Arteries and Veins of Lower Limbs

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Arteries Of LL

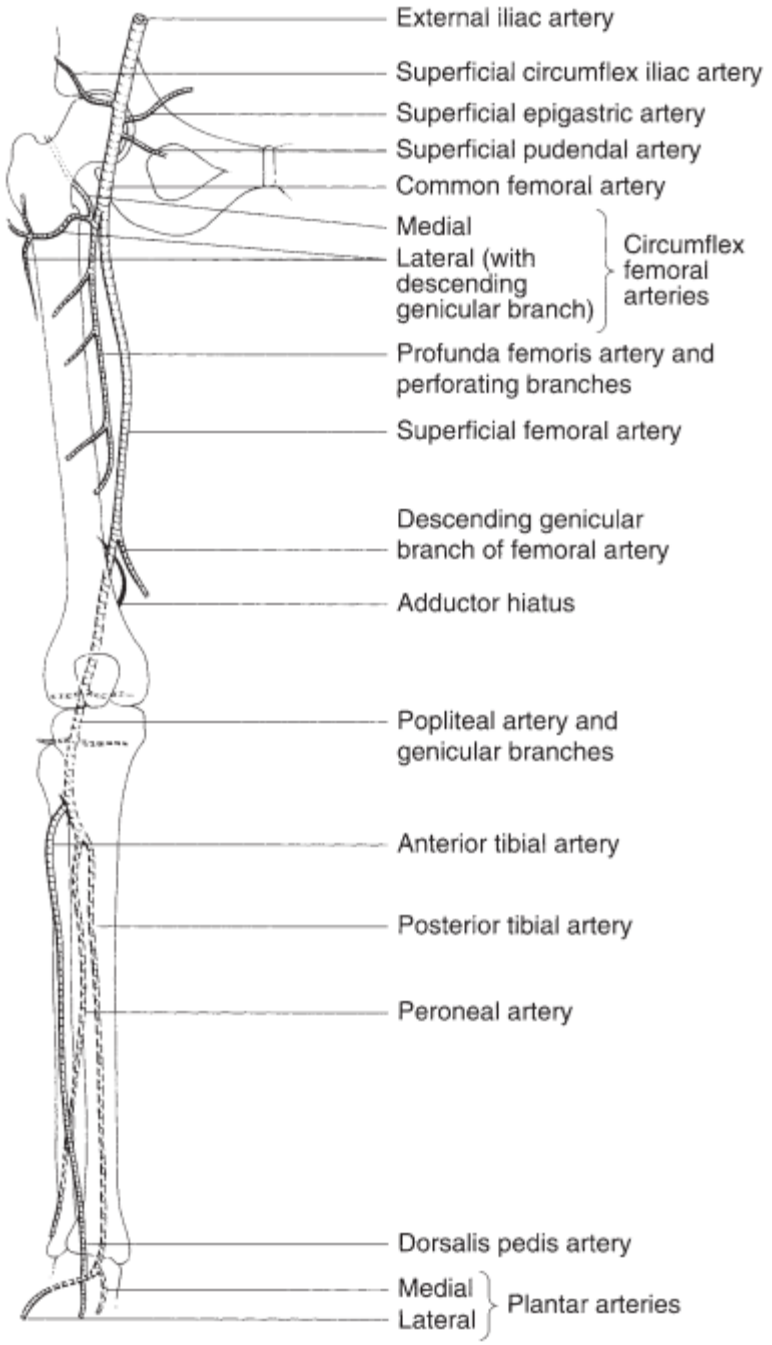
The external iliac artery becomes the common femoral artery where it crosses under the inguinal ligament midway between the anterior superior iliac spine and the pubic symphysis.

The **common femoral** artery has **three superficial branches** at this point, namely:

- the superficial circumflex iliac artery;
- the superficial inferior epigastric artery; and
- the superficial pudendal artery

The profunda femoris artery , its biggest branch, arises 5 cm distal to the inguinal ligament and has six branches as follows:

- medial and lateral circumflex femoral arteries; and
- four perforating arteries


External iliac artery
Superficial circumflex iliac artery
Superficial epigastric artery
Superficial pudendal artery
Common femoral artery
Medial
Lateral (with descending genicular branch)
Circumflex femoral arteries
Profunda femoris artery and perforating branches
Superficial femoral artery
Descending genicular branch of femoral artery
Adductor hiatus
Popliteal artery and genicular branches
Anterior tibial artery
Posterior tibial artery
Peroneal artery
Dorsalis pedis artery
Medial
Lateral
Plantar arteries

