**Asadullah**

**16383**

**DPT 2ND SEC (A)**

**QUESTION NO :- 4**

 **Sciatic nerve :-**

• The sciatic nerve is a major nerve of the lower limb. It is a thick flat band,

approximately 2cm wide – the largest nerve in the body. **Motor functions:-**

• Innervates the muscles of the posterior thigh (biceps femoris, semimembranosus

and semitendinosus) and the hamstring portion of the adductor magnus (remaining

portion of which is supplied by the obturator nerve).

• Indirectly innervates (via its terminal branches) all the muscles of the leg and foot.

Although the sciatic nerve passes through the gluteal region, it does not innervate any muscles there. However, the sciatic nerve does directly innervate the muscles in the posterior compartment of the thigh, and the hamstring portion of the adductor magnus.

The sciatic nerve also indirectly innervates several other muscles, via its two terminal branches:

 **Tibial nerve :–** the muscles of the posterior leg (calf muscles), and some of the intrinsic muscles of the foot.

 **Common fibular nerve :–** the muscles of the anterior leg, lateral leg, and the remaining intrinsic foot muscles.

In total, the sciatic nerve innervates the muscles of the posterior thigh, entire leg and entire foot

**• Sensory functions:**-

No direct sensory functions in thigh region .( Indirectly

innervates (via its terminal branches) the skin of the lateral leg, heel, and

both the dorsal and plantar surfaces of the foot)

 The sciatic nerve does not have any direct cutaneous functions. It does provide indirect sensory innervation via its terminal branches:

* **Tibial nerve :–**
* supplies the skin of the posterolateral leg, lateral foot and the sole of the foot.
* **Common fibular nerve :–**
* supplies the skin of the lateral leg and the dorsum of the foot.
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**QUESTION NO :- 5**

 **Muscle of the medial compartment of thigh :-**

Muscles in the Medial Compartment of the Thigh. The muscles in the medial compartment of the thigh are collectively known as the **hip adductors**. There are five muscles in this group; **gracilis**, **obturator** externus, **adductor** brevis, **adductor** longus and **adductor magnus .**

**Adductor Magnus :-**

The adductor magnus is the largest muscle in the medial compartment. It lies posteriorly to the other muscles.

Functionally, the muscle can be divided into two parts; the adductor part, and the hamstring part.

**Attachments :-**Adductor part – Originates from the inferior rami of the pubis and the rami of ischium, attaching to the linea aspera of the femur.

Hamstring part – Originates from the ischial tuberosity and attaches to the adductor tubercle and medial supracondylar line of the femur.

**Actions:-**

They both adduct the thigh. The adductor component also flexes the thigh, with the hamstring portion extending the thigh.

**Innervation:-**

Adductor part is innervated by the obturator nerve (L2-L4), the hamstring part is innervated by the tibial component of the sciatic nerve (L4-S3)

**Adductor Longus :-**

The adductor longus is a large, flat muscle. It partially covers the adductor brevis and magnus. The muscle forms the medial border of the femoral triangle.

**Attachments:-**

Originates from the pubis, and expands into a fan shape, attaching broadly to the linea aspera of the femur

**Actions:**- Adduction of the thigh.

**Innervation:-** Obturator nerve (L2-L4).

**Adductor Brevis :-**

The adductor brevis is a short muscle, lying underneath the adductor longus.

It lies in between the anterior and posterior divisions of the obturator nerve. Therefore, it can be used as an anatomical landmark to identify the aforementioned branches.

**Attachments**:**-**

Originates from the body of pubis and inferior pubic rami. It attaches to the linea aspera on the posterior surface of the femur, proximal to the adductor longus.

**Actions**: Adduction of the thigh.

**Innervation**: Obturator nerve (L2-L4)

**Obturator Externus :-**

This is one of the smaller muscles of the medial thigh, and it is located most superiorly

**Attachments:** It originates from the membrane of the obturator foramen, and adjacent bone. It passes under the neck of femur, attaching to the posterior aspect of the greater trochanter.

**Actions**: Adduction and lateral rotation of the thigh.

**Innervation**: Obturator nerve (L2-L4).

**Gracilis :-**

The gracilis is the most superficial and medial of the muscles in this compartment. It crosses at both the hip and knee joints. It is sometimes transplanted into the hand or forearm to replace a damaged muscle.

