

# **Back of thigh**

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# DISCLAIMER:

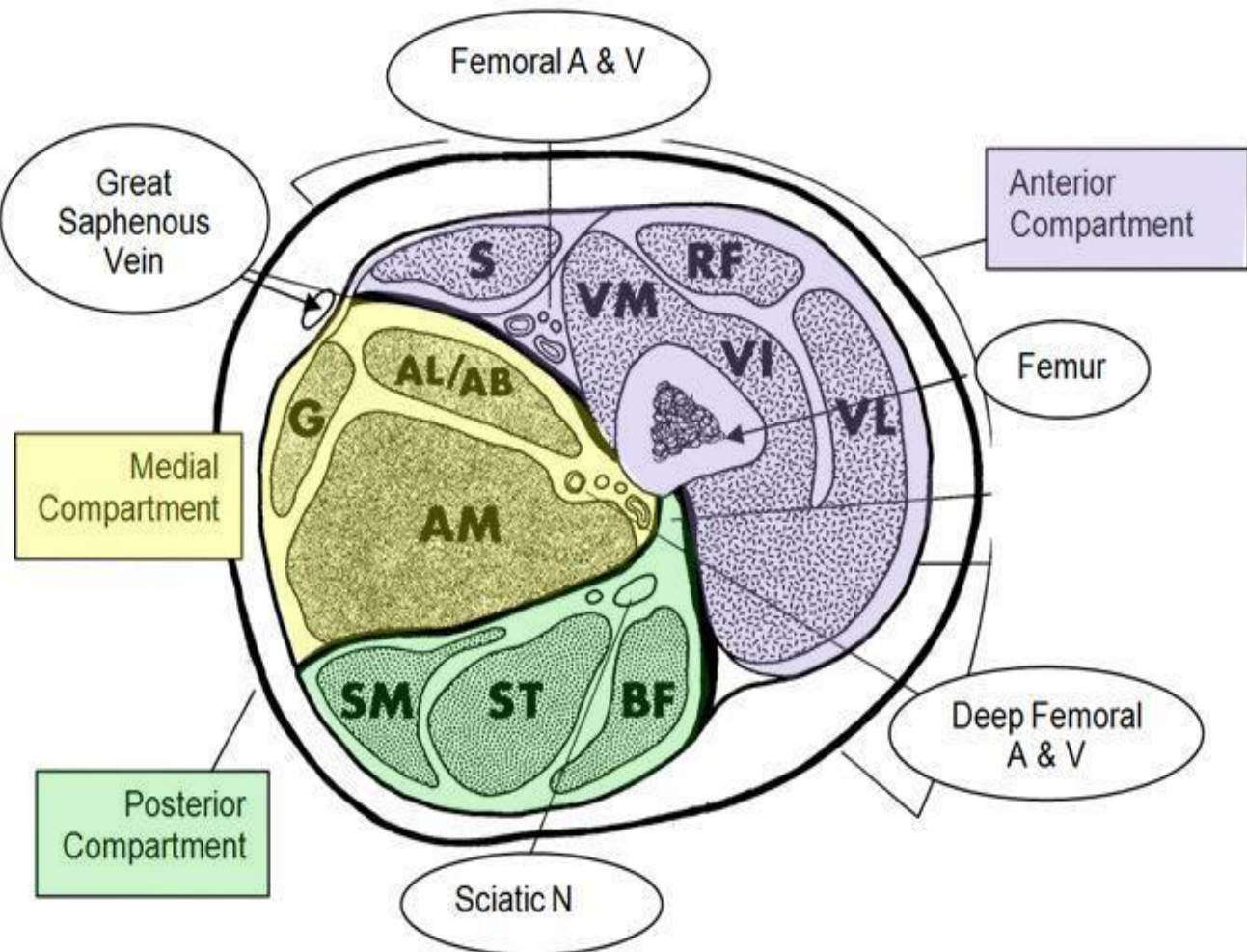
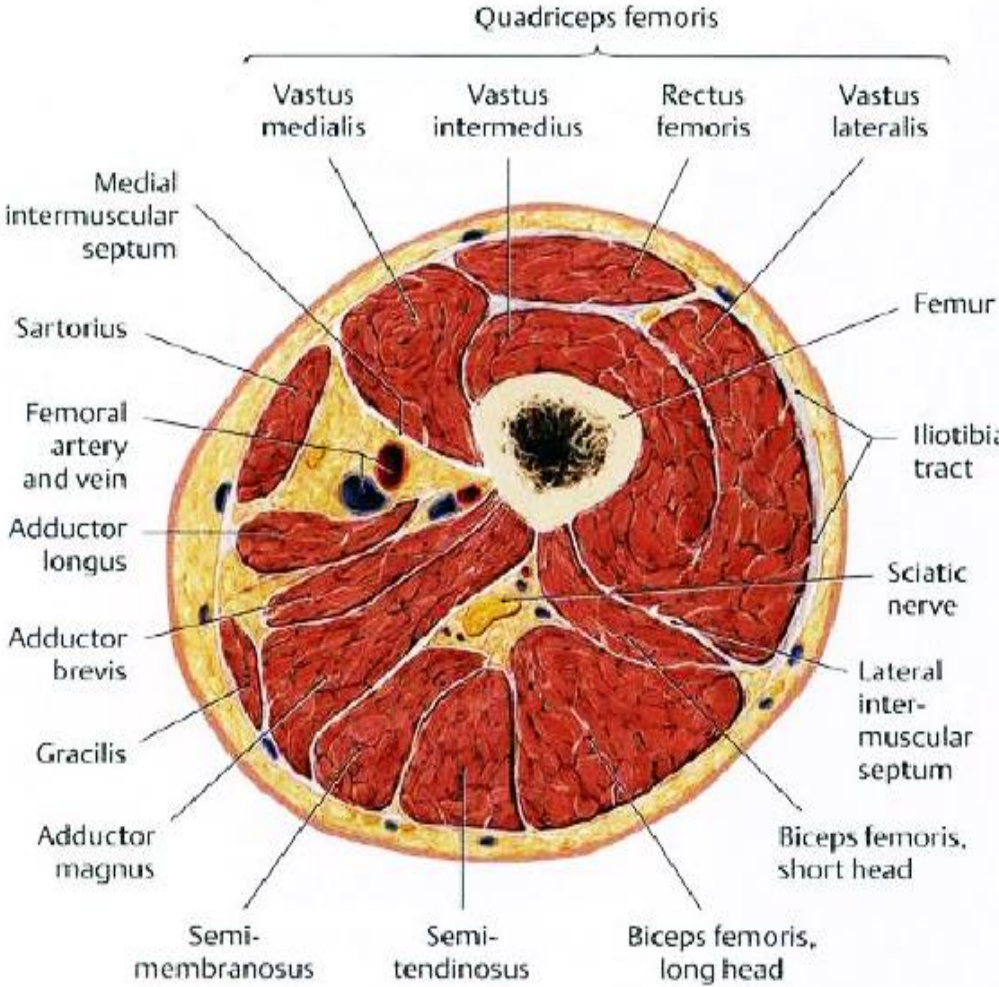
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# Learning Objectives

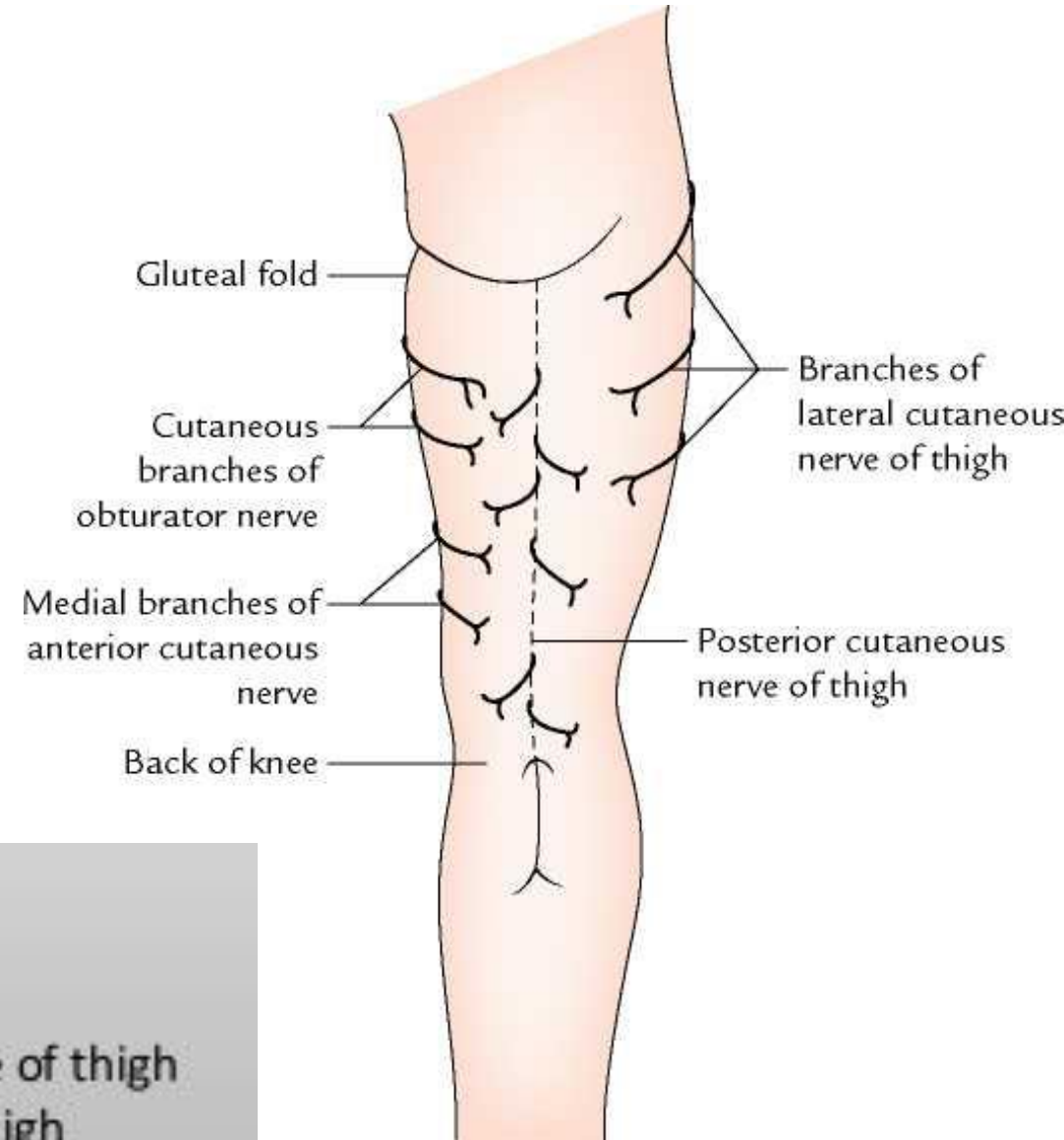
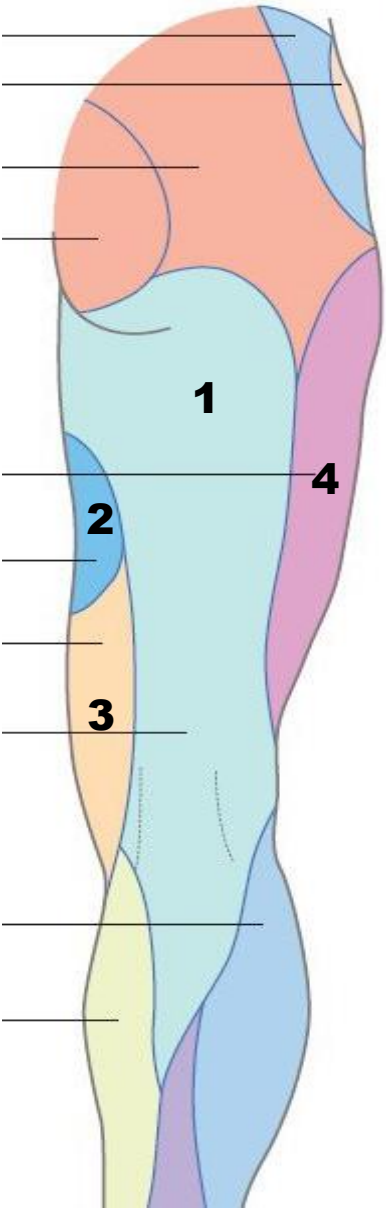
**By the end of this teaching session on back of thigh – I all the MBBS 1<sup>st</sup> year students must be able to:**

