

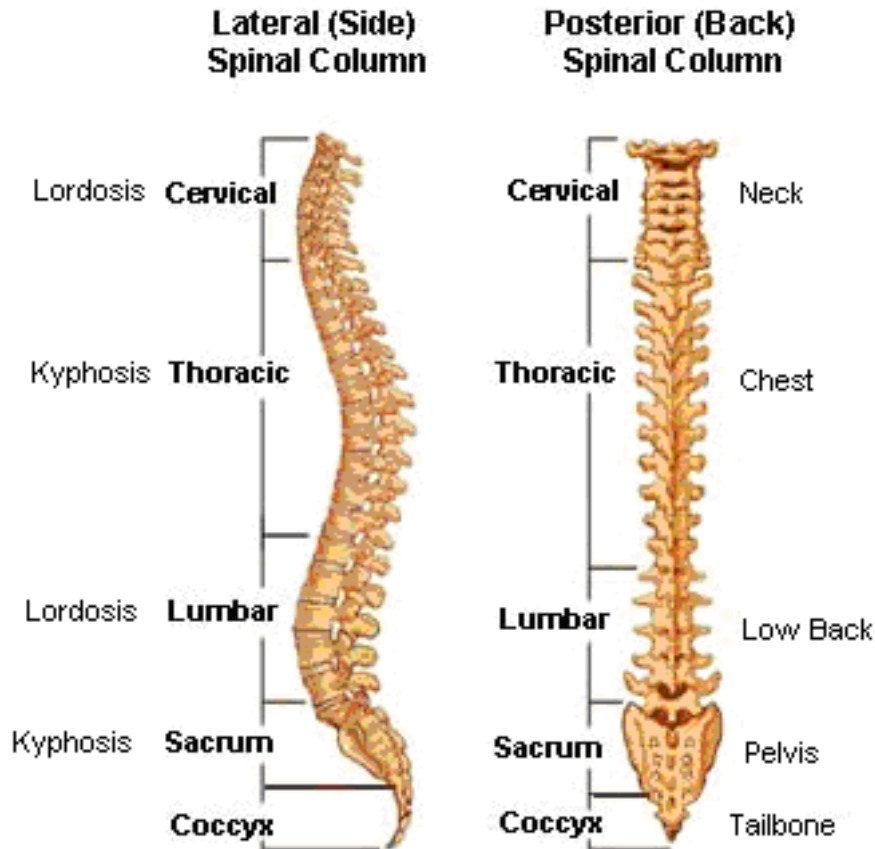
SPINE -ANATOMY

Dr.Khudur Shukur



Anatomy

Components of The Spinal Column



Extends from the skull to the pelvis •

33 vertebrae •

- 7 Cervical vertebrae (C1-C7) –
- 12 Thoracic vertebrae (T1-T12) –
- 5 Lumbar vertebrae (L1-L5) –
- 5 fused Sacrum vertebrae (S1-S5) –
- 4 Coccyx vertebrae –

Spinal Curves •

Curve Description –

- Kyphosis or Kyphotic Curve •
Concave anteriorly and convex posteriorly
- Lordosis or Lordotic Curve •
Convex anteriorly and concave posteriorly

Normal Curvature –

- Cervical Lordosis 20 to 40 •
degrees
- Thoracic Kyphosis 20 to 40 •
degrees
- Lumbar Lordosis 40 to 60 •
degrees
- Sacral Kyphosis Sacrum fused in •
a kyphotic curve

Anatomy

Functions of The Spinal Column

Protects •

Spinal Cord –

Nerve Roots –

Internal organs –

Mobility: allows for •

Flexion (forward bending) –

Extension (backward bending) –

Side bending (left and right) –

Rotation (left and right) –

Structure •

Anchors head, shoulders, chest –

Connects upper and lower body –

Balances body –

Distributes weight –





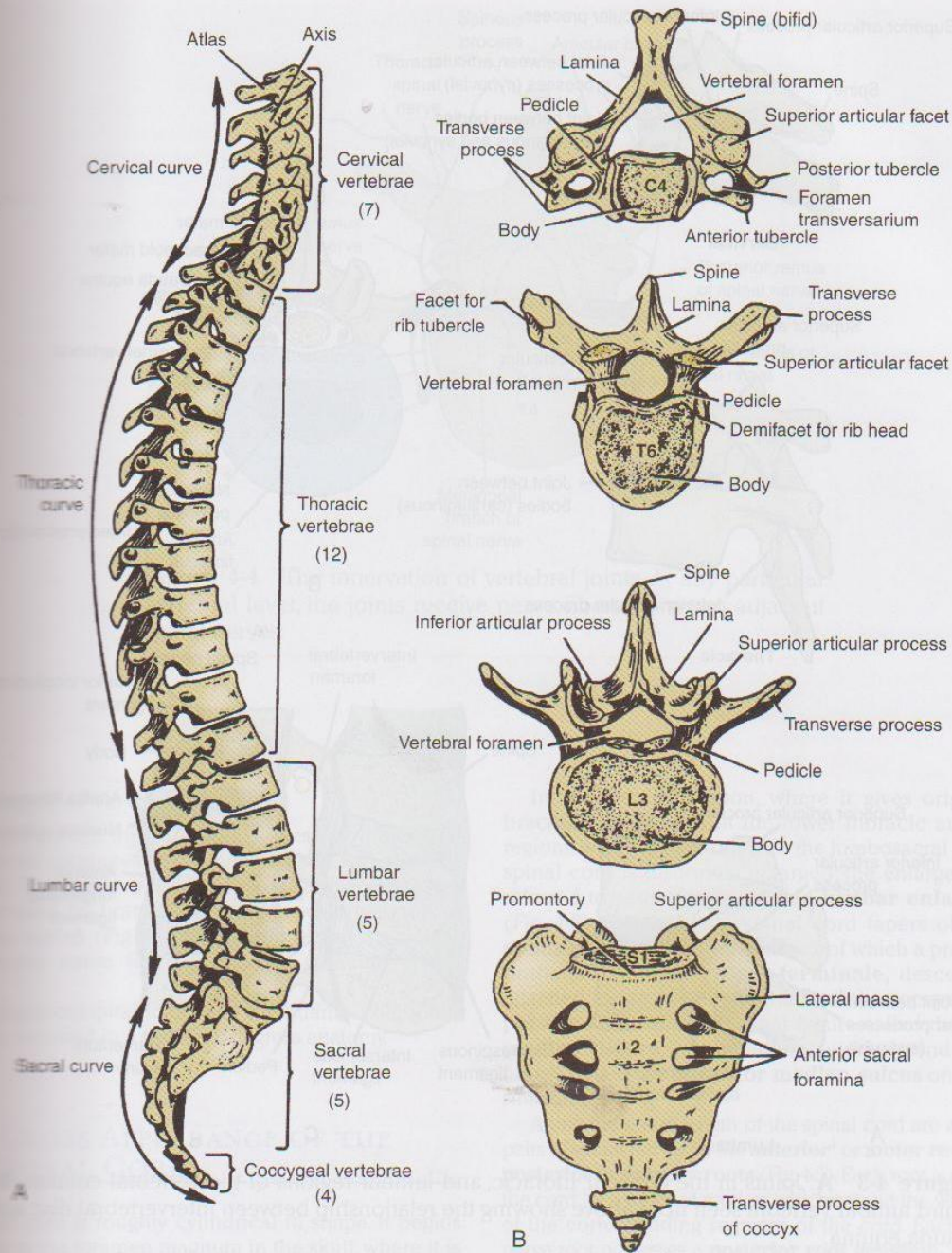
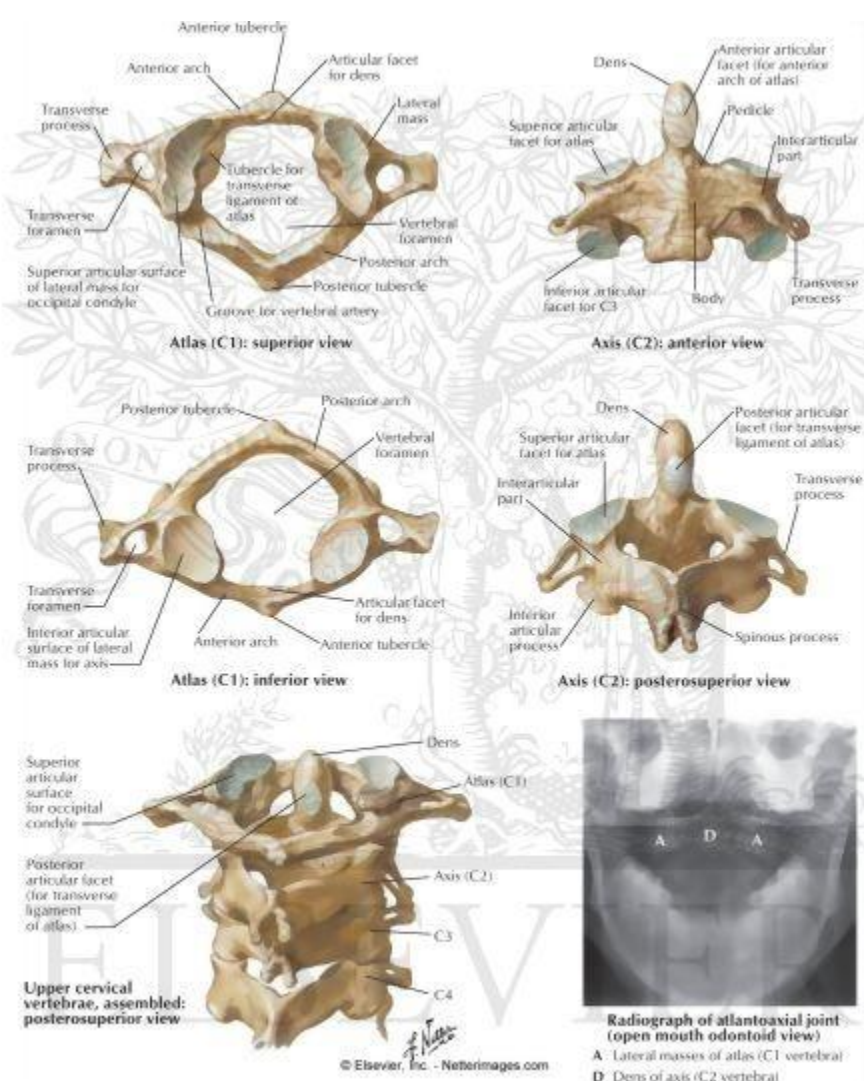
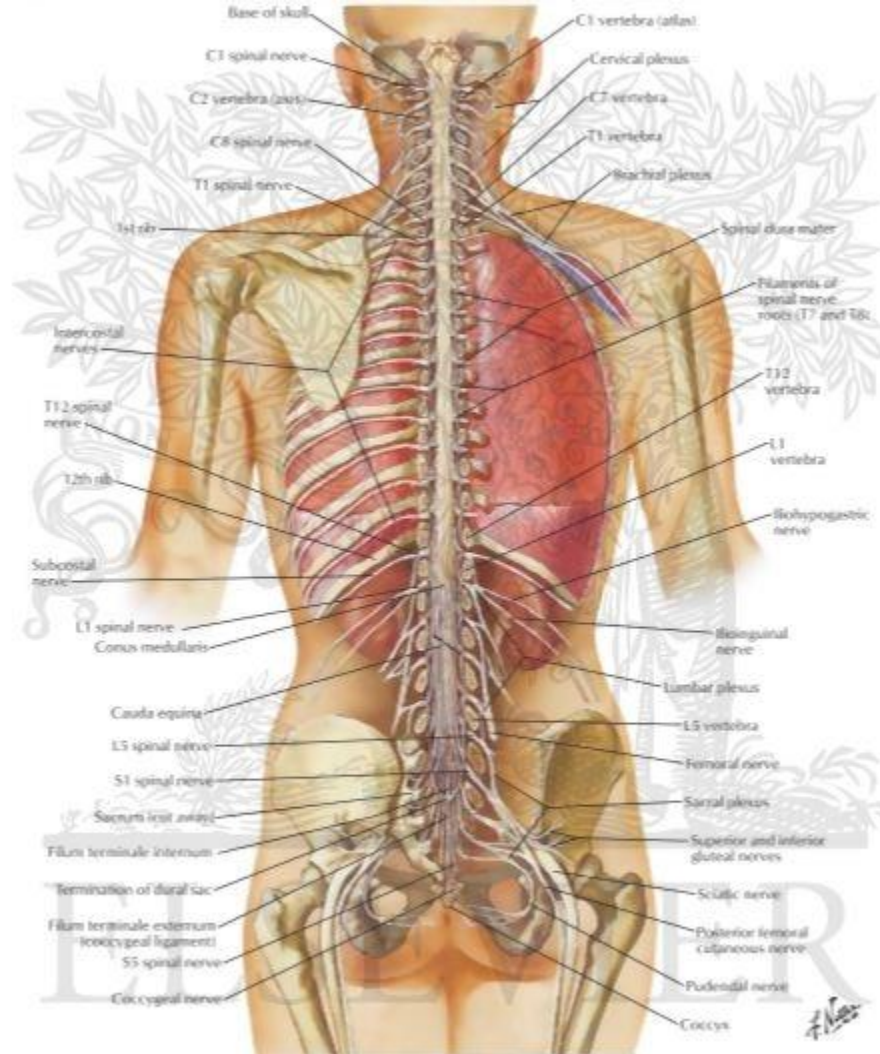
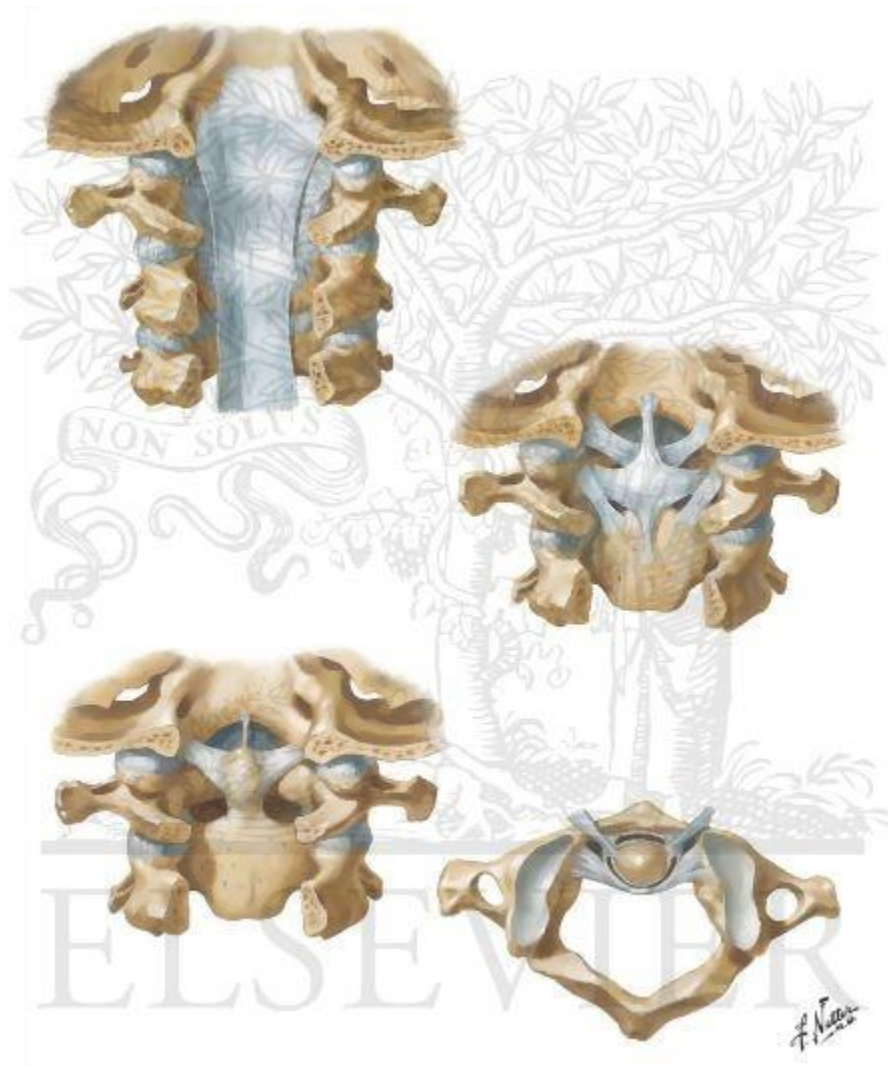
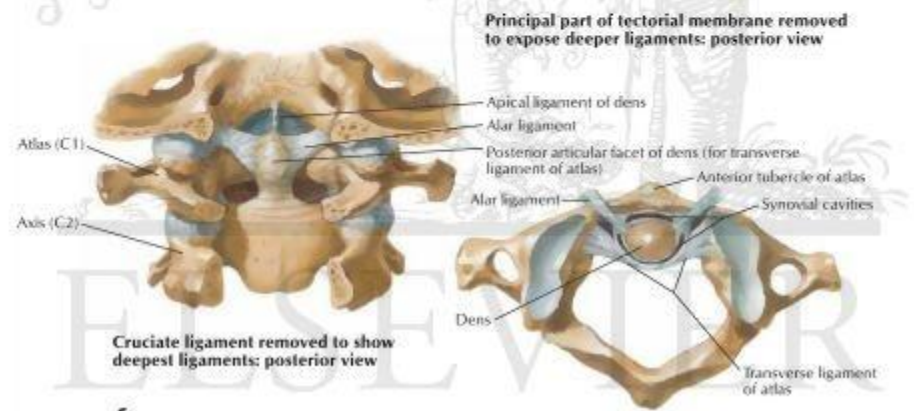
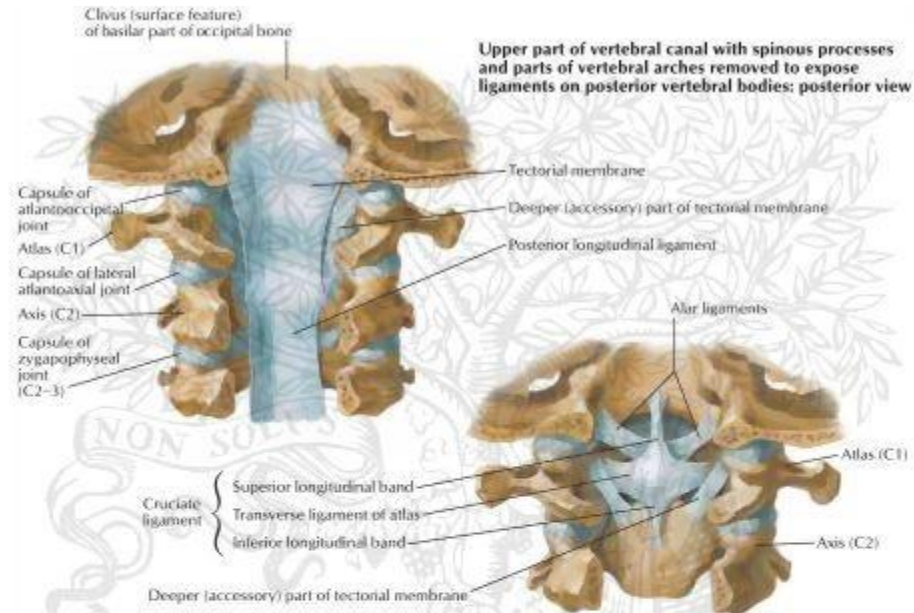