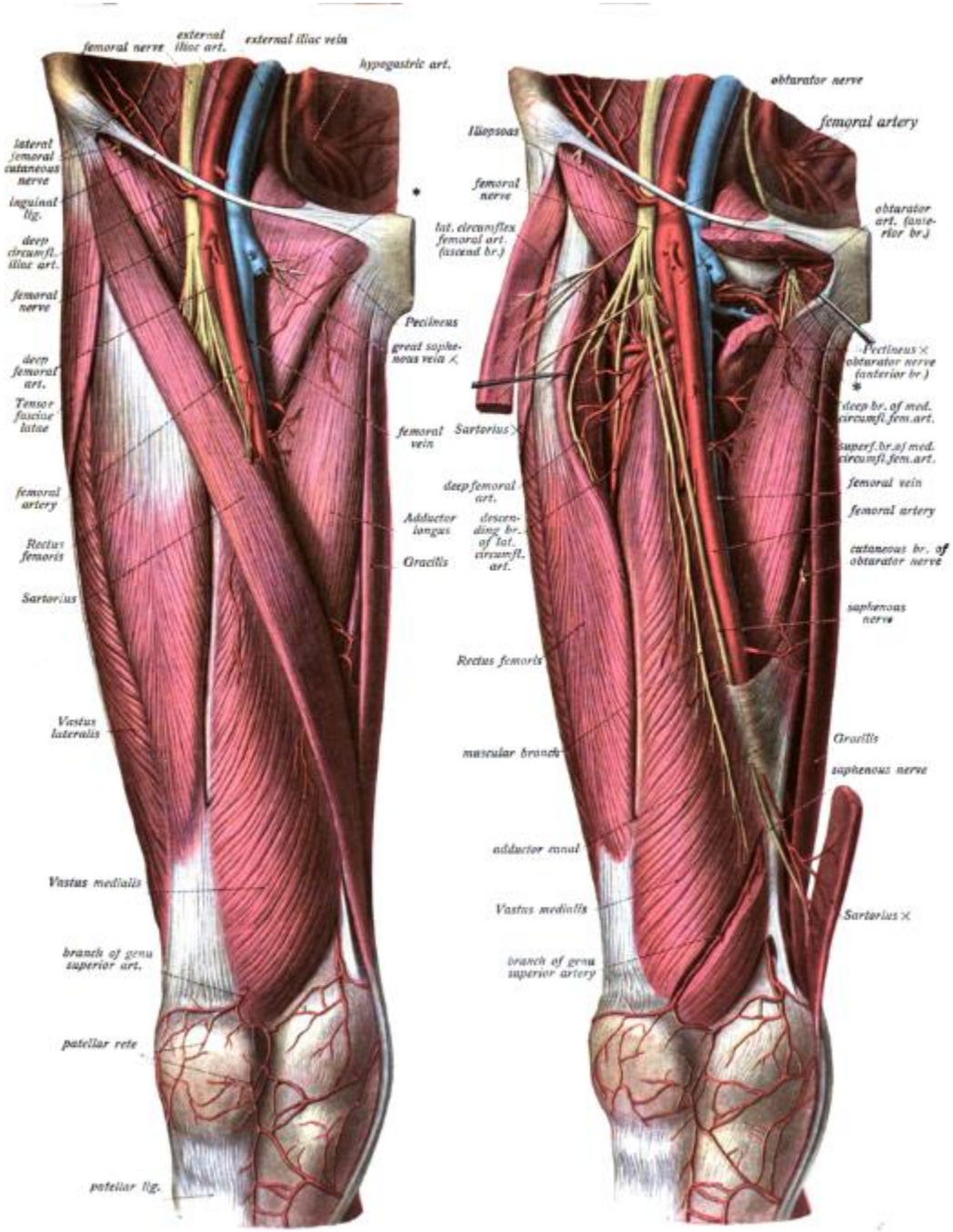
Four perforatig arteries: These supply the muscles of the thigh (the last of these is the continuation of the profunda) and surround the femur on angiography.

