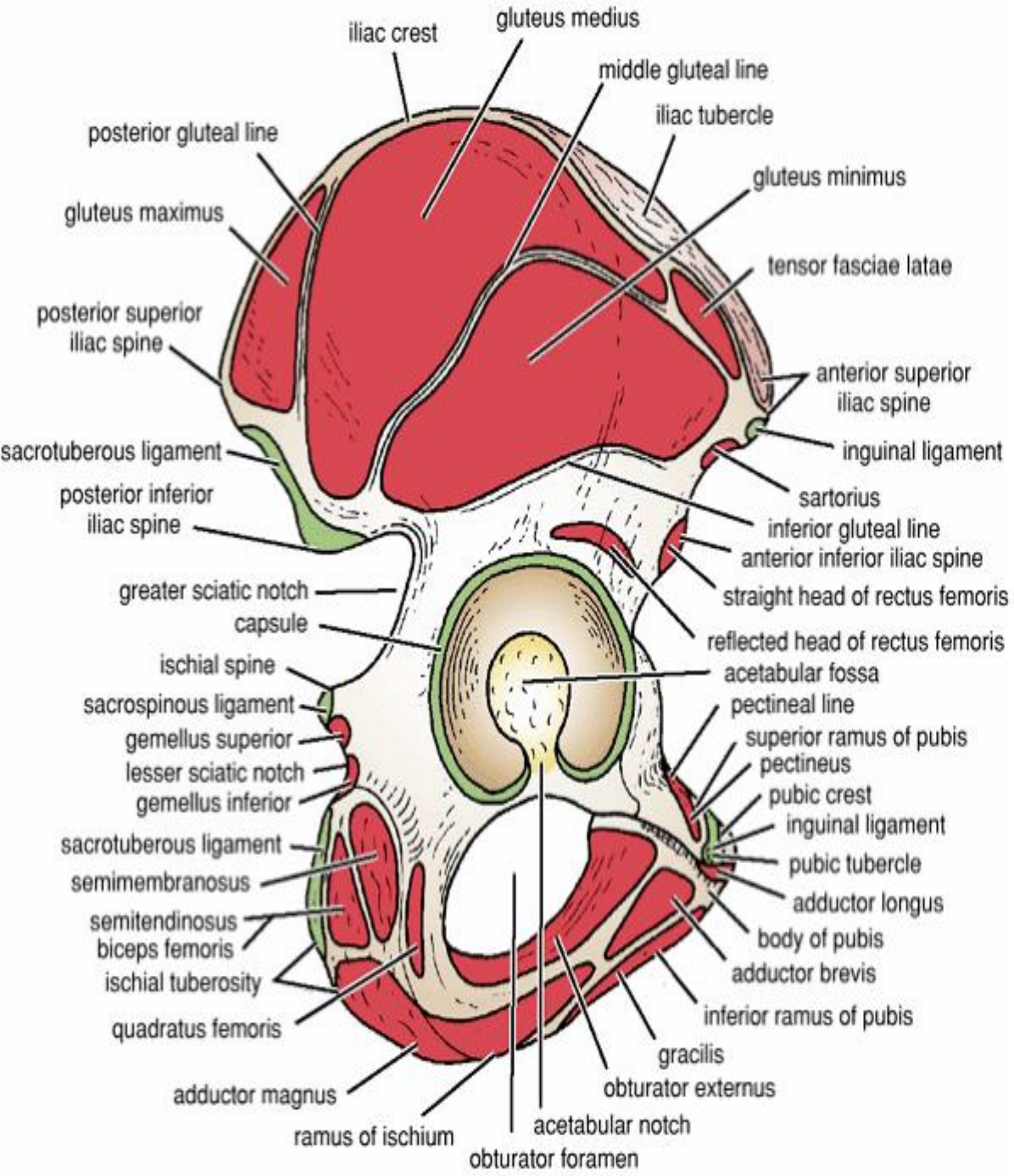


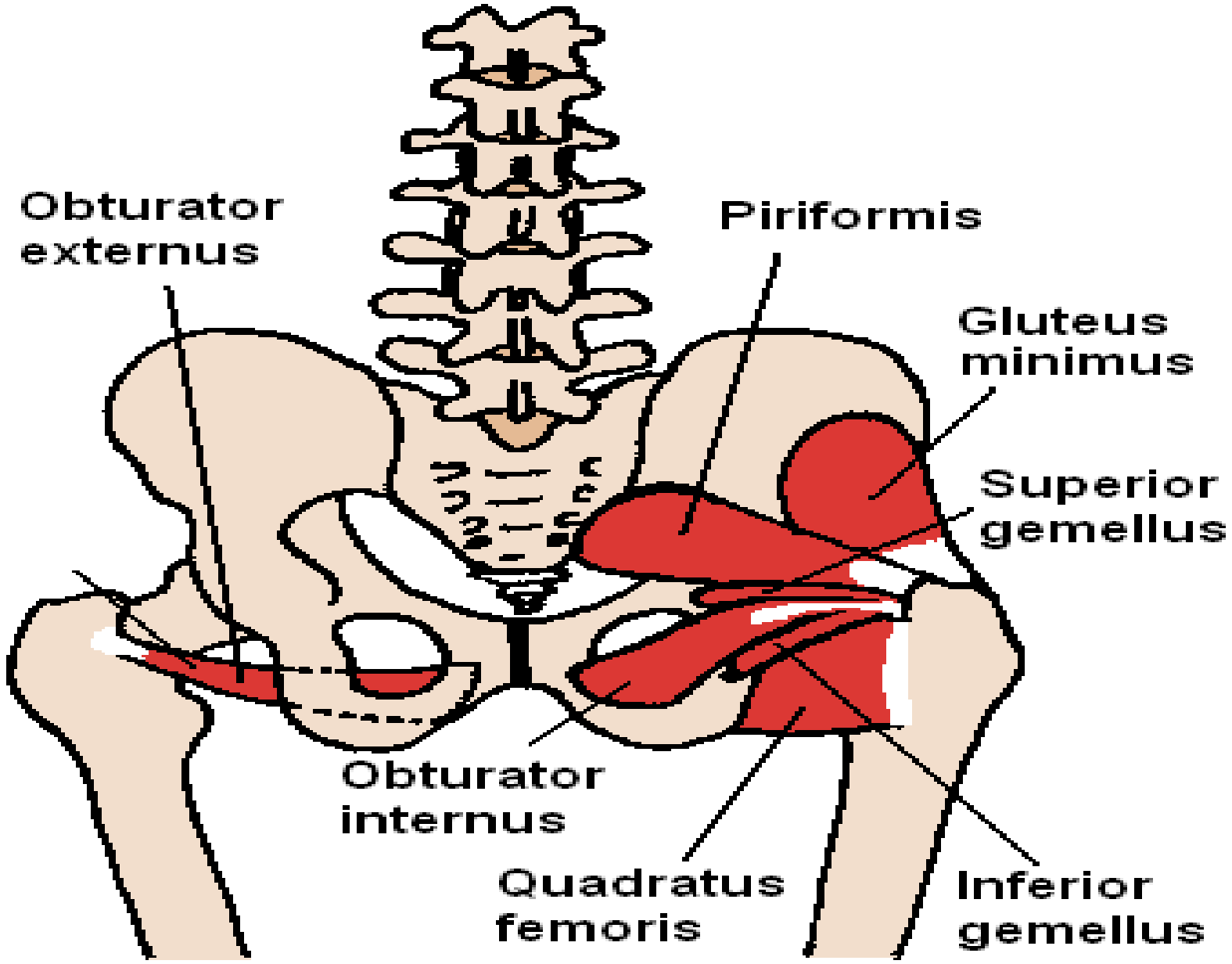
Muscles of the Gluteal Region

- The muscles of the gluteal region include the gluteus maximus, the gluteus medius, the gluteus minimus, the tensor fasciae latae, the piriformis, the obturator internus, the superior and inferior gemelli, and the quadratus femoris.