Figure 4-2 **A:** Lateral view of the vertebral column. **B:** General features of different kinds of vertebrae.





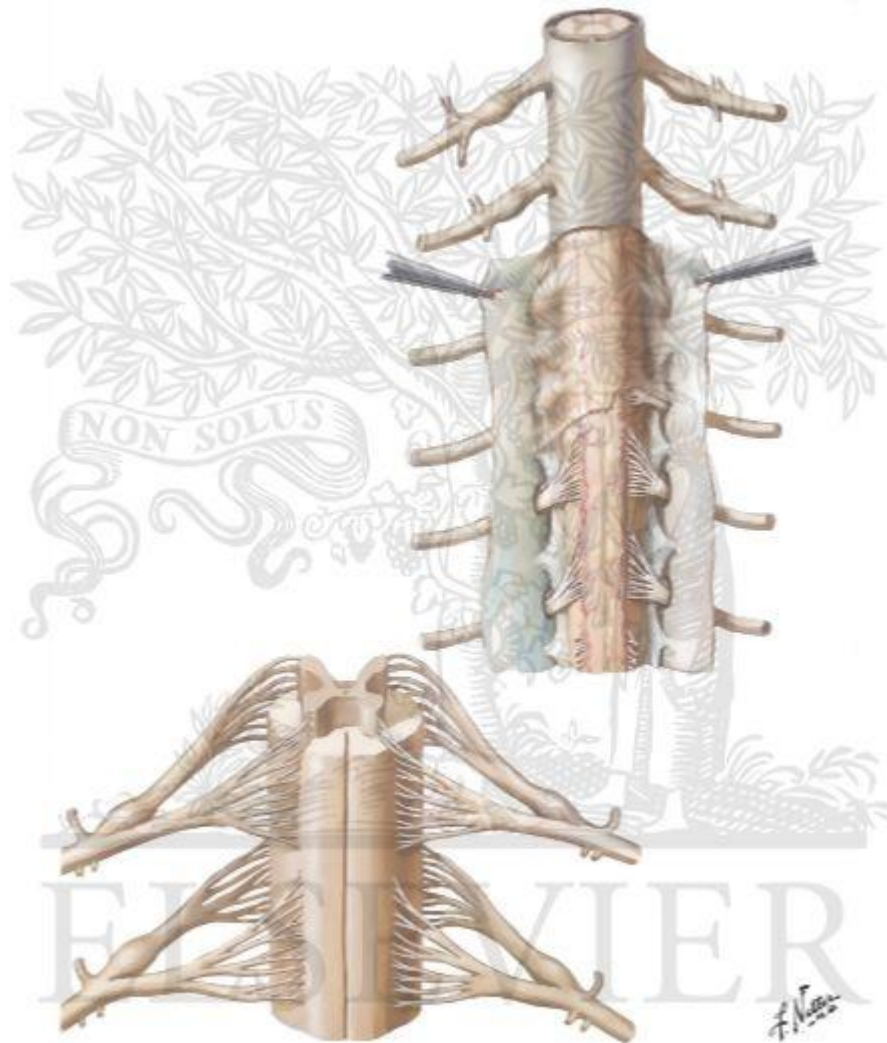




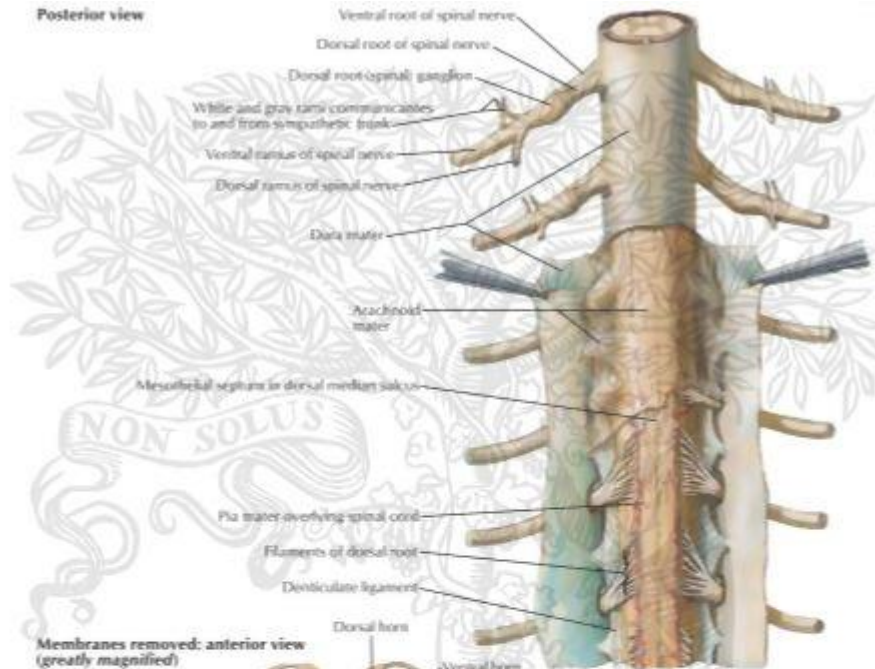
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© Elsevier, Inc. - Netter atlas atlantoaxial joint: superior view

