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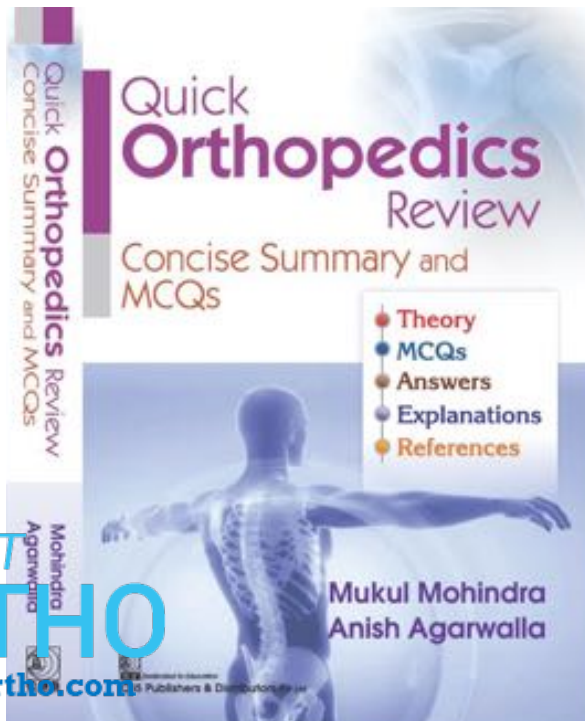
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Ex. Registrar MAMC, Delhi



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LOCALIZING A SPINAL LESION

Q. Your neighbour developed sudden back pain on lifting heavy weight. His MRI report reads “Disc Prolapse L3-4”. What changes do you expect to find in Knee and Ankle reflexes respectively presuming the patient has a neurological deficit?

Knee Reflex (L3-4)



Ankle Reflex (S1-S2)



N

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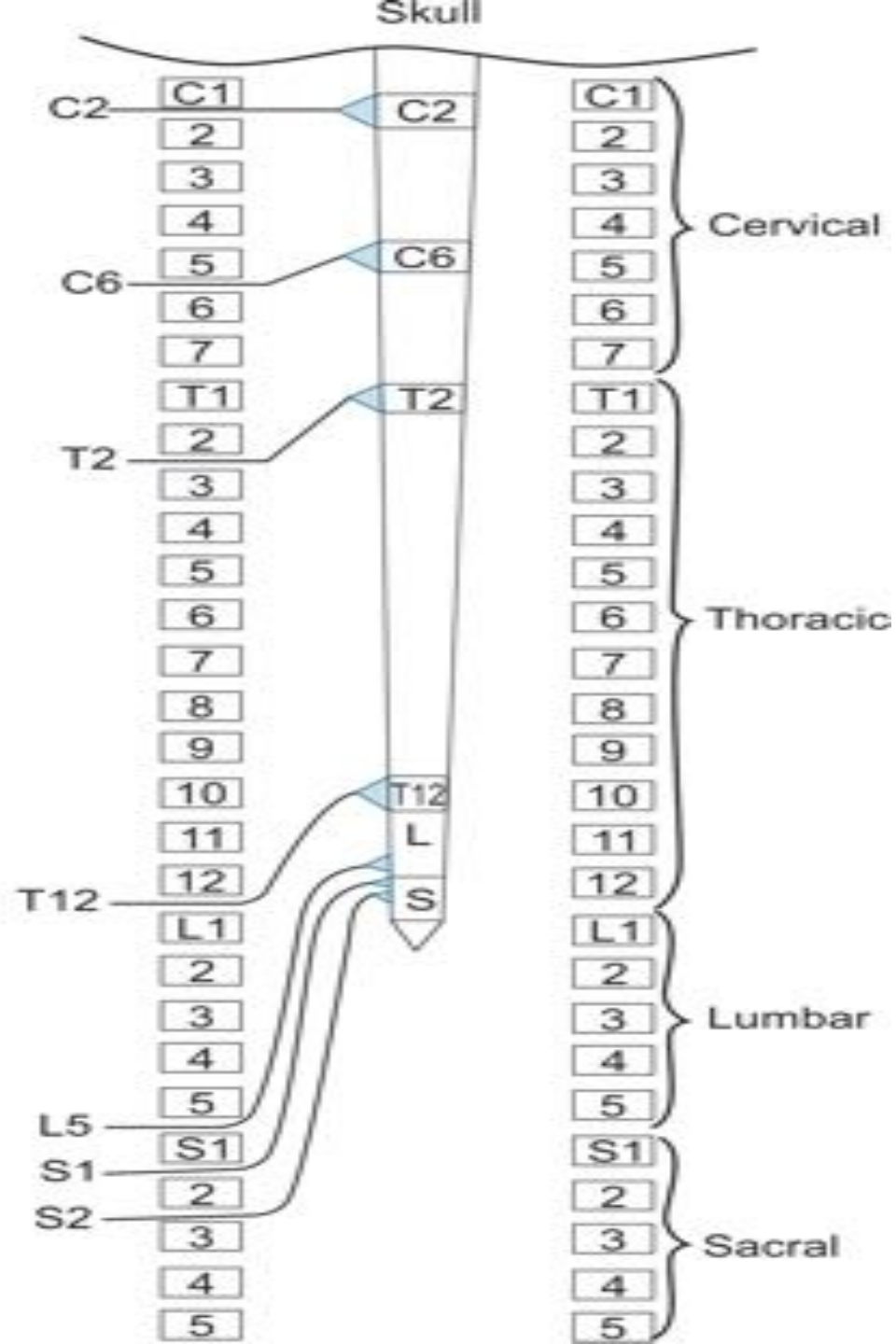
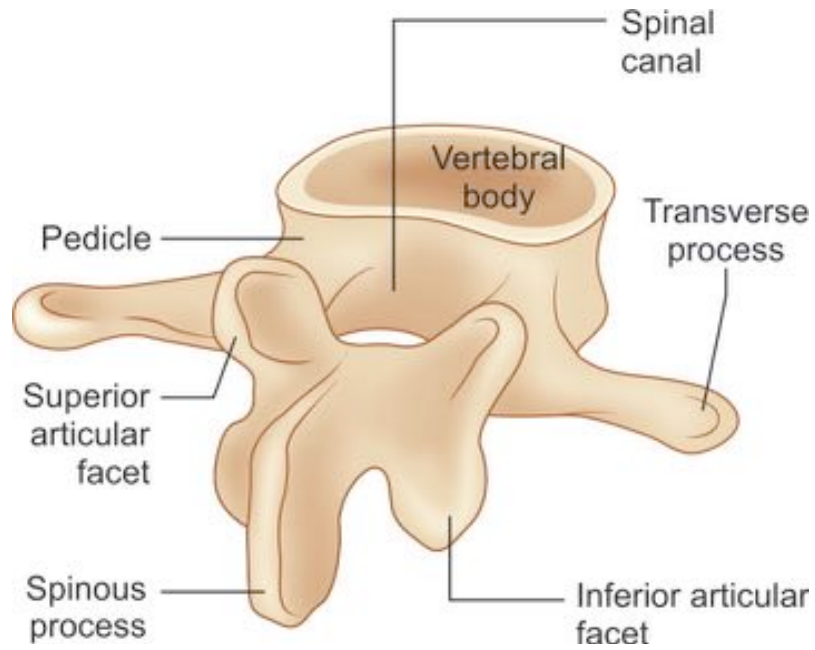


Ankle Reflex (S1-S2)