Muscles of the Gluteal Region

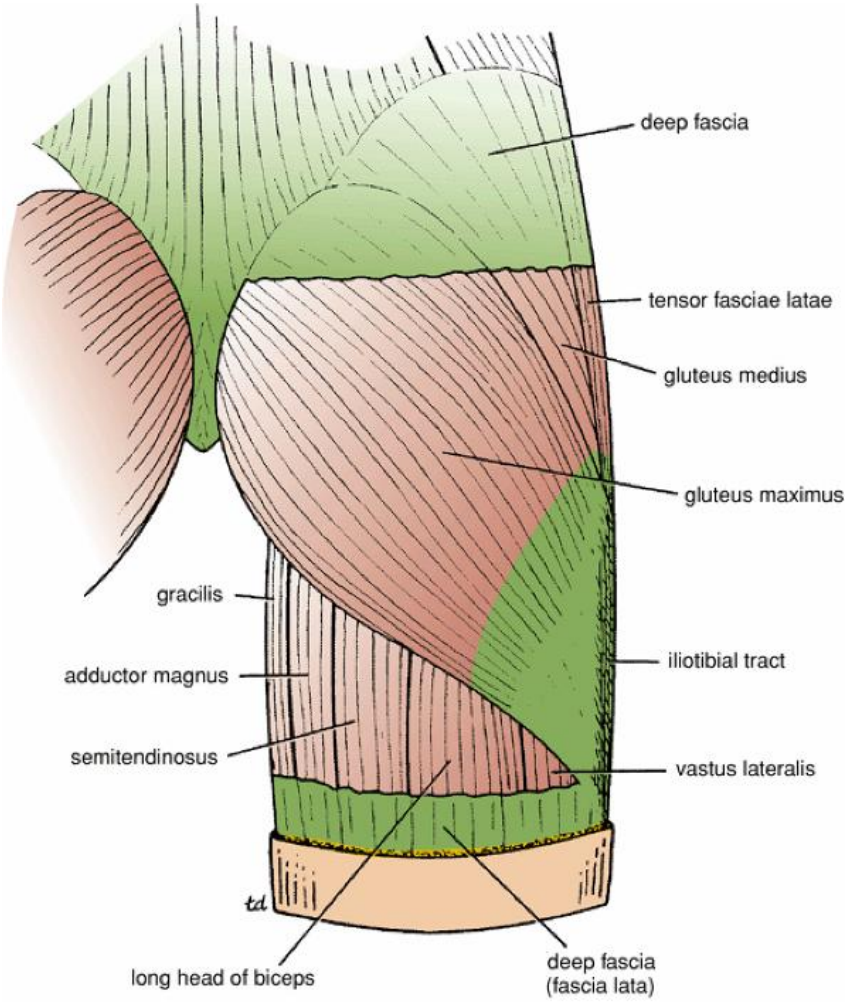
Muscle	Origin	Insertion	Nerve Supply	Nerve Rootsa	Action
Gluteus maximus	Outer surface of ilium, sacrum, coccyx, sacrotuberous ligament	Iliotibial tract and gluteal tuberosity of femur	Inferior gluteal nerve	L5; **S1, 2**	Extends and laterally rotates hip joint; through iliotibial tract, it extends knee joint
Gluteus medius	Outer surface of ilium	Lateral surface of greater trochanter of femur	Superior gluteal nerve	**L5;** S1	Abducts thigh at hip joint; tilts pelvis when walking to permit opposite leg to clear ground
Gluteus minimus	Outer surface of ilium	Anterior surface of greater trochanter of femur	Superior gluteal nerve	**L5;** S1	Abducts thigh at hip joint; tilts pelvis when walking to permit opposite leg to clear ground
Tensor fasciae latae	Iliac crest	Iliotibial tract	Superior gluteal nerve	L4; 5	Assists gluteus maximus in extending the knee joint
Piriformis	Anterior surface of sacrum	Upper border of greater trochanter of femur	First and second sacral nerves	L5; **S1,** 2	Lateral rotator of thigh at hip joint
Obturator internus	Inner surface of obturator membrane	Upper border of greater trochanter of femur	Sacral plexus	L5; **S1**	Lateral rotator of thigh at hip joint
Gemellus superior	Spine of ischium	Upper border of greater trochanter of femur	Sacral plexus	L5; S1	Lateral rotator of thigh at hip joint
Gemellus inferior	Ischial tuberosity	Upper border of greater trochanter of femur	Sacral plexus	L5; S1	Lateral rotator of thigh at hip joint
Quadratus femoris	Lateral border of ischial tuberosity	Quadrate tubercle of femur	Sacral plexus	L5; S1	Lateral rotator of thigh at hip joint


iliac crest
gluteus medius
middle gluteal line
iliac tubercle
posterior gluteal line
gluteus minimus
gluteus maximus
tensor fasciae latae
posterior superior iliac spine
anterior superior iliac spine
sacrotuberous ligament
inguinal ligament
posterior inferior iliac spine
sartorius
inferior gluteal line
anterior inferior iliac spine
greater sciatic notch
straight head of rectus femoris
capsule
reflected head of rectus femoris
ischial spine
acetabular fossa
sacrospinous ligament
pectineal line
gemellus superior
superior ramus of pubis
lesser sciatic notch
pectineus
gemellus inferior
pubic crest
inguinal ligament
sacrotuberous ligament
pubic tubercle
semimembranosus
adductor longus
semitendinosus
body of pubis
biceps femoris
adductor brevis
ischial tuberosity
inferior ramus of pubis
quadratus femoris
gracilis
obturator externus
adductor magnus
ramus of ischium
acetabular notch
obturator foramen


Obturator externus
Piriformis
Gluteus minimus
Superior gemellus
Obturator internus
Quadratus femoris
Inferior gemellus

- The gluteus maximus is the largest muscle in the body.

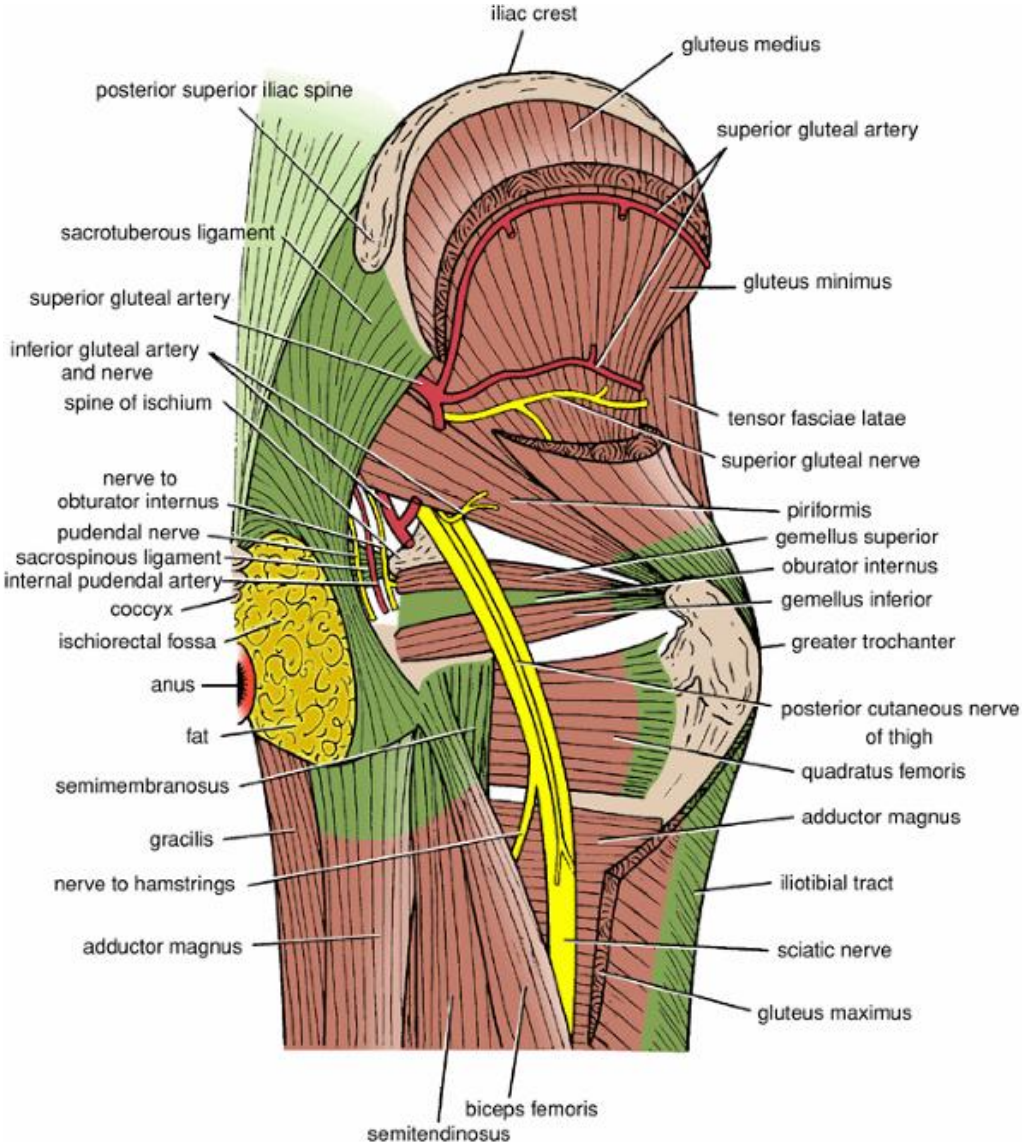
- It lies superficial in the gluteal region and is **largely responsible for the prominence of the buttock.**



- **The tensor fasciae latae** runs downward and backward to its insertion in the iliotibial tract and thus assists the gluteus maximus muscle in maintaining the knee in the extended position

The piriformis :

- lies partly within the pelvis at its origin.
- It emerges through the greater sciatic foramen to enter the gluteal region.
- Its position serves to separate the superior gluteal vessels and nerves from the inferior gluteal vessels and nerves



- The obturator internus is a fan-shaped muscle that lies within the pelvis at its origin.
- It emerges through the lesser sciatic foramen to enter the gluteal region.
- The tendon is joined by the superior and inferior gemelli and is inserted into the greater trochanter of the femur.

- **Three bursae are usually associated with the gluteus maximus:**

- between the tendon of insertion and the greater trochanter
- between the tendon of insertion and the vastus lateralis
- overlying the ischial tuberosity.

Clinical Notes

Gluteus Maximus and Intramuscular Injections

- The gluteus maximus is a large, thick muscle with coarse fasciculi that can be easily separated without damage.
- The great thickness of this muscle makes it ideal for intramuscular injections.
- To avoid injury to the underlying sciatic nerve, the injection should be given well forward **on the upper outer quadrant of the buttock.**