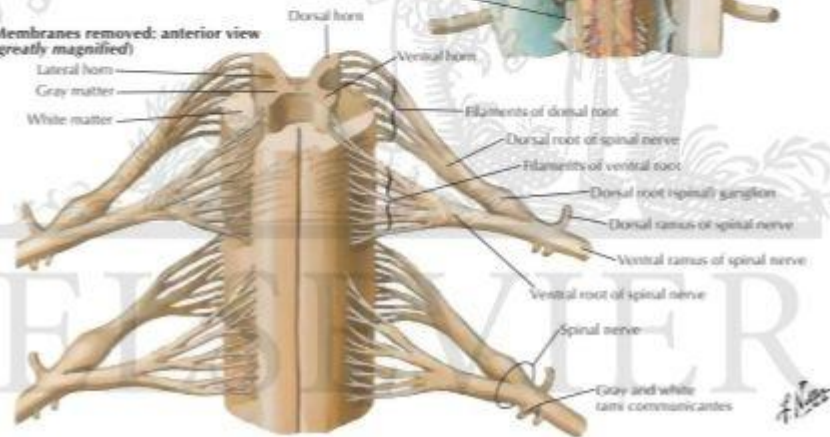
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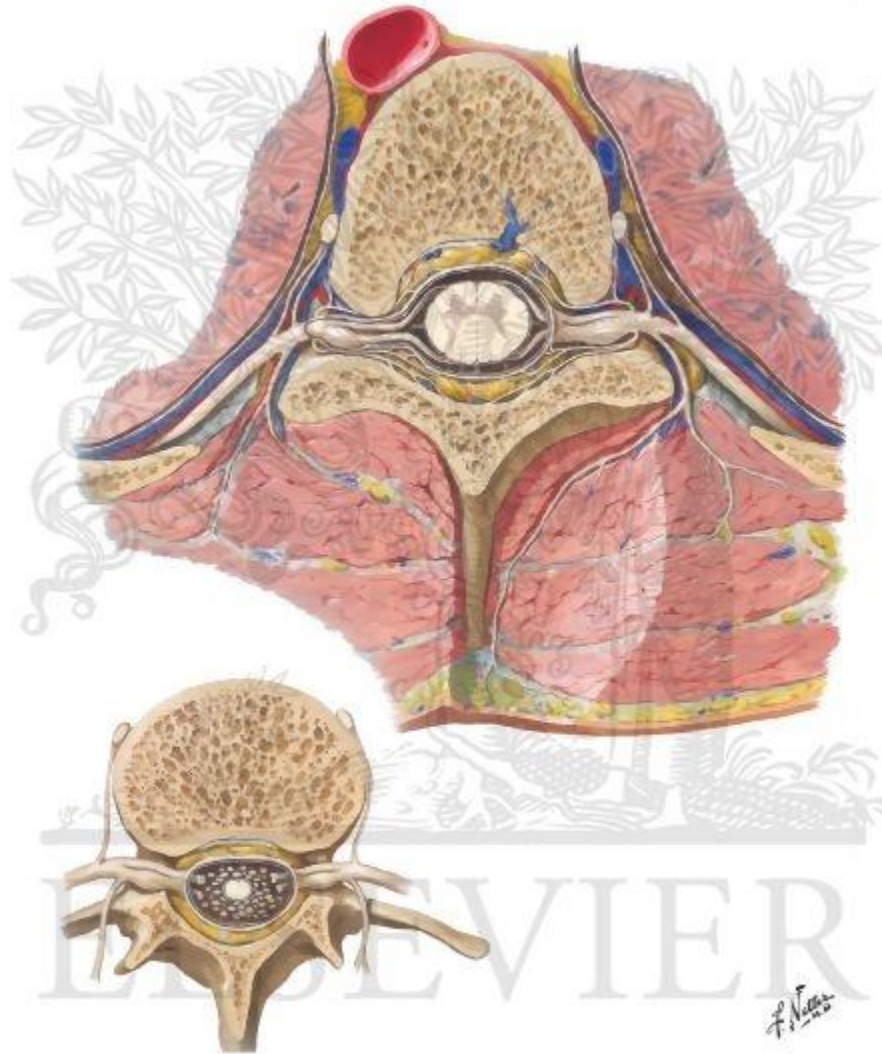


