Sciatic Nerve

Musculoskeletal block- Anatomy-lecture 13

Editing file

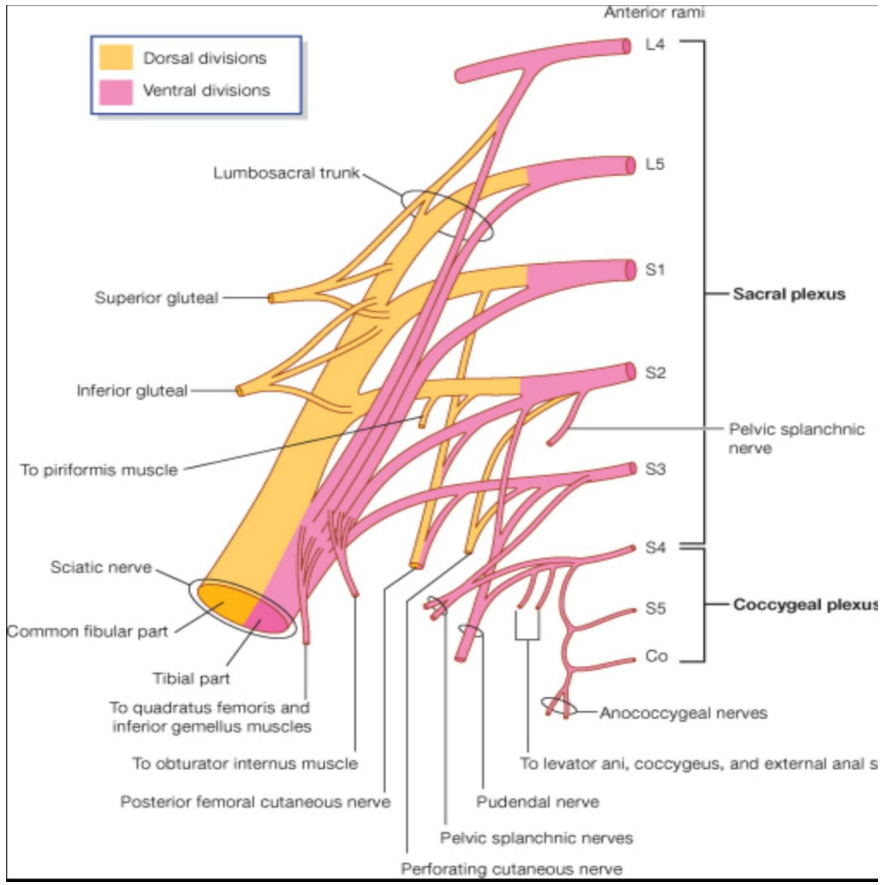
Objectives

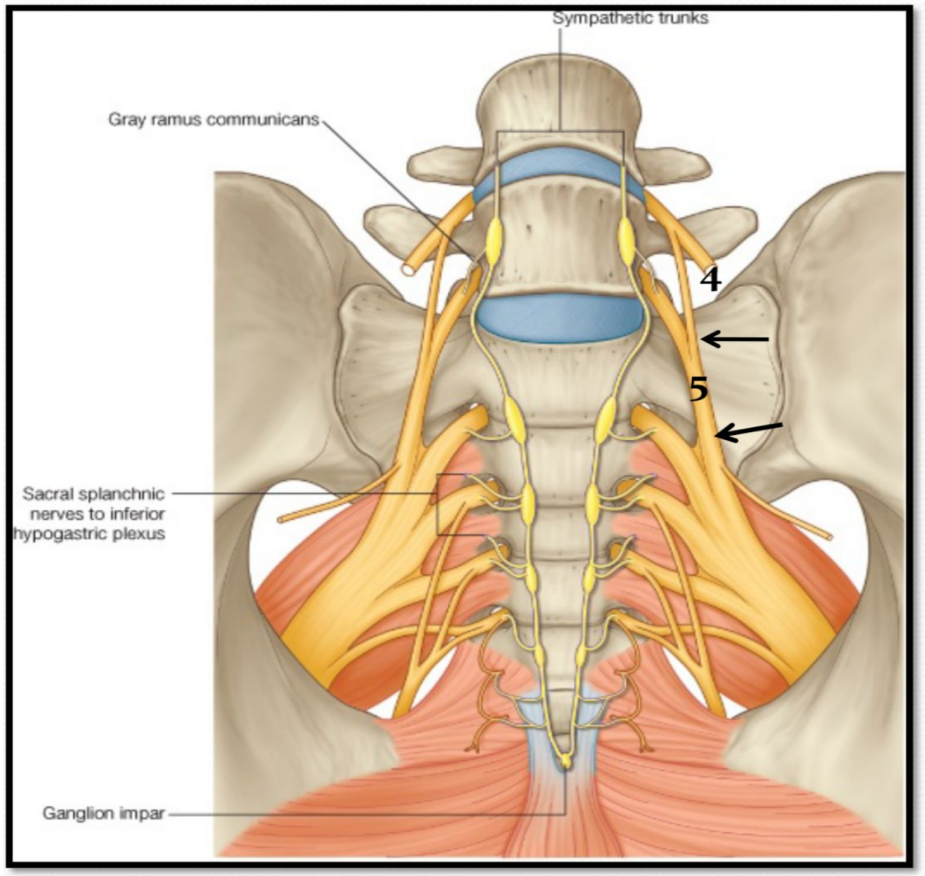
- ✓ Describe the anatomy (origin, course and distribution) of the sciatic nerve.
- ✓ List the branches of the sciatic nerve.
- ✓ Describe briefly the main motor and sensory manifestations in case of injury of the sciatic nerve or its main branches.

Color guide :
Only in boys slides in **Blue**
Only in girls slides in **Purple**
