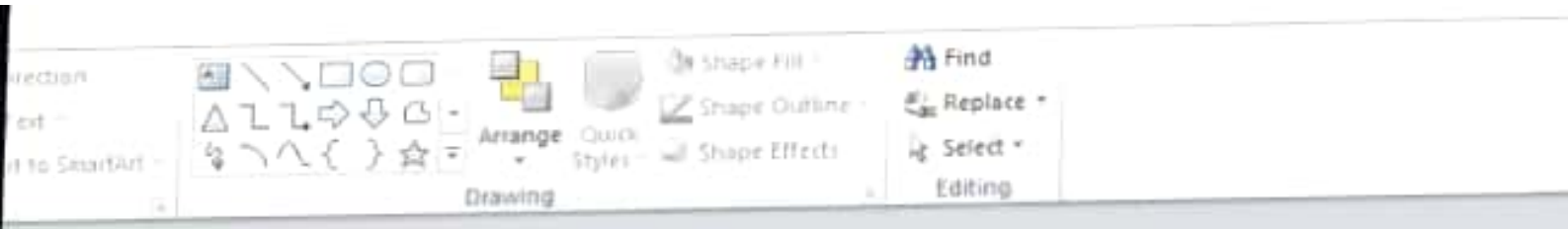


LUMBO SACRAL PLEXUS ANATOMY

DR NAJMA ATTAULLAH

LECTURER ANATOMY KGMC

1st Year

LUMBO SACRAL PLEXUS ANATOMY

DR NAJMA ATTAULLAH
LECTURER ANATOMY KGMC

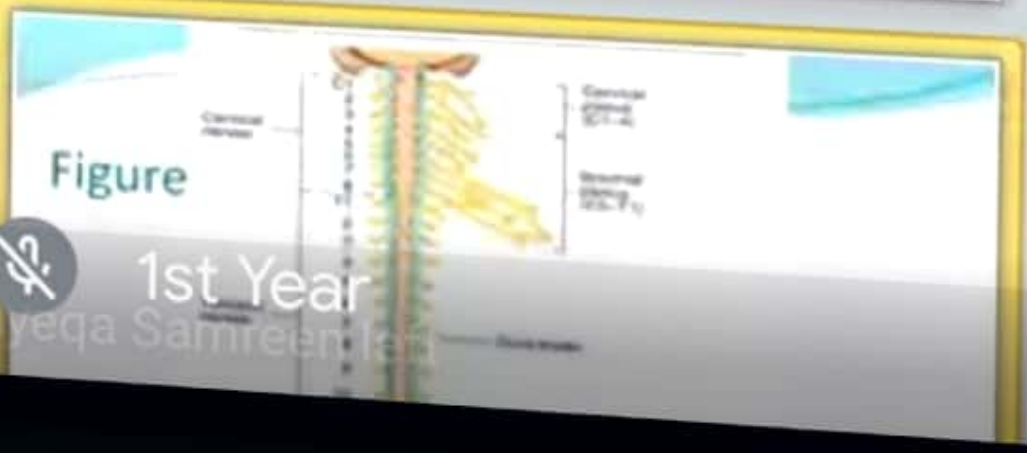
2

Nerve Plexus of Pelvic and Lower Limb

- Lumbar spinal nerves – **lumbar plexes.**
- Sacral spinal nerves – **sacral plexus.**
- Together form the **lumbosacral plexuses.**

- Lumbar plexus is the upper portion.
- Sacral plexus is the lower portion.

3



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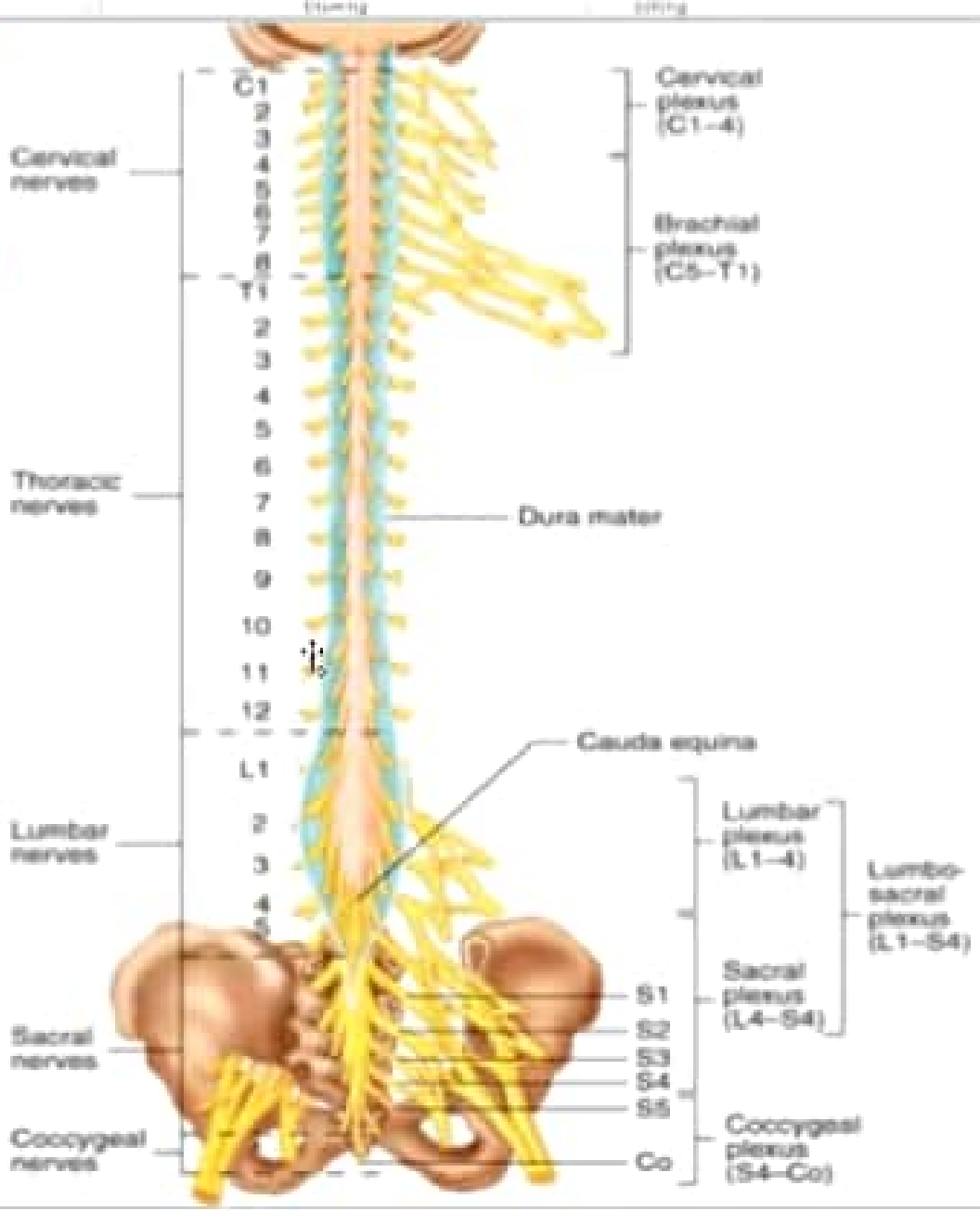
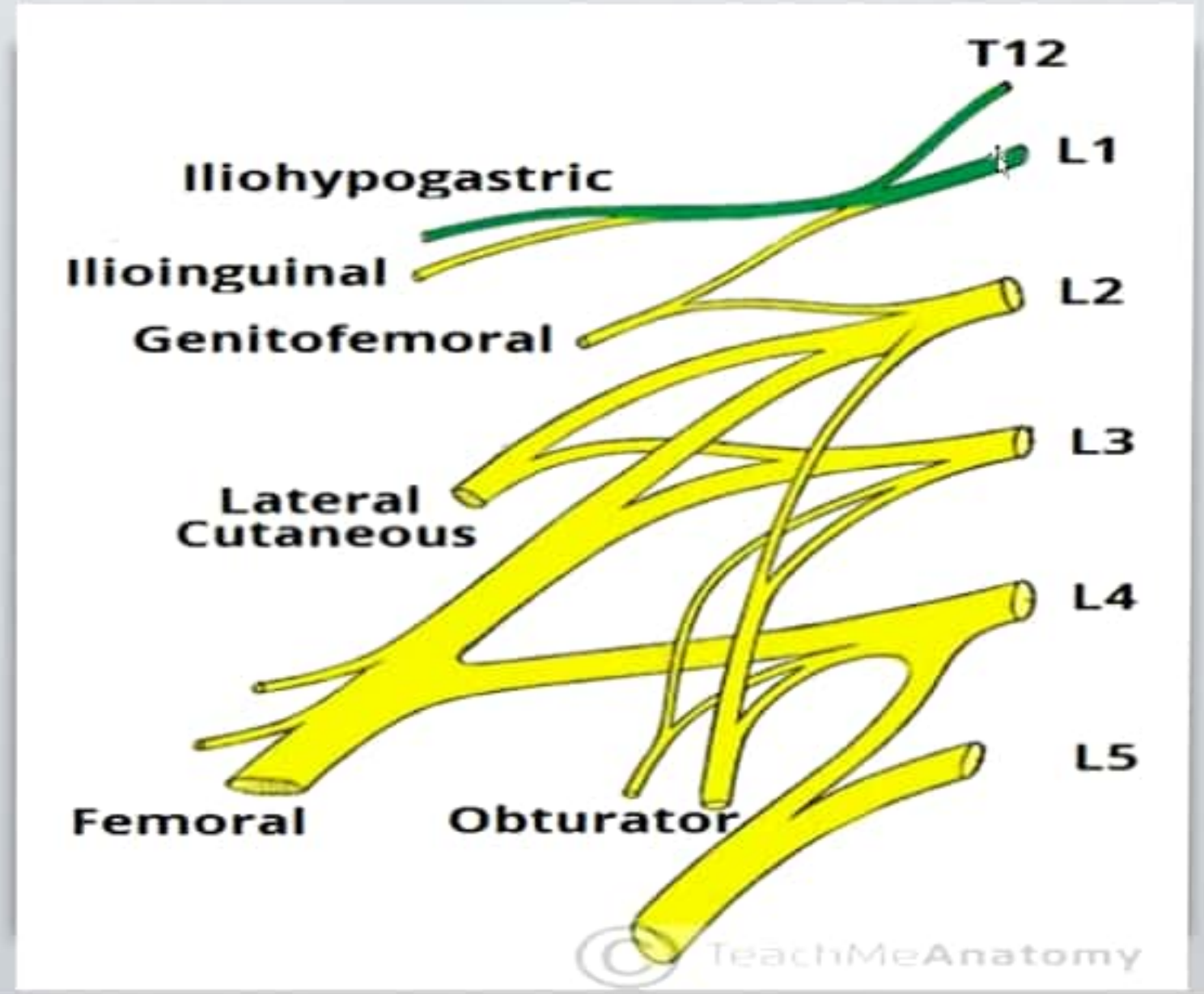


