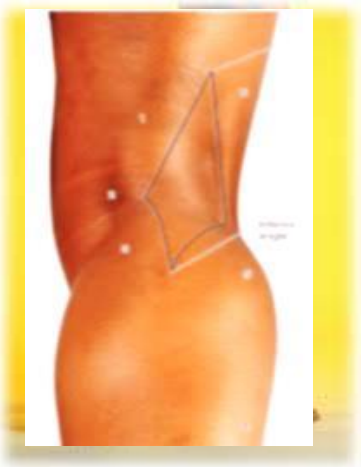
Popliteal fossa anatomy

Dr.Muayad j. Al-Haris



The popliteal fossa

1- It is a diamond-shaped intermuscular space (depression) lies behind the knee, the lower 1/3 of the femur and the upper part of the tibia.

2- The superficial fascia of the fossa contain little fat, while the deep fascia is thin and strong. The popliteal fascia is continuous

Proximally with the deep fascia of the thigh – Fascia Lata

Distally with the deep fascia of the leg - Crural Fascia

The popliteal fossa

3- ***Boundaries***:

a- superolaterally biceps femoris m.

b- superomedially semimembranosus and semitendinosus ms.

c- Inferolaterally lateral head of the gastrocnemius m.

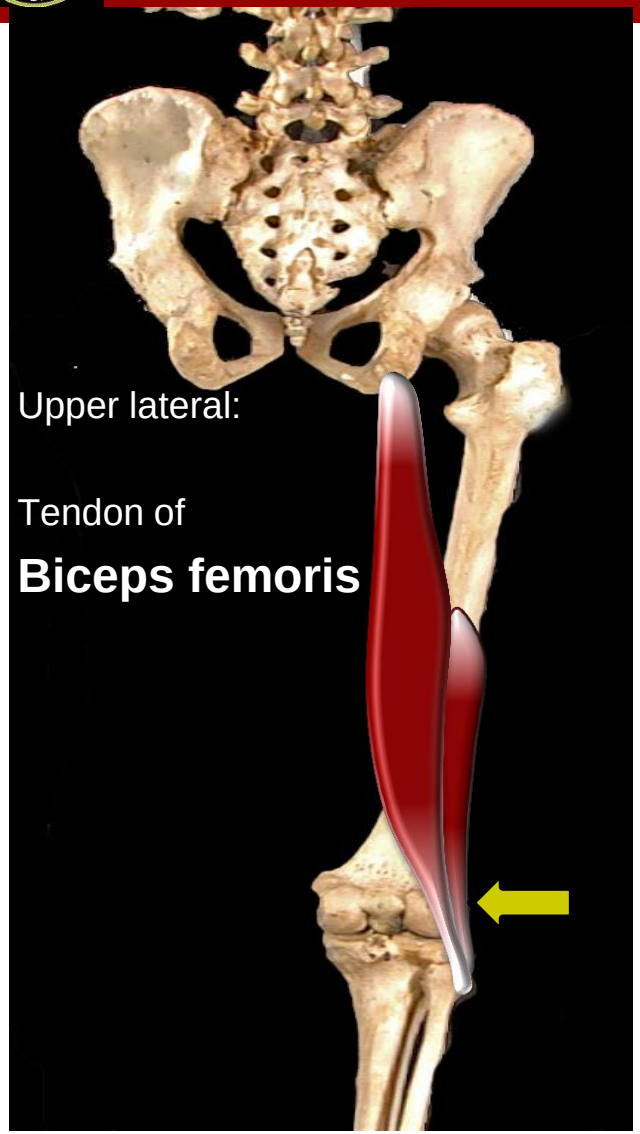
d- Inferomedially Medial head of the gastrocnemius m.

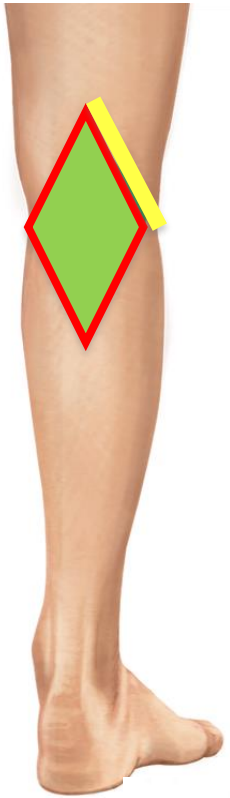
e- The anterior wall (floor) : from above downward is

the *popliteal surface of the femur, popliteus m, the posterior capsule of the knee joint and oblique popliteal ligament*

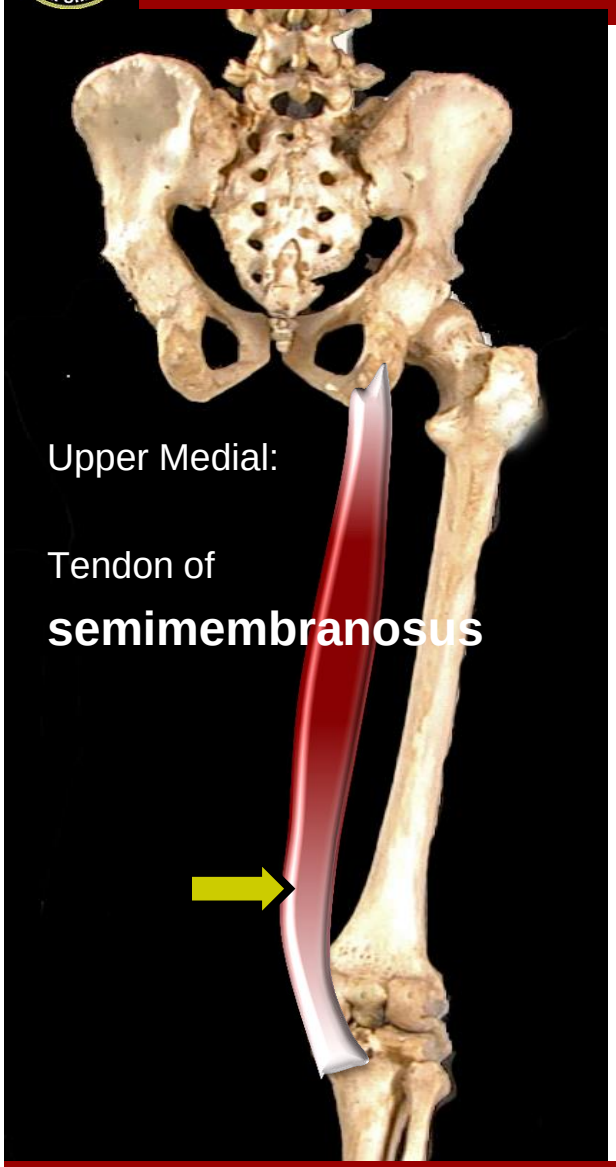
f- The posterior wall (roof) is the skin and deep fascia of the fossa which is here strongly reinforced by transverse fibers. It is pierced by small saphenous vein & posterior femoral cutaneous nerve