important in **Red**
Doctor note in **Green**
Extra information in **Grey**

Sacral Plexus

Formation	Site
Ventral (anterior) rami of (L4, 5 S1, 2, 3 & 4) Part of L4 & whole L5 (lumbosacral trunk) + S1,2,3 and most of S4	On the posterior pelvic wall. In front of Piriformis muscle.





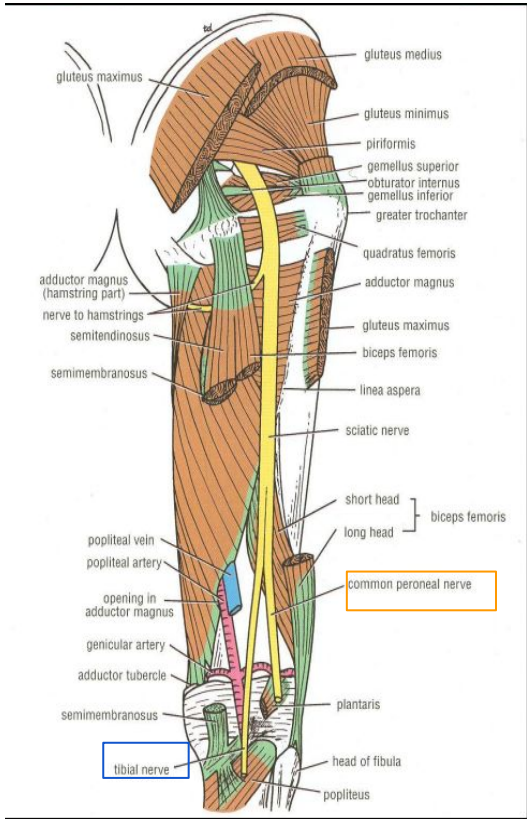
Sciatic nerve

Origin	-From Sacral the Plexus: (L4,5, S1, 2,3). -It is the largest branch of the plexus. -It is the largest nerve of the body