LUMBAR PLEXUS

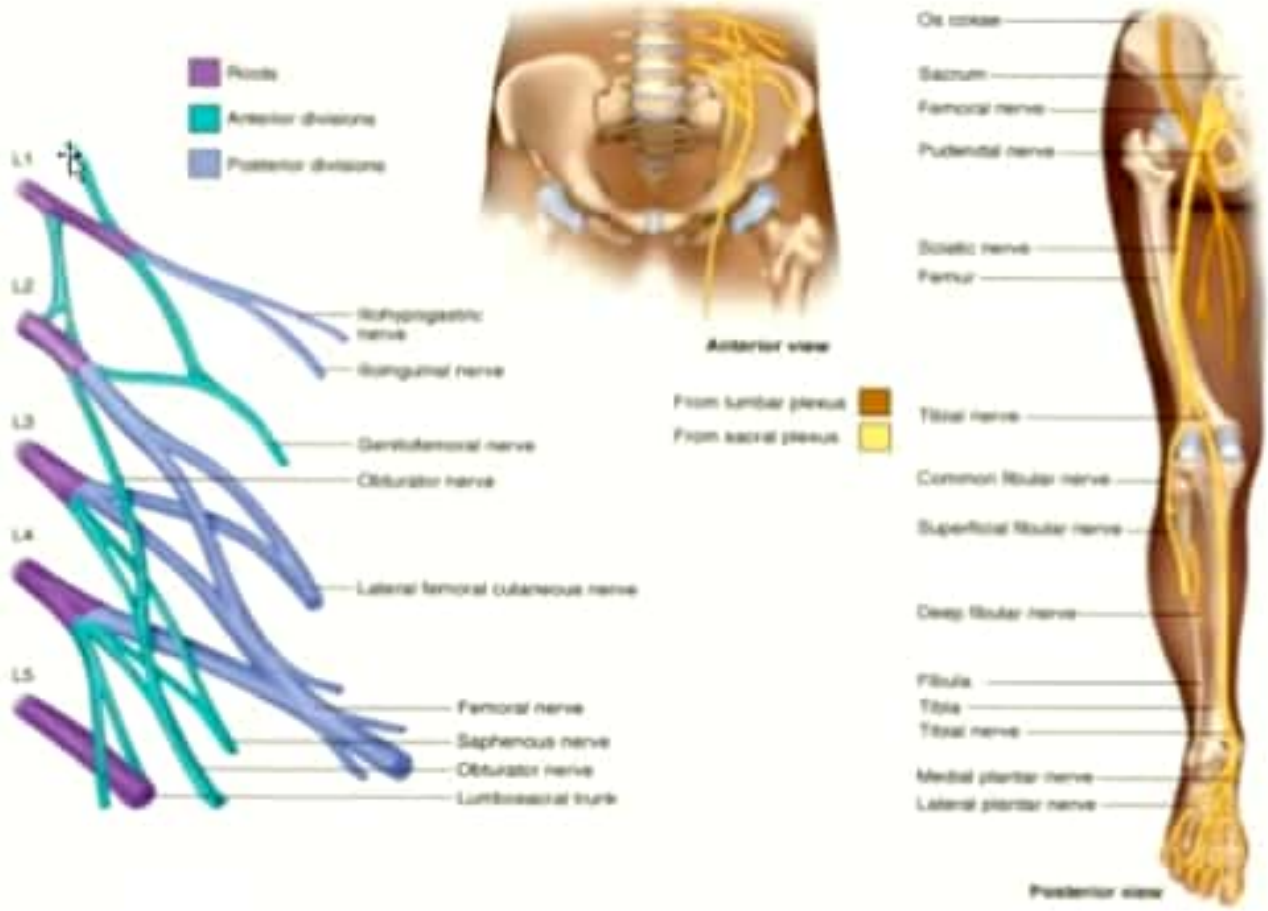
- Upper portion of the lumbosacral plexus.
- Roots ---- anterior rami of 1st lumbar spinal nerve until 4th lumbar spinal nerves (L1-L4)
- Some contribution from 12th thoracic spinal nerve and 5th lumbar spinal nerve.
- Give motor and cutaneous innervations for certain area on the abdominal area, pelvic area, and thigh.

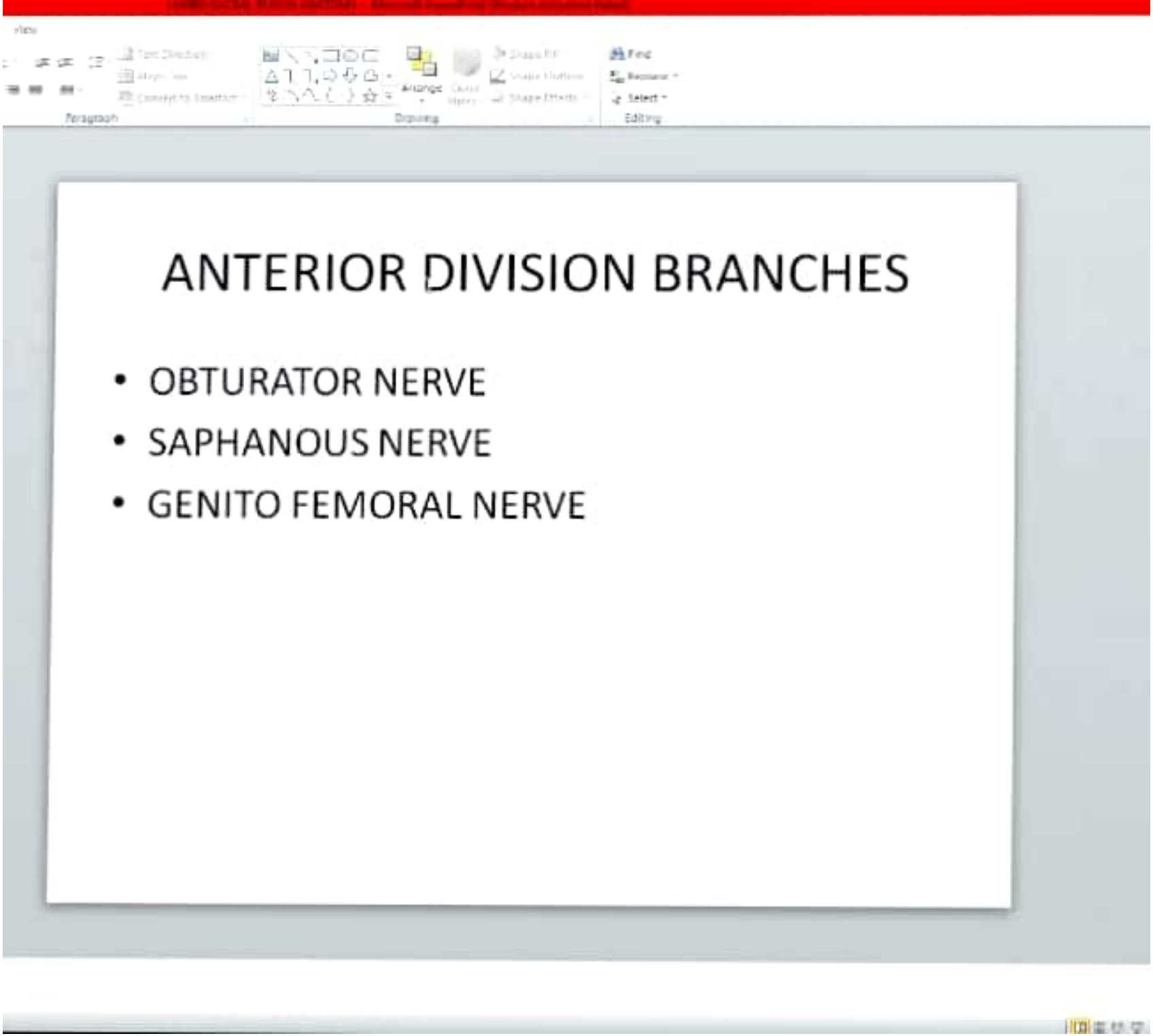
LUMBAR PLEXUS

- Anterior primary division of L1, L2 and L4 divide into upper and lower branches.
- The upper branch of L1 forms the iliohypogastric and ilioinguinal nerves
- The lower branch of L1 joins the upper branch of L2 to form the genitofemoral nerve.
- The lower branch of L4 joins L5 to form the lumbosacral trunk.



The Lumbar Plexus





LUMBAR PLEXUS

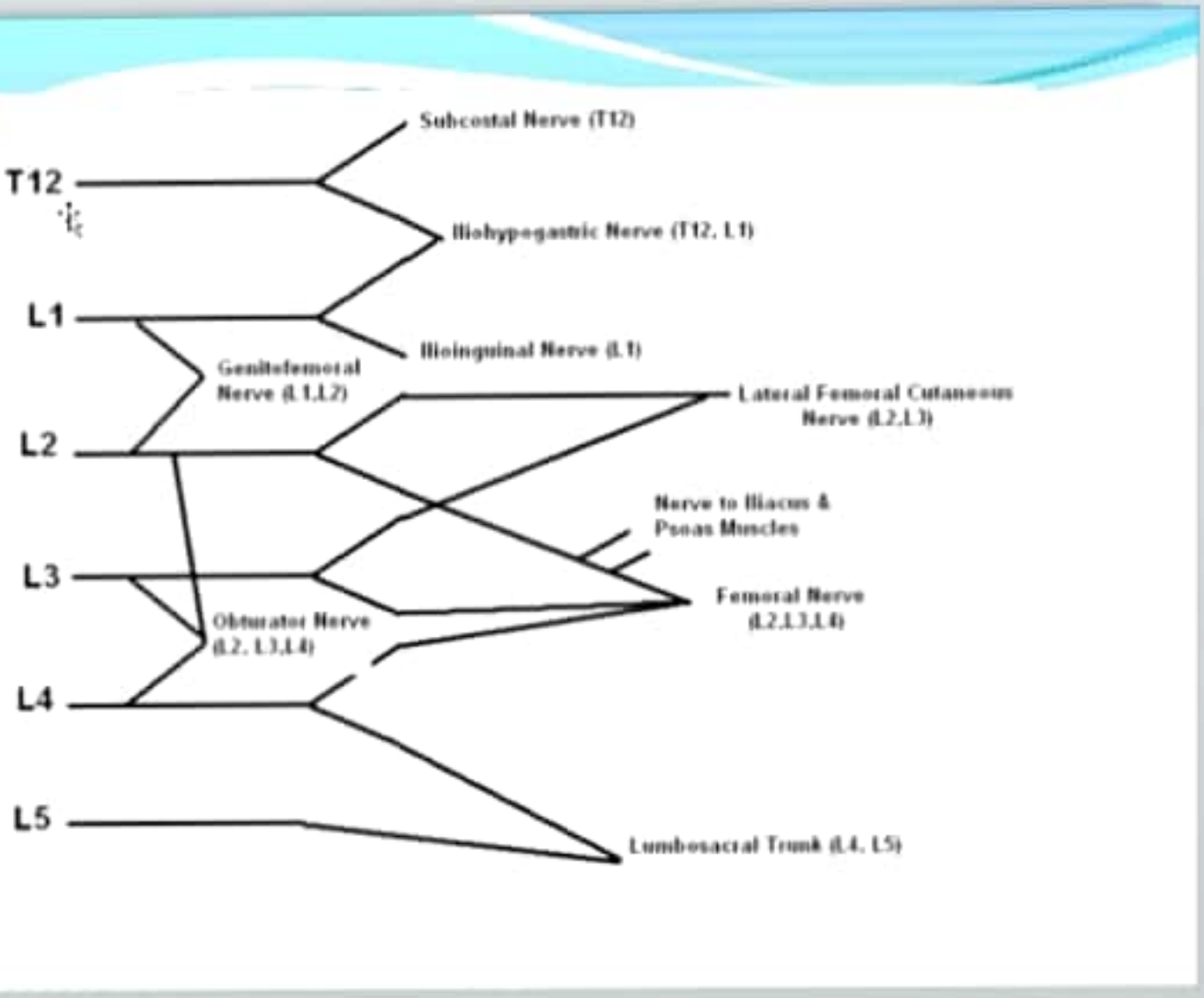
- The lower branch of L2, all of L3 and the upper branch of L4 each split into a small anterior and a large posterior division
- The 3 anterior divisions unite to form the obturator nerve
- The 3 posterior divisions unite to form the femoral nerve, and the upper 2 posterior divisions give off twigs that form the lateral femoral cutaneous nerve.