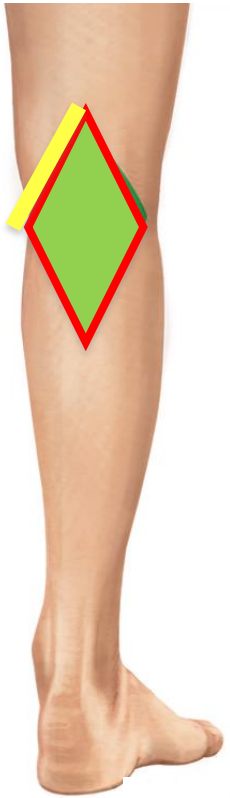
Biceps femoris



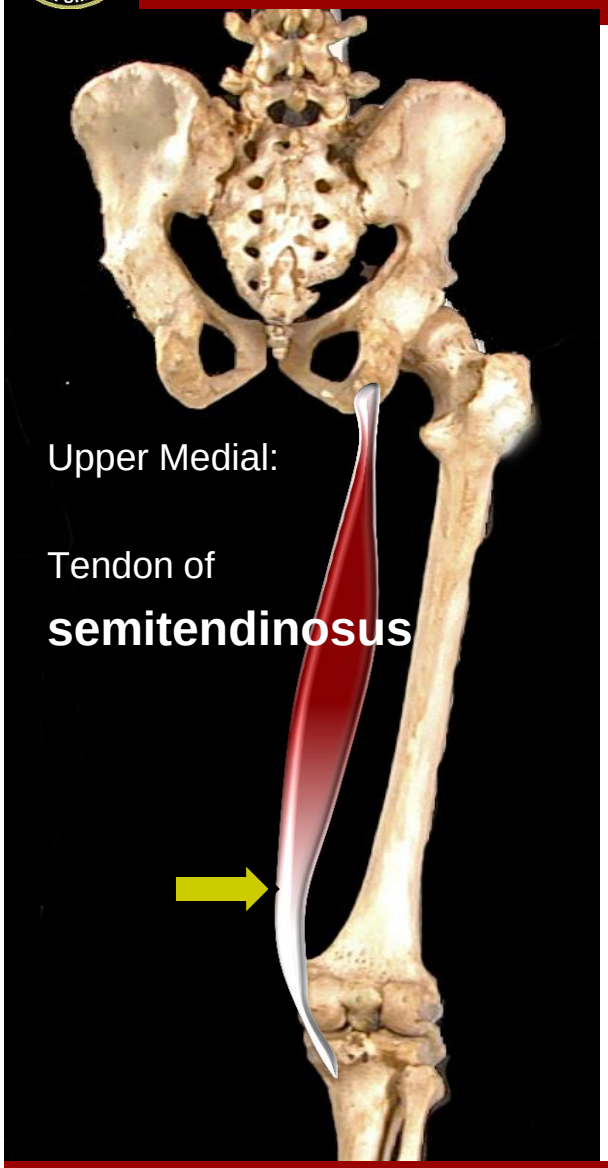


Semimembranosus

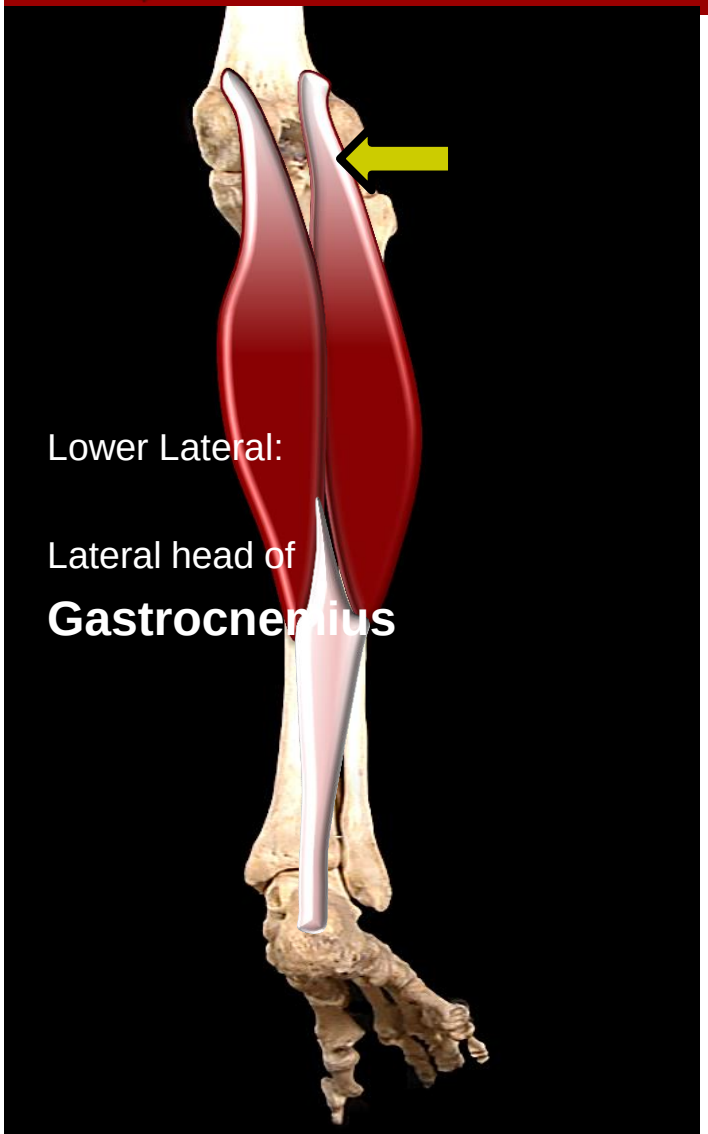




Semitendinosus

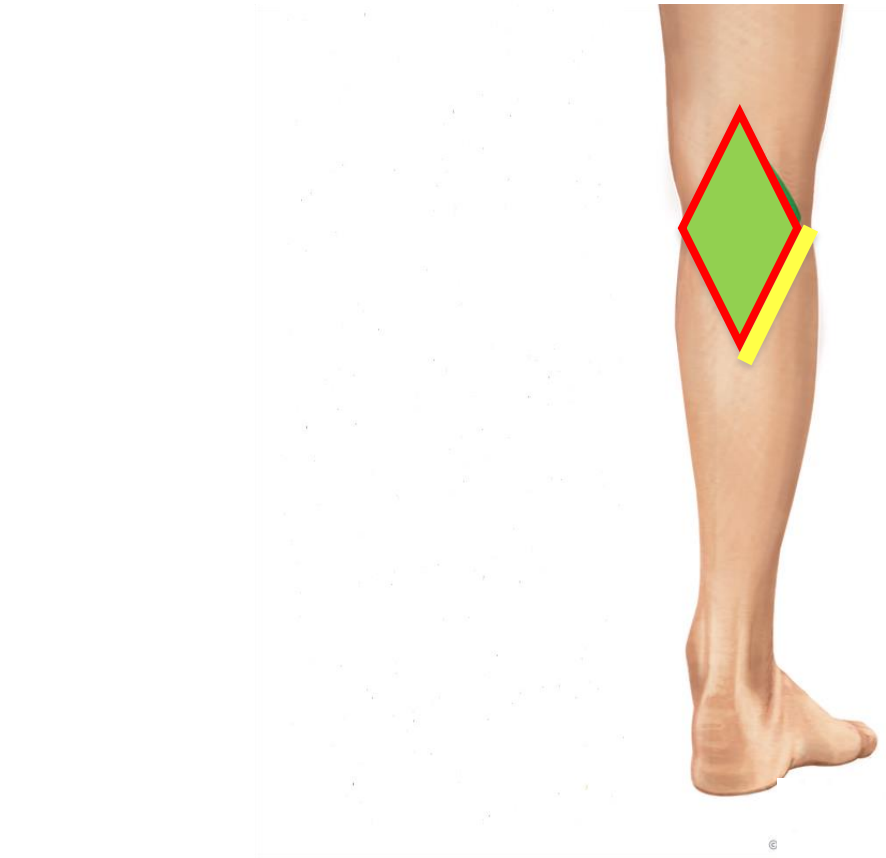


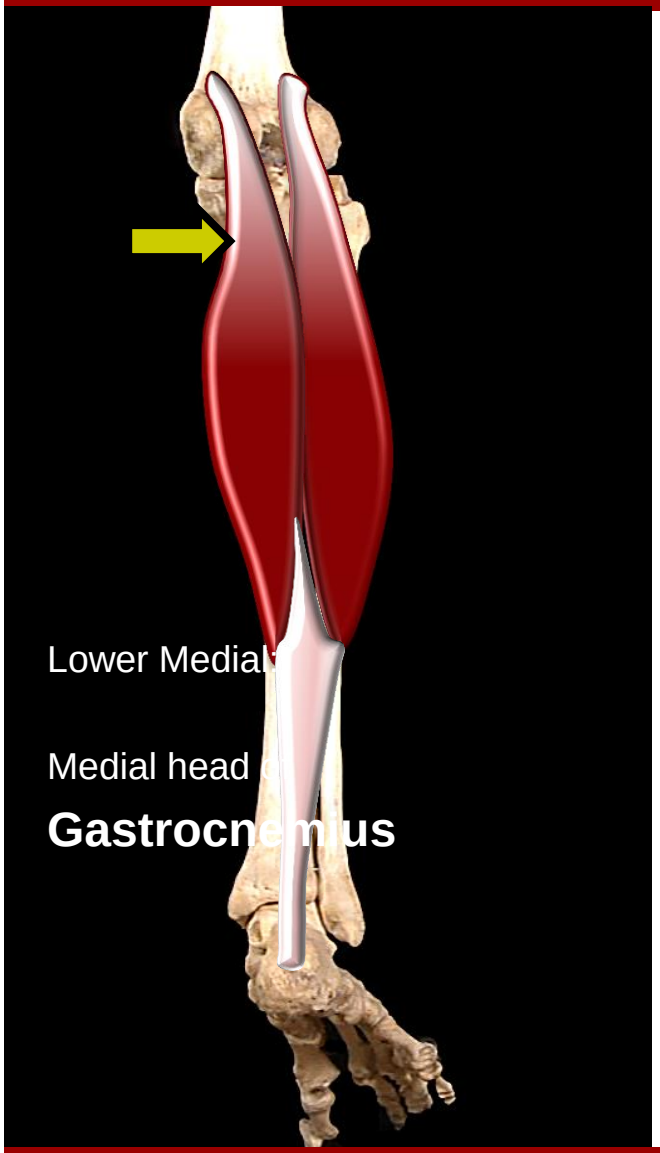
Lateral head of Gastrocnemius



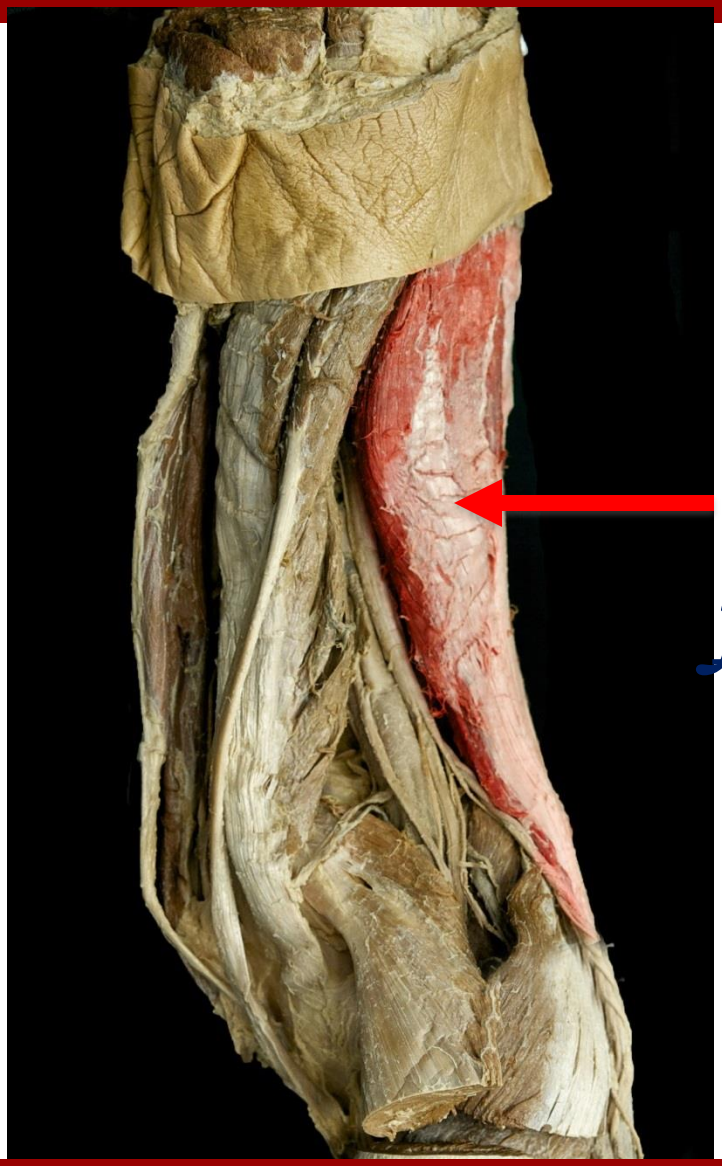
Lower Lateral:

Lateral head of
Gastrocnemius





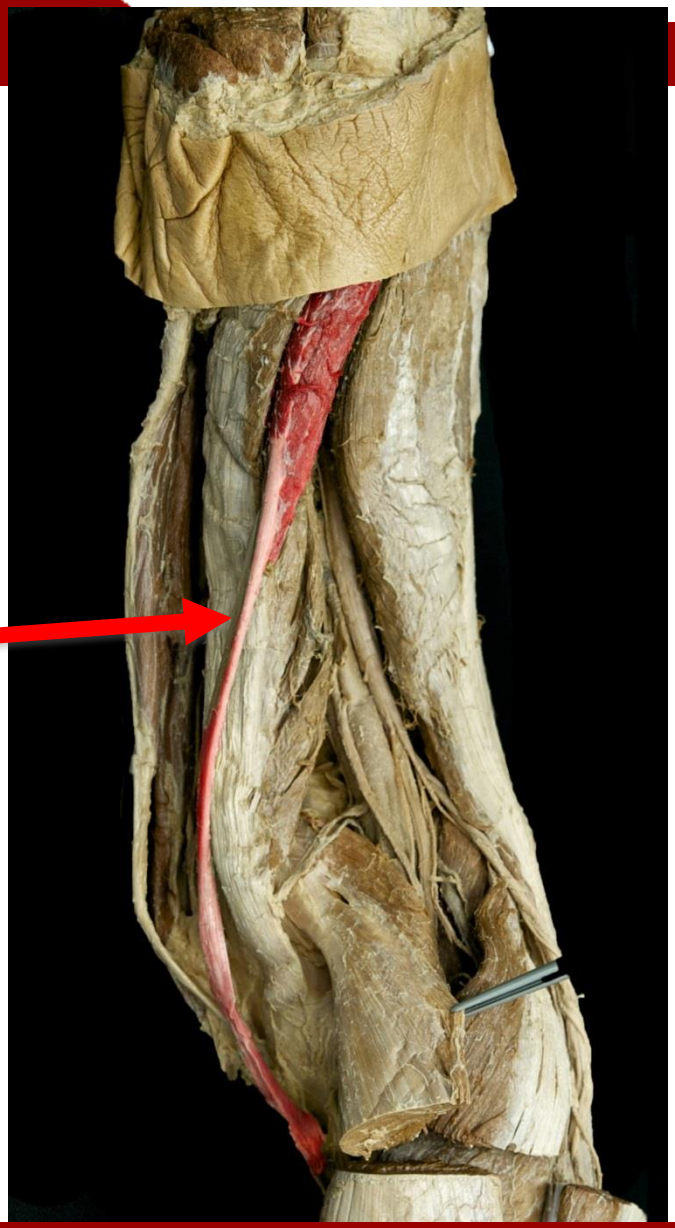
Medial head of Gastrocnemius

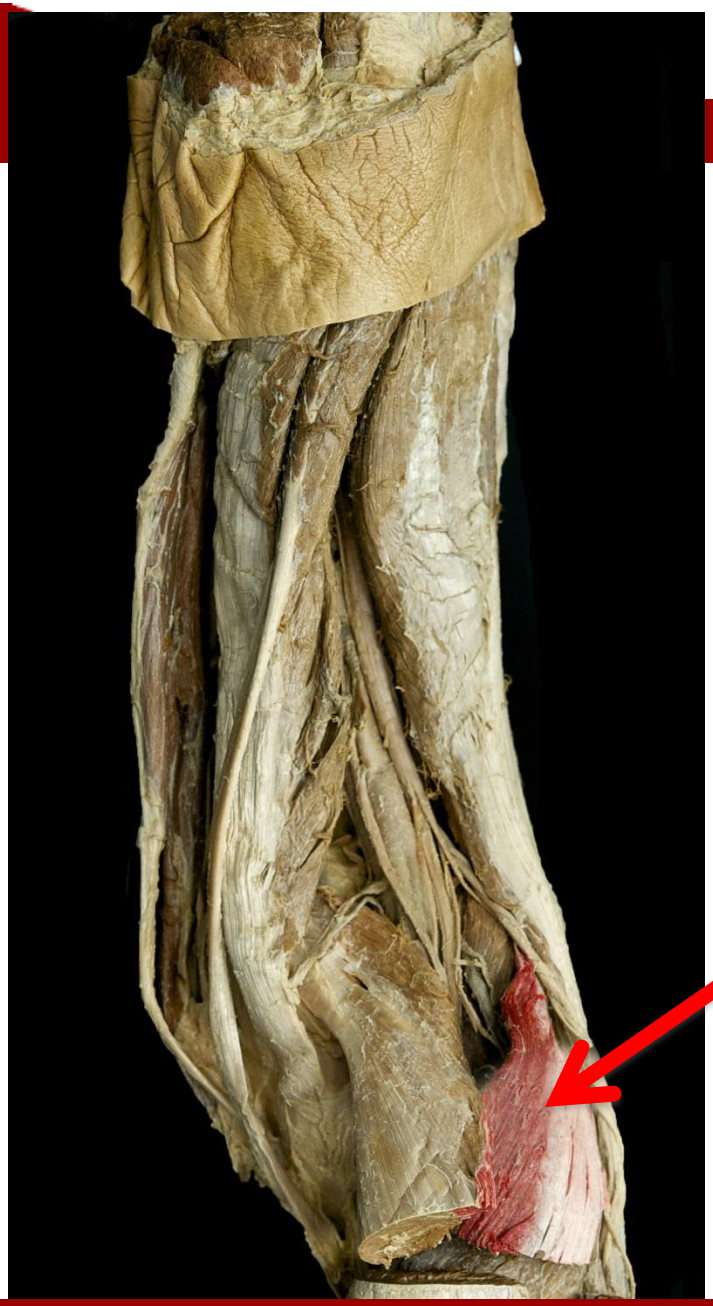


Biceps femoris

Semimembranosus

Semitendinosus





Lateral head

gastrocnemius

Medial head gastrocnemius

,

Upper angle Of Popliteal fossa

,

lower angle Of Popliteal fossa

.

Upper medial Boundary

Upper Lateral Boundary

Lower Medial Boundary

Lower Lateral Boundary

Contents of the fossa

These include:

1- The popliteal vessels(artery & vein). The popliteal art. is most anteriorly , it gives 5 genicular branches in the fossa and bifurcates at lower border of popliteus m. into anterior and posterior tibial arteries

2- Branches of the sciatic nerve the tibial and common peroneal nerves.

3- Popliteal lymph nodes.

4- Posterior cutaneous nerve of the thigh.

A- <u>The popliteal artery</u>

1- These are the direct continuation of the femoral art. enter the fossa through the adductor hiatus.

2- They lie anterior to the tibial nerve,.

3- it lies against the posterior part of the capsule of the knee joint,

4- then it lies posterior to popliteus muscle in the upper part of the leg.

5- The popliteal artery ends at the lower border of the popliteus muscle by dividing into anterior and posterior tibial arteries.

Branches of popliteal artery:

1- muscular branches to the hamstring ms. And to the muscles of the calf.

2- Articular branches these are :

a- the lateral and medial superior and inferior genicular and middle genicular arteries to the knee joint correspond to the genicular branches from the tibial and common peroneal nerves.

b- they anastomosed with the branches from the lateral circumflex femoral, descending genicular arteries, and the recurrent branches of the anterior tibial artery.