Course & Distribution

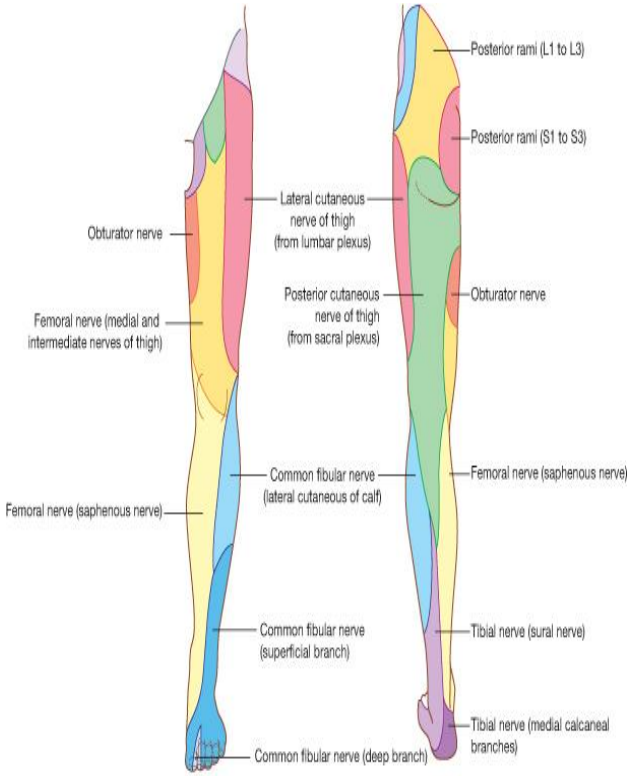
- The sciatic nerve leaves the pelvis through greater sciatic foramen, below the piriformis muscle.
- It passes in the **gluteal region** midway **(between ischial tuberosity & greater trochanter).**
- Then it enters the posterior compartment of the thigh.
- Termination: In the middle of the back of the thigh it divides into 2 terminal branches:

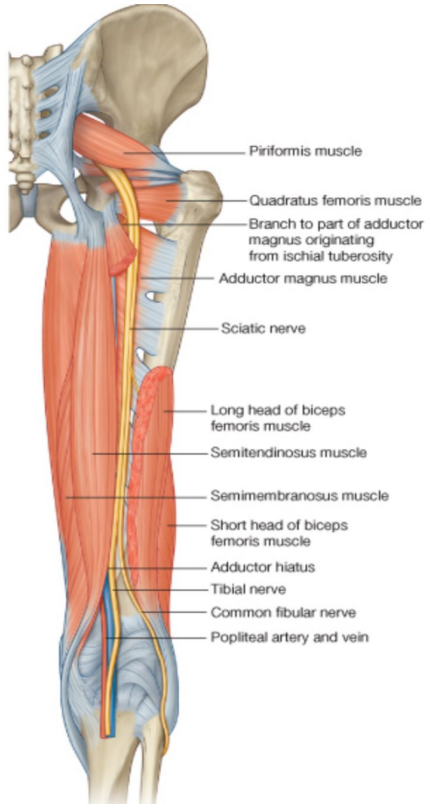
1. Tibial
2. Common Peroneal(Fibular).



Branches

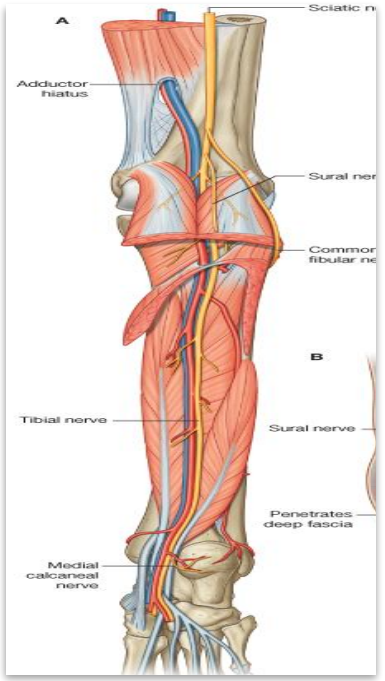
Cutaneous	Muscular
To all leg & foot **EXCEPT**: Areas supplied by the saphenous nerve (branch of femoral nerve).	To Hamstrings: (flexors of knee & extensors of the hip). (through tibial part)(tibial part **does not** mean tibial nerve) to: 1. Long head of Biceps Femoris 2. Semitendinosus. 3. Semimembranosus. 4. Hamstring part of Adductor Magnus NB. The short head of biceps receives its branch from the lateral popliteal nerve (fibular)