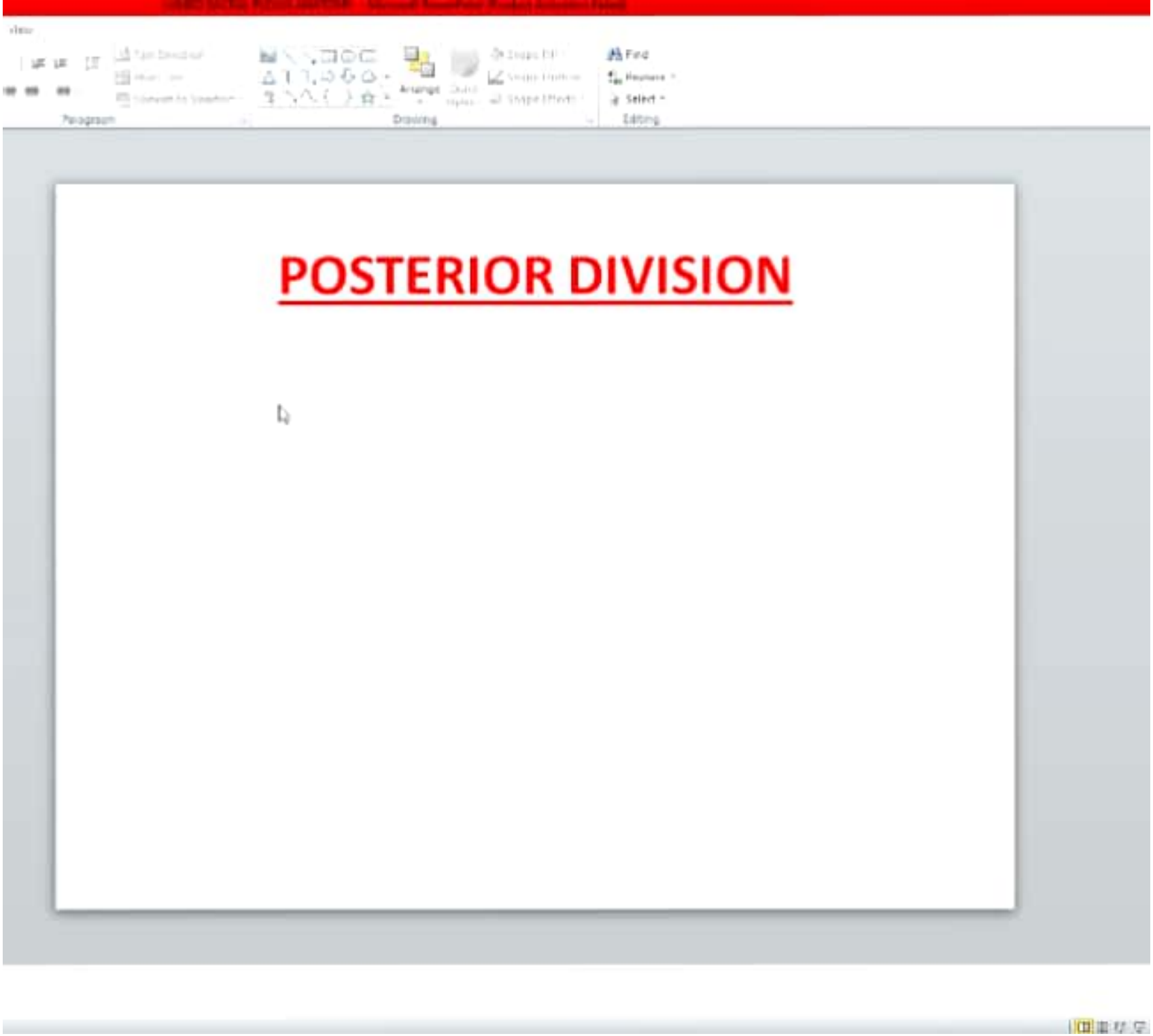
LUMBAR PLEXUS

- Collatoral branches to muscles supply the quadratus lumborum and intertransversari from L1 to L4 and the psoas muscle from L2 and L3.

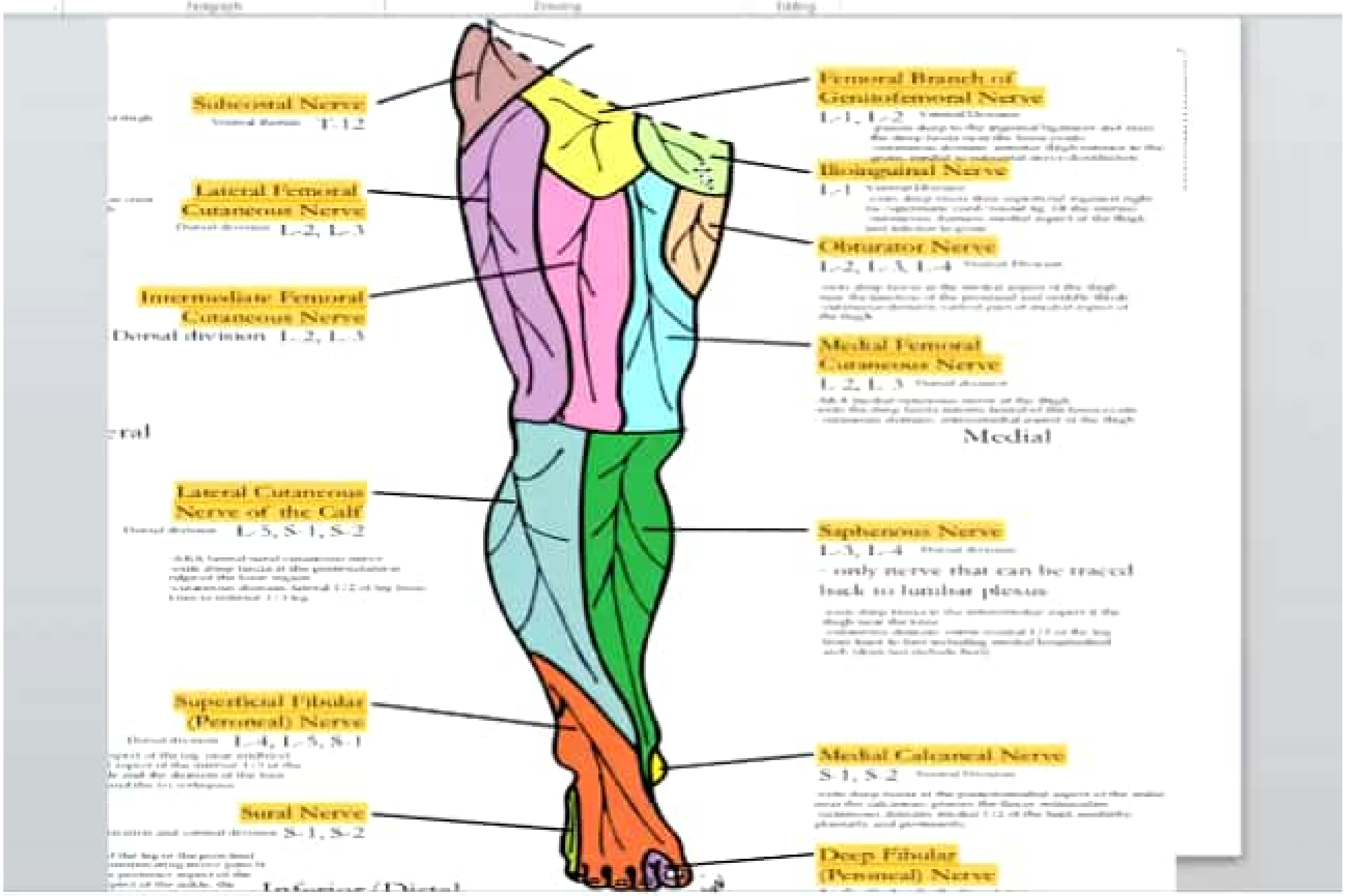
POSTERIOR DIVISION BRANCHES

- ILLIO INGUINAL & ILLIO HYPOGASTRIC NERVE
- FEMORAL NERVE
- LATERAL FEMORAL CUTANEOUS NERVE
- LUMBO SACRAL TRUNK





- The ilioinguinal nerve (L1) follows a course slightly inferior to iliohypogastric nerve, with it may anastomose, and is distributed to the skin of the upper medial part of the thigh and the root of the penis and scrotum (mons pubis & labium majus)

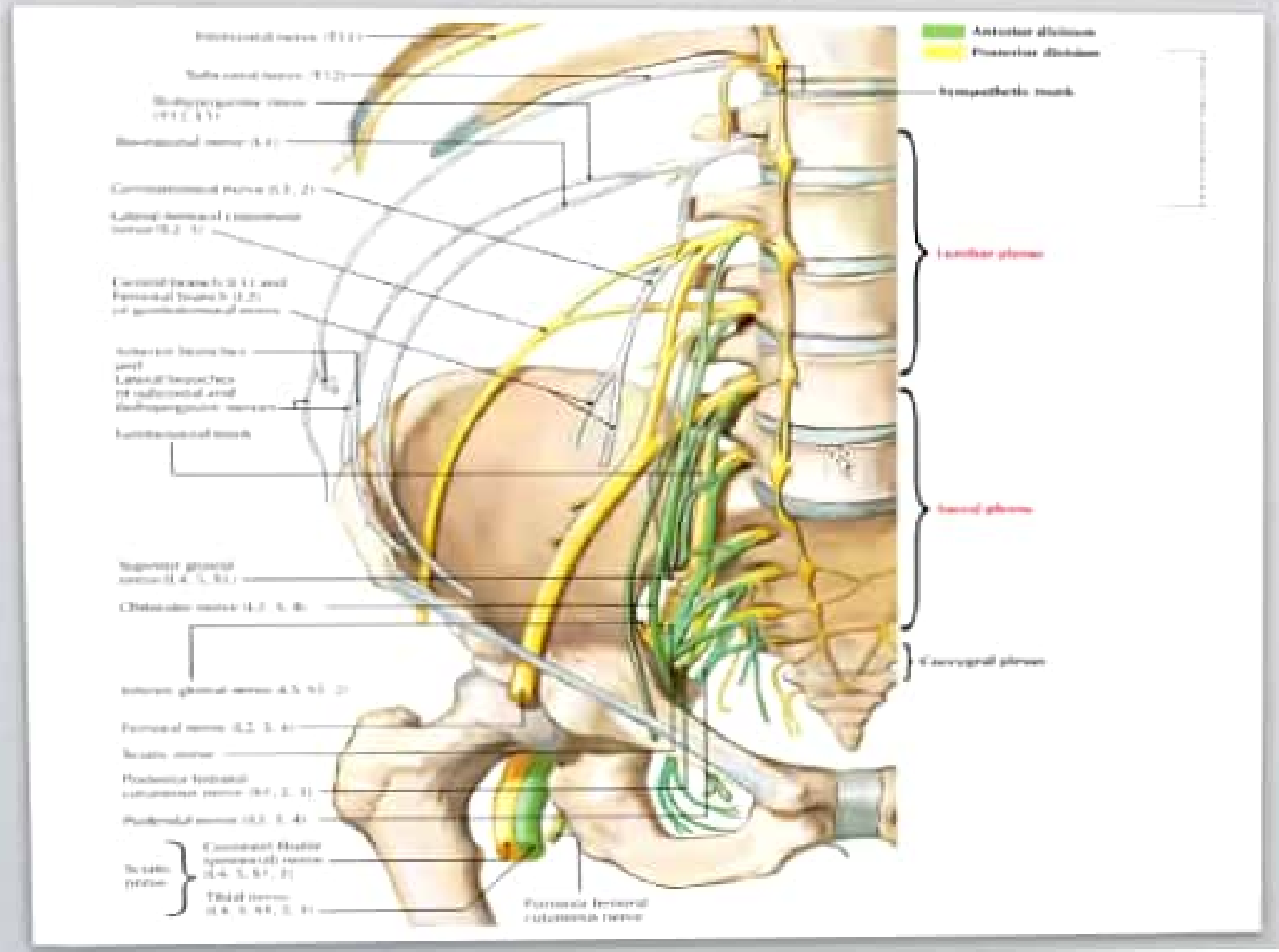


GENITOFEMORAL NERVE (L1 , L2)

- Emerges from the anterior surface of the psoas muscles, runs obliquely downward on the surface of this muscle and divides into the external spermatic nerve, which supplies the cresmastric muscle and the skin of the scrotum or labia and the lumboinguinal nerve, which supplies the skin of the middle upper part of the thigh.

