



ANATOMY TEAM

LECTURE (18)

SCIATIC NERVE

OBJECTIVES

• *At the end of the lecture the students should be able to:*

- * Describe the anatomy (**origin**, **course** & **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**.

تنويه / هذا العمل لا يعتبر مصدر أساسي للمذاكرة وإنما هو للمراجعة فقط ،

"يوجد بعض الفروقات بين سلايد الأولاد و البنات ننصح كلا الطرفين

بتحميل النسختين (نسخة البنات+نسخة الأولاد) "

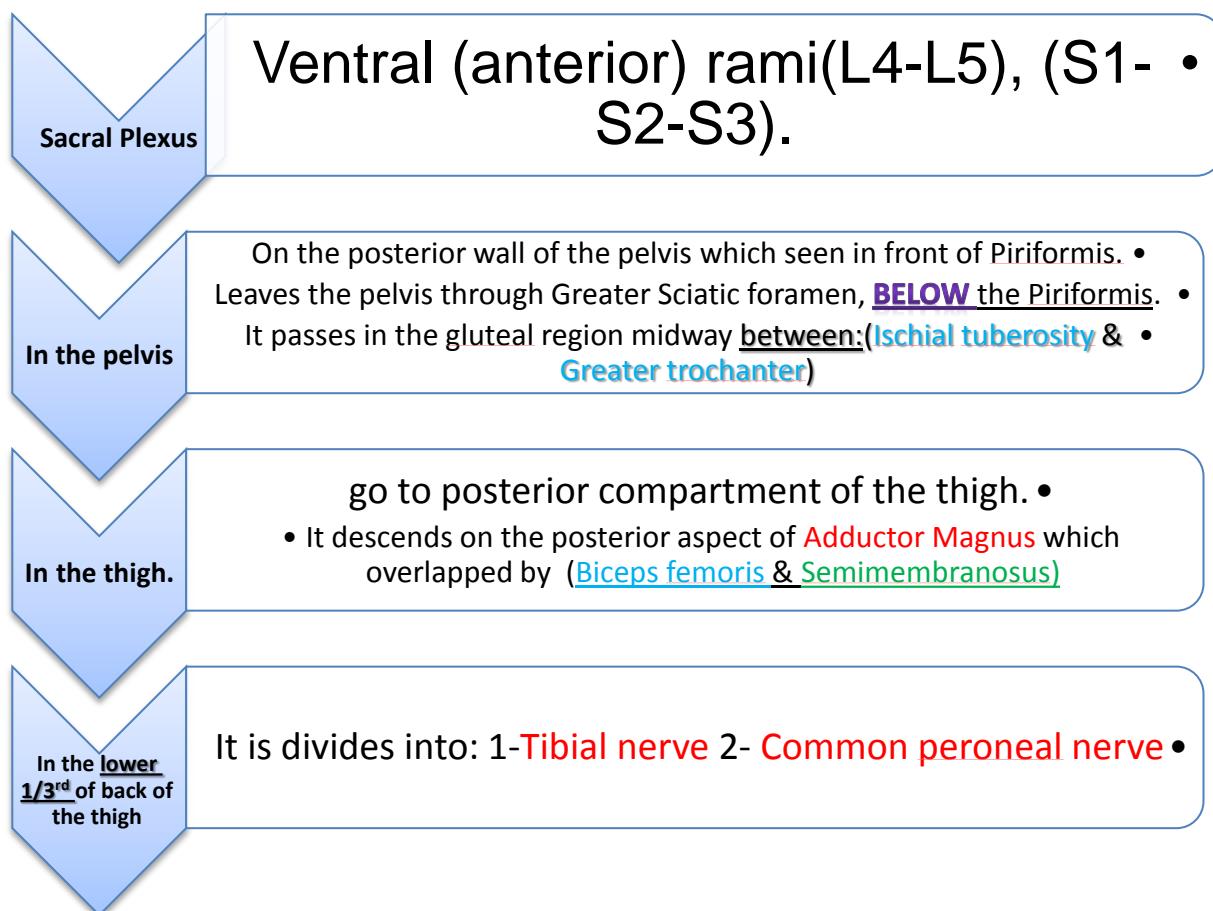
ORIGIN of sciatic nerve:

From Sacral Plexus which are , (L4-L5), (S1-S2-S3).

