



CVS....

Lecture (10)

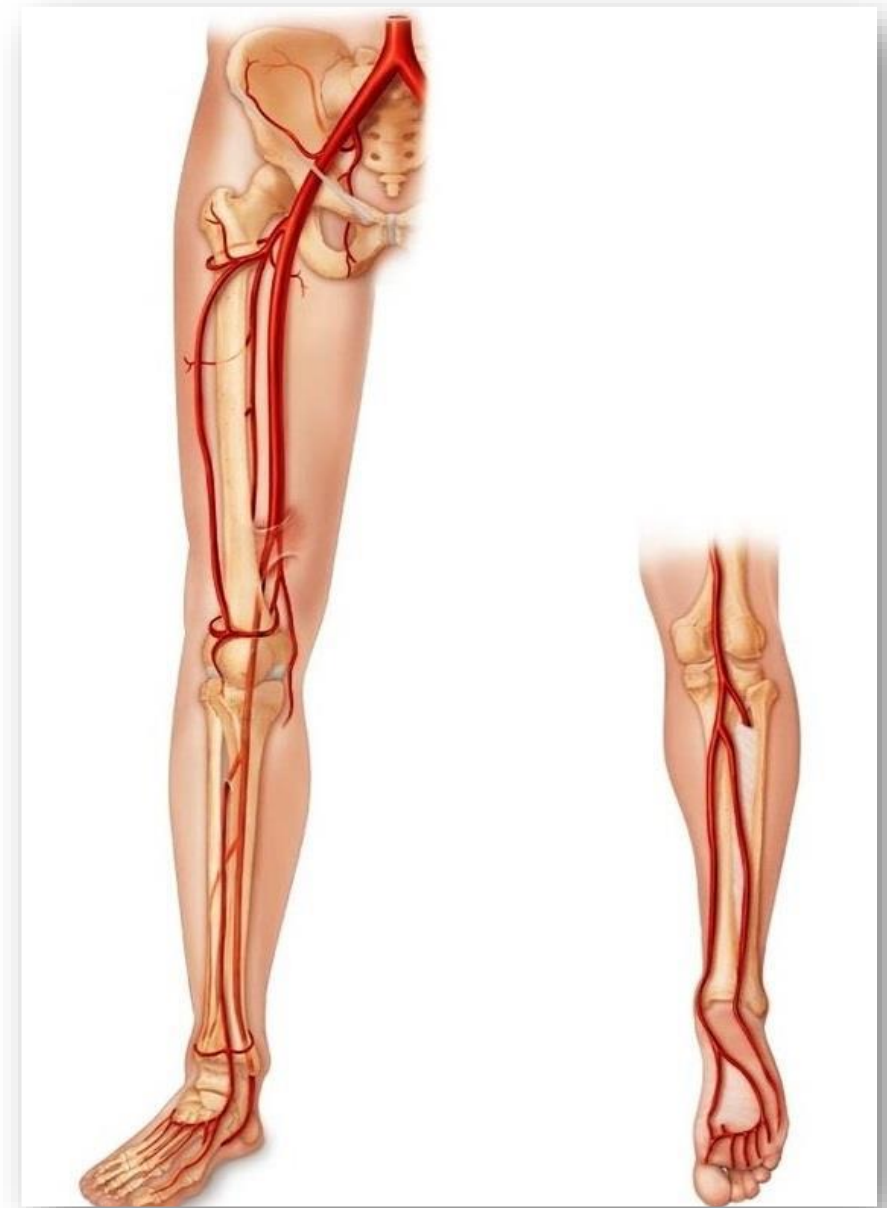
Arteries & veins in the lower limb region

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ILOs

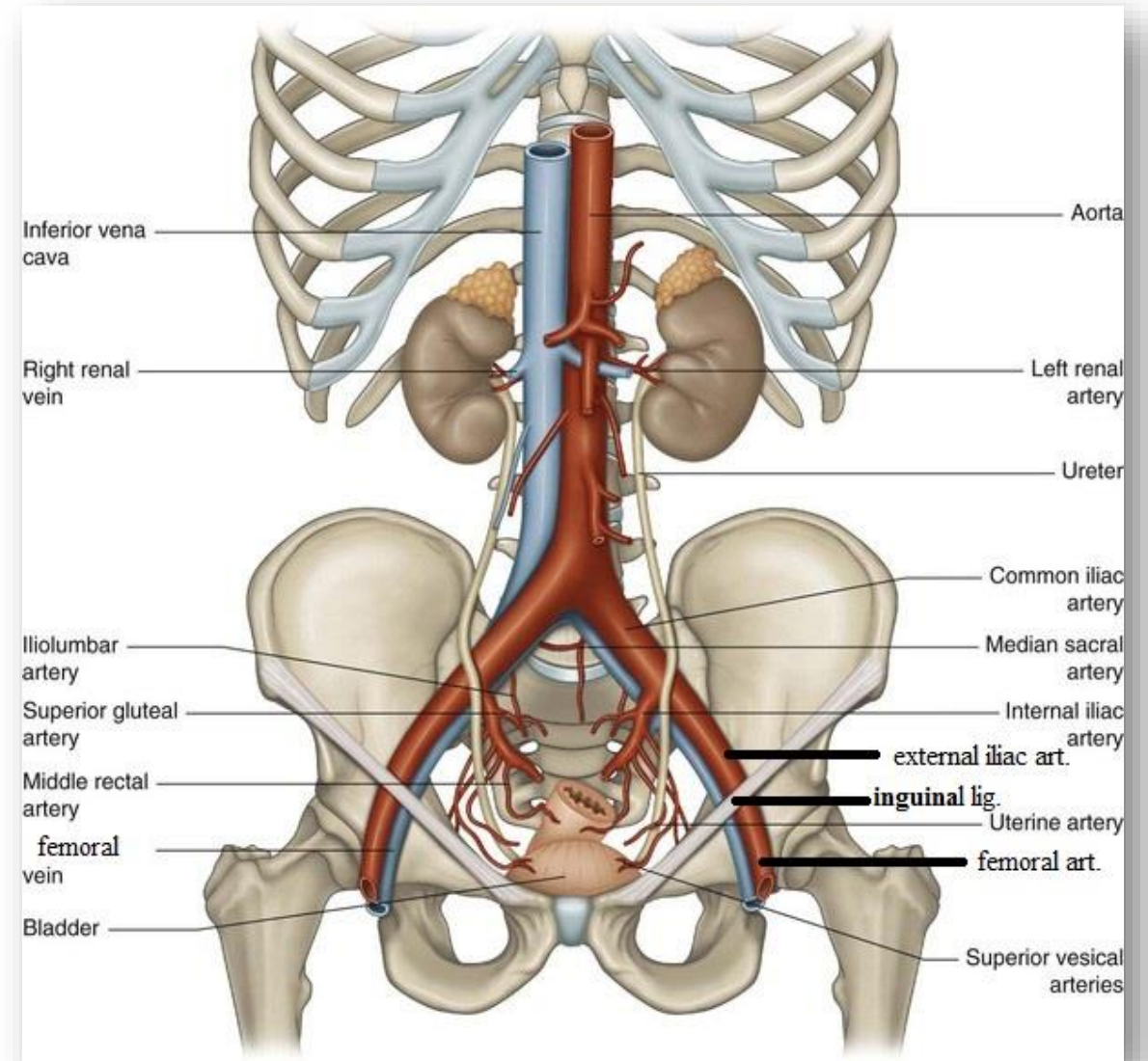
1. To describe the course, relations and branches of the femoral & the profunda femoris arteries.
2. To describe the course, relations and branches of the popliteal artery.
3. To describe the cruciate and trochanteric anastomosis.
4. To describe the course, relations and branches of the anterior tibial artery.
5. To describe the course, relations and branches of the posterior tibial artery.
6. To describe the anastomosis around the knee joint.
7. To describe the course, relations and branches of the dorsalis pedis, medial plantar and lateral plantar arteries.
8. To describe the location and branches of the plantar arch.
9. To describe veins of lower limb.



Femoral Artery

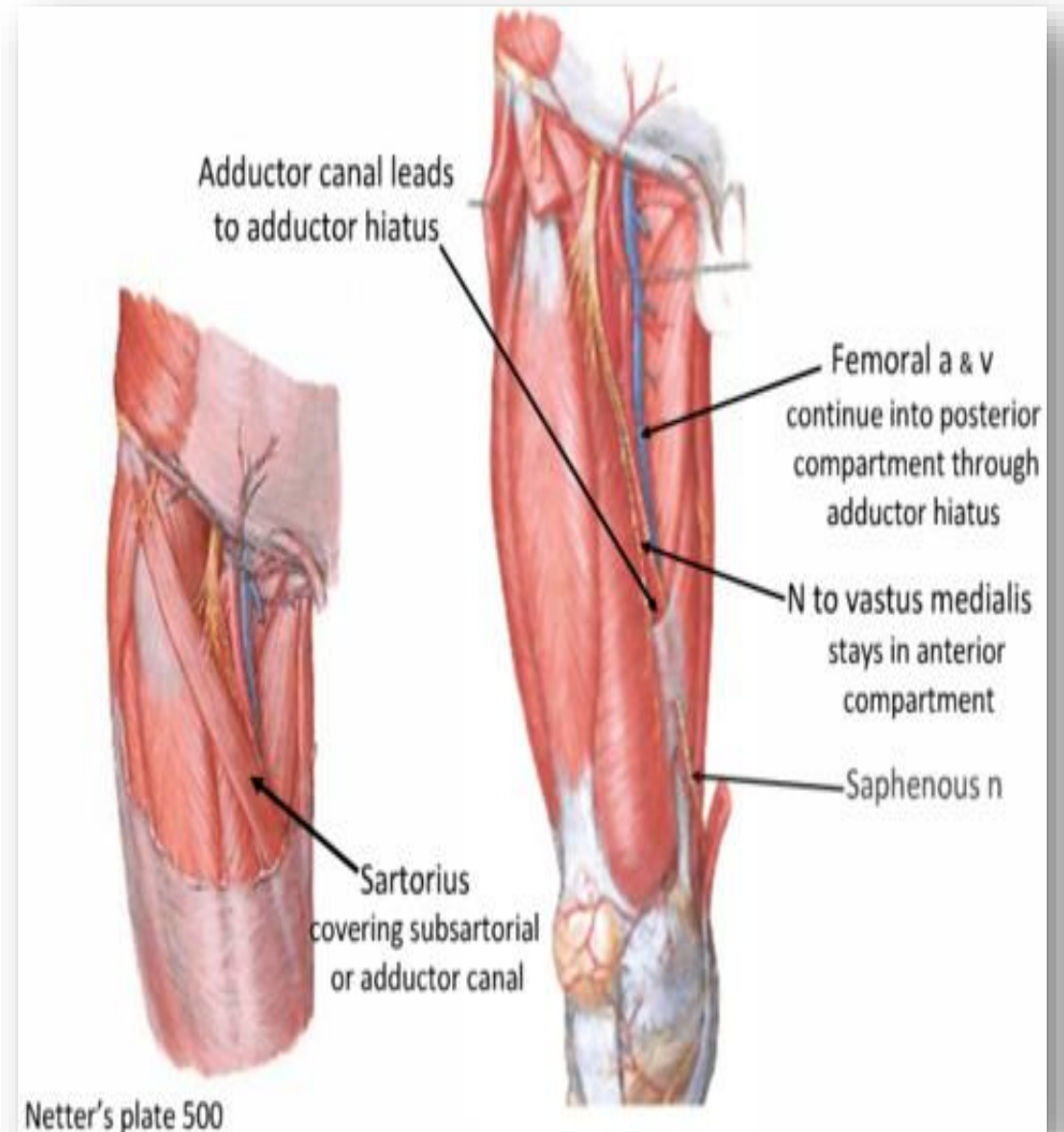
Origin:

- It is a **continuation** of the external iliac artery.
- It **begins** behind the inguinal ligament, midway between the anterior superior iliac spine and the pubic symphysis.



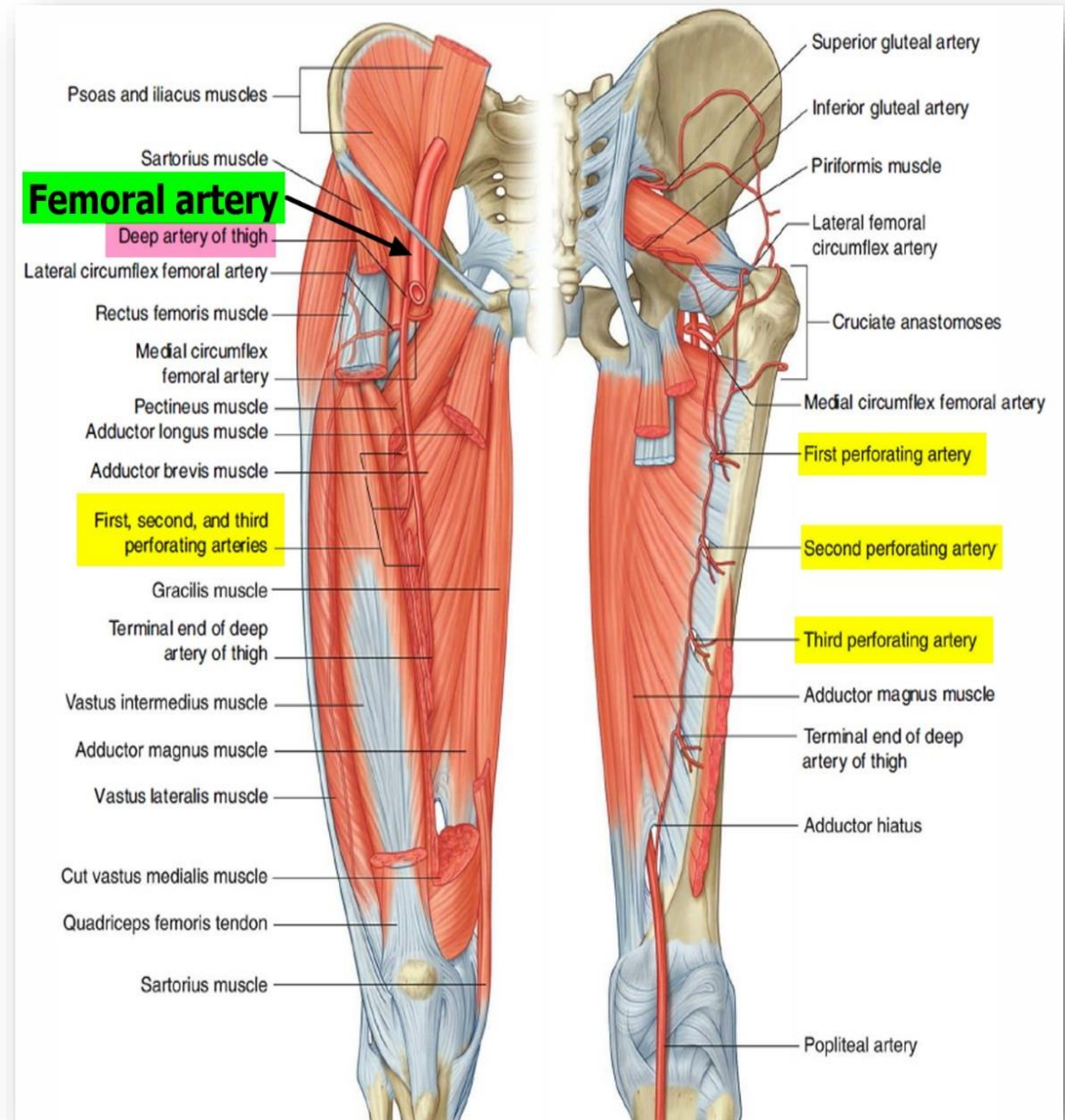
Course of the femoral artery:

- It descends along the anteromedial part of the thigh in the **femoral triangle**.
- Then it enters and passes through the **adductor (sub-sartorial) canal**.