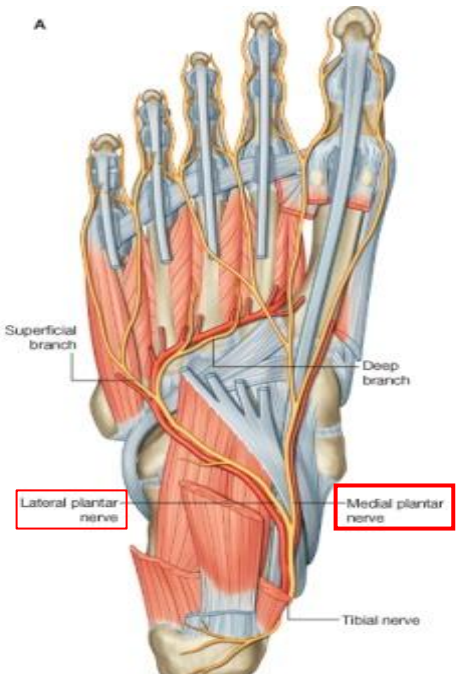


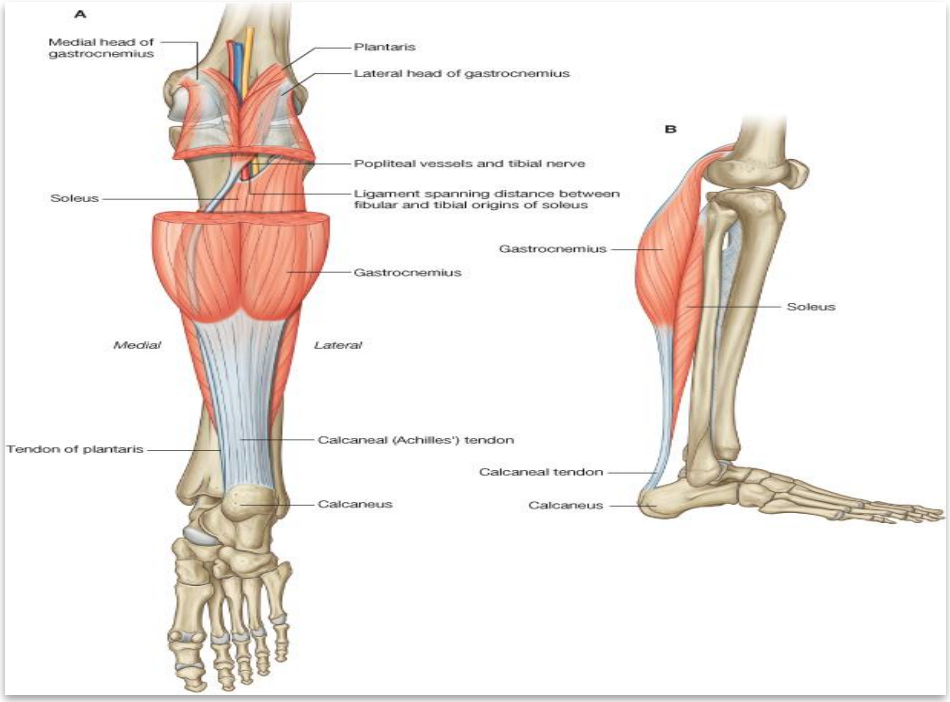


Branches of Sciatic Nerve
Tibial nerve or Medial popliteal

Course	Muscular branches
❖ Bisect the popliteal fossa to **posterior compartment of leg**, accompanied with posterior tibial vessels. ❖ Passes deep to flexor retinaculum (through the tarsal tunnel, behind medial malleolus) to reach the sole of foot where it divides into **2** terminal branches (Medial & Lateral plantar nerves)	• Muscles of posterior compartment of leg: 1. Plantar flexors of ankle, 2. Flexors of toes **ONE** Invertor of foot (tibialis posterior). • Intrinsic muscles of sole



