

Q:1 Enumerate muscles in the posterior compartment of the lower leg with clinical significances also write action and innervation of each posterior compartment muscle.

Answer:

Muscles in the posterior compartment of Legs:

Posterior compartment of legs consist of seven muscles. These muscles are divided into two layers, Superficial and Deep.

Superficial posterior muscles:

There are three muscles.

- Gastrocnemius.
- Plantaris.
- Soleus.

- **Gastrocnemius:**

It is the most superficial muscle of all the three muscles in the compartment consist of two heads, medial and lateral. Arises from femur and crosses the knee joint and ankle joint.

Actions:

Plantarflexion of the ankle joint. It flexes the knee because it crosses there.

Innervation:

Innervated by Tibial nerve.

- **Plantaris:**

A small muscle with a long tendon. 10% of people lack plantaris.

Actions:

It has same function as gastrocnemius. Plantarflexion of the foot.

Innervation:

Innervated by tibial nerve.

- **Soleus:**

It is located beneath the gastrocnemius. Soleus is a large and flat muscle. It is named soleus because it resembles with soul- a flat fish.

Actions:

It plantarflexes the foot at ankle joint.

Innervation:

Innervated by tibial nerve.

Clinical significance of superficial posterior compartment:

- Pressure increases.
- Affects the microcirculation of leg.
- Causes tissue inchemia and death.

Deep posterior compartment:

Consist of four muscles.

- Popliteus.
- Flexor hallucis longus muscle.
- Flexor digitorum longus muscle.
- Tibialis posterior.

- **Popliteus muscle:**

It is the smallest of all four muscles located deep in the popliteal fossa.

Action:

Internal rotation of tibia.

Lateral rotation of femur.

Innervation:

Innervated by branch of tibial nerve.

Clinical significance of deep posterior compartment:

Causes pain along the inside edge of the shin bone (tibia).it also causes,

- Weakness.
- Reduced range of movement.
- Balanced problems.

Treatment:

- Electrotherapy.
- Hydrotherapy.
- Taping.

Q:2 Explain the following

a) Foot drop:

It is sometimes called drop foot.

The inability to lift the front part of the foot during which the foot is drag along the ground during walking.

It can be occur to one or both legs at the same time and can be temporary or permanent.

Causes:

- Nerve injury.
- Brain.
- Muscle disorders.

Treatment:

Treatment may include,

- Lightweight braces.
- Shoe inserts.
- Physical therapy.
- Surgery.

Deep venous thrombosis:

A disorder occur when there is blood clot form in the deep veins in the body usually in the legs.

Symptoms:

Symptoms include,

- Swelling in the leg, like cramping and soreness.
- Red or discolored skin on the leg feeling of the warmth in the affected leg.

Causes:

Deep vein thrombosis is caused when the blood is unable to circulate or normally clot. Such as,

- Injury to vein
- Surgery
- Certain medications
- Limited movement
- Reduce mobility

Risk factors:

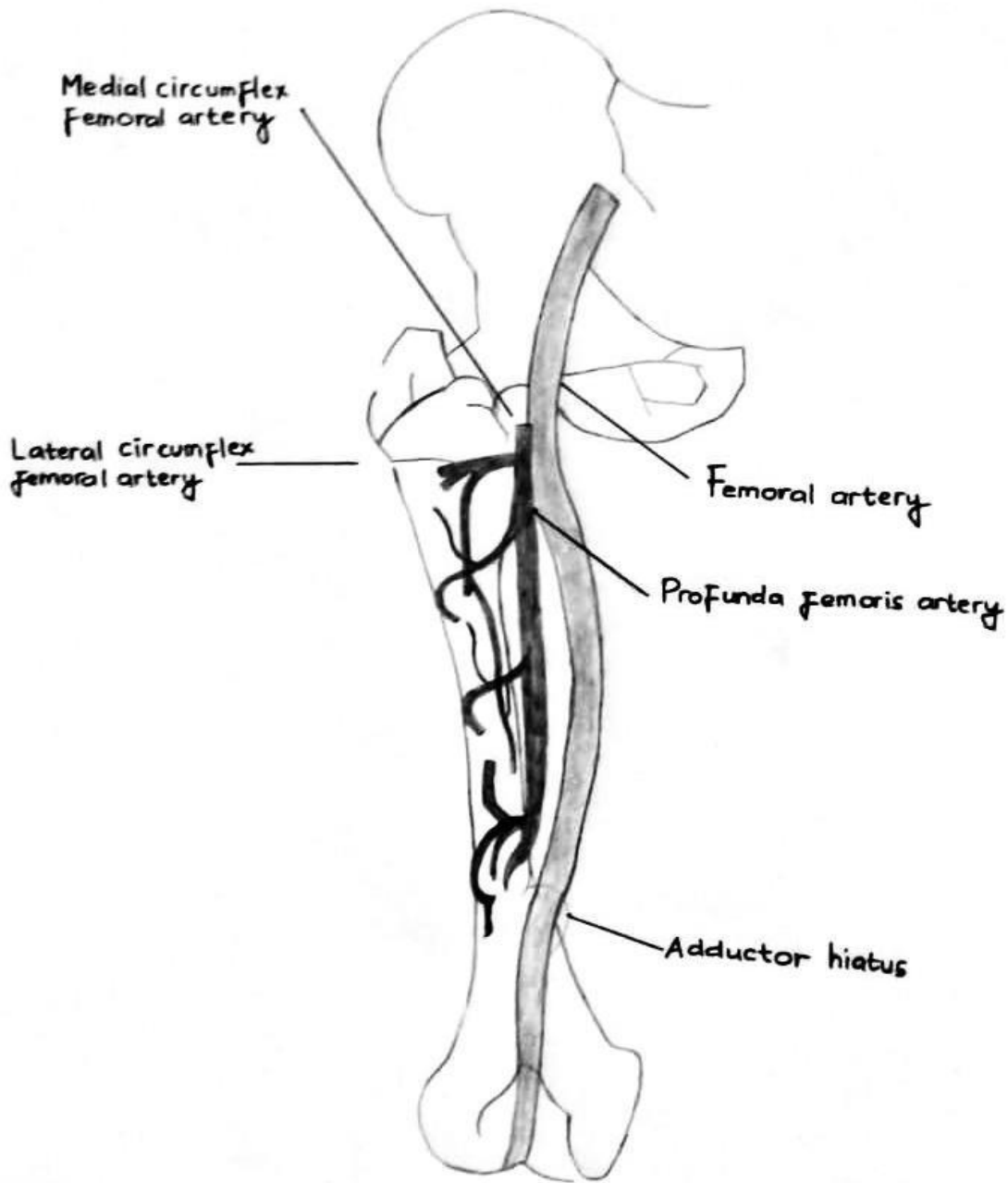
- When a person have blood clotting disorder.
- Prolonged bed rest like paralysis etc.
- Injury or surgery.