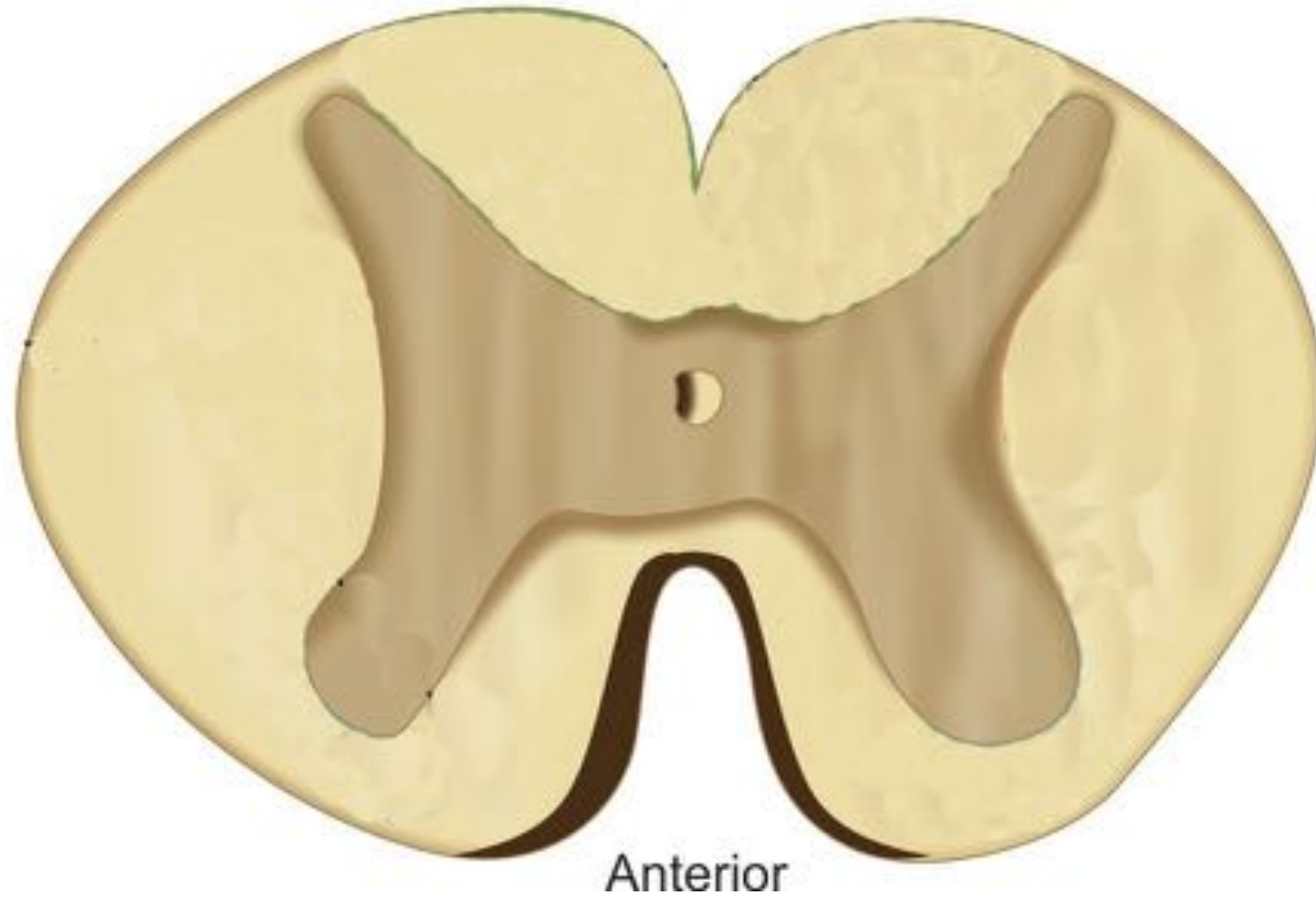


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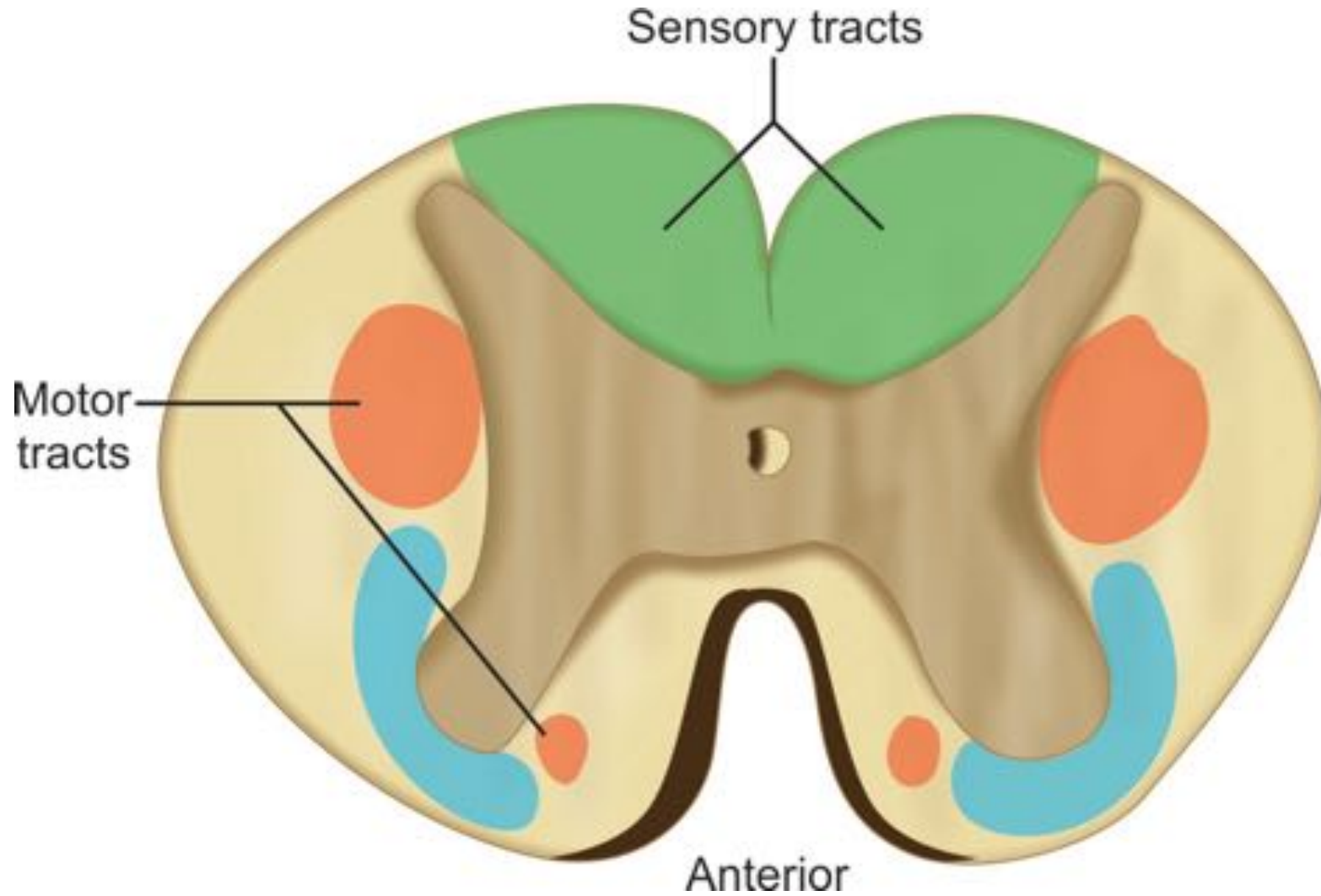
ANATOMY

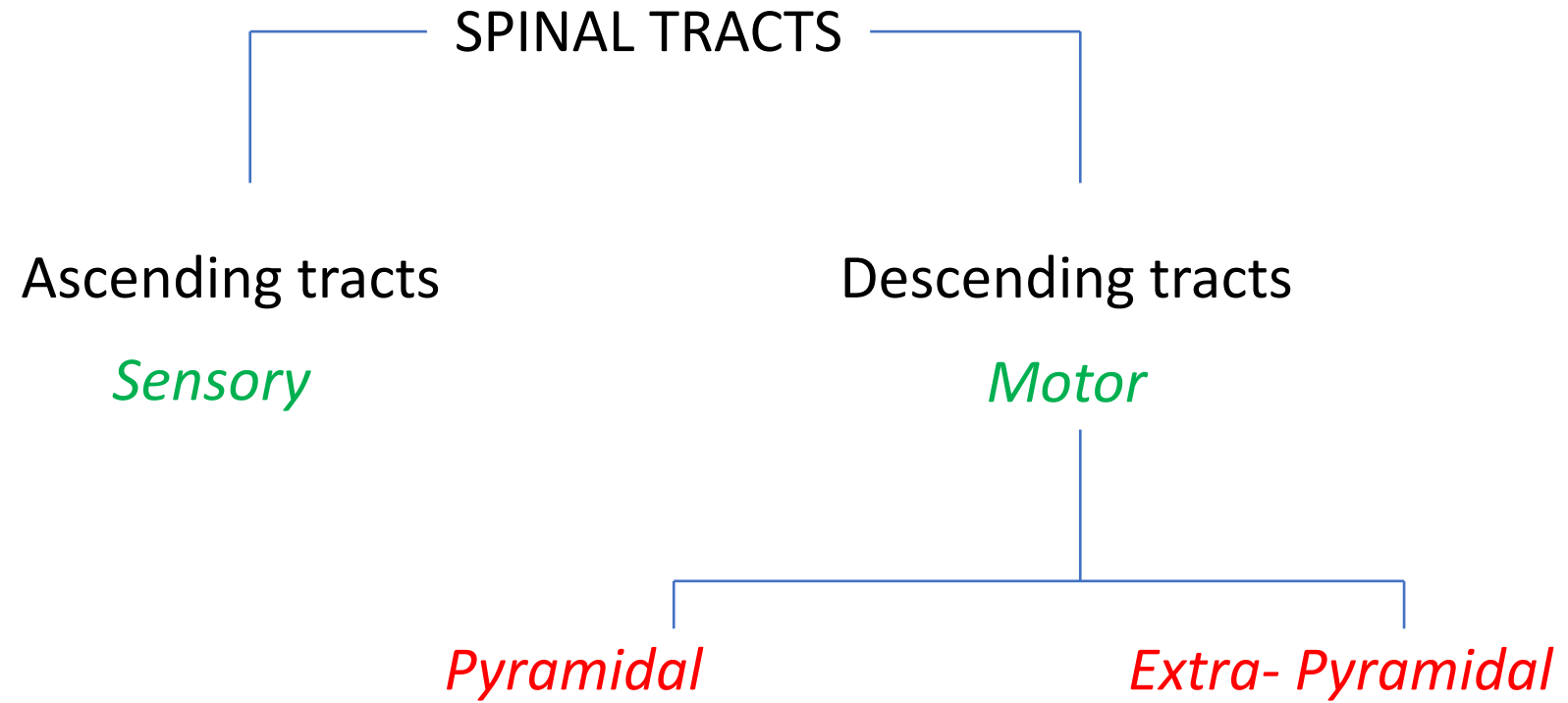


SPINAL CORD CROSS-SECTION



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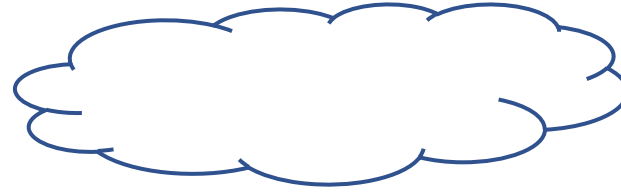