End of the femoral artery:

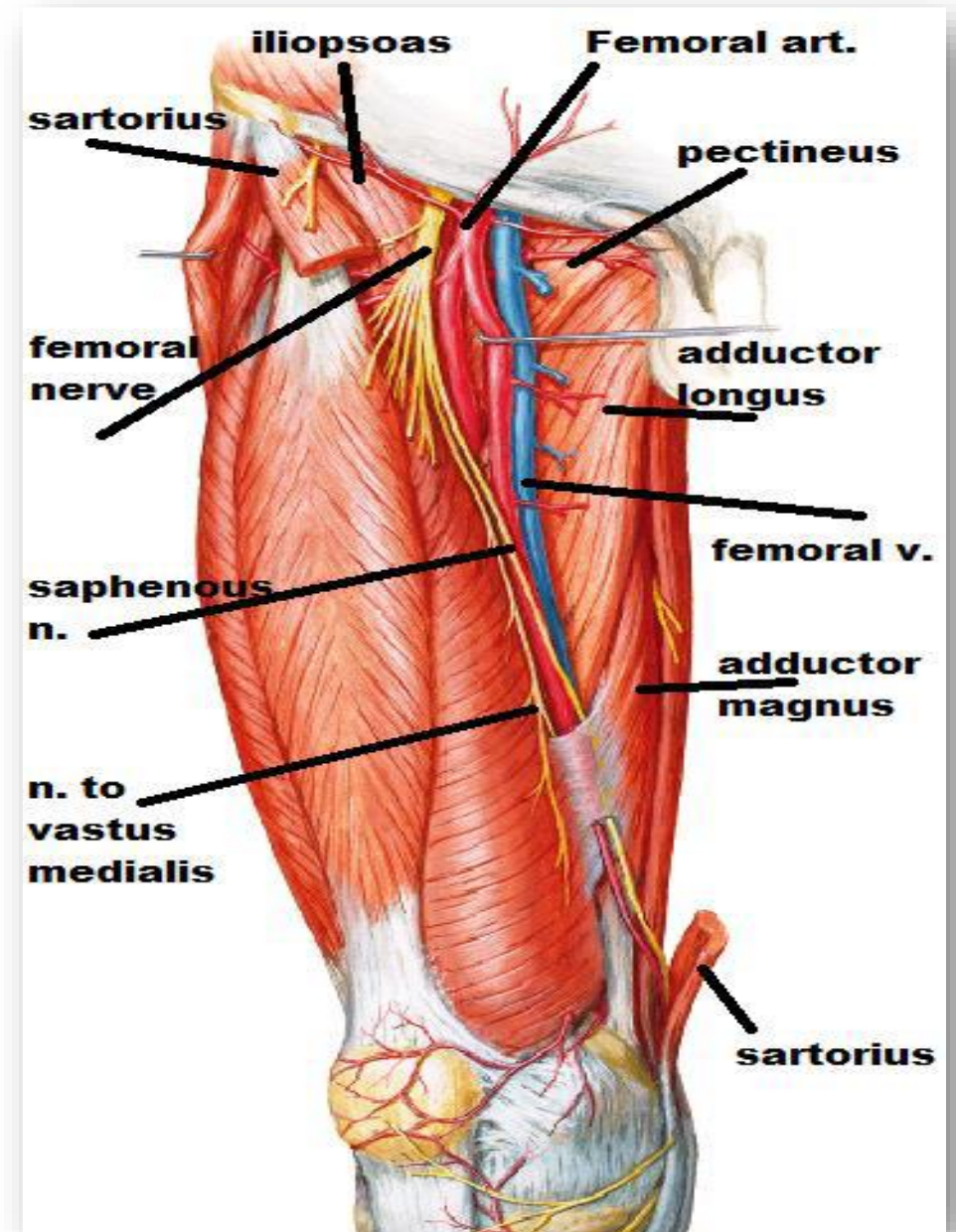
- It becomes the popliteal artery as it passes through an opening in adductor magnus muscle (adductor hiatus).



Relations of the femoral Artery:

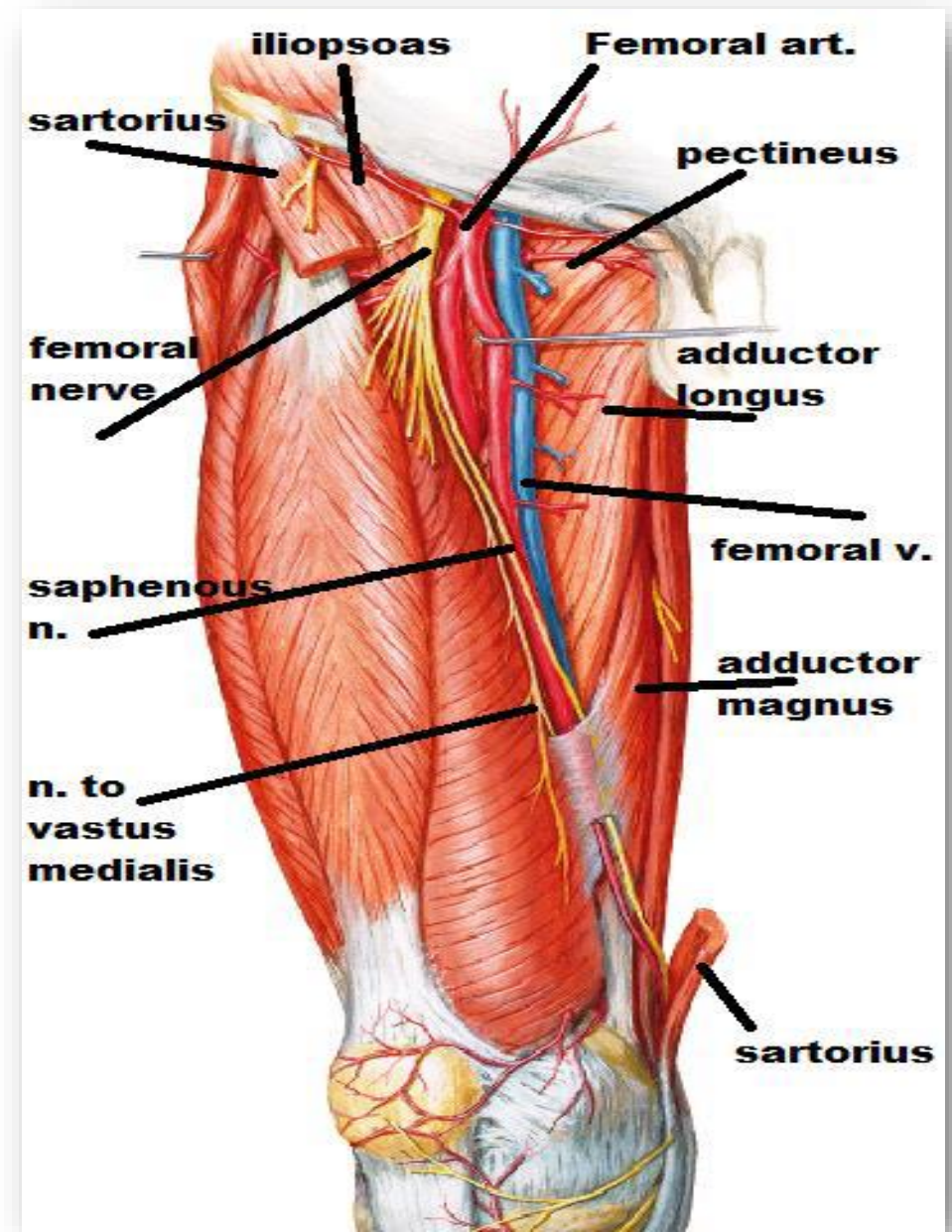
At the femoral triangle:

- **Anteriorly:** Skin & fascia.
- **Posteriorly:** From above downward,
 - **Iliopsoas muscle;** separate the artery from the hip joint.
 - **Pectineus muscle.**
 - **Adductor longus.**
- **Lateral to the artery:** Femoral nerve.
- **Medial to the artery:** Femoral vein.



Femoral artery within the adductor canal:

- It is **covered** by skin, fasciae & Sartorius muscle.
- It is **anterior to** adductor longus & magnus muscles.
- **Femoral vein** is posterior to the femoral artery in this canal.



Compression of the femoral artery:

- It is most effective just distal to the inguinal ligament, where it is superficial and separated from the bone (iliopubic eminence) only by the iliopsoas tendon.
- But arterial injury proximal to the inguinal ligament, such as laceration by a knife, cannot be controlled simply by compression.



Branches of femoral artery:

Superficial branches:

1- Superficial circumflex iliac artery:

- Anastomosing around ASIS.

2-Superficial epigastric artery:

- Supplies skin of the anterior abdominal wall.

3-Superficial external pudendal artery:

- Supply the penile, scrotal or labial skin.

Deep branches:

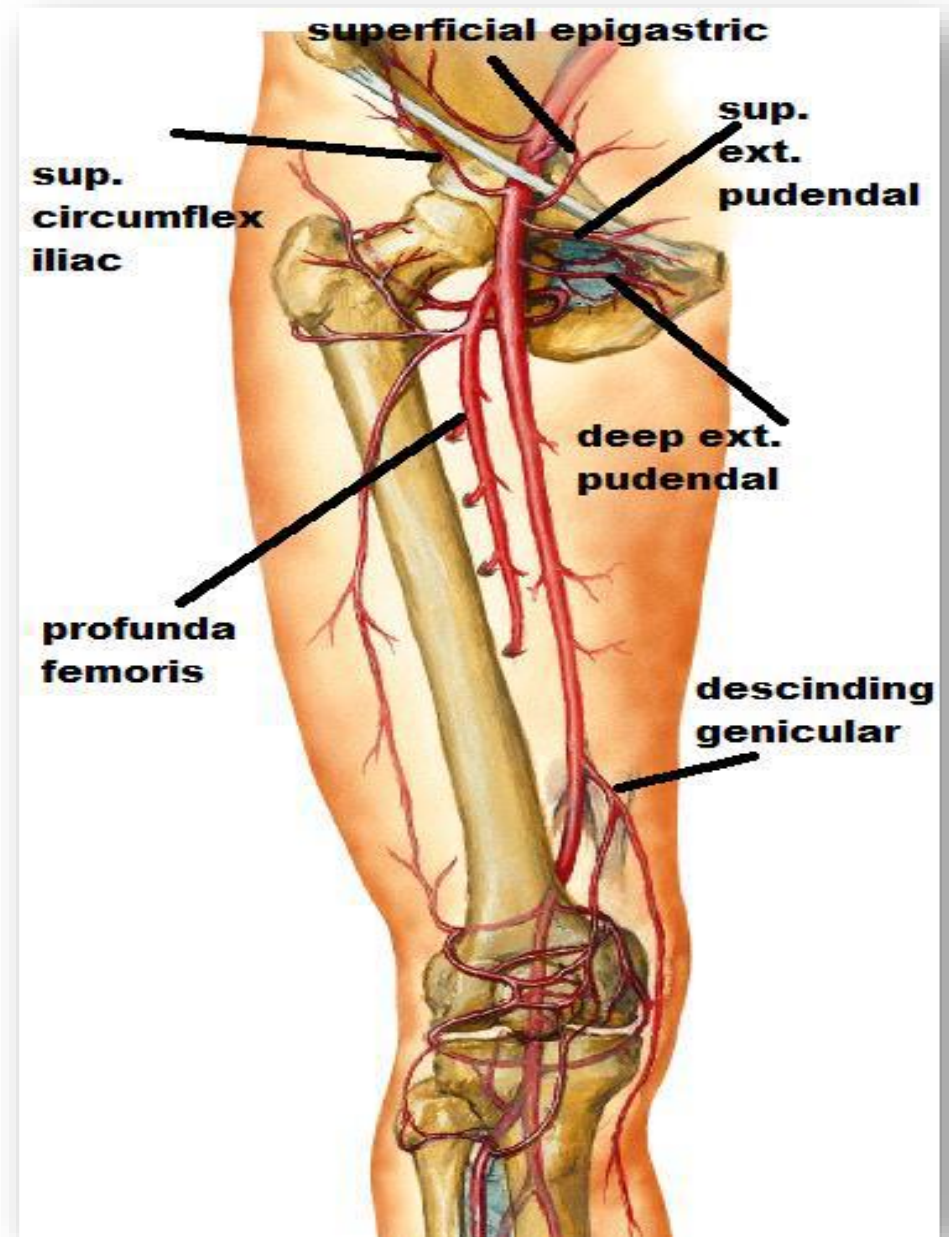
1-Deep external pudendal artery:

- Supply the skin of the perineum and scrotal or labial skin.

2-Descending genicular artery:

- Share in anastomosis around knee.

3-Profunda femoris artery.



