

BRACHIAL PLEXUS & LUMBOSACRAL PLEXUS

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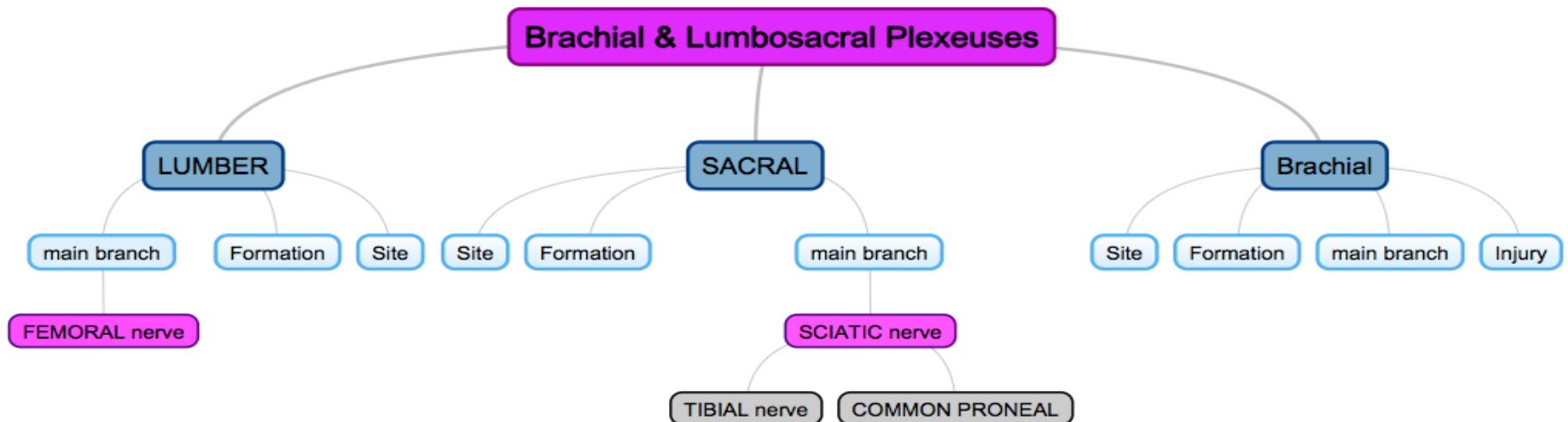
هذا العمل لا يعتبر مصدر رئيسي للمذاكرة وإنما للمرجعة فقط: تنويه

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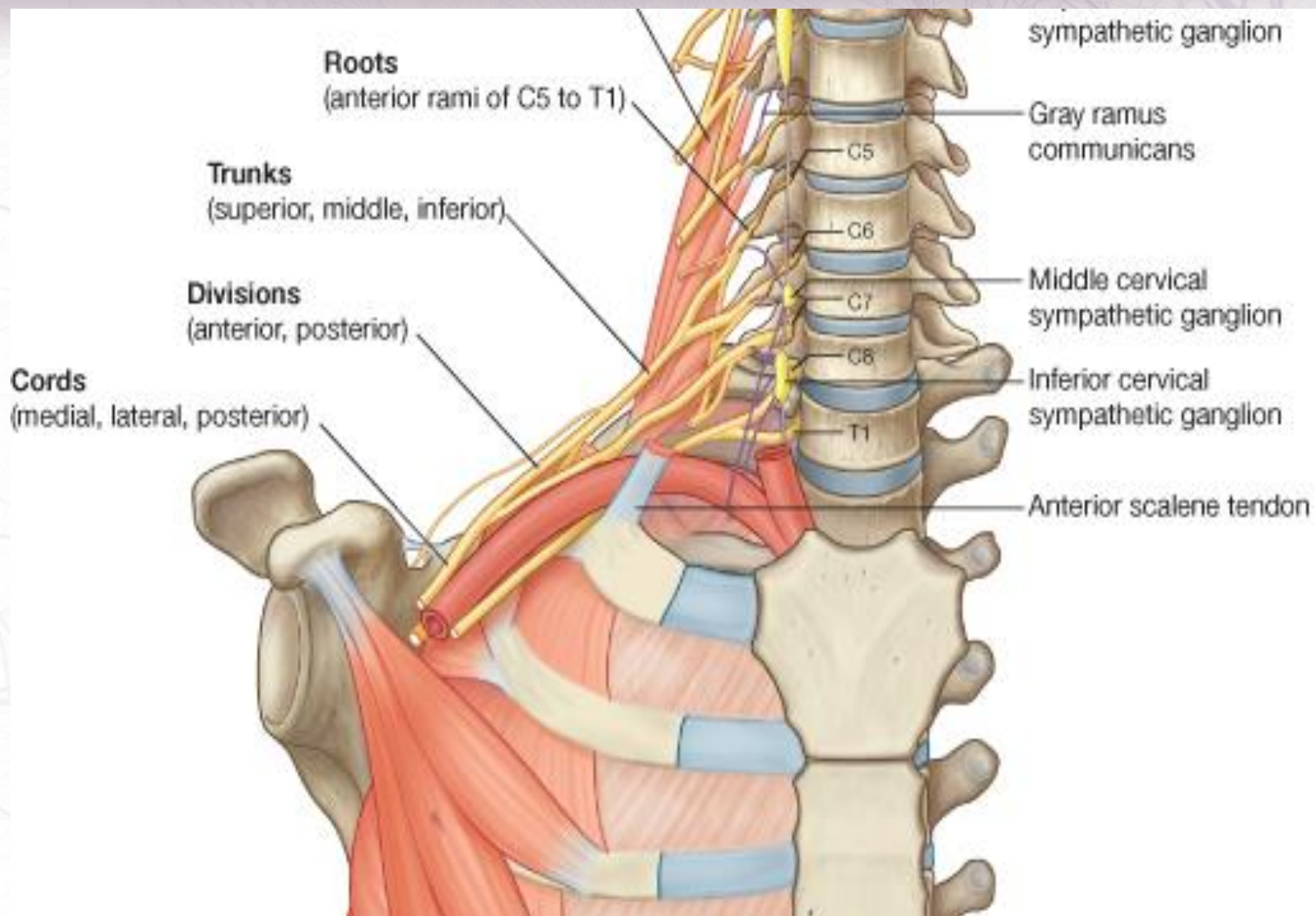