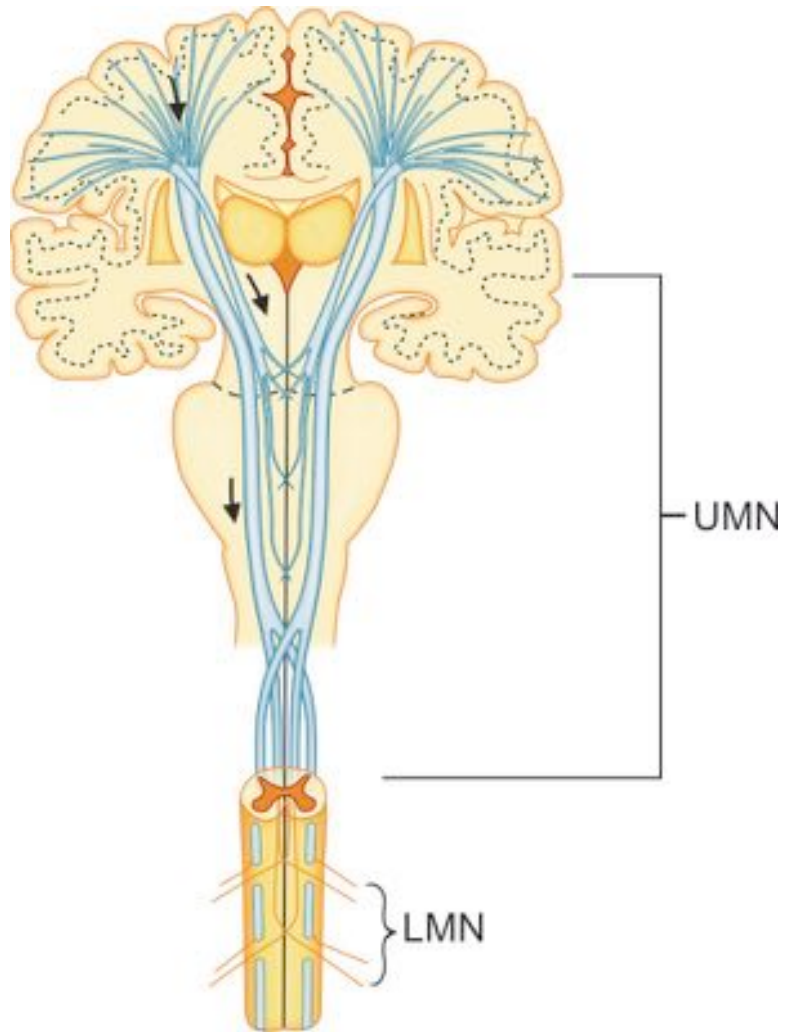


LOCALIZING A SPINAL LESION

- UMN and LMN lesion
- Reflexes
- Dermatomes and Myotomes

UMN Vs LMN





REFLEX

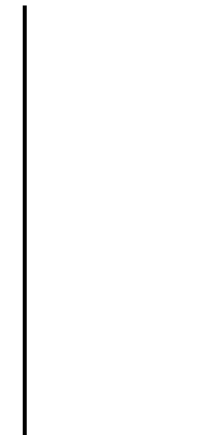
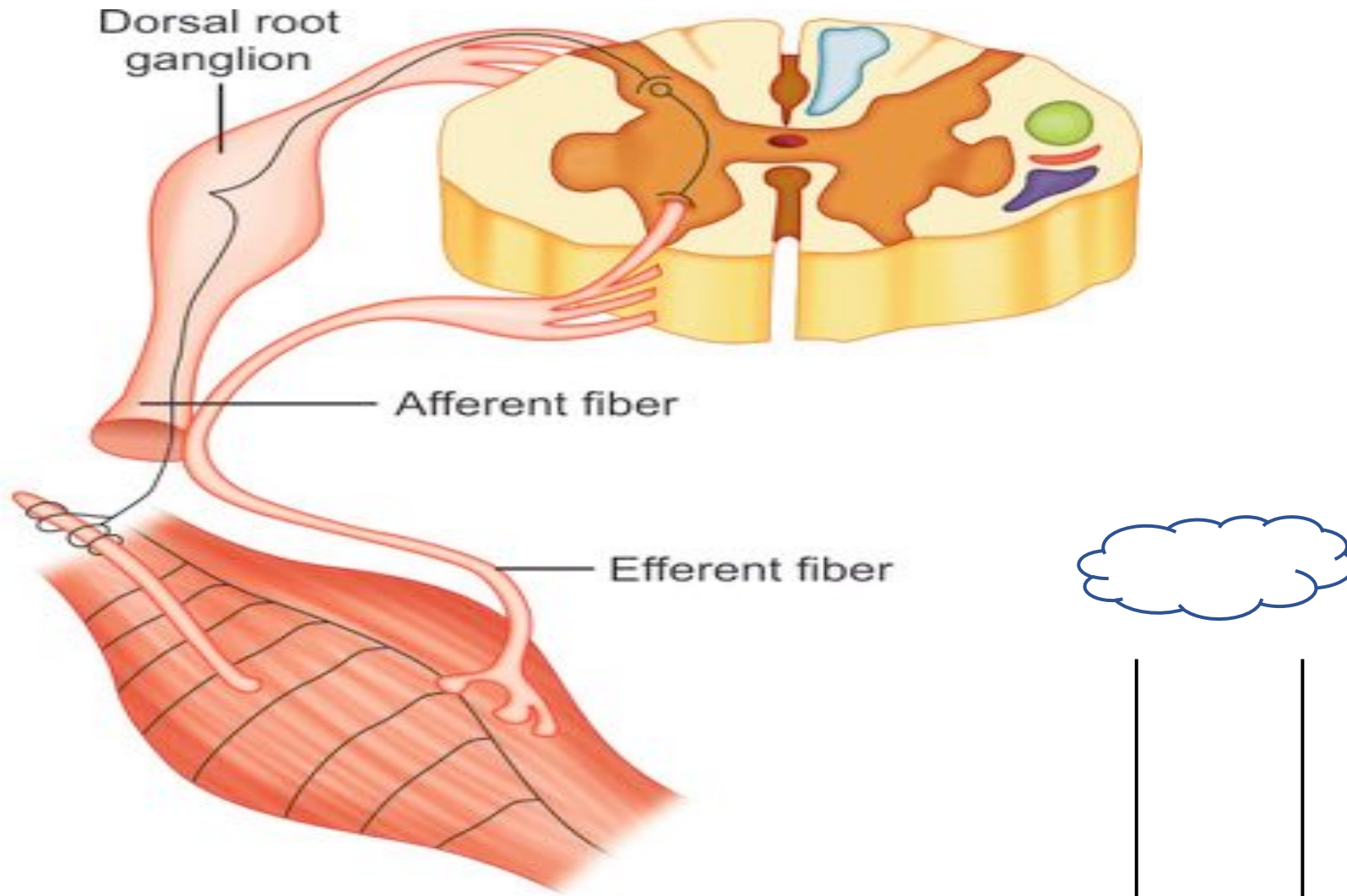


Q 1

You are sitting in front of me in a class. I come near you and tell you that I am “COVID” positive. What will be your response?

Q 2

I message you a day before the class, that I am “COVID” positive. What will be your response?



REFLEX



A simple sensory motor pathway that traverses only single (or a couple at most) spinal segment. Only grey matter is involved.

No white matter tracts are involved.

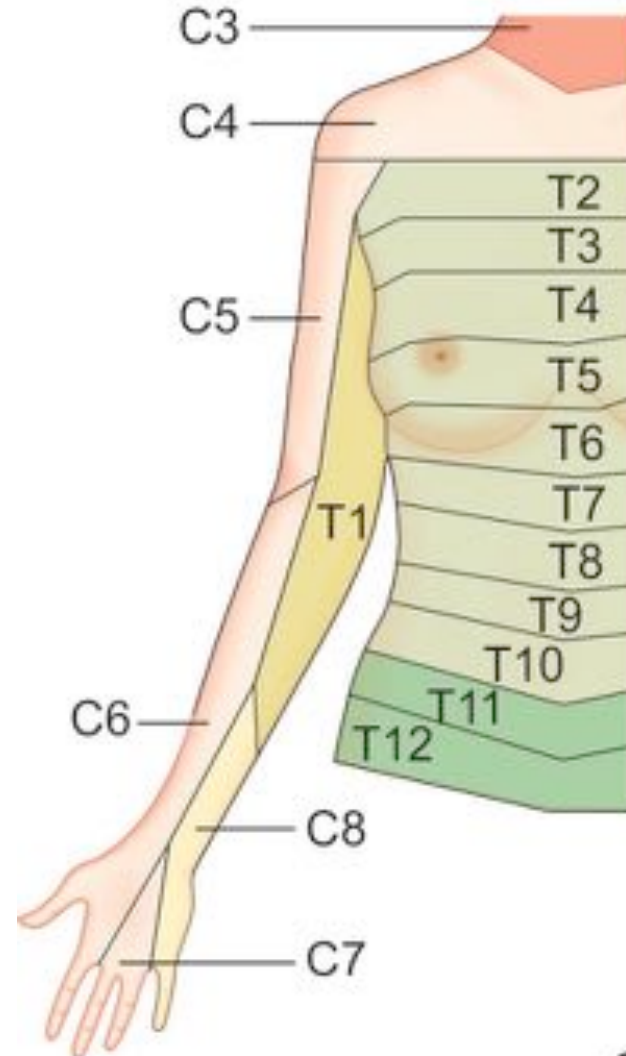
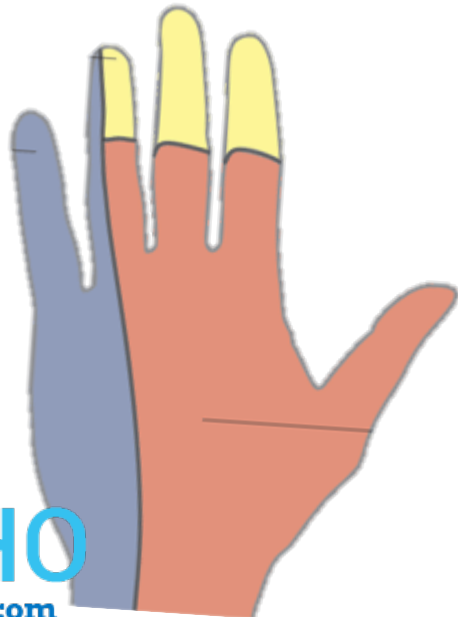
LEVELS