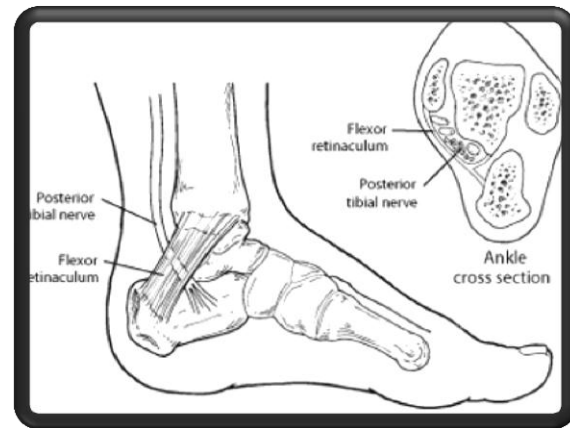
Formation:

Ventral (anterior) rami of a part of L4 & whole L5 + S1,2,3 and most of S4.

COURSE Sciatic Nerve:



Tibial nerve of Course



It descends through the popliteal fossa (bisect the fossa)

posterior compartment of leg, accompanied with posterior tibial vessels

Passes deep to the flexor retinaculum (through the tarsal tunnel, behind medial malleolus)

It reach the sole of foot where it divides into two terminal branches: 1-medial planter nerves
2- lateral planter nerve

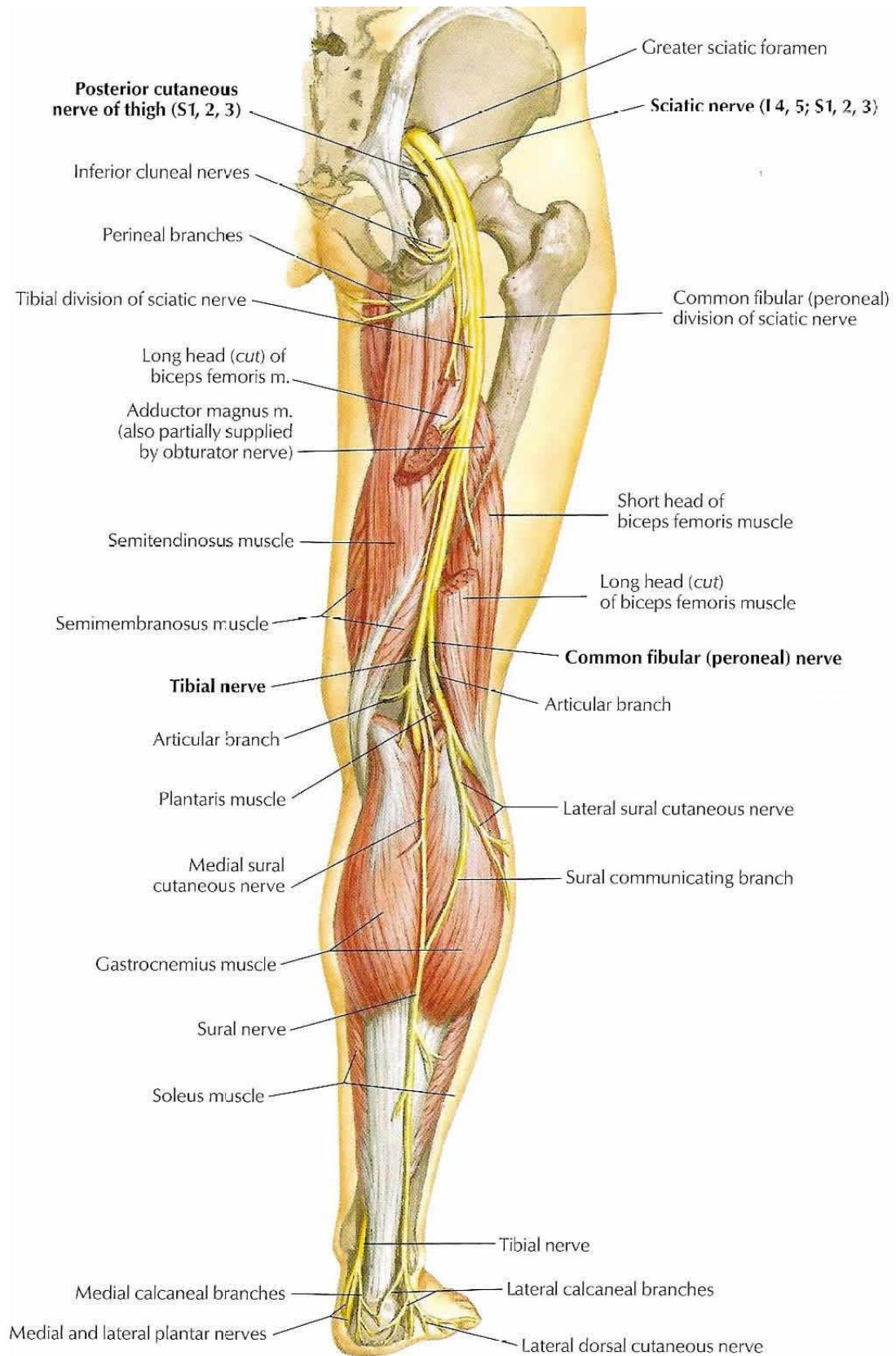
COURSE COMMON PERONEAL NERVE:

Leaves popliteal fossa through its lateral angle and turns around the lateral aspect of neck of fibula

Then divides into two nerves:

1-Superficial peroneal to supply the Lateral compartment of the leg.