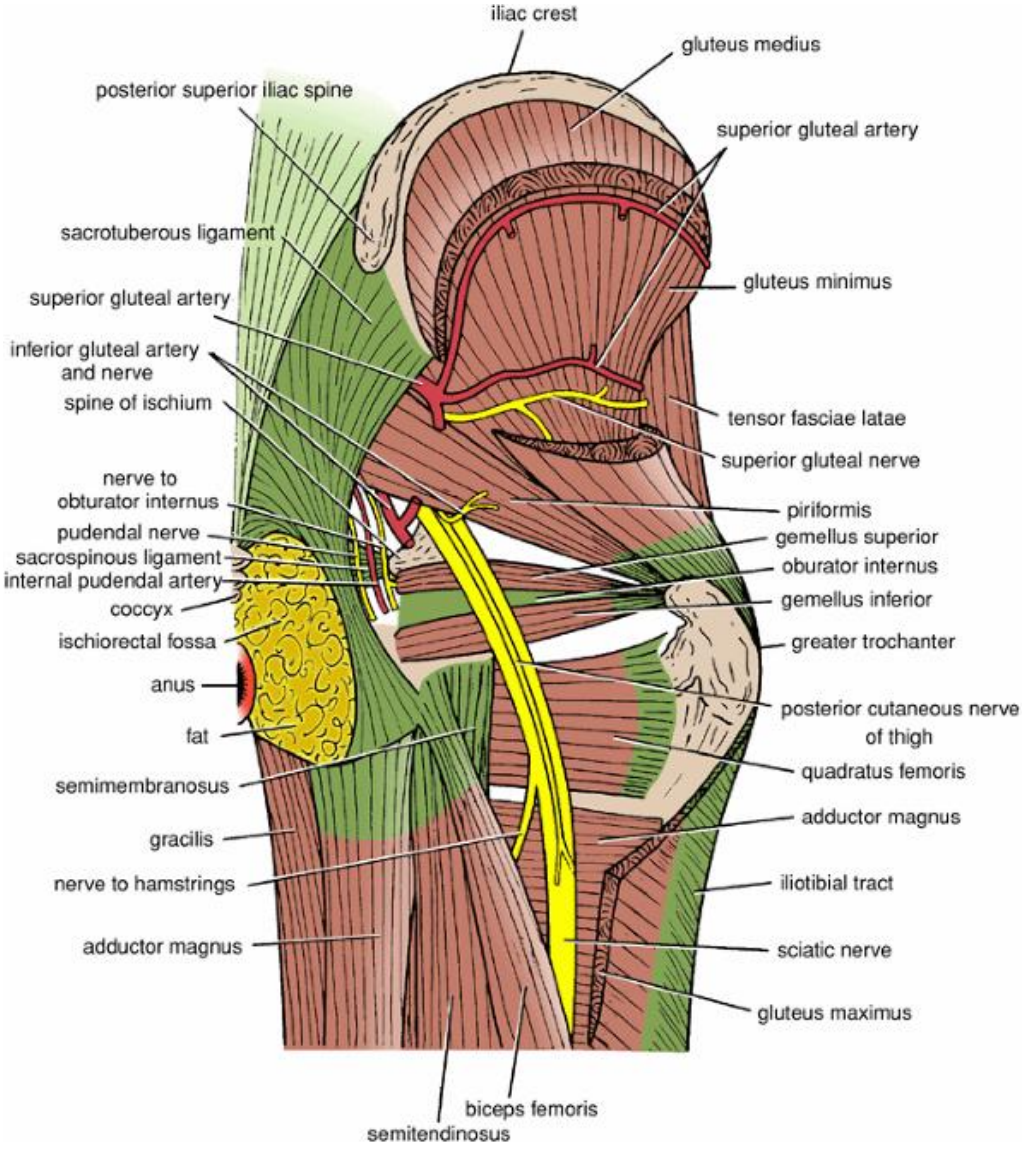
Gluteus Maximus and Bursitis

- Bursitis, or inflammation of a bursa, can be caused by acute or chronic trauma.
- An inflamed bursa becomes distended with excessive amounts of fluid and can be extremely painful.
- The bursae associated with the gluteus maximus are prone to inflammation.

Nerves of the Gluteal Region

Sciatic Nerve

- The sciatic nerve, a branch of the sacral plexus (L4 and 5; S1, 2, and 3)
- emerges from the pelvis through the lower part of the greater sciatic foramen
- It is the largest nerve in the body and consists of the tibial and common peroneal nerves bound together with fascia
- The nerve appears below the piriformis muscle and curves downward and laterally, lying successively on the root of the ischial spine, the superior gemellus, the obturator internus, the inferior gemellus, and the quadratus femoris to reach the back of the adductor magnus muscle

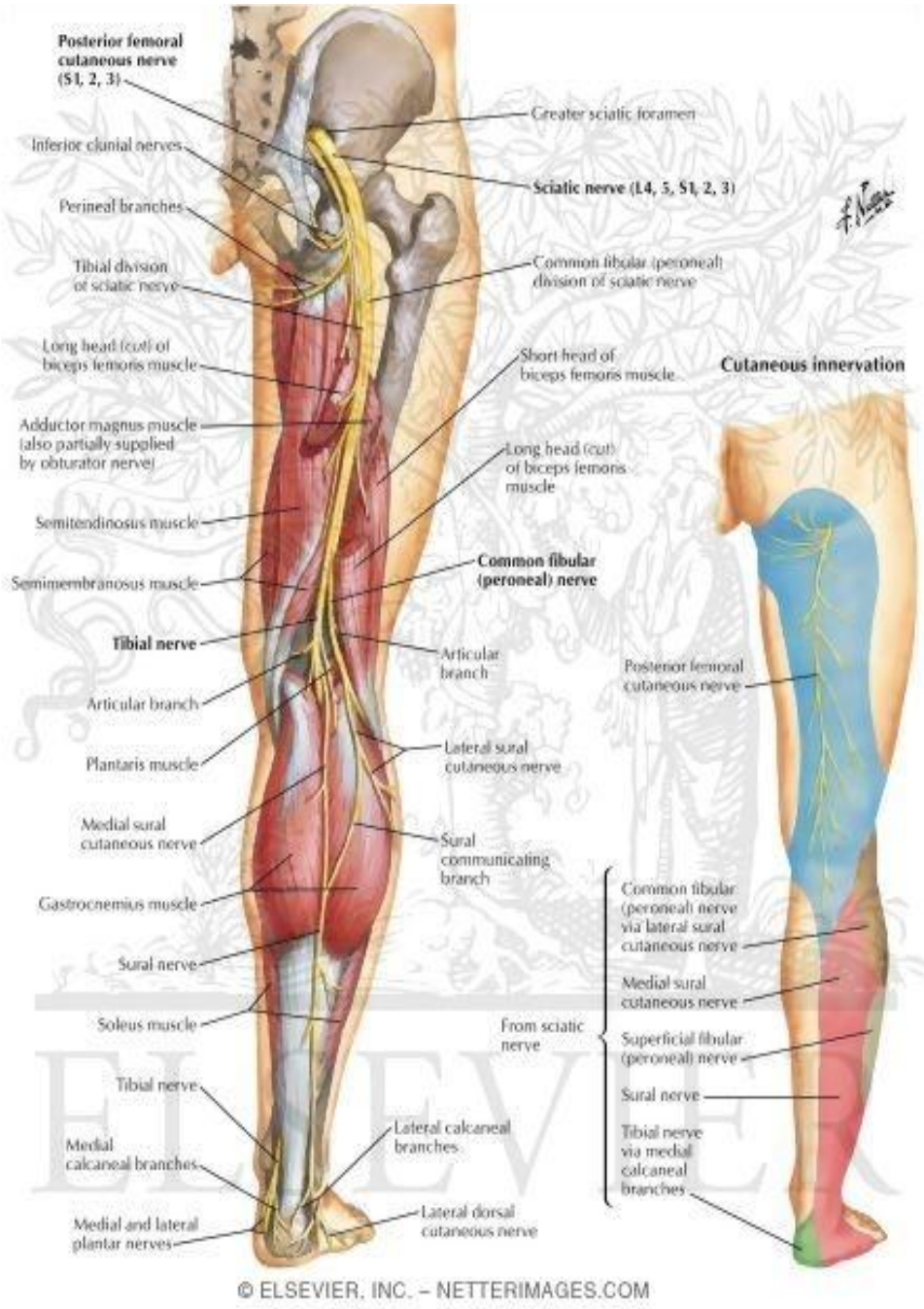


Sciatic nerve…….cont

- It is related posteriorly to the posterior cutaneous nerve of the thigh and the gluteus maximus. It leaves the buttock region by passing deep to the long head of the biceps femoris to enter the back of the thigh

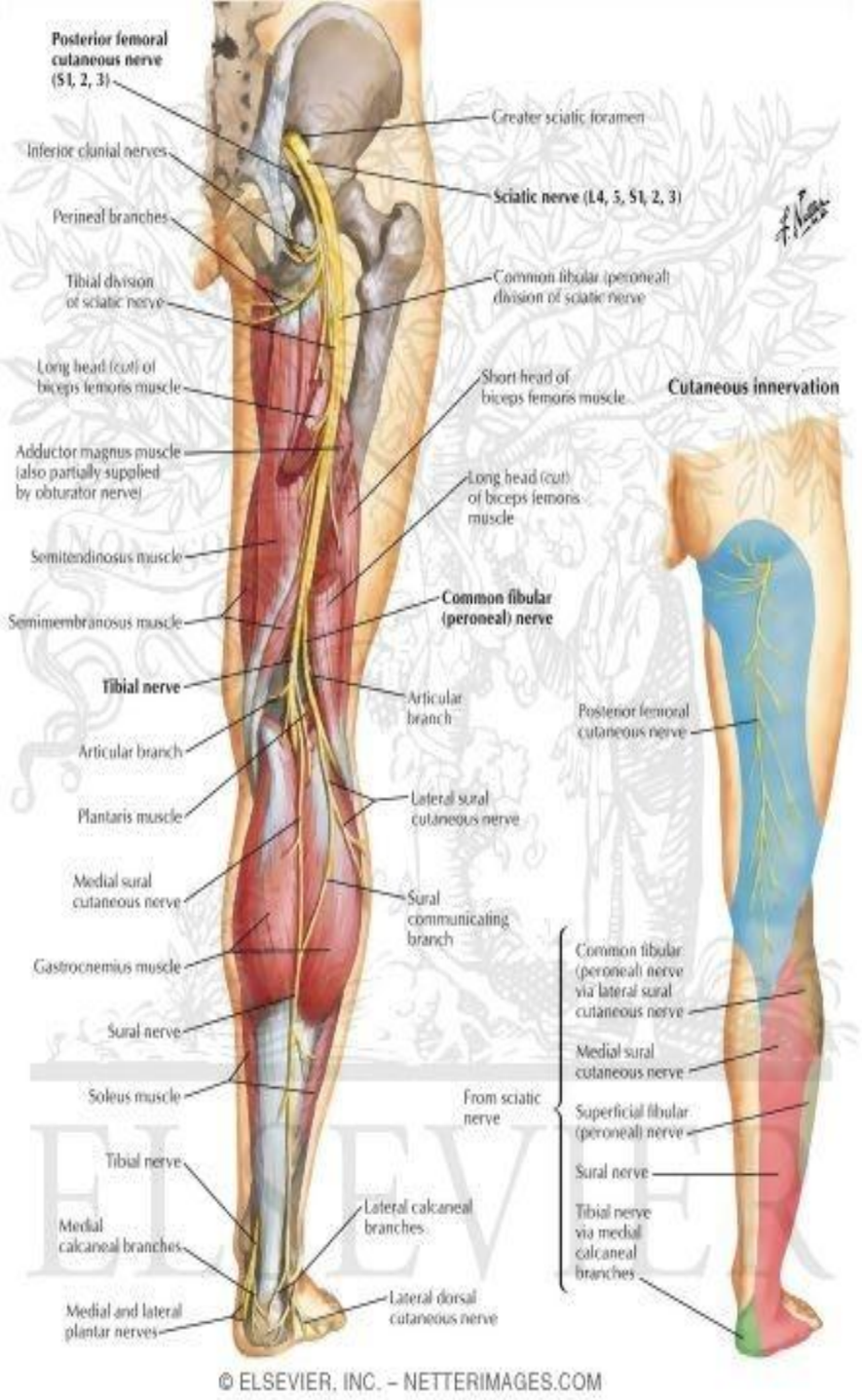
- Occasionally, **the common peroneal nerve leaves the sciatic nerve high in the pelvis and appears in the gluteal region by passing above or through the piriformis muscle.**

- The sciatic nerve usually gives no branches in the gluteal region.