OBJECTIVES

- Describe the **formation** of brachial plexus (site, roots)
- List the **main branches** of brachial plexus
- Describe the **formation** of lumbosacral plexus (site, roots)
- List the **main branches** of lumbosacral plexus
- Describe the important **Applied Anatomy** related to the brachial & lumbosacral plexuses.



BRACHIAL PLEXUS

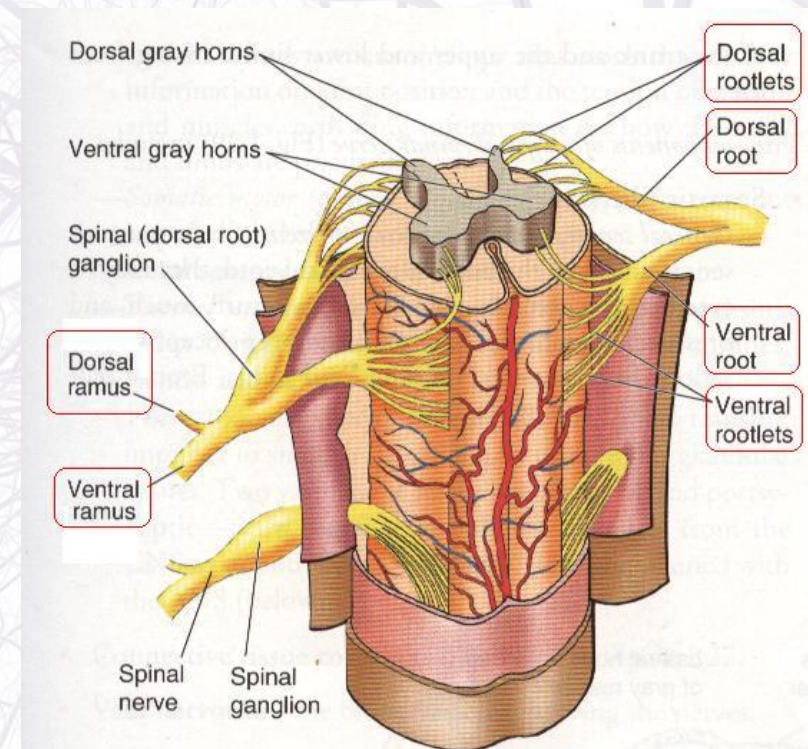
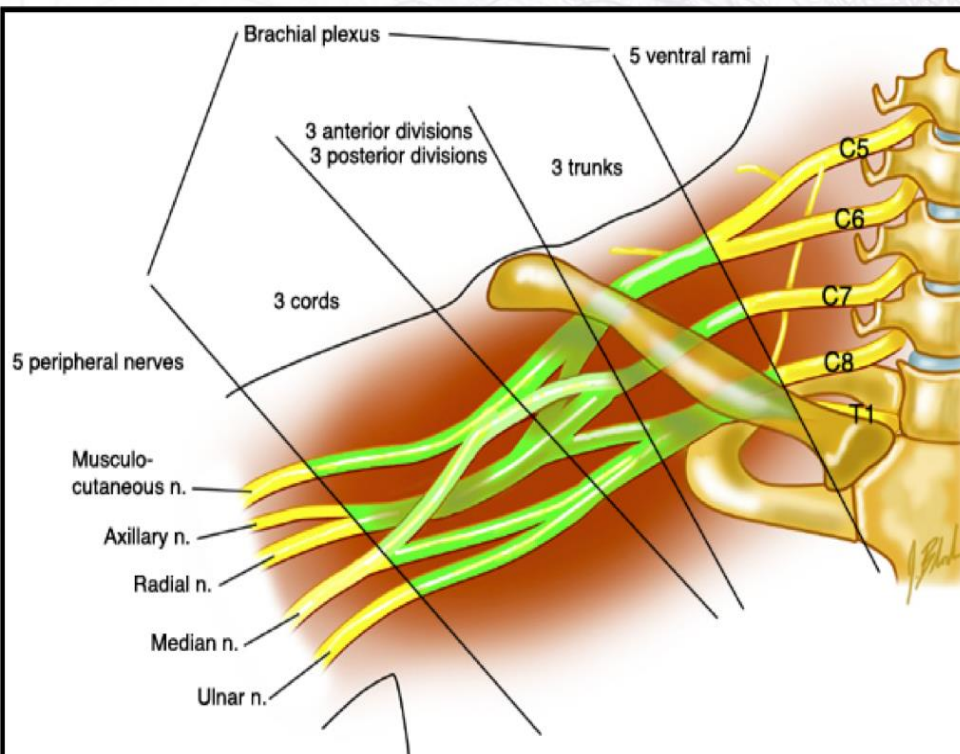