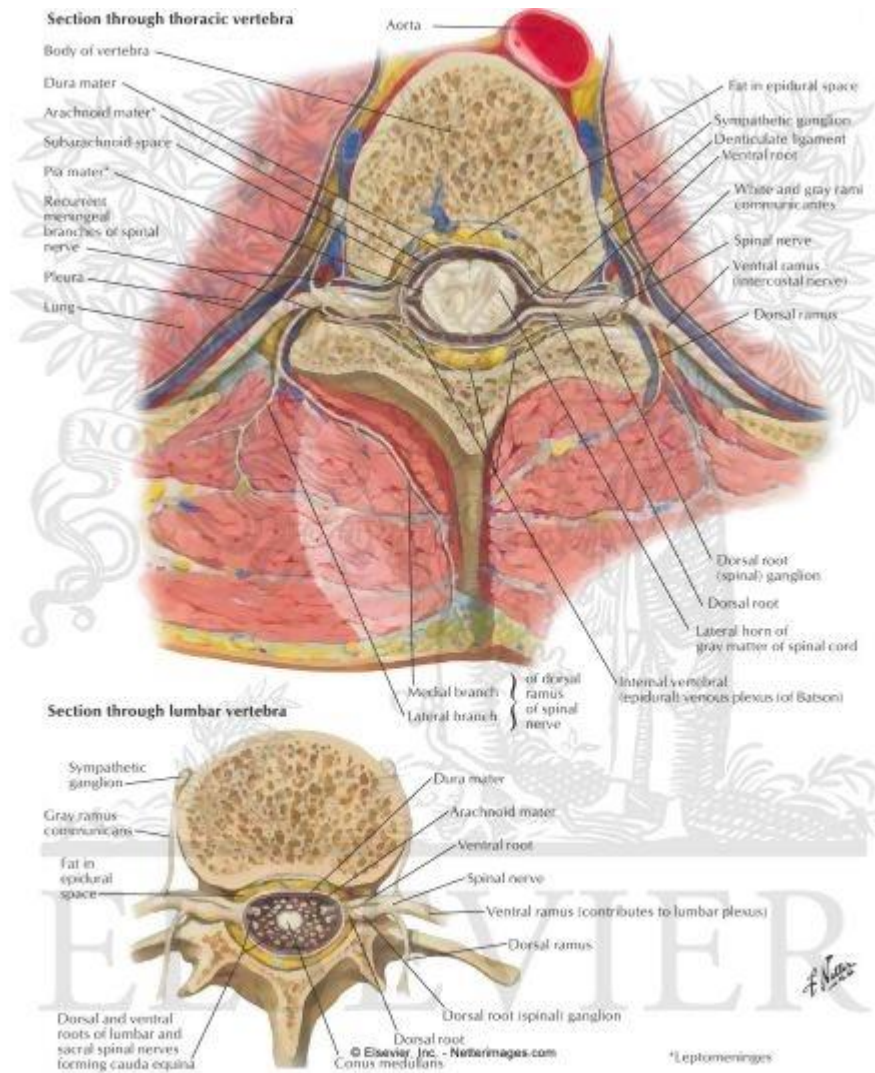
Posterior view

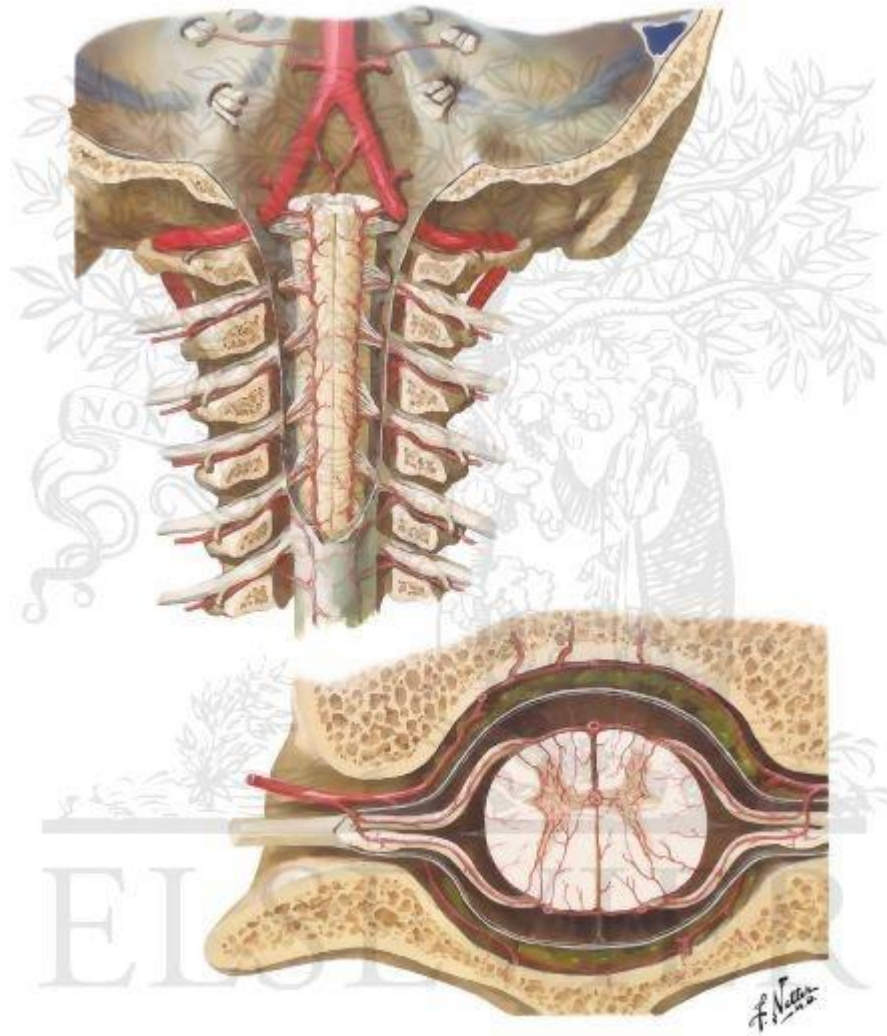


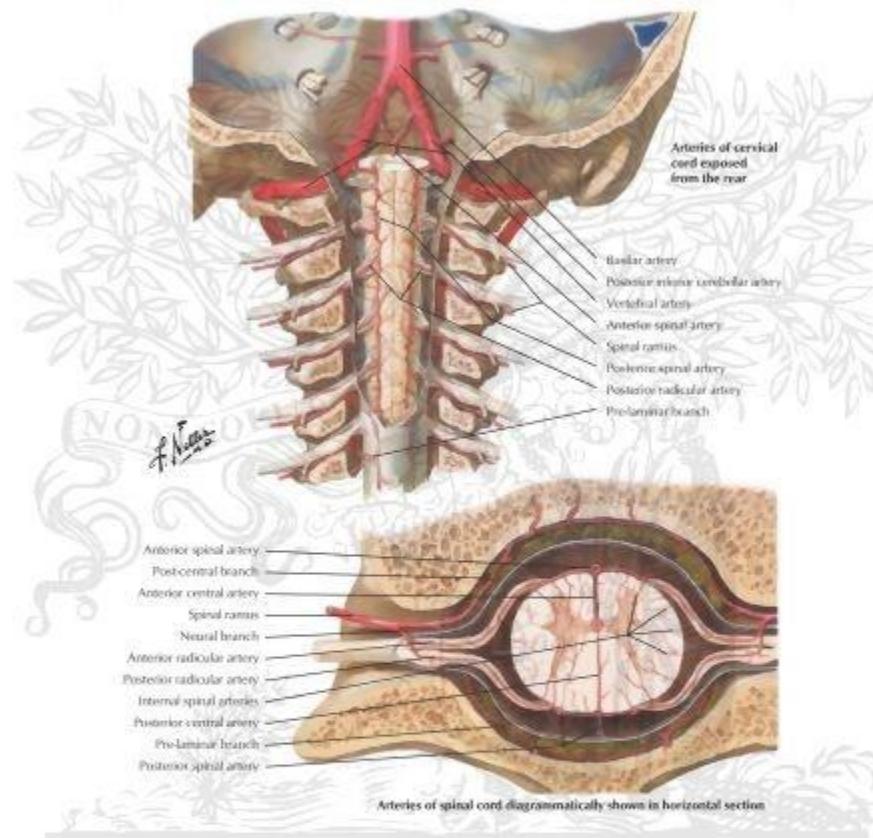
Membranes removed: anterior view (greatly magnified)