Profunda femoris artery:

Origin:

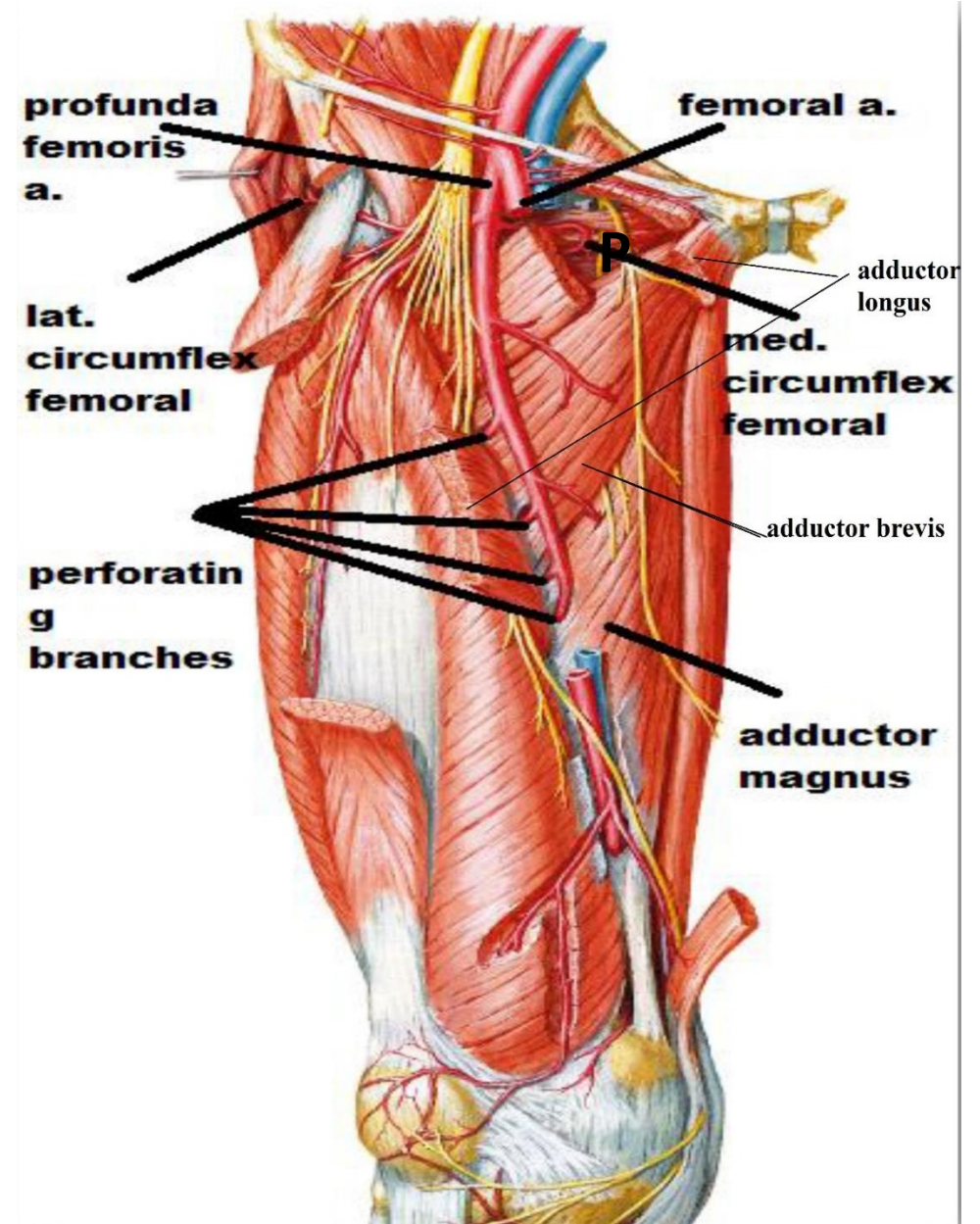
- From the lateral aspect of the femoral artery.

Course:

- It spirals posterior to the femoral vessels to reach the medial side of the femur.

End:

- As it pierces the adductor magnus muscle as the fourth perforating artery.



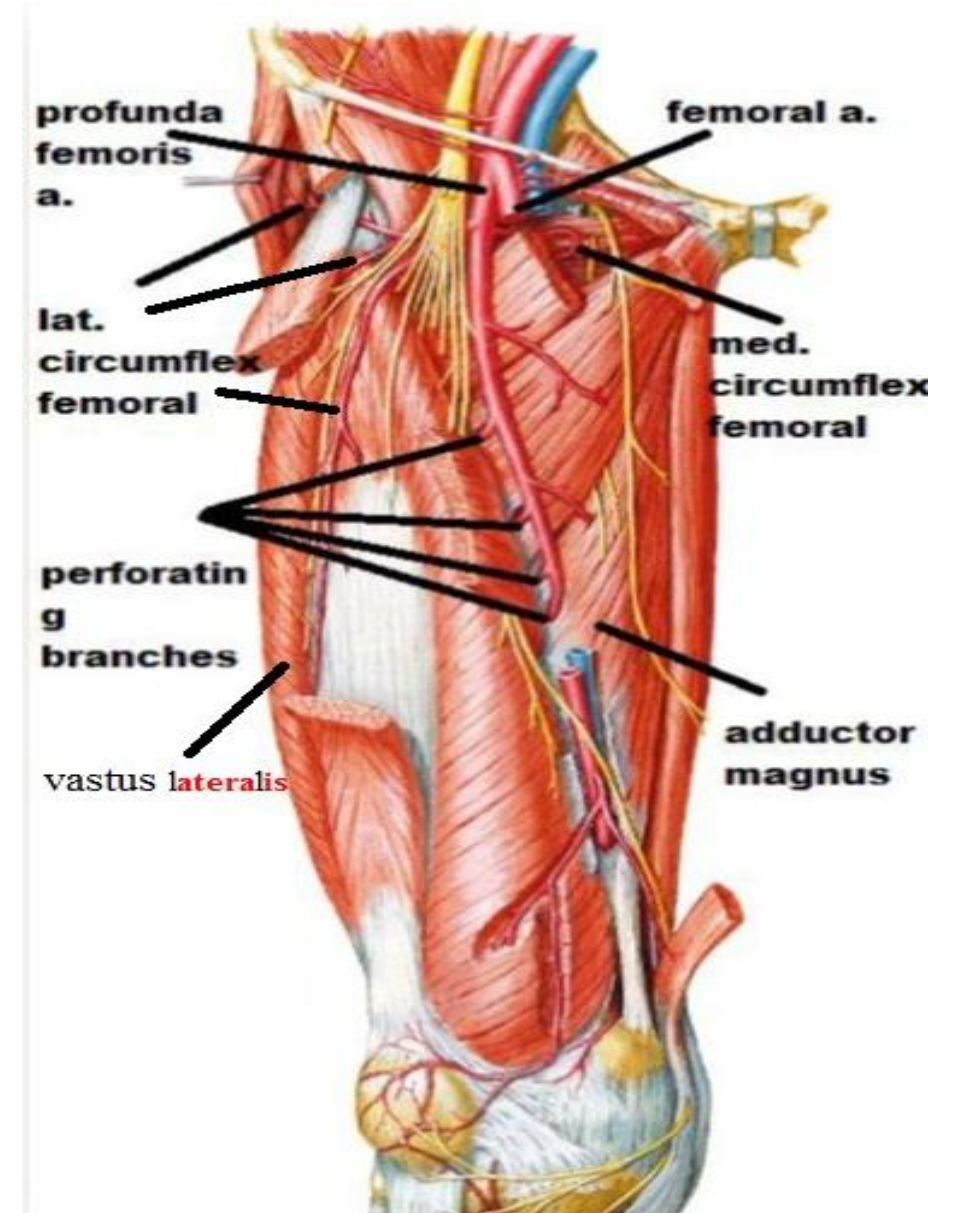
Branches of profunda femoris artery:

1-Muscular branches:

- For muscles of the thigh.

2- Lateral circumflex femoral artery:

- It divides into;
 - **Ascending branch.**
 - **Transverse branch.**
 - **Descending branch;** Share in anastomosing around knee

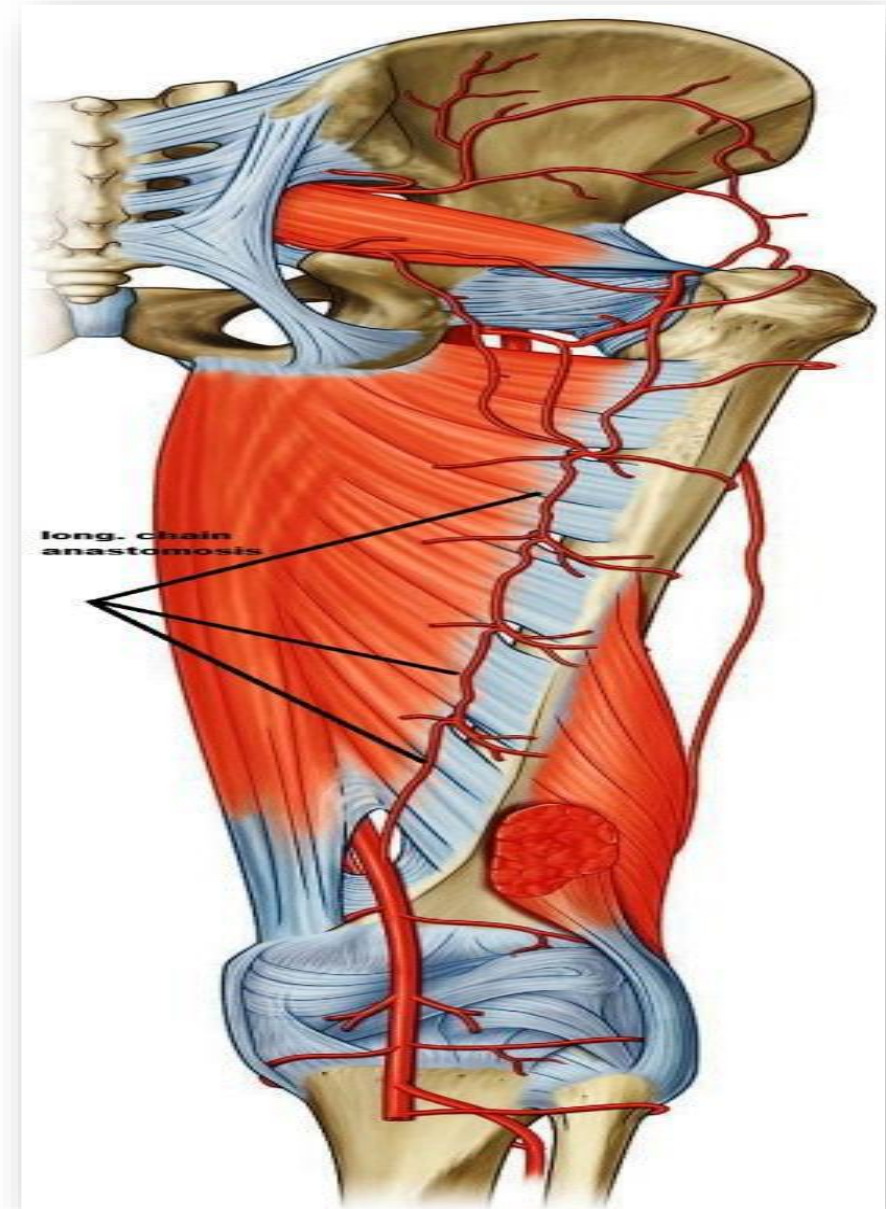


3- Medial circumflex femoral artery

- Dividing into;
 - **Ascending branch.**
 - **Transverse branch.**

4- Perforating arteries

- Three perforating, **perforate the adductor magnus** to reach the flexor aspect of the thigh.
- They anastomose forming longitudinal chain of anastomosis.

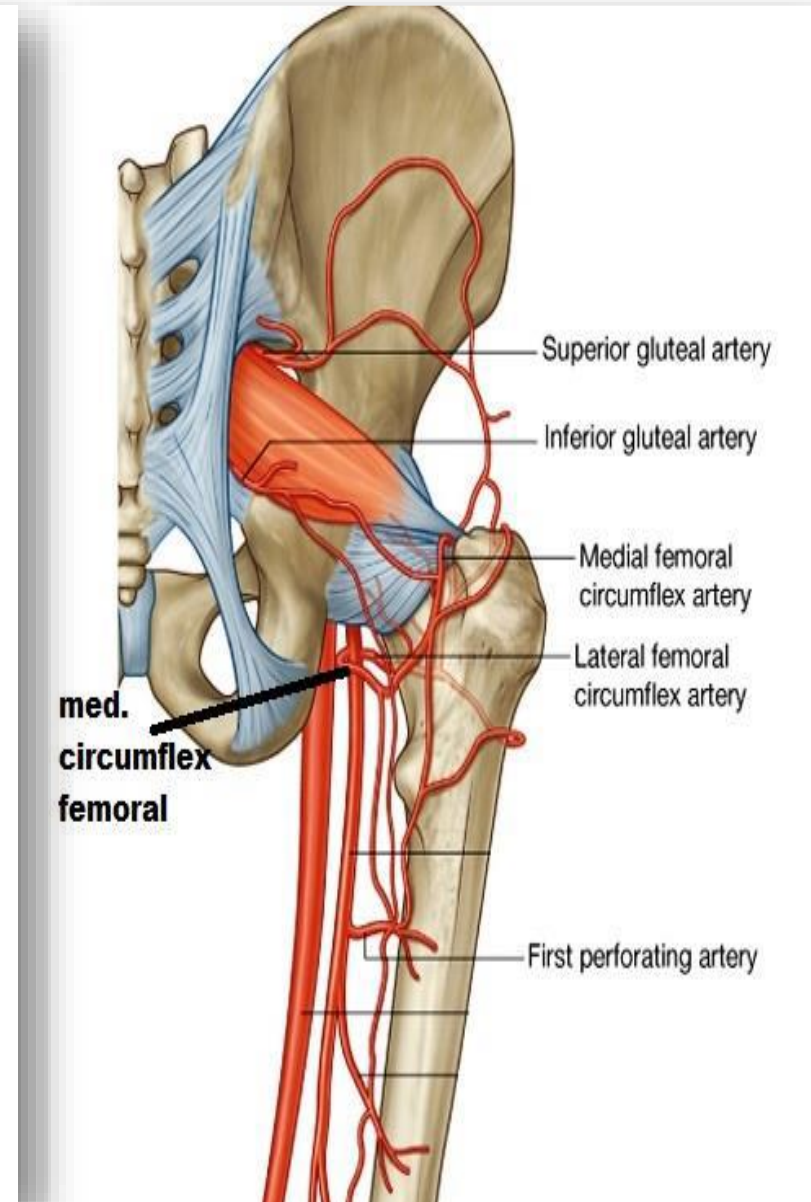
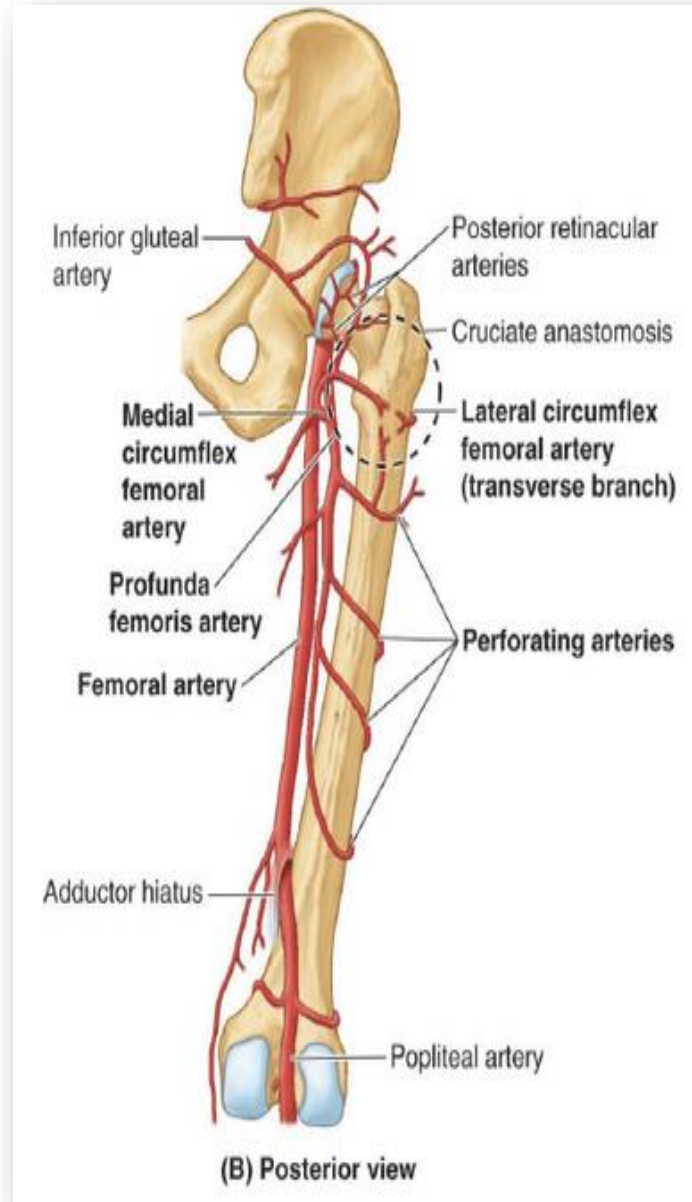


