

ANATOMY II LAB ASSIGNMENT 2020

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QUESTION NO 1 :-

Write down a comprehensive note on blood supply and venous return of lower limb.

ANSWER :-

BLOOD SUPPLY OF LOWER LIMB :-

FEMORAL ARTERY :-

The femoral artery is a large artery in the thigh and the main arterial supply to the thigh. The femoral artery runs in the middle of the femoral triangle. It supplies the anterior and anteromedial aspects of the thigh.

BRANCHES :-

The femoral artery travels posteriorly and distally giving of three main branches.

- Lateral femoral circumflex artery
- Medial femoral circumflex artery
- Perforating branches

LATERAL FEMORAL CIRCUMFLEX ARTERY:-

The Lateral femoral circumflex femoral artery supplies the anterior thigh muscles as well as knee and hip. The wraps around the posterior side of the femur supplying its neck and head

MEDIAL FEMORAL CIRCUMFLEX ARTERY :-

The medial femoral circumflex artery is a posteromedial branch of the deep femoral artery, arising in the medial thigh compartment. The medial femoral circumflex artery is the primary source of blood supply to the femoral head.

PERFORATING BRANCHES :-

It consist of three or four arteries that perforate the adductor magnus, contributing to the supply of the muscles in the medial and posterior thigh.

OTHER ARTERIES :-

IN THE THIGH:-

In addition to the femoral artery, there are other vessels supplying the lower limb.obturator artery arises from the internal iliac artery in the pelvic region the obturator canal to enter the medial thigh, bifurcating into two branches:

- Anterior branch
- Posterior branch

IN THE LEG:-

The popliteal artery descends down the posterior thigh, giving rise to genicular branches that supply the knee joint. It moves through the popliteal fossa, exiting between the gastrocnemius and popliteus muscles. The lower border of the popliteus, the popliteal artery terminates by dividing into two

- Posterior tibial artery
- Fibular (peroneal) artery

IN THE FOOT:-

Arterial supply to the foot is delivered via two arteries:

- Dorsalis pedis
- Posterior tibial

DORSALIS PEDIS:-

The dorsal aspect of the tarsal bones, then moves inferiorly, towards the sole of the foot.

POSTERIOR TIBIAL :-

The posterior tibial artery enters the sole of the foot through the tarsal tunnel.

ARTERIAL OF THE GLUTEAL REGION:-

The main arteries of the gluteal region are

- Superior gluteal
- Inferior gluteal

SUPERIOR GLUTEAL ARTERY :-

The superior gluteal artery is the largest branch of the internal iliac artery. The superior gluteal artery passes posteriorly between the lumbosacral trunk, and the first sacral nerve. It divides into two superficial and deep branches.

INFERIOR GLUTEAL ARTERY :-

The inferior gluteal artery is a terminal branch of the internal iliac artery. The gluteal region artery gives off branches to supply the sciatic nerve and the muscles and skin of the gluteal thigh and hip region.

VENOUS RETURN OF THE LOWER LIMB:-

The veins of the lower limb drain deoxygenated blood and return it to the heart. They can be divided into two groups

- Superficial
- Deep

SUPERFICIAL VEINS :-

These veins are found in the subcutaneous tissue. They eventually drain into the deep veins.

DEEP VEINS:-

These veins are located underneath the deep fascia of the lower limb, accompanying the major arteries.

SUPERFICIAL VEINS OF THE LOWER LIMB :-

The superficial veins of the lower limb run in the subcutaneous tissue. There are two major superficial veins,

- The small saphenous vein.
- The great saphenous vein

THE SMALL SAPHENOUS VEIN :-

The small saphenous vein is formed by the dorsal venous arch of the foot, and the dorsal vein of the little toe. It moves between the two heads of the gastrocnemius muscle and empties into the popliteal vein in the popliteal fossa. It moves up the posterior side of the leg, passing posteriorly to the lateral malleolus, along the lateral border of the calcaneal tendon.

THE GREAT SAPHENOUS VEIN :-

The great saphenous vein is formed by the dorsal venous arch of the foot, and the dorsal vein of the great toe. As the vein moves up the leg, it receives tributaries from other small superficial veins. The great saphenous vein terminates by draining into the femoral vein immediately inferior to the inguinal ligament.