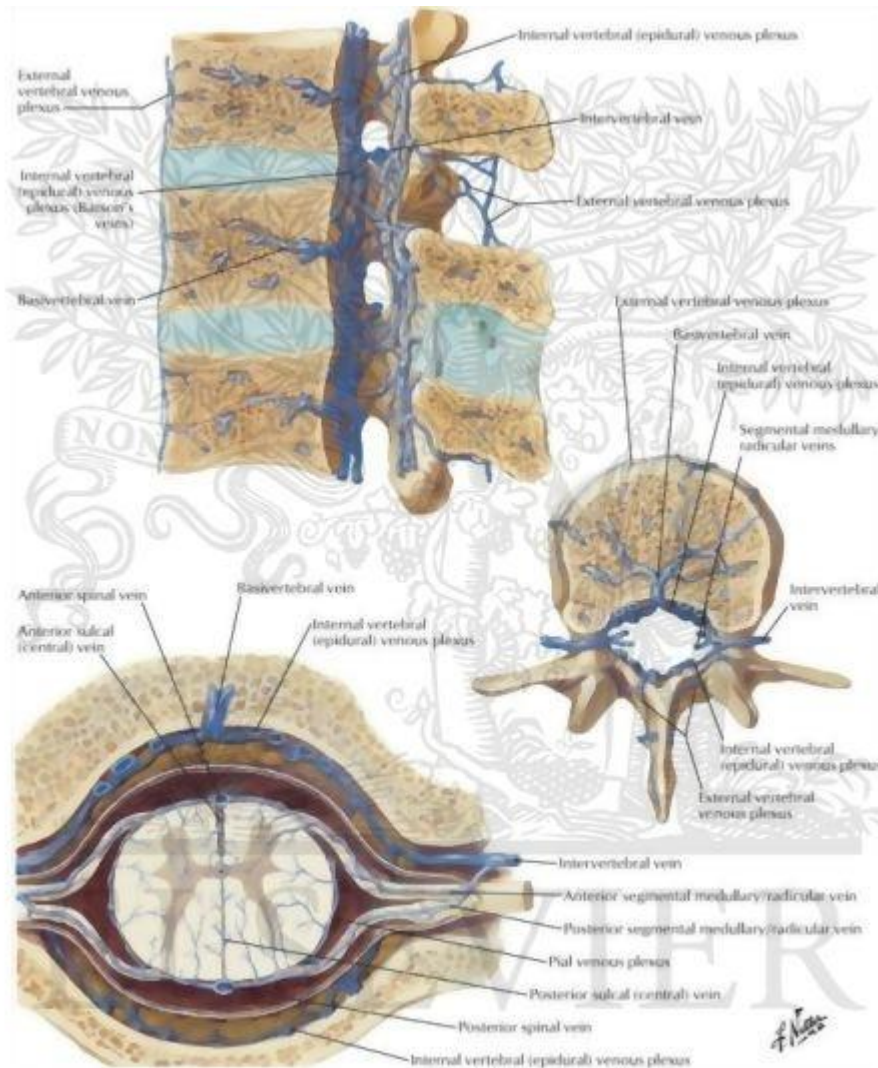


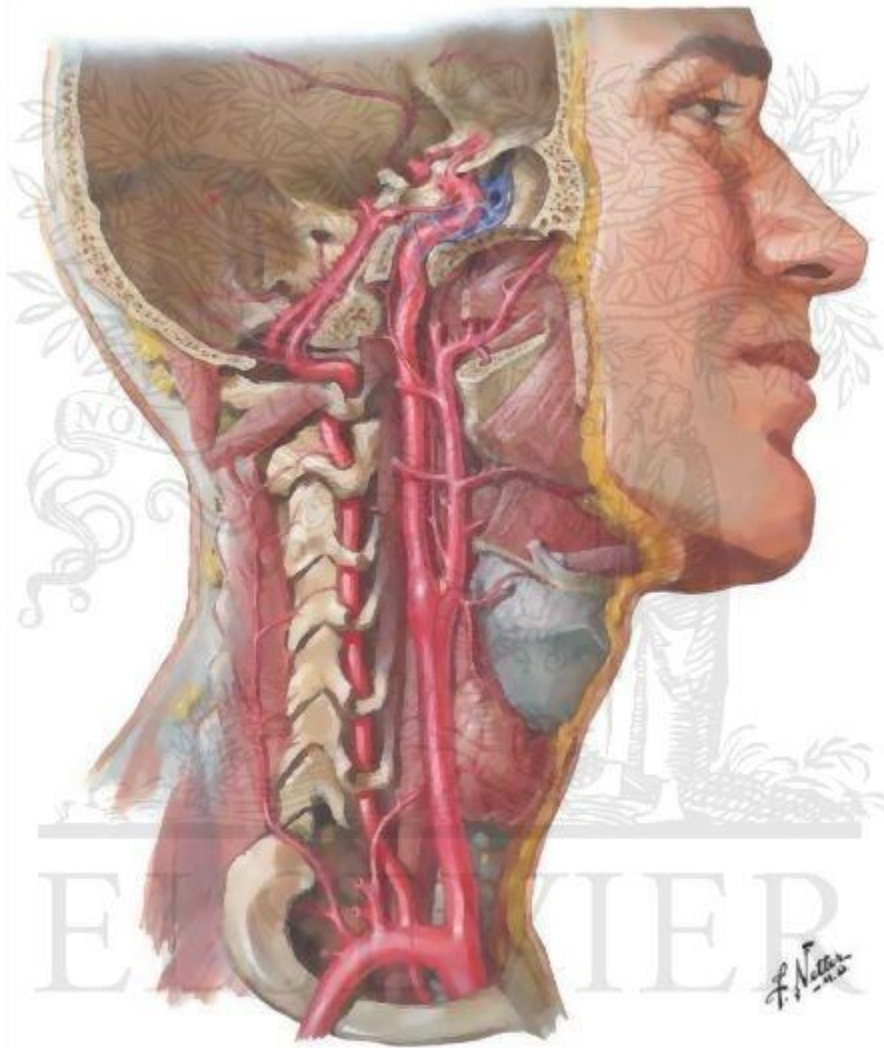


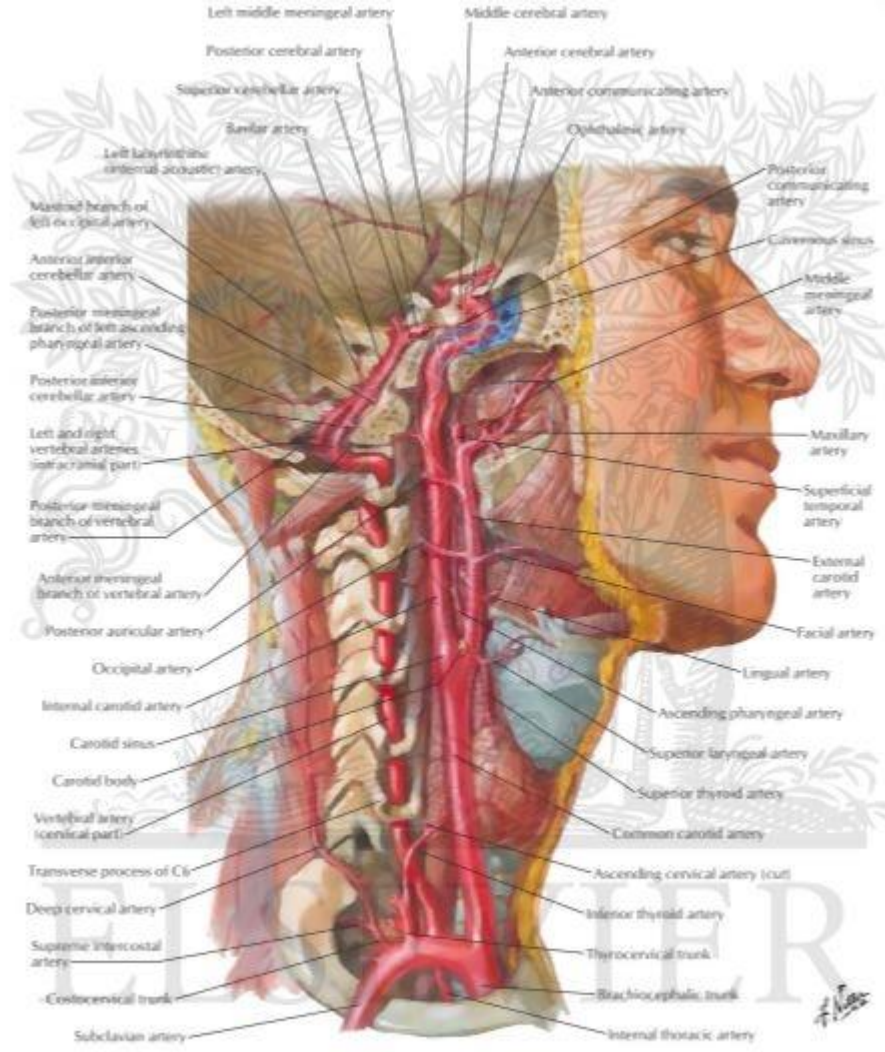




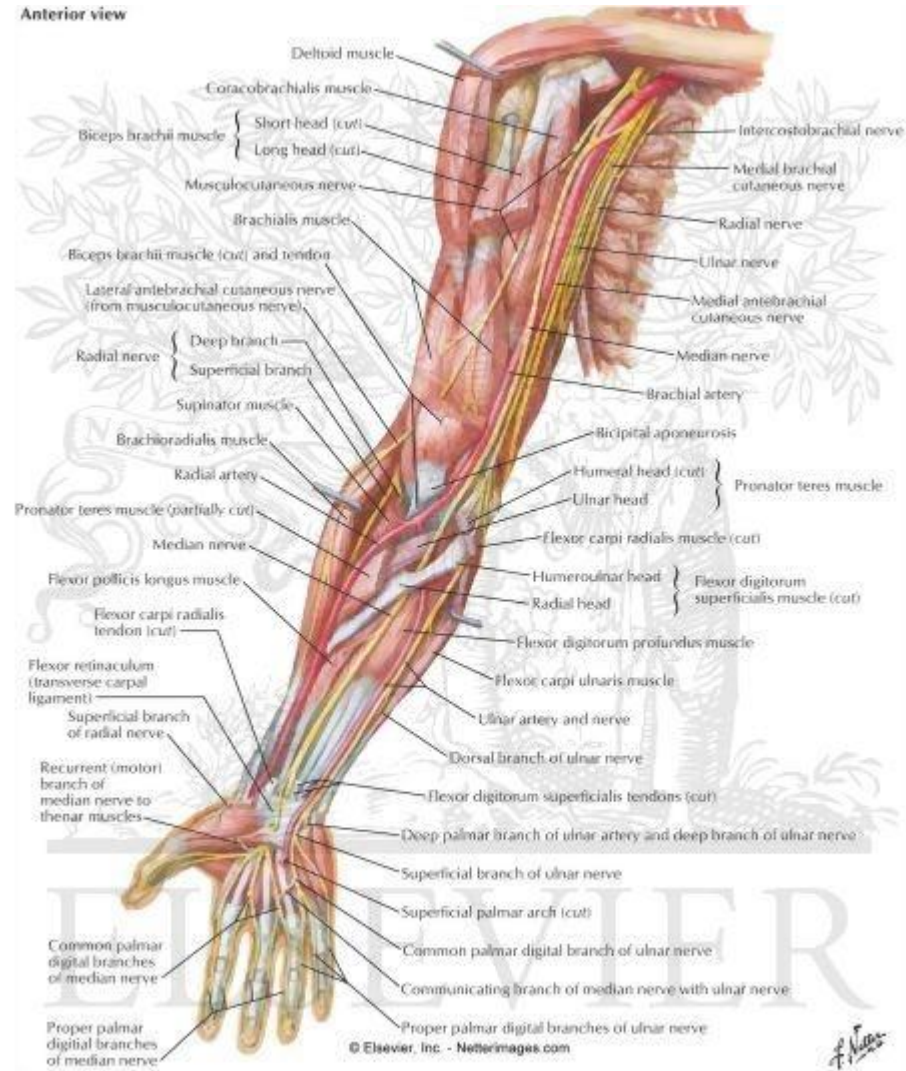
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Anterior view

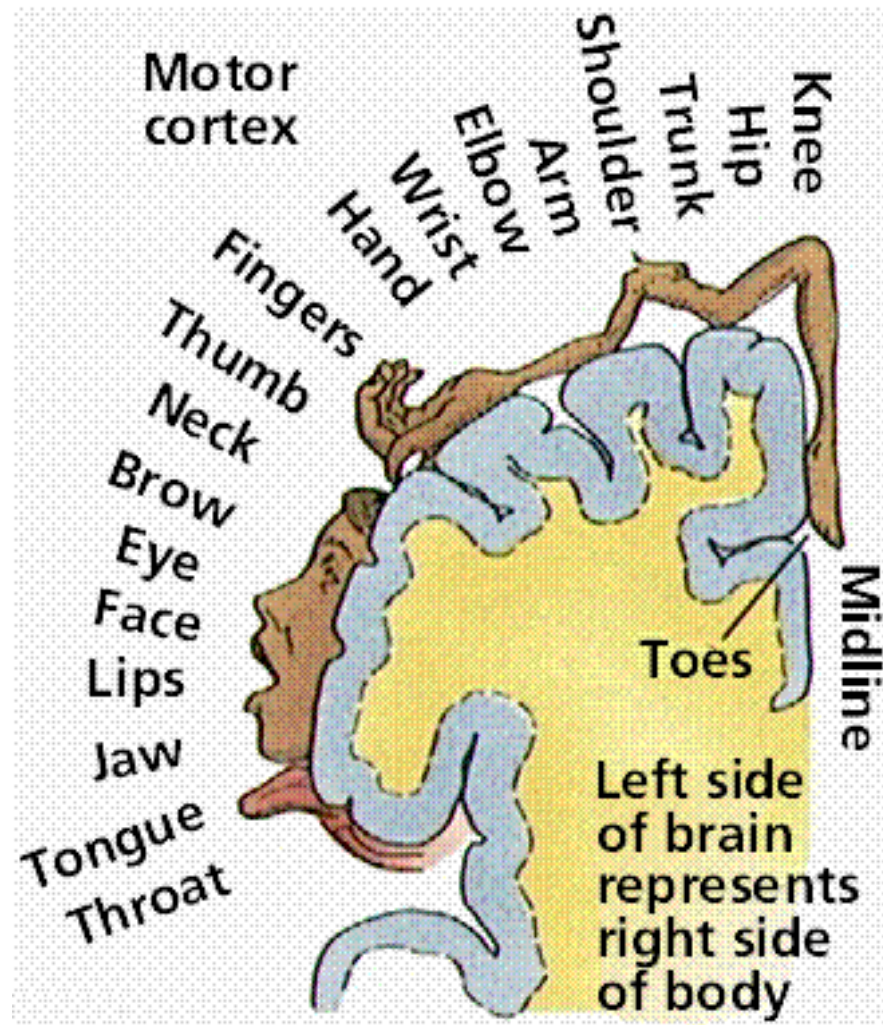


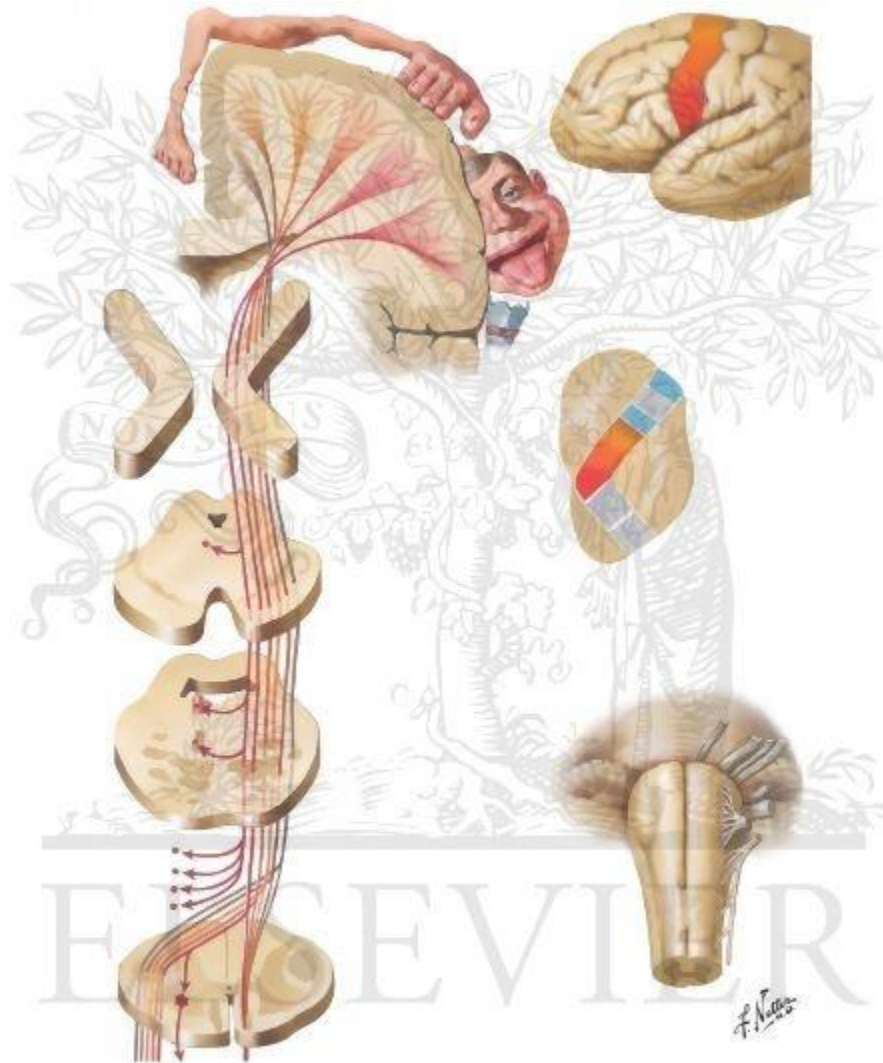
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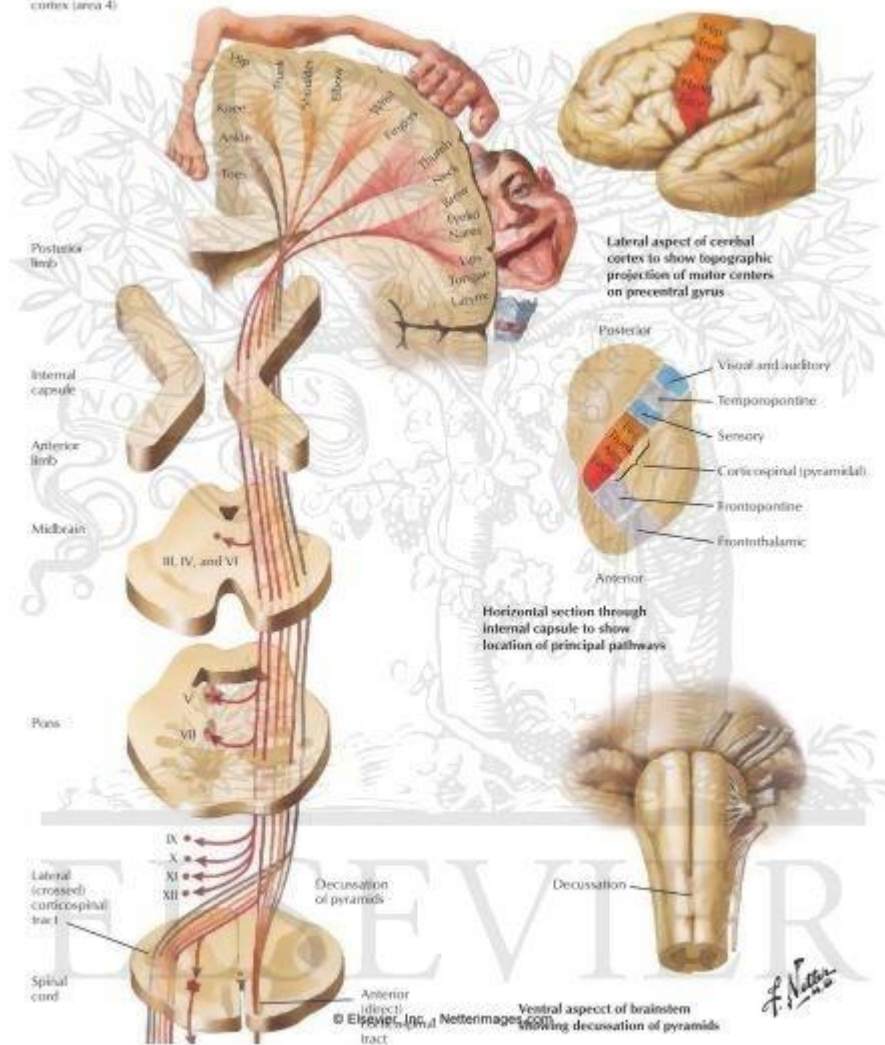
The Motor Strip





