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| ***Subject*** | Anatomy |
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***Question no. 01***

***Muscles in the posterior compartment of the lower leg:***

The posterior compartment of the leg contains ***seven*** muscles organized into two layers:

1. Superficial (3 muscles)
2. Deep (4 muscles)

The two layers are separated by a band of fascia.

***Superficial Muscles:***

1. ***Gastrocnemius Muscles:***

***The gastrocenemius is the most superficial of all the muscles in the posterior leg.***

***It has two heads- medial and lateral, which converge to form a single muscle belly.***

**Actions: It plantarflexes at the ankle joint, and because it crosses the knee, it is flexor there.**

**Innervation*:* Tibial nerve.**

1. ***Plantaris Muscles:***

The plantaris is a small muscle with a long tendon, which can be mistaken for a nerve as it descends down the leg. ***It is absent in 10% of people.***

**Actions:** it plantarflaexes at ne ankle joint, and because it crosses the knee, it is flexor there. It is not vital muscle for these movements.

**Innervation*:* Tibial nerve.**

1. ***Soleus Muscles:***

The soleus is located deep to the gastrocnemius. It is large and flat, named soleus due to its resemblance of a sole- a flat fish.

**Actions:** Plantarflexes the foot at the ankle joint.

**Innervation*:*** Tibial nerve.

***Deep Muscles:***

There are ***four*** Muscles in the deep compartment of the posterior leg:

* One muscle, ***The Popliteus***, acts only knee joint.
* *Remaining three muscles* ***(tibialis posterior, flexor halluces longus and flexor digitorum longus)*** act on the ankle and foot.

***The Popliteus:***

The popliteus is located superiorly in the leg. It lies behind the knee joint, forming the base of the popliteal fossa.

There is a bursa(fluid filled sac) that lies b/w the popliteal tendon and the posterior surface of the knee joint. It is called the popliteus bursa.

 **Actions:**  laterally rotates the femur on the tibia-“unlocking” the knee joint so that flexion can occur.

**Innervation*:*** Tibial nerve.

***Question no. 02***

***Foot Drop***

* Foot drop is a clinical sign indicating paralysis of the muscles in the anterior compartment of the leg. It is most commonly seen when the common **fibular nerve** (from which the deep fibular nerve arises) is damaged.
* In foot drop, the muscles in the anterior compartment are paralyzed. The unopposed full of the plantar flexor produces permanent **plantar flexion.**
* This can interfere with walking as the affected limb can drag along the ground.

***Deep Venous Thrombosis***

* Deep venous thrombosis **(DVT)** is the formation of the blood clot within the deep veins of the lower limbs, causing blockage of the vessel. Locally this causes pain, swelling and tenderness of the affected limb.
* The main complication of a **DVT** is pulmonary embolism. The thrombus can become dislodged, and travel into pulmonary circulation. Pulmonary occlusion prevents blood from returning to the heart, resulting in mechanical shock.

***Question no. 03***

***“Blood supply of thigh and gluteal region”***

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* **Femoral Artery:**

The main artery of the lower limb is the femoral artery. It is continuation of the external lilac artery. The external lilac becomes the femoral artery when it crosses under the inguinal and enters the **femoral triangle.**

* In the femoral triangle, the profunda femoris artery arises from the posterolateral aspect of the femoral artery. It travels posteriorly and distally, giving off **three main branches.**
* ***Perforating branches:***  consists of three or four arteries that perforate the adductor magnus, contributing to the supply of the muscles in the medial and posterior thigh.
* ***Lateral femoral circumflex artery:***  wraps round the anterior, lateral side of the femur, supplying some of the muscles on the lateral aspect of the thigh.
* ***Medial femoral circumflex artery:*** wraps round the posterior side of the femur, supplying its neck and head. In a fracture of the femoral neck this artery can easily be damaged, and avascular necrosis of the femur head can occur.

***The Thigh:***

* Once the popliteal vein has entered the thigh, known as the femoral vein. It is situated anteriorly, accompanying the femoral artery.
* The deep vein of the thigh is the other main venous structure in the thigh. Via perforating veins, it drains blood from the thigh muscles. It then empties into distal section of the femoral vein
* The femoral vein leaves the thigh by running underneath the inguinal ligament, at which point is known as the **external iliac** vein.

***The Gluteal region:***

* The gluteal region is drained by inferior and superior gluteal veins.
* These empty into the **internal iliac** vein.

***Question no. 04***

***“Anatomical course, motor and sensory***

***Function Of sciatic nerve”***

***Anatomical course:***

* The sciatic nerve is derived from the lumbosacral plexus. After its formation,
* It leaves the pelvis and enters the gluteal region via greater sciatic foramen.
* It emerges inferiorly to the piriformis muscle and descends in an infer lateral direction.

**Nerve root:** *L4-S3*

***Motor functions:***

* Innervates the muscles of the posterior thigh (*biceps femoris, semimembranosus and semitendinosus)* and hamstring portion of the adductor Magnus.
* Indirectly innervates (via its terminal branches) all the muscles of the leg and foot.

***Sensory functions:***

* No direct sensory functions in thigh region. Indirectly innervates (via its terminal branches) the skin of the lateral leg, heal, and both the dorsal and planter surface of the foot.

***Question no. 05***

***“Muscles of Medial Compartment***

***Of the Thigh”***

* The muscle in the medial compartment of the thigh are collectively known as the hip adductors.
* There are five muscles in this group:
1. Gracilis
2. Obturator externus
3. Adductor brevis
4. Adductor longus
5. Adductor magnus
* All the medial thigh muscles are innervated by the **obturator nerve,** which arises from the lumber plexus. Arterial supply is via the **obturator artery.**

***“Tarsal tunnel Syndrome”***

Tarsal tunnel syndrome is a compression, or squeezing, on the posterior tibial nerve that produces symptoms anywhere along the path of the nerve running from inside of the ankle into the foot. **Tarsal tunnel syndrome is similar to carpal tunnel syndrome, which occurs in the wrist.**