**Attachments:** It originates from the inferior rami of the pubis, and the body of the pubis. Descending almost vertically down the leg, it attaches to the medial surface of the tibia, between the tendons of the sartorius (anteriorly) and the semitendinosus (posteriorly).

**Actions:** Adduction of the thigh at the hip, and flexion of the leg at the knee.

**Innervation:** Obturator nerve (L2-L4).

**● TARSAL TUNNEL SYNDROME :-**

This is a condition where the tibial nerve is compressed within the tarsal

tunnel (posterior to the medial malleolus). There are varying causes, of

which the main three are:

• Osteoarthritis

• Rheumatoid arthritis

• Post-trauma ankle deformities

• Patients complain of paraesthesia in the ankle and sole of the foot, which

can radiate up the leg slightly. It is aggravated by activity and relieved by

rest.

• Tarsal tunnel symptoms can be treated conservatively by anti-inflammatory

drugs and changes in footwear.

• If these interventions are not successful, the flexor retinaculum can be cut

surgically, which releases the pressure.

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**QUESTION NO :- 2**

**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 pull of the plantar flexor produces

permanent plantarflexion.

• This can interfere with walking – as the affected limb can drag along

the ground.

**Deep vein thrombosis (DVT) :-**

 is a serious condition that occurs when a blood **clot** forms in a **vein** located **deep** inside your body. A blood **clot** is a clump of blood that's turned to a solid state. **Deep vein** blood clots typically form in your thigh or lower leg, but they can also develop in other areas of your body.

Diseases or conditions caused: **Pulmonary embolism.**

**QUESTION NO :- 3**

  **The Thigh :-**

 • Once the popliteal vein has entered the thigh, it is known as

the femoral vein. It is situated anteriorly, accompanying the femoral

artery.

• The deep vein of the thigh (profunda femoris vein) is the other main

venous structure in the thigh. Via perforating veins, it drains blood

from the thigh muscles. It then empties into the distal section of the

femoral vein.

• The femoral vein leaves the thigh by running underneath the inguinal

ligament, at which point it 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.

 External iliac vein

Deep vein of thigh femoral vein

 Popliteal vein

 Posterior tibial vein

 Fibular vein

 Anterior tibial vein

**QUESTION NO :- 1**

 **Muscle In The Posterior Compartment Of Leg :-**

 The posterior compartment of the leg contains seven muscles,

organized into two layers – superficial and deep.

• The two layers are separated by a band of fascia.

• The posterior leg is the largest of the three compartments.

Collectively, the muscles in this area plantarflex and invert the foot.

• They are innervated by the tibial nerve, a terminal branch of the

sciatic nerve.

 **Superficial Muscles :-**

• The superficial muscles form the characteristic ‘calf’ shape of the posterior

leg.

• They all insert into the calcaneus of the foot (the heel bone), via

the calcaneal tendon.

• The calcaneal reflex tests spinal roots S1-S2.

• To minimize friction during movement, there are two bursae (fluid filled

sacs) associated with the calcaneal tendon:

• Subcutaneous calcaneal bursa – lies between the skin and the calcaneal

tendon.

• Deep bursa of the calcaneal tendon – lies between the tendon and the

calcaneus.

**Gastrocnemius :-**

• The gastrocnemius 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 a flexor there.

• **Innervation**: Tibial nerve

 **Plantaris :-**

• 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 plantarflexes at the ankle joint, and because it crosses the

knee, it is a flexor there. It is not a vital muscle for these movements.

• **Innervation**: Tibial nerve.

**Soleus :-**

• 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.

**Clinical Relevance:-**

Ruptured Calcaneal Tendon

• Rupture of the calcaneal tendon refers to a partial or complete tear

of the tendon. It is more likely to occur in people with a history

of calcaneal tendinitis (chronic inflammation of the tendon).

• The injury is usually sustained during forceful plantarflexion of the

foot. The patient will be unable to plantarflex the foot against

resistance, and the affected foot will be permanently dorsiflexed. The

soleus and gastrocnemius can contract to form a lump in the calf

region.

• Treatment of a ruptured calcaneal tendon is usually Conservative

(Physiotherapy), except in those with active lifestyles.

**Deep Muscles :-**

• There are four muscles in the deep compartment of the posterior leg.

One muscle, the popliteus, acts only on the knee joint. The remaining

three muscles (tibialis posterior, flexor hallucis 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 between 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.

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