Trochanteric anastomosis

It is an **anastomosis between;**

- Ascending branches of the **medial & lateral circumflex femoral artery.**
- Descending branch of the **superior gluteal artery.**

It is the main blood supply to the head & neck of the femur.



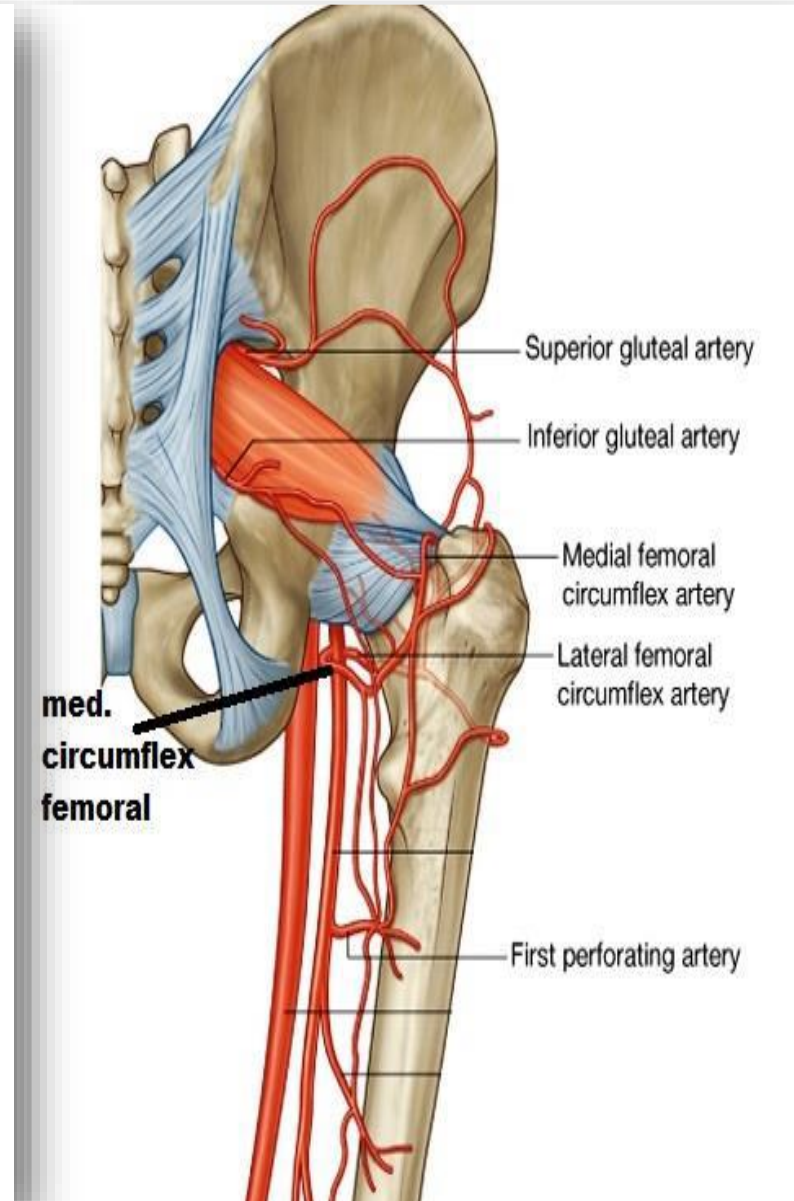
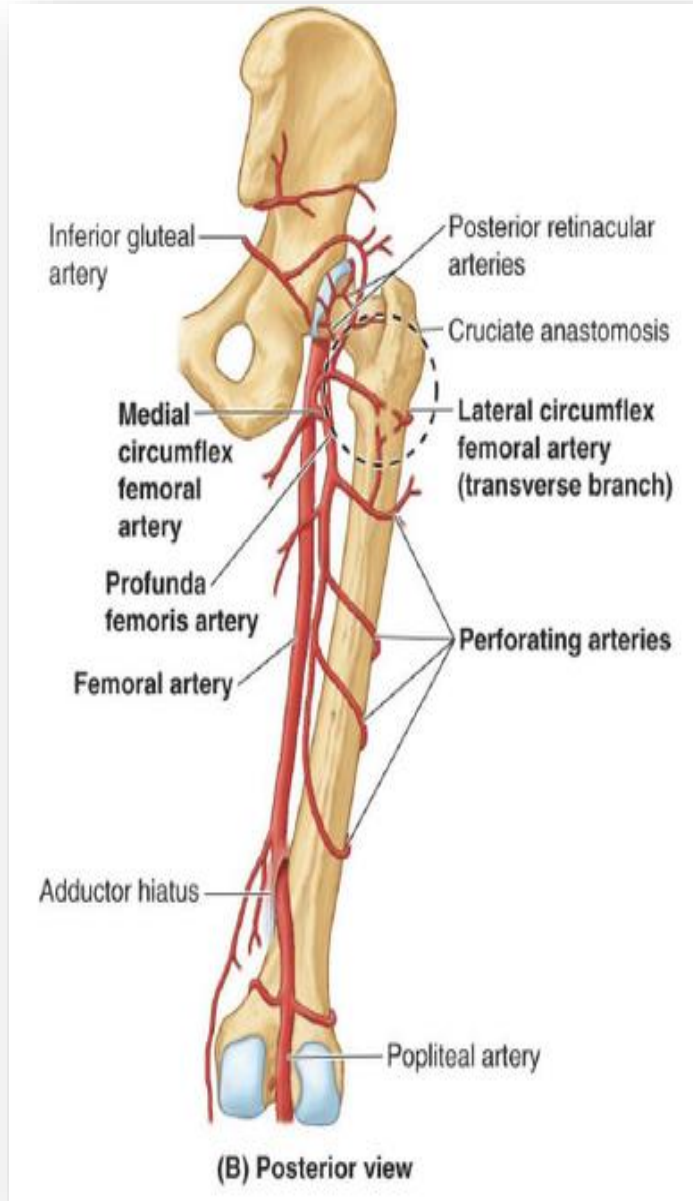
Cruciate anastomosis

It is an **anastomosis between;**

- Transverse branches of the **medial and lateral circumflex femoral arteries.**
- Ascending branch from the **first perforating artery**
- Descending branch of the **inferior gluteal artery.**

Function:

- It is anastomosis between branches of internal iliac artery & femoral artery.
- So it **provide an alternative route** for the blood supply of the lower limb when there is a blockage of the blood flow between the external iliac and femoral arteries.



Popliteal Artery

- It is the main blood supply to the knee, leg and foot.

Origin:

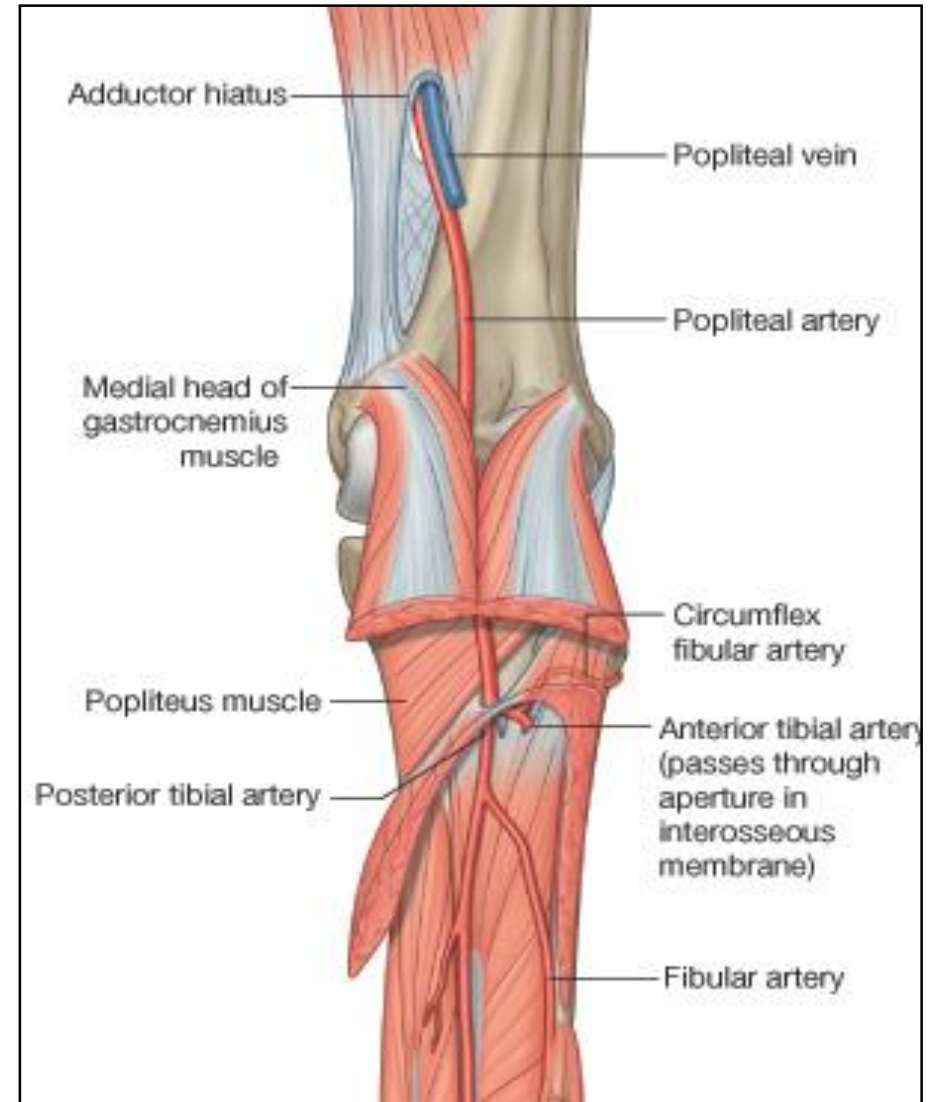
- It is the continuation of the femoral artery. It begins at the adductor hiatus.

Course:

- It descends as the most deepest structure in the popliteal fossa.

Ends:

- **It ends at** the lower border of the popliteus muscle **by dividing into** the anterior and posterior tibial arteries.

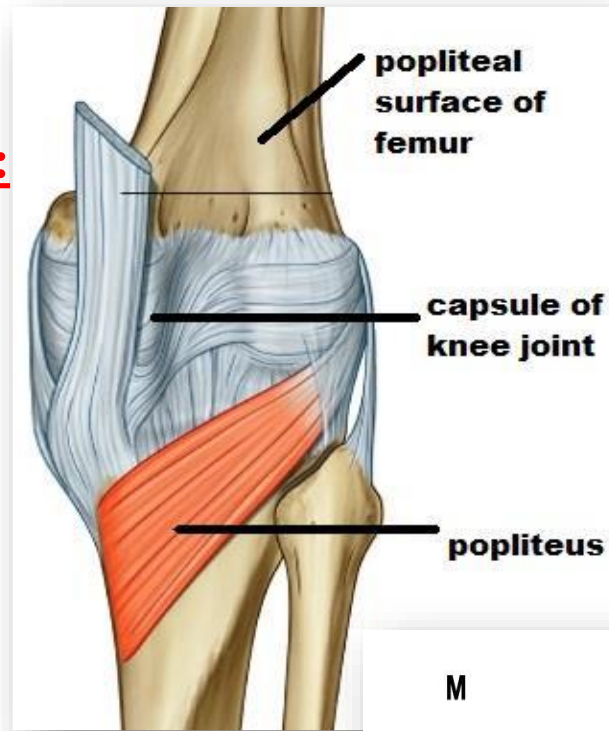


Relations of the popliteal artery:

Anterior relations (deep):