2-Deep peroneal to supply the Anterior compartment of the leg.



Some important Notes

- 1- It is the **largest** nerve of the body.
- 2- It is the **largest** branch of the plexus.
- 3- lumbosacral trunk is contain (L4-L5).
- 4- The sciatic nerve **divided** into **two branches** :
 - a. **Tibial** or (Medial popliteal).
 - b. **Common peroneal** nerves or (Lateral popliteal) or (**Fibular nerve**).
- 5- branches of the sciatic nerve cutaneous enervation **All leg and foot except** medial site of leg and medial site of the are supplied by the **Saphenous nerve** which (branch of Femoral nerve).
- 6- Medial site of **big toe** supplied by one of the branches of the sciatic nerve called **common fibular nerve**.
- 7- The **sciatic nerve** usually supplies no structures in the **gluteal region**.
- 8- **The short head of biceps** receives its branch from the **lateral popliteal nerve** (fibular nerve).
- 9- Sciatic nerve branches (**Tibial part**) are supply **hamstring part** , Adductor Magnus, long head of Biceps Femoris ,Semitendinosus and Semimembranosus.
- 10- The causes of sciaticnerve injury are:
 - A-Badly placed intramuscular injection.
 - B- Posterior dislocation of hip joint.
 - C- Fracture pelvis.

11- The best region for **intramuscular injection** is the Gluteal region and **the safest place** to inject is the **upper outer quadrant**.

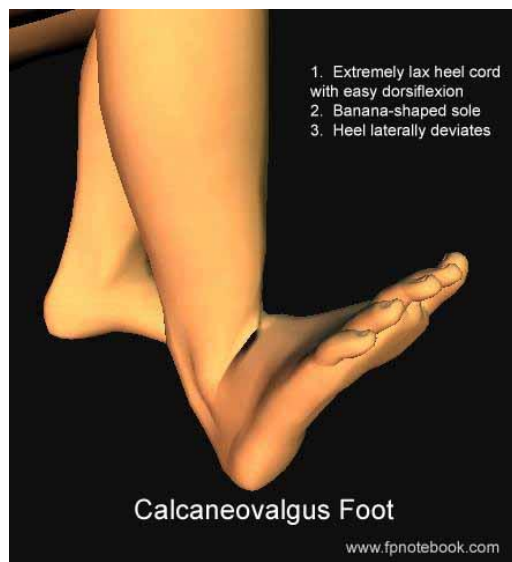
12-foot drop happens if the sciatic nerve or the common peroneal nerve are injured.

13-in case the injury is in the sciatic nerve, we call the patient's walk (stamping gate)

14-lesion in tibial nerve causes **dorsiflexed foot and everted** (Calcaneovalgus)

15-if there is a lesion in common peroneal nerve : **Foot drop loss of dorsiflexion and eversion** (Calcaneovarus)

16- if there is a lesion in the femoral nerve : **loss of extension of the knee joint**



Calcaneovarus

NOTES SAID BY THE DOCTOR: (عند البنات)

1-S4 is not considered as a sciatic nerve, it will join the sacrococcygeal nerve.

بمعنى اذا جت اصابه في s4 الـ sciatic nerve ماراح يتأثر

2-Sciatic nerve is covered by the **biceps muscle**.

3-tibial nerve will divide into 2 branches in **the sole** of the foot.

4-all the muscles in the sole of the foot are **INTRINSIC**.

5-all the muscles in the back of the leg are **FLEXORS**, while the anterior are **EXTENSORS**.

6-neck of fibula is not covered by any muscles and the peroneal nerve go throu it. That's why it is dangerous to have an injury in it.

7-anterior tibial nerve called by that name because there is an artery beside it with the same name

8-**upper quadrant of the buttocks** is good for injection because it is away from the sciatic nerve

9-sciatic nerve is behind the hip immediately

10-foot drop=planterflextion

11- sciatica (3rg elnessa) starts as a sensory then it effect the motor nerves.