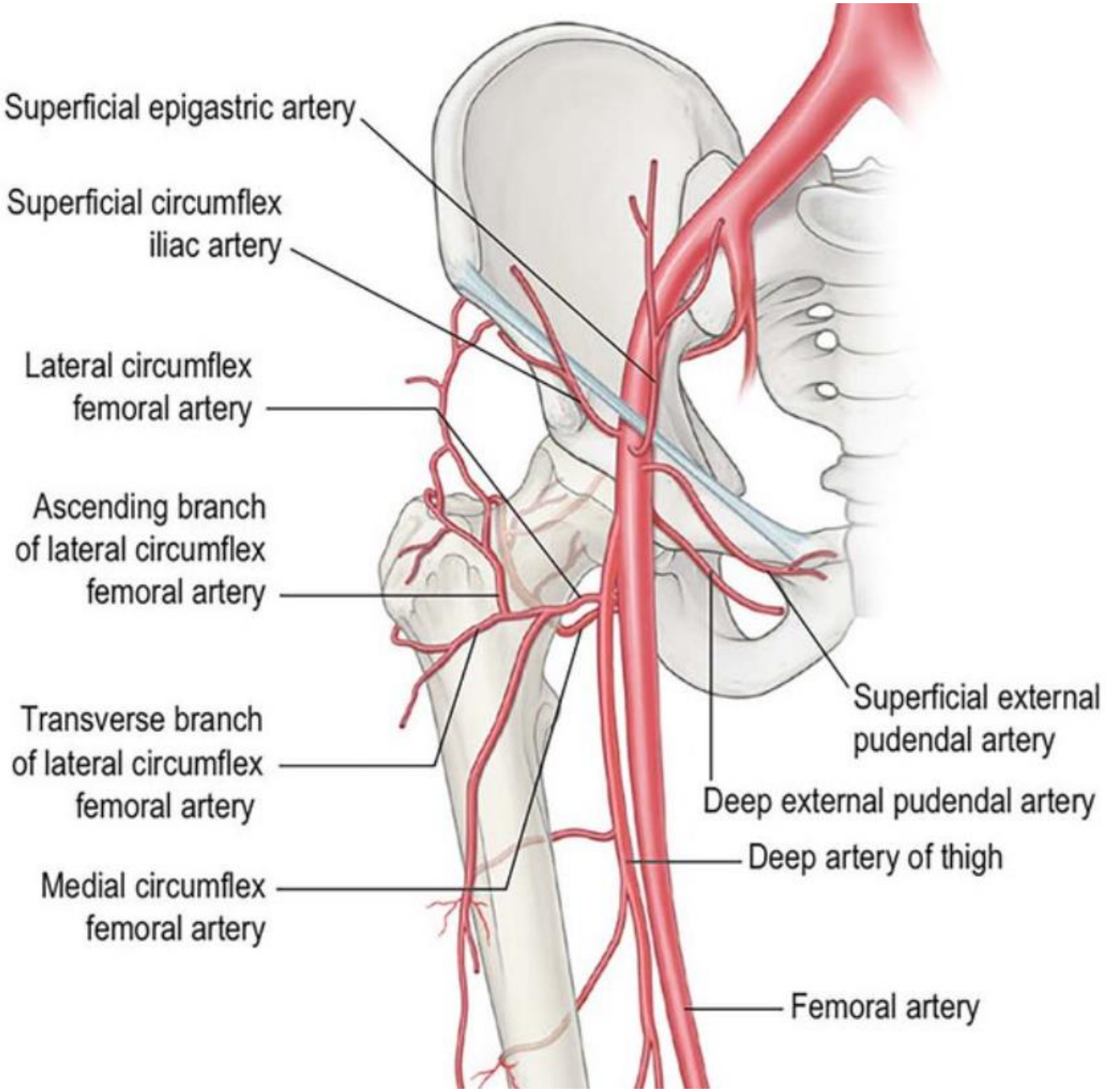
The femoral artery continues as the superficial femoral artery and has few branches in the thigh.

It passes in the adductor canal between vastus medialis, the adductors and sartorius

The popliteal artery supplies branches to the

genicular anastomosis, branches to the knee joint and divides at the lower border of the knee joint into anterior and posterior tibial arteries


femoral nerve
external iliac art.
external iliac vein
hypogastric art.
lateral femoral cutaneous nerve
inguinal lig.
deep circumfl. iliac art.
femoral nerve
deep femoral art.
Tensor fasciæ latæ
femoral artery
Rectus femoris
Sartorius
Vastus lateralis
Vastus medialis
branch of genu superior art.
patellar rete
patellar lig.
Pectineus
great saphenous vein
femoral vein
Adductor longus
Gracilis
deep femoral art.
descending br. of lat. circumfl. art.
obturator nerve
femoral artery
Iliopsoas
femoral nerve
lat. circumflex femoral art. (ascend br.)
obturator art. (anterior br.)
Pectineus
obturator nerve (anterior br.)
deep br. of med. circumfl. fem. art.
superf. br. of med. circumfl. fem. art.
femoral vein
femoral artery
Sartorius
deep femoral art.
cutaneous br. of obturator nerve
saphenous nerve
Rectus femoris
muscular branch
Gracilis
saphenous nerve
adductor magnus
Vastus medialis
Sartorius
branch of genu superior artery