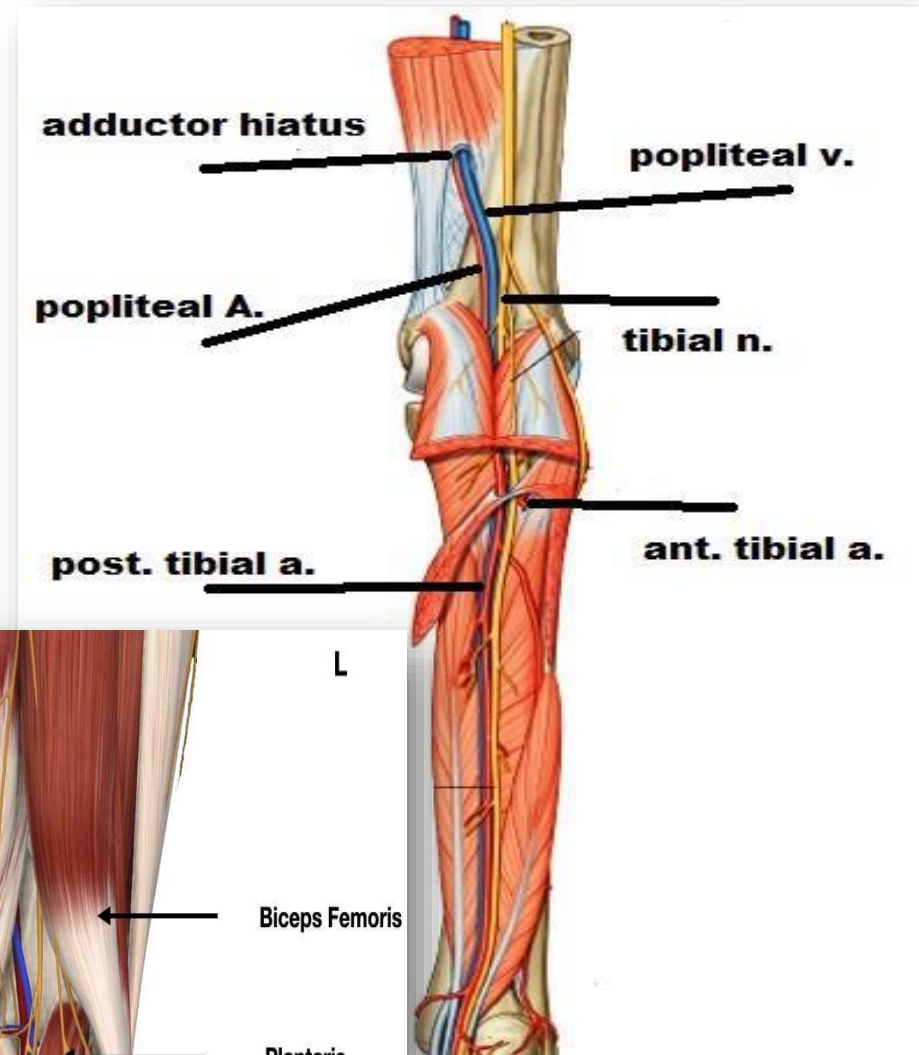
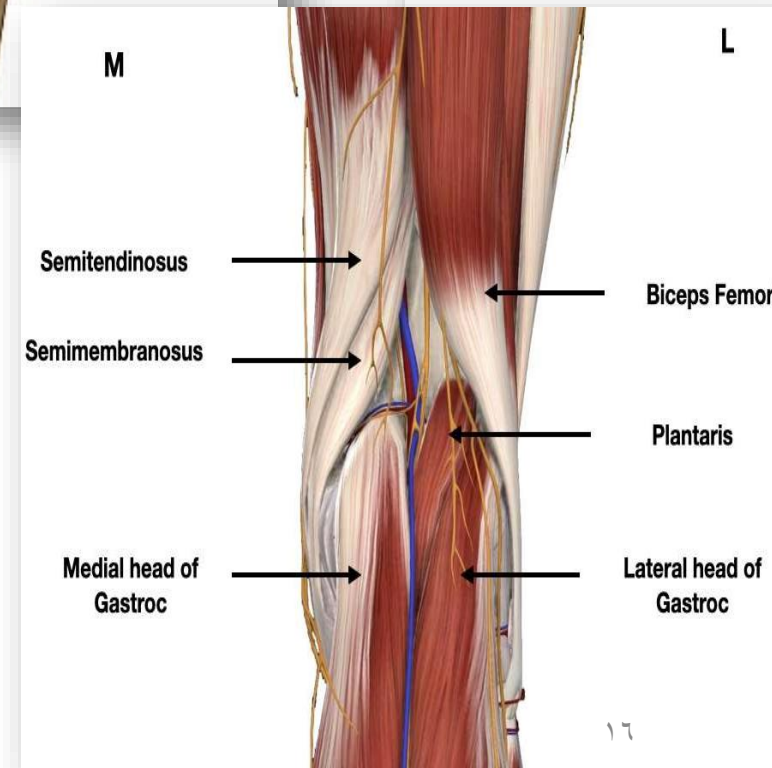
From above downwards;

- Popliteal surface of femur.
- Capsule of knee joint.
- Popliteus muscle.



Posterior relations (superficial):

- Semimembranosus muscle.
- Gastrocnemius muscle.
- It crossed superficially by popliteal vein & tibial nerve.



Branches of Popliteal Artery:

1-Muscular branches:

2-Genicular branches (five) see the figure:

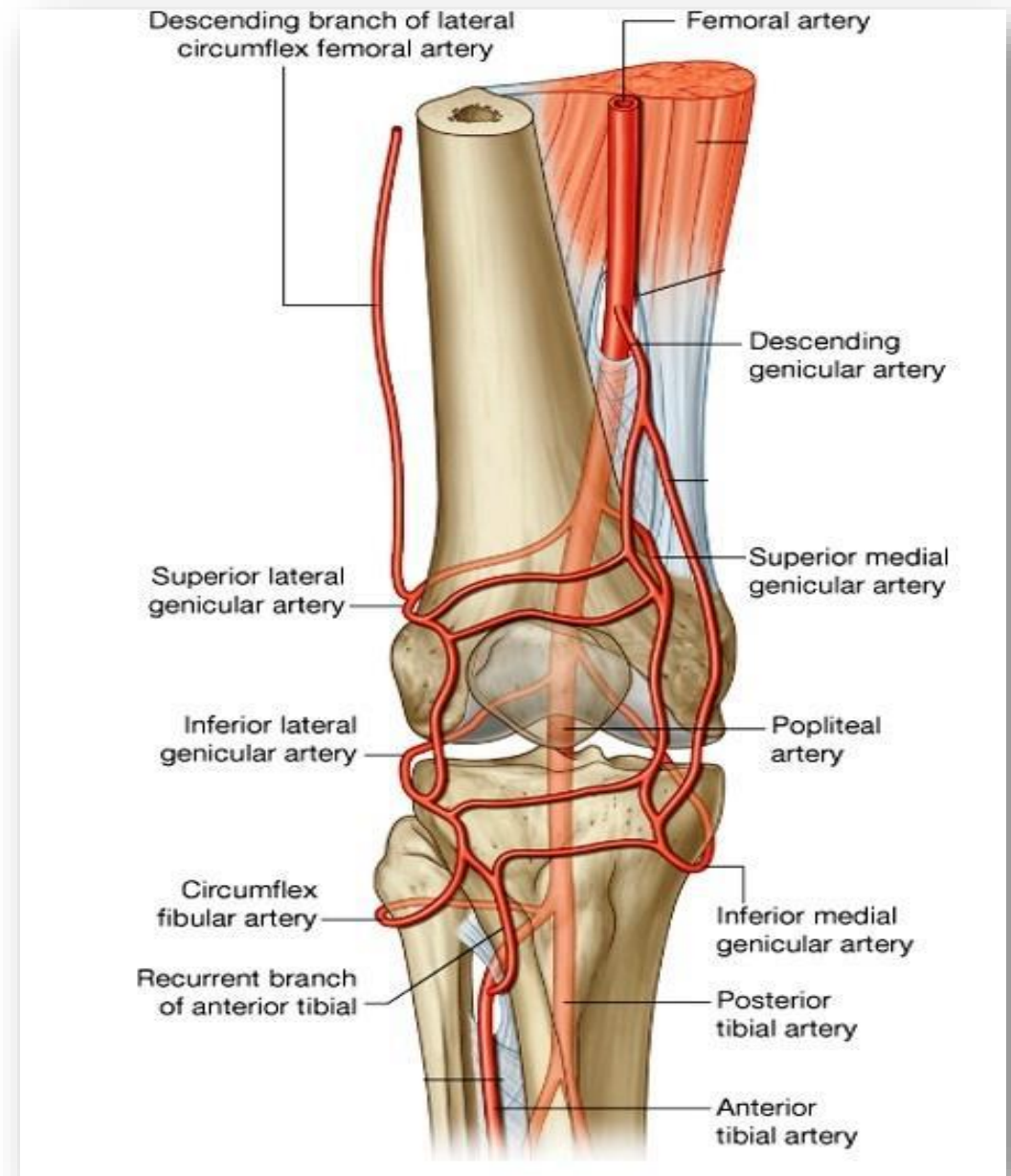
- To the knee joint & share in anastomosis around it.

3-Terminal branches:

- Anterior tibial artery.
- Posterior tibial artery.

Arteries share in anastomosis around knee:

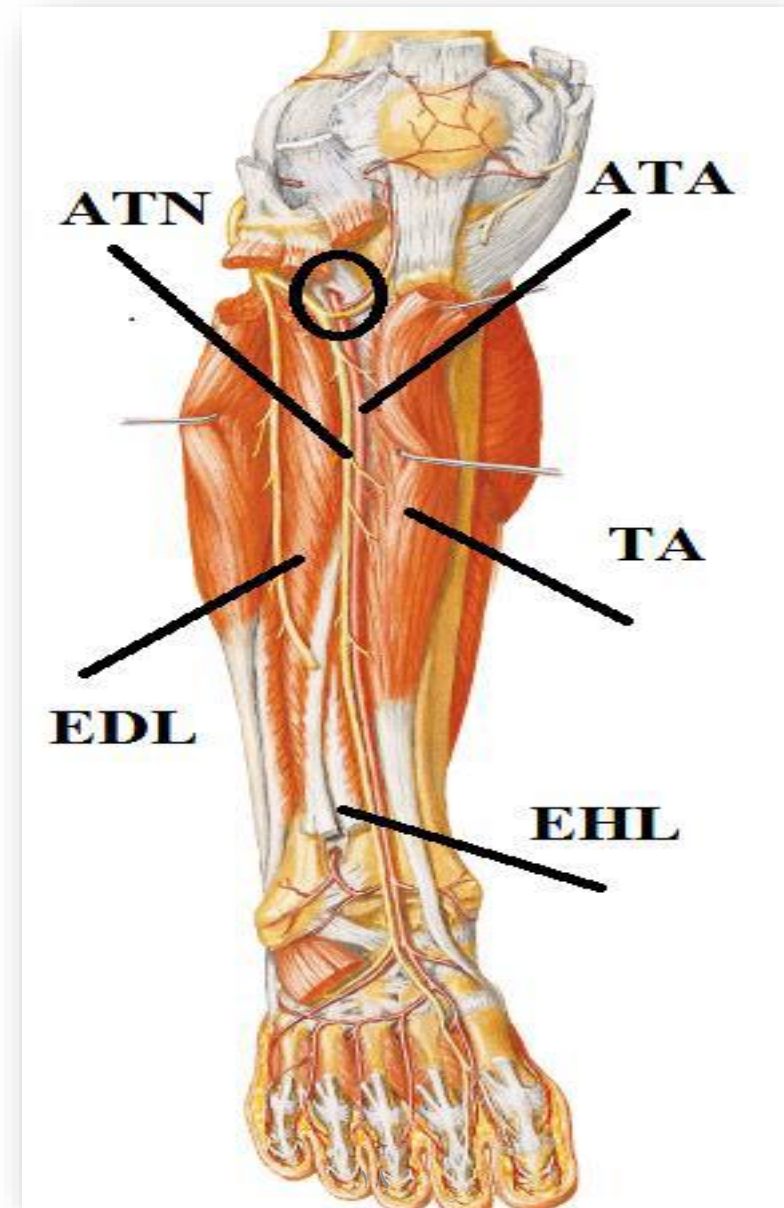
- Descending genicular (femoral)
- Branch of lateral circumflex femoral (profunda femoris)
- Five genicular branches (popliteal)
- Tibial recurrent (ant. tibial).



Anterior Tibial Artery

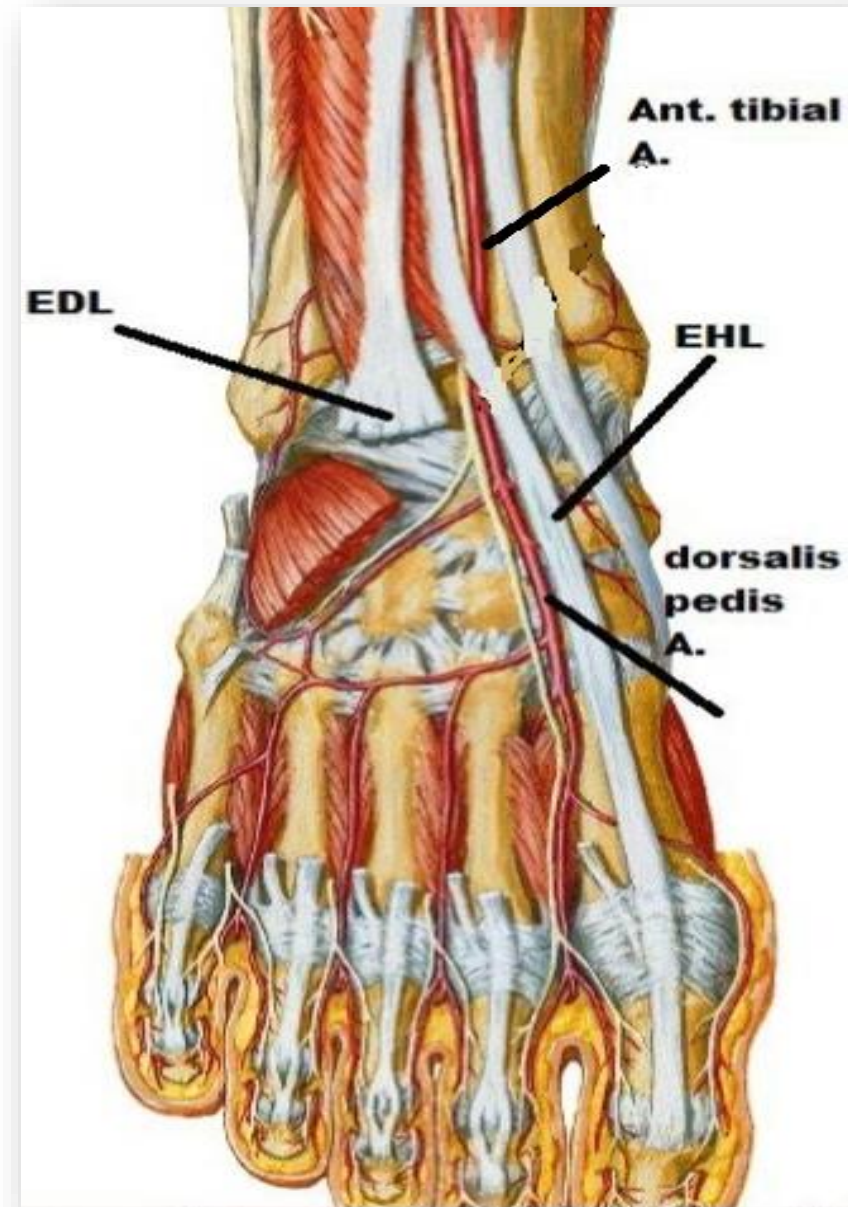
Course & relations:

- At first it is in the posterior compartment of the leg.
- It **passes through** aperture in the interosseous membrane, medial to the fibular neck, to reach anterior compartment of leg.
- It **descends on** the anterior aspect of the interosseous membrane, then it lies anterior to distal part of the tibia.