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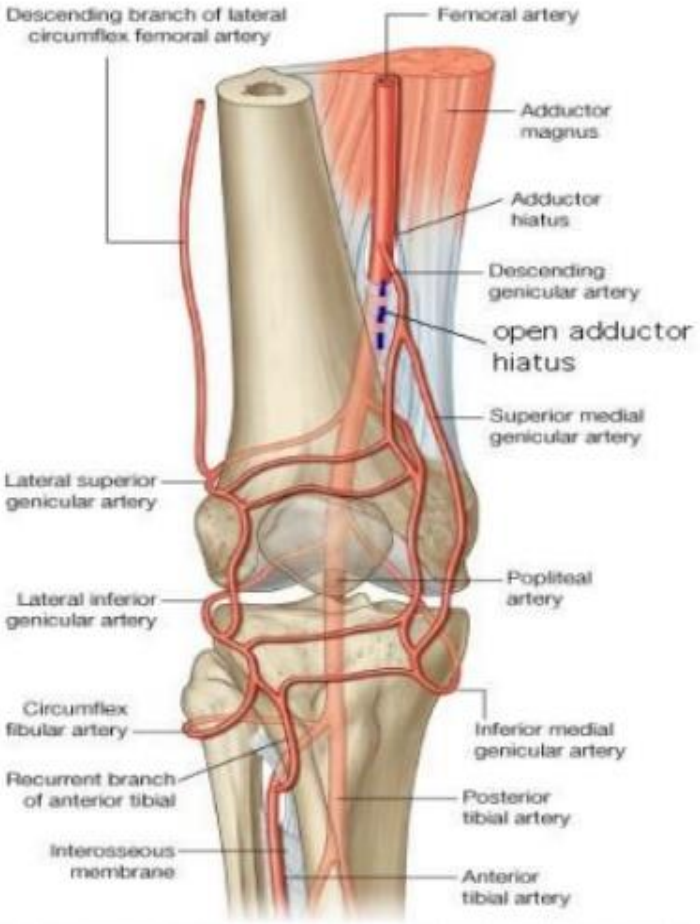
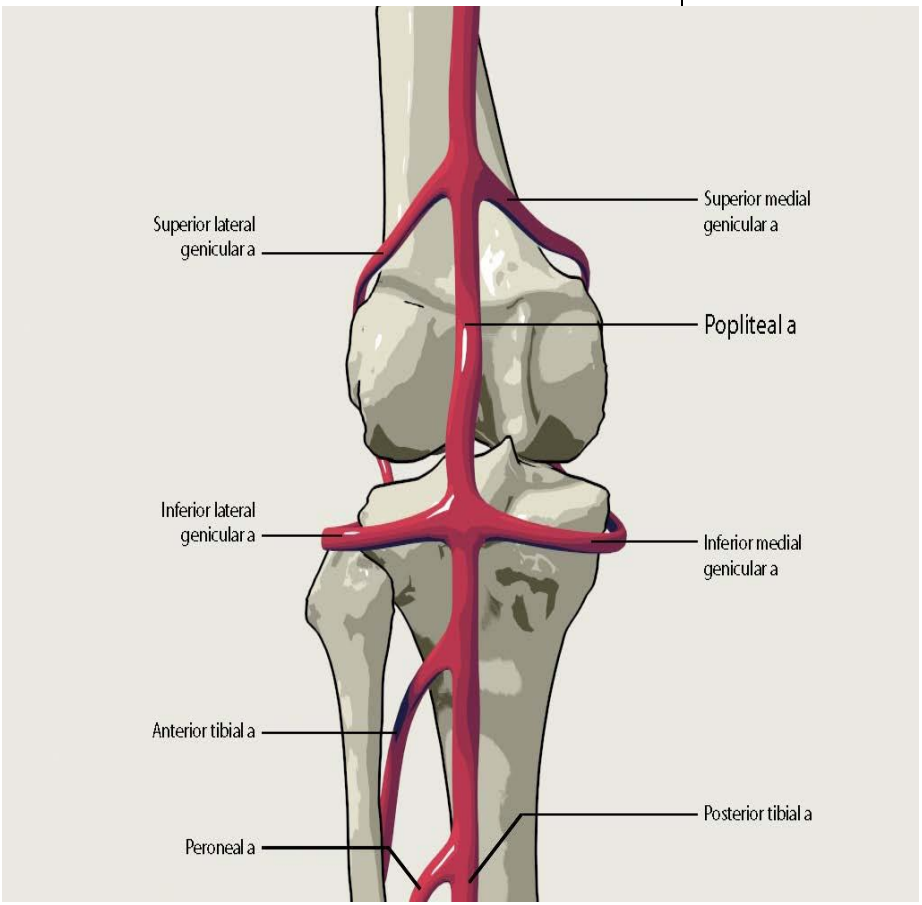
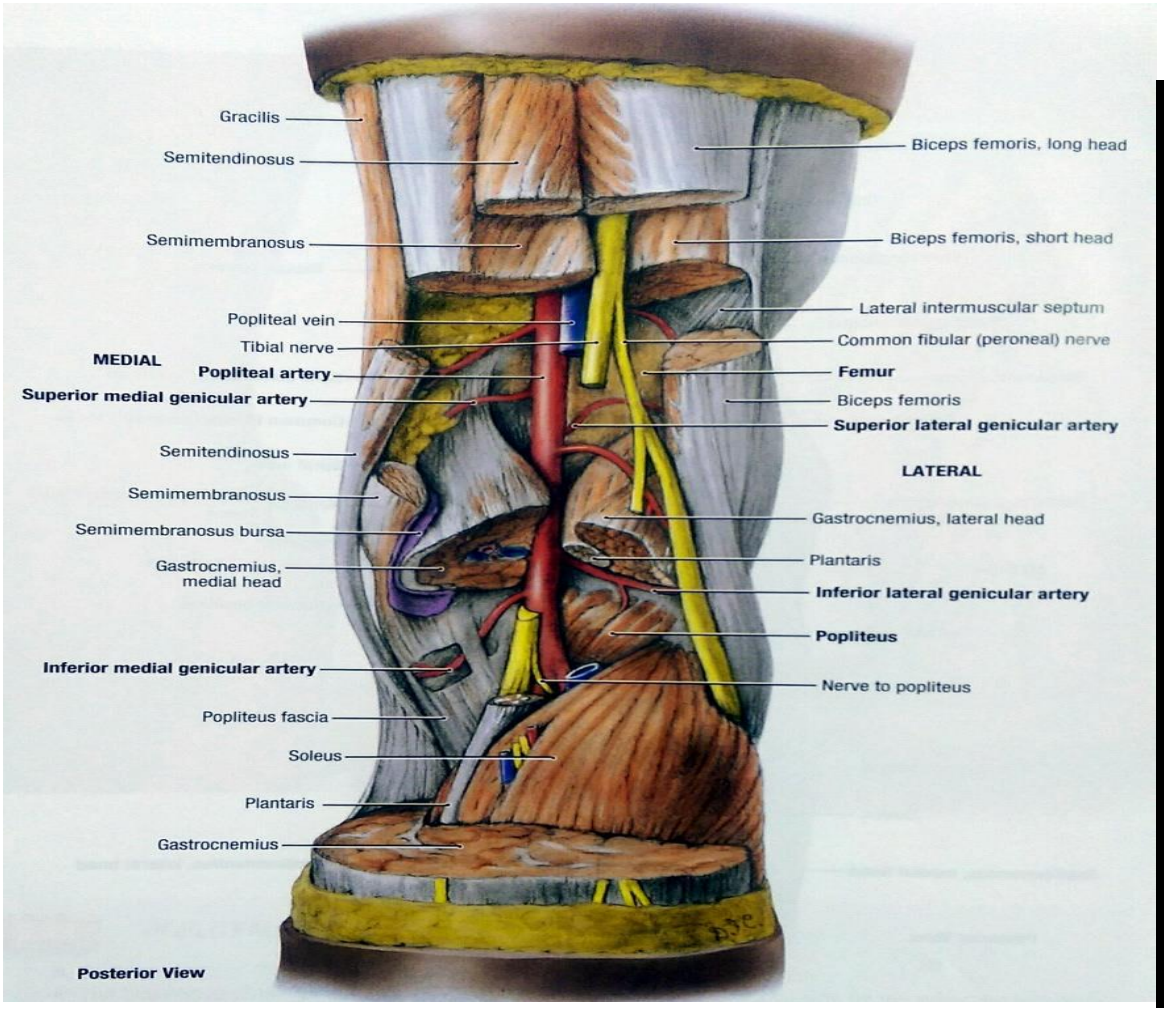
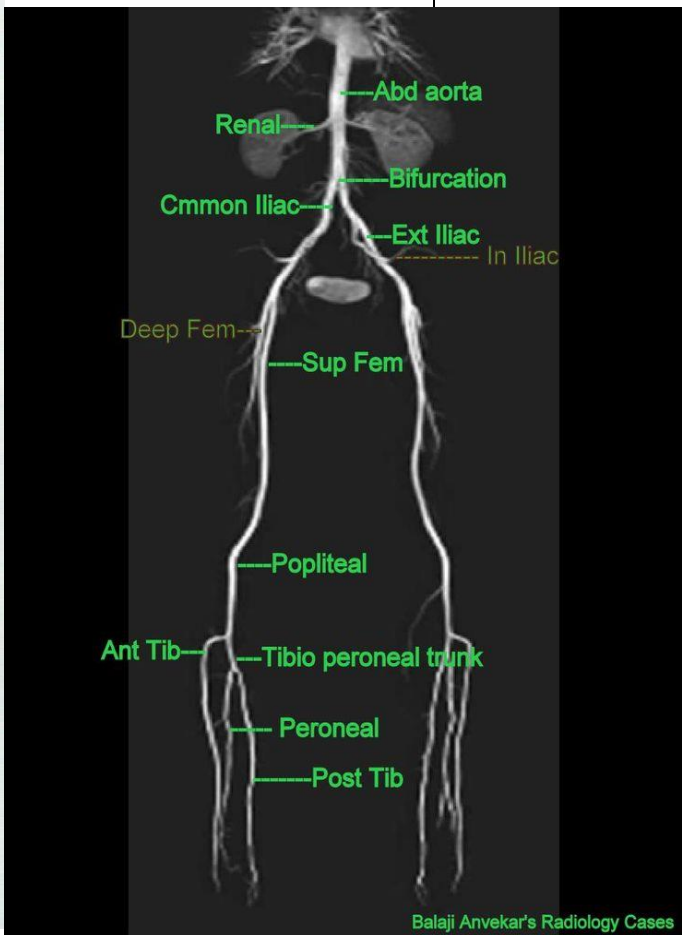

Descending branch of lateral circumflex femoral artery
Femoral artery
Adductor magnus
Adductor hiatus
Descending genicular artery
open adductor hiatus
Superior medial genicular artery
Lateral superior genicular artery
Popliteal artery
Lateral inferior genicular artery
Circumflex fibular artery
Inferior medial genicular artery
Recurrent branch of anterior tibial
Posterior tibial artery
Interosseous membrane
Anterior tibial artery


Superior lateral genicular a
Superior medial genicular a
Popliteal a
Inferior lateral genicular a
Inferior medial genicular a
Anterior tibial a
Posterior tibial a
Peroneal a


Gracilis
Semitendinosus
Semimembranosus
Popliteal vein
Tibial nerve
MEDIAL
Popliteal artery
Superior medial genicular artery
Semitendinosus
Semimembranosus
Semimembranosus bursa
Gastrocnemius, medial head
Inferior medial genicular artery
Popliteus fascia
Soleus
Plantaris
Gastrocnemius
Biceps femoris, long head
Biceps femoris, short head
Lateral intermuscular septum
Common fibular (peroneal) nerve
Femur
Biceps femoris
Superior lateral genicular artery
LATERAL
Gastrocnemius, lateral head
Plantaris
Inferior lateral genicular artery
Popliteus
Nerve to popliteus
Posterior View


Abd aorta
Renal
Bifurcation
Cmmon Iliac
Ext Iliac
In Iliac
Deep Fem
Sup Fem
Popliteal
Ant Tib
Tibio peroneal trunk
Peroneal
Post Tib
Balaji Anvekar's Radiology Cases

clinically

- Popliteal pulsation against the back of the femur, with the fingertips of both hands pressing into the centre of the fossa

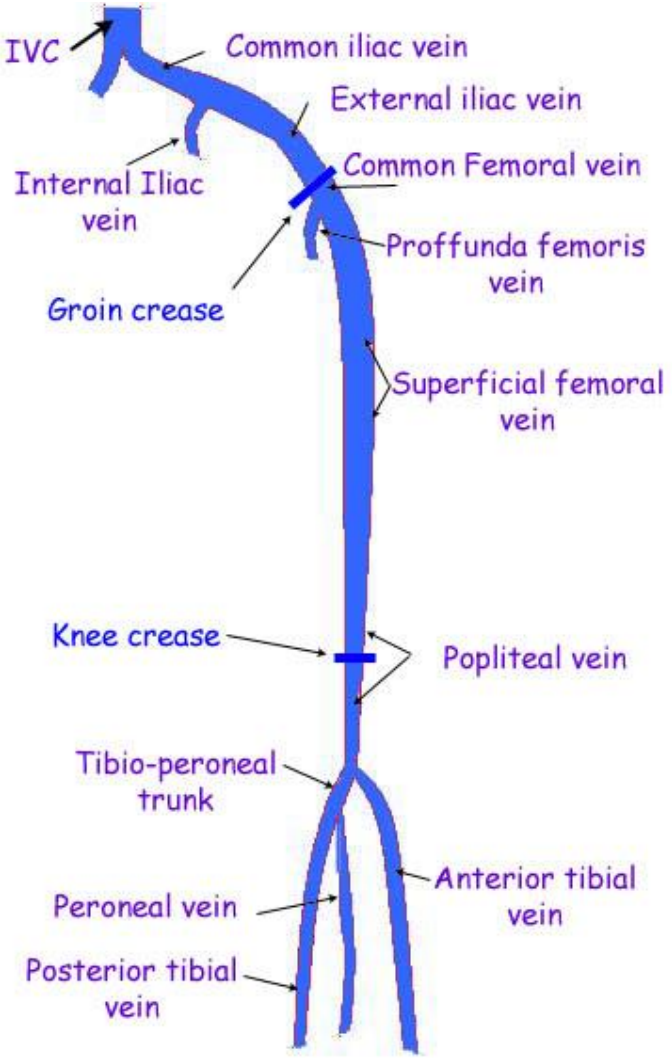
B- The popliteal vein:

1- formed by the union of the anterior tibial, the posterior tibial and the peroneal veins at the lower border of the popliteus muscle

2- it lies superficial to the artery and between it and the tibial nerve.

3- it receive tributaries correspond to the branches of the popliteal artery and the lesser saphenous vein.

4- it become the femoral vein at the adductor hiatus.



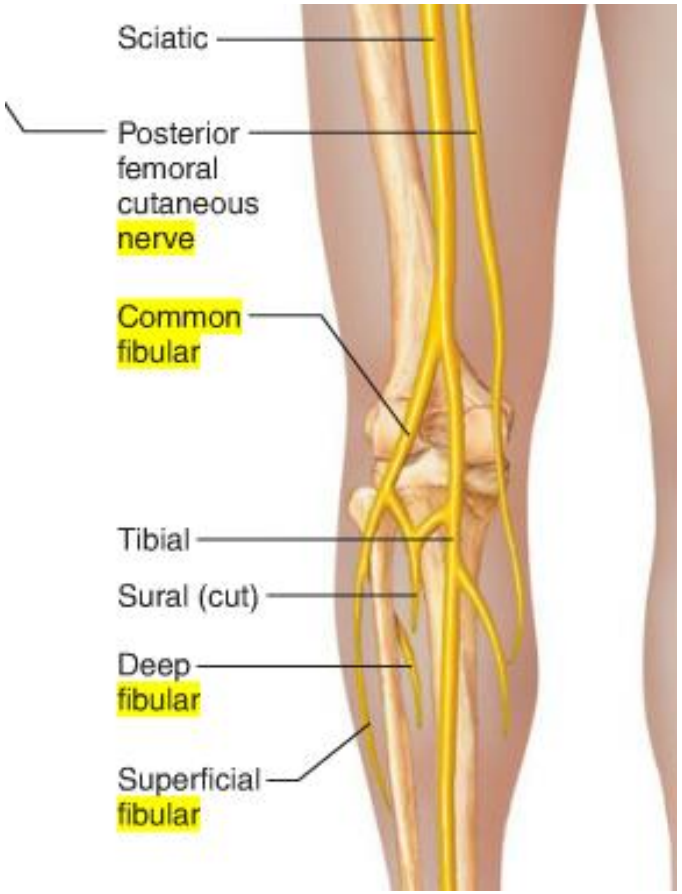
C- <u>Tibial nerve (L4 L5 S1 S2 S3).</u>

1- It is the largest of the two terminal branches of the sciatic nerve

2- it begins above the popliteal fossa descends vertically in the fossa, Lying first on the lateral side of the popliteal artery then posterior to it and finally medial to it.

3- it pass between the two heads of the gastrocnemius muscle and under the soleus muscle.

4- It supply the muscles of the back of the thigh and leg, the sole of the foot, the skin of the lateral and lower half of the back of the leg and sole of the foot.



Branches in the popliteal fossa:

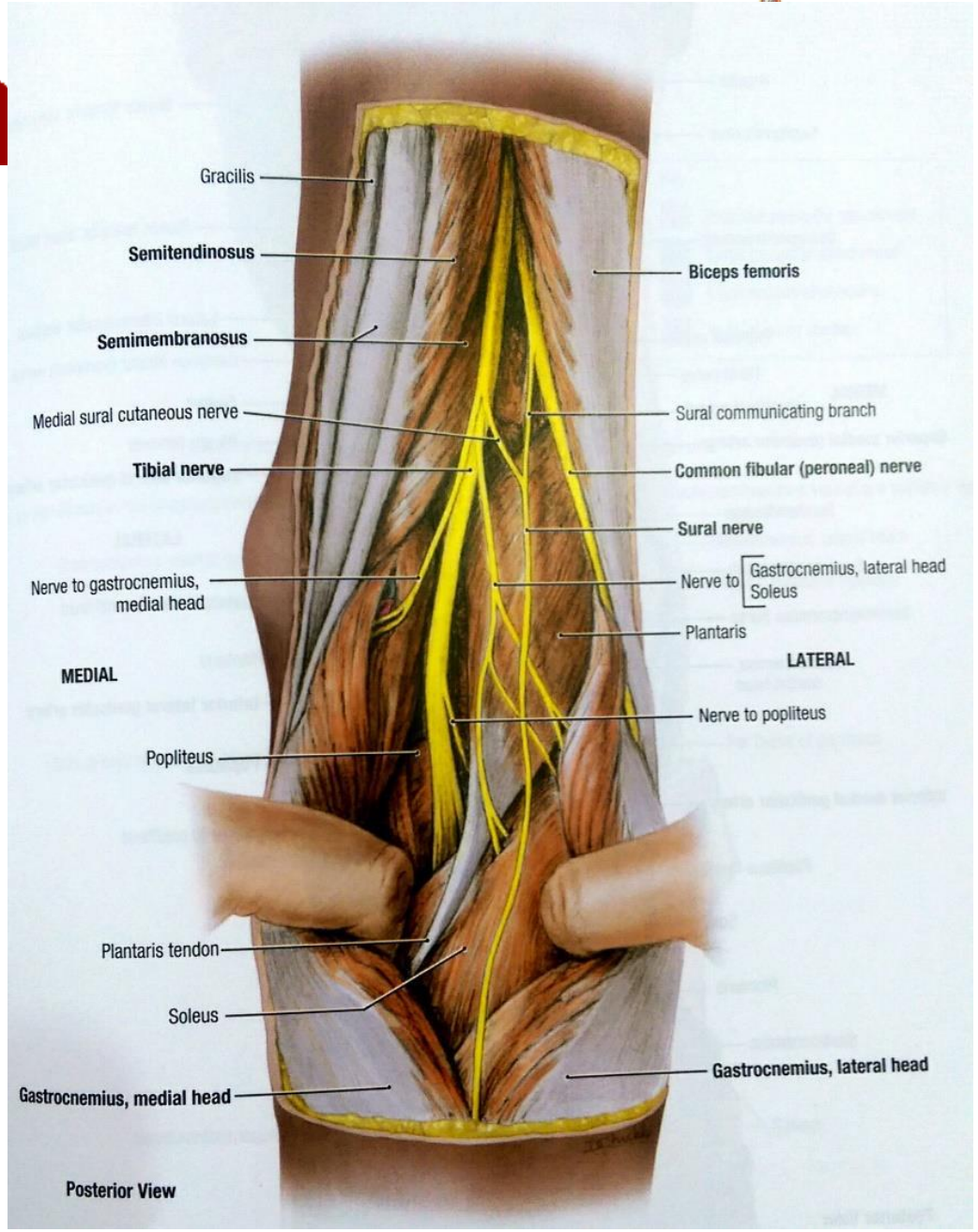
1- Articular branches, it gives superomedial, inferomedial and middle genicular branches to the knee joint, accompanied the corresponding branches from the popliteal artery

2- Muscular branches to the muscles of the back of the thigh and to the gastrocnemius, plantaris, soleus and popliteus ms.

3- sural nerve:

a- it is a cutaneous branch descend in the groove between the two heads of the gastrocnemius m.

b- it pierce the deep fascia about the middle of the back of the leg, supply the skin of the lower posterior part of the leg and the skin of the lateral side of the dorsum of the foot.



D- Common peroneal nerve (L4 L5 S1 S2)

1- It is smaller than tibial nerve follow the tendon of biceps femoris m. along the upper lateral border of the popliteal fossa to the back of the head of the fibula,

2- then curves forwards along the neck of the fibula deep to the peroneus longus m. here it divides into deep and superficial branches.

Branches in the popliteal fossa:

1- ***cutaneous branches***, these include

a- the peroneal communicating branch which arise in the upper part of the popliteal fossa descend on the posterolateral side of the calf , it supply the proximal 2/3 of the posterolateral part of the leg.

b- Lateral cutanous nerve of the calf arise on the lateral head of the gastrocnemius m. supply the lateral side of the leg.

2- ***articular branches***, these include:

a- the superior and the inferior lateral genicular branches they are small branches accompany the corresponding arteries.

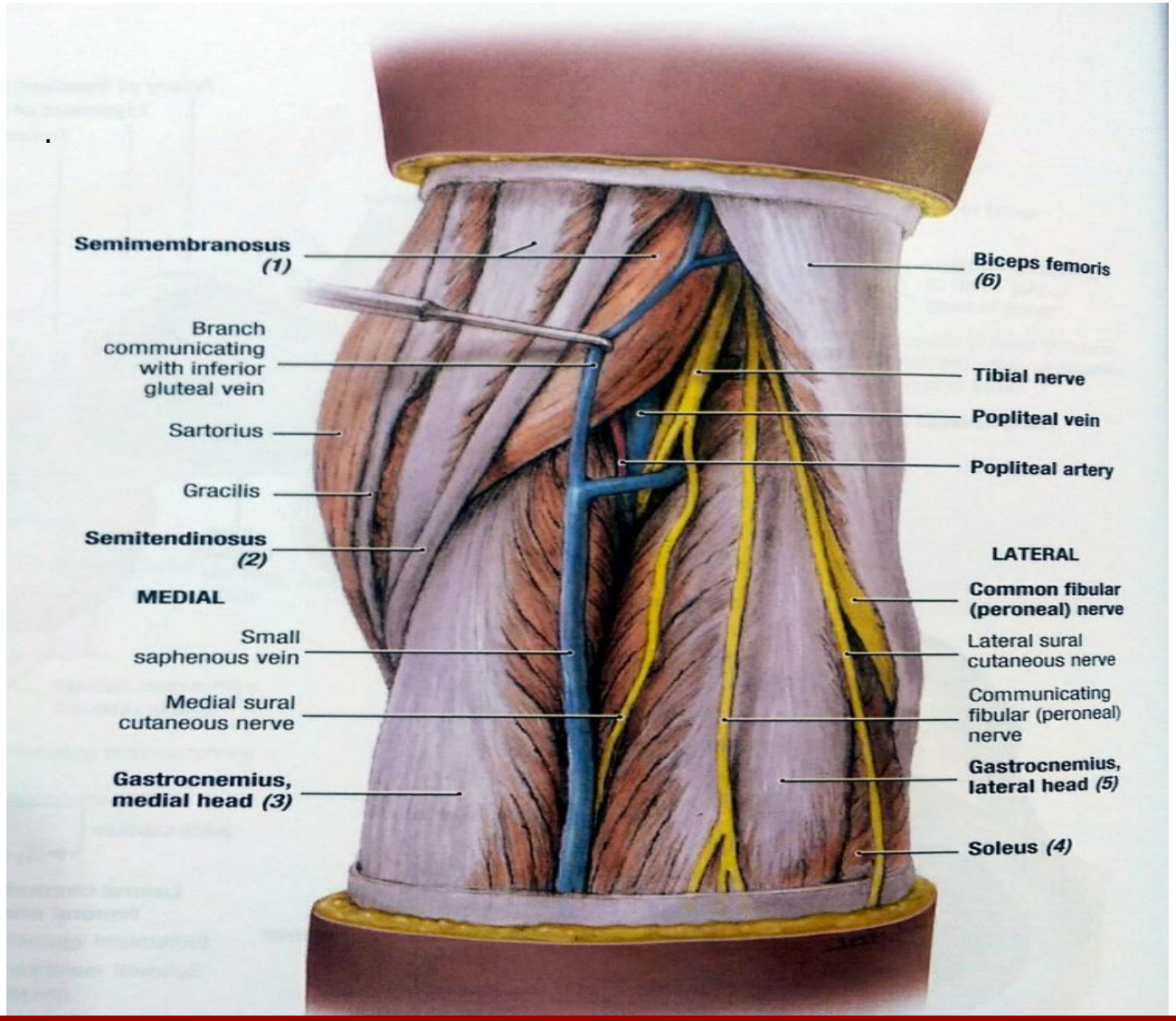
b- Recurrent genicular branch arise where the common peroneal nerve divides into superficial and deep branches, it ascends to the knee joint.

3- ***muscular branch*** to the short head of the biceps femoris m. arise high up in the fossa

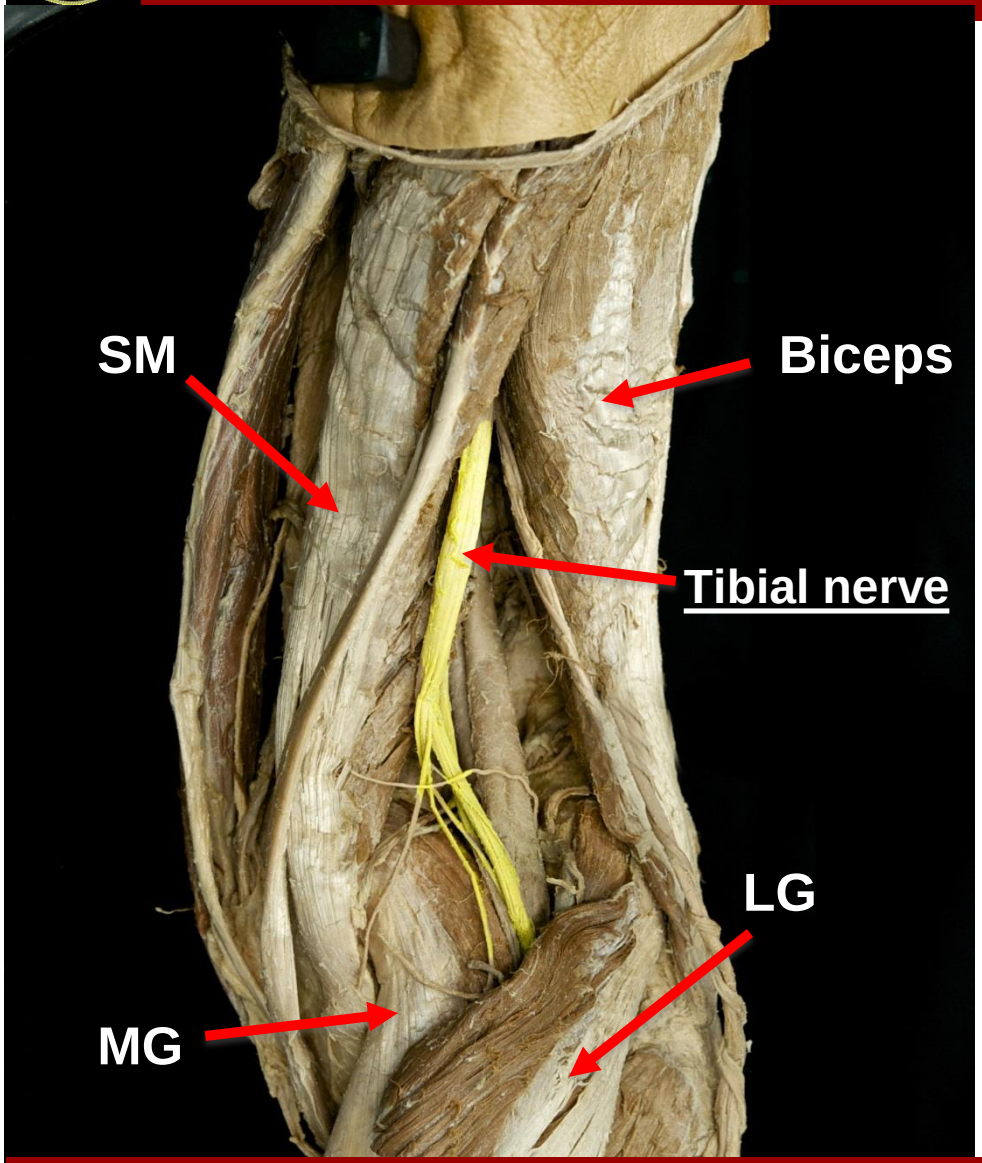
popliteal fossa
contents

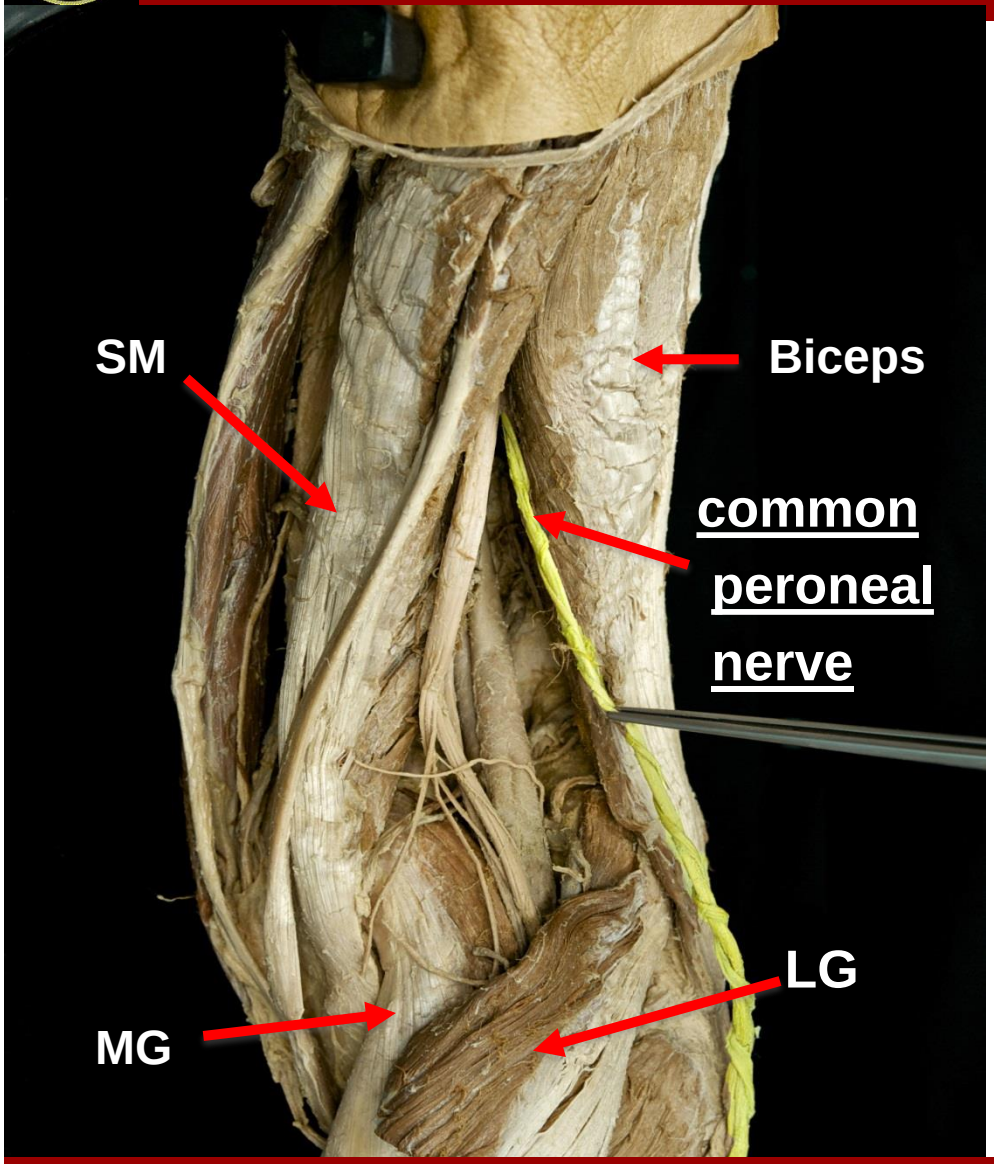
Popliteal lymph nodes: about six LNs. Are embedded in the fatty connective tissue of pop. Fossa .they receive superficial lymph vs. from lateral side of the foot & leg ,these accompany small saphenous vein into pop. Fossa ,they also receive lymph from knee joint&from deep lymph vs. accompanying the anterior & posterior tibial arteries..