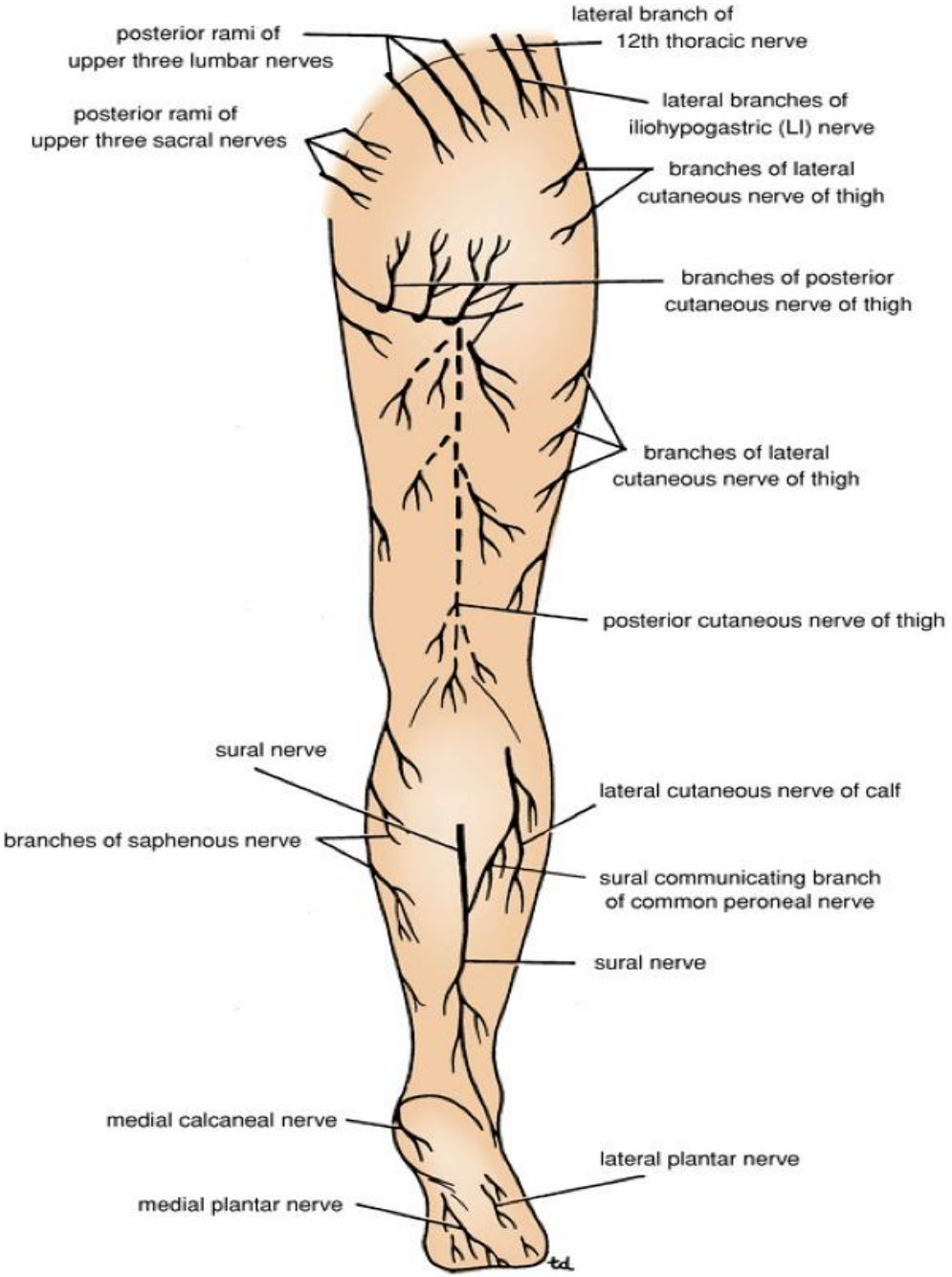
Posterior Cutaneous Nerve of the Thigh

- The posterior cutaneous nerve of the thigh, a branch of the sacral plexus
- enters the gluteal region through the lower part of the greater sciatic foramen below the piriformis muscle
- It passes downward on the posterior surface of the sciatic nerve and runs down the back of the thigh beneath the deep fascia. In the popliteal fossa it supplies the skin



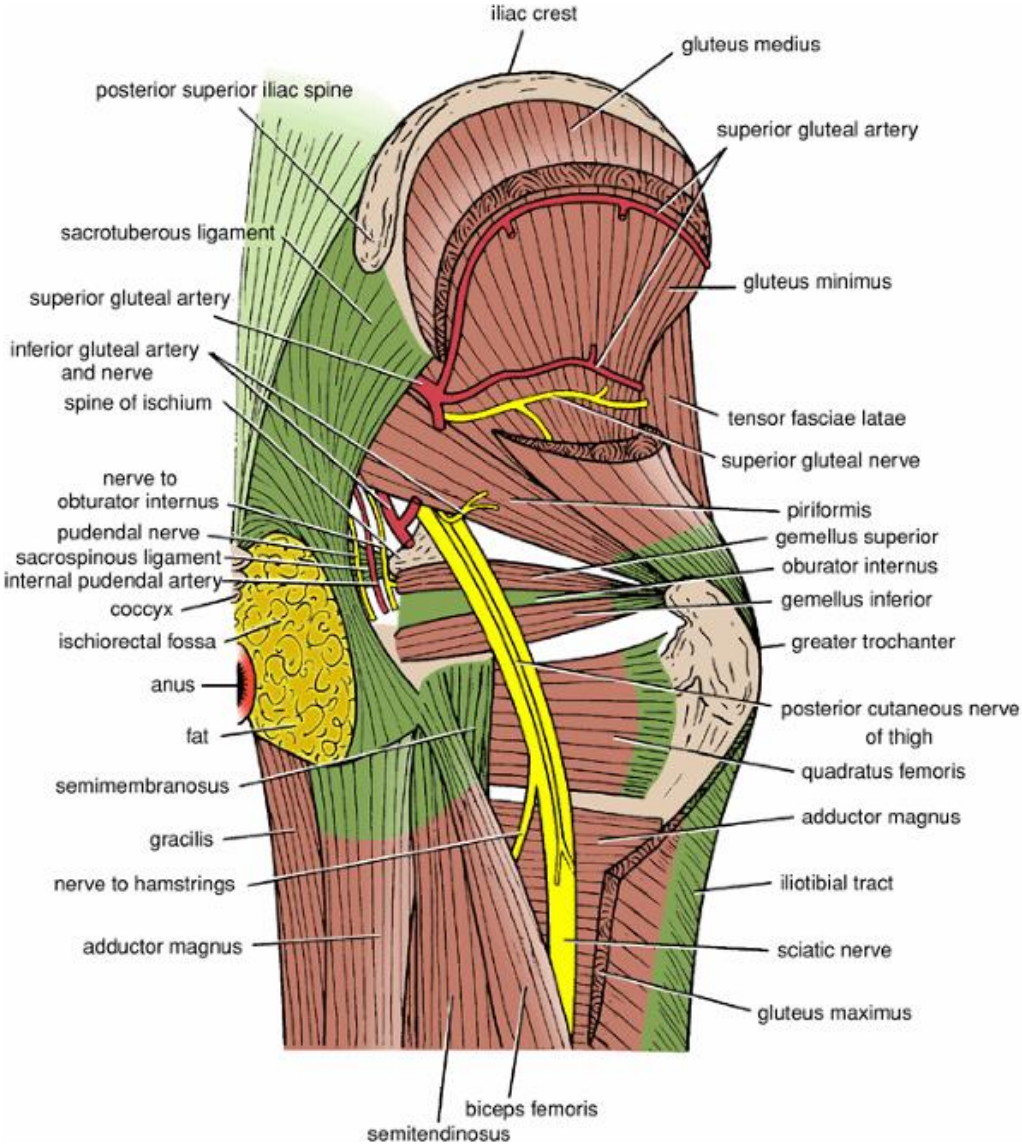
Branches:

- Gluteal branches to the skin over the lower medial quadrant of the buttock
- Perineal branch to the skin of the back of the scrotum or labium majus
- Cutaneous branches to the back of the thigh and the upper part of the leg



Superior Gluteal Nerve

- The superior gluteal nerve, a branch of the sacral plexus
- leaves the pelvis through the upper part of the greater sciatic foramen above the piriformis
- It runs forward between the gluteus medius and minimus, supplies both, and ends by supplying the tensor fasciae latae.