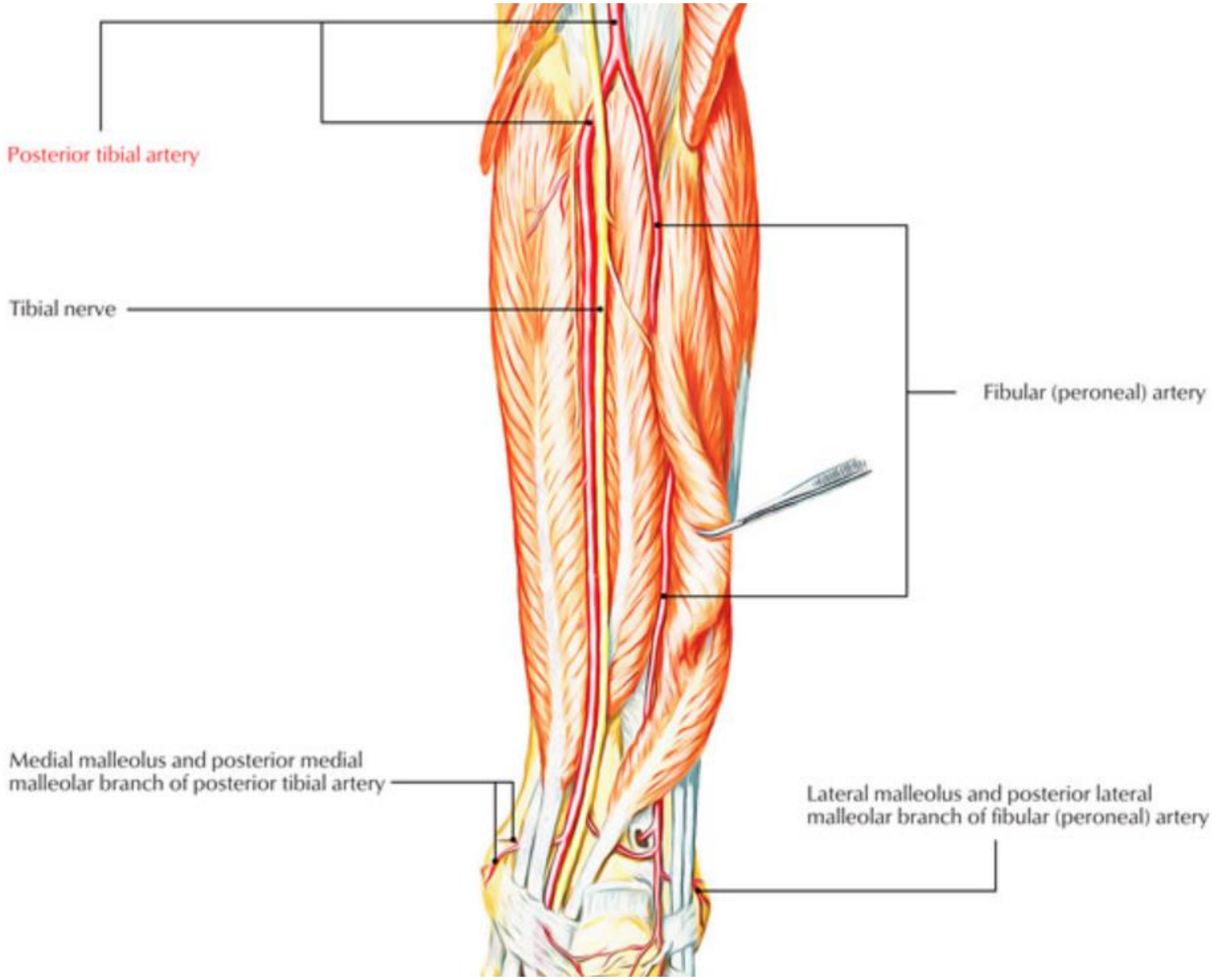

Superficial epigastric artery
Superficial circumflex iliac artery
Lateral circumflex femoral artery
Ascending branch of lateral circumflex femoral artery
Transverse branch of lateral circumflex femoral artery
Medial circumflex femoral artery
Superficial external pudendal artery
Deep external pudendal artery
Deep artery of thigh
Femoral artery

The posterior tibial artery

is the larger of the two terminal branches

Its proximal part is sometimes called the tibioperoneal trunk It gives rise to the peroneal artery 25 cm from its origin

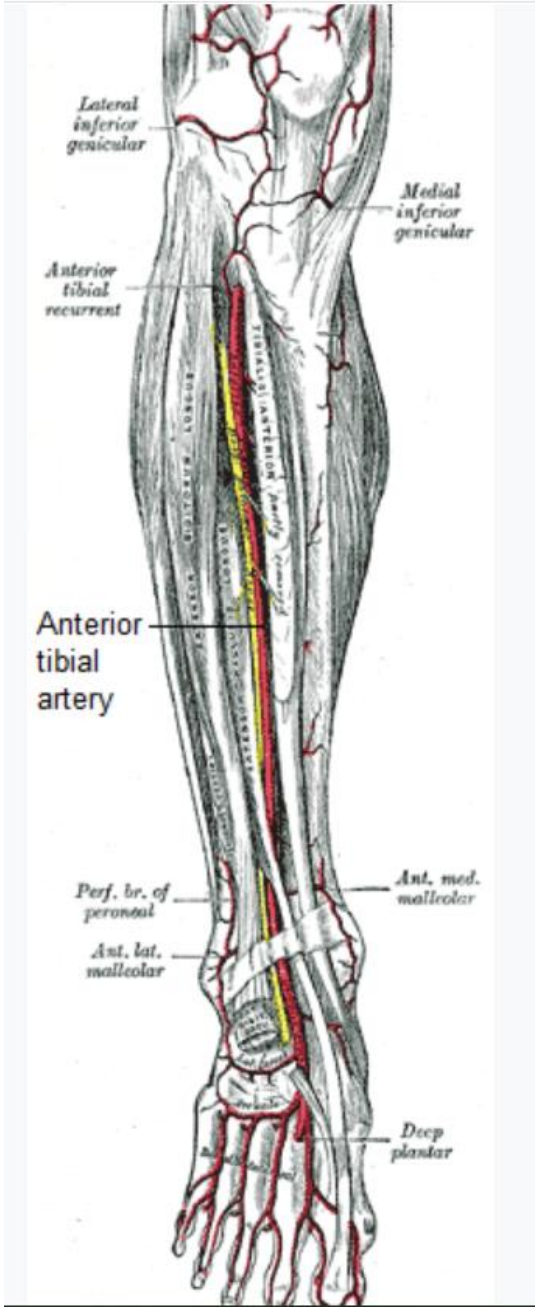
The posterior tibial artery then **passes** between the superficial and deep muscles of theposterior compartment of the lower leg