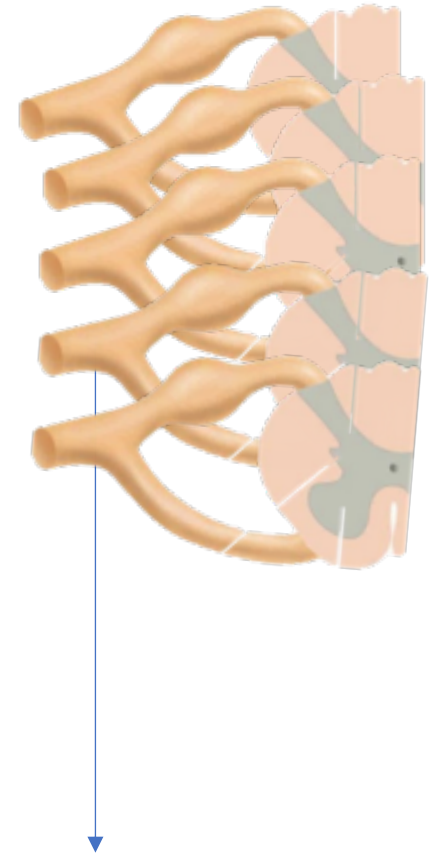
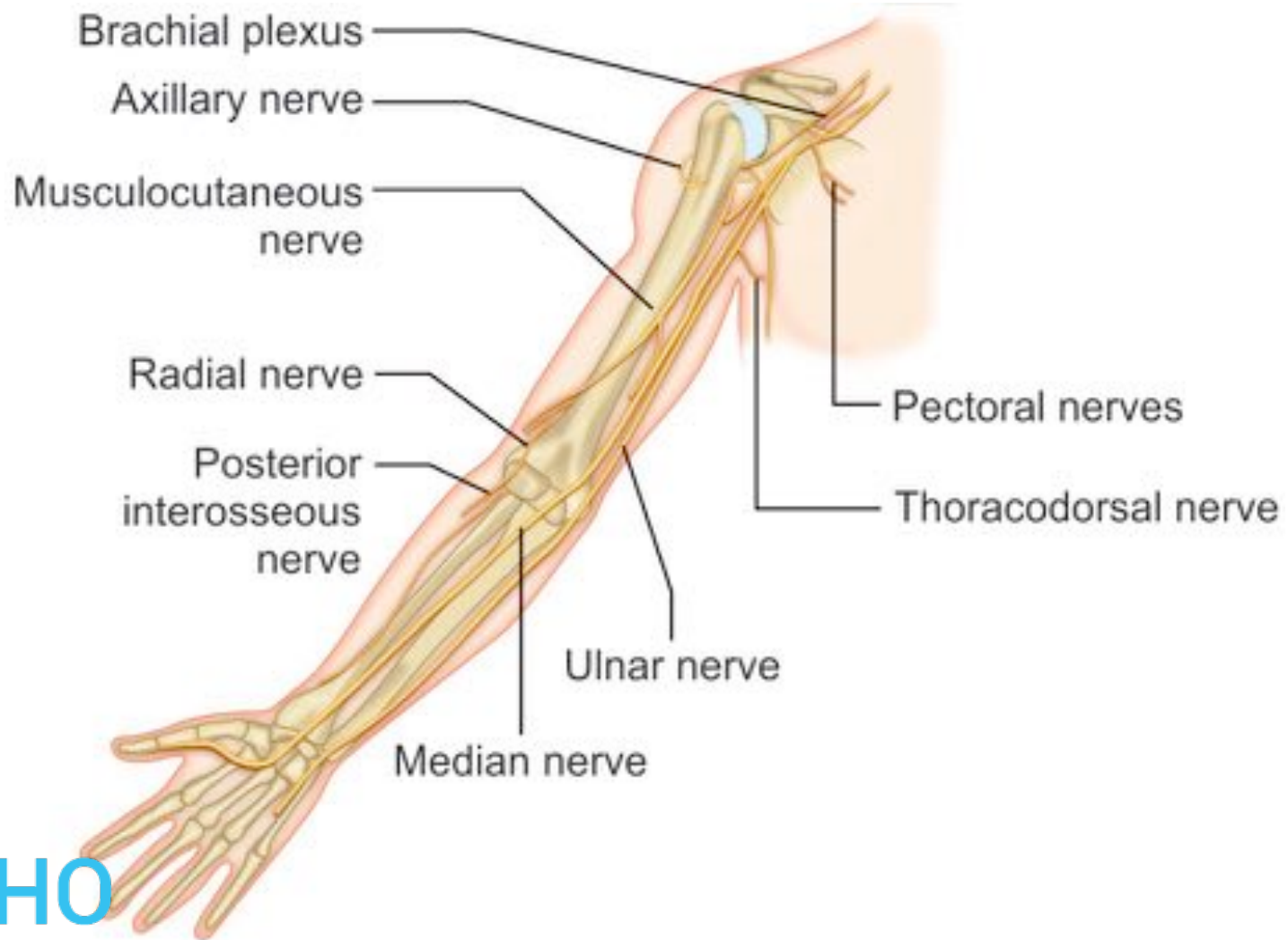
DERMATOME/ MYOTOME

I have sensory loss over my 'little finger'.
Which nerve is injured?

- A. Ulnar nerve
- B. C 8 spinal nerve
- C. Could be either
- D. None

DERMATOME/ MYOTOME





DERMATOME

AREA OF SKIN supplied by a single SPINAL NERVE!

MYOTOME

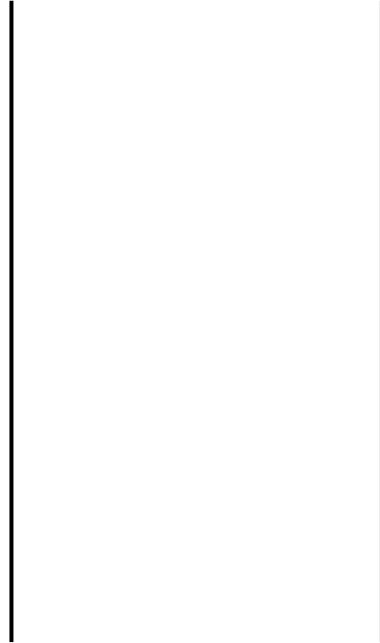
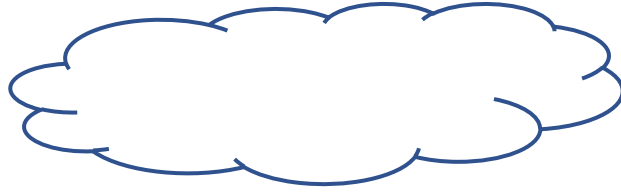
A MUSCLE supplied by a single SPINAL NERVE!

MYOTOMES

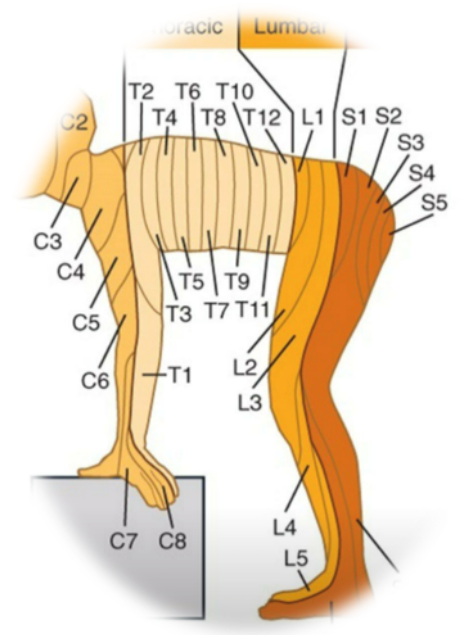
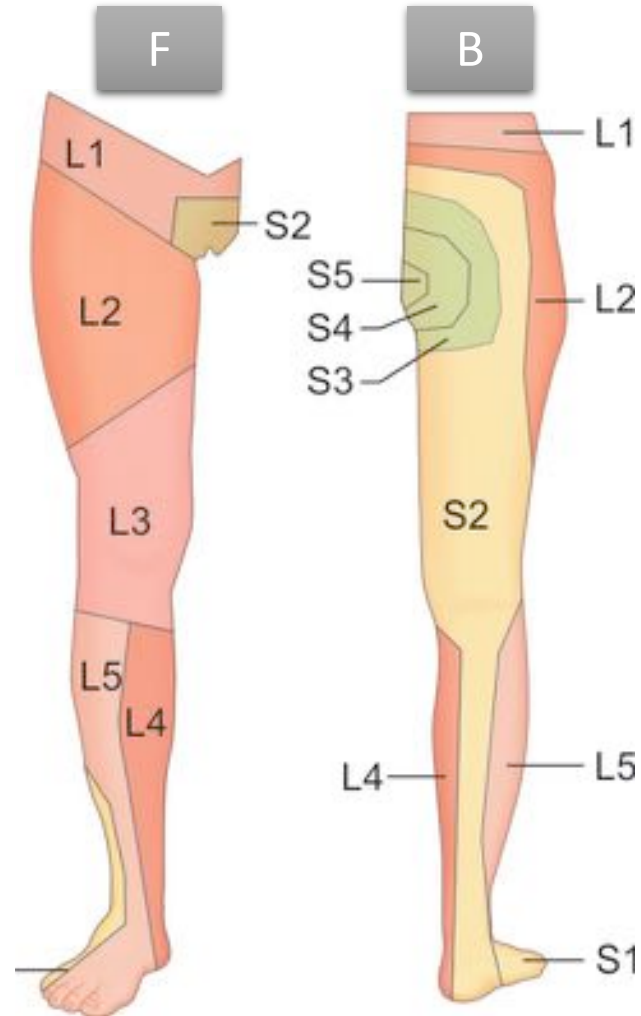
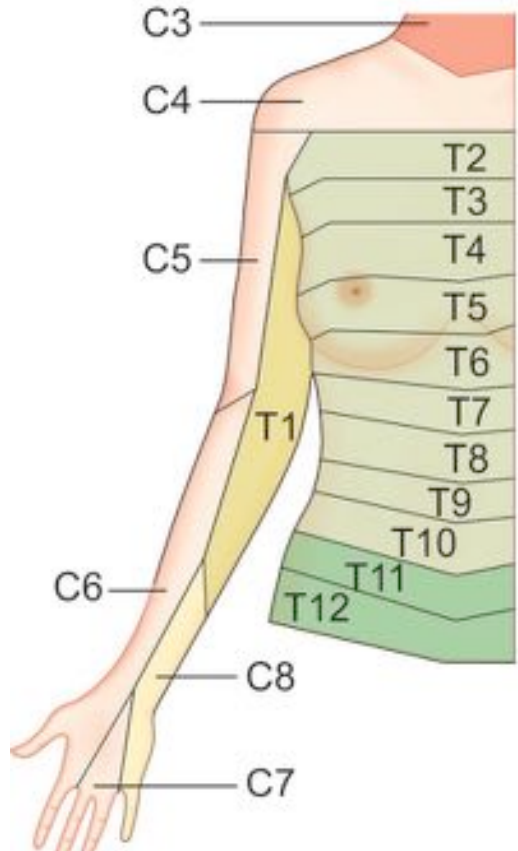
UPPER LIMB	LOWER LIMB
C 5: Deltoid	L1-2: Hip flexors
C 6: Wrist extensors	L3-4: Knee extensors
C 7: Triceps	L4: Ankle dorsiflexor
C 8: Finger flexors	L5: EHL
T 1: Finger abductors	S1: Ankle plantar flexor