12-most common place to get injured is **L5 & S1** OR **L4&L5**

13-if there is a fracture in the neck of fibula, antagonist muscle will work. (Planterflextion and flextion of the toe) ,in case of peroneal nerve is injured.

14- what's the difference between foot drop in case of peroneal and sciatic nerve?

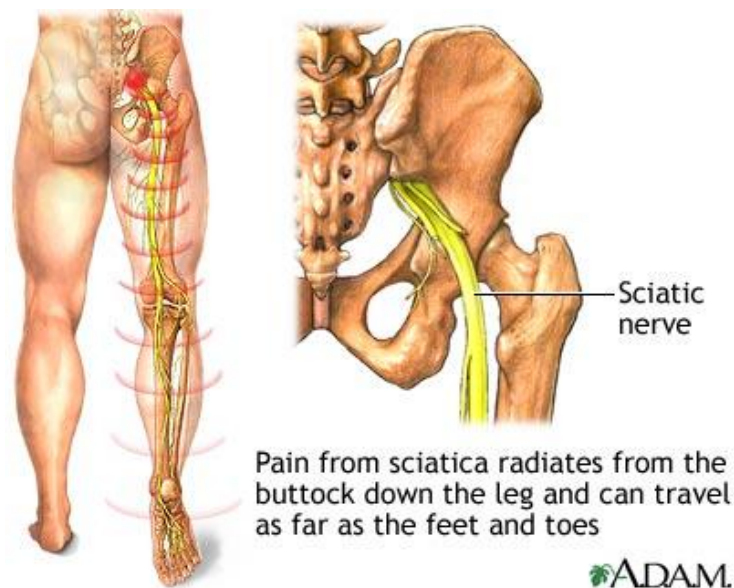
Sciatic: all the flexor muscles are paralyzed (it drop cuz of the body weight and gravity)

Peroneal: only the muscles of anterior are paralyzed

15- tibial nerve is rarely injured because it is covered by muscles

16- common peroneal will not supply the sole of foot it will supply the dorsum (3ks el tibial nerve)

17- if there is problems in the vertebrae column and it compressed the sciatic nerve, this condition is called **sciatica**, and it will result in severe pain.



Useful links and videos: =)

Summary of the nerves of lower limb

<http://www.scribd.com/doc/28759565/Summary-of-Nerves-of-Lower-Limb>

http://www.youtube.com/watch?v=gBX_X2ljET0

Quick Review

Q1. What is the origin of sciatic nerve?

From Sacral Plexus, (L4,L5), (S1, S2,S3).

Q2. What is the site formation of sciatic nerve?

Ventral (anterior) rami of a part of L4 & whole L5 + S1,S2,S3 and most of S4.

Q3. What is the lumbosacral trunk?

Assemblage of L4 and L5.

Q4. what are the main features of sciatic nerve ?

It is the largest nerve of the body.

& largest branch of the plexus.

Q6. What are the other name of common peroneal nerves?

Latral popliteal nerve.

FIBULAR nerve.

Q7. why the lateral aspect of neck of fibula is very dangerous position ?

Because it is an exposed position.

Q8. What is the nerve that supply medial site of leg and medial site of the foot ?

Saphenous nerve

Q9. What is the nerve that supply Anterior compartment of the leg?

Common fibular nerve "branch from sciatic nerve"

Q10. What are the muscles which supplied by tipial nerve?

Hamstring part of Adductor Magnus.

long head of Biceps Femoris.

Semitendinosus.

Semimembranosus.

Q.11 what is the muscle that supplied by fibular nerve?

The short head of biceps of femoris.

Q12. What are the main causes of the sciatic nerve injury?

A- Badly placed intramuscular injection

B- Posterior dislocation of hip joint.

C- Fracture pelvis.

Q13. What is the safest place to inject in GLUTEAL REGION?

The upper outer quadrant of either gluteal region.

Q14. What is the motor effects occur when Sciatic nerve injured?the

The hamstring muscles are paralyzed, but weak flexion of the knee is possible (weakness). Also, All the muscles below the knee are paralyzed, and the weight of the foot causes it to drop(plantar flexed position).

Q15. What is the sensory effects occur when Sciatic nerve injured?the

Sensory effects: Loss of sensation of the areas supplied by sciatic nerve below knee
EXCEPT for a narrow area down the medial side of the lower part of the leg.

Q16. Why there is a weak flexion of the knee and weak extension of the hip if the Sciatic nerve injured?

Because of the action of the sartorius (femoral nerve) and gracilis (obturator nerve) in knee flexion and gluteus maximus(Inferior gluteal nerve) in hip extention

Q17. What are the causes of Common peroneal nerve injury ?