Posterior tibial artery
Tibial nerve
Fibular (peroneal) artery
Medial malleolus and posterior medial malleolar branch of posterior tibial artery
Lateral malleolus and posterior lateral malleolar branch of fibular (peroneal) artery

The peroneal artery , as it descends, comes to lie close to the medial aspect of the posterior of the fibula

The anterior tibial artery , after it arises from the popliteal artery, passes above the upper margin of the interosseous membrane and descends anterior to this membrane until it becomes superficial at the ankle midway between the malleoli

This continues as **the dorsalis pedis artery** which, having supplied the arcuate artery for the metatarsal and digital arteries, passes between the first and second metatarsals to join the plantar arch


Lateral inferior genicular
Medial inferior genicular
Anterior tibial recurrent
Anterior tibial artery
Perf. br. of peroneal
Ant. lat. malleolar
Ant. med. malleolar
Deep plantar

Radiological features of the arteries of the lower limb

Arteriography of the lower limb

This is performed by catheterization of the femoral artery or, in special circumstances, by translumbar aortography or even by approaching the aortic arch from one of the upper limb arteries

Ultrasound

These arteries can be imaged using ultrasound and Doppler ultrasound, especially where they are superficial, that is,

the common femoral artery in the inguinal region, the popliteal artery in the popliteal fossa and the dorsalis pedis on the dorsum of the foot