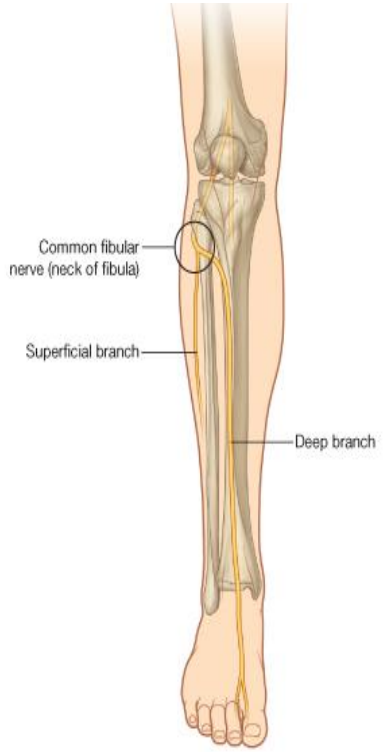


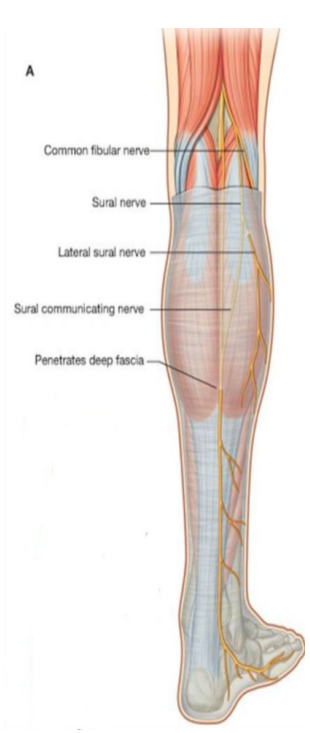


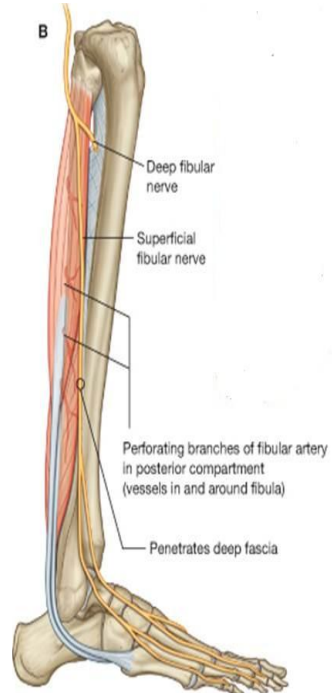
Note :it Bisect the popliteal fossa and it is the most superficial structure in the popliteal fossa..

Branches of Sciatic Nerve
Common Peroneal or Fibular Nerve or lateral popliteal

Course	Muscular branches
Leaves popliteal fossa & **turns around the lateral aspect of neck of fibula**, **(Dangerous Position).** Then divides into 1-Superficial peroneal (Musculocutaneous) : to supply the Lateral compartment of the leg. 2-Deep peroneal or (Anterior Tibial): to supply the Anterior compartment of the leg	Muscles of anterior & lateral compartments of leg: 1. Dorsiflexors of ankle 2. Extensors of toes 3. Evertors of foot.







Sciatic Nerve Injury

Cases	Effects	
	Motor	sensory

The sciatic nerve is most frequently injured by

I- Badly placed intramuscular injections in the gluteal region.

➢ To avoid this, injections should be done into the gluteus maximus or medius (into the upper outer quadrant of the buttock).

Most nerve lesions are incomplete, and in 90% of injuries, the common peroneal (part of the nerve) is the most affected because The common peroneal nerve fibers lie superficial in the sciatic nerve.

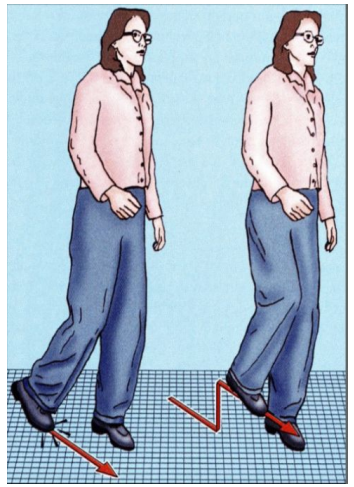
II-Posterior dislocation of the hip joint

-Marked wasting of the muscles below the knee.