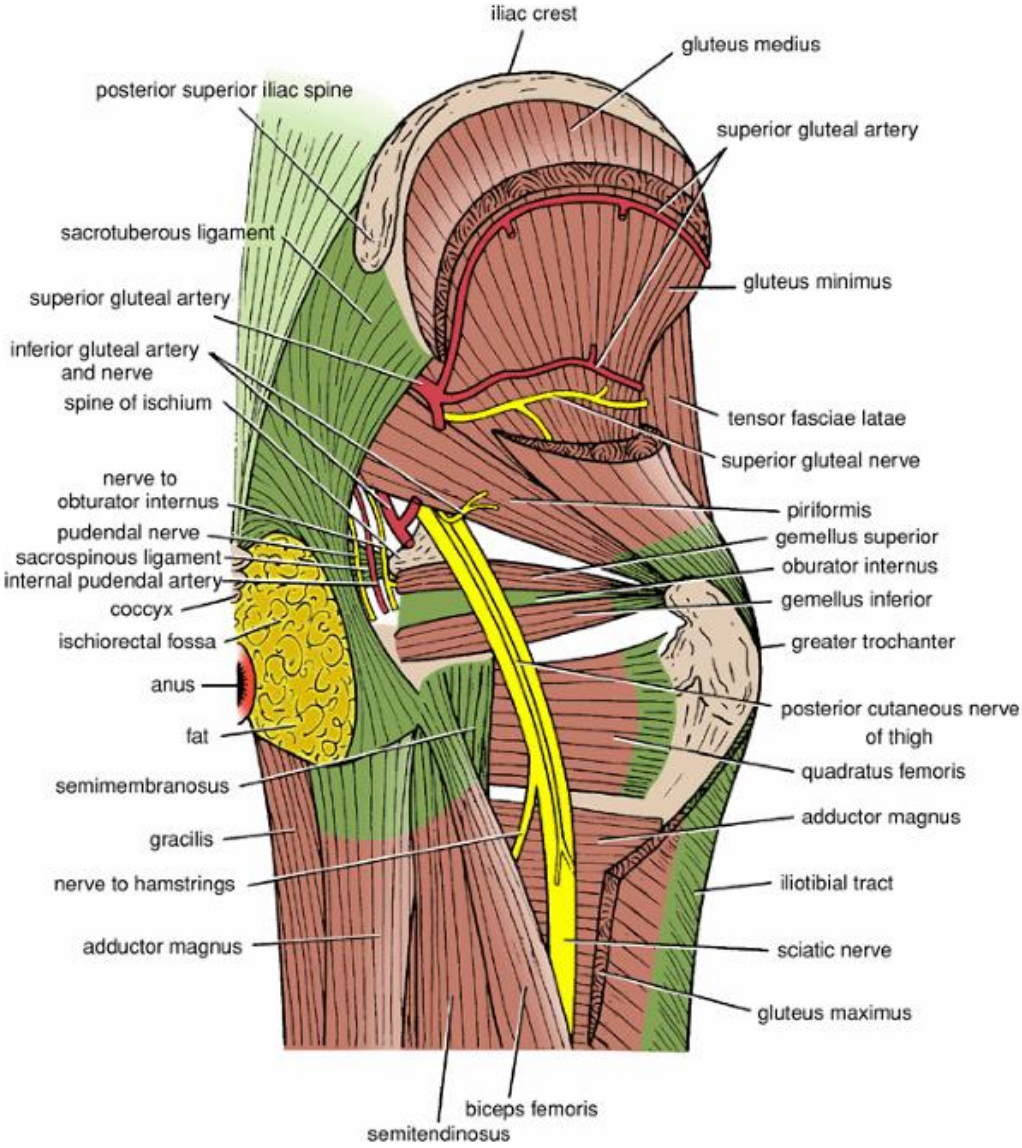


Inferior Gluteal Nerve

- The inferior gluteal nerve, a branch of the sacral plexus, leaves the pelvis through the lower part of the greater sciatic foramen below the piriformis
- It supplies the gluteus maximus muscle.

Nerve to the Quadratus Femoris

- A branch of the sacral plexus, the nerve to the quadratus femoris leaves the pelvis through the lower part of the greater sciatic foramen
- It ends by supplying the quadratus femoris and the inferior gemellus

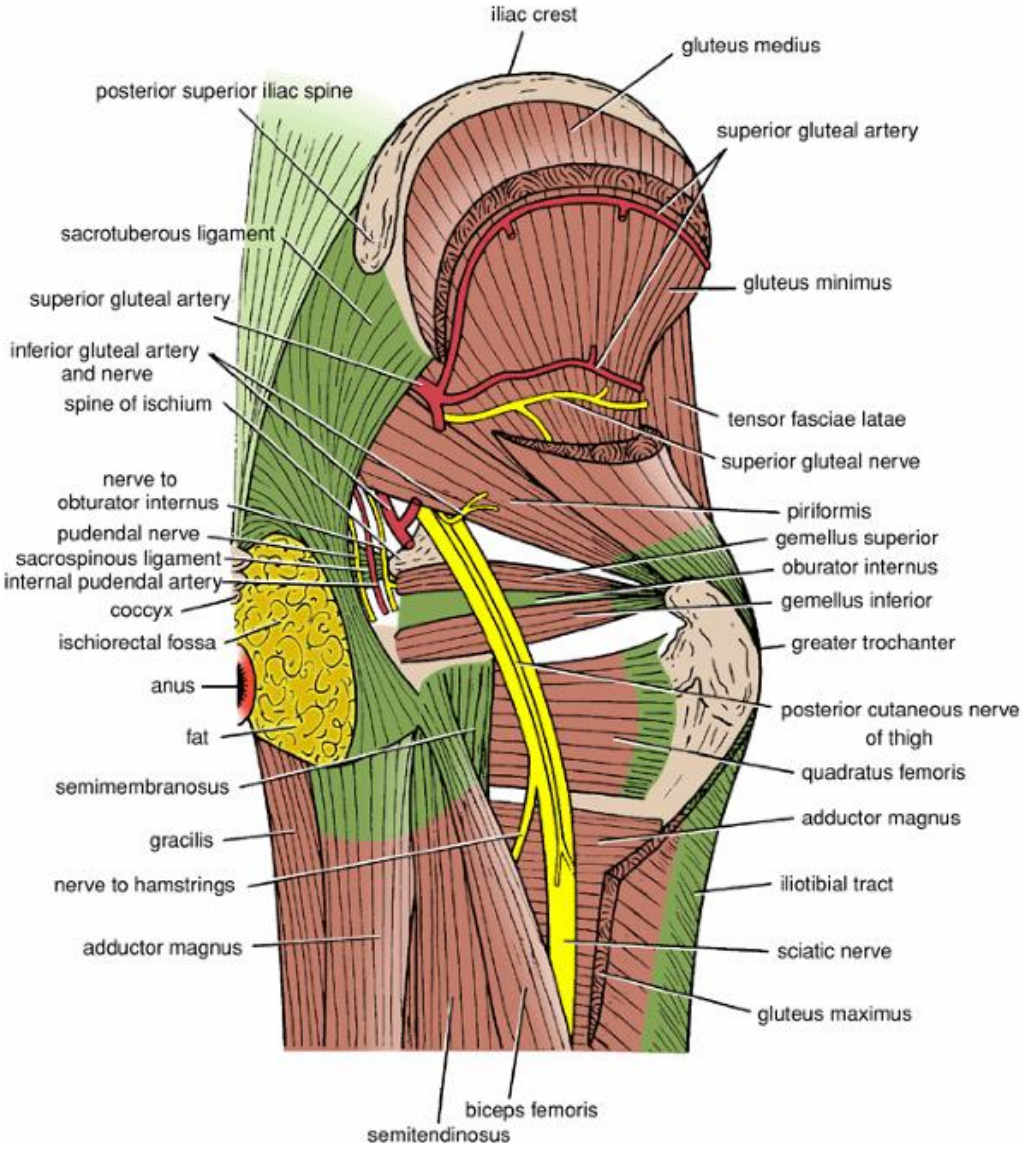


Pudendal Nerve and the Nerve to the Obturator Internus

- Branches of the sacral plexus, the pudendal nerve, and nerve to the obturator internus leave the pelvis through the lower part of the greater sciatic foramen, below the piriformis

- They cross the ischial spine with the internal pudendal artery and immediately re-enter the pelvis through the lesser sciatic foramen; they then lie in the ischiorectal fossa

- The pudendal nerve supplies structures in the perineum.
- The nerve to the obturator internus supplies the obturator internus muscle on its pelvic surface.