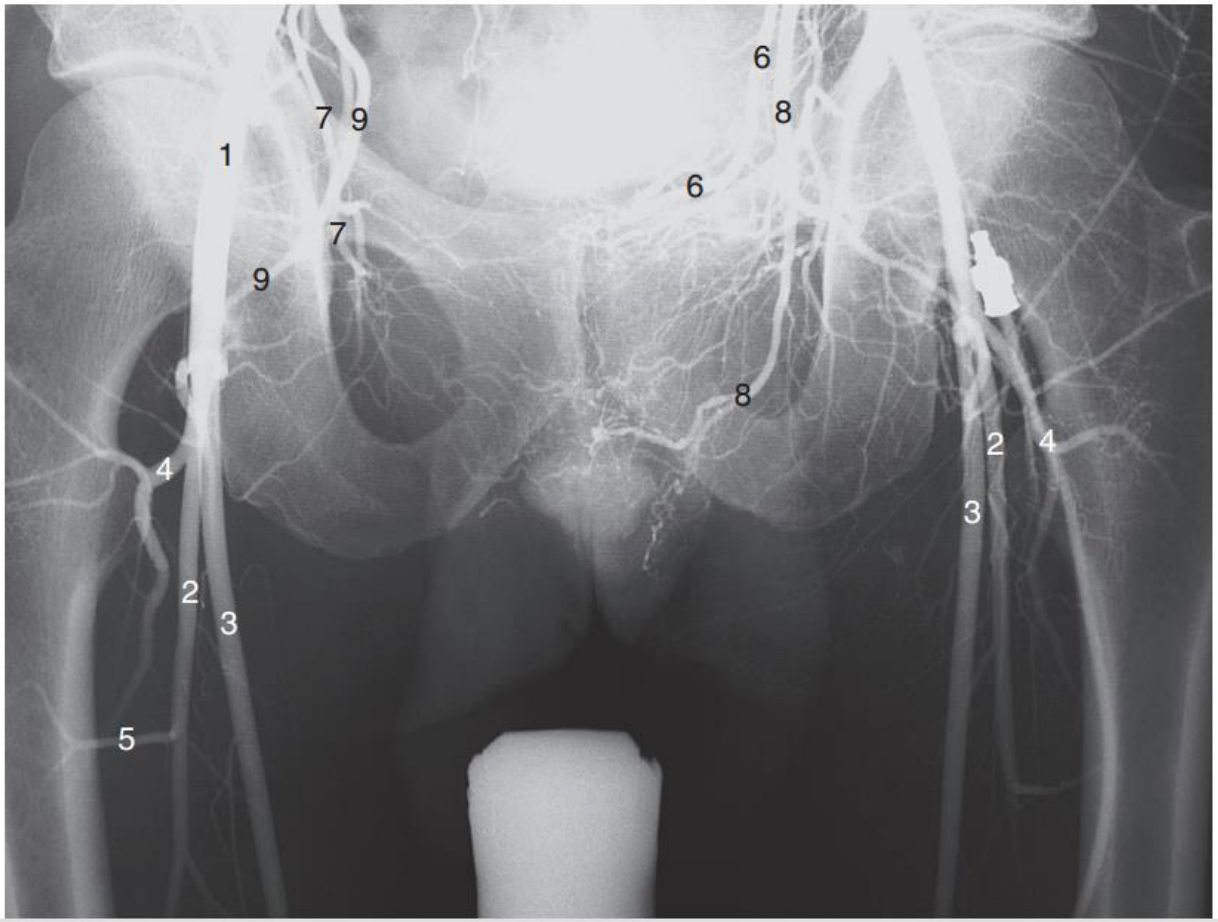
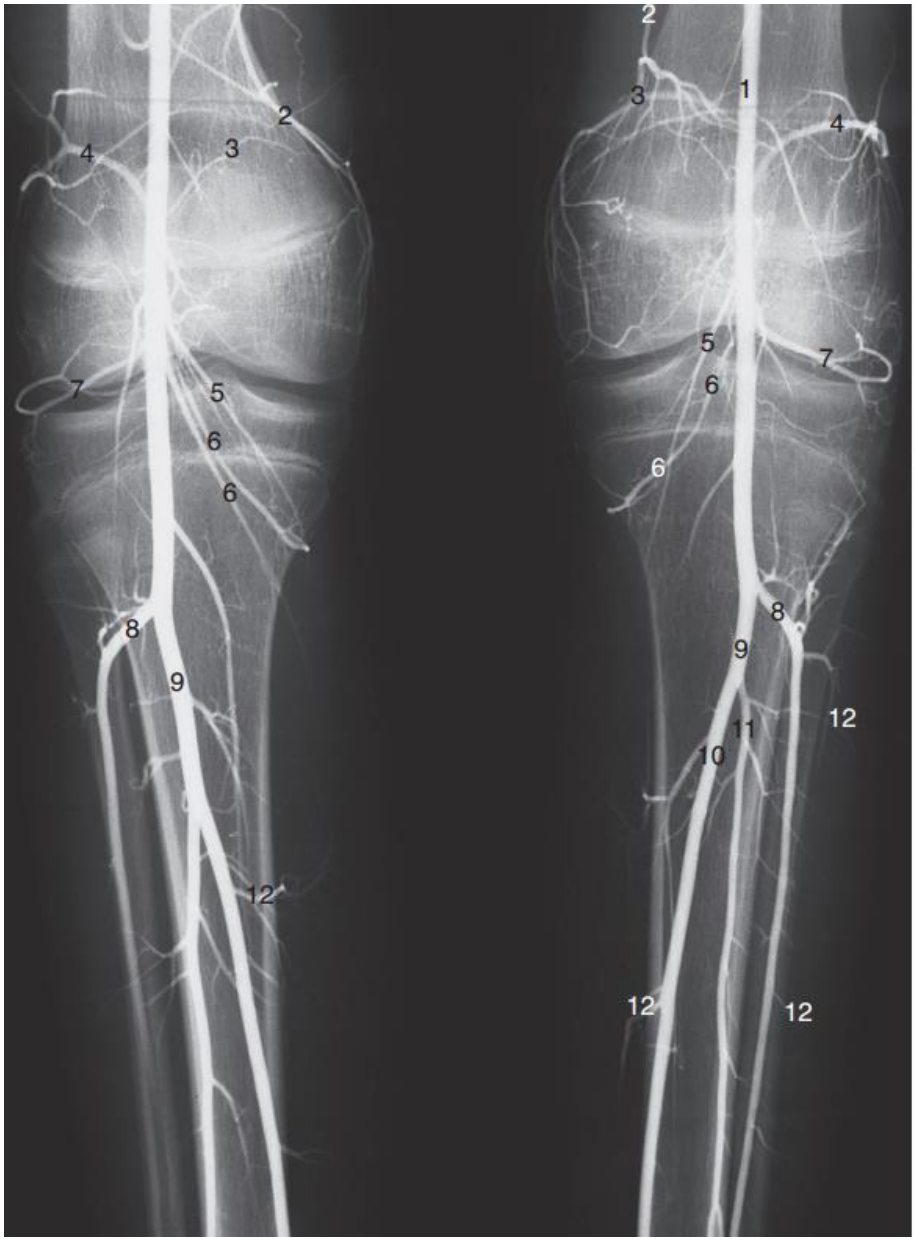


Figure 8.25 • Femoral artery angiogram.