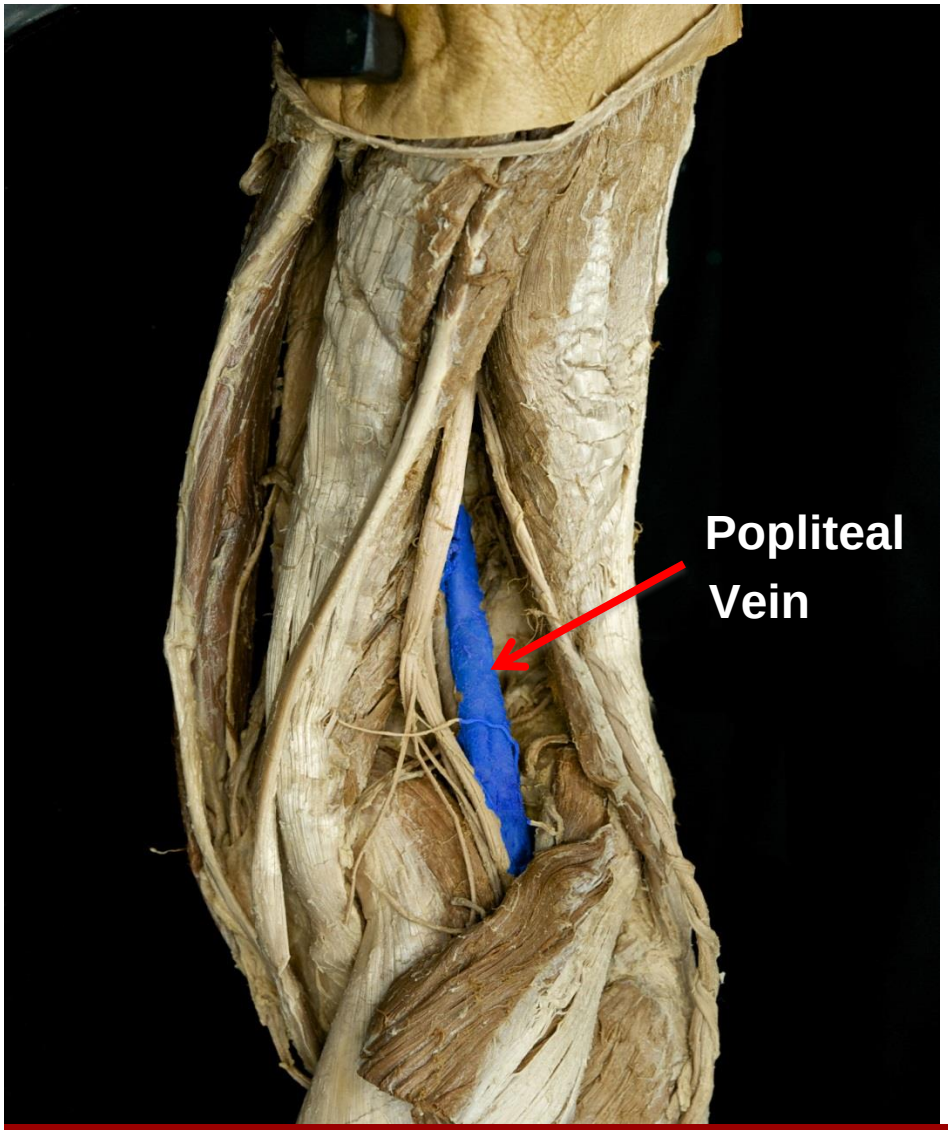
Note: Review the relationship of the nerves, veins, and arteries within the popliteal fossa. The common peroneal and tibial nerves are most superficial, the popliteal vein and its branches are intermediate in position, and the popliteal artery and its branches are most deep and lie adjacent to the femur, tibia, and the knee joint capsule.