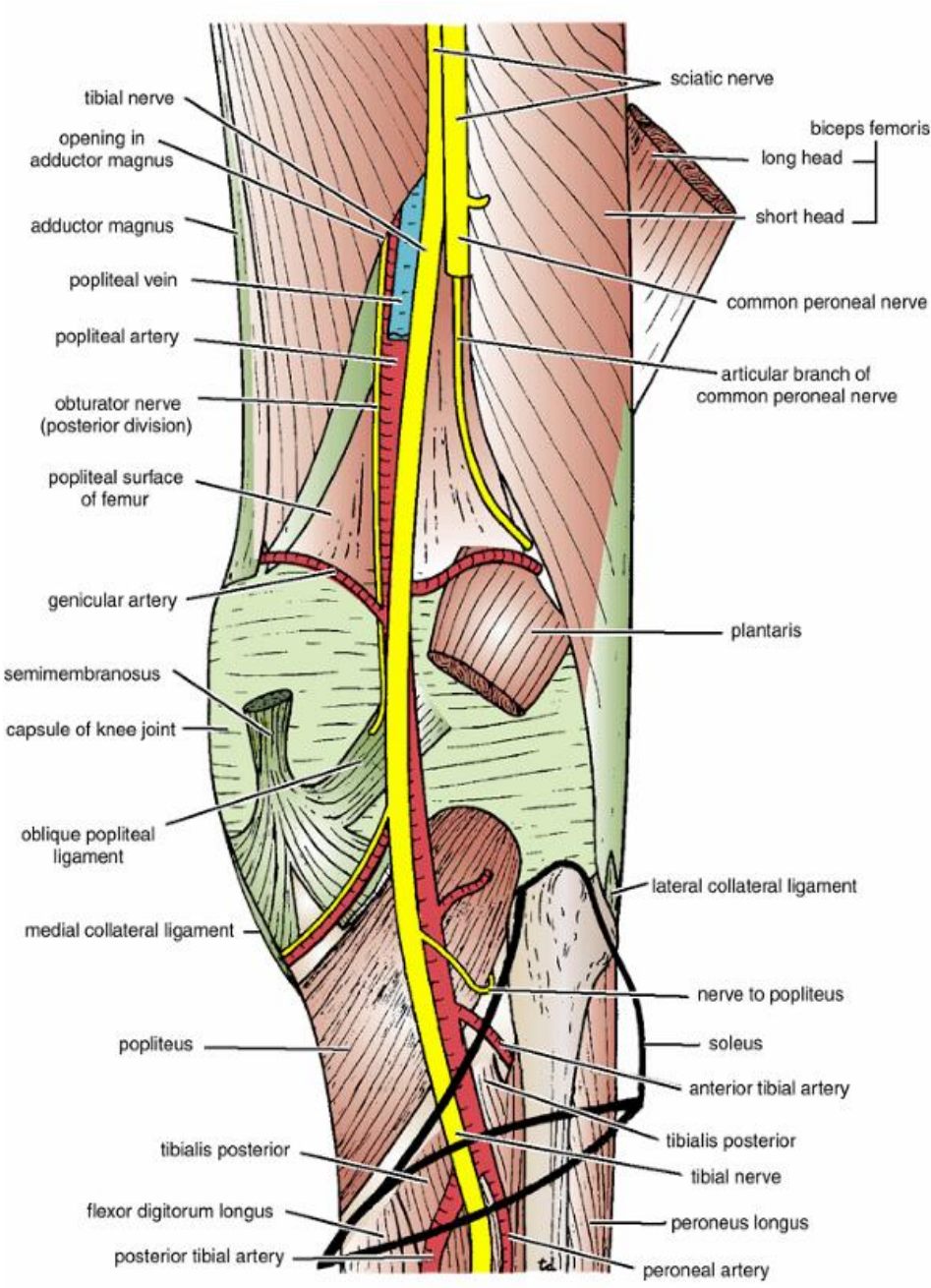


Tibial Nerve (medial popliteal nerve)

- The larger terminal branch of the sciatic nerve
- the tibial nerve arises in the lower third of the thigh.
-
- It runs downward through the popliteal fossa, lying first on the lateral side of the popliteal artery, then posterior to it, and finally medial to it

- The popliteal vein lies between the nerve and the artery throughout its course.

- The nerve enters the posterior compartment of the leg by passing beneath the soleus muscle.



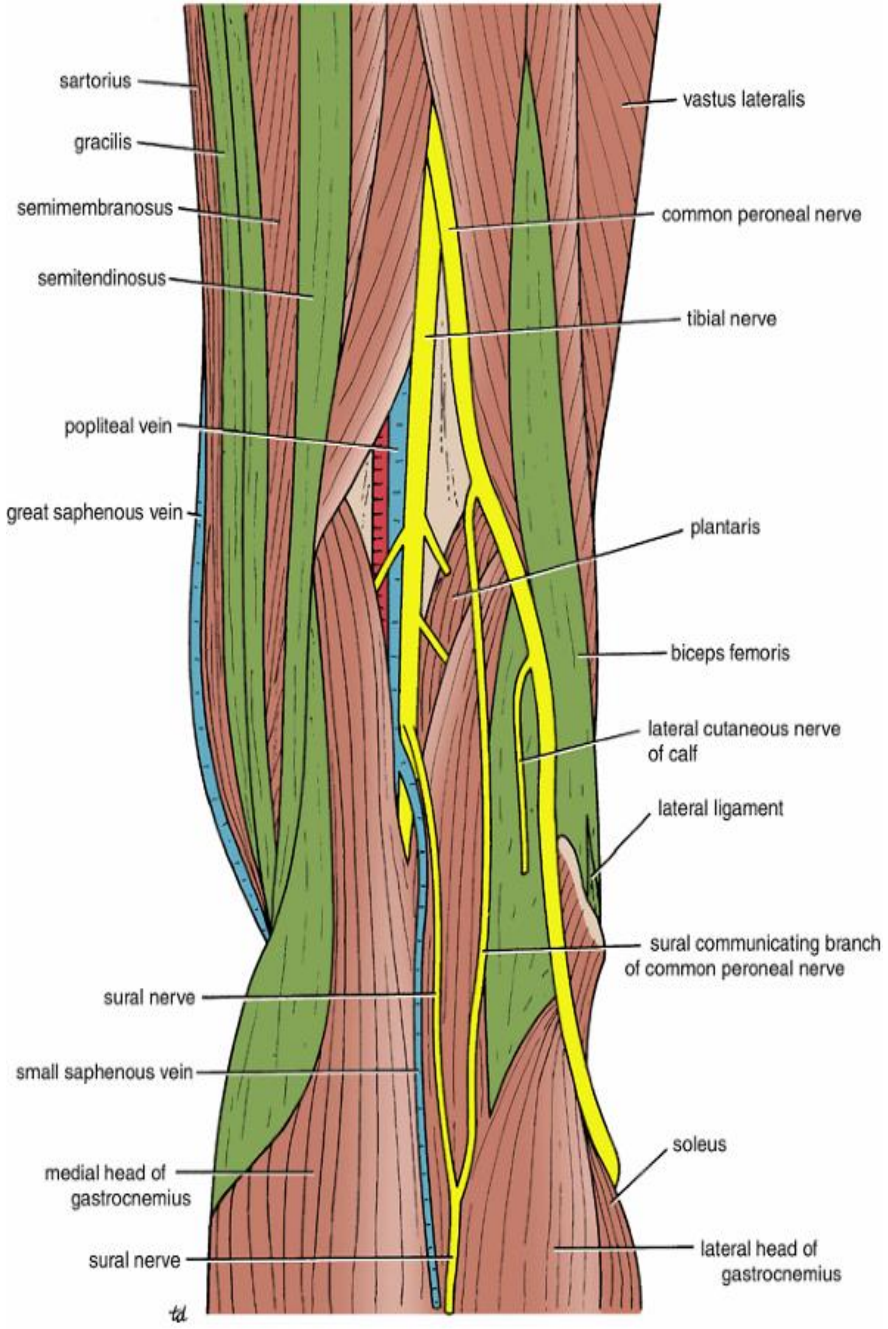
Branches of tibial nerve

Cutaneous:

- **The sural nerve** descends between the two heads of the gastrocnemius muscle and is usually joined by the sural communicating branch of the common peroneal nerve
- **Numerous small branches** arise from the sural nerve to supply the skin of the calf and the back of the leg.
- The sural nerve accompanies the small saphenous vein behind the lateral malleolus and is distributed to the skin along the lateral border of the foot and the lateral side of the little toe.

Muscular branches supply both heads of the gastrocnemius and the plantaris, soleus, and popliteus

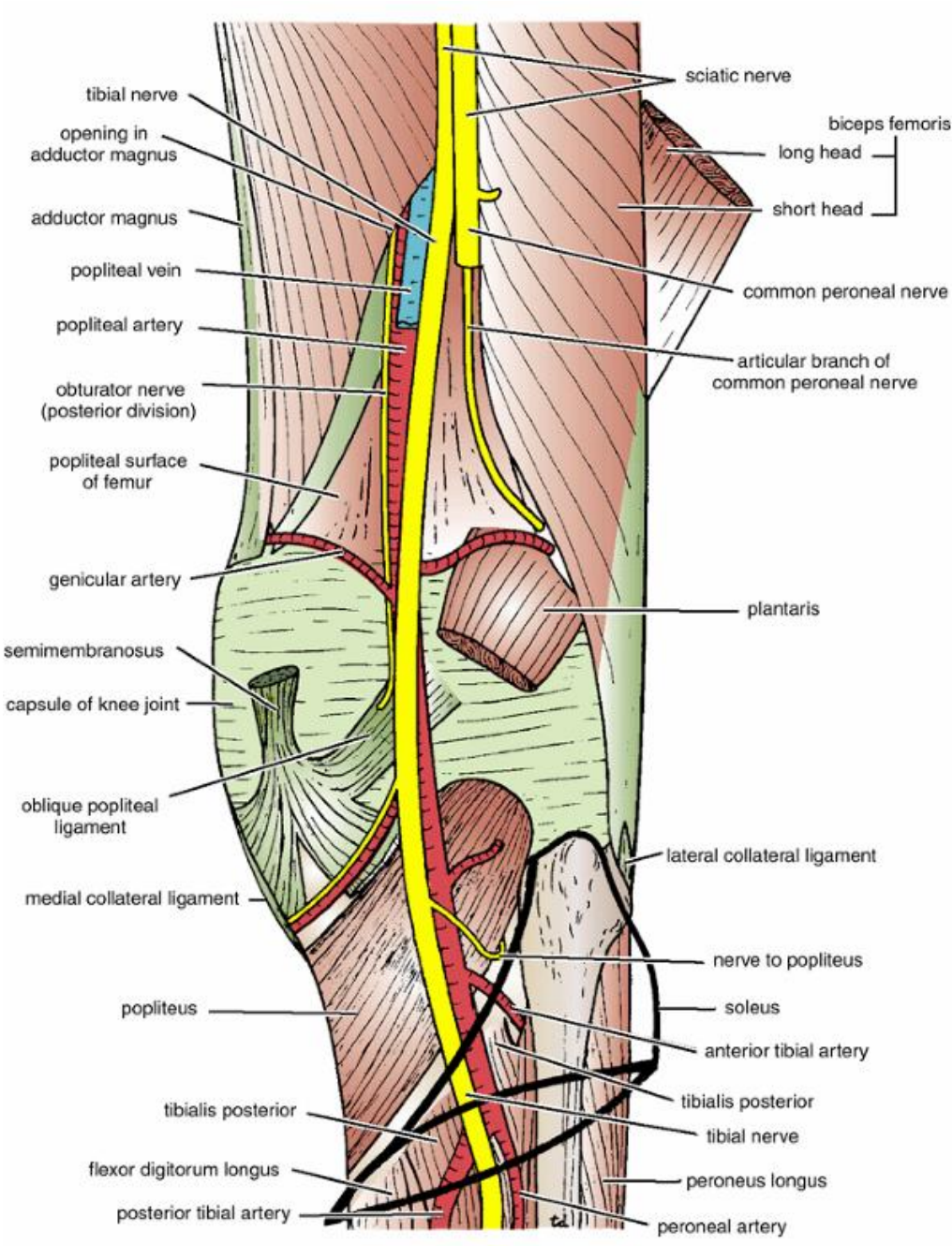
- **Articular branches** supply the knee joint**(3 genicular nerve, sup, middle & inf medial genicular nerve)**



Common Peroneal Nerve

- The smaller terminal branch of the sciatic nerve
- the common peroneal nerve arises in the lower third of the thigh.
- It runs downward through the popliteal fossa, closely following the medial border of the biceps muscle
- It leaves the fossa by crossing superficially the lateral head of the gastrocnemius muscle.