1. Common femoral artery
2. Profunda femoris artery
3. Superficial femoral artery
4. Lateral circumflex femoral artery
5. Perforating artery
6. Superior vesical artery
7. Obturator artery
8. Internal pudendal artery
9. Inferior gluteal artery



1. Popliteal artery
2. Descending genicular artery
3. Medial superior genicular artery
4. Lateral superior genicular artery
5. Middle genicular artery
6. Medial inferior genicular artery
7. Lateral inferior genicular artery
8. Anterior tibial artery
9. Tibioperoneal trunk
10. Posterior tibial artery
11. Peroneal artery
12. Muscular branches

The veins of the lower limb

Venous blood is drained from the lower limb by a system of deep and superficial veins

The normal direction of flow is from superficial to deep veins

Valves are more numerous in the superficial than in the deep system, and more numerous distally than proximally The valves and the deep fascia of the lower limb help to propel the blood towards theheart

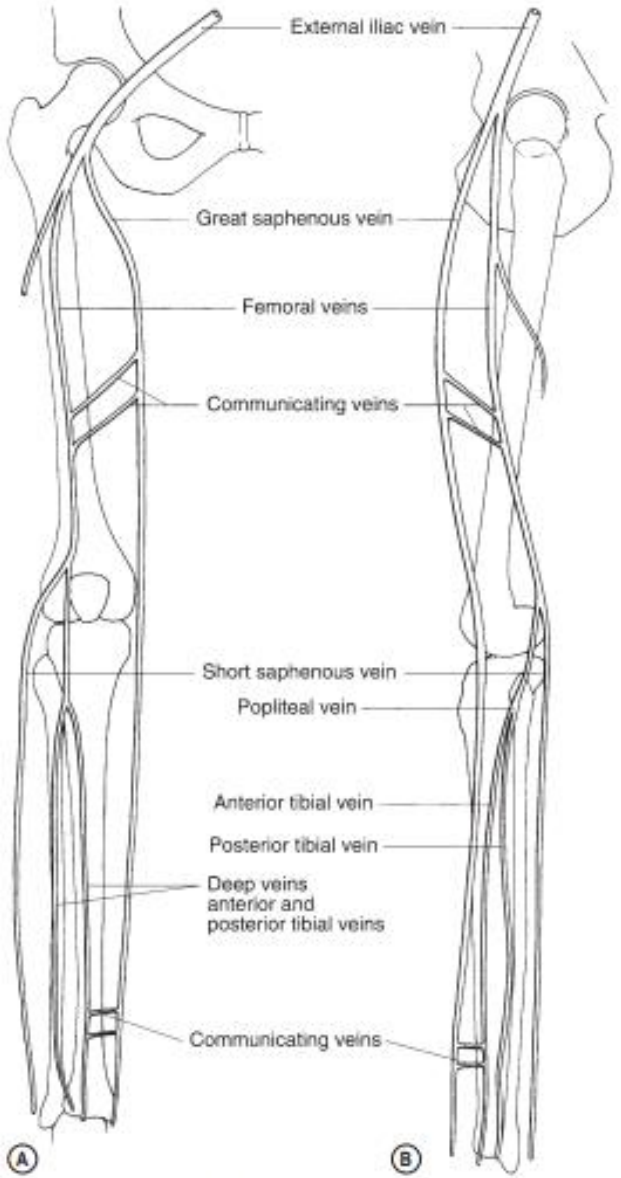


Figure 8.28 • Veins of the lower limb as seen on venography.

The long saphenous vein

The superficial veins are the long and short saphenous veins

The long saphenous vein starts on the medial side of the dorsum of the foot and passes anterior to the medial malleolus.

It ascends vertically so that it lies posterior to the medial side of the knee and anterior to the upper thigh the thigh, The long saphenous vein drains into the femoral vein

The short saphenous vein

The short saphenous vein begins on the lateral side of the dorsum of the foot and passes posterior to the lateral malleolus

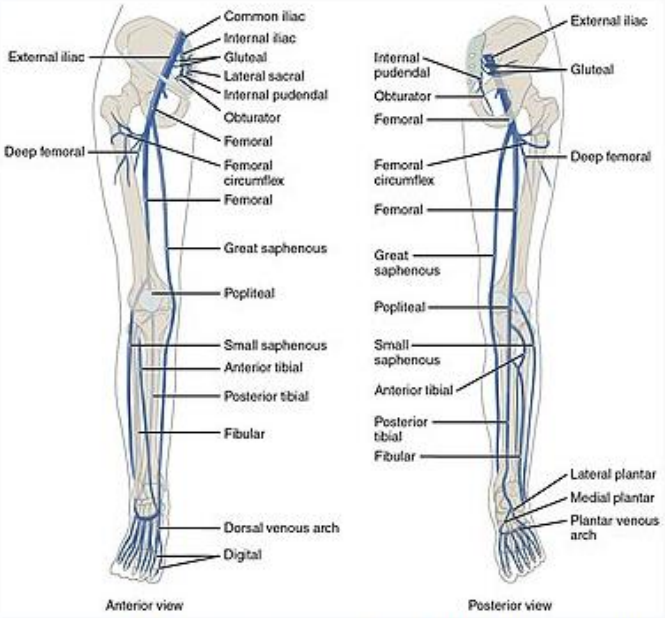
It ascends on the back of the calf and pierces

the deep fascia over the popliteal fossa to enter the popliteal vein

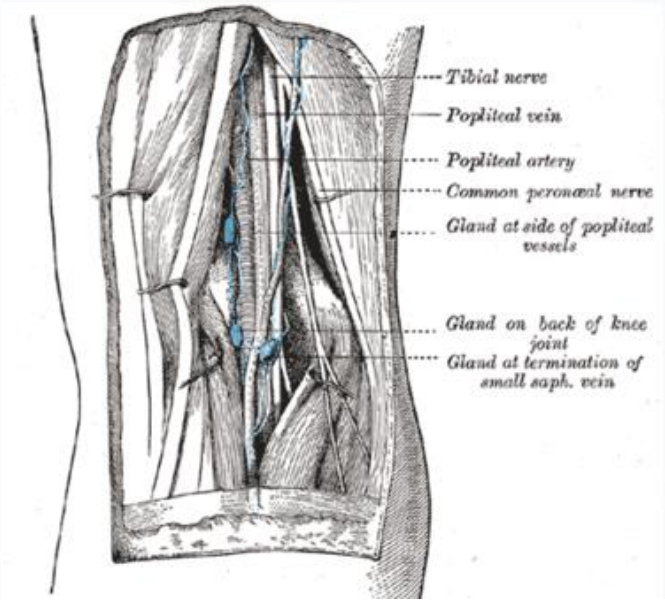
The deep veins of the lower limb accompany the arteries,

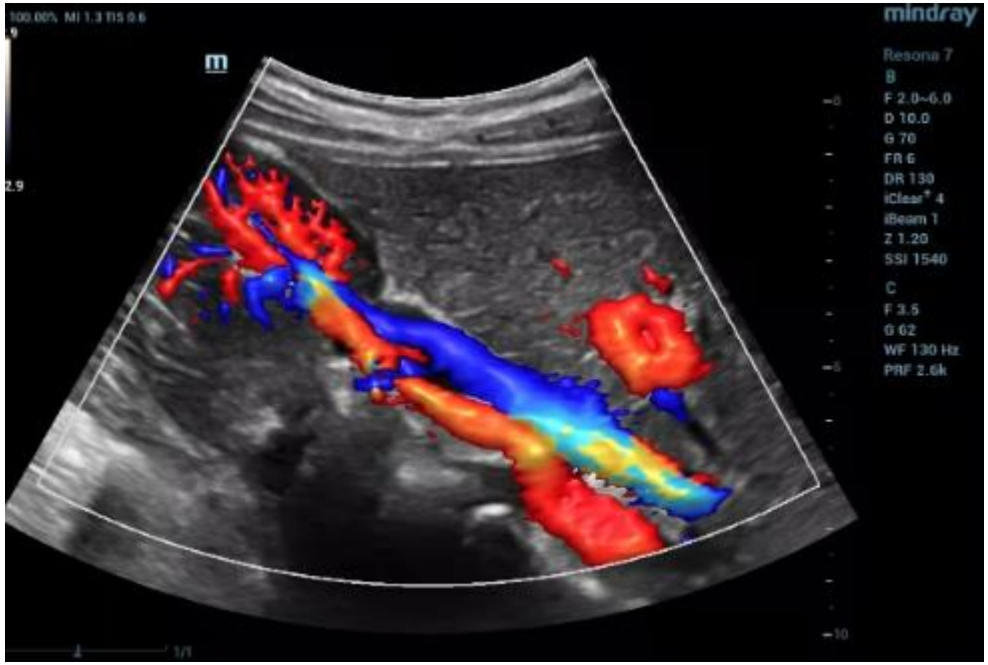
They are **usually paired**, although more than two veins may accompany one artery

Perforating (communicating) veins carry blood from superficial veins to the deep veins and are variable in site and number



Front and back views of popliteal and other veins





Radiological features of the veins of the lower limb

Venography of the lower limb is usually performed in cases of suspected thrombosis of the deep veins and is achieved by injection of contrast medium into the veins on the dorsum of the foot If a tourniquet is applied to the leg just proximal to the first perforating veins then contrast passes into the deep veins and not into the superficial veins

The introduction of **Doppler venography** has almost completely replaced the need for contrast venography, which is now only performed in complex or atypical clinical circumstances