DEEP VEINS OF THE LOWER LIMB :-

The deep venous drainage system of the lower limb is located beneath the deep fascia of the lower limb. The artery and vein are located within the same vascular sheath, so that the arterial pulsations aid the venous return. The deep veins of the lower limb can be separated into four main groups, according to their location:

- Veins of the thigh
- Veins of the leg
- Vein of the knee
- Veins of the foot

VEINS OF THE THIGH :-

The femoral vein is a continuation of the popliteal vein and accompanies the femoral artery. It begins at the opening of the adductor magnus muscle and ends posterior to the inguinal ligament as the external iliac vein.

Tributaries of the femoral vein include:

- The medial circumflex vein
- Lateral circumflex vein
- Long saphenous vein

Profunda femoris vein, which drains 4-12 cm distal to the inguinal ligament. The profunda femoris vein, also referred to as the deep vein of the thigh, is located superficial to the profunda femoris artery. Veins accompanying the perforating branches of the profunda femoris artery drain the thigh muscles and empty into the profunda femoris vein. The medial and lateral circumflex veins are sometimes tributaries of the profunda femoris vein.

VEINS OF THE LEG:-

The anterior tibial veins are formed by the venae comitantes, or companion veins, of the dorsalis pedis artery. The fibular veins are also formed by the medial and lateral plantar veins and run with the fibular artery. The posterior tibial veins are formed by the medial and lateral plantar veins and accompany the posterior tibial artery.

VEINS OF THE KNEE:-

The popliteal vein is located within the popliteal fossa and pierces the adductor magnus muscle, where it becomes the femoral vein. The popliteal vein usually has 4 or 5 valves and many tributaries. All of the three main veins of the leg drain into it, as well as the short saphenous vein and two muscular veins from each head of the gastrocnemius muscle.

VEINS OF THE FOOT:-

The foot consists of two main types of deep veins:

- Dorsal veins
- Planter veins

DORSAL VEINS:-

Which drain the dorsal or upper surface of the foot

PLANTER VEINS :-

Which drain the plantar surface or underside of the foot

A dorsal venous arch is also present and is formed by the dorsal metatarsal veins, which are also formed by the dorsal and plantar digital veins. Venous plexuses within the plantar regions of the toes join to form plantar digital veins. These veins connect with their dorsal counterparts, the dorsal digital veins, to form four plantar metatarsal veins. These veins run proximally within the intermetatarsal spaces and then continue on to form the deep plantar venous arch. Medial and lateral plantar veins arise from this arch.

THE GLUTEAL REGION

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

QUESTIONS NO 2:-

Describe anatomical course of femoral and sciatic nerve with the help of diagrams?

SCIATIC NERVE:

NERVE ROOT: L4-S3

ANATOMICAL COURSE:

The sciatic nerve is a major nerve of the lower limb. It is a thick flattened band which is 2cm wide. It is the largest nerve in the body after its formation, it leaves the pelvis and enters the gluteal region by greater

sciatic foramen. Within the posterior thigh, the nerve gives rise to the branches to the hamstring muscles and adductor magnus. When the sciatic nerve reaches the apex of the popliteal fossa, it terminates by bifurcating into the tibial and common fibular nerves.

MOTOR FUNCTION:

The sciatic nerve passes through the gluteal region but does not innervate any muscles there. The muscles of the posterior thigh and the portion of hamstring of the adductor magnus are innervated by sciatic nerve. The sciatic nerve also directly innervates several other muscles, into two terminal branches

- **TIBIAL NERVE:**

The muscles of the posterior leg, calf muscles and some of the intrinsic muscles of the foot

- **COMMON FIBULAR:**

The muscles of the anterior leg, lateral leg and the remaining intrinsic foot muscles