- Pregnancy in which the pressure in veins increases.

Treatment:

- Medications
- Compression stockings
- Filter inserted in the vana cava
- DVT surgery
- DVT exercise
- Knee pulls
- Foot pumps
- Ankle circles.

Q:3 *Explain blood supply of thigh and gluteal region with the help of diagram.*



The arterial blood supply of the thigh comes directly from the external iliac artery. The external iliac artery becomes the femoral artery after it passes beneath the inguinal ligament and enters the femoral triangle.

Arteries of the Thigh:

The femoral artery runs in the middle of the femoral triangle. It supplies the anterior and anteromedial aspects of the thigh.

The profunda femoris artery is the largest branch of the femoral artery. This vessel is also known as the deep artery of the thigh and has three main branches:

- Medial circumflex femoral artery (MCFA)
- Lateral circumflex femoral artery (LCFA)
- Perforating branches – three to four arteries supplying the posterior and anterolateral muscles of the thigh. They run laterally across the muscles.

Arteries of the gluteal region:

The main arteries of the gluteal region are the superior gluteal and inferior gluteal arteries. They arise from the internal iliac artery.

The superior gluteal artery is the largest branch of the internal iliac artery and arises from its posterior division. It has superficial and deep branches which supply the gluteus maximus, gluteus medius, gluteus minimus and tensor fasciae latae muscles.

The inferior gluteal artery originates from the anterior division of the internal iliac artery. This artery supplies blood to the gluteus maximus, piriformis, internal obturator, gemellus superior and inferior and quadratus femoris muscles. It also gives off a branch to the sciatic nerve.

Q4: Describe anatomical course, motor and sensory function of Sciatic Nerve

Origin of sciatic nerve:

The sciatic nerve is formed by the combination of 5 nerves
L4, L5, S1, S2 and S3.

These 5 nerves carry out the motor and sensory functions of the lower body.

Anatomical course:

The sciatic nerve is derived from lumbosacral plexus and once its formed so it leaves the pelvis and enters the gluteus region, it cross the posterior surface of the superior gemellus, obturator internus inferior gemellus and quadratus Femoris muscle then it enters the biceps femoris.

Function of sciatic nerve:

Sciatic nerve have both motor and sensory functions.

Motor functions:

Motor functions include

- Flexion of knee: that is Bending the knee.
- Hip abduction: foot pointed downward.
- Plantar flexion: toes pointed downward.
- Dorsiflexion of the foot: foot pointed upward
- Extension of toes: toes pointed upward

Sensory functions:

provide sensation to the skin to the following areas.

- Front back and outer part of thighs.
- Front back and outer part of leg.
- The top and outer side of the foot.
- Sole of foot.

Q5: *Enumerate Muscles of the medial compartment of thigh, what is tarsal tunnel syndrome?*

Muscles of medial compartment of the thigh:

- Gracilis.
- Adductor longus
- Adductor brevis
- Pubic part of adductor magnus
- Obturator externus
- They are collectively known as Hip adductors .

Tarsal tunnel syndrome:

A condition which is caused by repeated pressure. is a compression, or squeezing, on the posterior tibial nerve that produces symptoms anywhere along the path of the nerve running from the inside of the ankle into the foot.

Causes:

- Tarsal tunnel syndrome is caused by anything that produces compression on the posterior tibial nerve.
- Diabetes or arthritis, which cause swelling, and compresses the nerve.
- Ankle sprain, may produce inflammation and swelling resulting in compression of the nerve.

Symptoms:

- Tingling, burning or a sensation similar to an electrical shock
- Numbness
- Pain, including shooting pain

Treatment:

- Rest.
- Oral medications.
- Immobilization.

- Physical therapy.
- Injection therapy.
- Shoes.
- Bracing.