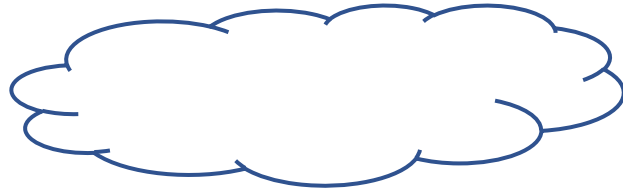


MYOTOMES



DERMATOMES





Spinal Cord Injury (UMN)

Complete sensory paralysis from the level of transaction till the TERMINAL peri-anal level (S5)!

Spinal Nerve Injury (LMN)

Sensory paralysis will involve only the distribution of involved nerve!

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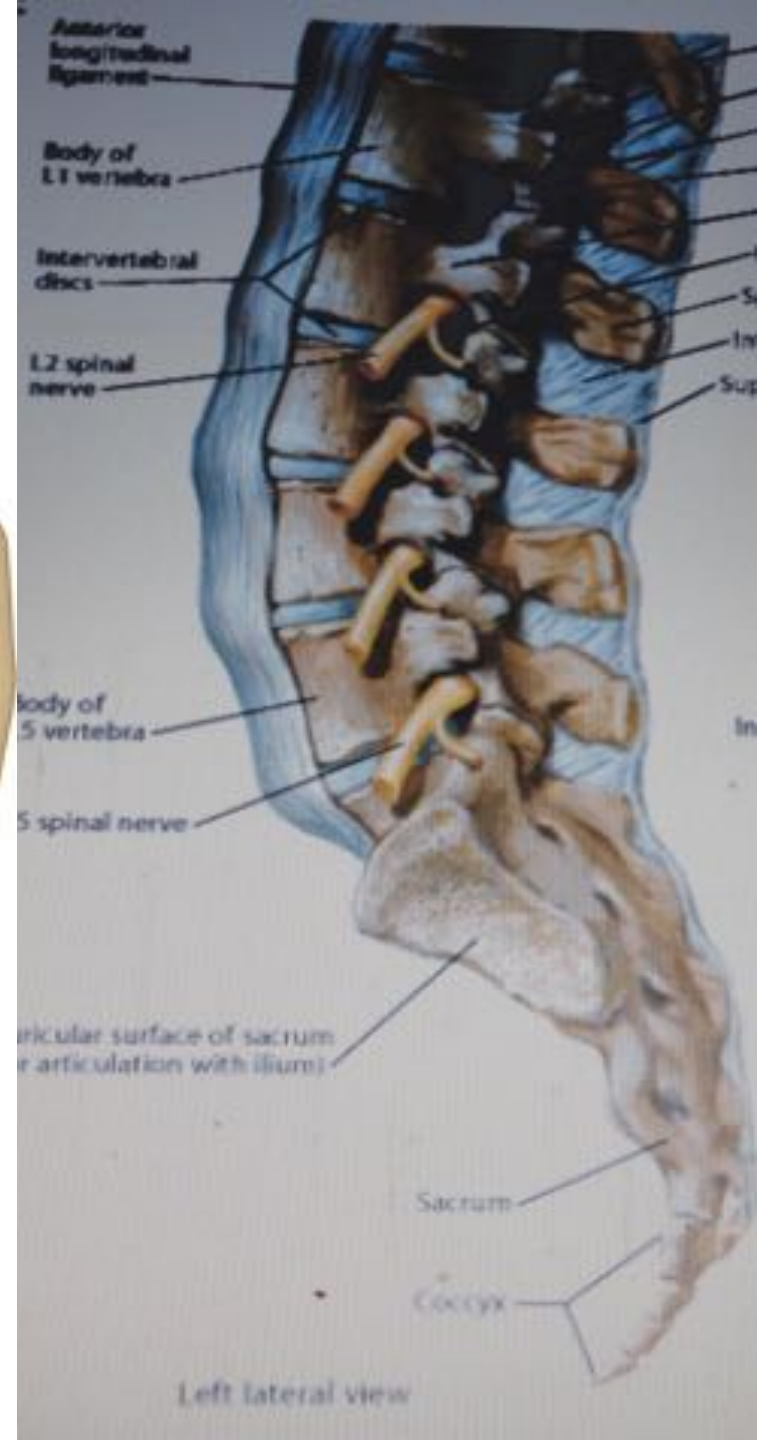
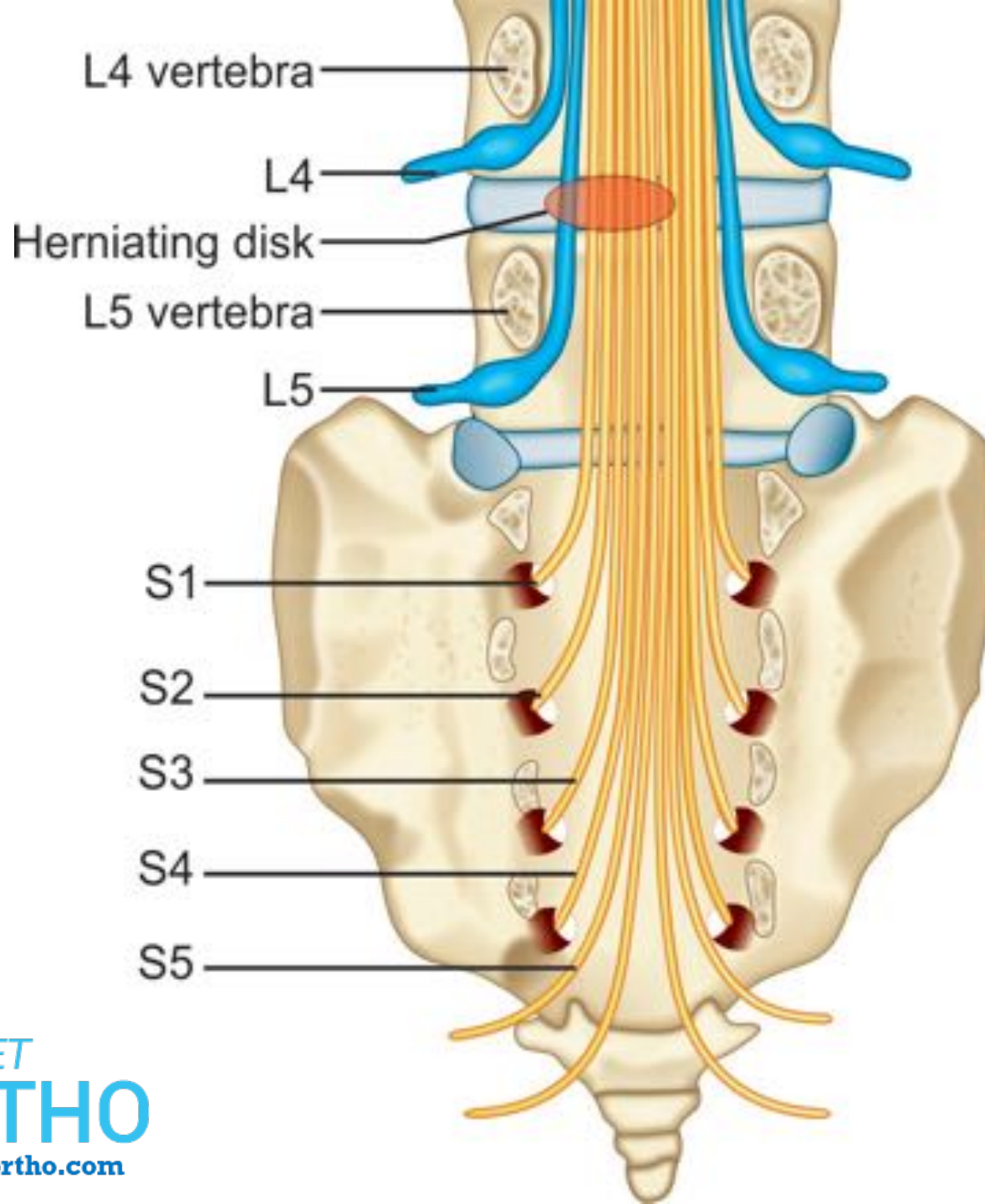
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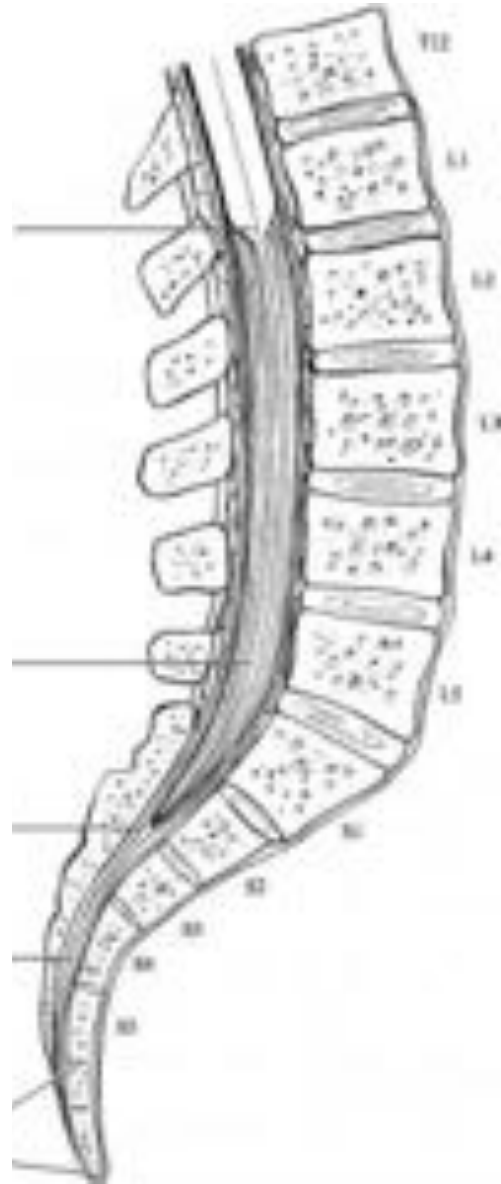
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CAUDA EQUINA SYNDROME