FORMATION OF BRACHIAL PLEXUSES

- It is formed in the **posterior triangle** of the neck.
- It is the union of the **anterior rami** of the **5th, 6th, 7th, 8th cervical** and the **1st thoracic** spinal nerves

The plexus is divided into :

Roots → Trunks → Divisions (Each trunk divides into **anterior** and **posterior** division)
→ Cords → Terminal branches

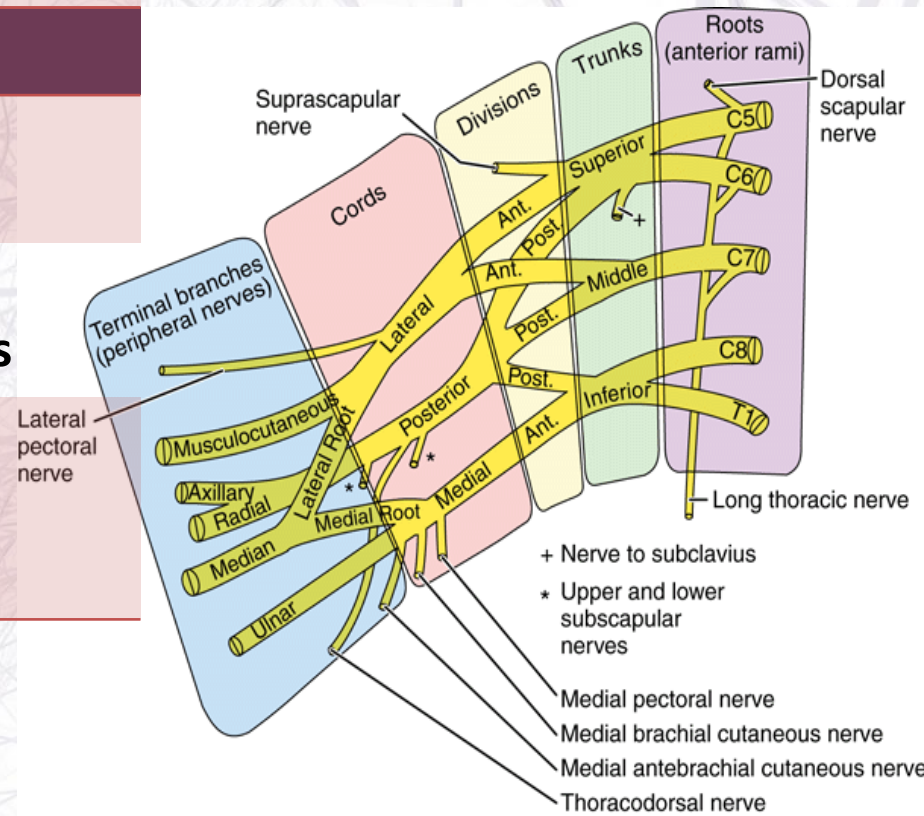


Trunks

Upper trunk	Union of the roots of C5 & 6
Middle trunk	Continuation of the root of C7
Lower trunk	Union of the roots of C8 & T1

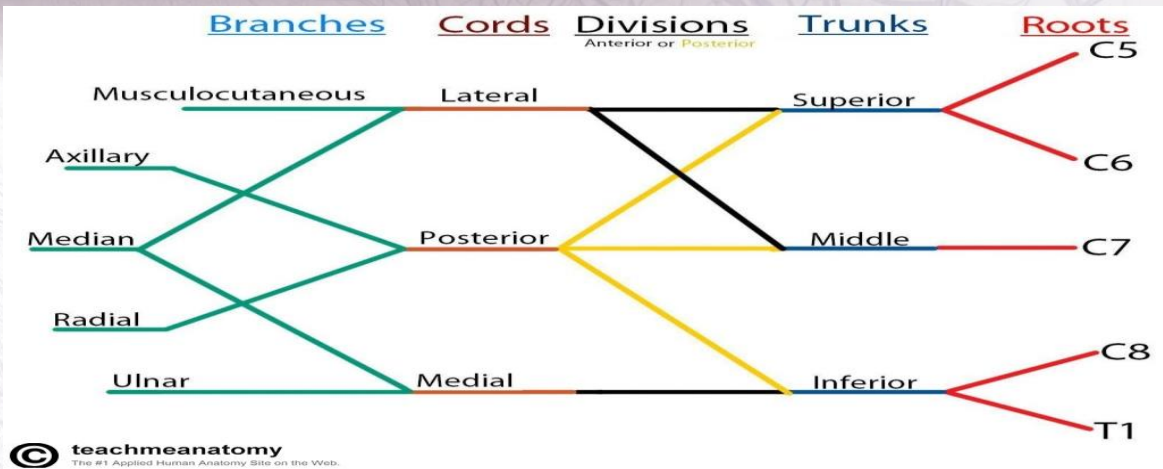
CORDS

Posterior cord	From the three posterior divisions
Lateral cord	From the anterior divisions of the upper and middle cords
Medial cord	It is the continuation of the anterior division of the lower trunk