- Enumerate the contents of posterior compartment of thigh
- Describe the cutaneous innervation of skin of back of thigh
- Enumerate the hamstring muscles
- List the criteria for inclusion of muscles as hamstring muscles
- Describe the origin, insertion, nerve supply & actions of hamstring muscles
- Describe origin, course and branches of sciatic nerve
- Write a short note on posterior cutaneous nerve of thigh
- Write a note on arteries and arterial anastomosis at the back of thigh
- Discuss applied anatomy of back of thigh

# Compartments of the thigh



# Cutaneous innervation of back of thigh



## CUTANEOUS INNERVATION:

1. Posterior cutaneous nerve of the thigh
2. Cutaneous branches of the obturator nerve
3. Medial branches of anterior cutaneous nerve of thigh
4. Branches of Lateral cutaneous nerve of the thigh

# Contents of Back of thigh

## Muscles:

Hamstring muscles & short head of biceps femoris

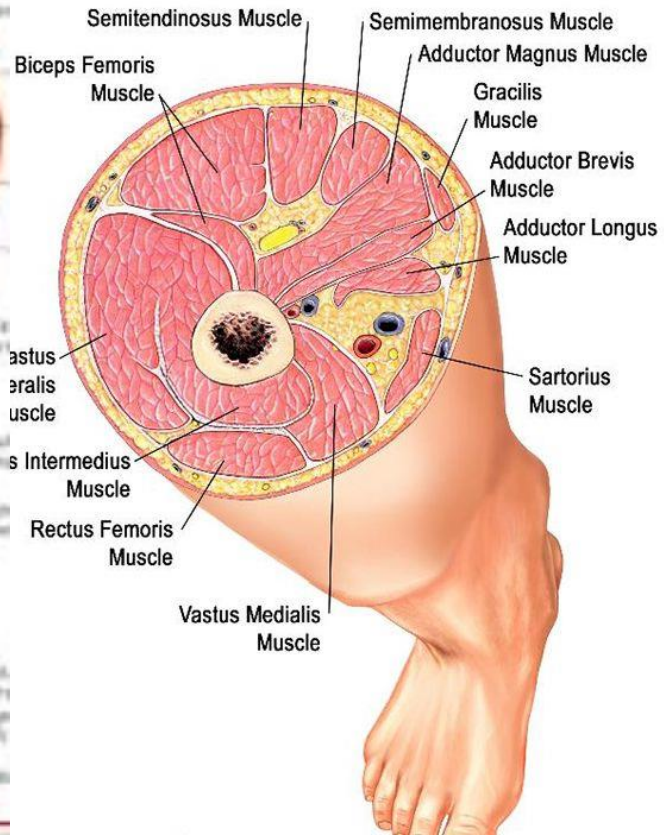
The hamstring muscles are:

1. Semitendinosus.
2. Semimembranosus.
3. Biceps femoris (long head).
4. Ischial head of adductor magnus.

## Nerves:

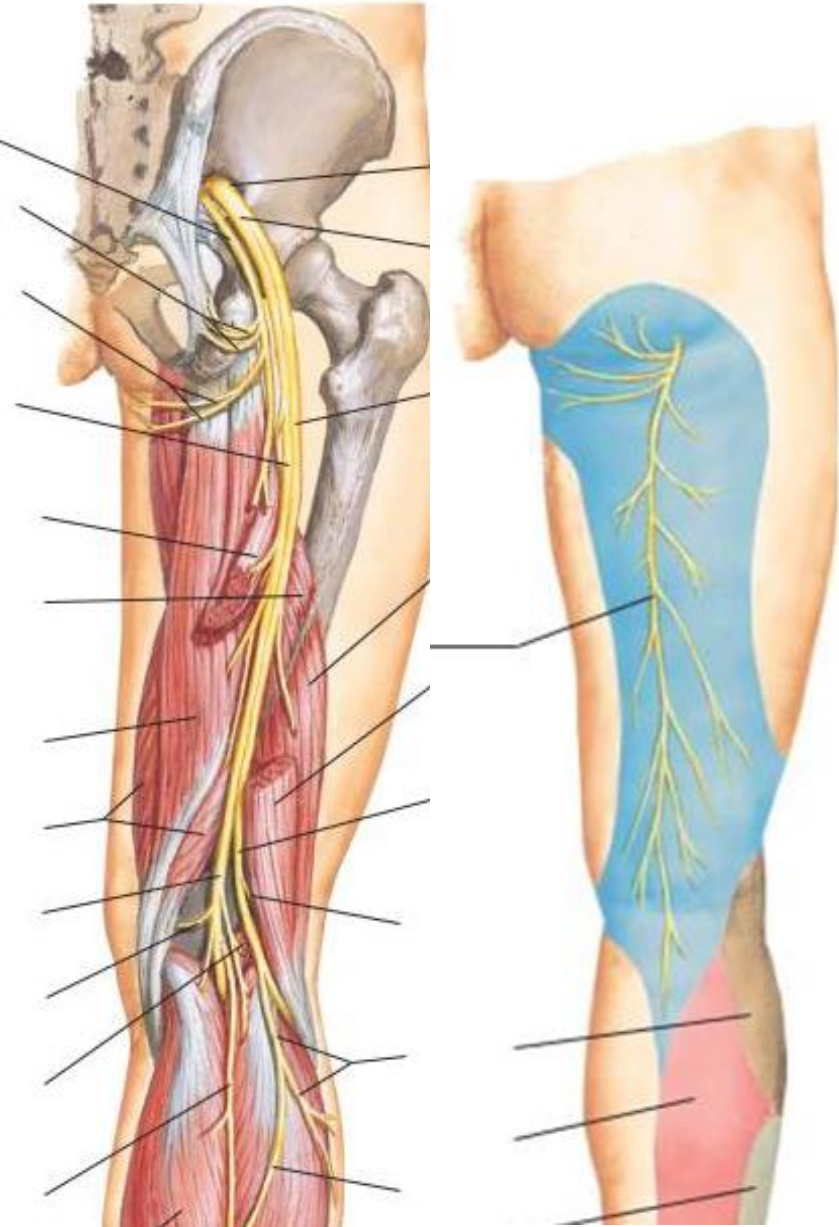
Sciatic nerve & posterior cutaneous nerve of thigh

## Arterial Anastomosis:



# The Posterior Femoral Cutaneous Nerve

*(n. cutaneus femoralis posterior)*



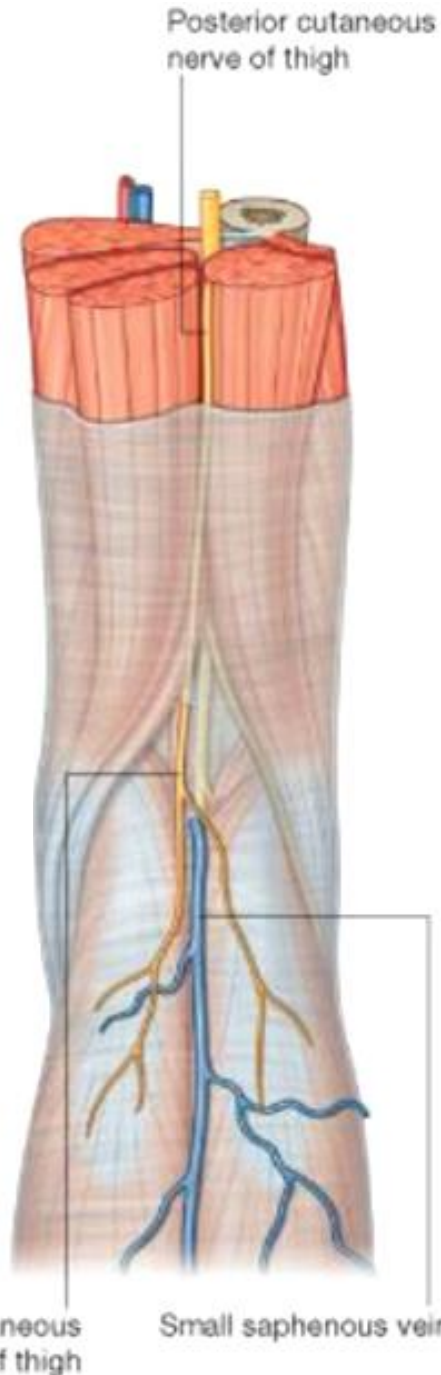
Dorsal divisions of – S1, S2 & Ventral divisions of S2, S3

Exits from pelvis through the greater sciatic foramen below the Piriformis.