- 1- Fracture neck of fibula
- 2- Pressure from a cast or splint

Q18. What are the EFFECTS OF INJURY OF COMMON PERONEAL NERVE?

Paralysis of muscles of:

Anterior & Lateral compartments of the leg.

Movements affected: Loss of:

1. Dorsiflexion of ankle.
2. Eversion of the foot.
3. Extension of the toes.

So, Foot is Planter flexed & Inverted.

Q19. What are the EFFECTS OF INJURY OF TIBIAL NERVE?

Paralysis of muscles of the : Posterior compartment of leg

Muscles of the sole of the foot

*Movements affected:

1. Planter Flexion of ankle
2. Inversion of foot
3. Flexion of toes

So, Foot is Dorsiflexed&Everted

Q20. Which one of the following structure pass behind the medial malleolus?

Tibial Nerve

Q19. Why if the Sciatic nerve injured the foot is dropped “Planter---flexed” ?

While all the muscles below the knee is paralyzed so no muscle will work in the foot as a result of that the gravity will pull the foot Downward.

Q20. What is other name of tibial nerve ?

Medial popliteal

QUIZ:

1. Paralysis of which of the following would make an individual unable to flex the knee?

- a. hamstring muscles.
- b. gluteal muscles.
- c. brachioradialis.
- d. soleus.

2. Which is wrong regarding the gluteal region ?

- a. Its deep fascia is continuous with the tensor fascia lata of thigh.
- b. Sacrotuberous ligament is attached to ischial tuberosity.
- c. Piriformis is the lateral rotator of thigh at hip joint.
- d. Gluteus maximus is innervated by sciatic nerve.

3. Popliteal fossa contains :

- a. Great saphenous vein.
- b. Posterior tibial artery.
- c. Tibial nerve.
- d. Deep peroneal nerve.

4. the nerve is affected by Fracture of the neck of fibula?

- a. saphenous nerve
- b. common peroneal nerve
- c. Axillary nerve
- d. Femoral nerve

5. Which nerve supply Anterior compartment of the leg?

- a. Deep peroneal nerve
- b. Tibial nerve.
- c. Common peroneal nerve
- d. Saphenous nerve

6. Select the INCORRECT statement about the sciatic nerve:

- a. It is the largest nerve in the body
- b. It is a terminal branch of the sacral plexus
- c. Its root values S1,2,3
- d. It leaves the pelvis inferior to the piriformis

7- The injury of sciatic nerve leads to :

- a. Completely loss of Eversion.
- b. Completely loss of Flexion of hip
- c. completely loss of Extension of knee
- d. . Completely loss of Flexion of knee

8-A child was riding a motor-bicycle, then he fall and there was fracture of the fibular neck, what will be affected:

- a. Common peroneal nerve.
- b. Tibial nerve.
- c. deep peroneal nerve
- d. Saphenous nerve

9- Fracture of fibular neck leads to (injury to commonperoneal nerve)leads to :

- a. Loss of inversion
- b. Drop foot
- c. loss of all movements

10- Taleps calcanovalgus due to an injury of which nerve:

- a. Tibial nerve
- b. common peroneal nerve
- c. Superior Gluteal Nerve
- d. Nerve To Obturatorinternus

11- Which one of the following structure pass Behind the medial malleolus?

- a. Tibial Nerve
- b. Common peroneal (fibular) nerve
- c. Saphenous nerve

12- Talipes equinovarus due to an injury of which nerve:

- a. Common peroneal (fibular) nerve
- b. Tibial Nerve
- c. femoral nerve

13- Talipes Calcaneovalgus occurs when the foot is:

- a. Planter flexed & Inverted
- b. Dorsiflexed&Everted
- c. Only Everted
- d. Only Planter flexed

14- The sciatic nerve descends on the posterior aspect of:

- a. Semitendinosus
- b. Adductor Magnus
- c. Sartorius
- d. Psoas major

15- the sciatic nerve divides at the:

- A. the lower of front of the thigh
- B. the upper of back of the thigh
- C. the middle of front of the thigh
- D. the middle of back of the thigh

16- When the sciatic nerve injury occurs, one of the manifestations is:

- A. all muscles of the leg wasted
- B. all muscles of the foot wasted
- C. all muscles of the foot & leg wasted
- D. no muscles wasted

N.Q	ANSWER
1	A
2	D
3	C
4	B
5	A
6	C
7	A
8	A
9	B
10	A
11	A
12	A
13	B
14	B
15	D
16	C

GOOD LUCK ;)