- It then passes behind the head of the fibula, winds laterally around the neck of the bone, pierces the peroneus longus muscle, and divides **into two terminal branches:**
- the superficial peroneal nerve and the deep peroneal nerve As the nerve lies on the lateral aspect of the neck of the fibula, it is subcutaneous and can easily be rolled against the bone.



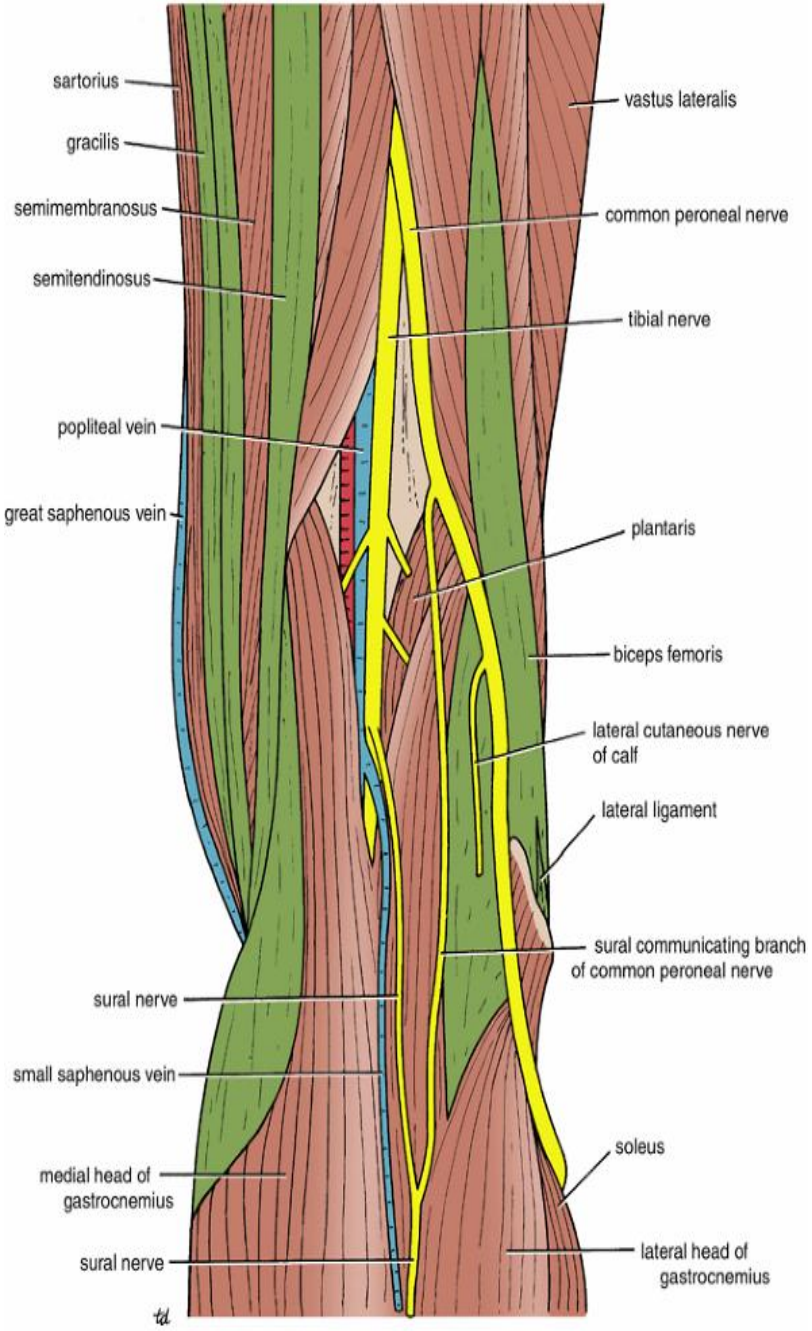
Branches:

Cutaneous:

- The sural communicating branch runs downward and joins the sural nerve.
- The lateral cutaneous nerve of the calf supplies the skin on the lateral side of the back of the leg

Muscular branch to the short head of the biceps femoris muscle, which arises high up in the popliteal fossa

Articular branches to the knee joint



Clinical Notes

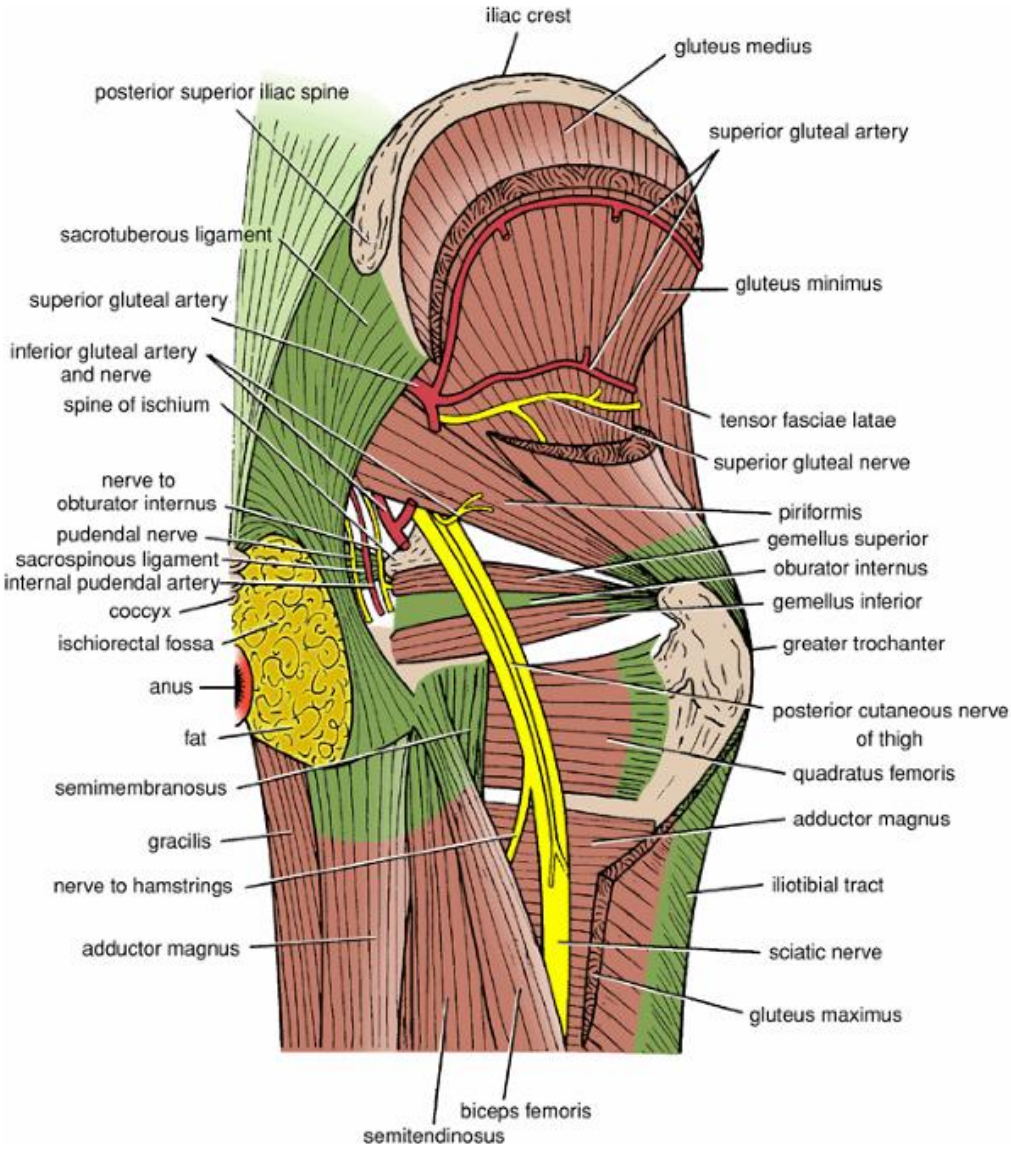
- **Common Peroneal Nerve Injury**
- The common peroneal nerve is extremely vulnerable to injury as it winds around the neck of the fibula. At this site, it is exposed to direct trauma or is involved in fractures of the upper part of the fibula. Injury to the common peroneal nerve causes footdrop.