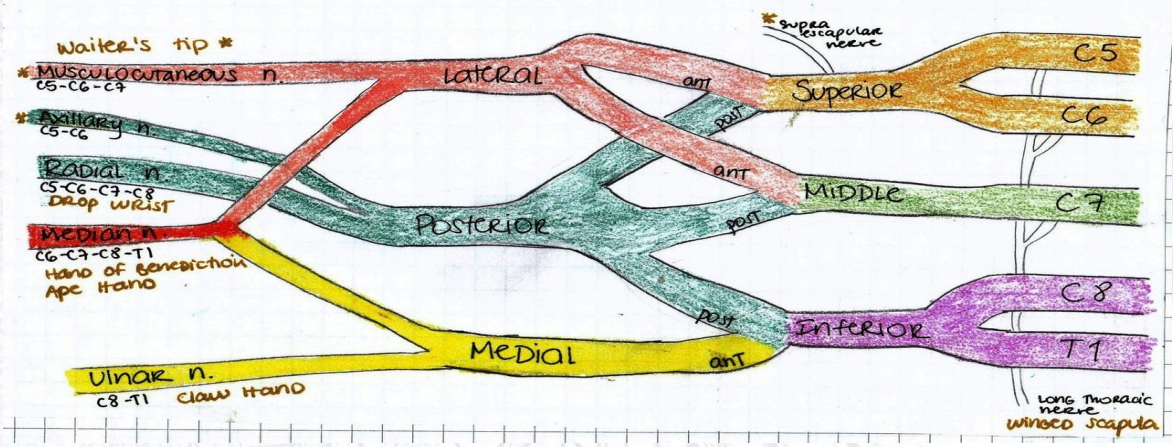
BRANCHES

All three cords will give branches, those will supply their respective regions



*The first 2 stages
Roots & Trunks lie in
posterior triangle
Divisions:
 behind the **clavicle**
 The last 2 stages
Cords & branches
 lie in the **axilla**

ARM	Axilla	NECK
5 Terminal Bchs.	3 CORDS	6 DIVISIONS
		3 TRUNKS
		5 ROOTS



BRANCHES

➤ (A) From Roots:

1. C5: Nerve to rhomboids
(dorsal scapular nerve).

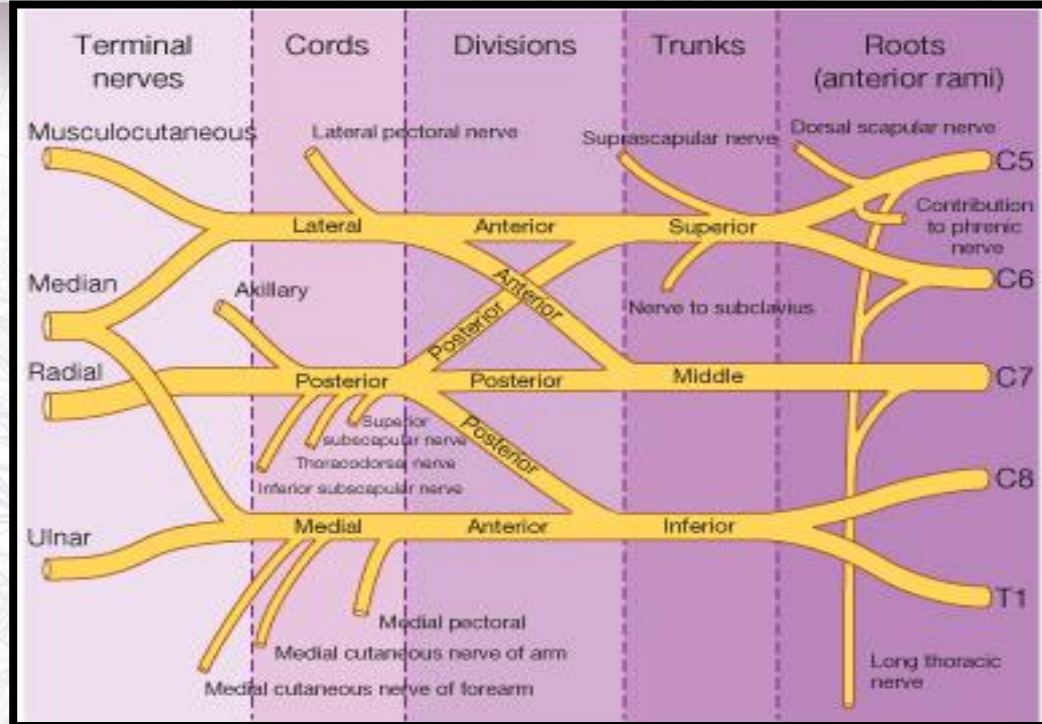
2. C5,6 &7: Long thoracic nerve

➤ (B) From Trunk (upper trunk):

1-Nerve to subclavius

2-Suprascapular nerve

(supplies supraspinatus & infraspinatus)



➤ (C) From Cords :

1- Lateral cord (2LM)

- Lateral pectoral n
- **Lateral root to median n**
- Musculocutaneous n

2- Medial cord (4MU)

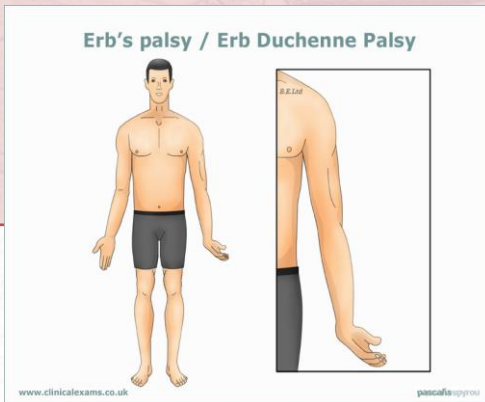
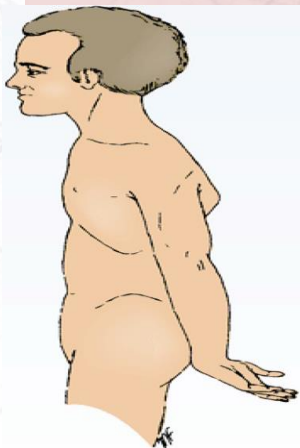
- Medial pectoral n.
- **Medial root to median n.**
- Medial cutaneous n of arm.
- Medial cutaneous n of forearm.
- **Ulnar n.**