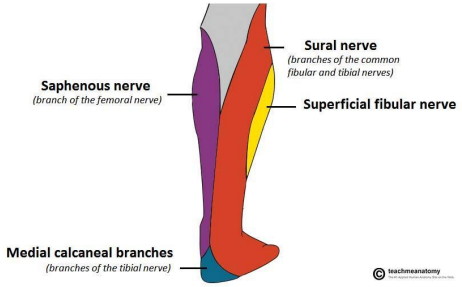
-Weak flexion of the knee (sartorius & gracilis are intact).

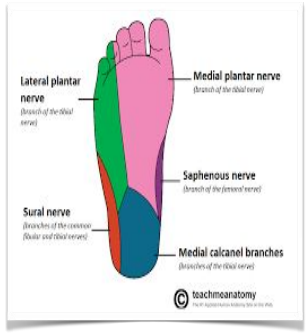
Weak extension of hip (gluteus maximus is intact).

- All the muscles below the knee are paralyzed, and the weight of the foot causes it to assume the plantar-flexed position, or Foot Drop(Stamping gait).



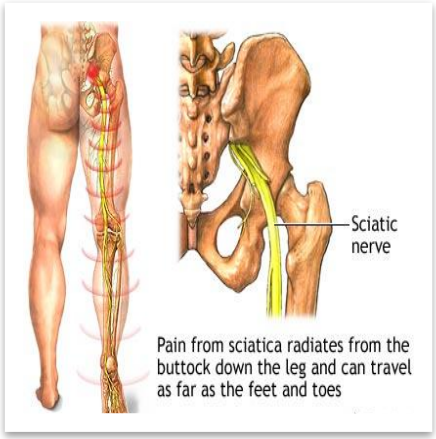
Sensation is lost below the knee, except for a narrow area down the medial side of the lower part of the leg (purple) and along the medial border of the foot as far as the ball of the big toe, which is supplied by the saphenous nerve (femoral nerve).





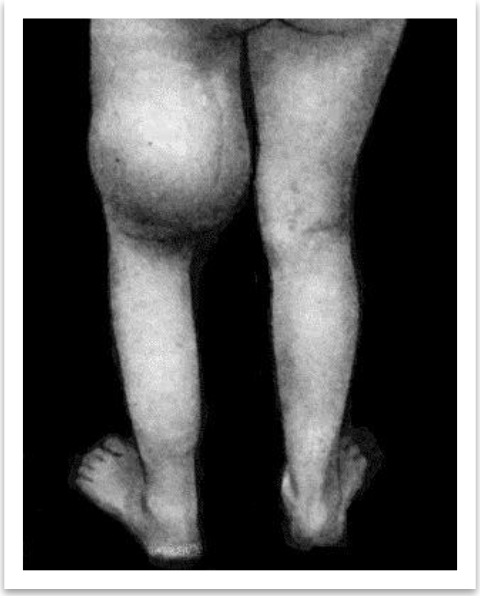
Sciatica عرق النَّسَا

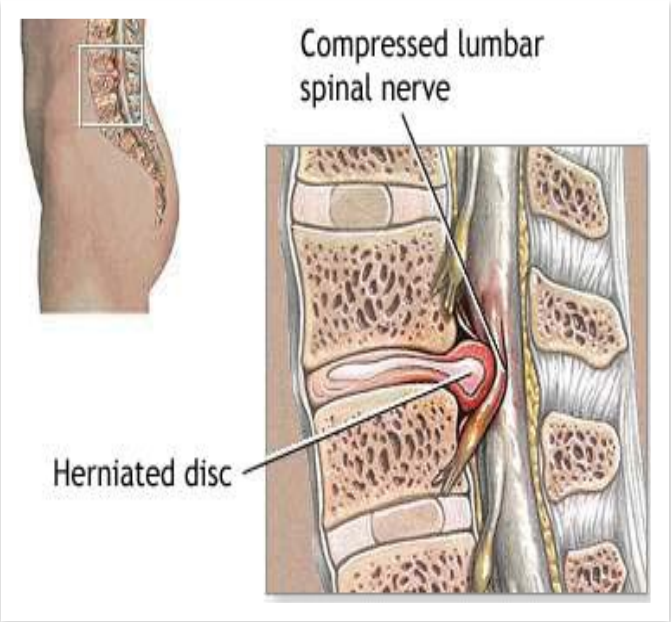
- Sciatica describes the condition in which patients have pain along the sensory **distribution of the sciatic nerve.** (just pain muscles work effectively)
- Thus the pain is experienced in:
  1-the posterior aspect of the thigh
  2-the posterior and lateral sides of the leg
  3-and the lateral part of the foot.



