

# Lower limb vessels

- The arteries of the lower limb are the branches of the external iliac artery, which is formed by the division of the common iliac artery in the pelvis.
- The external iliac artery passes into the inguinal region through the vascular lacuna, where it lies laterally from the external iliac vein and medially from the femoral branch of the genitofemoral nerve.
- Passing through the vascular lacuna into the iliopectineal fossa, the external iliac artery changes into the femoral artery, which then branches into five main arteries.
- The veins of the lower limb can be divided into deep veins running mostly in pairs along the arteries of the same name and superficial veins.

## Lower limb arteries

### Branches of the femoral artery

1. external pudendal arteries - artery supplying area of the external genitalia
2. superficial epigastric artery - branch for the surface layer of the abdominal wall in the range of the abdominal rectus muscle
3. superficial ilium circumflex artery - arises in the subcutaneous tissue upwards along the inguinal ligament to the anterior superior iliac spine
4. descending genicular artery - the longest branch of the femoral artery, which extends into the adductor canal, together with the saphenous vein and the saphenous nerve, pierces the membrane of the vast adductor membrane and supplies the knee joint (creates the genicular articular network)
5. deep femoral artery - a very strong branch that descends to the depth of the iliopectineal fossa and produces branches that are involved in supplying the ventral and dorsal sides of the thigh and hip joint
  - medial circumflex artery of the femoral - twists medially and dorsally, supplies the adductors, pelvitrochanteric muscles, and hip joint
  - lateral circumflex artery of the femoral - twists laterally and dorsally, participates in the majority supply of the quadriceps femur
  - perforating arteries - 3 branches gradually penetrating the adductor magnus muscle and nourishing the muscles of the dorsal group (biceps femoris muscle, semimembranosus muscle, and semitendinosus muscle)

### Popliteal artery and its branches

- The femoral artery continues together with the vein of the same name caudally in the femoral triangle, gradually passing into the adductor canal.
- The artery initially runs laterally from the vein, but during the adductor canal, the vein runs and reaches the medial and dorsal.
- After passing through the adductor gap, it changes into the popliteal artery.
- Thus, the popliteal artery is a continuation of the femoral artery from the mouth of the adductor gap to the upper edge of the soleus artery, where it branches into the anterior and posterior arteries of the tibialis.
- During the course in the popliteal region, the vessel is located close to the sheath of the knee joint, ventromedially from the vein of the same name.
- Nerves - the tibial nerve and the common fibular nerve run the most laterally and superficially.
- In addition to the tibial artery, the popliteal artery also issues branches for the knee joint
  - upper medial artery type,
  - upper lateral artery type,
  - middle artery type,
  - lower medial artery type,
  - lower lateral artery type
    - together with the descending genicular artery, they form the genus joint network.

### Tibial arteries

- Tibial arteries (anterior et posterior) arise at the upper edge of the soleus muscle by dividing the popliteal artery.
  1. posterior tibial artery - is a free continuation of the popliteal artery along the back of the lower leg, running under the arch of the muscle solei taken into the deep leaf of the lower leg fascia between the superficial and deep muscle groups.
    - it gradually twists behind the inner ankle, where it is covered by the synovial flexor muscles, accompanied by 2 veins and lying dorsally from the flexor digitorum longus muscle
    - during the course through the malleolar canal branches in the main branches of the plant - medial and lateral plantar artery
      - circumflex fibular branch
      - medial malleolar branches
      - medial malleolar net
      - branches of the heel
      - nutricia artery of the tibia
    - fibular artery - the posterior tibialis branch of the posterior tibialis, which splits under the arcus of

the musculus solei and runs in the Hyrtl musculofibular canal (between the flexor hallucis longus muscle and the fibula), supplies mainly the ankle joint

- perforating branch
  - communicating branch
  - lateral malleolar branches
  - nutritive artery of the fibula
2. anterior tibial artery - runs above the interosseous membrane and runs ventrally, gradually joining the deep fibular nerve coming from the lateral side of the tibia, issues branches for the medial and lateral malleolar net and end branches for the back of the foot -dorsal artery of the foot and arcuate artery
    - lateral tarsal artery - neck of ankle
    - medial tarsal artery - from the medial surface of the artery to the inner edge of the foot
    - arcuate artery
    - dorsal metatarsal arteries -4 branches
    - digital dorsal arteries - to the adjacent areas of two adjacent fingers
    - deep plantar artery - gets to the foot of the foot