LATERAL FEMORAL CUTANEOUS NERVE (L2, L3)

- Passes obliquely across the iliacus muscle and under Poupart's ligament to divide into several rami distributed to the skin of the anterolateral side of the thigh.

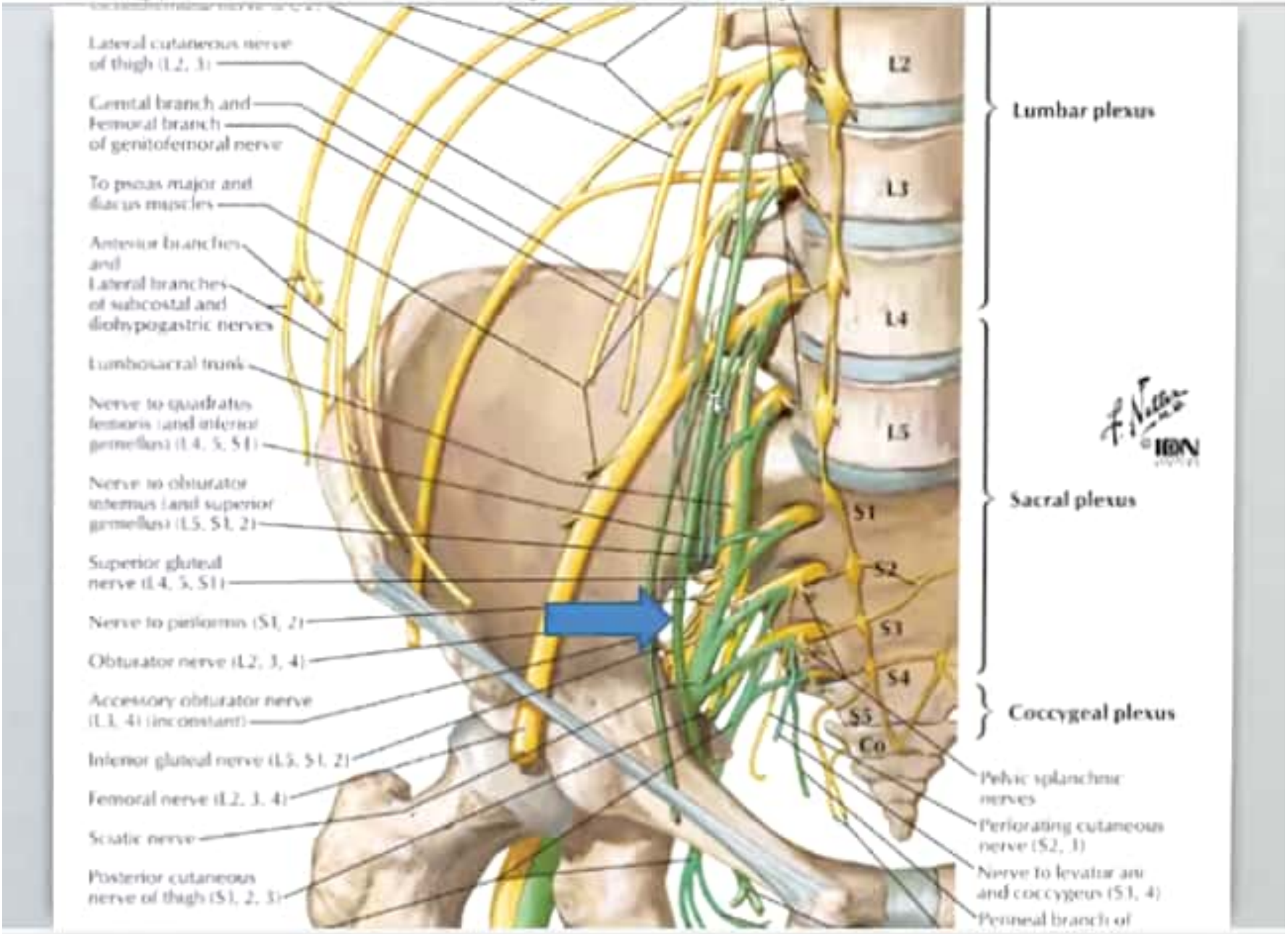


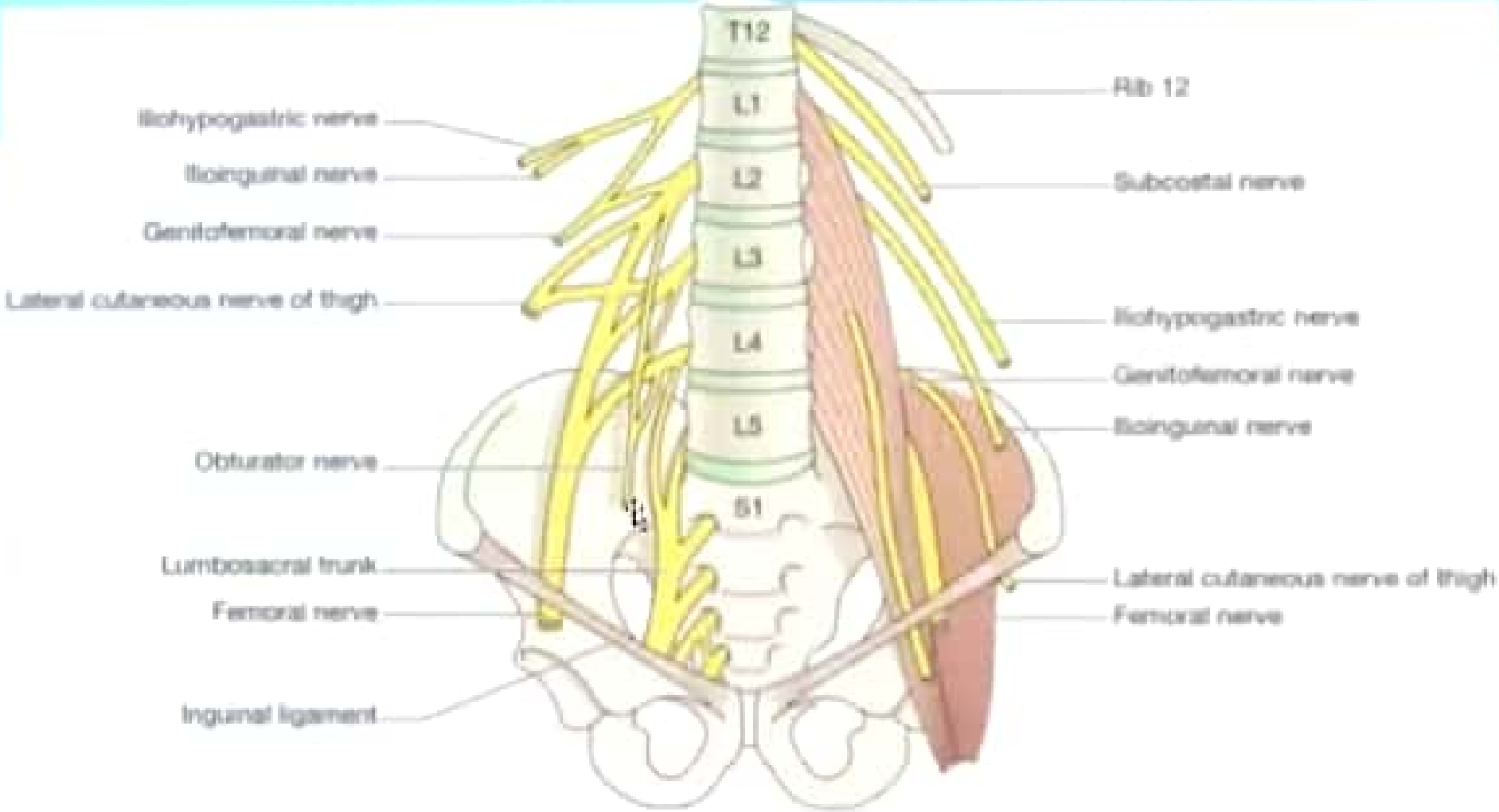
OBTURATOR NERVE

- Arise from the lumbar plexus by a fusion of the 3 anterior divisions of the plexus, which are divided from the 2nd, 3rd, and 4th lumbar nerves.
- Emerges from the medial border of the psoas muscle near the brim of the pelvis, obturator nerve passes on the lateral side of the hypogastric vessels and ureter and descends through the obturator canal in the upper part of the obturator foramen to the medial side of the thigh.

OBTURATOR NERVE

- In the canal the obturator nerve splits into anterior and posterior branch.
- Motor rami from the posterior branch supply the obturator externus and adductor magnus muscles.
- Motor rami from the anterior branch supply the adductor longus and adductor brevis muscles and the gracilis muscles
- Sensory rami from the anterior branch of the nerve supply the hip joint and a small area of skin on the medial internal part of the thigh.





FEMORAL (ANTERIOR CRURAL) NERVE L2-L4

- Largest branch of the lumbar plexus
- Arise from the 3 posterior division of the plexus which derived from L2,L3 & L4
- Emerges from the lateral border of the psoas muscle just above the inguinal ligament where it divides into terminal branches.

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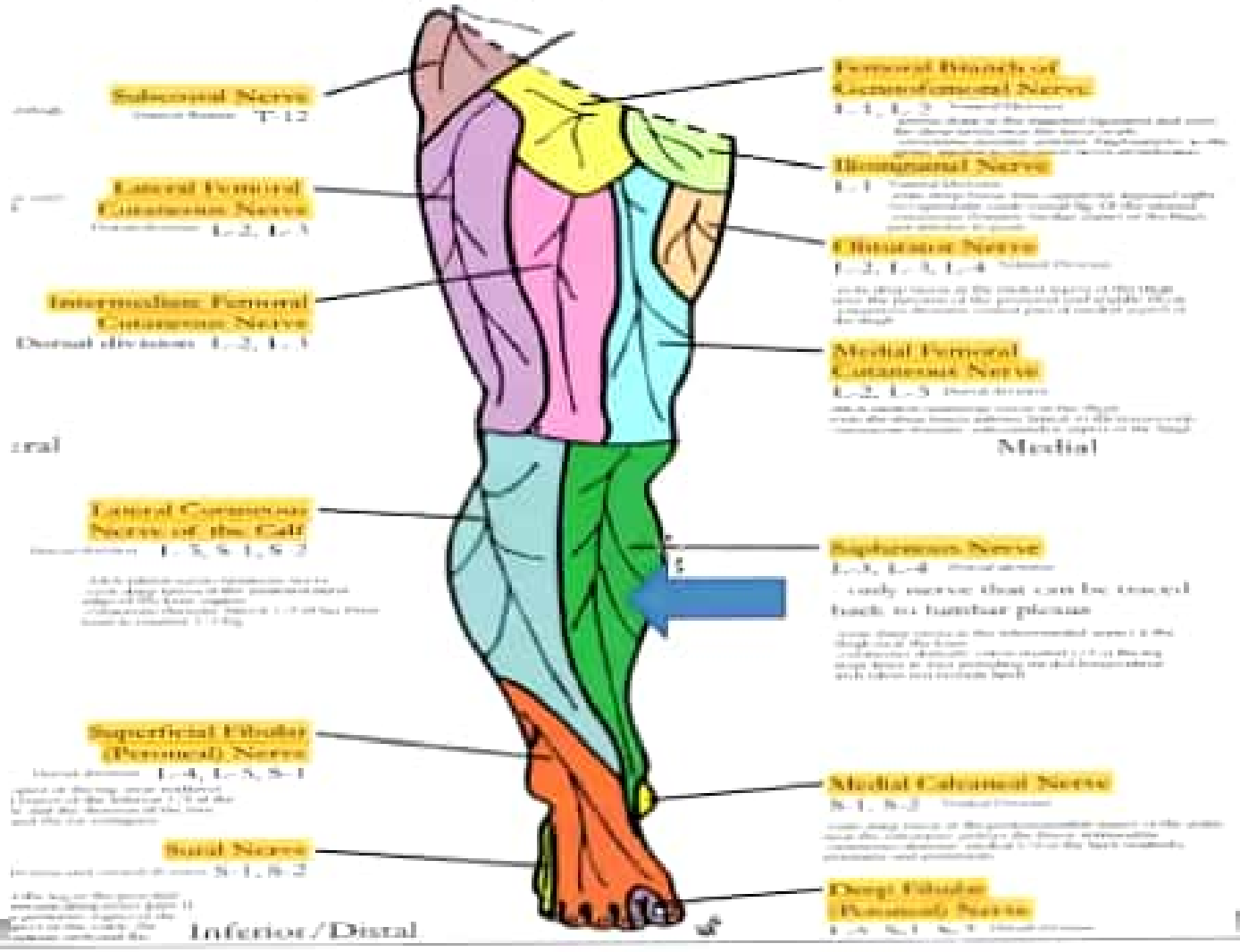
LUMBOSACRAL TRUNK (L4, L5)

- Descends into the pelvis, where it becomes part of the sacral plexus.

Nerves of the lumbar plexus

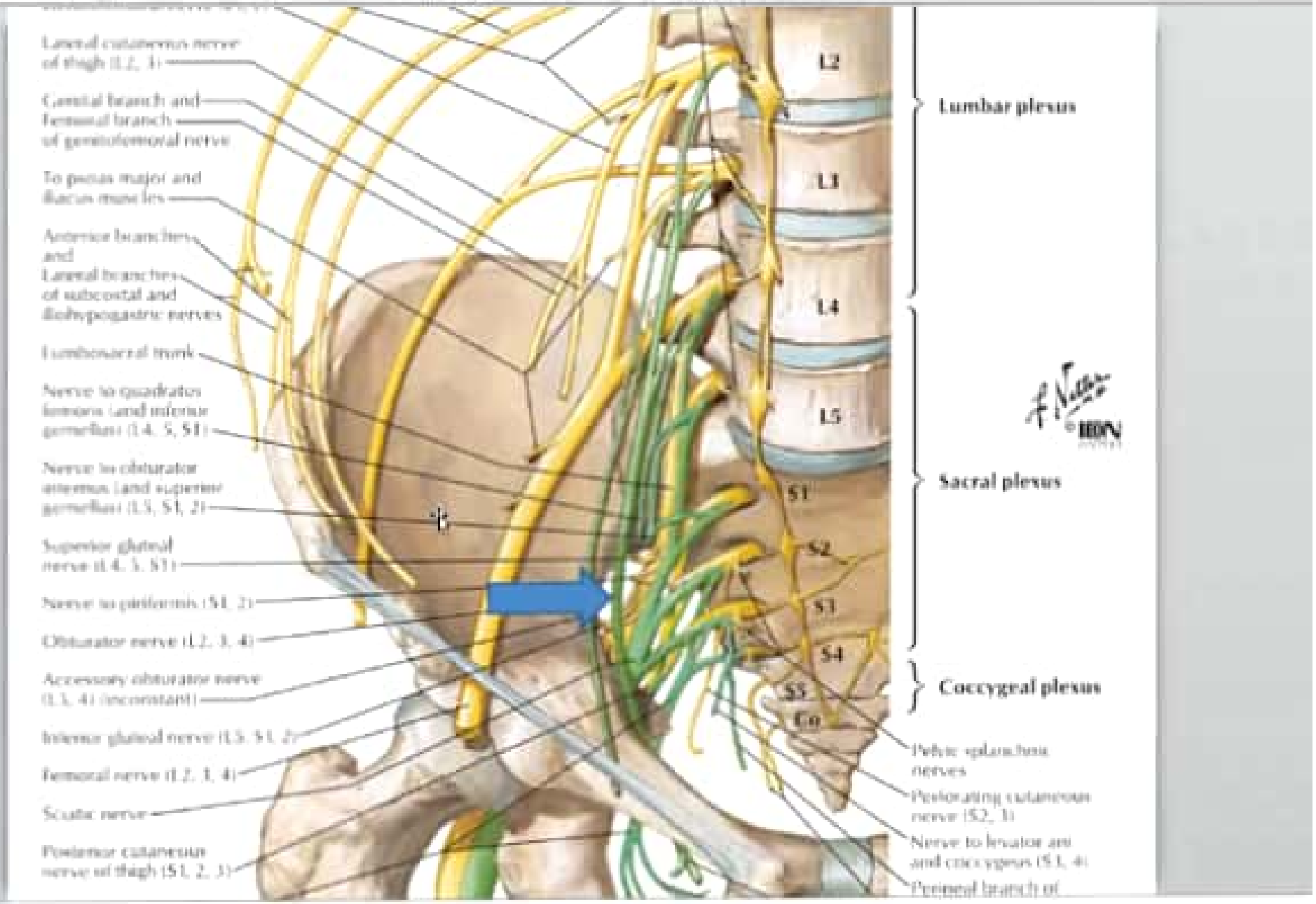
Nerve	Segment	Innervated muscles	Cutaneous branches
Iliohypogastric	T12-L1	• Transversus abdominis • Abdominal internal oblique	• Anterior cutaneous ramus • Lateral cutaneous ramus
Ilioinguinal	L1		• Anterior scrotal nerves in males • Anterior labial nerves in females
Genitofemoral	L1, L2	• Cremaster in males	• Femoral ramus • Genital ramus
Lateral femoral cutaneous	L2, L3		• Lateral femoral cutaneous
Obturator	L2-L4	• Obturator externus • Adductor longus • Gracilis • Pectineus • Adductor magnus	• Cutaneous ramus
femoral	L2-L4	• Iliopsoas • Pectineus • Sartorius • Quadriceps femoris	• Anterior cutaneous branches • Saphenous
Short, direct muscular branches	T12-L4	• Psoas major • Quadratus lumborum • Iliacus • Lumbar intertransverse	

SAPHANOUS NERVE



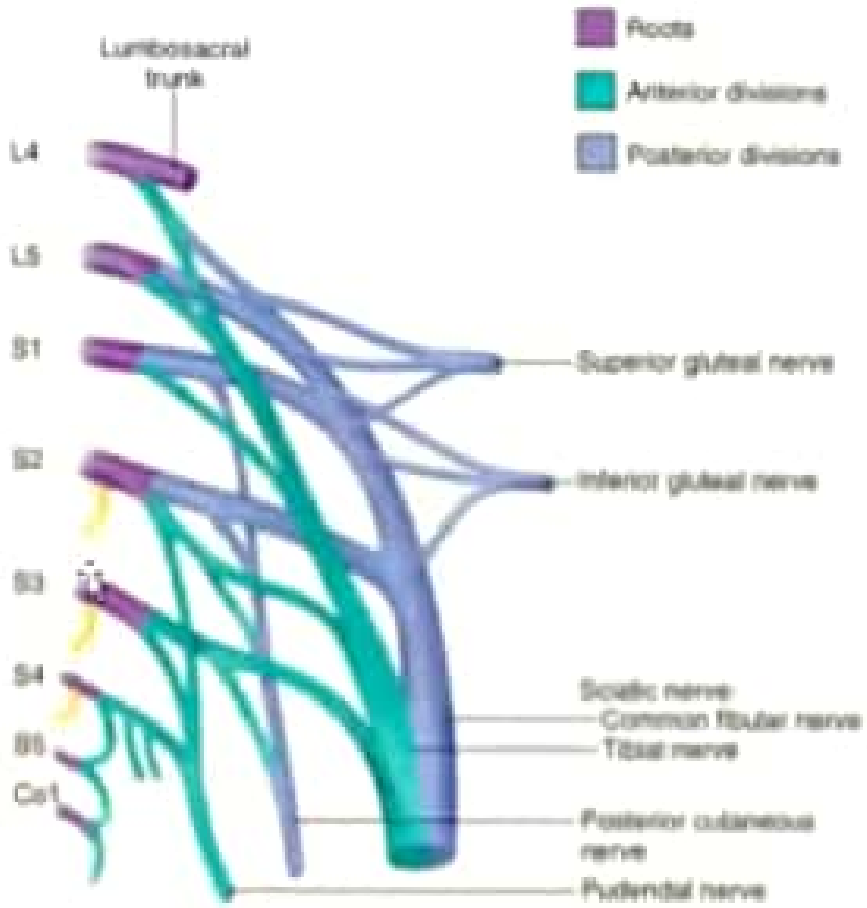
LATERAL FEMORAL CUTANEOUS NERVE (L2, L3)

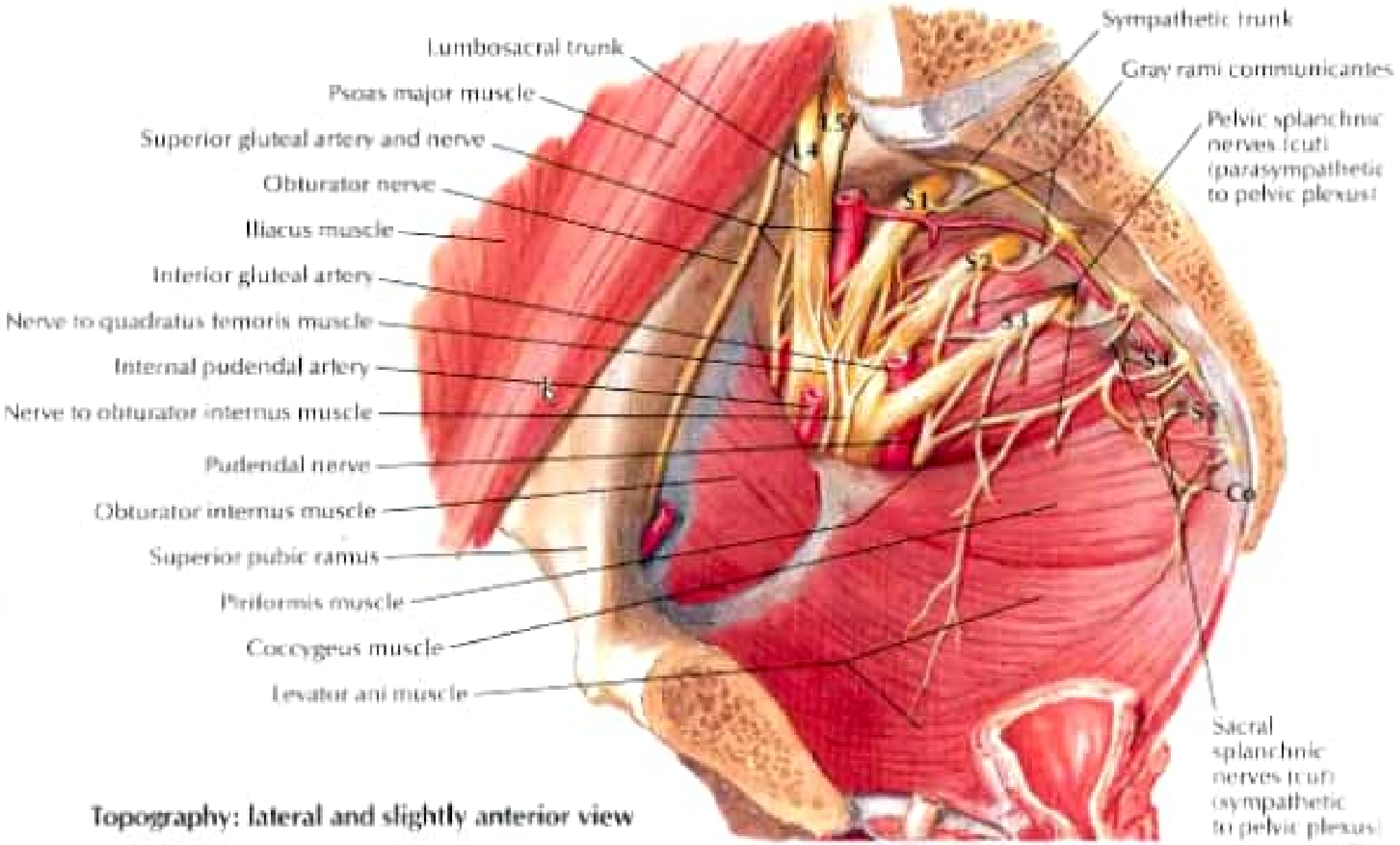
- Passes obliquely across the iliacus muscle and under Poupart's ligament to divide into several rami distributed to the skin of the anterolateral side of the thigh.



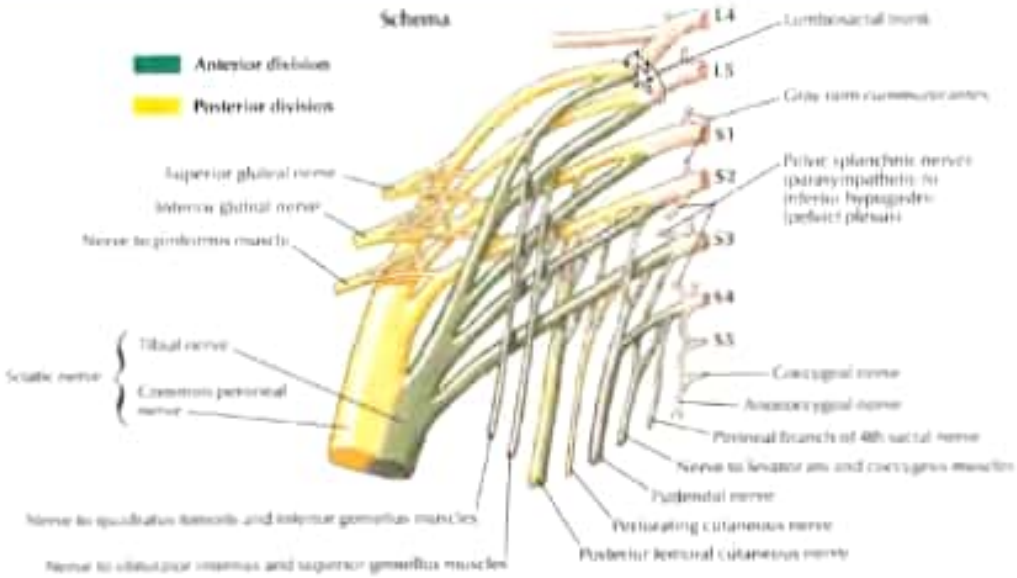
SACRAL PLEXUS

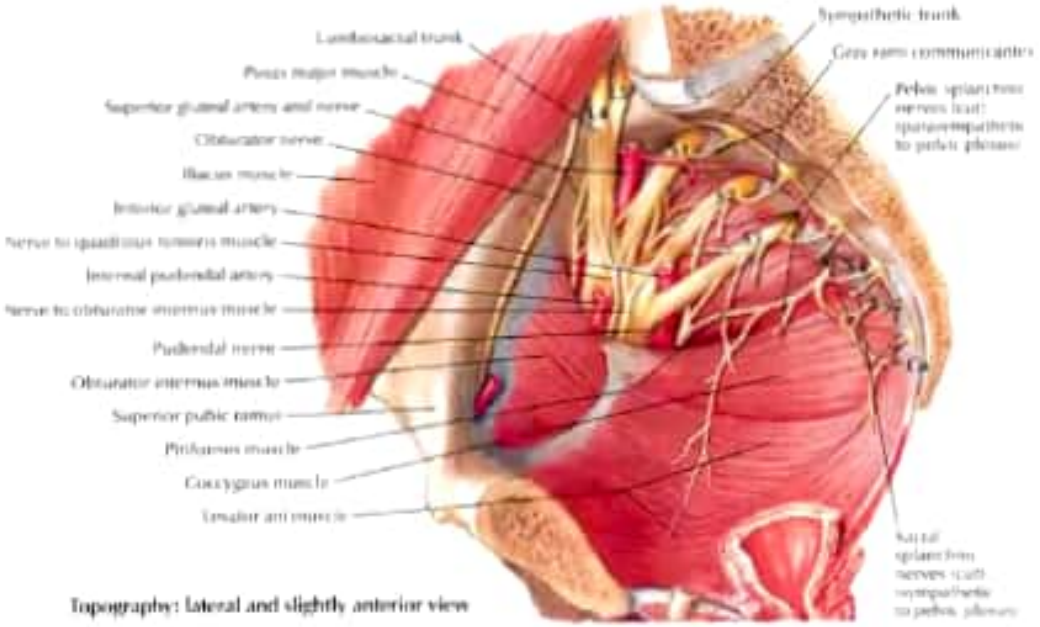
- Roots; anterior rami of L4-L5 & S1-S4
- Each of the 5 roots splits into an anterior and posterior divisions
- The upper 4 posterior divisions (L4, L5 and S1,S2) join to form the common peroneal nerve.
- All 5 of the anterior divisions (L4, L5 and S1,S2, S3) join to form the tibial nerve.
- The peroneal and tibial nerves are fused as the sciatic nerve.





Topography: lateral and slightly anterior view





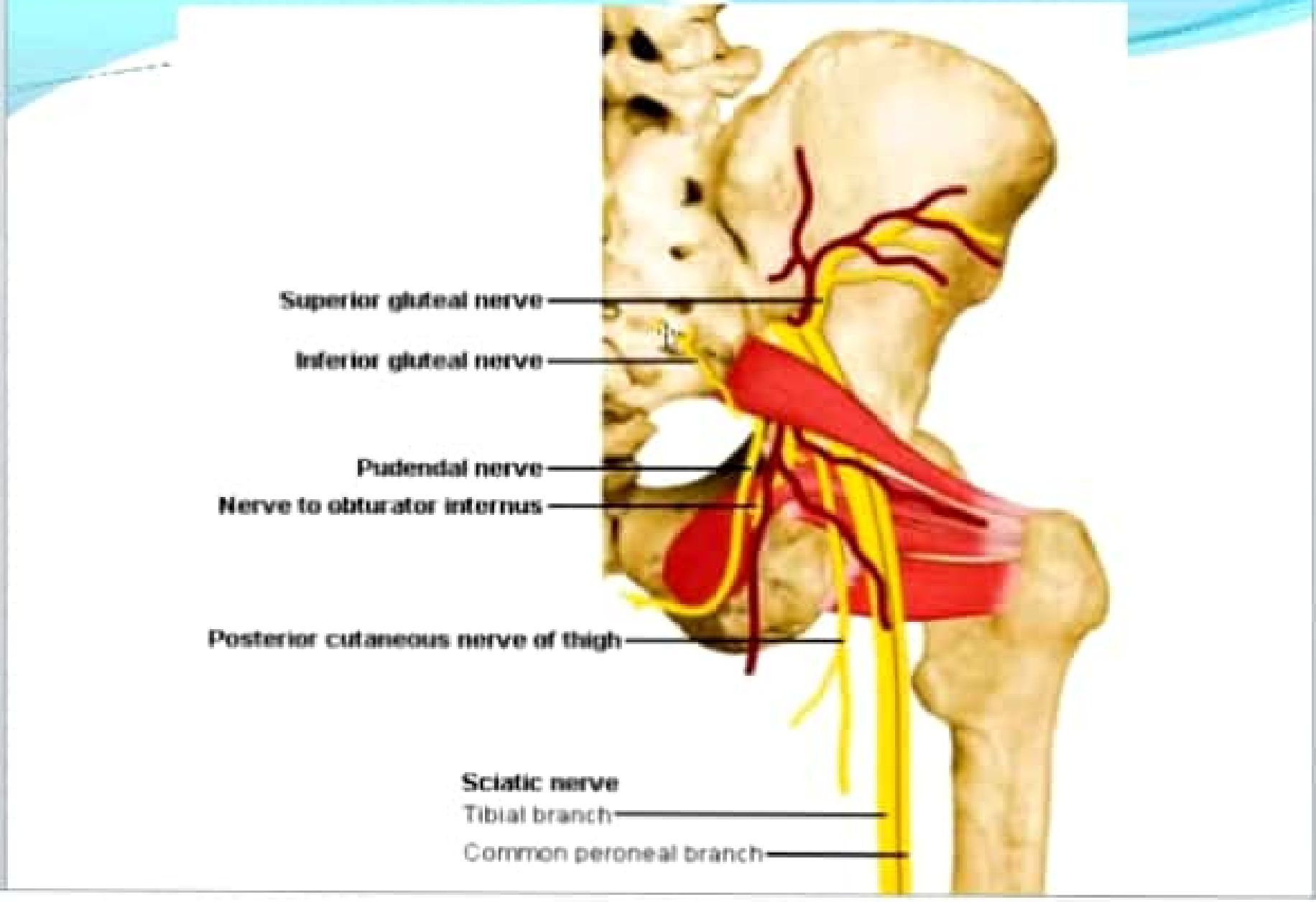
Topography: lateral and slightly anterior view