End of the anterior tibial artery:

- At the ankle, midway between the two malleoli as it become **dorsalis pedis artery**.



Branches of the Anterior Tibial Artery:

1- Tibial recurrent arteries:

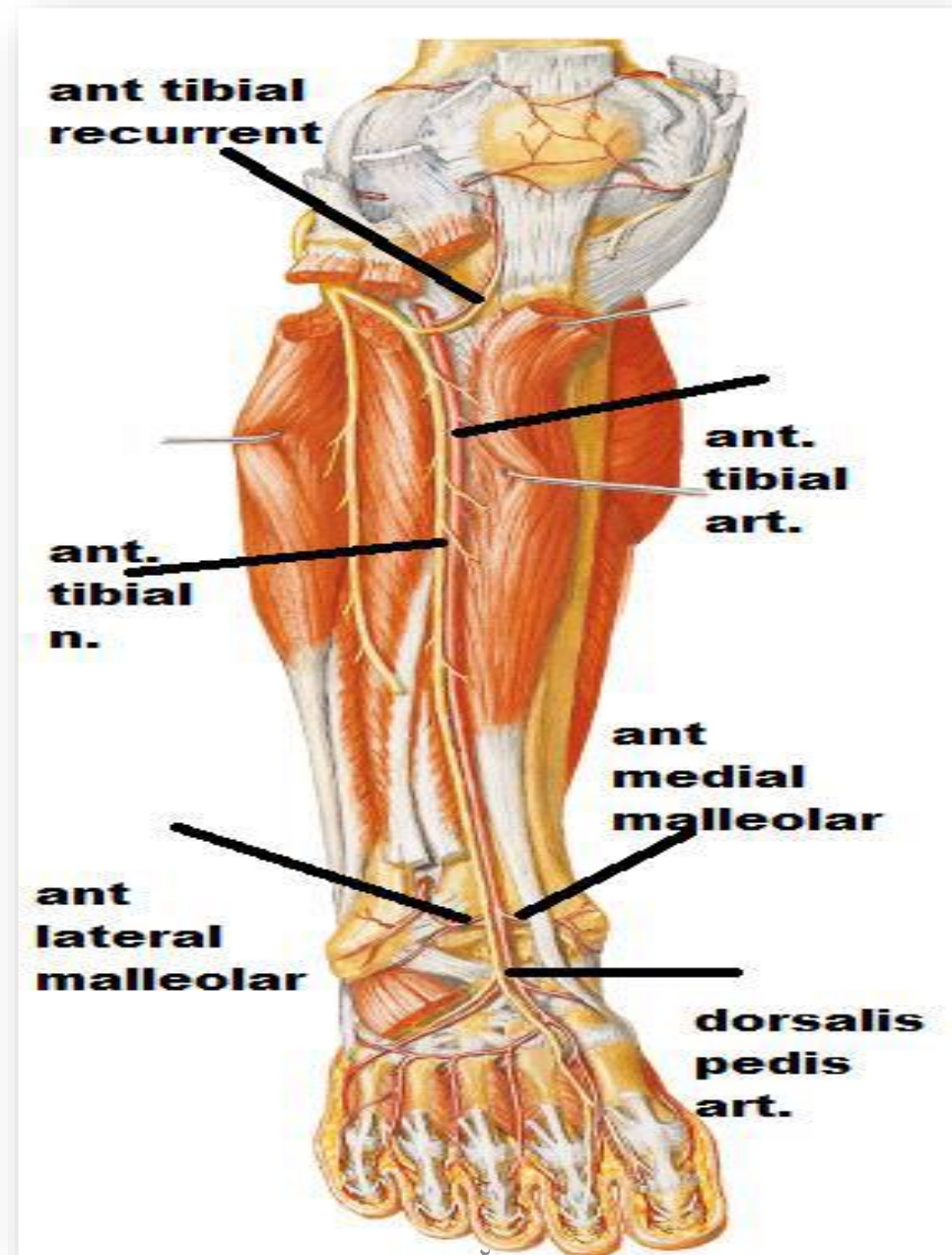
- Shares in anastomosis around knee.

2-Muscular branches:

- For muscles of anterior compartment of leg.

3-Malleolar arteries:

- Share in anastomosis around ankle.



Dorsalis Pedis Artery

Origin:

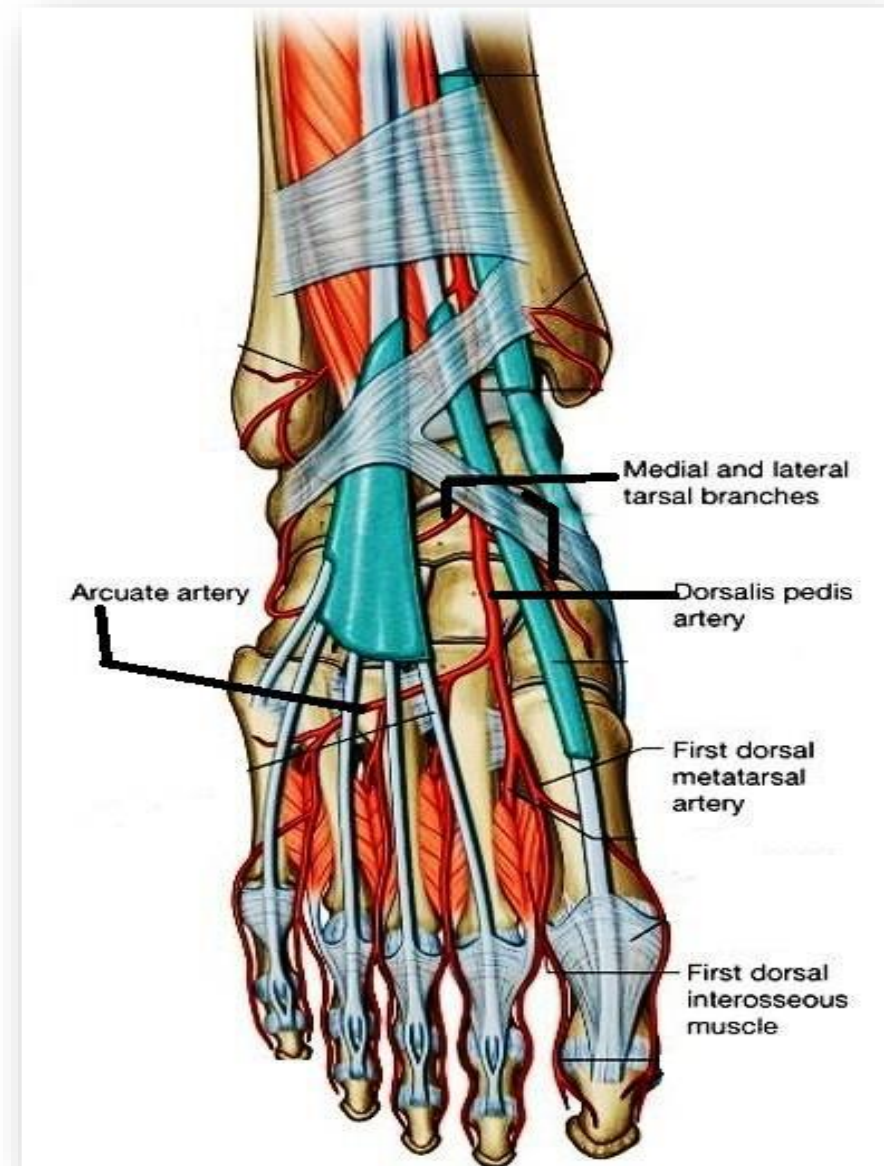
- It begins midway between two malleoli as a continuation of the anterior tibial artery.

Course & relation:

- It **runs** forward on the dorsum of the foot.
- **Then** run downward between the two heads of 1st dorsal interosseous to enter the sole of the foot.

End:

- It **ends** in the sole of the foot **as it anastomose** with the plantar arch.

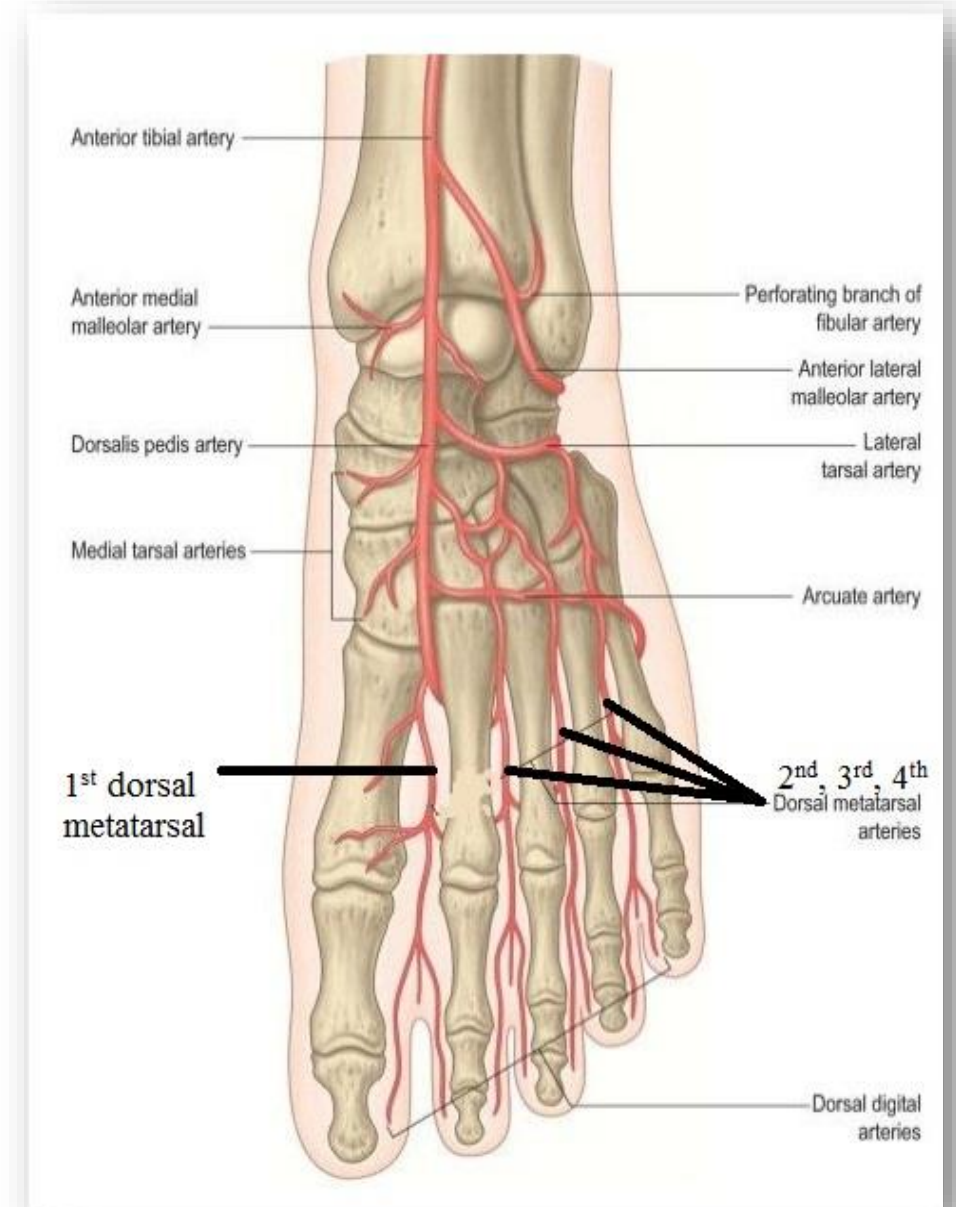


Branches of the dorsalis pedis artery:

1- Arcuate artery:

- It passes laterally.
- It gives 2nd, 3rd, 4th dorsal metatarsal arteries.

2- 1st dorsal metatarsal artery.



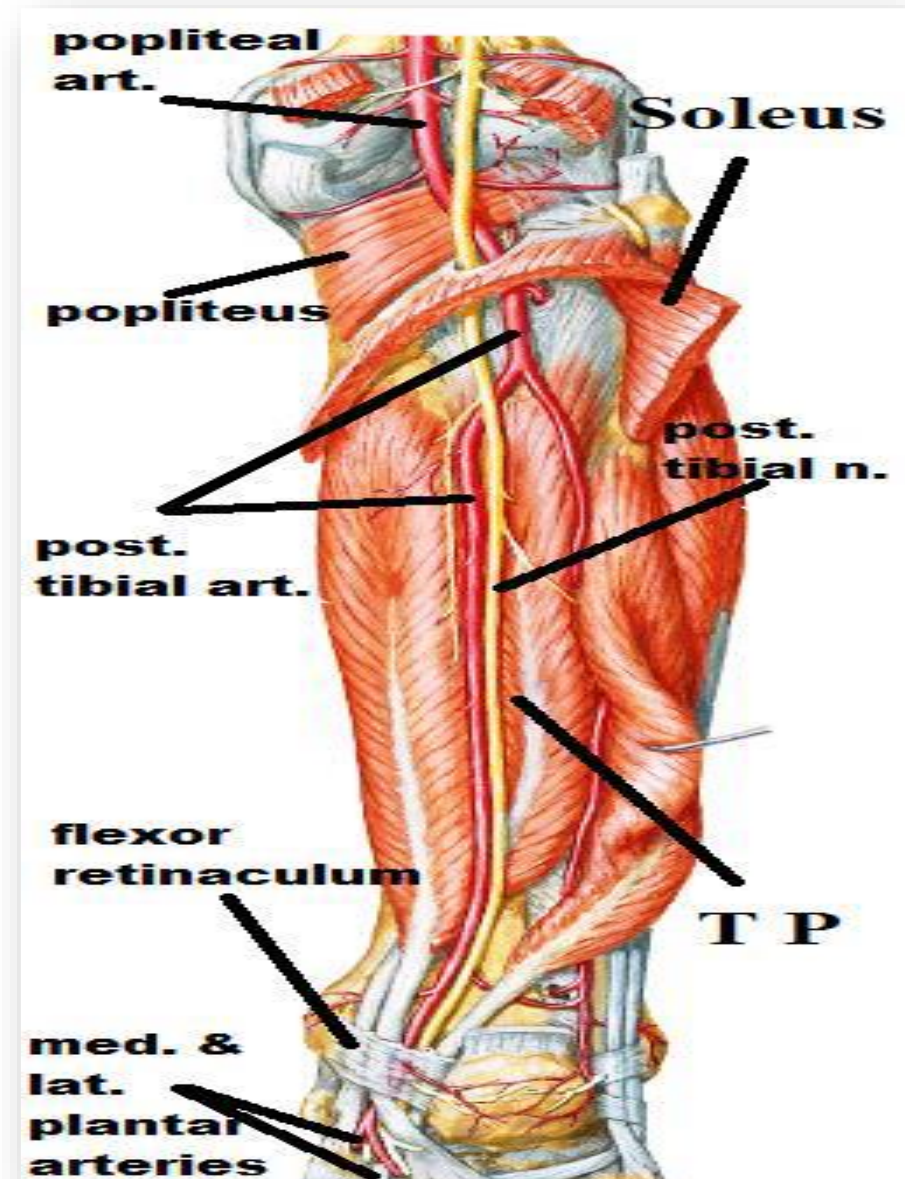
Posterior Tibial Artery

Course & relations:

- It descends in the posterior compartment of leg, between soleus & tibialis posterior muscles.