Cases

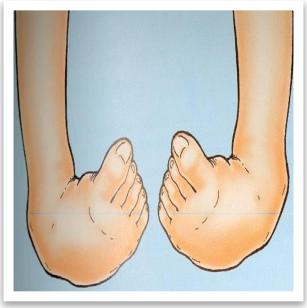
- Prolapse of an intervertebral disc, with pressure on one or roots of the lower lumbar and sacral spinal nerves
- Pressure on the sacral plexus or sciatic nerve by an intrapelvic tumor
- Inflammation of the sciatic nerve or its terminal branches.

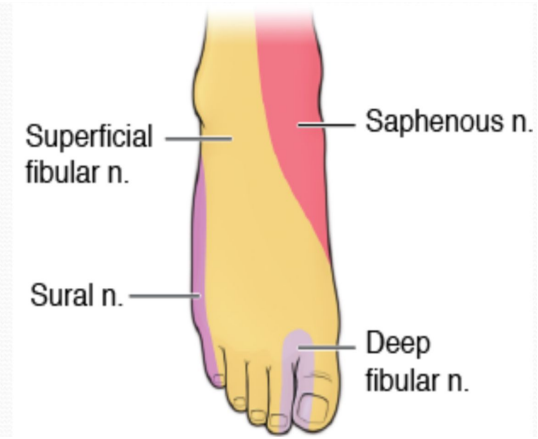


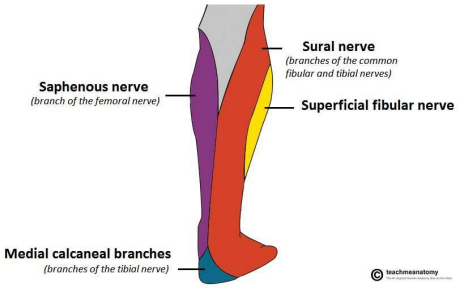


Common Peroneal Nerve Injury:

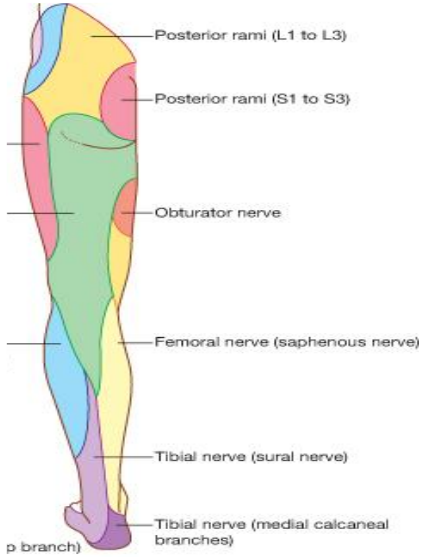
Cases	Manifestations	
	Motor	sensory
The common peroneal nerve is in an exposed position as it leaves the popliteal fossa it winds around neck of the fibula to enter peroneus longus muscle, (Dangerous Position). The common peroneal nerve is **commonly** injured 1- In Fractures of the neck of the fibula. 2- By pressure from casts or splints.	The muscles of the anterior and lateral compartments of the leg are paralyzed, — As a result, the opposing muscles (in the posterior compartment of the leg) , the plantar flexors of the ankle joint and the invertors of the subtalar joints, cause the foot to be Plantar Flexed (Foot Drop) and Inverted, an attitude referred to as **Talipes Equinovarus**	Sensation is lost between the first and second toes. Dorsum of the foot and toes. Medial side of the big toe. Lateral side of the leg.