ANTERIOR DIVISION

- PUDENDAL NERVE
- TIBIAL BRANCH OF SCIATIC NERVE

Pudendal Nerve

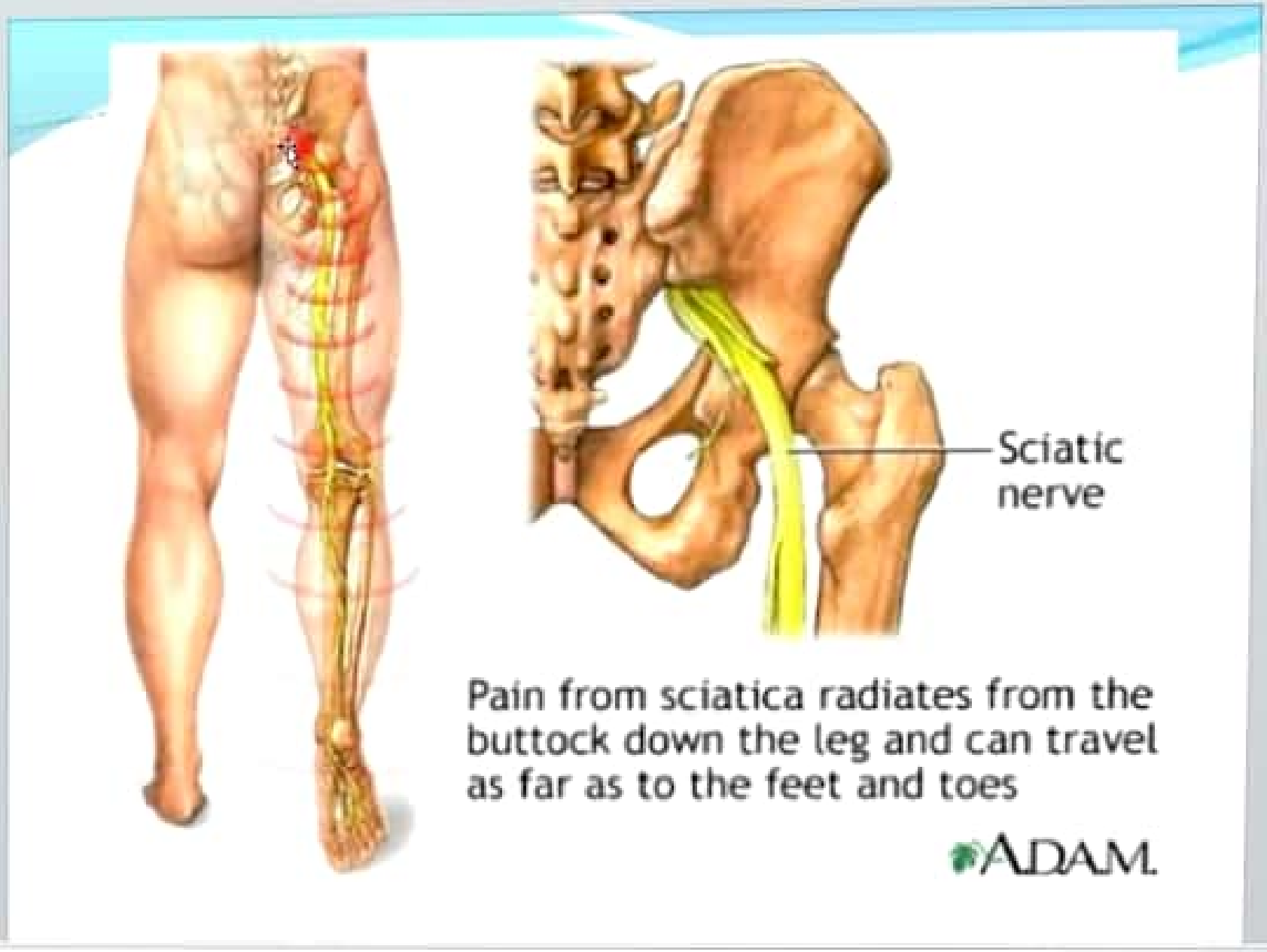
- Roots; anterior division of S2, S3 and S4
- Main nerve of perineum
- Carry sensation from external genitalia (both sexes) as well give motor innervation to various pelvic floor muscles.



SCIATIC NERVE

- Sciatic nerve is the largest nerve in the body.
- It consists of 2 separate nerves in one sheath ;
  i. Common peroneal
  ii. Tibial nerve

- The common peroneal nerve is formed by the upper 4 posterior divisions of the sacral plexus
- The tibial nerve is formed from all 5 anterior divisions of the sacral plexus.



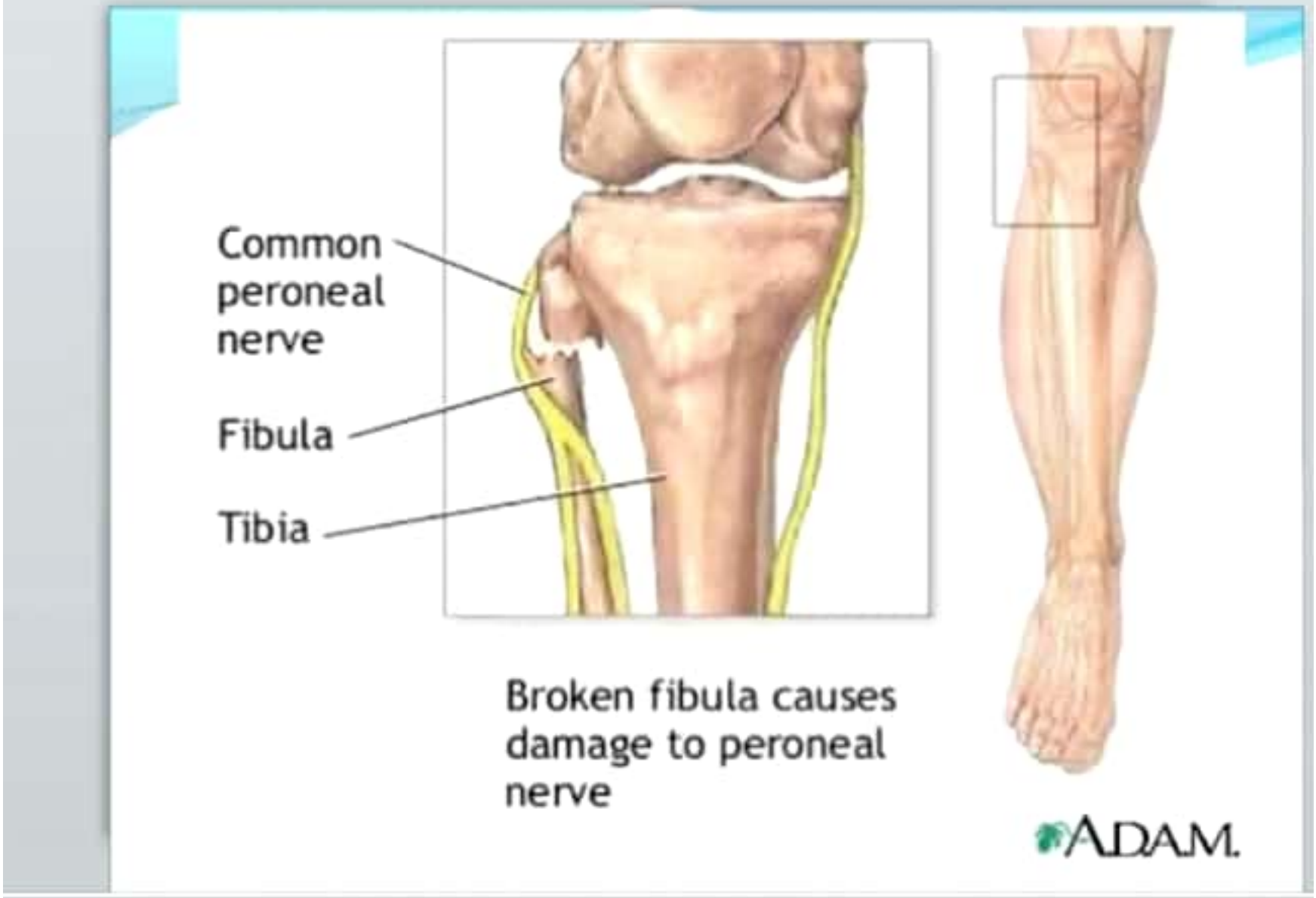
Common peroneal nerve (L4, L5, S1, S2)

- Formed by the fusion of the upper 4 posterior divisions of the sacral plexus : L4 – S2

- In the thigh it is a component of the sciatic nerve until the upper part of the popliteal space, where the common peroneal nerve begins its independent course.

Sensory branches of Common peroneal nerve

- First branches given off by the common peroneal are sensory and include the superior and inferior articular branches to the knee joint and the lateral sural cutaneous nerve, which joins the medial sural cutaneous nerve (from the tibial nerve) to form the sural nerve – supplying the skin of the lower dorsal aspect of the leg, the lateral malleolus and the lateral side of the foot and fifth toe.



Common peroneal nerve (L4, L5, S1, S2)

- The 3 terminal branches of the CPN are the recurrent articular and the superficial and deep peroneal nerves.

- The recurrent articular nerve accompanies the anterior tibial recurrent artery – supplying the tibiofibular abd knee joints and a twig to tibialis anterior muscle.

Common peroneal nerve (L4, L5, S1, S2)

- The superficial peroneal nerve descends along the intermuscular septum to supply muscular branches to the lower front of the leg, and terminal cutaneous branches to the dorsum of the foot, part of big toe, and the 2nd and 5th toes up to the 2nd phalanges.

Common peroneal nerve (L4, L5, S1, S2)

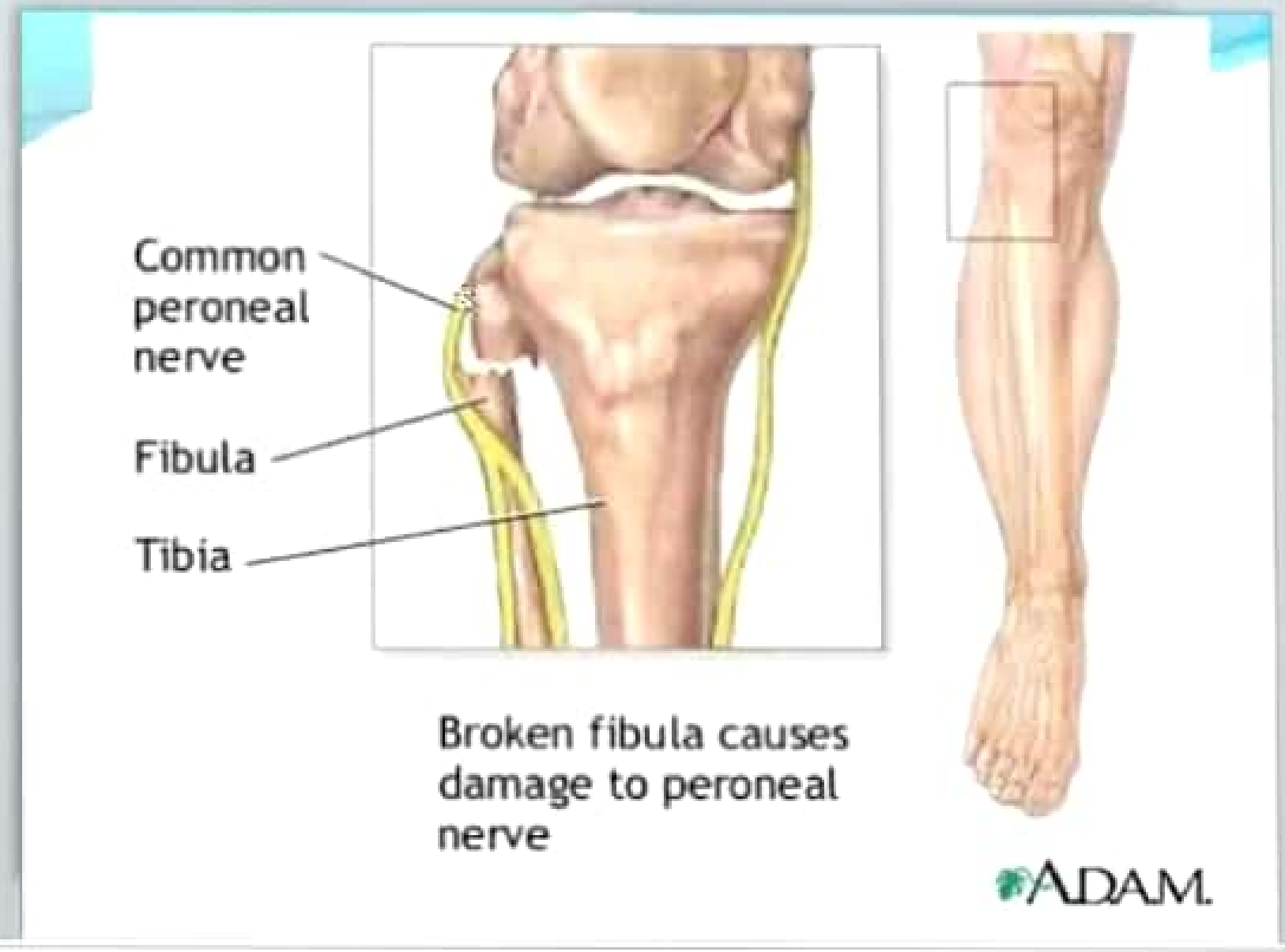
- The deep peroneal (anterior tibial) nerve descends in the anterior compartment of the leg.