Descends beneath the Gluteus maximus with the inferior gluteal artery

Runs down the back of the thigh beneath the fascia lata, to the back of the knee and leg

erve



## Posterior Femoral Cutaneous Nerve contd.....

- Here it pierces the deep fascia and accompanies the small saphenous vein to about the middle of the back of the leg
- Its terminal twigs communicate with the sural nerve.
- Its branches are all cutaneous, and are distributed to the gluteal region, the perineum, and the back of the thigh



# Muscles of Back of thigh

- Called hamstring why

The posterior thigh muscles were called “hamstrings” because their tendons on the rear of knee are accustomed to hang up hams (hip and thigh regions of critters viz., pigs.).

**Hamstringing** is a method of crippling a person or animal so that they cannot walk properly by severing the hamstring tendons in the thigh of the individual. It is used as a method of torture, or to incapacitate the victim.

Hamstringing was commonly used to incapacitate combatants and prisoners

# Muscles of Back of thigh (Hamstring muscles)

They are:

1. **Semitendinosus**
2. **Semimembranosus**
3. **Biceps femoris (long head)**
4. **Adductor magnus**

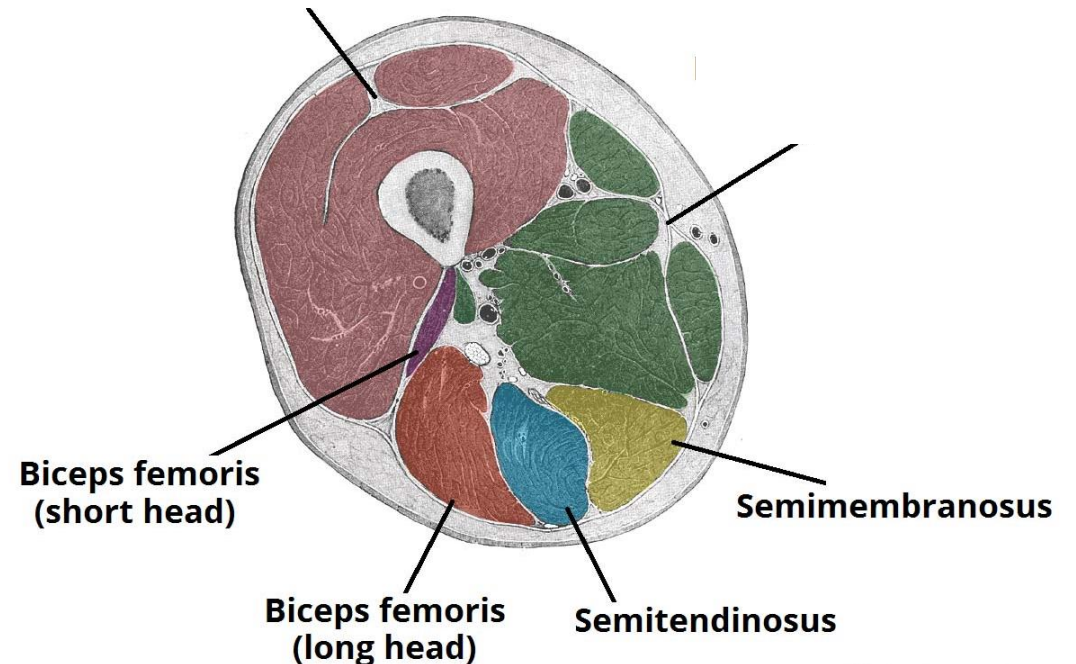
characteristic features of hamstring muscles

1. Arise from the ischial tuberosity.
2. Are inserted into one of the bones of the leg.
3. Are flexors of the knee and extensors of the hip joint
4. Are supplied by tibial part of the sciatic nerve.

## Exceptions:

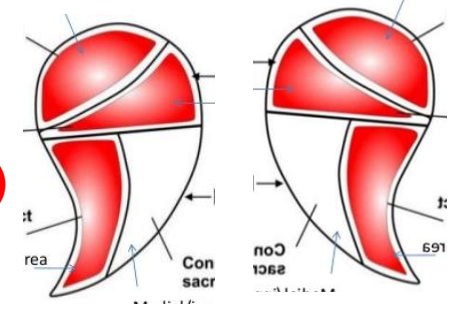
Adductor magnus reaches only upto adductor tubercle still why is it a hamstring?

- Tibial collateral ligament of knee joint represents the morphologic degenerated tendon of this muscle



# Semitendinosus

(upper part muscular, lower part has long tendon of insertion)



Lies posteromedially in thigh  
Superficial to semimembranosus

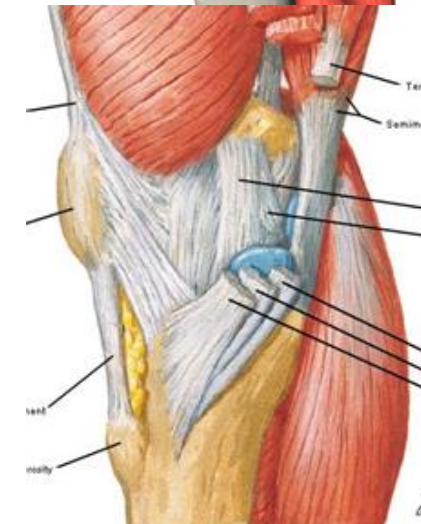
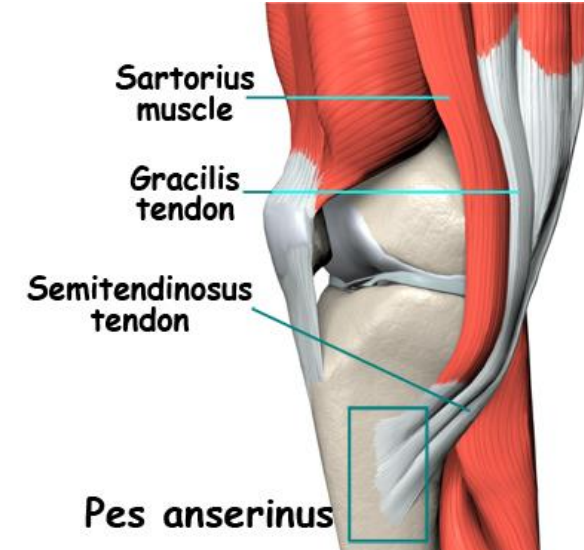
## ORIGIN:

Inferomedial impression of upperpart of ischial tuberosity in common with long head of biceps femoris

## INSERTION:

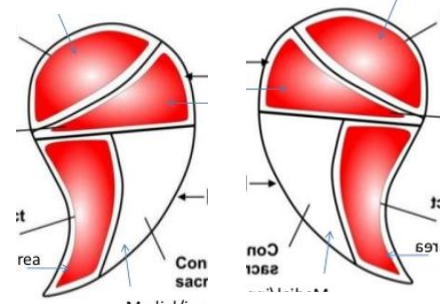
Into upper part of medial surface of tibia behind Sartorius and gracilis

**PES ANSERINUS** ("goose foot") conjoined tendons of three muscles that insert onto the anteromedial surface of the proximal tibia. Sometimes referred to as the guy ropes.



# Semimembranosus

(has a flat tendon of origin- like a membrane)



Lies posteromedially in thigh  
deep to semitendinosus

## ORIGIN:

From superolateral impression of upperpart of ischial tuberosity

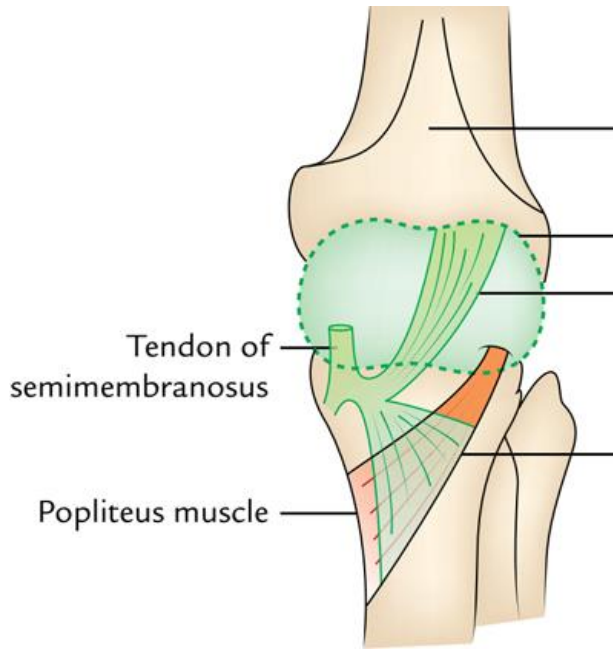
## INSERTION:

Into a groove on posterior surface of medial condyle of tibia

Expansions from the tendon form:

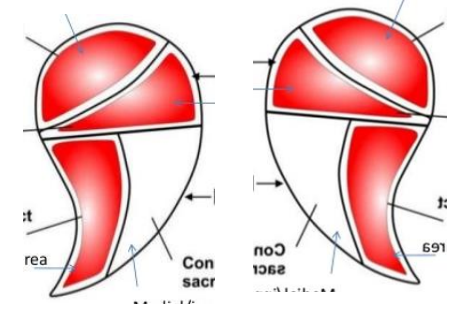
**Oblique popliteal ligament**

**Fascia covering popliteus**



# Biceps Femoris

(has two heads of origin- long & short)



Lies postero-laterally in thigh

## ORIGIN:

**LONG HEAD:** from infero-medial impression on upper part of ischial tuberosity

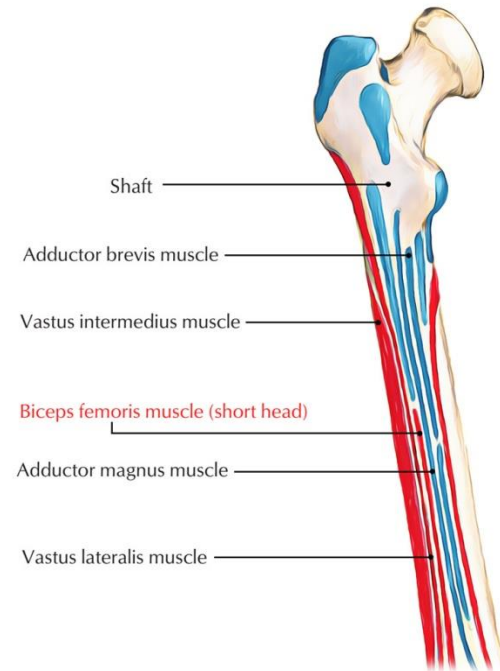
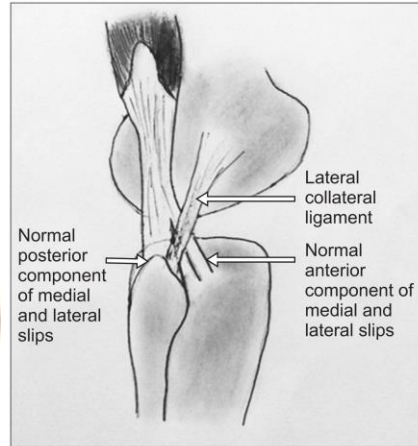
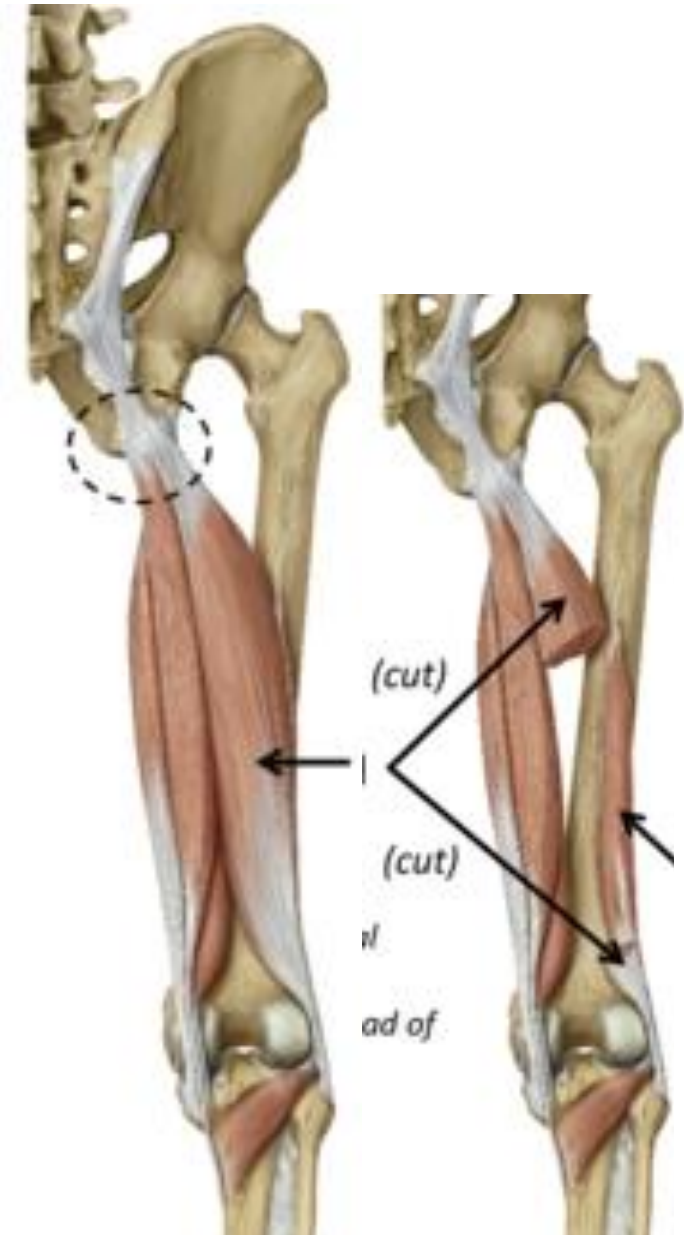
**SHORT HEAD:**

1. lateral lip of linea aspera between adductor magnus and vastus lateralis
2. Upper 2/3<sup>rd</sup> of lateral supracondylar line
3. Lateral intermuscular septum

## INSERTION:

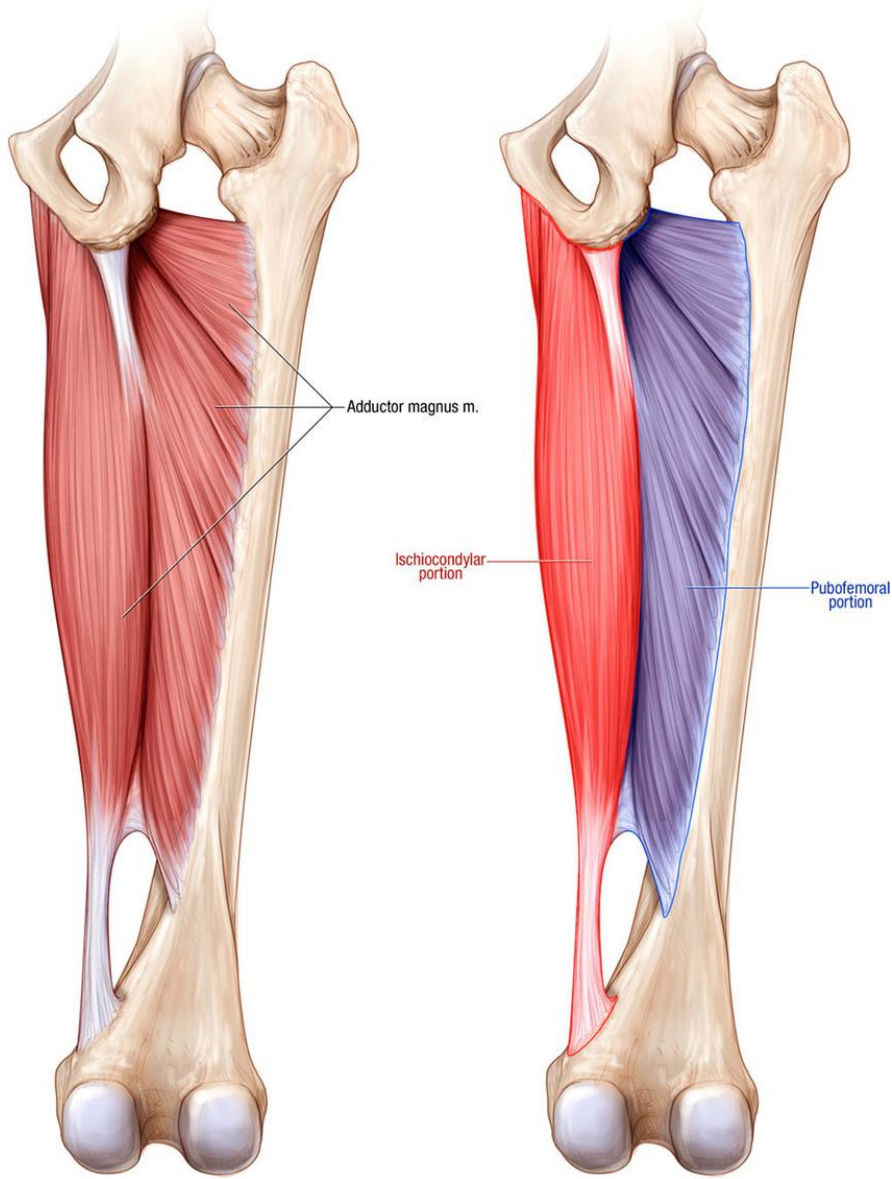
Into the head of fibula in front of styloid process

**Tendon splits into 2 slips around fibular collateral ligament**



# Adductor Magnus

(hybrid muscle- as 2 nerves supply it)



## ORIGIN:

- Lower lateral part of ischial tuberosity (hamstring component)
- Ramus of the ischium
- Inferior ramus of pubis –lower part

## INSERTION:

- Medial margin of gluteal tuberosity
- Linea aspera
- Medial supracondylar line
- Adductor tubercle (hamstring component)

# Nerve supply

Muscle	Nerve Supply
<b>Semitendinosus</b>	<b>Sciatic nerve (tibial part)</b>
<b>Semimembranosus</b>	<b>Sciatic nerve (tibial part)</b>
<b>Biceps Femoris</b>	<b>Long head: Sciatic nerve (tibial part) Short head: common peroneal part</b>
<b>Adductor Magnus</b>	<b>Hamstring part: Sciatic nerve (tibial part) Adductor part: obturator nerve</b>