SENSORY FUNCTION

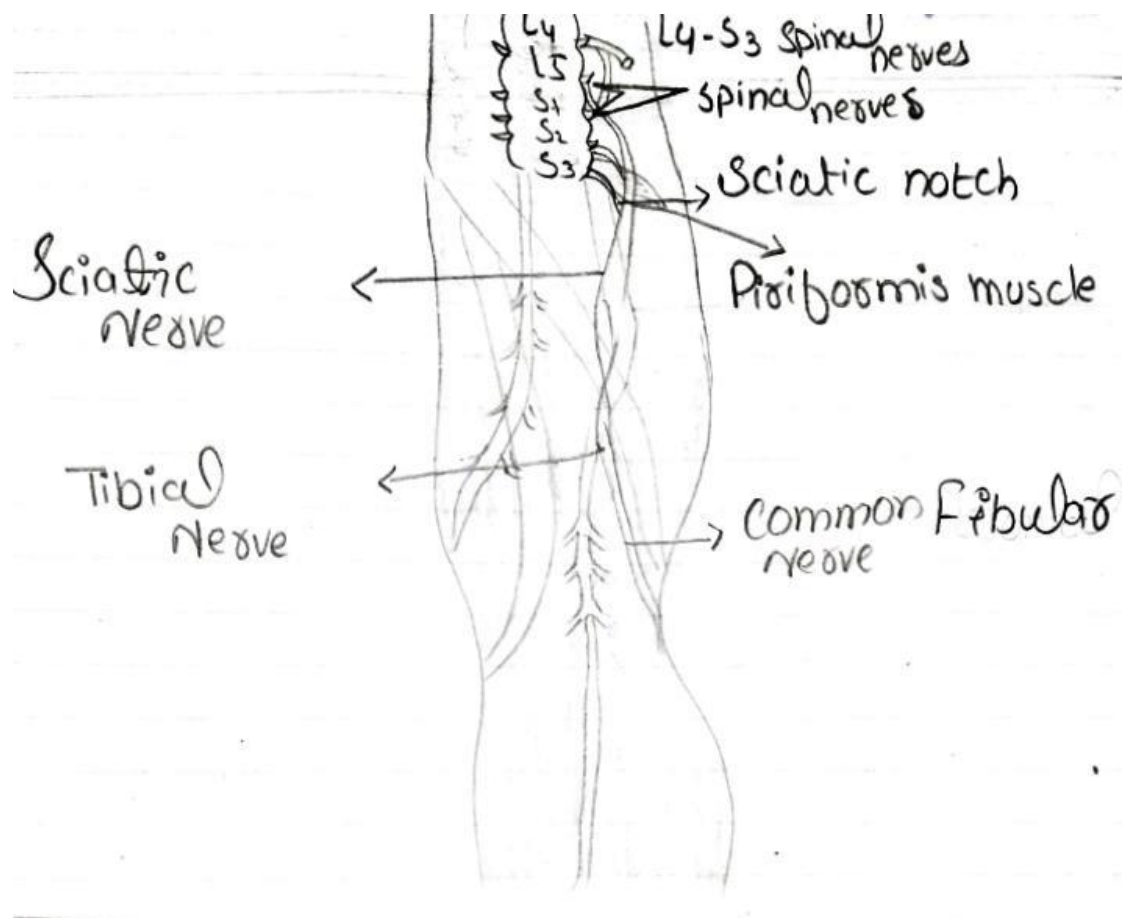
The sciatic nerve does not have any direct cutaneous function; it does provide indirect sensory innervation via its terminal branches

- **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.



(2):FEMORAL NERVE:-

NERVE ROOTS :-

L2-L3-L4

ANATOMICAL COURSE :-

The femoral nerve is the largest branch of the lumbar plexus. It is derived from the anterior rami of nerve roots L2, L3 and L4. The femoral nerve then passes underneath the inguinal ligament to enter the femoral triangle. Within this triangle, the nerve is located lateral to the femoral vessels (unlike the nerve, the femoral artery and vein are enclosed within the femoral sheath). Approximately 4cm below the inguinal ligament, the femoral nerve divides into anterior and posterior divisions.

MAJOR FUNCTION :-

The femoral nerve supplies the muscles of the anterior thigh.

KNEE EXTENSORS:

Quadriceps femoris (rectus femoris, vastus lateralis, vastus medialis and vastus intermedius) – extends the leg at the knee joint. Rectus femoris also steadies the hip joint and assists iliopsoas in flexing the thigh.

HIP FLEXOR:-

Iliacus:-

acts with psoas major and psoas minor (forming iliopsoas) to flex the thigh at the hip joint and stabilise the hip joint.

PECTINEUS :-

adducts and flexes the thigh, assists with medial rotation of the thigh.

SARTORIUS – FLEXES :-

abducts and laterally rotates the thigh at the hip joint. Flexes the leg at the knee joint.

SENSORY FUNCTION :-

There are two main sensory branches that arise from the femoral nerve:

SAPHENOUS NERVE:-

a continuation of the posterior division of the femoral nerve. It supplies the skin of the medial leg and foot.

ANTERIOR CUTANEOUS BRANCHES:-

Derived from the anterior division of the femoral nerve. They supply the skin of the anteromedial thigh.