- Muscular branches extend to the tibialis anterior, extensor digitorum longus, extensor hallucis longus and peroneus tertius muscles.

Common peroneal nerve (L4, L5, S1, S2)

- Articular filaments supply the inferior tibiofibular and ankle joints.

- Terminal branches extend to the skin of the adjacent sides of the first 2 toes and to the extensor digitorum brevis muscles and adjacent joints.



TIBIAL NERVE (L4, L5, S1, S2, S3)

- Tibial nerve is formed by all of the anterior divisions of the sacral plexus.
- The tibial nerve is the largest component of the sciatic nerve in the thigh
- It courses to the dorsomedial aspect of ankle, from which point its terminal branches, the medial and lateral plantar nerves, continue into the foot.

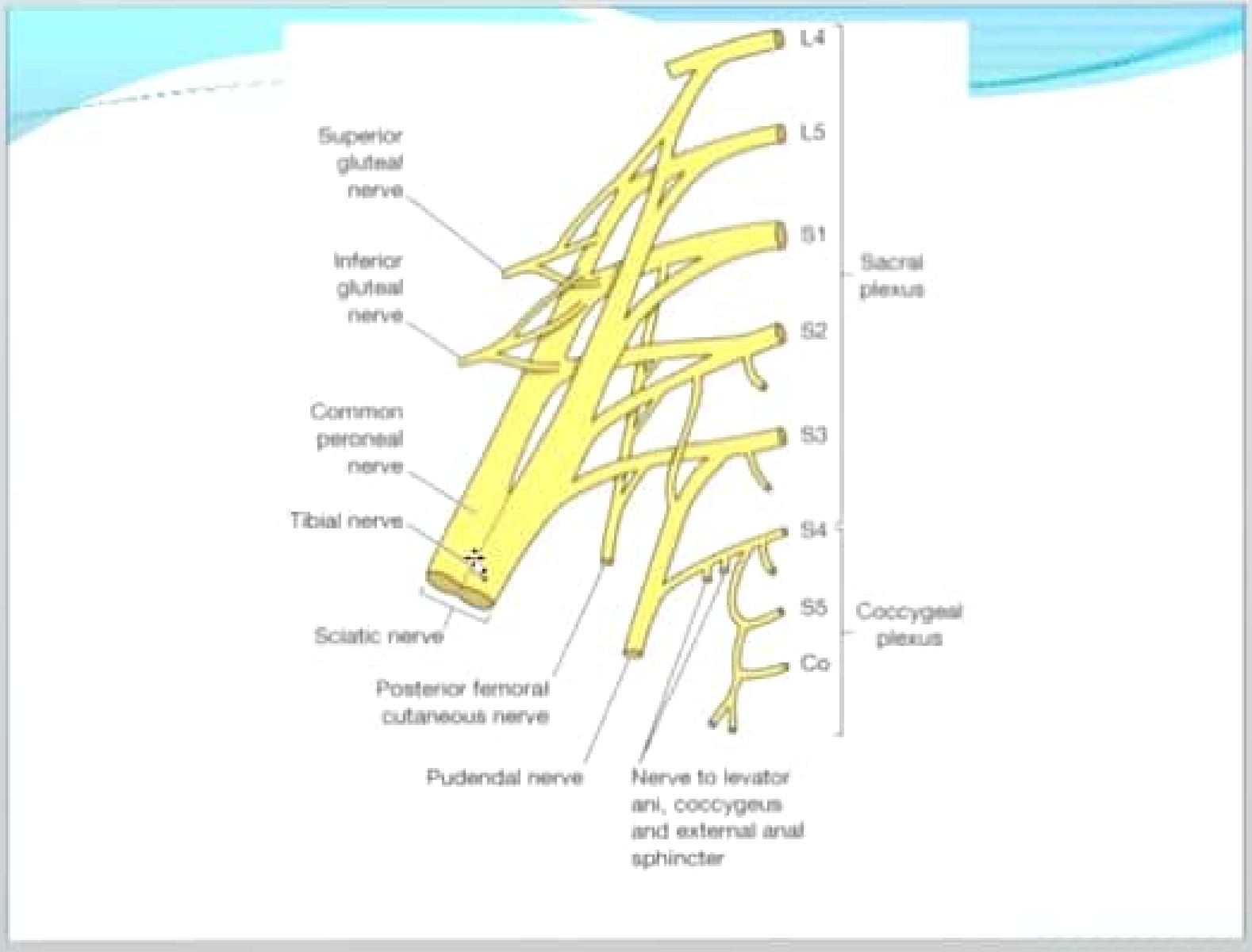
Branches of the tibial nerve

- Motor branches extend to the gastrocnemius, plantaris, soleus, popliteus, tibialis posterior, flexor digitorum longus pedis, and flexor hallucis longus muscles.

- A sensory branch, the medial sural cutaneous nerve, joins the lateral sural to form the sural nerve, which is the skin of the dorsolateral part of the leg and the lateral side of the foot. Articular branches pass to the knee and ankle joints.

Branches of the tibial nerve

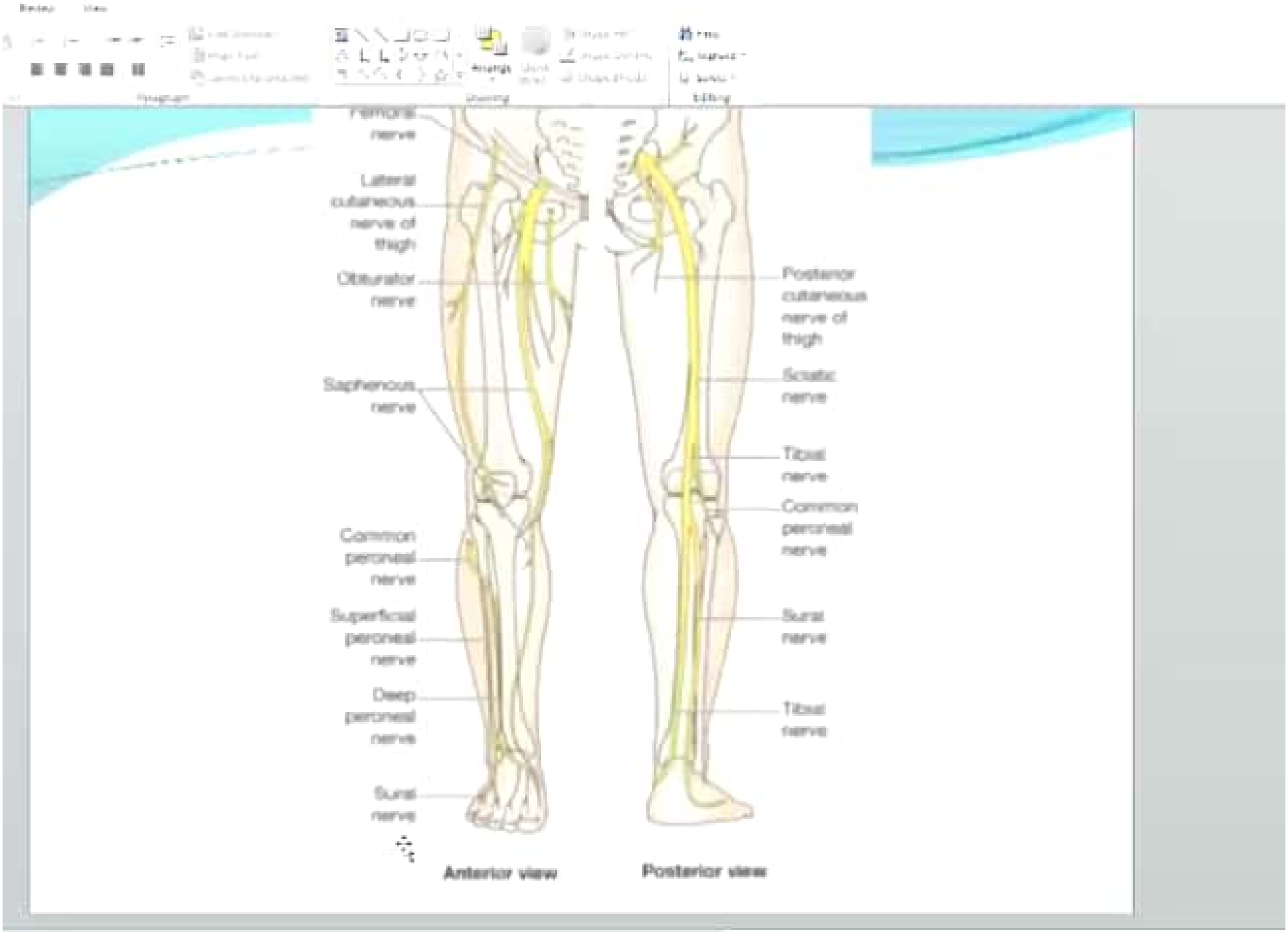
- The lateral plantar nerve sends motor branches to all the small muscles of the foot except those innervated by the medial plantar nerve and sensory branches to the lateral 1½ toes, and the nail bearing phalanges of these toes.



Nerves of the sacral plexus

Nerve	Segment	Innervated muscles	Cutaneous branches
Superior gluteal	L4-S1	Gluteus medius Gluteus minimus Tensor fascia latae	
Inferior gluteal	L5-S2	Gluteus maximus	
Posterior cutaneous femoral	S1-S3		Posterior cutaneous femoral • Inferior cluneal nerves • Perineal branches
Direct branches from plexus			
• Piriformis	L5, S2	Piriformis	
• Obturator internus	L5, S1	Obturator internus	
• Quadratus femoris	L4-S1	Quadratus femoris	

Sciatic			
Sciatic	L4-S3	Semitendinosus (Tib) Semimembranosus (Tib) Biceps femoris • Long head (Tib) • Short head (Fib) Adductor magnus (medial part, Tib)	
Common fibular	L4-S2		Lateral sural cutaneous Communicating fibular
• Superficial fibular		Peroneus longus Peroneus brevis	Medial dorsal cutaneous Intermediate dorsal cutaneous
• Deep fibular		Tibialis anterior Digitorum extensor longus Extensor digitorum brevis Extensor hallucis longus Extensor hallucis brevis Peroneus tertius	Lateral cutaneous nerve of big toe Intermediate dorsal cutaneous
Tibial nerve	L4-S3	Triceps surae Plantaris Popliteus Tibialis posterior Flexor digitorum longus Flexor hallucis longus Peroneus tertius	Medial sural cutaneous Lateral calcaneal Medial calcaneal Lateral dorsal cutaneous



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Tibial nerve	L4-S3	Triceps surae Plantaris Popliteus Tibialis posterior Flexor digitorum longus Flexor hallucis longus Peroneus tertius	Medial sural cutaneous Lateral calcaneal Medial calcaneal Lateral dorsal cutaneous

APPLIED ANATOMY

- A lumbosacral plexopathy is a disorder affecting either the lumbar or sacral plexus of nerves. They are rare syndromes, caused by damage to the nerve bundles.

- A plexopathy is suspected if the symptoms cannot be localised to a single nerve. Patients may complain of neuropathic pains, numbness or weakness and wasting of muscles.

Lumbosacral Plexopathy

- One of the main causes of lumbosacral plexopathy is diabetic amyotrophy.
- In this condition, the high blood sugar levels damage the nerves.
- Tumours and other local invasions can cause the plexopathy due to the compression of the plexus.

Lumbosacral Plexopathy

- Treatment depends on what is causing the symptoms. For tumours and space-occupying lesions, they should be removed if possible. For diabetic and idiopathic causes, treatment with high-dose corticosteroids can be useful.

Click to add no

English (U.K.)

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