3- Posterior cord (ULTRA)

- Upper subscapular n
- Lower subscapular n
- Thoracodorsal n
- **Radial n**
- **Axillary n**

BRACHIAL PLEXUS INJURY

Name	Site of Injury	Cause	Result
Erb-Duchenne Palsy "waiter's tip position".	<u>Upper Trunk</u> C5,6	excessive displacement of the head to the opposite side and depression of the shoulder on the same side (a blow or fall on shoulder).	<ul style="list-style-type: none"> •<u>The position of the upper limb</u> in this condition has been likened to that of a porter or waiter hinting for a tip or policeman's tip hand. •The arm hangs by the side and is rotated medially. The forearm is extended and pronated



BRACHIAL PLEXUS INJURY

Name	Site of Injury	Cause	Result
Klumpke Palsy	<u>Lower Trunk (C8,T1)</u>	Lower lesions of the brachial plexus are usually traction injuries <u>caused by a person falling from a height clutching at an object to save himself.</u> The first thoracic nerve is usually torn.	The nerve fibers from this segment run in the ulnar and median nerves to supply all the small muscles of the hand. The hand has a <u>clawed appearance</u> due to ulnar nerve injury. Hand of Benediction or Pop's Blessings (APE HAND) will result from median nerve injury.



LUMBAR PLEXUS

SACRAL PLEXUS

Formation

By ventral rami of **L1,2,3** and most of **L4**


By ventral rami of a part of **L4** & whole **L5** (lumbosacral trunk) + **S1, 2, 3** and most of the **S4**

Site

In the substance of psoas major muscle

In front of piriformis muscle

Main branch

Iliohypogastric & ilioinguinal: 
to anterior abdominal wall

Obturator: 
to medial compartment of thigh

Femoral: 
to anterior compartment of thigh

Pelvic splanchnic nerve: 
preganglionic parasympathetic to pelvic viscera & hindgut

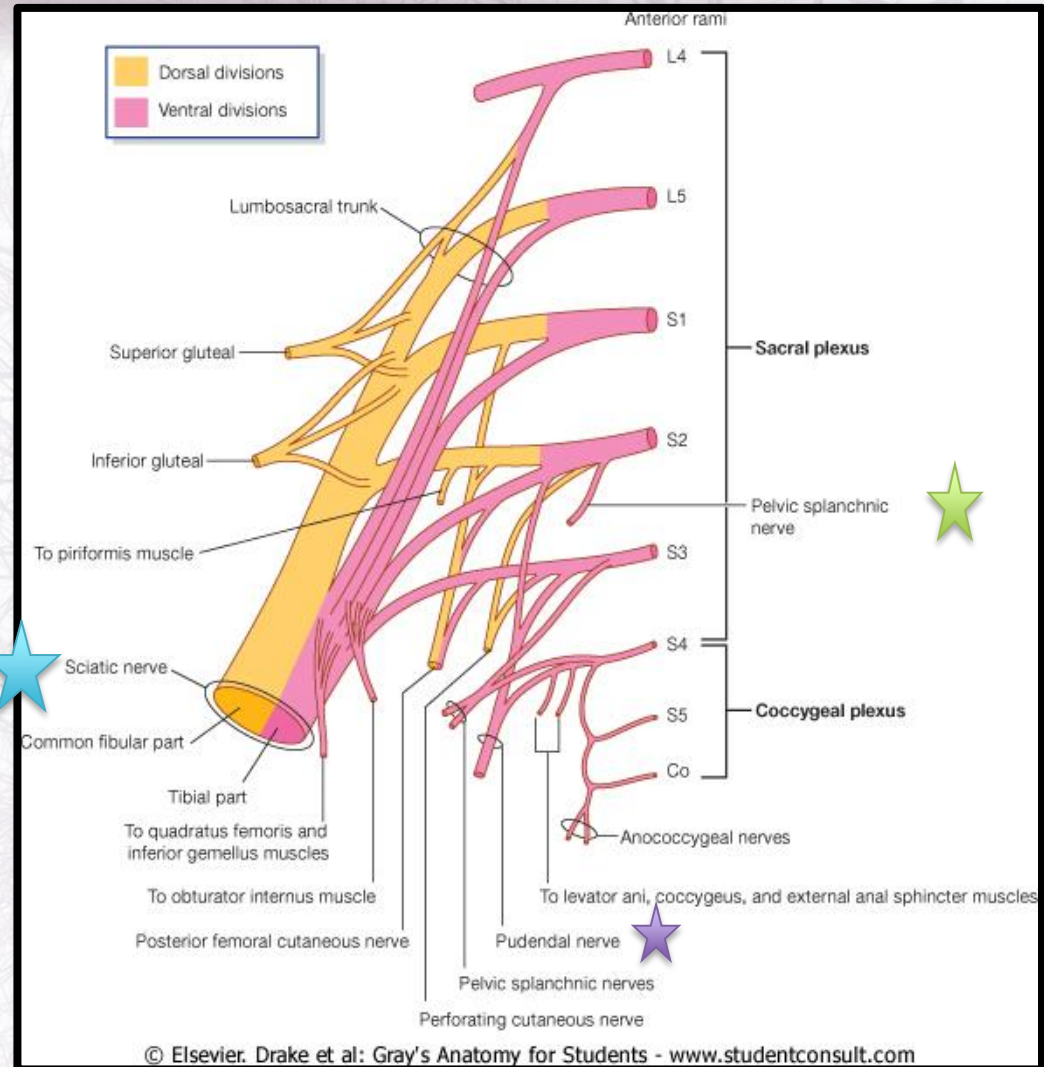
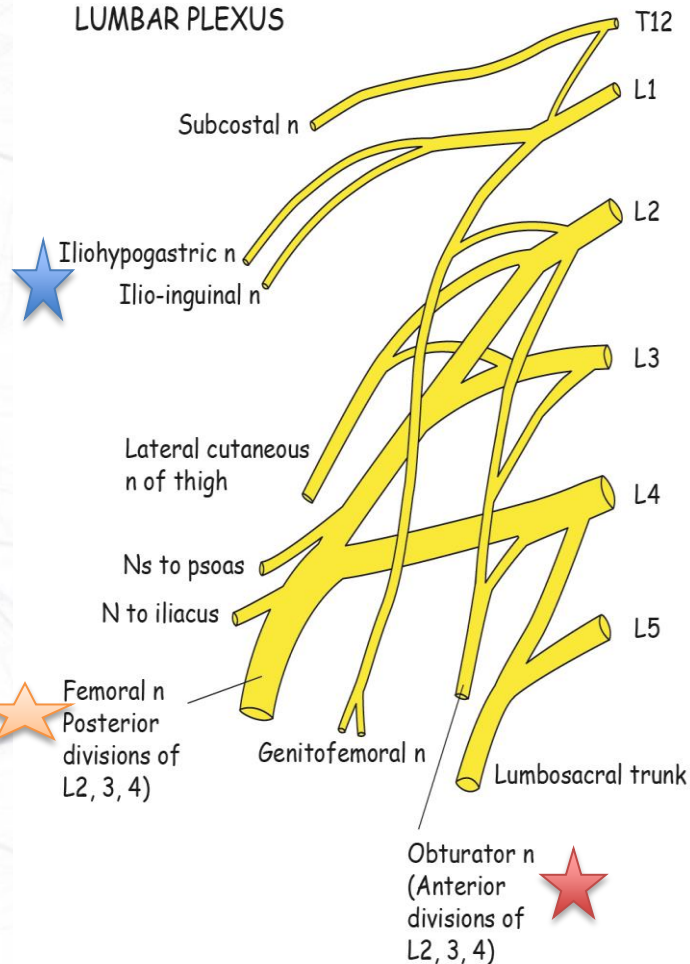
Pudendal nerve: 
to perineum