Multiple level spinal nerve involvement
generally by a large prolapsing disc

- Areflexic flaccid paralysis involving multiple muscles of lower limb
- Sensory loss in distribution of multiple sacral nerves:
Saddle anaesthesia
- Bladder Bowel Involvement

CONUS MEDULLARIS SYNDROME

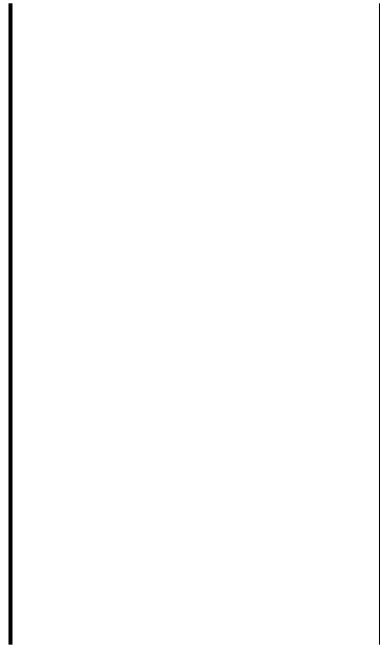
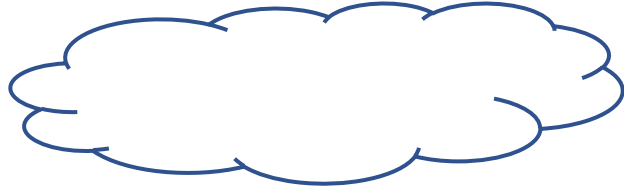


CONUS

Peri anal (S5) sensations:

CAUDA

Peri anal (S5) sensations:

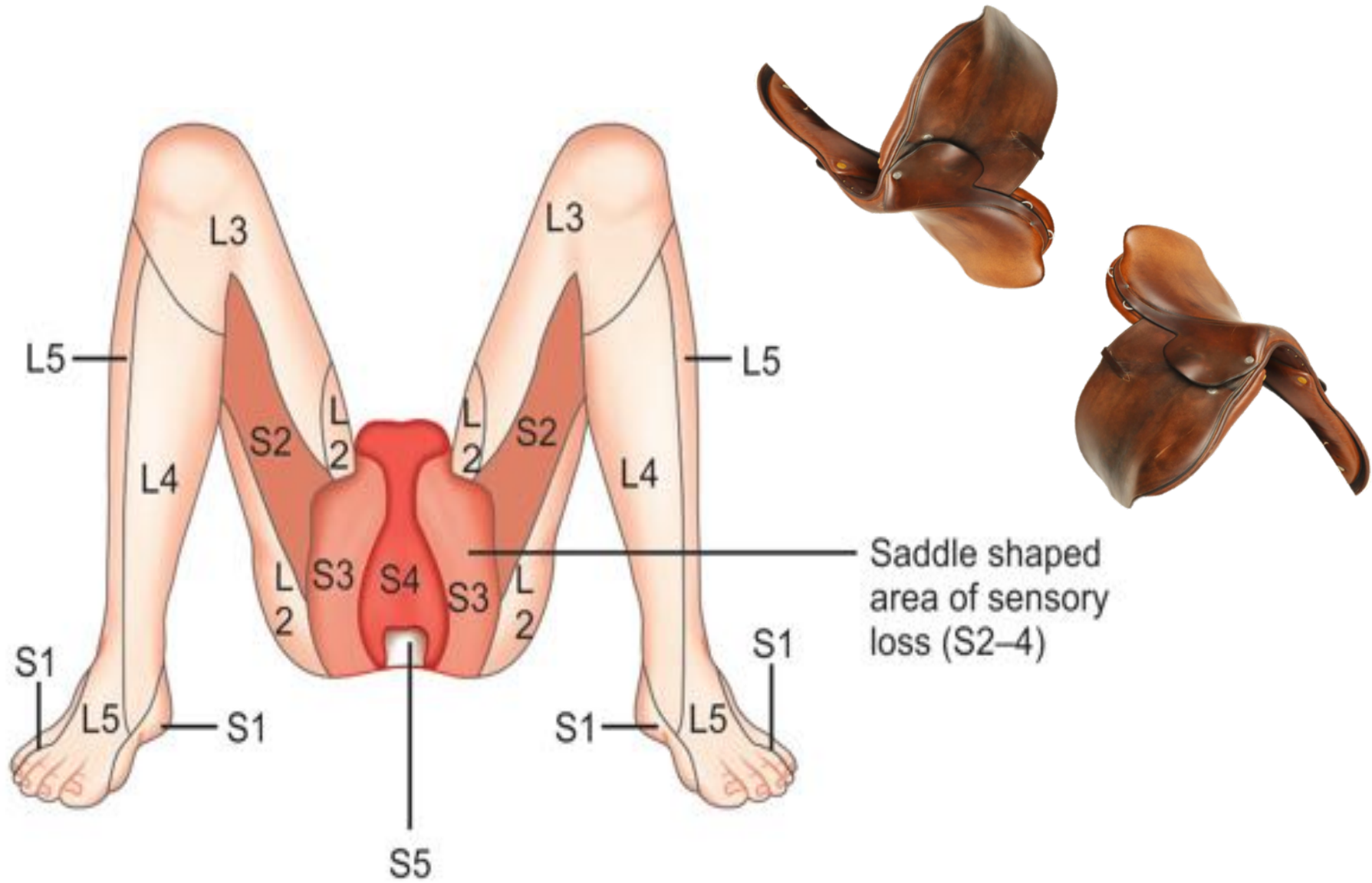


Spinal Cord Injury (UMN)

Complete sensory paralysis from the level of transaction till the TERMINAL peri-anal level (S5)!

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Sensory paralysis will involve only the distribution of involved nerve!



Saddle shaped area of sensory loss (S2-4)

(Peri-anal dermatome)

DECIDING VERTEBRAL LEVEL

Cervical cord lesion: Minus 1 for vertebral level

D1-6 cord lesion: Minus 2 for vertebral level

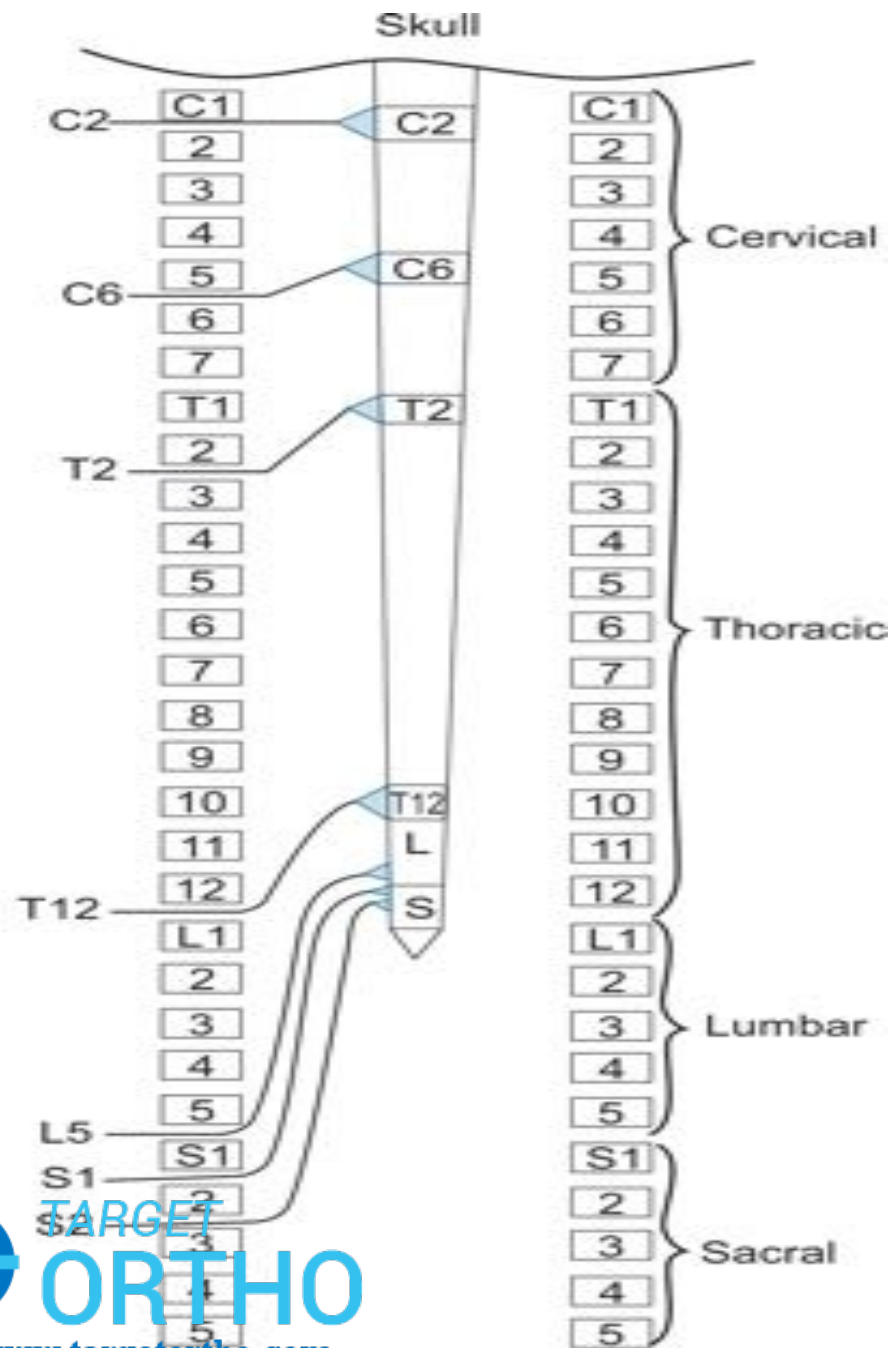
D6-12 cord lesion: Minus 3 for vertebral level