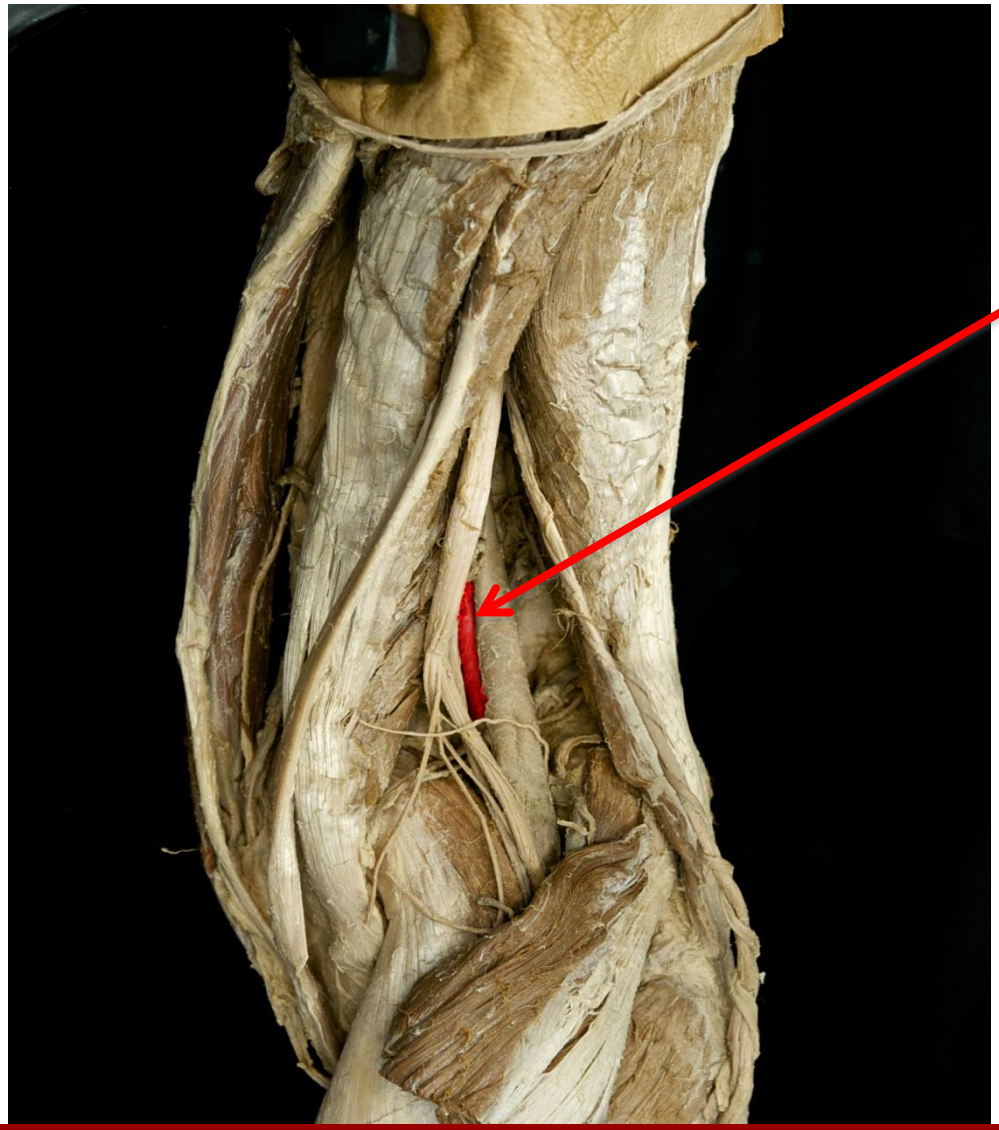


Posterior view of knee

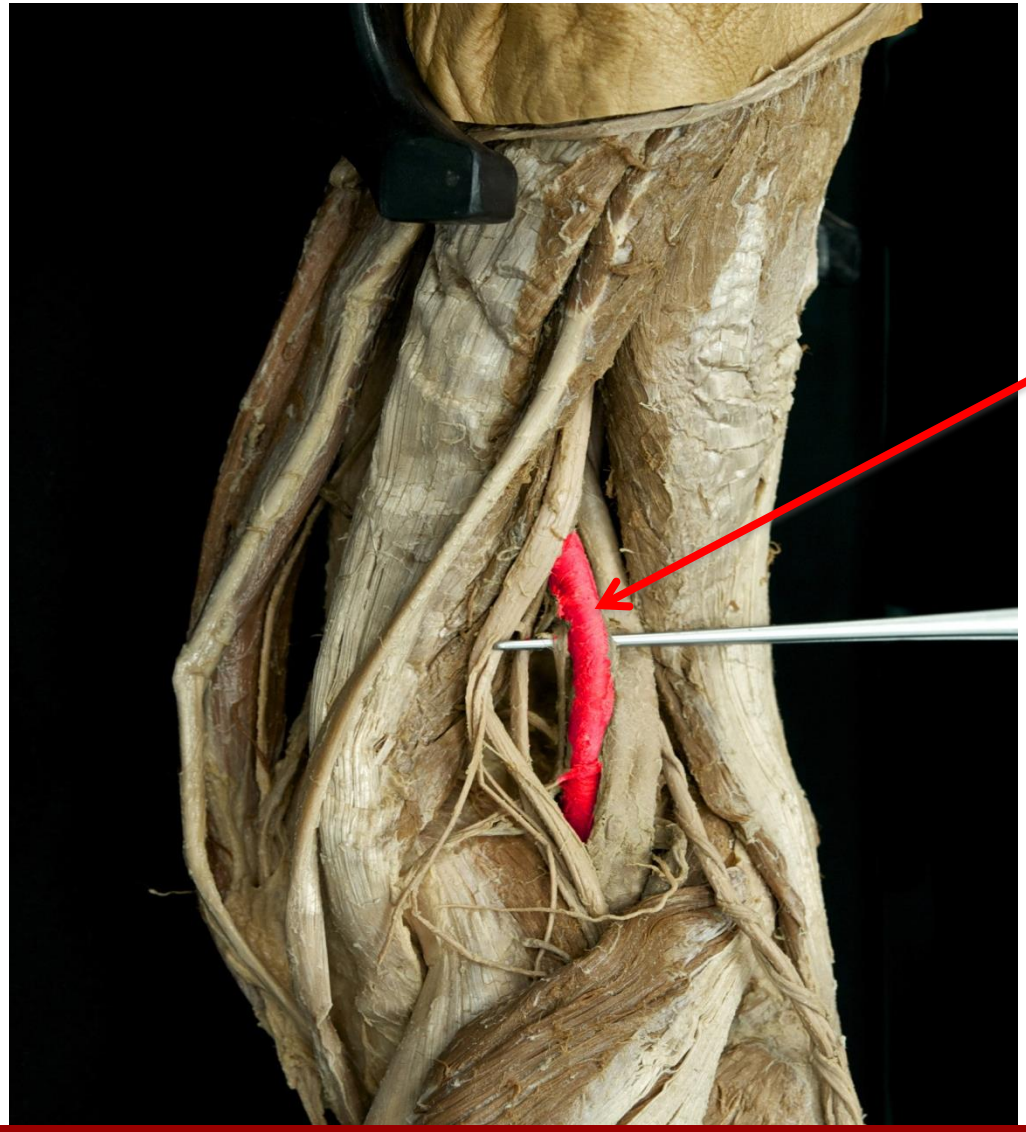

SM
Biceps
Tibial nerve
LG
MG


SM
Biceps
common peroneal nerve
LG
MG


Popliteal
Vein



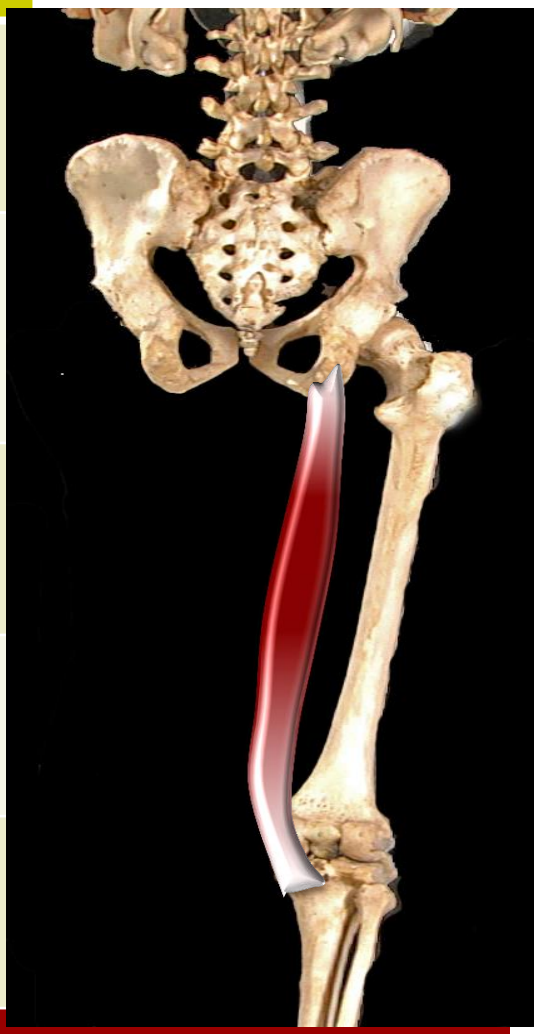
Popliteal artery



Popliteal artery

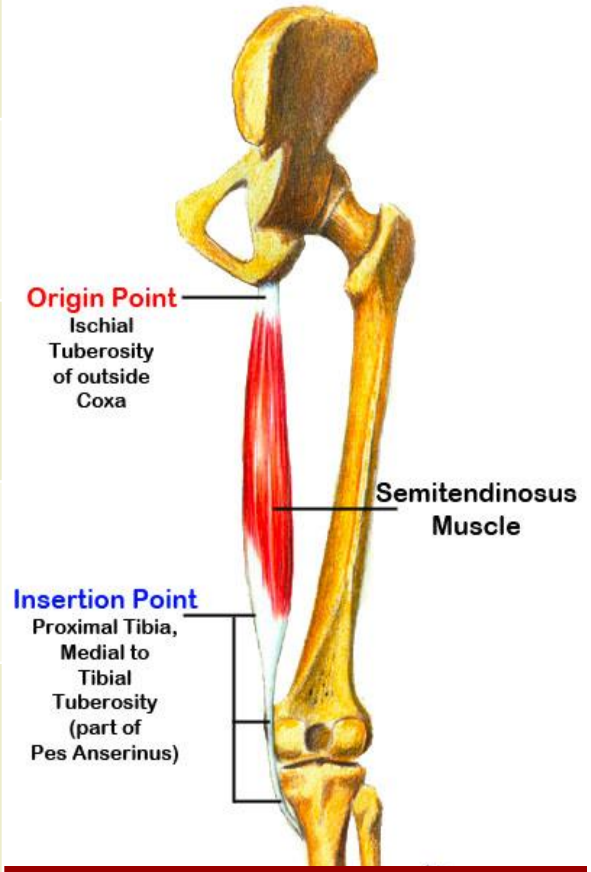
semimembranosus

Origin	Superior lateral quadrant of posterior surface ischial tuberosity
Insertion	Posterior surface of the medial tibial condyle. Sends fascial extension over popliteus, and gives rise to oblique popliteal ligament
Action	Extends hip, flexes and medially rotates the knee
Nerve supply	Tibial component of sciatic nerve (L5, S1)
Blood supply	Perforating branches of profunda femoris artery, inferior gluteal artery, and the superior muscular branches of popliteal artery



Semitendinosus

Origin	Superior medial quadrant, posterior surface ischial tuberosity
Insertion	Superior part, medial tibial shaft
Action	Extends hip, flexes and medially rotates knee
Nerve supply	Tibial component of sciatic nerve (L5, S1)
Blood supply	Perforating branches of profunda femoris artery, inferior gluteal artery, superior muscular branches of popliteal artery

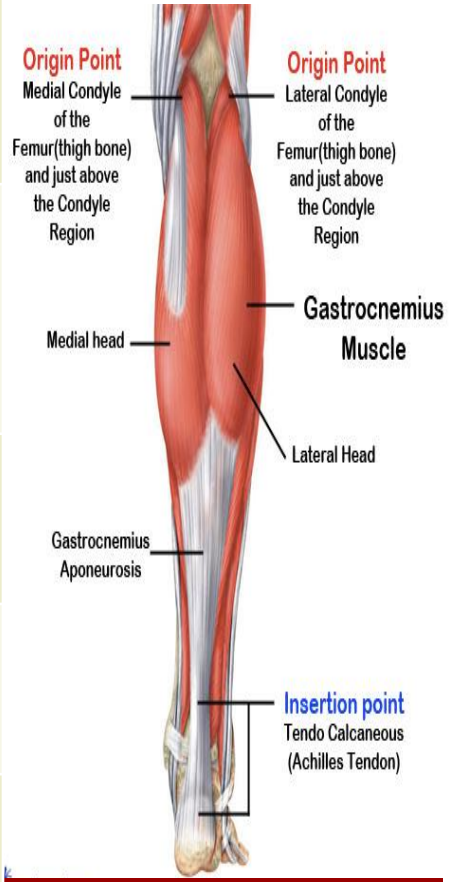


Biceps Femoris

Origin	Long Head: Superior medial quadrant of the posterior surface of the ischial tuberosity Short Head: Middle third linea aspera, lateral supracondylar ridge of femur
Insertion	Fibular head, with extensions to lateral collateral ligament and lateral tibial condyle
Action	Flexes the knee, rotates tibia laterally, extends the hip joint
Nerve supply	Long head: tibial component of sciatic nerve, Short head: common peroneal component of sciatic nerve (L5, S1)
Blood supply	Perforating branches of profunda femoris artery, inferior gluteal artery, superior muscular branches of popliteal artery

Gastrocnemius

Origin	**Medial head: posterior surface of medial femoral condyle** **Lateral head: posterior surface of lateral femoral condyle**
Insertion	**The two heads unite and with soleus form the Achilles tendon, which inserts onto the posterior and upper surface of calcaneum**
Action	**Powerful plantar flexor of ankle**
Nerve supply	**Tibial nerve (S1, S2)**
Blood supply	**Sural branches of the popliteal artery**



popliteus

Origin	Lateral surface of lateral femoral condyle
Insertion	Posterior surface of the shaft of the tibia above soleal line
Action	Flex knee joint,lateral rotation of femur on tibia (unlocking the knee joint)
Nerve supply	Tibial nerve (L4,L5,S1)
Blood supply	Medial inferior genicular branch of popliteal artery and muscular branch of posterior tibial artery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