Sciatic nerve: 
to lower limb

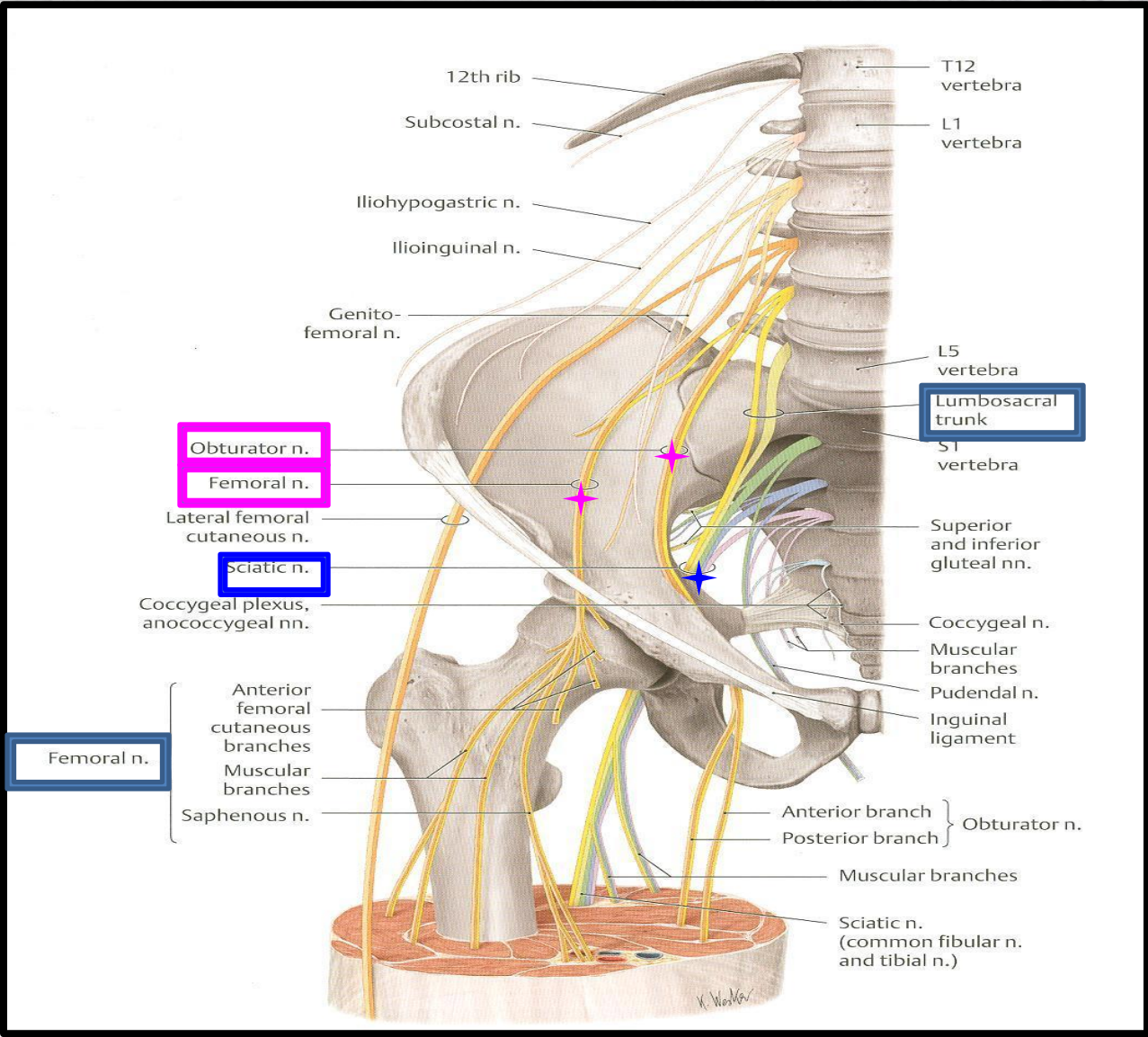
LUMBAR PLEXUS

SACRAL PLEXUS

LUMBAR PLEXUS



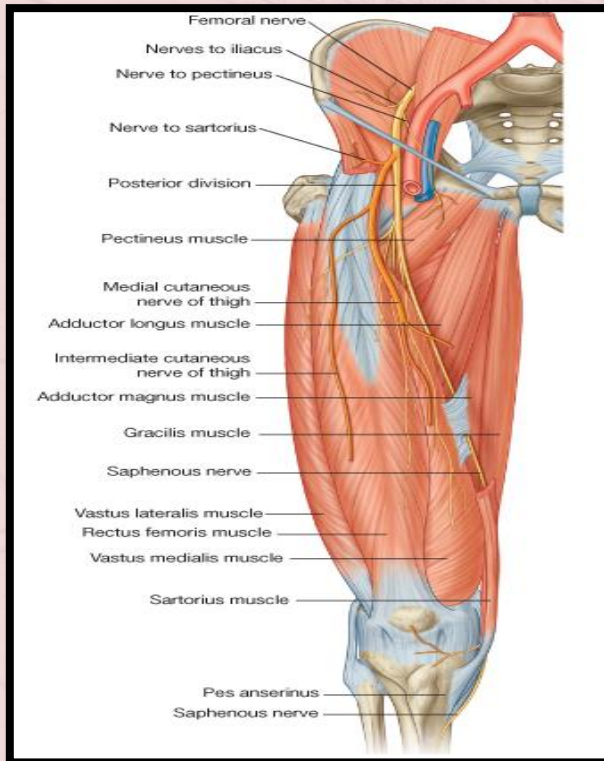
LUMBOSACRAL PLEXUS



FEMORAL NERVE

Origin

A branch from lumbar plexus (L2,3,4)



Course

- ❑ Descends lateral to psoas major & enters the thigh behind the inguinal ligament
- ❑ Passes lateral to femoral artery & divides into terminal branches.