Arteries of the Gluteal Region

Superior Gluteal Artery:

- The superior gluteal artery is a branch from **the internal iliac artery** and enters the gluteal region through the upper part of the greater sciatic foramen above the piriformis

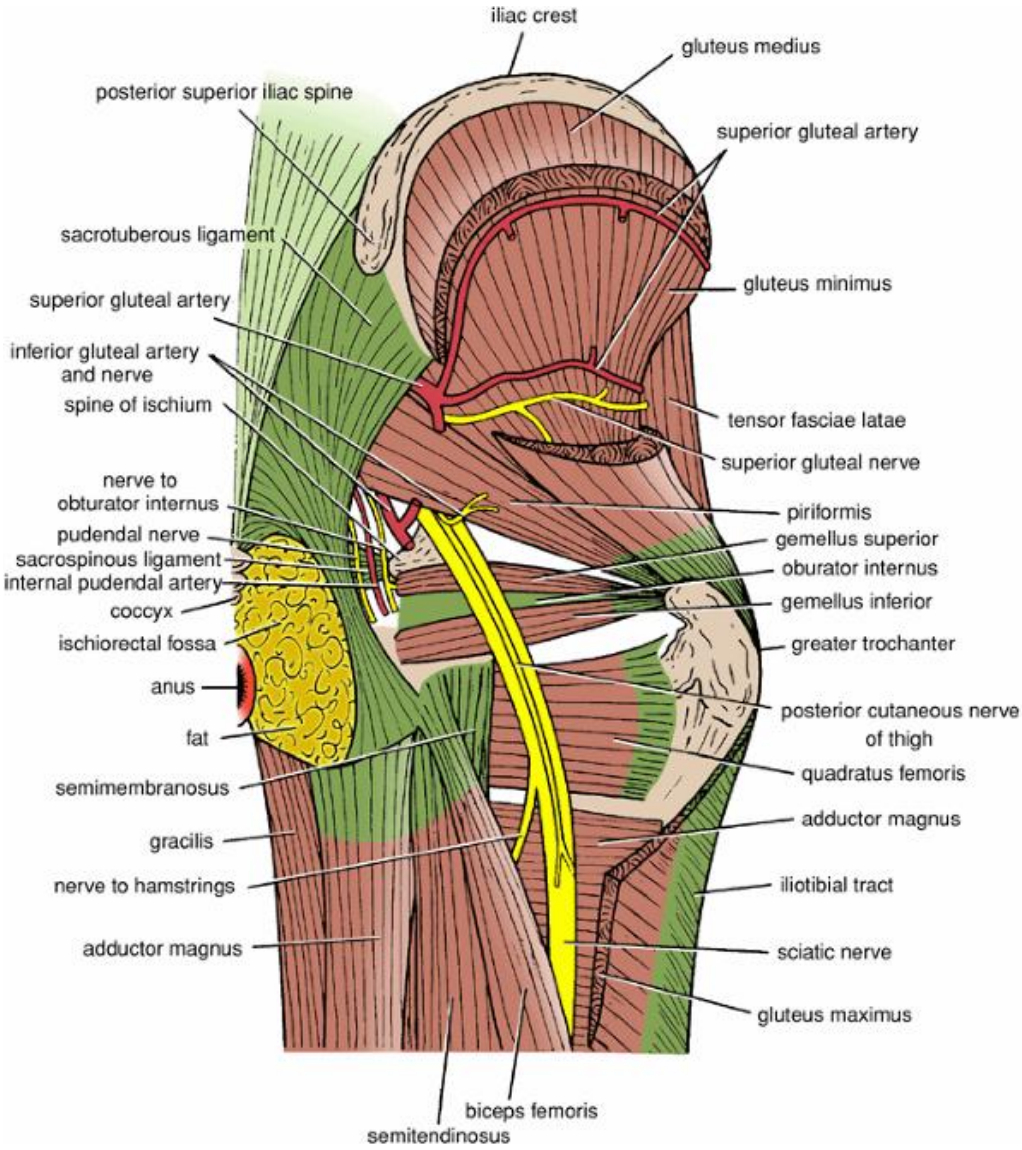
- It divides into branches that are distributed throughout the gluteal region.



Inferior Gluteal Artery

- The inferior gluteal artery is a branch of the **internal iliac artery** and enters the gluteal region through the lower part of the greater sciatic foramen, below the piriformis

- It divides into numerous branches that are distributed throughout the gluteal region.

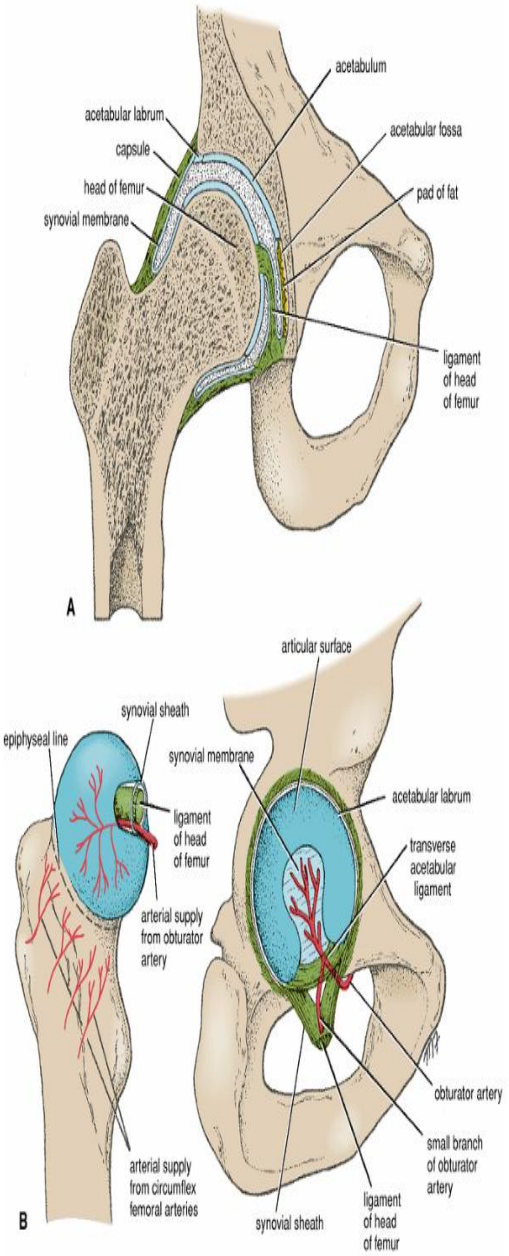


The Trochanteric Anastomosis

- The trochanteric anastomosis provides the main blood supply to the head of the femur. The nutrient arteries pass along the neck of femur beneath the capsule

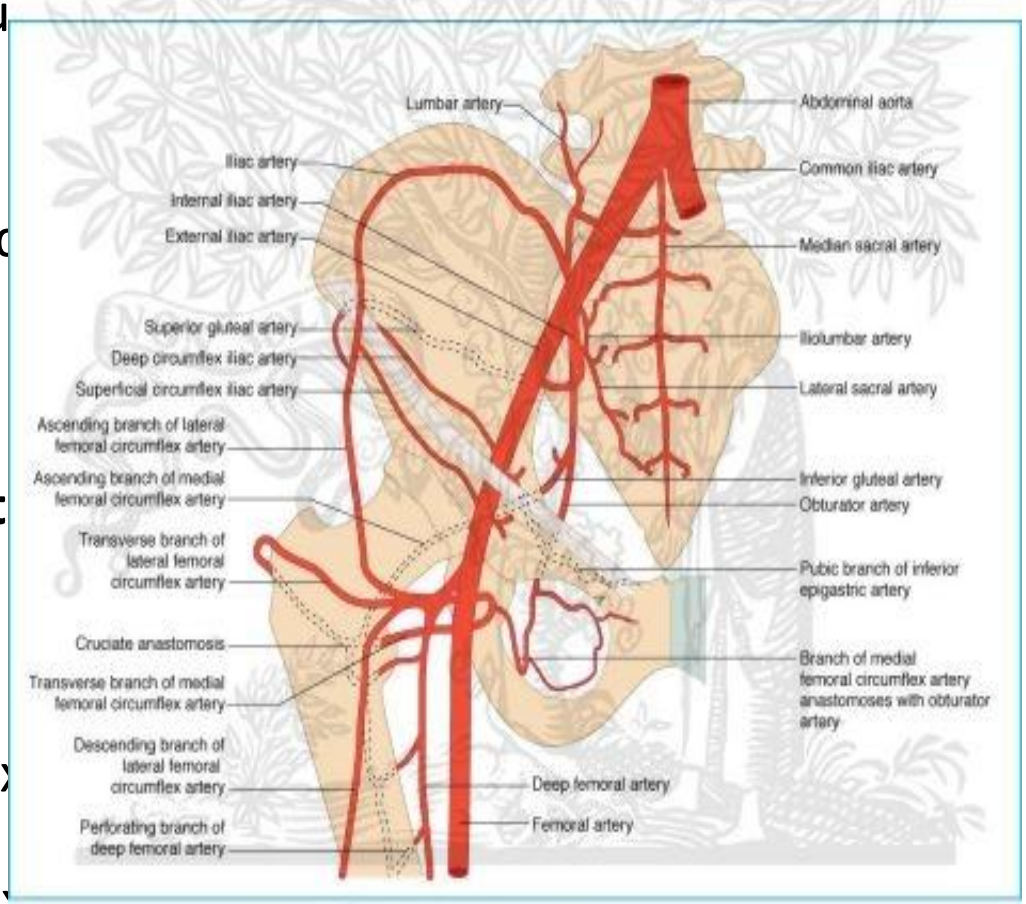
- **The following arteries take part in the anastomosis:**

- the superior gluteal artery
- the inferior gluteal artery
- the medial femoral circumflex artery, and the lateral femoral circumflex artery.



The Cruciate Anastomosis

- The cruciate anastomosis is situated at the level of the lesser trochanter of the femu and, together with the trochanteric anastomosis, provides a connection between the internal iliac and the femoral arteries.



The following arteries take part in the anastomosis:

- the inferior gluteal artery
- the medial femoral circumflex artery
- the lateral femoral circumflex artery
- the first perforating artery, a branch of the profunda artery

Clinical Notes

- Arterial Anastomoses and Femoral Artery Occlusion
- The importance of the trochanteric and cruciate anastomoses in femoral artery occlusion is important to maintained the blood supply to the lower limb

Anatomy and histology

- Register your attendance with your university number
- Make sure that the settings of your phone allow tracking location

Go to settings > privacy> location> services> make sure that location services is ON