End:

- It ends **deep to flexor retinaculum, behind medial malleolus** (its pulsation felt) by giving **medial & lateral plantar arteries**.



Branches of posterior tibial artery:

1-Peroneal artery (fibular).

- Supplies muscles of posterior & lateral compartments of leg.

2-Muscular branches:

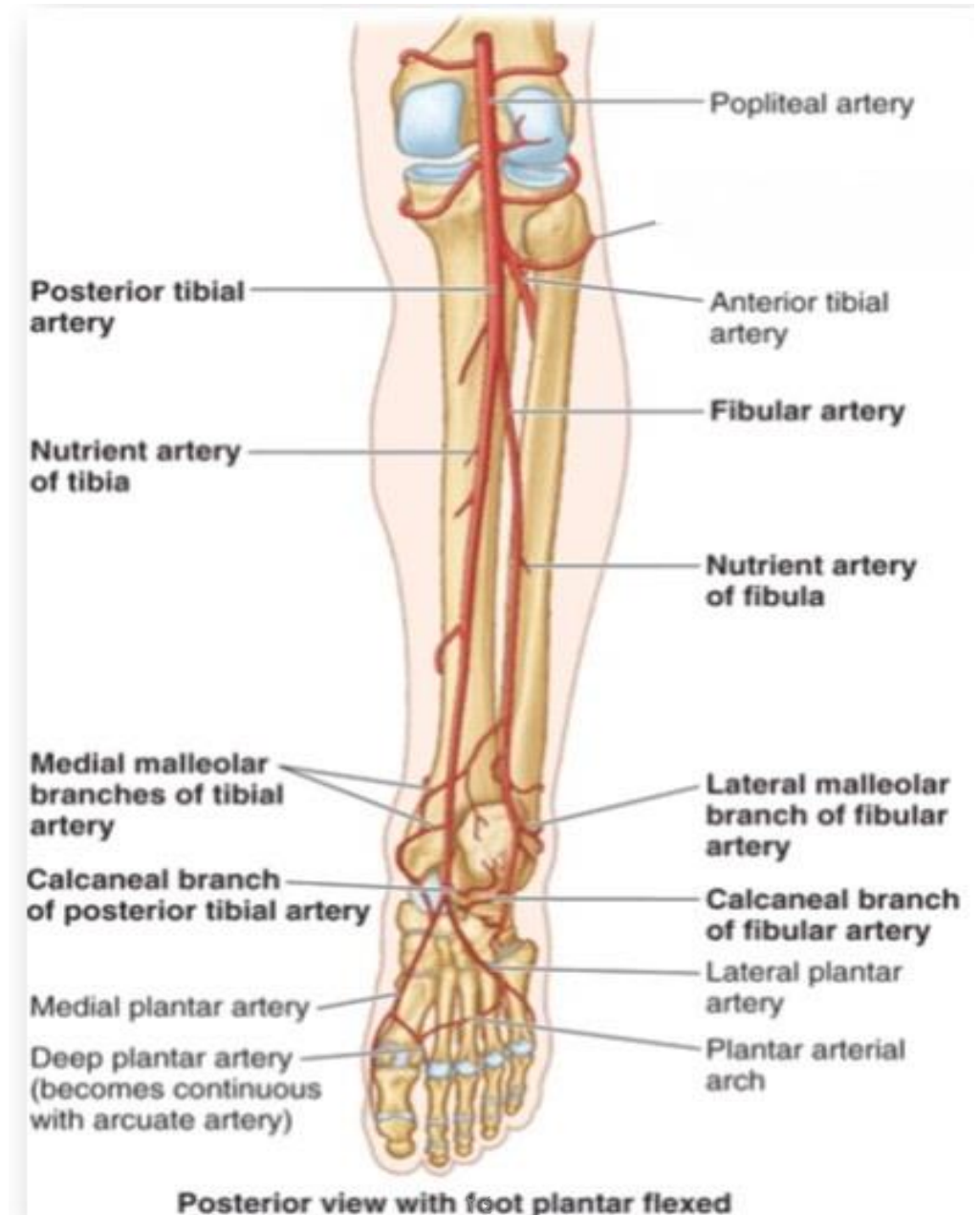
- For the muscles of posterior compartments of leg.

3- Calcaneal & malleolar branches:

- Anastomosis around ankle.

4-Terminal branches:

- Medial plantar artery.
- Lateral plantar artery.



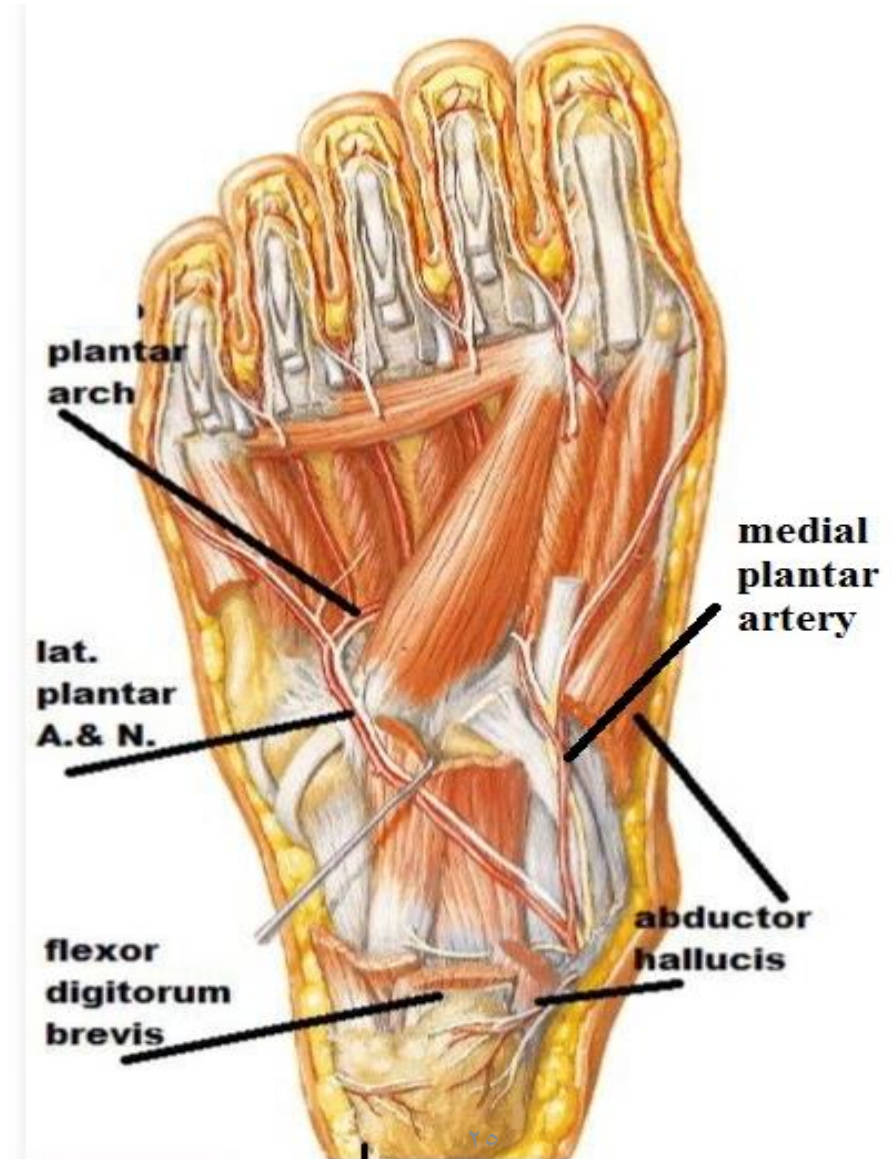
Medial Plantar Artery

Course:

- It passes forward in plantar aspect of the foot along the medial side of the foot & big toe.

End:

- by diminishing in size.



Lateral Plantar Artery

Course:

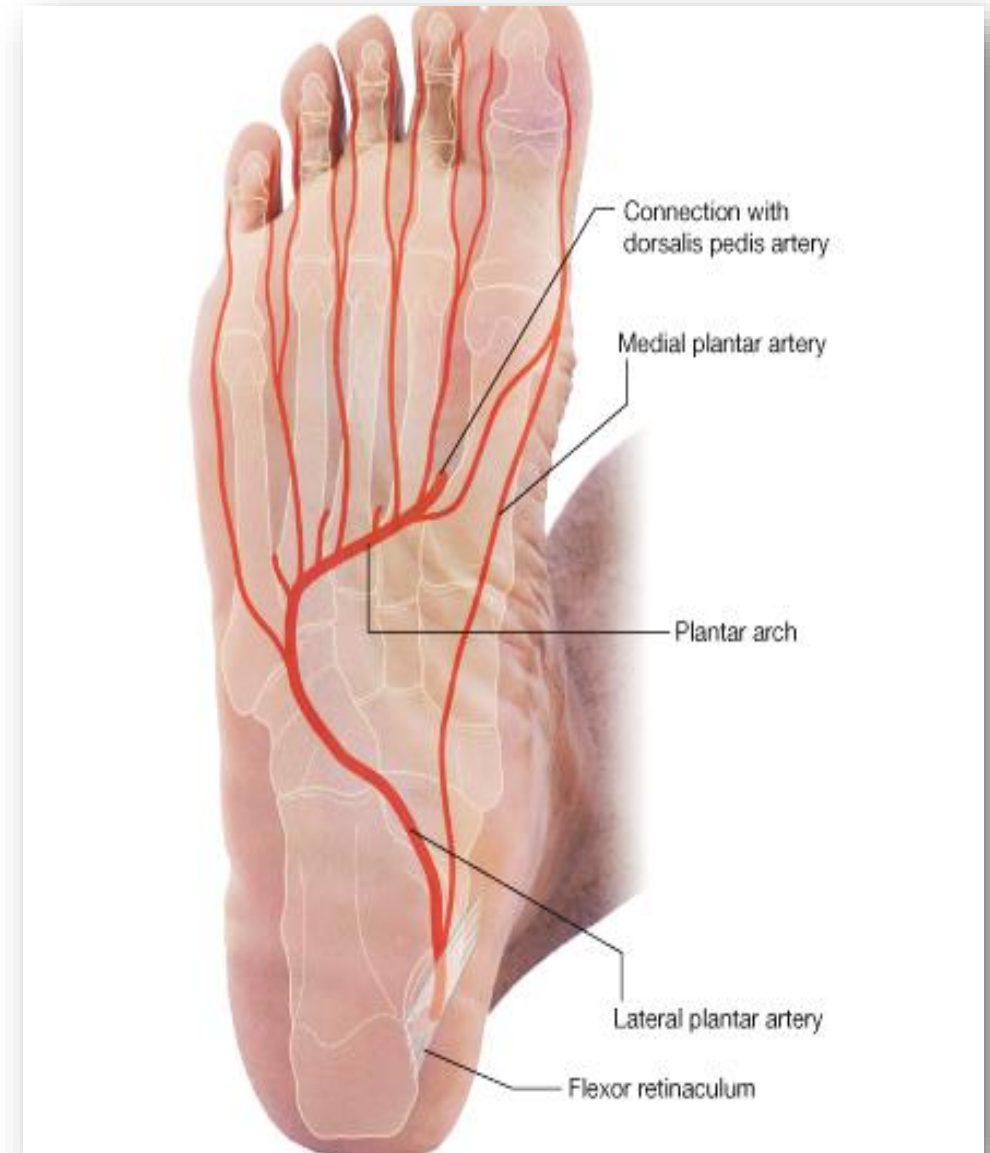
- It passes in the plantar aspect of the foot forward & laterally.
- Then it curves medially to form the plantar arch.

End:

- At the 1st intermetatarsal space as it anastomoses with the end of the dorsalis pedis artery.

Branches:

- 1- Cutaneous, muscular & articular branches.
- 2- **Plantar arch** gives: four **plantar metatarsal arteries**.