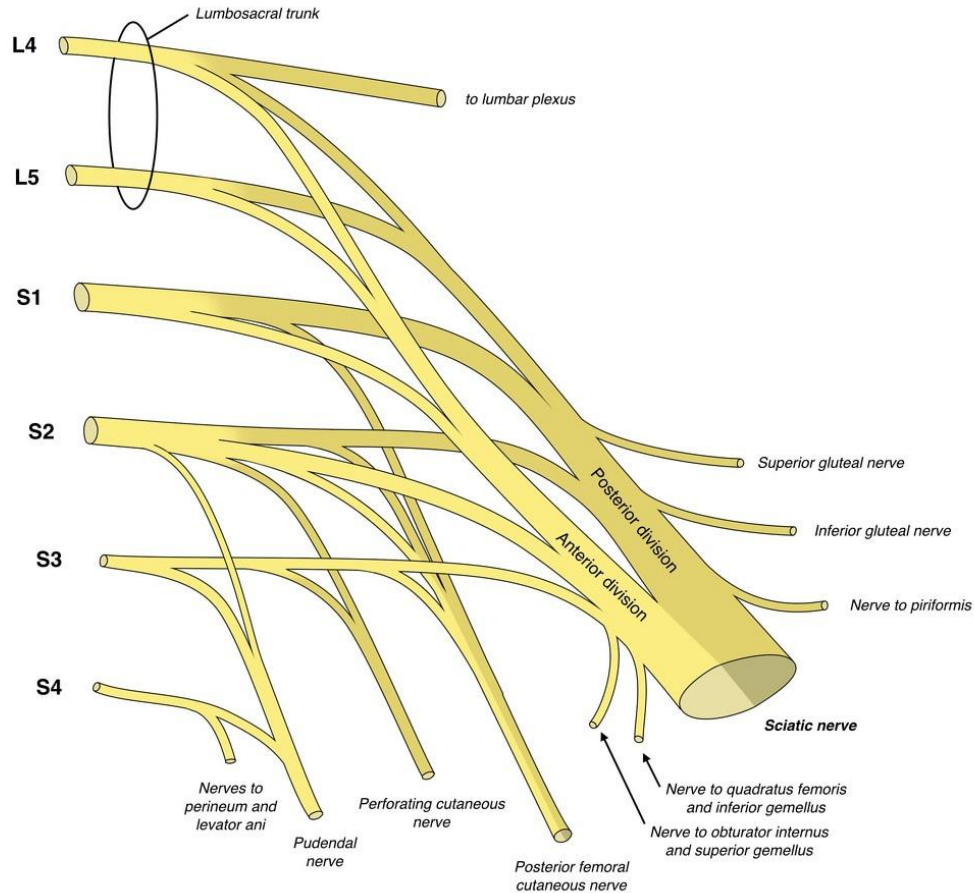
# Actions

Muscle	Actions	
	At Hip joint	At knee joint
<b>Semitendinosus</b>	<b>Extension</b>	<b>Flexion, medial rotation of leg in semiflexed knee</b>
<b>Semimembranosus</b>	<b>Extension</b>	<b>Flexion, medial rotation of leg in semiflexed knee</b>
<b>Biceps Femoris</b>	<b>Extension</b>	<b>Flexion, lateral rotation of leg in semiflexed knee</b>
<b>Adductor Magnus</b>	<b>Extension</b>	<b>Flexion, Adduction of thigh(adductor component)</b>



# Origin

(L4,L5,S1,S2,S3- Dorsal & ventral divisions)



- Largest branch of sacral plexus
- Made of 2 parts
  - **Tibial part**
  - **Common peroneal part**

## TIBIAL PART-

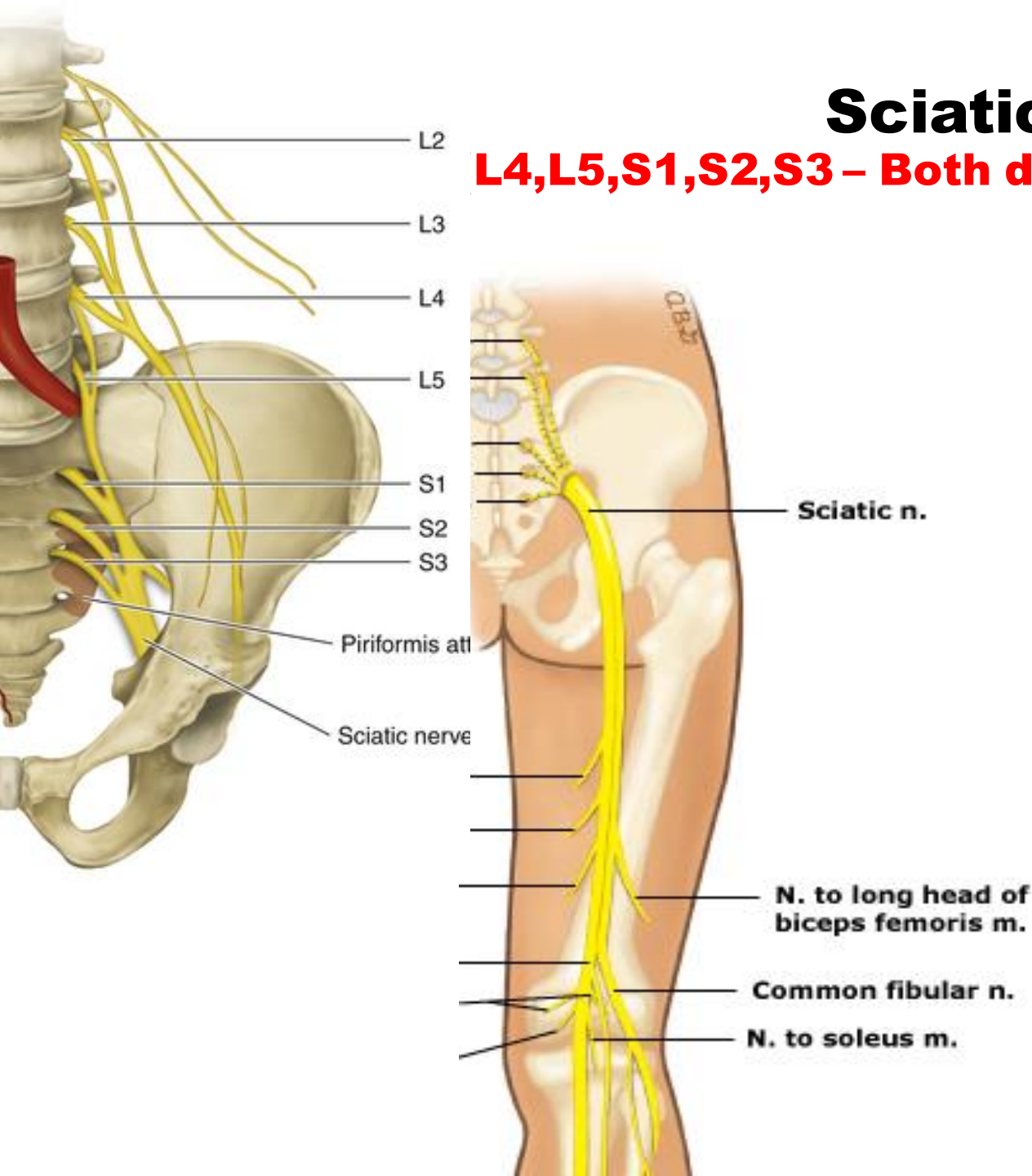
- Ventral divisions - L4,L5,S1,S2,S3

## COMMON PERONEAL PART-

- Dorsal divisions - L4,L5,S1,S2

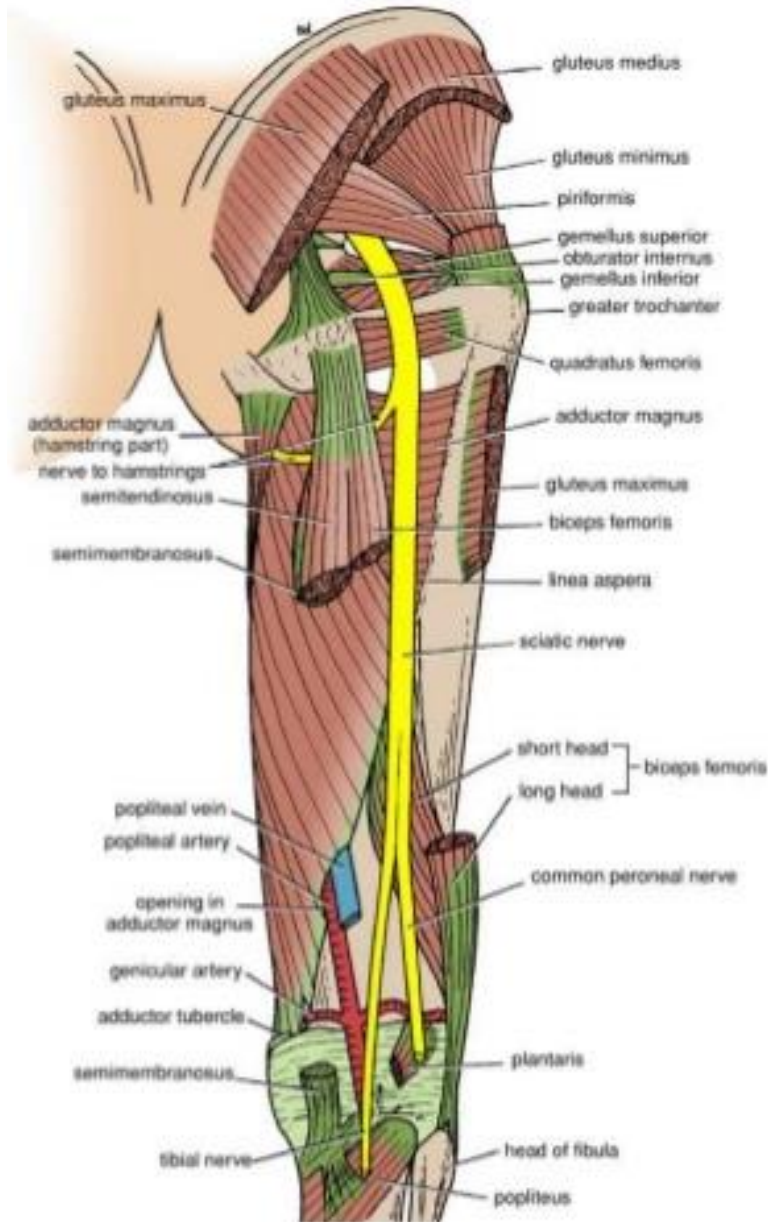
# Sciatic nerve

**L4,L5,S1,S2,S3 – Both dorsal & ventral divisions)**



- Thickest nerve
- Band like about 2 cm wide
- Begins in pelvis
- From pelvis passes to gluteal region, then in the back of thigh
- Terminates at superior angle of popliteal fossa
- Divides into tibial & common peroneal part