## Artery of the foot

- the arteries of the foot are the final branches of the anterior and posterior tibial arteries
1. plantar medial artery - the weaker of the terminal branches of the posterior tibialis, runs together with the medial plantar nerve along the plantar side of the thumb muscles
    - superficial branch - supplies the medial side of the foot (runs along the adductor hallucis muscle) and continues as the digital plantar hallucis artery
    - deep branch - a branch for deep leg muscles (interosseous muscles), contributes to the plantar arch
  2. medial plantar artery - the weaker of the terminal branches of the posterior tibialis artery, runs together with the medial plantar nerve along the plantar side of the thumb muscles
    - superficial branch - supplies the medial side of the foot (runs along with the adductor hallucis muscle) and continues as the digital plantar hallucis artery
    - deep branch- a branch for deep leg muscles (interosseous muscles), contributes to the plantar arch
  3. lateral plantar artery - the thicker of the posterior branches of the posterior tibial artery, together with the lateral plantar nerve, runs between the flexor short tendon muscle and the square muscle of the plant, continues along with the muscles of the little finger, sinks deep and forms the plantar arch
    - plantar arch - arterial arch running under the adductor hallucis muscle, emits metatarsal plantar artery (4 arteries along with interosseous spaces) that continue as common digital plantar arteries to metatarsophalangeal joints, where it is divided into 2 proper digital plantar arteries for toes
  4. Dorsal artery of the foot - the final branch of the anterior tibialis on the back of the foot going above the first metatarsal space, on the back sends the medial tarsal artery, lateral tarsal arteries, and strong arcuate artery
    - arcuate artery - arcuately laterally twisting blood vessels, supplies the back of the foot and toes
      - dorsal metatarsal arteries - 4 arteries above the interosseous spaces, each emitting 2 dorsal digital arteries for toes
      - deep plantar branch - a branch from the dorsal metatarsal artery I, which penetrates deep into the first metatarsal space and anastomizes with the plantar arch

## Lower limb veins

### Superficial veins

1. dorsal venous network of the foot
  - it is a venous plexus collecting blood from the back of the foot and the plant via joints from the venous plantar network, the saphenous vein is formed from the medial side of the plexus, the saphenous vein is formed from the lateral side
2. great saphenous vein
  - the main superficial vein of the lower limb, runs together with the saphenous nerve in front of the inner ankle, continues to rise in the subcutaneous layer along the ventromedial side of the lower leg, knee (behind the inner condyle), and thighs; in the area of the femoral triangle, pierces the fascia lata in the place called the saphenous gap and flows into the femoral artery in the iliopectineal fossa
  - even before the mouth, it gains the porcine veins of the thigh, genitals, and abdomen - accessory saphenous vein, external pudendal, superficial epigastric vein, and superficial circumflex vein of the ilium (these veins are arranged radially and form the so-called Cockett's star)
3. small saphenous vein
  - it is collected from the lateral side of the dorsal venous network of the foot, passes under the subcutaneous tissue behind the outer ankle, and twists together with the sural nerve on the back of the lower leg from above femoropopliteal vein draining blood from the dorsal side of the thigh

### Deep veins

- Often doubled veins (on the tibia) accompanying the arteries of the same name have numerous connections with each other and with superficial veins (using perforators), which is of great importance in the pathogenesis of varicose veins, or deep vein thrombosis.
1. popliteal vein - is deposited dorsolaterally from the artery of the same name, takes up the saphenous vein, runs upwards from the arch of the soleus muscle to the adductor gap, where it passes into the femoral vein
  2. femoral vein - continues from the adductor gap laterally and dorsally from the artery, during the adductor

canal it gradually reaches the artery, and its medial side, in the iliopectinea fossa superficial veins (great saphenous vein and Cockett's star veins) flow into it, passes through the lacuna vasorum medially from the artery at the lacunar ligament and passes smoothly in the external iliac vein

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- Lymfatická drenáž končetin

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