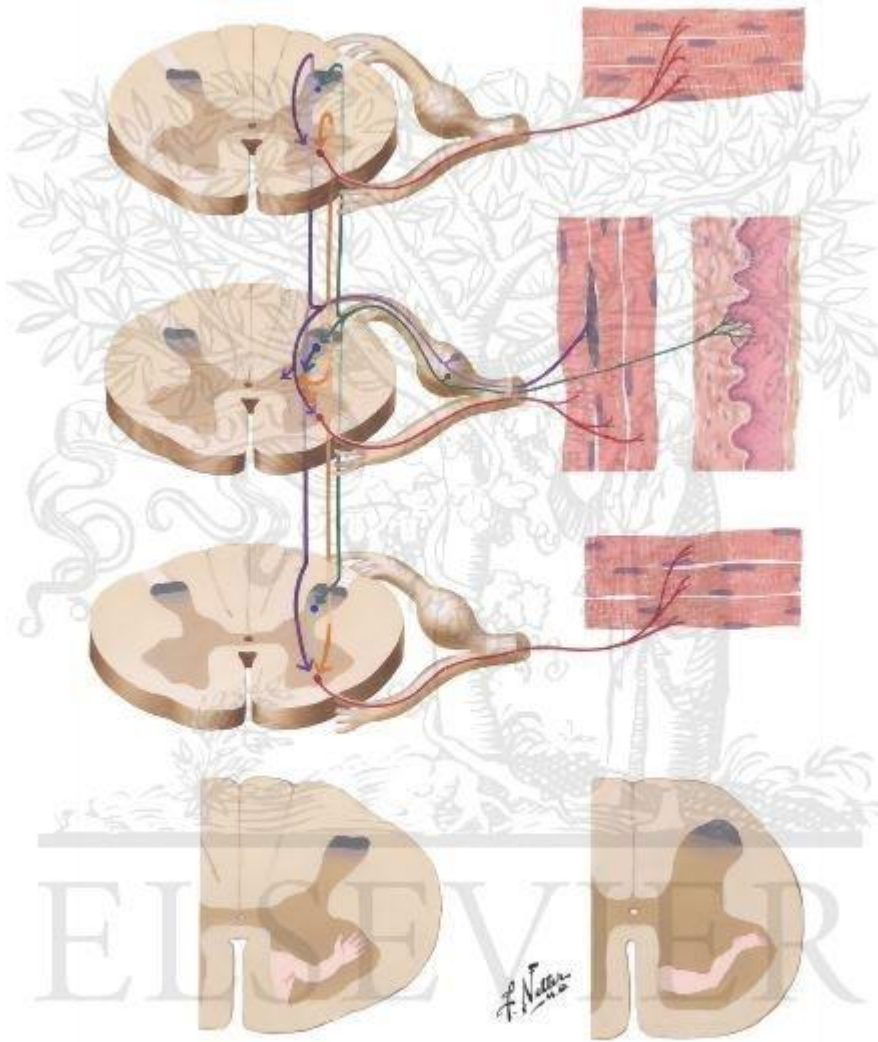
Primary motor cortex (area 4)

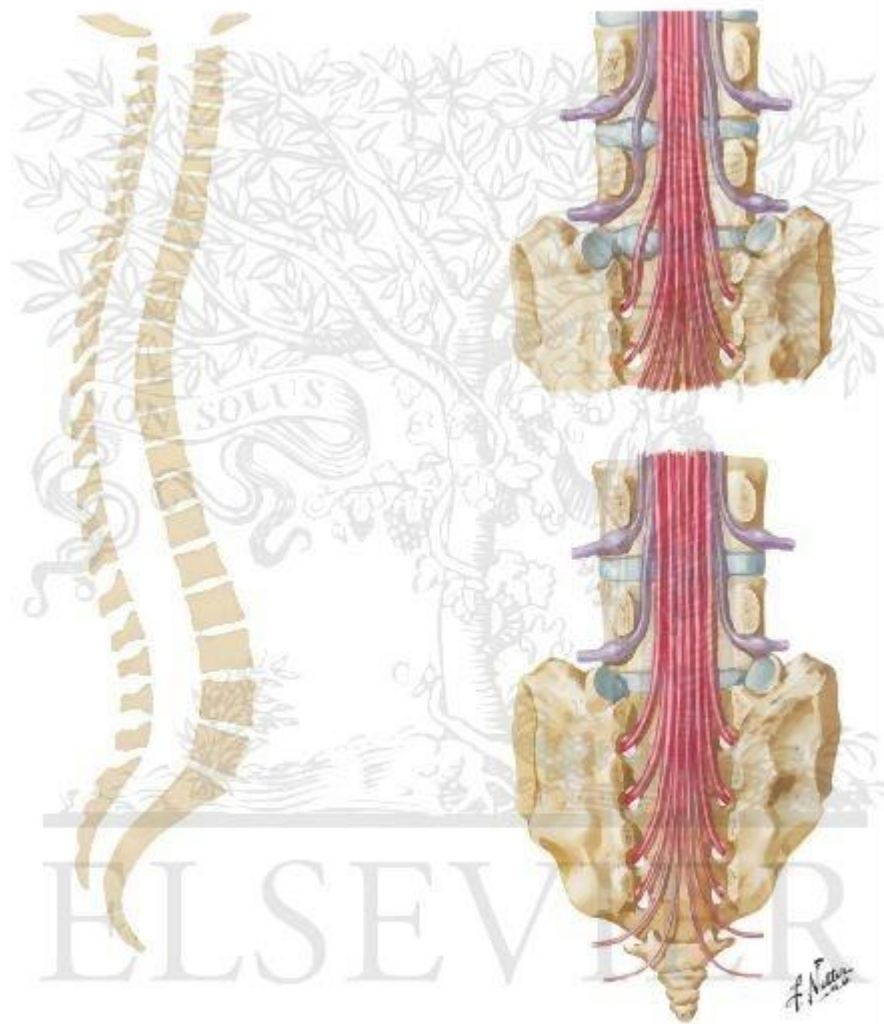
Pyramidal System

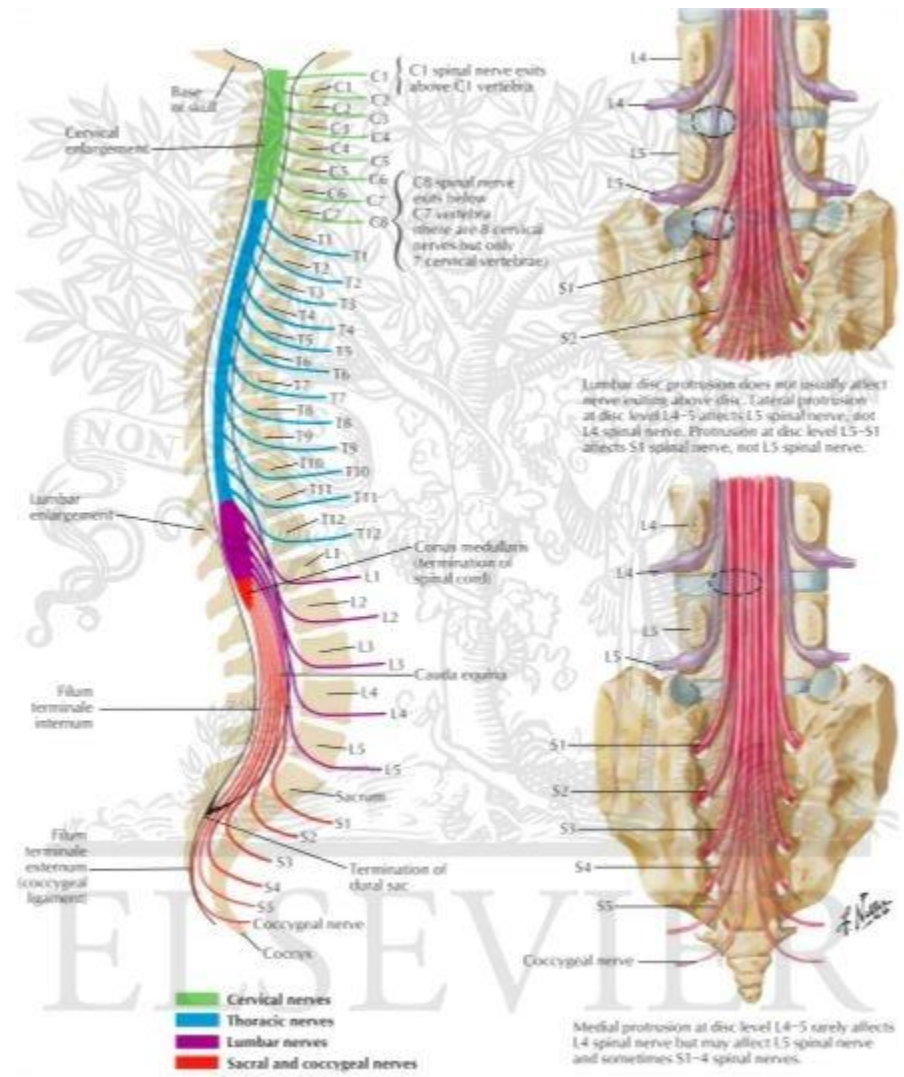


Fibers









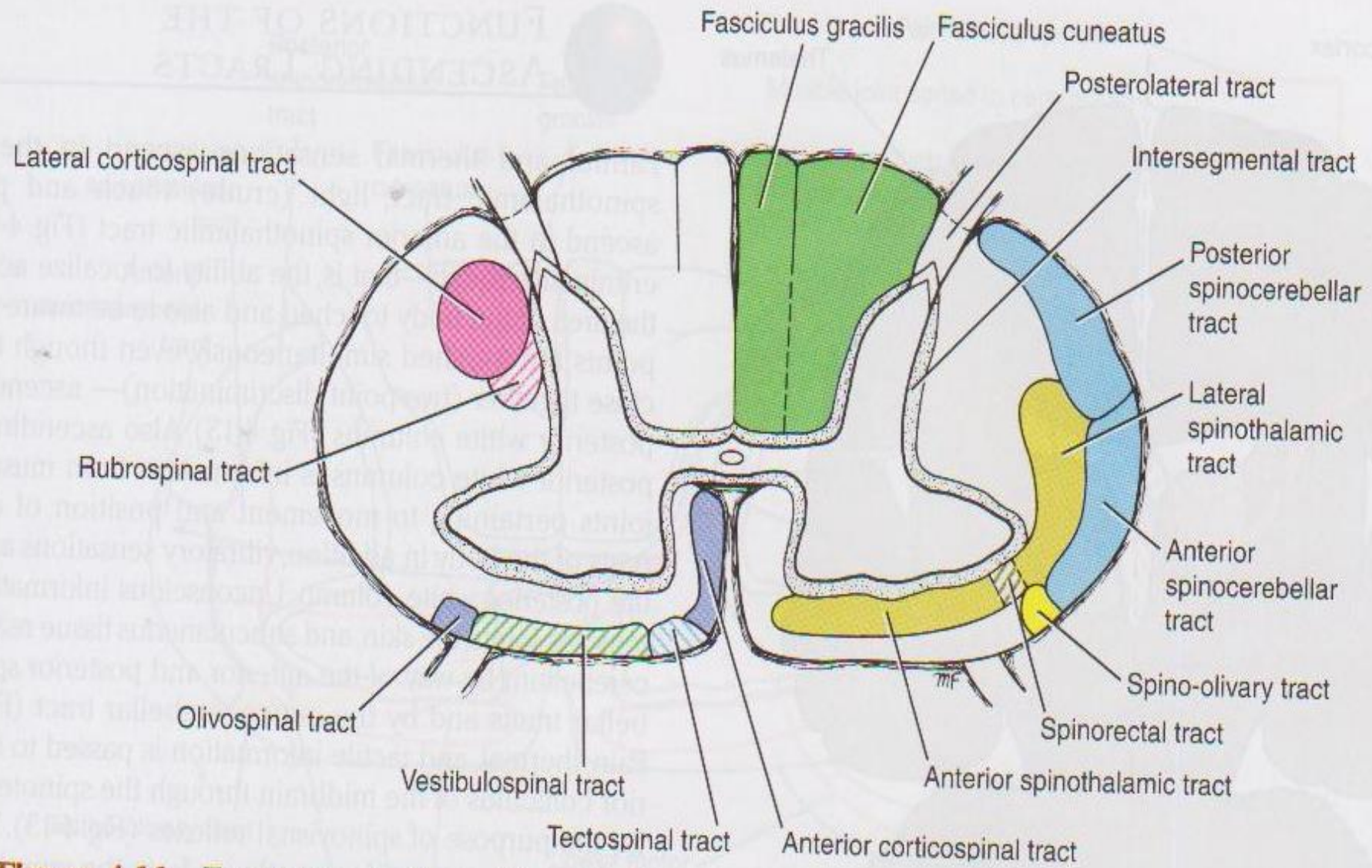
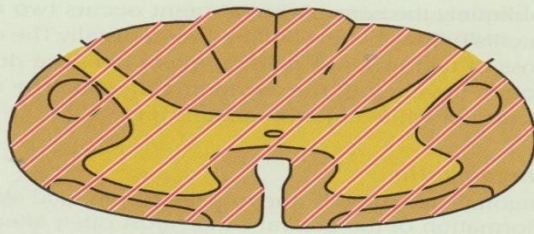
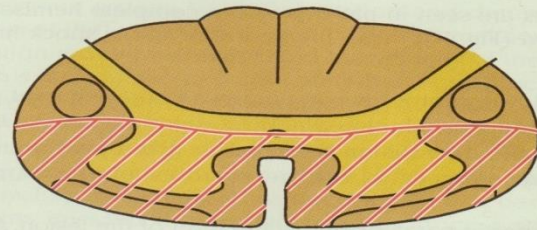


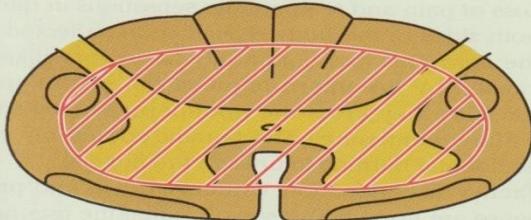
Figure 4-11 Transverse section of the spinal cord at the midcervical level showing the general arrangement of the ascending tracts on the right and the descending tracts on the left.



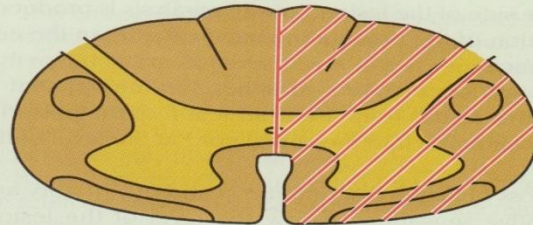
Complete cord transection syndrome



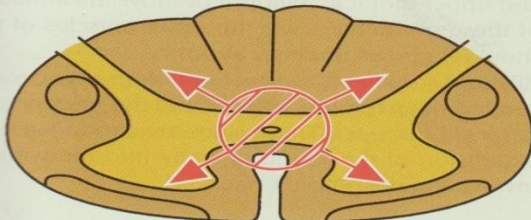
Anterior cord syndrome



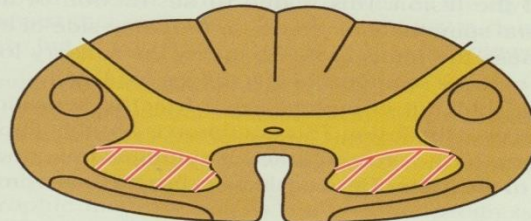
Central cord syndrome



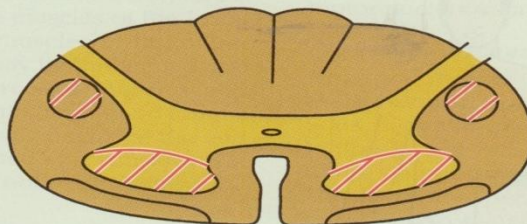
Brown-Sequard syndrome



Syringomyelia



Poliomyelitis



Amyotrophic lateral sclerosis

Figure 4-31 Spinal cord syndromes.

Area in which sensations
of pain and temperature
are lost

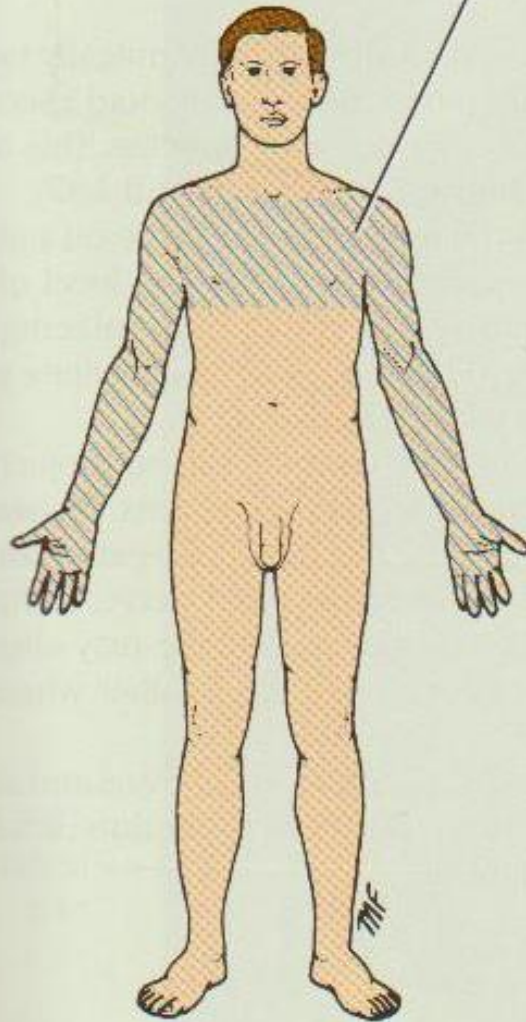
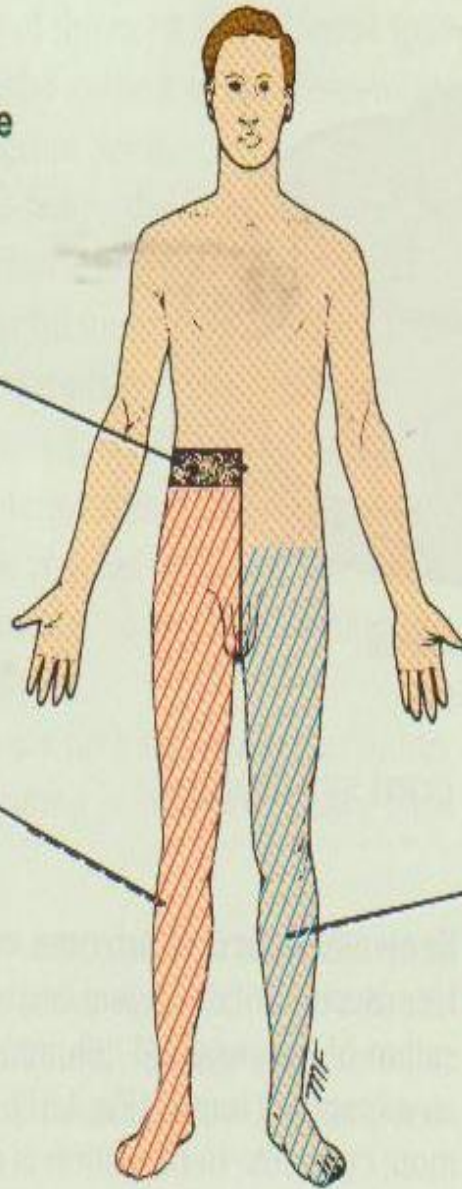


Figure 4-33 Skin area in which the sensations of pain and temperature are lost in syringomyelia.

Lesion on this side

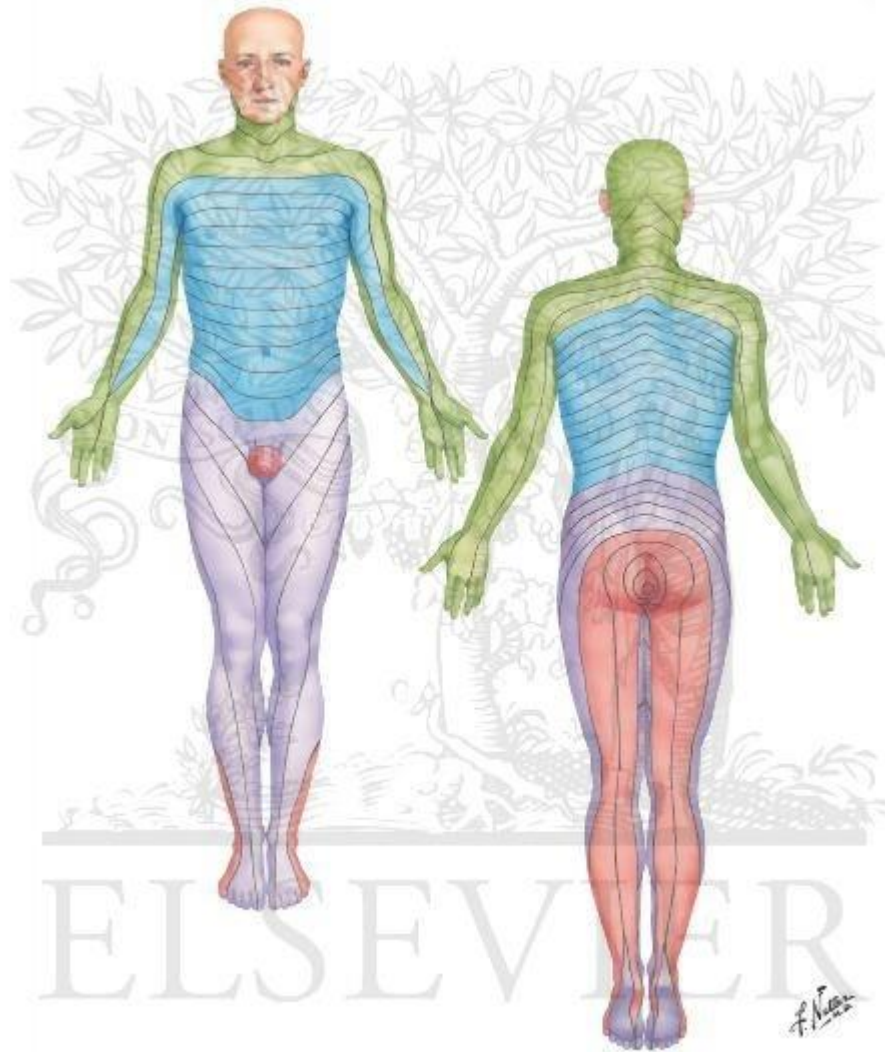
Total loss of all sensations—
hypotonic paralysis

Loss of tactile discrimination,
vibratory and proprioceptive
sensations—spastic paralysis