L1,2: D10-11 vertebra

Lower Lumbar cord lesion: D12 vertebra

Conus lesion: L1 vertebra

Cauda equina: Below L1 vertebra

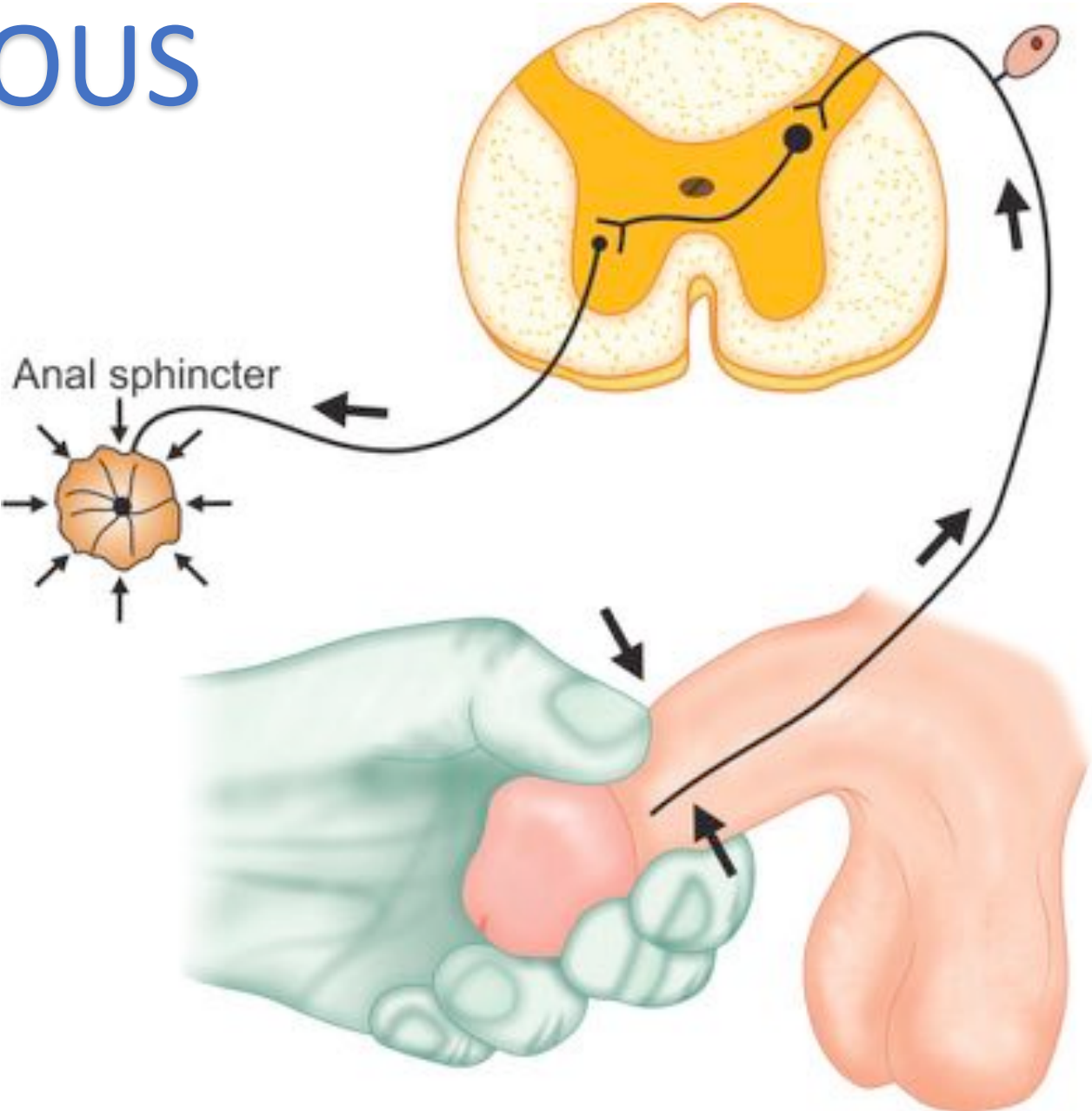


ACUTE SCI

Q. The first reflex to return once spinal shock is over?

- A. Plantar reflex
- B. Ankle reflex
- C. Bulbocavernous reflex
- D. Cremasteric reflex

BULBO CAVERNOUS REFLEX

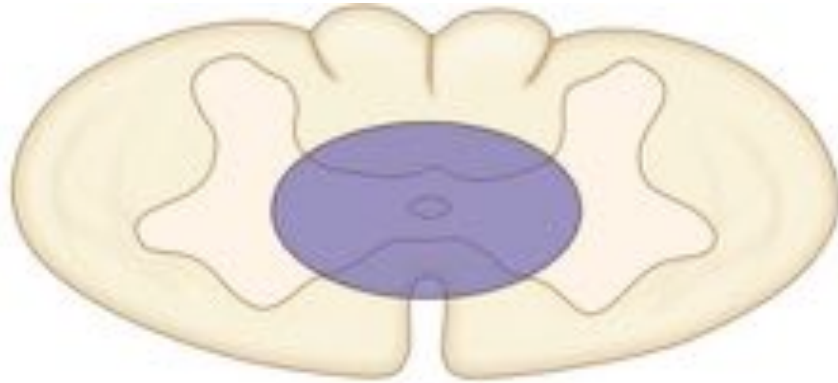


COMPLETE Vs INCOMPLETE SCI

“SACRAL SPARING” is represented by

- intact perianal sensations
- voluntary rectal motor function and
- great toe flexor activity