INJURY

- ❑ Motor effect:
 - Wasting of quadriceps femoris
 - Loss of extension of knee
 - Weak flexion of hip (psoas major is intact)
- ❑ Sensory effect:
 - loss of sensation over areas supplied **antero-medial aspect of thigh & medial side of leg & foot**

SCIATIC NERVE

The largest nerve of the body

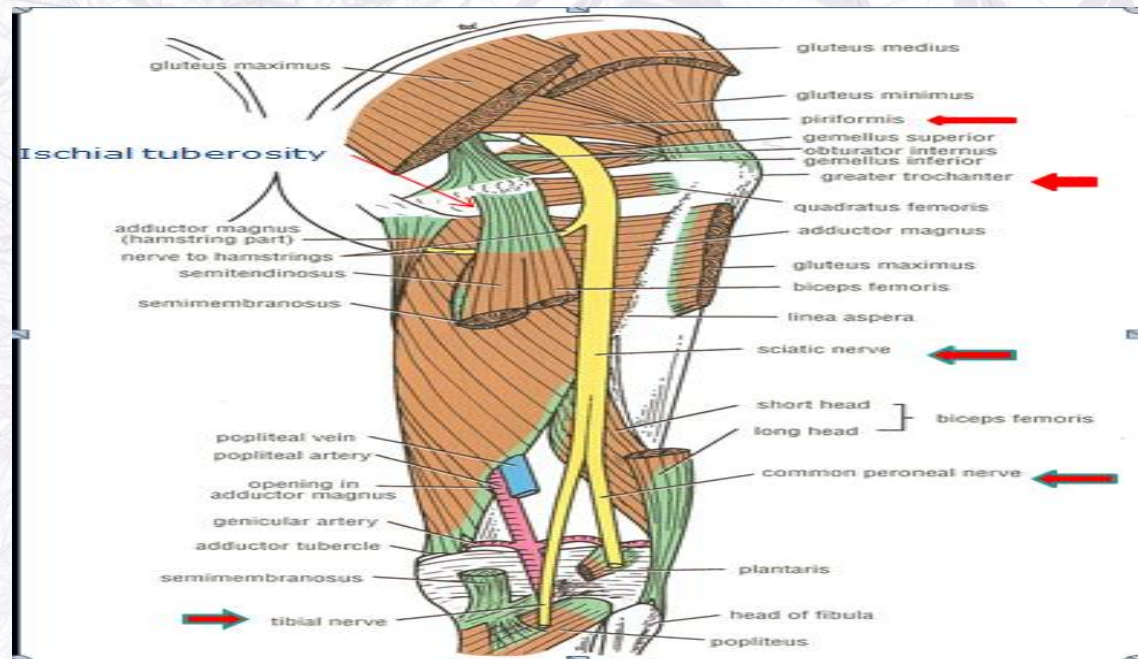
Origin:

from **sacral plexus (L4, 5, S1, 2, & 3)**

Course:

Leaves the pelvis through **greater sciatic foramen**, below piriformis & passes in the **gluteal region** (between ischial tuberosity & greater trochanter) then to posterior compartment of thigh

Divides into **tibial & common peroneal (fibular) nerves**



Course of Tibial nerve and COMMON PERONEAL (FIBULAR) NERVE

TIBIAL NERVE

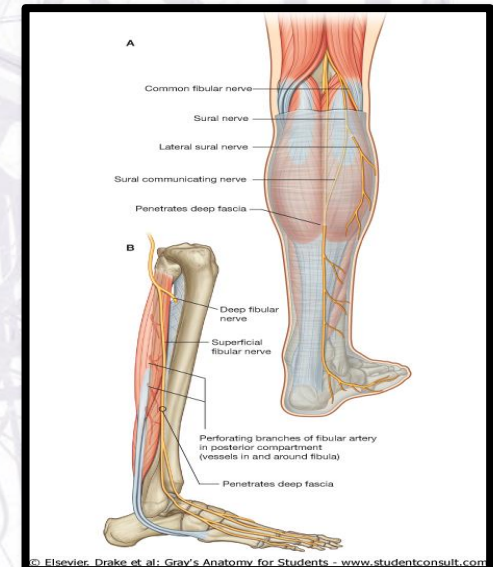
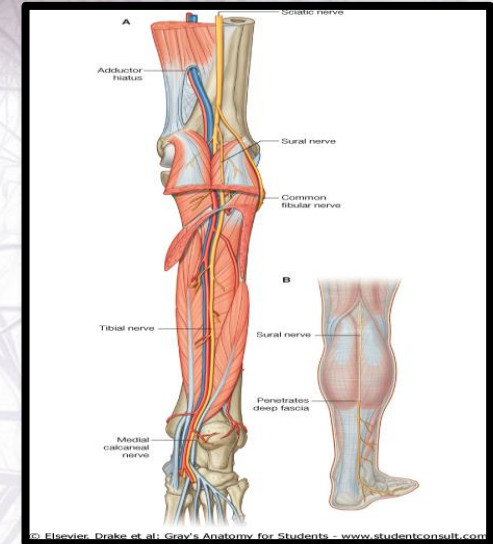
Descends through popliteal fossa to posterior compartment of leg, accompanied with posterior tibial vessels

Passes deep to flexor retinaculum to reach the sole of foot where it divides into 2 terminal branches

COMMON PERONEAL (FIBULAR) NERVE

Leaves popliteal fossa & turns **around the lateral aspect of neck of fibula**. Then divides into:

1. **Superficial peroneal**: descends into lateral compartment of leg
2. **Deep peroneal**: descends into anterior compartment of leg



QUESTIONS

Q1-Lower trunk of brachial plexus union of:

A-T1,C8

B-C6,C7

C-C8,C7

Q2-At the level of the root C5 give:

A-dorsal scapular nerve

B-long thoracic nerve

C-nerve to subclavius

Q3-Which one of the following is one of the posterior cord of brachial plexuses:

A-Musculocutaneous nerve

B-Ulnar nerve

C-Axillary nerve

Q	Answer
1	A
2	A
3	C

QUESTIONS

Q4: Branches of C5,C6,C7 union together to give:

- a- dorsal scapular nerve
- b- Long thoracic nerve
- c- Nerve to subclavius
- d- Suprascapular nerve

Q5: Which one of the following nerve NOT include in the Lateral cord of brachial plexuses:

- a- Lateral pectoral N.
- b- Lateral root to median N.
- c- Radial N.
- d- Musculocutaneous N.

Q6: Lesions of the Brachial Plexus Upper Trunk C5,6 case:

- a- APE HAND
- b- Claw hand
- c- Hand of Benediction
- d- waiter's tip position

Q	Answer
4	B
5	C
6	D

QUESTIONS

Q7: The femoral nerve supplies:

- A-Extensors of hip.**
- B-Skin of dorsum of foot.**
- C-Hamstrings.**
- D-Extensors of knee**

Q8: Injury of common peroneal nerve leads to:

- A-Loss of dorsiflexion of ankle**
- B-Loss of inversion of foot**
- C-Loss of extension of knee**
- D-Loss of flexion of toes**

Q9: What are the nerve roots of the Femoral Nerve?

- A. L2toL4**
- B. L2toL5**
- C. L1toL4**
- D. L2 & L3**

Q	Answer
7	d
8	a
9	a

10. Within which muscle does the Femoral Nerve arise?

- A. Pectineus**
- B. Sartorius**
- C. Psoas Major**
- D. Rectus Abdominis**

11. What is the position of the femoral nerve in relation to the femoral artery ?

- A. Lateral**
- B. Medial**
- C. Above**
- D. Below**

12. Where do the cutaneous branches of the femoral nerve supply?.

- A. Lateral Thigh**
- B. Anteromedial Thigh**
- C. Dorsum of the foot**
- D. Lateral surface of the leg**
- E. Gluteal region**

Q	Answer
10	c
11	a
12	b