Tibial Nerve Injury

Cases	Effects	
	Motor	Sensory
Because of its deep and protected position, the tibial nerve is **rarely** injured. **Complete division** results in the following clinical features:	All the muscles in the back of the leg and the sole of the foot are paralyzed. The opposing muscles Dorsiflex the foot at the ankle joint and Evert the foot at the subtalar joint, (it is the opposite of foot drop) an attitude referred to as **Talipes Calcaneovalgus.** 	Sensation is **lost** on the Lateral side of the leg and foot & Trophic ulcers in the sole. (also seen in case of Sciatic nerve injury) Because he walks and does not feel what he walks on, so he can be injured  

MCQs

Question 1: Which of the following nerve is the largest nerve of the body?

A. Sciatic nerve.

B. Radial nerve.

C. Ulnar nerve.

D. Peroneal nerve.

Question 2: The site of sacral plexus:

A.On the anterior wall of the pelvis, in front of piriformis muscle.

B.On the posterior wall of the pelvis, in the back of piriformis muscle.

C.On the posterior wall of the pelvis, in front of piriformis muscle.

D.On the anterior wall of the pelvis, in the back of piriformis muscle.

Question 3: Which muscle of these is not one of the anterior and lateral compartments of leg?

A.Dorsiflexors of ankle.

B. Evertors of foot.

C. Extensors of toes.

D.Plantar flexors of ankle.

Question 4: Which one of theses muscles is supplied by common peroneal nerve?

A.Long head of biceps.

B. Short head of biceps.

C.Hamstring.

D.Semitendinosus.

Question 5: The most frequent injuries of the sciatic nerve is:

A.Badly placed intramuscular injections in the gluteal region.

B.Posterior dislocation of hip joint.

C.Both a and b.

D.None of the above

Question 6: When all muscles below the knee are paralyzed, the weight of the foot causes it to assume the:

A.Plantar position.

B.Foot drop.

C.Stamping gait.

D.All of the above.

Question 7: In the tibial nerve course, it descends through popliteal fossa to the:

A.Anterior compartment of the leg.

B.Posterior compartment of the leg.

C.Posterior compartment of thigh.

D.Anterior compartment of the thigh.

Answers: Q1.A Q2.C -Q3.D -Q4.B- Q5.C- Q6.D-Q7.B

Team members

Boys team:

- Khalid AL-Dossari
- Naif Al-Dossari
- Faisal Alqifari
- Salman Alagla
- Ziyad Al-jofan
- ★ Suhail Basuhail
- Ali Aldawood
- Khalid Nagshabandi
- Mohammed Al-huqbani
- Jehad Alorainy
- Khalid AlKhani
- Omar Alammari

Team leaders

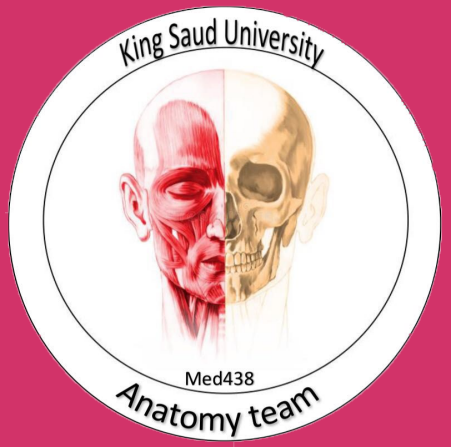
- ★ Abdulrahman Shadid
- Ateen Almutairi

★ =This lecture done by

Girls team :

- Ajeed Al Rashoud
- Taif Alotaibi
- Noura Al Turki
- Amirah Al-Zahrani
- Alhanouf Al-haluli
- Sara Al-Abdulkarem
- Rawan Al Zayed
- Reema Al Masoud
- Renad Al Haqbani
- Nouf Al Humaidhi
- Fay Al Buqami
- Jude Al Khalifah
- Nouf Al Hussaini
- Alwateen Al Balawi
- Rahaf Al Shabri
- Danah Al Halees
- Haifa Al Waily
- Rema Al Mutawa
- Amirah Al Dakhilallah
- Maha Al Nahdi
- Renad Al Mutawa
- Ghaida Al Braithen
- Reham Yousef

Special thank for Anatomy team 436



Good luck

Give us your feedback: