Subject: Anatomy-II Lab

Semester: DPT 2nd

Laiba hashmat Id: 16394

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

Answer:

Blood supply of lower limb:

The main arterial system of the lower limb is the femoral artery, which undergoes name changes on it descent. The exception is the gluteal region which is served by superior and inferior gluteal arteries from the internal iliac artery of the pelvis.

In the thigh and gluteal region:

Femoral artery:

- *The femoral artery is the main artery of lower limb and is the continuation of external iliac artery.*
- *The external iliac when crosses under the inguinal ligament and enters the femoral triangle it becomes the femoral artery.*
- *The profunda femoris artery arises from the posterolateral aspect of the femoral artery in the femoral triangle.*
- *It gives three main branches when travels posteriorly and distally.*

1.Perforating branches:

It consist of three or four arteries which perforate the adductor mangus. It contribute to the supply of muscles in the medial

and posterior thigh.

2.Lateral femoral circumflex artery:

It wraps the anterior , lateral side of the femur ans supply some of the muscles on the lateral aspect of thigh.

3.Medial femoral circumflex artery:

It wraps the posterior side of femur and supply its neck and head. In case the femoral neck is fracture the artery can easily be damaged and avascular necrosis of femur can occur.

- *The femoral artery continues down the anterior surface of the thigh after exiting the femoral triangle through a tunnel known as adductor canal.*
- *The adductor canals ends at an opening in the adductor mangus called adductor hiatus.*
- *The femoral artery enters the posterior compartment of the thigh, proximal to knee through this opening.*
- *At this stage femoral artery is now known as popliteal artery.*

Other arteries of the thigh:

- *There are also some other vessels which supply the lower limb.*
- *From internal iliac artery in the pelvic region the obturator artery arises.*
- *It enters the medial thigh through obturator canal contribution into two brances.*

1.Anterior branch:

This branch supplies the pectineus, obturator externus, adductor muscle and gracilis.

2.Posterior branch:

This branch supplies some of the deep gluteal muscles.

- *The gluteal region is supplied by the superior and inferior gluteal arteries.*
- *These arteries also arises from the internal iliac artery which enters the gluteal region through greater sciatic nerve.*

In the leg:

- *The popliteal artery which decends down the posterior thigh it give rise to genicular branches which upply the knee joint.*
- *Exiting between the gastrocnemius and popliteus muscles it moves through the popliteal fossa.*
- *The popliteal artery divides into into the anterior tibial artery and tibioperoneal trunk at the lower border of popliteus.*
- *The tibioperoneal trunk in turn bifurcates into posterior tibial and fibular arteries.*

- ***Anterior tibial artery:***
  It passes anteriorly through a gap in the intersseous membrane between the tibia and fibula. It move inferiorly down the leg and runs the entire leg and into the foot . Here it becomes the dorsalis pedis artery.
- ***Posterior tibial artery;***
  It continues inferiorly along the deep posterior leg muscle. It enters the sole of the foot through the tarsal tunnel.
- ***Fibular artery:***
  It decends posteriorly to the fibula. It give rise to perforating branches and penetrates the intermuscular septum to supply muscles in the lateral compartment of leg.

  In the foot:
  The blood supply to the foot is delivered through twp arteries:
  1.Dorsalis pedis
  2.Posterior tibial

Venous return of th lower limb:

- *The veins of lower limb drain deoxygenated blood and return it back to the heart.*
- *They can be divided in two groups which are superficial and deep.*
- *Superficial veins are located in subcutaneous tissue.*
- *Deep veins are located underneath the deep fascia which accompanying the major arteries.*

Deep veins of lower limb:

The deep veins accompany and share the name of the major artery in the lower limb. As discuss earlier deep venous drainage system of the lower limb is located beneath the deep fascia. The arteries and veins are located in the vascular sheath so that the arterial pulsation aid the venous return.

The foot and leg:

- *The venous structure of the foot is the dorsal venous arch which drains into superficial veins mostly.*
- *Some veins from the arch penetrate deep in the leg forming anterior tibial vein.*
- *Medial and plantar veins arise on the plantar aspect of foot.*
- *These veins combine to form the posterior tibial and fibular veins.*
- *On the posterior surface of knee the anterior tibial, posterior tibial, and fibular veins unite to form popliteal vein.*
- *The popliteal vein enters the thigh through adductor canal.*

The thigh:

- *When the popliteal vein enters the thigh it is known as femoral vein.*
- *The deep vein of thigh is other main venous structure in the thigh.*

- *It drains blood from the thigh muscles.*
- *The femoral vein leaves the thigh by running underneath the inguinal ligament and at this point it is known as external iliac vein.*

The gluteal region:

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

Superficial vein of the lower limb;

There are two major superficial veins :

1. *The great saphenous vein*
2. *The small sapenous vein*

The great saphenous vein;

- *It I formed by the dorsal venous arch of the foot and dorsal vein of great toe.*
- *It ascend on the medial side of leg and pass anteriorly to the medial malleolus at the ankle and posteriorly to the medial condyle at the knee.*
- *The great saphoneous vein terminates by draining into thefemoral vein inferior to the inguinal ligament.*

The small saphenous vein:

- *It is formed by the dorsal venous arch of foot and dorsal vein of little toe.*
- *It passes posteriorly to lateral mallelous along the lateral border of the calcaneal tendon.*
- *It empties into the popliteal vein in the popliteal fossa.*

Clinical relevance:

Deep vein thrombosis:

- *It is a serious condition that occurs when a blood clot forms in a vein located deep inside our body.*
- *A blood clot is a clump of blood that's turns to a solid state.*
- *The main complication of DVT is pulmpnary embolism*
- *DVT can cause leg pain or swelling but can also occur with no symptoms.*
- *Patients undergo prophylactic treatment to prevent thrombosis.*

Varicose vein:

- *Varicose veins are larged , swollen veins that often appear on the legs and feet.*
- *They happen when the valves in the vein do not worked properly.*
- *The veins rarely need treatment for health reasons.*
- *There are various options including home remedies.*

Describe anatomical course of femoral and sciatic never with the help of diagrams

Answer:

The nerves of lower limb originates from lumbar and sacral nerve while creating the lumbar plexus in the posterior abdominal wall and the sacral plexus in the pelvis.

Anatomical course of femoral nerve:

- *The femoral nerve is the largest branch of the lumbar plexus.*
- *It is derived from the anterior rami of nerve root L2, L3 and L4.*
- *After arises from the lumbar plexus the femoral nerve travels inferiorly through the psoas major muscle of the posterior abdominal wall.*
- *Once it passes beneath the inguinal ligament it divides into a*

deep and superficial branch.

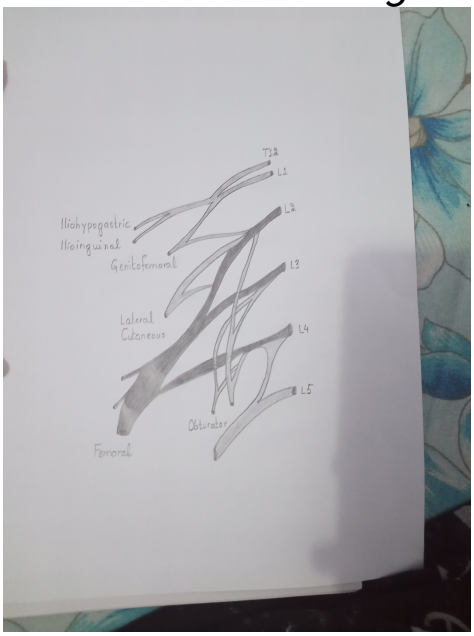
- *The deep branch supplies the quadriceps.*
- *The superficial branch divides into medial and anterior cutaneous nerve of thigh.*

Motor function:

- *It innervates the anterior thigh muscle that flex the hip joint (pectineus, iliacus, sartorius) and extend the knee (quadriceps femoris, rectus femoris, vastus lateralis, vastus medialis and vastus intermedius).*

Sensory function;

- *It supplies the cutaneous branches to the anteromedial thigh (anterior cutaneous branches of the femoral nerve) and the medial side of the leg and foot.*



Anatomical course of sciatic nerve;

- *The sciatic nerve is derived from the lumbosacral plexus.*
- *After its formation it leaves the pelvis and enters the gluteal*

region through greater sciatic foramen.

- *It emerges inferiorly to the piriformis muscle and decends in an inferolateral direction.*
- *As the nerve moves through the gluteal region it crosses the posterior surface of the superior gamellus , obturator internus, inferior gameluss and quadratus femoris muscles.*
- *It then enters the posterior thigh passing deep to the long head of the bicep femoris.*

Motor function:

- *It innervates muscles of the posterior thigh (biceps femoris, semimembranosus and semitendinosus) and the hamstring portion of the adductor magnus.*
- *The sciatic nerves indirectly innervates the muscle in the posterior compartment of the thigh.*
- *The sciatic nerve also indirectly innervates several muscles through two terminal branches:*
  1.Tibial nerve: the muscles of the posterior leg and some of the intrinsic muscles of foot.
  2. Common fibular nerve: the muscles of the anterior leg, lateral leg, and the remaining intrinsic foot muscles.

Sensory function:

- *No direct sensory function. But it indirectly innervates the skin of the lateral leg, heel and both the dorsal and plantar surfaces of the foot.*