ANATOMY OF THE SPINAL CORD AND SPINAL NERVES
SPINAL CORD (PART OF THE CENTRAL NERVOUS SYSTEM (CNS) ALONG WITH THE BRAIN)

NERVOUS TISSUE TUBE FOUND INSIDE THE VERTEBRAL CANAL

CONTAINS:

BUNDLES OF FIBERS GOING TO THE BRAIN CALLED **AFFERENT OR SENSORY TRACTS** - BRINGING INFORMATION ABOUT THE EXTERNAL ENVIRONMENT TO OUR BRAIN

BUNDLES OF FIBERS COMING FROM THE BRAIN CALLED **EFFERENT OR MOTOR TRACTS** - SENDS MESSAGES FROM OUR BRAIN TO THE REST OF OUR BODY
SPINAL CORD ANATOMY

LENGTH 45 CM, 17-18 IN
ENDS AT THE LEVEL OF L1-2

ENLARGEMENTS IN THE
CERVICAL AND LUMBAR
REGIONS FOR INNERVATION
OF THE UPPER AND LOWER
LIMBS RESPECTIVELY

CERVICAL ENLARGEMENT
FORMS BRACHIAL PLEXUS

LUMBAR ENLARGEMENT
FORMS LUMBOSACRAL
PLEXUS
CONUS MEDULLARIS
POINTED CONE-SHAPED END OF THE SPINAL CORD AT L1-2

CAUDA EQUINA
COLLECTION OF DORSAL AND VENTRAL NERVE ROOTS AT THE INFERIOR END OF THE SPINAL CORD FILLING IN THE VERTEBRAL CANAL
MENINGEAL COVERINGS

THE BRAIN AND SPINAL CORD ARE COVERED BY 3 LAYERS OF CONNECTIVE TISSUE CALLED THE MENINGES:

DURA MATER - OUTER MOST LAYER, VERY THICK AND TOUGH; THE EPIDURAL SPACE LIES BETWEEN THE VERTBRAE AND THE DURA MATER
DURA MATER FORMS A POUCH INFERIOR TO THE CONUS MEDULLARIS CALLED THE LUMBAR CISTERN, CONTAINS THE CAUDA EQUINA.

LOCATION OF LUMBAR CISTERN
**ARACHNOID MATER** - MIDDLE LAYER, DELICATE MEMBRANE WITH NUMEROUS FINE BRANCHING FIBERS GIVING A SPIDER WEB APPEARANCE
SUBARACHNOID SPACE IS LOCATED BETWEEN THE ARACHNOID MATER AND THE PIA MATER, CEREBROSPINAL FLUID (CSF) IS CONTAINED IN THIS SPACE.
**PIA MATER** - INNER MOST LAYER, VERY THIN, ADHERENT TO THE SPINAL CORD EXCEPT FOR THE DENTICULATE LIGAMENTS AND THE FILUM TERMINALE

DENTICULATE LIGAMENTS ARE EXTENSIONS OF THE PIA THAT ATTACH THE SPINAL CORD TO THE ARACHNOID AND DURA; 20-22 PAIRS ALONG THE LENGTH OF THE CORD
FILUM TERMINALE
THIN THREAD-LIKE EXTENSION OF THE PIA MATER
HOLDS THE SPINAL CORD TO THE SACRUM
LUMBAR PUNCTURE OR SPINAL TAP

USED TO OBTAIN CSF FROM THE LUMBAR CISTERN, IMPORTANT DIAGNOSTIC TOOL FOR EVALUATING A VARIETY OF NERVOUS SYSTEM DISORDERS

NEEDLE PASSES BETWEEN L3 AND L4 OR L4 AND L5, PENETRATES THE LIGAMENTUM FLAVUM TO ENTER THE SPINAL CANAL

WHAT MEMBRANES WILL THE NEEDLE PASS THROUGH TO REACH CSF?
SPINAL NERVES

31 PAIRS OF SPINAL NERVES, LEAVE THE VERTEBRAL CANAL THROUGH THEIR APPROPRIATE INTERVERTEBRAL FORAMINA

8 CERVICAL (C1-C8)
12 THORACIC (T1-T12)
5 LUMBAR (L1-L5)
5 SACRAL (S1-S5)
1 COCCYGEAL (C0)
ARRANGEMENT OF SPINAL NERVES

CERVICAL SPINAL NERVE C1

C1 → C2
C2 → C3
C3 → C4
C4 → C5
C5 → C6
C6 → C7
C7 → C8

THORACIC SPINAL NERVE T1

ALL FOLLOWING SPINAL NERVES LEAVE BELOW THEIR NAMED VERTEBRA.
MIXED SPINAL NERVES - CONTAINS BOTH AFFERENT AND EFFERENT FIBERS

FORMED BY THE JOINING OF 2 ROOTS: VENTRAL AND DORSAL
DORSAL ROOT GANGLION - SENSORY GANGLION (CONTAINS SENSORY NERVE CELL BODIES)

DORSAL ROOT GANGLION: CONTAINS CELLS BODIES OF NEURONS BRINGING INFORMATION INTO SPINAL CORD
SPINAL NERVE DIVIDES INTO A VENTRAL RAMUS AND A DORSAL RAMUS

VENTRAL RAMUS TO ANTERIOR AND LATERAL TRUNK AND EXTREMITIES; DORSAL RAMUS TO DEEP BACK
THE BRACHIAL PLEXUS AND THE LUMBOSACRAL PLEXUS
BRACHIAL (ARM) PLEXUS (BRAID): A NETWORK OF NERVES SUPPLYING THE UPPER EXTREMITY (C5,6,7,8,T1)
FORMATION OF THE BRACHIAL PLEXUS:
RAMI
TRUNKS
DIVISIONS
CORDS
BRANCHES

ROBERT TAYLOR DRINKS COLD BEER
READ THE DAMN CADAVER BOOK
RAMI FORMED FROM THE VENTRAL RAMI OF C5, C6, C7, C8, AND T1

LOCATED IN THE NECK SUPERIOR TO THE CLAVICLE
TRUNKS - UPPER FORMED BY C5 AND C6
MIDDLE FORMED BY C7
LOWER FORMED BY C8 AND T1
DIVISIONS - EACH TRUNK DIVIDES INTO 2 DIVISIONS: ANTERIOR AND POSTERIOR
CORDS - 3 CORDS ARE FORMED:

**LATERAL CORD** FROM THE ANTERIOR DIVISION OF THE UPPER AND MIDDLE TRUNKS

**MEDIAL CORD** FROM THE ANTERIOR DIVISION OF THE LOWER TRUNK

**POSTERIOR CORD** FROM THE POSTERIOR DIVISIONS OF ALL 3 TRUNKS
BRANCHES - 5 LARGEST TERMINAL NERVES OF THE BRACHIAL PLEXUS

POSTERIOR CORD = AXILLARY AND RADIAL
LATERAL CORD = MUSCULOCUTANEOUS AND MEDIAN
MEDIAL CORD = ULNAR AND MEDIAN

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<td>Axillary</td>
<td>Posterior</td>
<td>Anterior</td>
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POSTERIOR CORD (C5-T1):

DIVIDES INTO AXILLARY NERVE AND THE RADIAL NERVE

AXILLARY NERVE, SMALLER BRANCH, HOOKS BACK INTO THE AXILLA, SUPPLIES THE DELTOID AND TERES MINOR

RADIAL NERVE SPIRALS BEHIND THE HUMERUS, SUPPLIES THE POSTERIOR ARM AND FOREARM MUSCLES
LATERAL CORD (C5,6,7):

DIVIDES INTO THE MUSCULOCUTANEOUS NERVE AND LATERAL HALF OF MEDIAN NERVE

MUSCULOCUTANEOUS NERVE PIERCES THE CORACOBRACHIALS, SUPPLIES THE ANTERIOR MUSCLE OF THE ARM

MEDIAN NERVE SUPPLIES MOST OF THE ANTERIOR FOREARM MUSCLES AND THE LATERAL MUSCLES OF THE HAND
MEDIAL CORD (C8 - T1):

DIVIDES INTO THE ULNAR NERVE AND MEDIAL HALF OF THE MEDIAN NERVE

ULNAR NERVE PASSES POSTERIOR TO THE MEDIAL EPICONDYLE OF THE HUMERUS, SUPPLIES 1/1/2 MUSCLES OF THE ANTERIOR FOREARM AND THE MEDIAL AND DEEP MUSCLES OF THE HAND

MEDIAN NERVE SUPPLIES MOST OF THE ANTERIOR FOREARM MUSCLES AND THE LATERAL MUSCLES OF THE HAND
LUMBOSACRAL PLEXUS: A NETWORK OF NERVES SUPPLYING THE LOWER LIMB ((T12)L1,2,3,4,5,S1,2,3,4)
LUMBOSACRAL PLEXUS - FORMED BY THE LUMBAR PLEXUS AND THE SACRAL PLEXUS

LUMBAR PLEXUS FORMED FROM (T12) L1 - L4 SUPPLIES THE ANTERIOR AND MEDIAL THIGH

L1 - 3 SUPPLIES THE PSOAS MAJOR

FEMORAL NERVE L2 - 4 SUPPLIES THE ILIACUS AND THE ANTERIOR THIGH

OBTURATOR NERVE L2 - 4 SUPPLIES THE MEDIAL THIGH
FORMATION OF THE SACRAL PLEXUS: THE LUMBOSACRAL TRUNK (VENTRAL RAMI OF L4,5) AND THE SACRAL VENTRAL RAMI OF S1-4
SCIATIC NERVE

FORMATION BY THE: LUMBOSACRAL TRUNK = L4,5 AND S1,2,3

OCCURS INSIDE THE PELVIS
SCIATIC NERVE:
LARGEST BRANCH OF LUMBOSACRAL PLEXUS, SUPPLIES THE ENTIRE LOWER EXTREMITY EXCEPT FOR THE ANTERIOR AND MEDIAL THIGH; DIVIDES INTO TWO NERVES IN THE POSTERIOR THIGH - TIBIAL AND COMMON FIBULAR
TIBIAL:
LARGER MEDIAL COMPONENT OF THE SCIATIC; SUPPLIES MOST OF THE HAMSTRINGS AND THE POSTERIOR LEG; PASSES BEHIND THE MEDIAL MALLEOLUS WITH TIBIALIS POSTERIOR, FLEXOR DIGITORUM LONGUS AND FLEXOR HALLUCIS LONGUS TO SUPPLY THE MUSCLES OF THE FOOT
MEDIAL AND LATERAL PLANTAR NERVES ARISE FROM THE TIBIAL NERVE; SUPPLY THE PLANTAR FOOT
SCIATIC NERVE
TIBIAL NERVE
MEDIAL AND LATERAL PLANTAR NERVES
COMMON FIBULAR/PERONEAL NERVE:

SMALLER, LATERAL DIVISION OF THE SCIATIC NERVE; WRAPS AROUND THE HEAD OF THE FIBULA THEN DIVIDES INTO SUPERFICIAL AND DEEP BRANCHES

SUPERFICIAL TO THE LATERAL COMPARTMENT OF THE LEG

DEEP TO THE ANTERIOR COMPARTMENT OF THE LEG AND DORSUM OF FOOT
HERNIATED DISC, “SLIPPED DISC”

RUPTURE OF THE ANNULUS FIBROSUS ALLOWING THE PROTUSION OF THE NUCLEUS PULPOSUS PUSHES ON THE NERVE ROOT EXITING FROM THE CORD

COMMON IN LUMBAR REGION (L4,5) “SCIATICA”