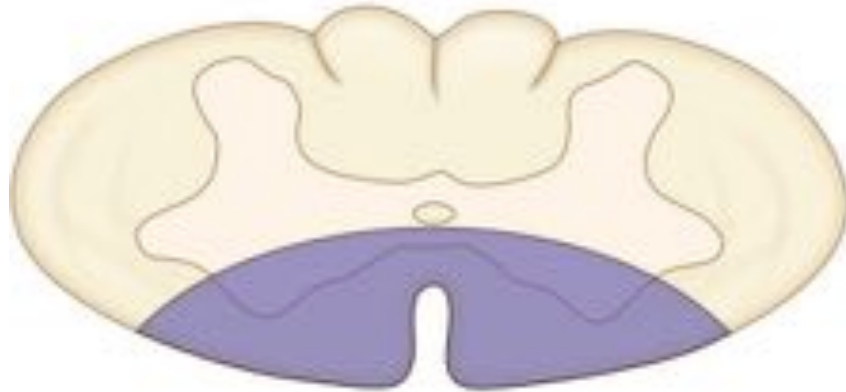
INCOMPLETE SCI SYNDROMES



Central cord syndrome



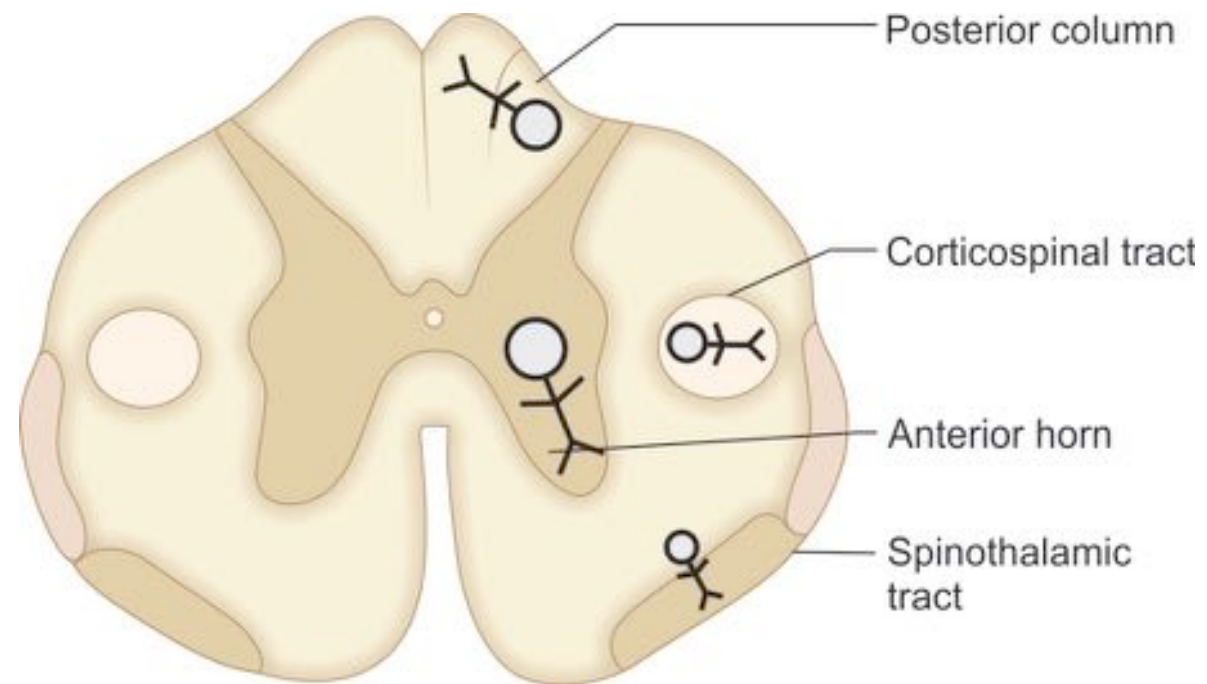
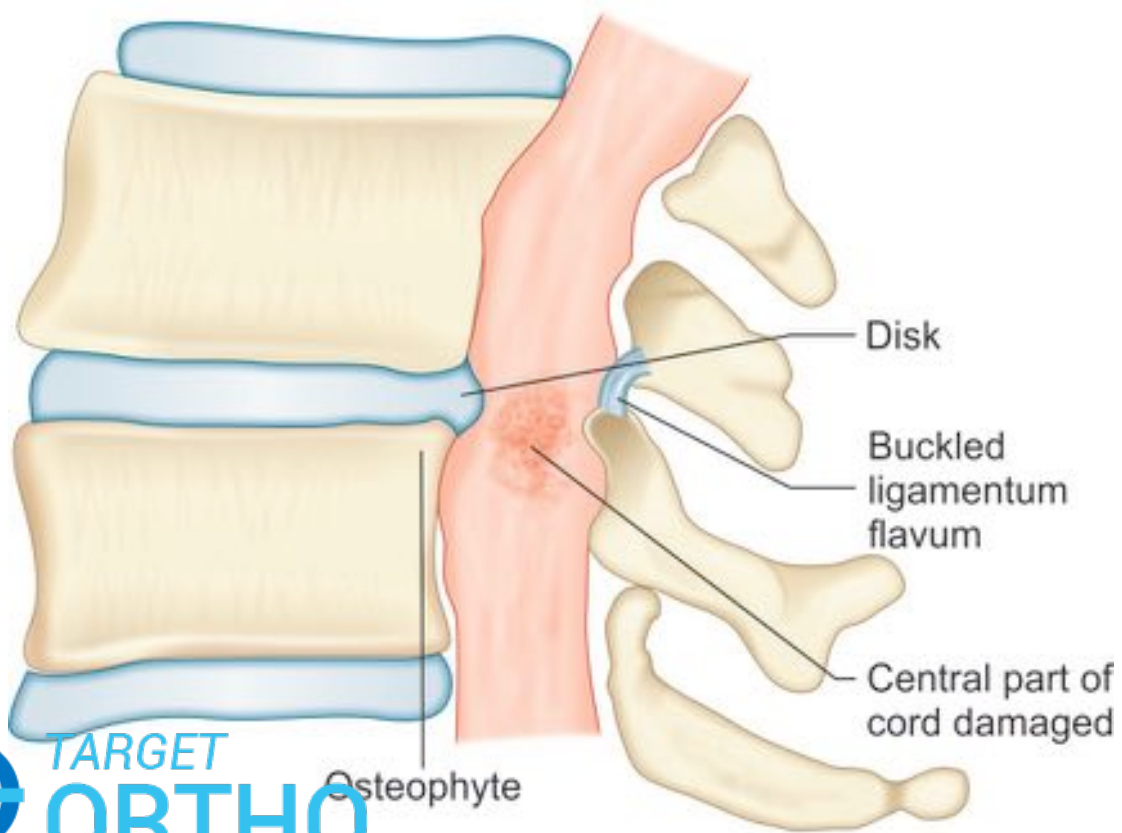
Brown-Séquard syndrome



Anterior cord syndrome



Posterior cord syndrome



Q. Which incomplete SCI syndrome has worst prognosis?

- A. Anterior cord syndrome
- B. Posterior cord syndrome
- C. Brown Sequard syndrome
- D. Central cord syndrome

COMPLICATIONS *during* SPINAL SHOCK

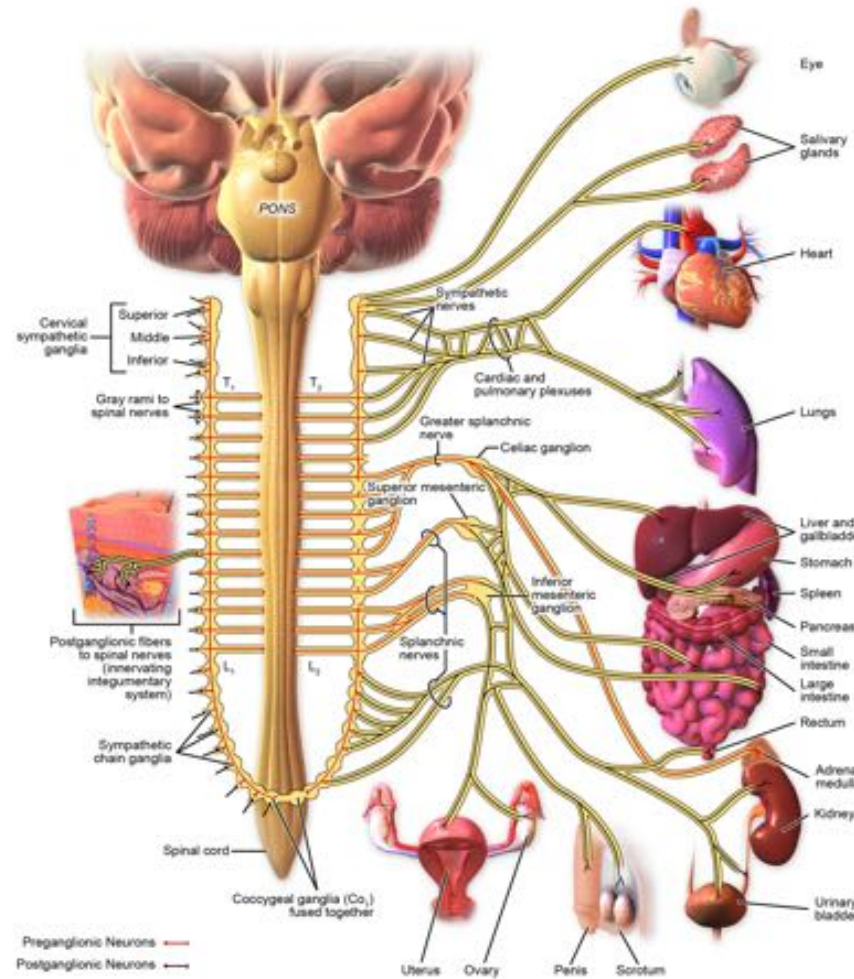
SCI above T6 level

NEUROGENIC SHOCK

- Hypotension
- Bradycardia
- Hypothermia

AUTONOMIC DYSREFLEXIA

- Hypertension
- Bradycardia
- Sweating



Sympathetic Innervation

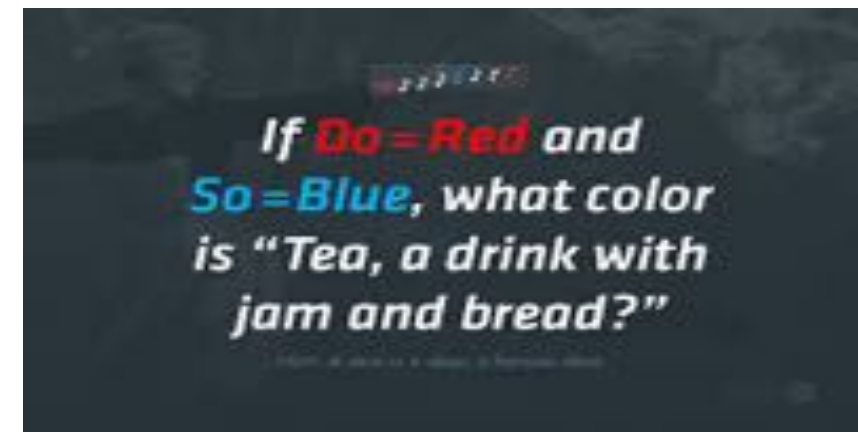
Hoffman reflex

Inverted reflex



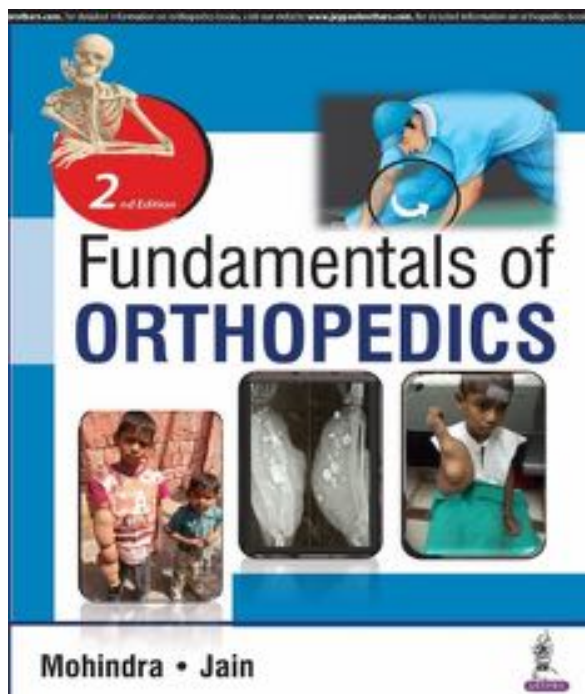
Where to strike the hammer if you are trying to elicit “Supinator Reflex”?

- A. Distal forearm
- B. Proximal forearm
- C. Middle of forearm
- D. Olecranon process at elbow



Movement seen is?

- A. Supination of forearm
- B. Pronation of forearm
- C. Flexion of forearm
- D. Extension of forearm



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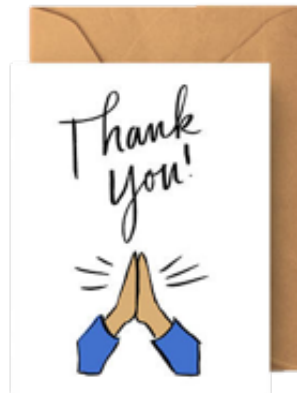
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