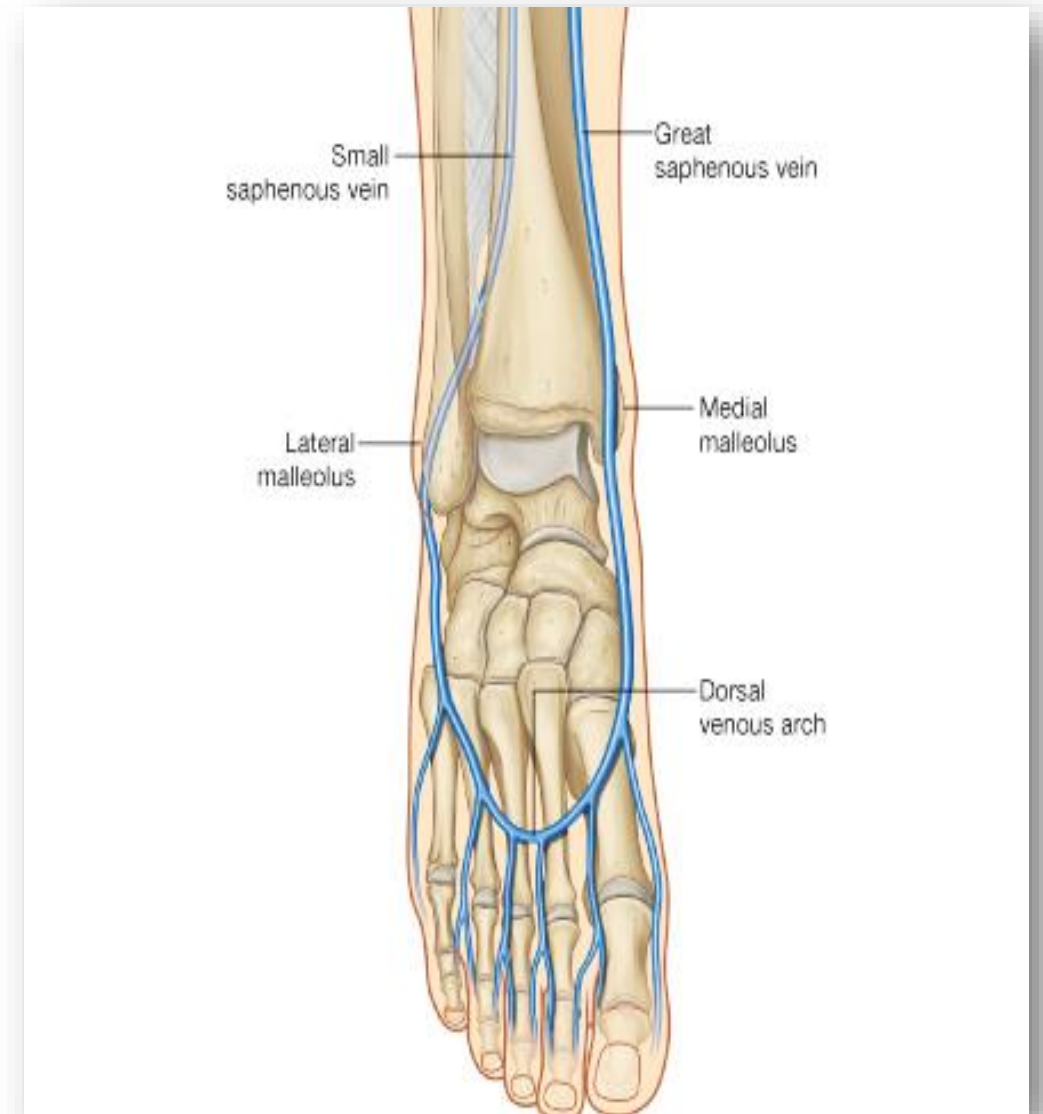
Superficial Veins of the Lower Limb

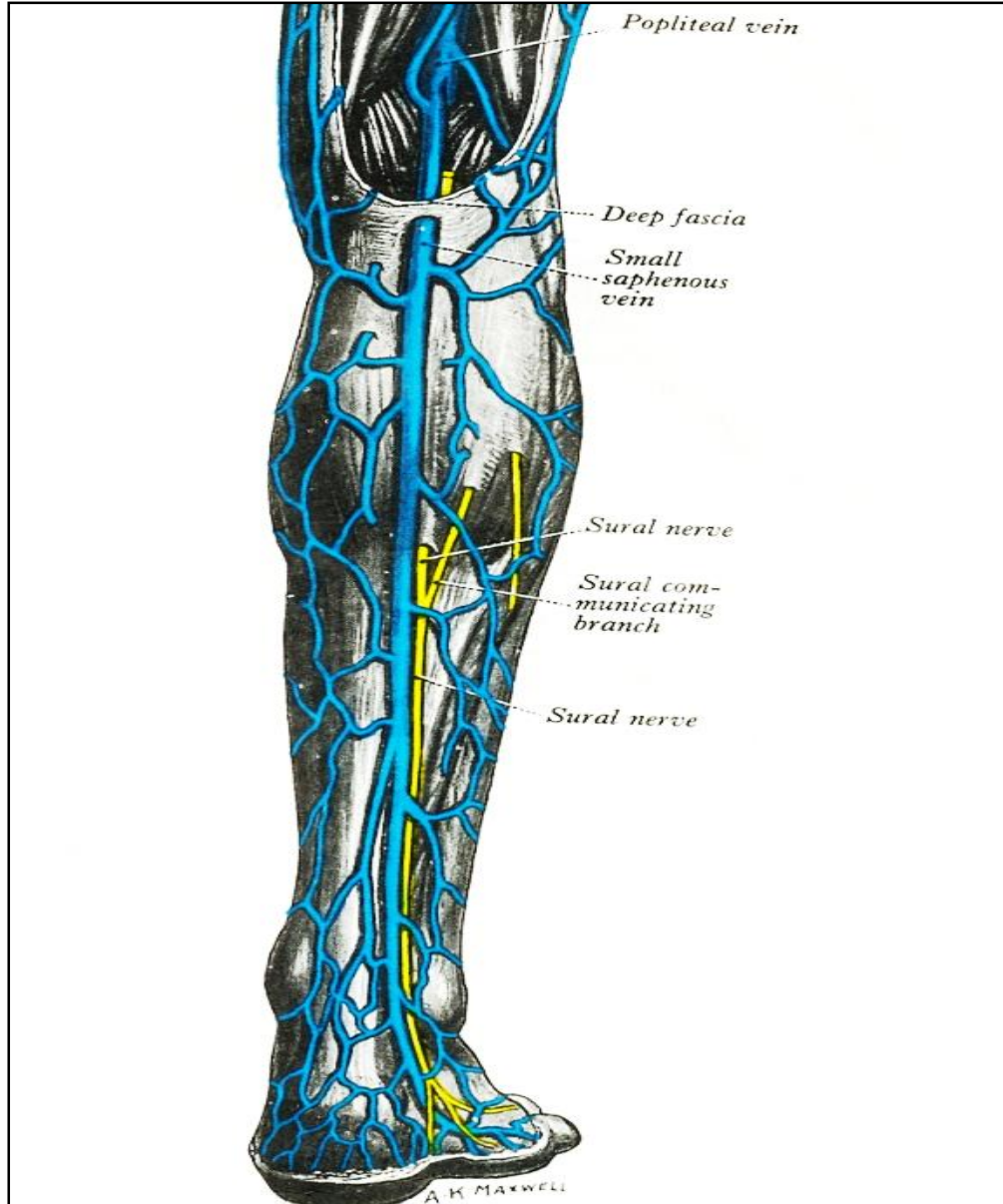
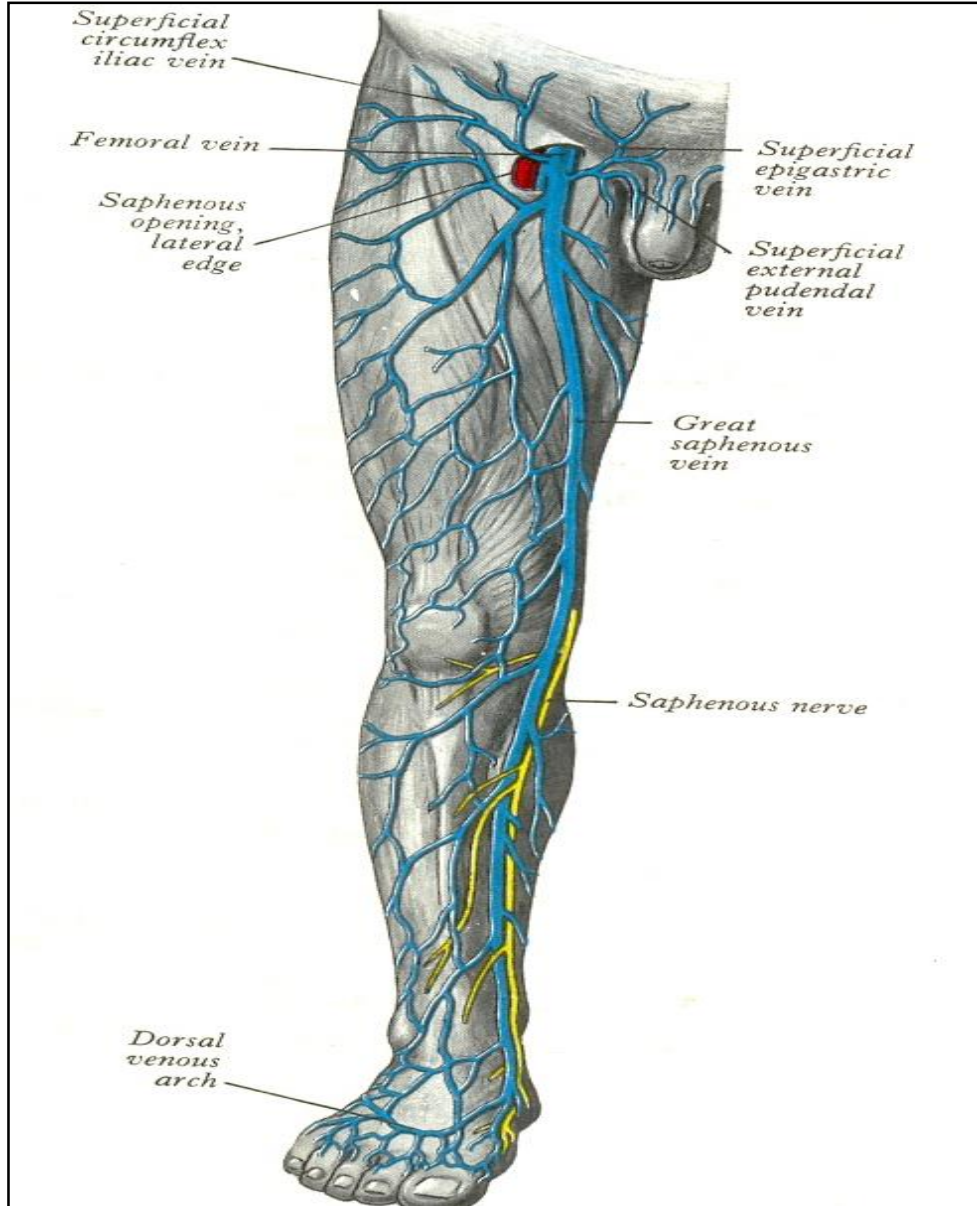
Great saphenous vein:

- It arises from medial end of the dorsal venous arch.
- It ascends along medial side of leg and thigh.
- It ends in femoral vein.

Small saphenous vein:

- It arises from the lateral end of the dorsal venous arch.
- It ascends along back of leg & ends in the popliteal vein.

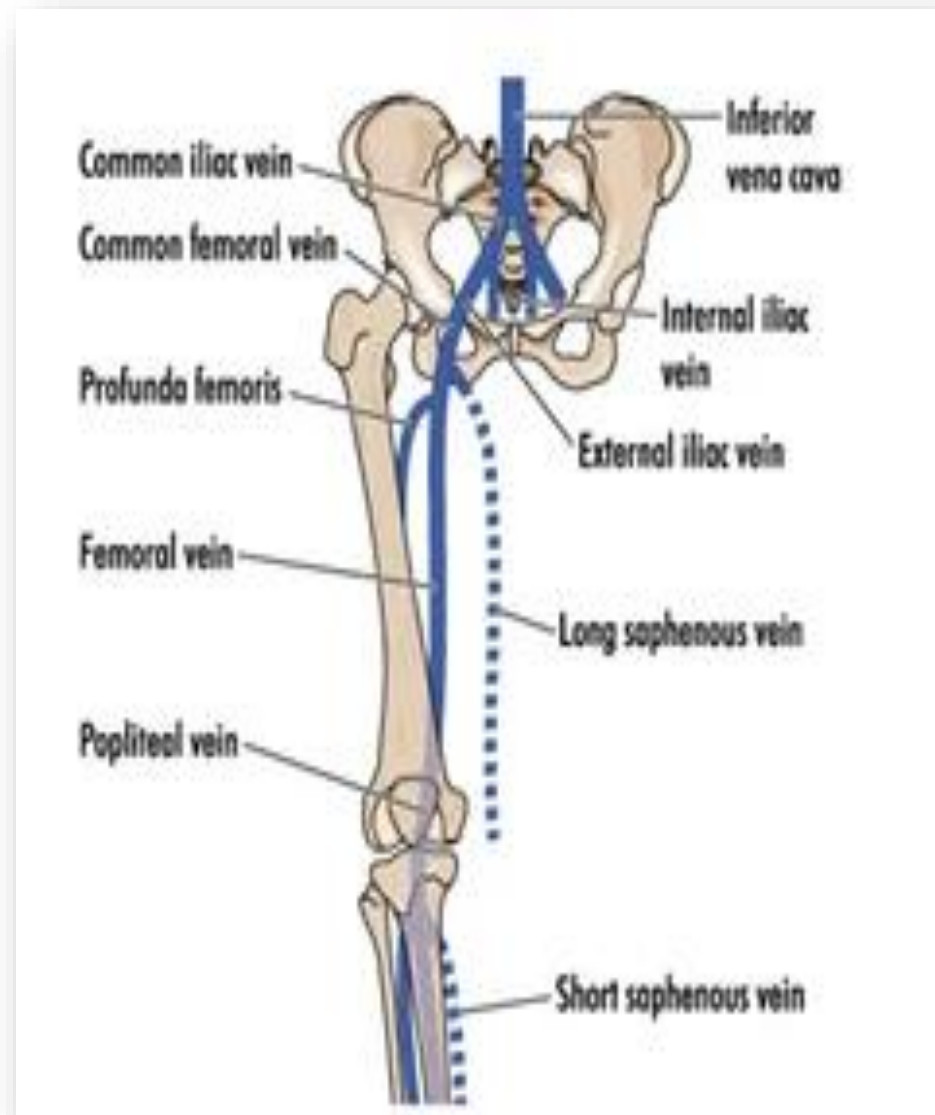




Deep Veins of the Lower Limb

Femoral vein:

- It is the continuation of popliteal vein.
- Ends behind inguinal ligament, where it becomes the external iliac vein.



Quiz

Which of the following arteries of the lower limb is correctly matching with its point of origin?

- A) Femoral artery --- Anterior superior iliac spine
- B) Popliteal Artery --- Popliteal surface of femur
- C) Anterior tibial artery --- Distal border of popliteus.
- D) Dorsalis pedis artery --- First metatarsal base.
- E) Lateral plantar artery --- Behind lateral malleolus.

Damage to which of the following arteries cause ischemia to the extensor muscles of the leg?

- (A) Profunda femoris.
- (B) Anterior tibial
- (C) Posterior tibial
- (D) Peroneal
- (E) Lateral plantar.