# Course & relations

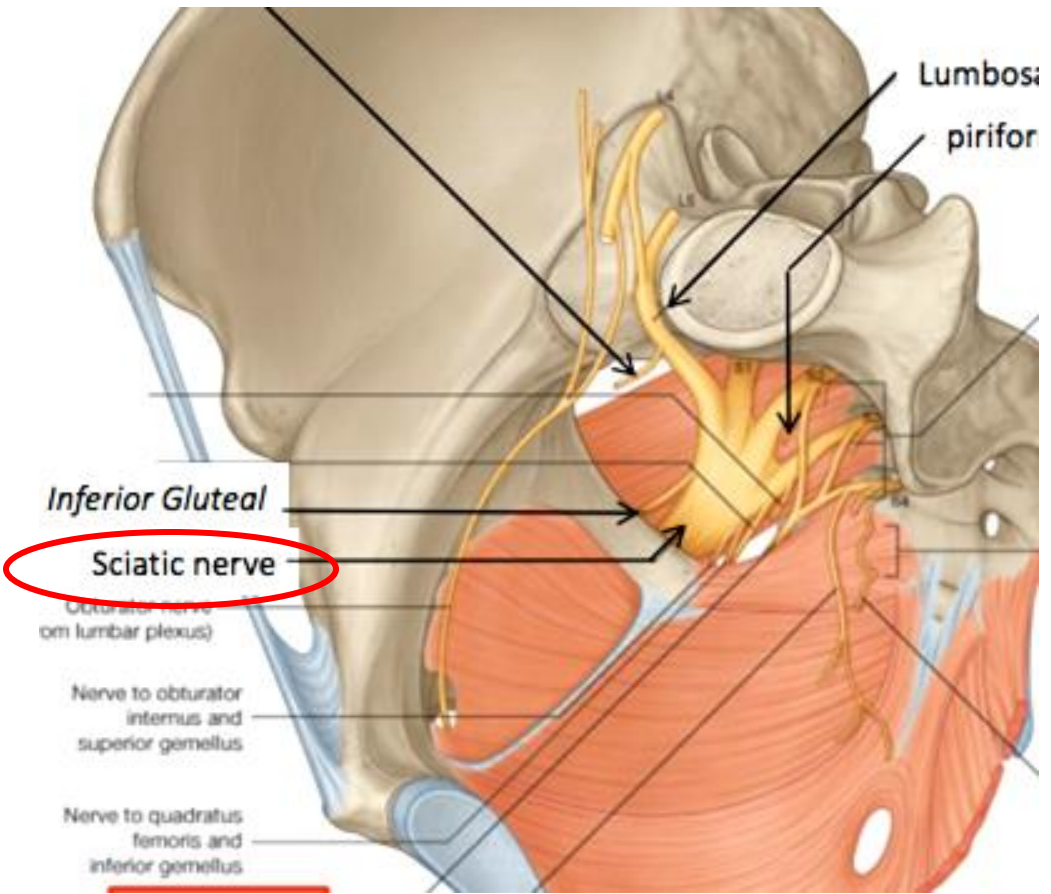


- **Courses through 3 regions:**

- Pelvis
- Gluteal region
- Back of thigh

Terminate at junction of upper 2/3<sup>rd</sup> and lower 1/3<sup>rd</sup> of back of thigh (superior angle of popliteal fossa) by dividing into tibial & common peroneal nerves

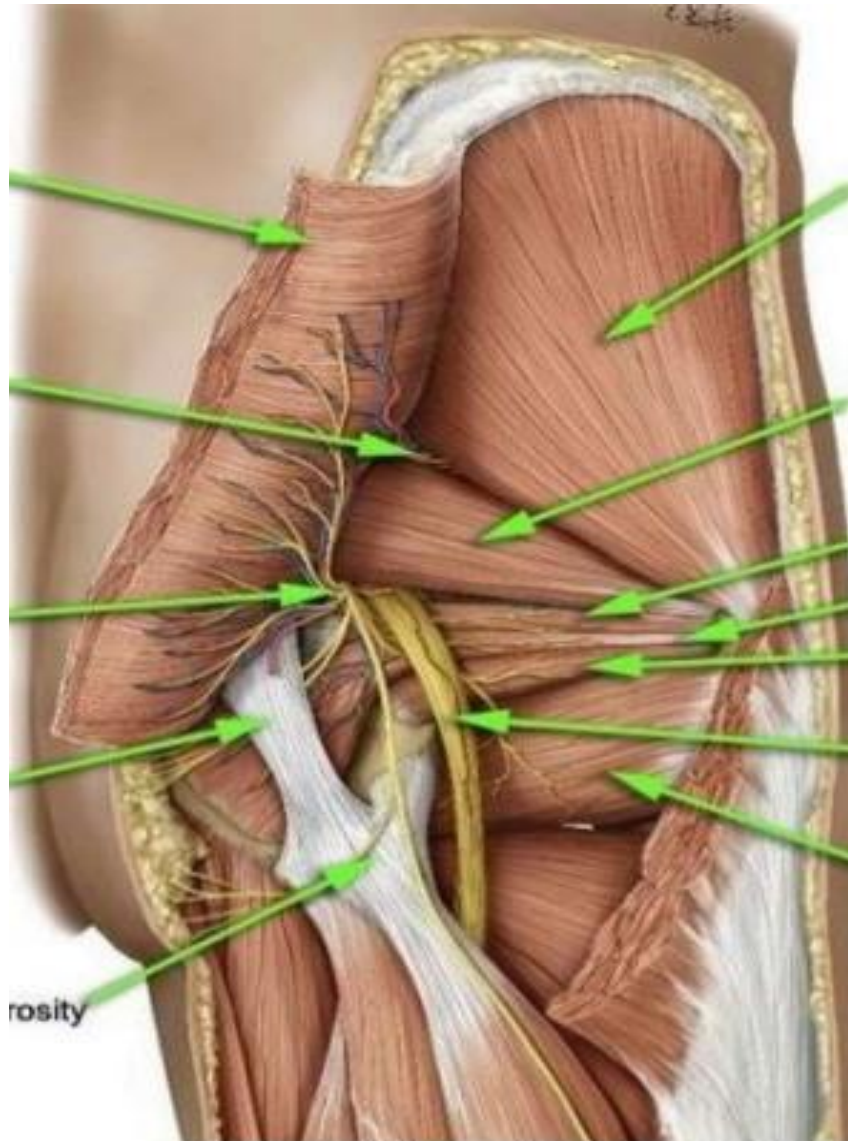
# sciatic nerve contd....



## Relations in pelvis –

- Lies in front of piriformis covered by fascia
- Leaves the pelvis at lower border of piriformis by passing out through greater sciatic foramen

## **Relations in gluteal region**



- Enters gluteal region through greater sciatic foramen below piriformis
- **SUPERFICIAL** –
  - Gluteus maximus
- **DEEP** –
  - Body of ischium
  - Tendon of obturator internus with 2 gemelli
  - Quadratus femoris, obturator externus
  - Posterior surface of capsule of hip joint
  - Upper transverse fibres of adductor magnus
- **MEDIAL**-
  - Inferior gluteal nerves & vessels

## Relations in the back of thigh

- Enters back of thigh at lower border of gluteus maximus
- Runs vertically downwards to superior angle of popliteal fossa

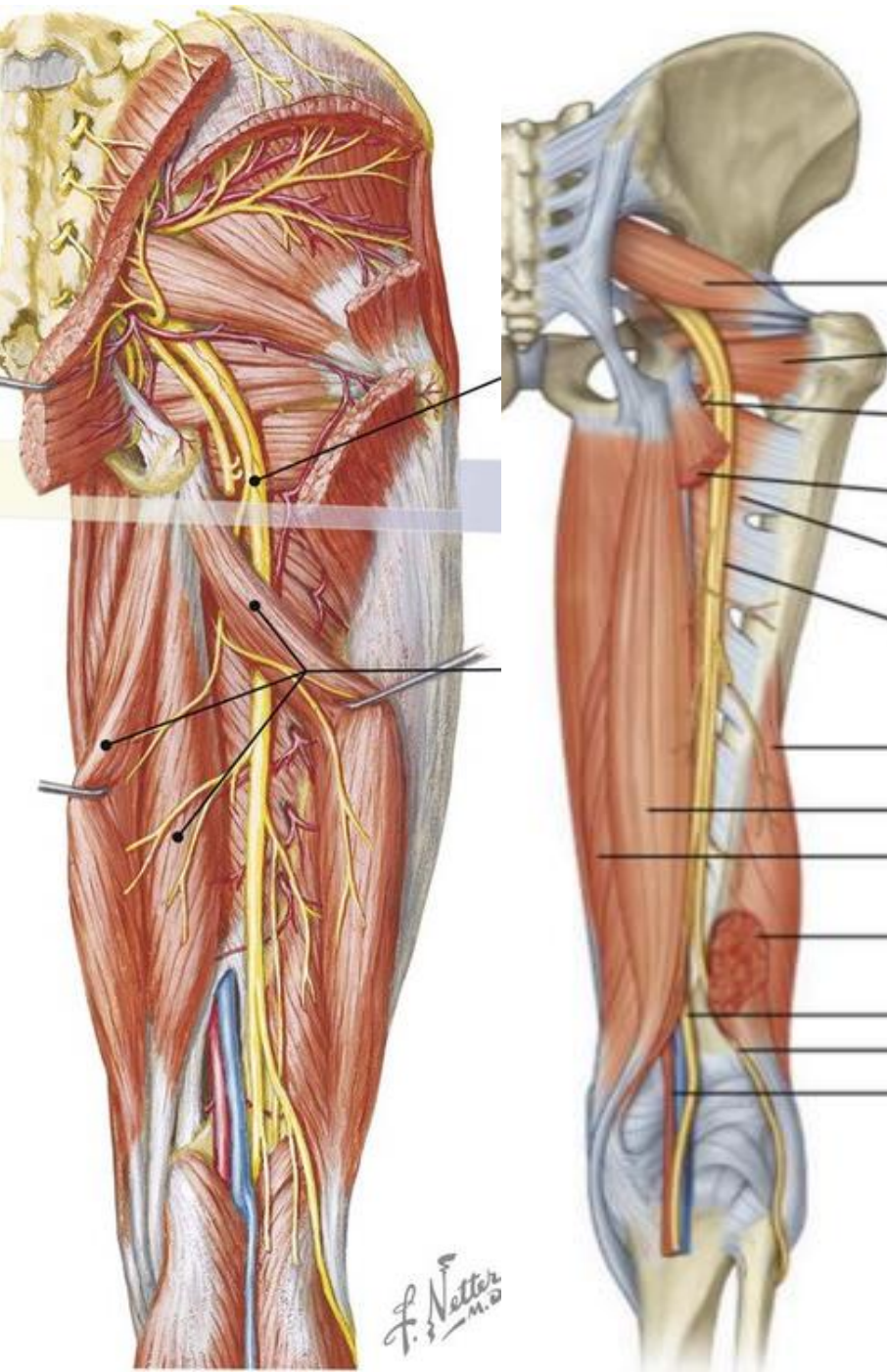
SUPERFICIAL- long head of biceps femoris

DEEP – adductor magnus

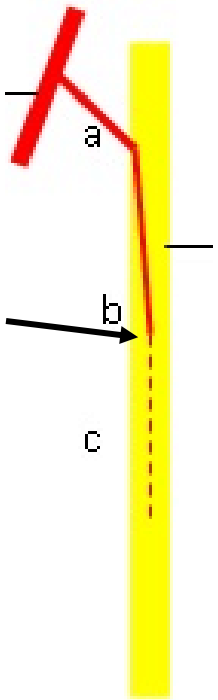
MEDIAL- Semimembranosus,  
Semitendinosus

LATERAL – Biceps femoris

Accompanied by **artery to sciatic nerve**



Artery sinks into the substance of the nerve



# Branches of sciatic nerve

**In the pelvis:** No branch

**In the gluteal region:**

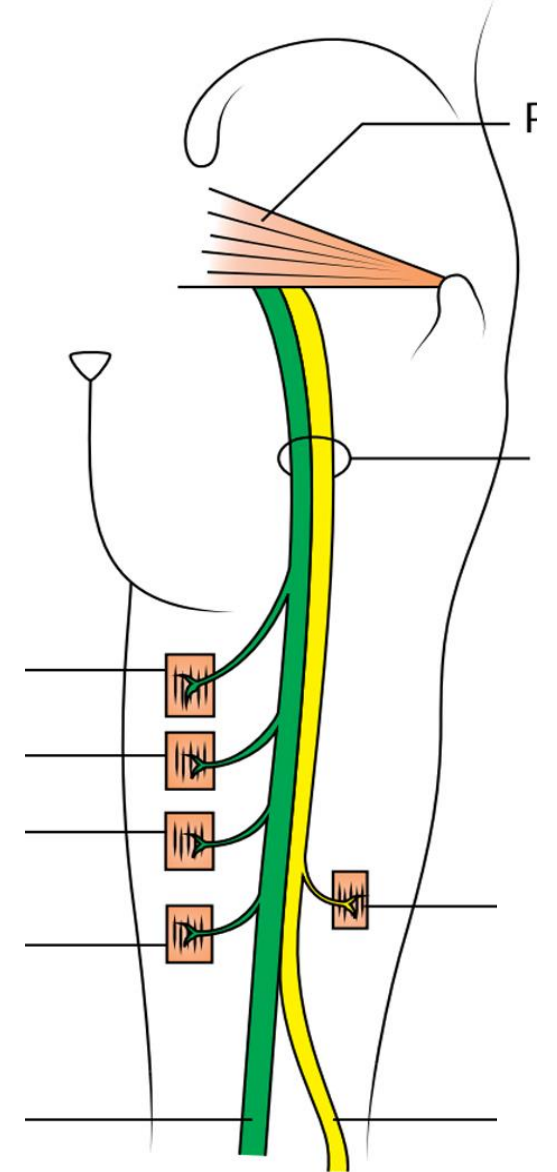
Articular branch to hip joint

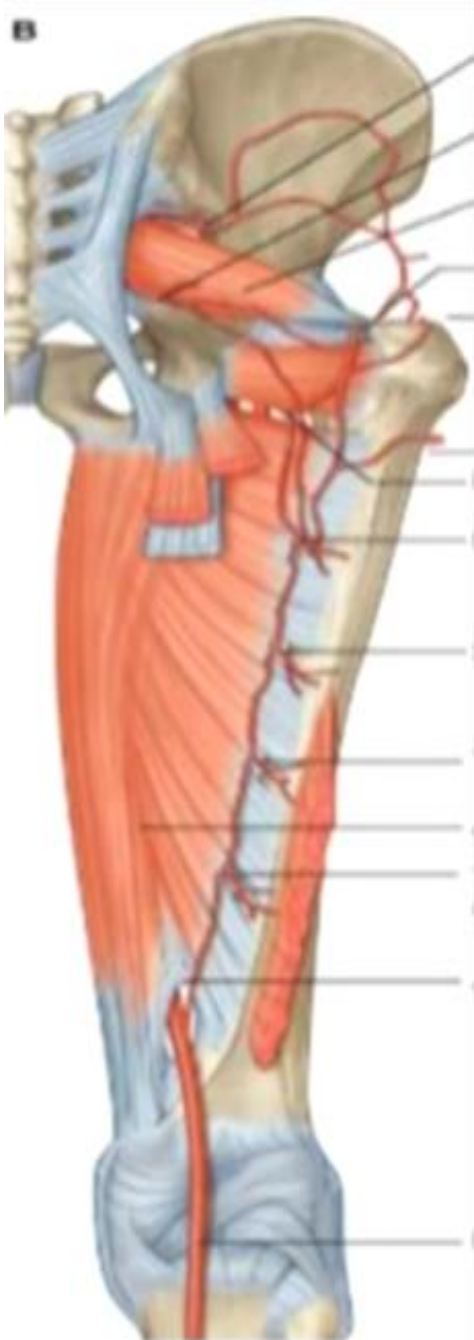
**In the back of thigh:**

Muscular branches-

**FROM TIBIAL COMPONENT** - semitendinosus,  
semimembranosus, long head of biceps femoris & ischial head  
of adductor magnus (from medial side of sciatic nerve)

**FROM COMMON PERONEAL COMPONENT** – short head of  
biceps femoris (from lateral side of sciatic nerve)





## Arterial anastomosis at the back of thigh

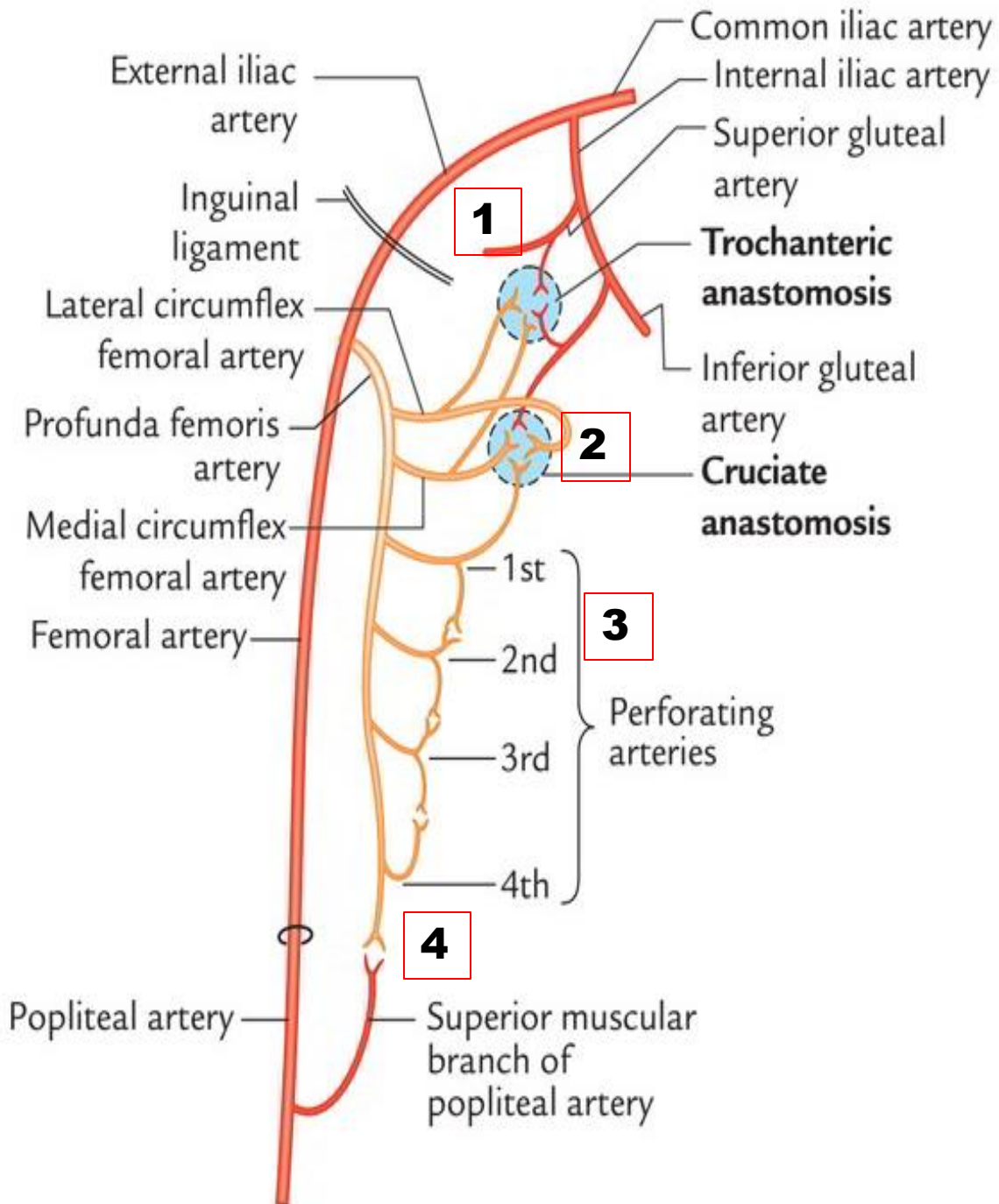
2 longitudinal anastomotic channels:

1. On / within substance of adductor magnus
2. Close to linea aspera

Formed by branches of

- Internal iliac
- Femoral
- Popliteal





## Arterial anastomosis at the back of thigh cont....

### Above Downwards-

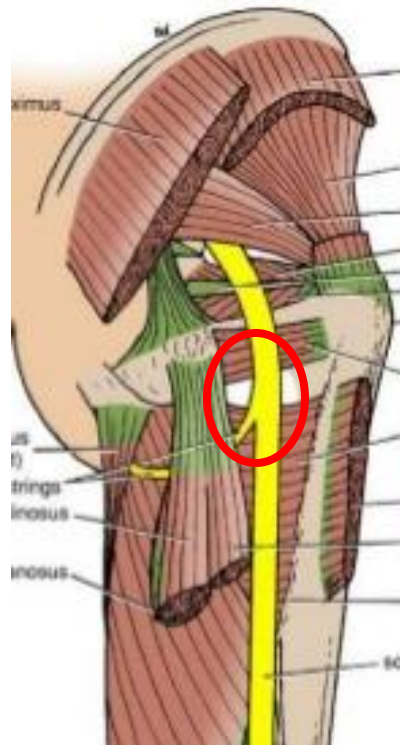
1. Gluteal arteries & circumflex femoral arteries
2. Circumflex femoral with 1<sup>st</sup> perforating
3. Perforating arteries with each other
4. 4<sup>th</sup> perforating with upper muscular branch of popliteal artery

**Provide an alternative route of blood supply to lower limb bypassing external iliac and femoral arteries**

# Applied anatomy

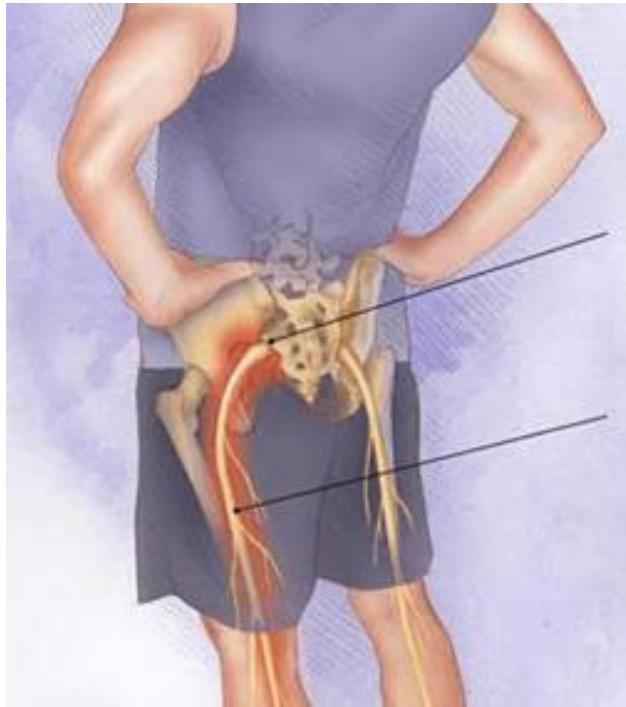
# Sleeping foot

- Temporary numbness of lower limb due to compression of sciatic nerve in gluteal region by prolonged sitting

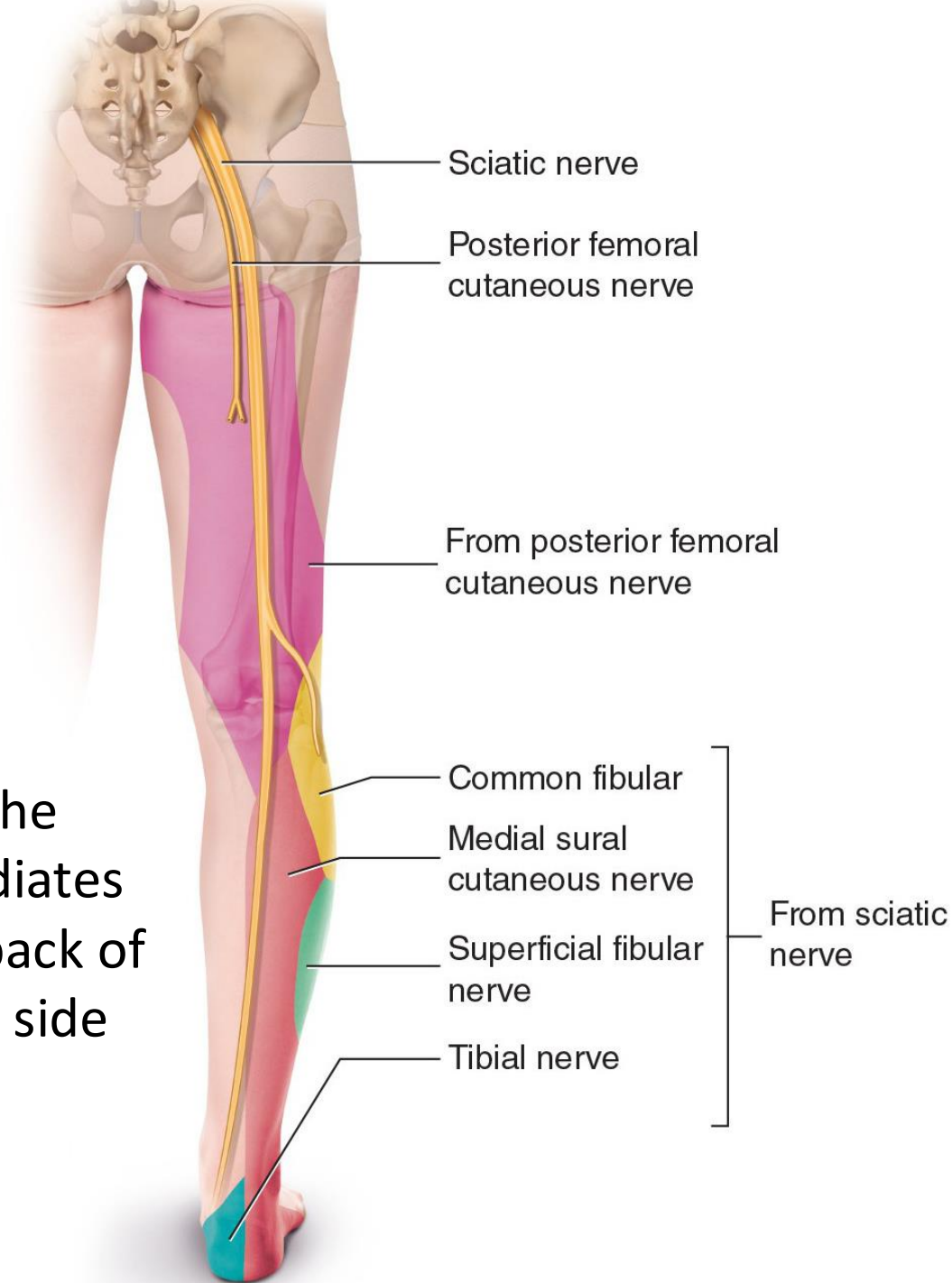


# Sciatica

(irritation or compression of sciatic nerve)



Nerve pain that originates in the lower back (gluteal region) radiates deep into the buttock, along back of thigh, travels down the lateral side of leg to the dorsum of foot. Pain travels



# Injury to sciatic nerve

(by penetrating wounds , dislocation of hip)



- Sensory loss on whole leg and foot except the area innervated by saphenous nerve
- Motor loss-
  - loss of hamstring muscles
  - Loss of foot dorsiflexors (anterior compartment of leg)
  - Loss of foot plantar flexors (posterior compartment of leg)
  - Loss of evertors of foot (lateral compartment of leg)
- Loss of all movements below the knee
- Foot drop

## **CASE STUDY**

- A patient presented with severe chronic lower back pain in the sacral region with radiation to the back of the left leg, producing a strong pain throbbing and burning behind the knee.
- Pain was aggravated when bending forward or in reaching out position.
- He gave history of an accident that resulted in fracture of the lumbar vertebrae.
- His MRI two months prior to this severely increasing pain revealed disc degeneration, and protrusion of the disc at the S1 level.

**Which anatomical structure is likely to be involved ?**

**THANK YOU**  
**Students....**