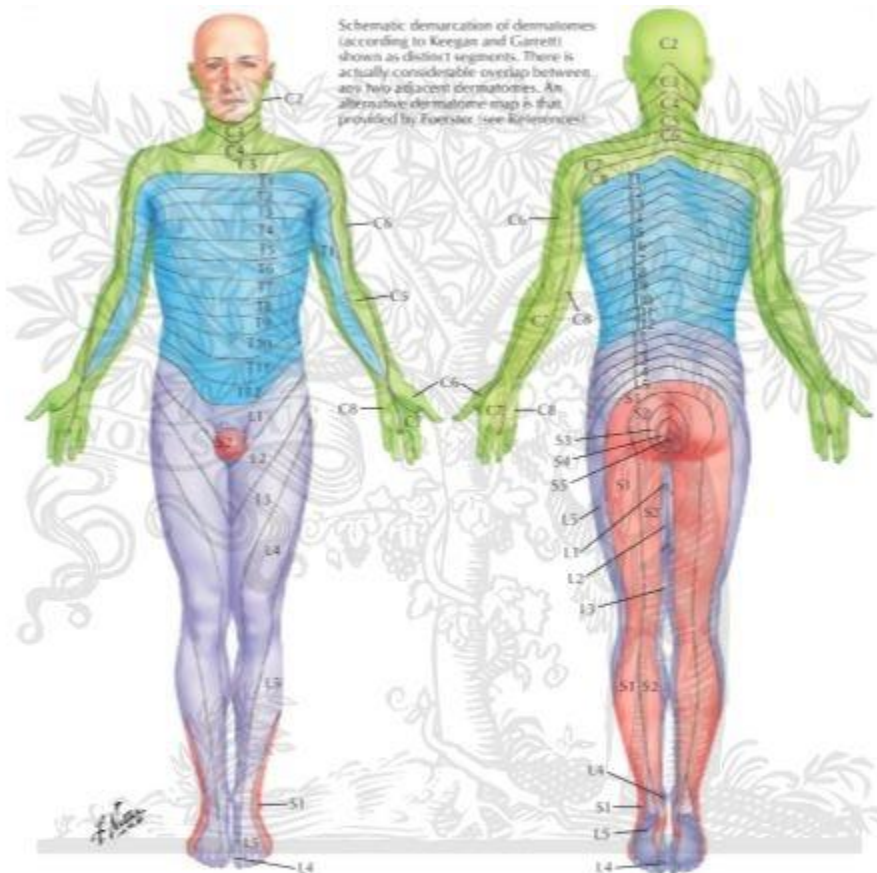


Loss of pain and
temperature sensations,
impaired tactile sense

Figure 4-32 Brown-Séquard syndrome with a spinal cord lesion at the right 10th thoracic level.



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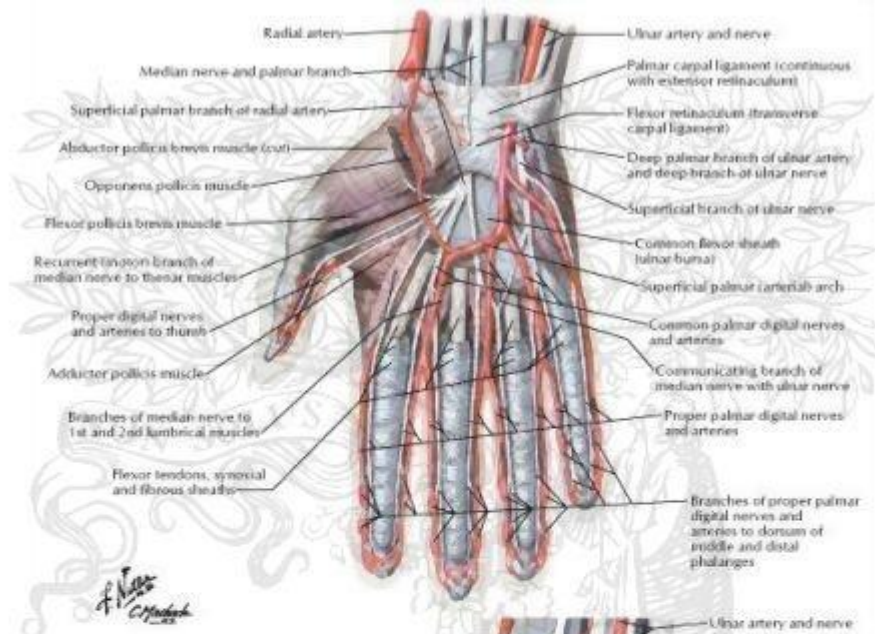


Levels of principal dermatomes

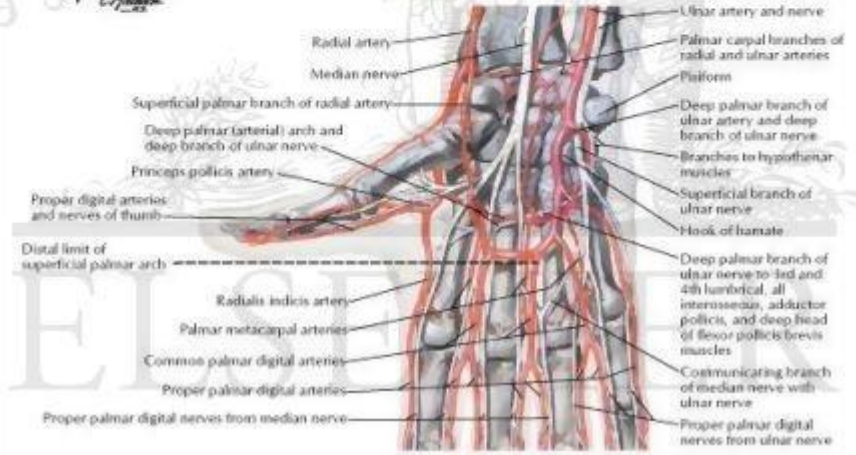
C5 Clavicles
 C5, 6, 7 Lateral parts of upper limbs
 C8, T1 Medial sides of upper limbs
 C6 Thumb
 C8, 7, 8 Hand
 C8 Ring and little fingers
 T4 Level of nipples

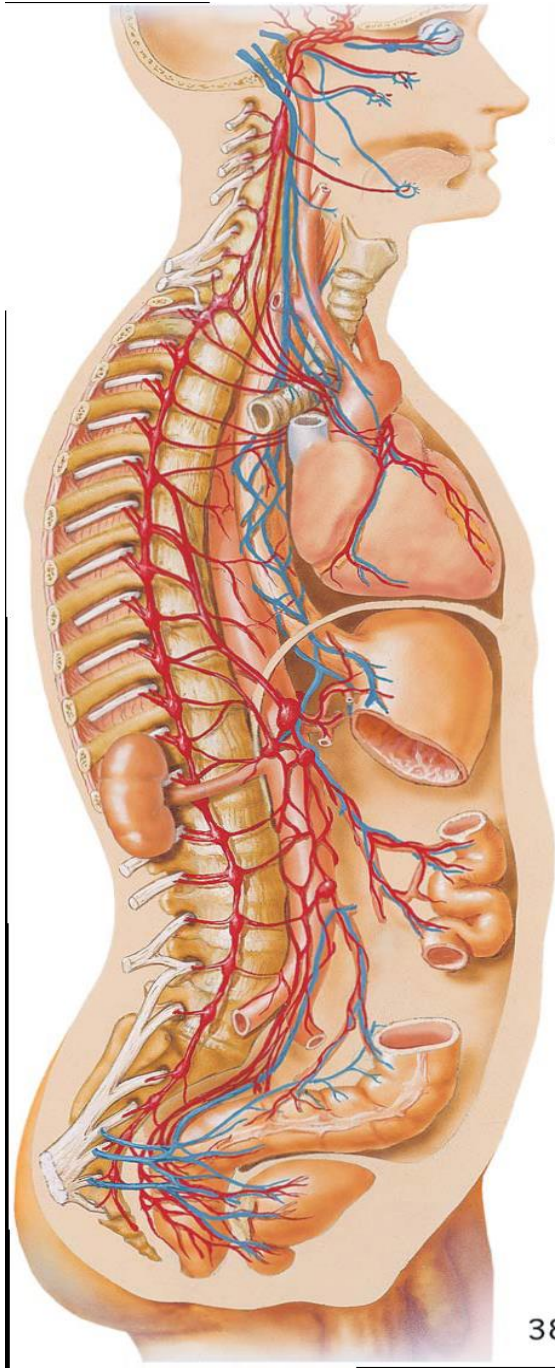
T10

Level of umbilicus
 L1 Inguinal or groin regions
 L1, 2, 3, 4 Anterior and inner surfaces of lower limbs
 L4, 5, S1 Foot
 L4 Medial side of great toe
 S1, 2, L5 Posterior and outer surfaces of lower limbs
 S1 Lateral margin of foot and little toe
 S2, 3, 4 Perineum



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C. Medeck





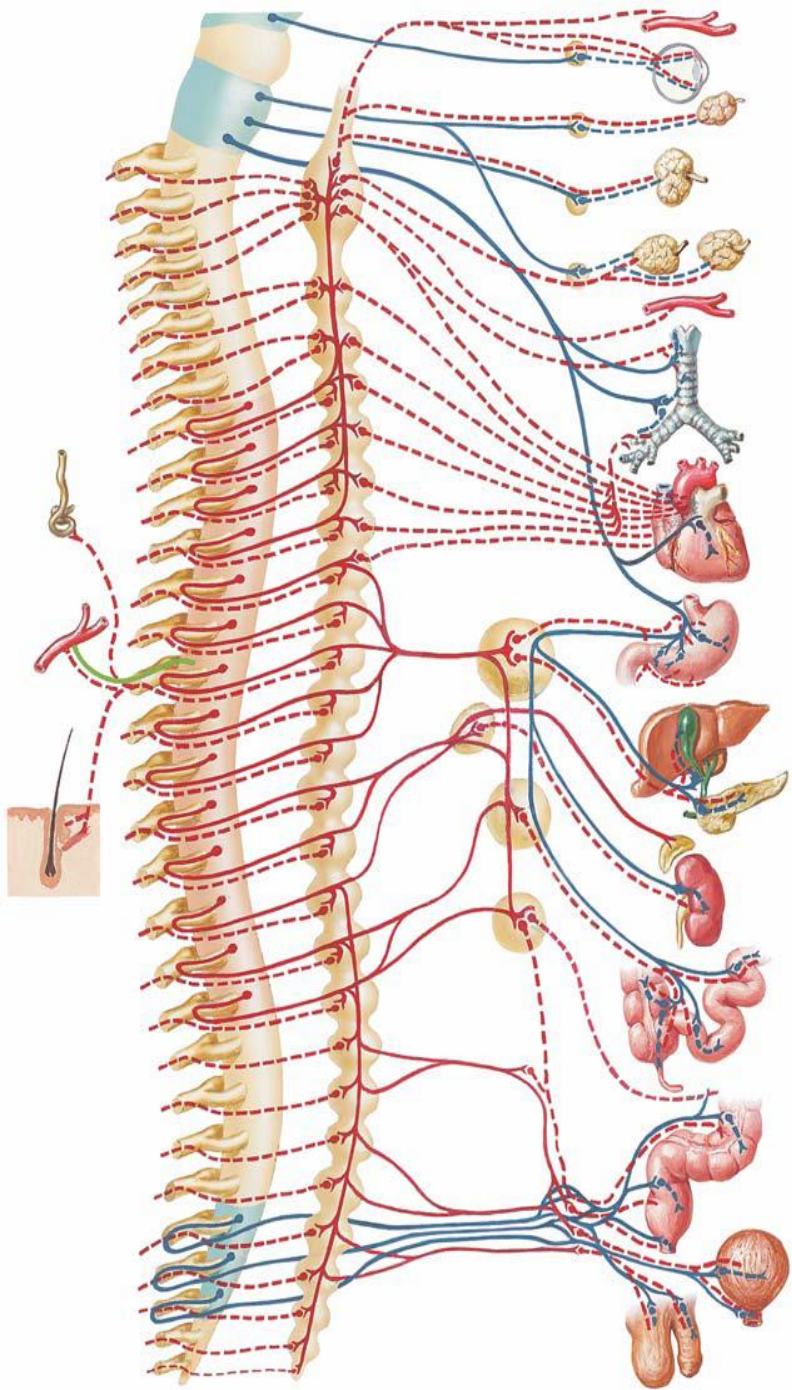




Figure 14-7 This man is making good use of the sympathetic part of his autonomic nervous system.

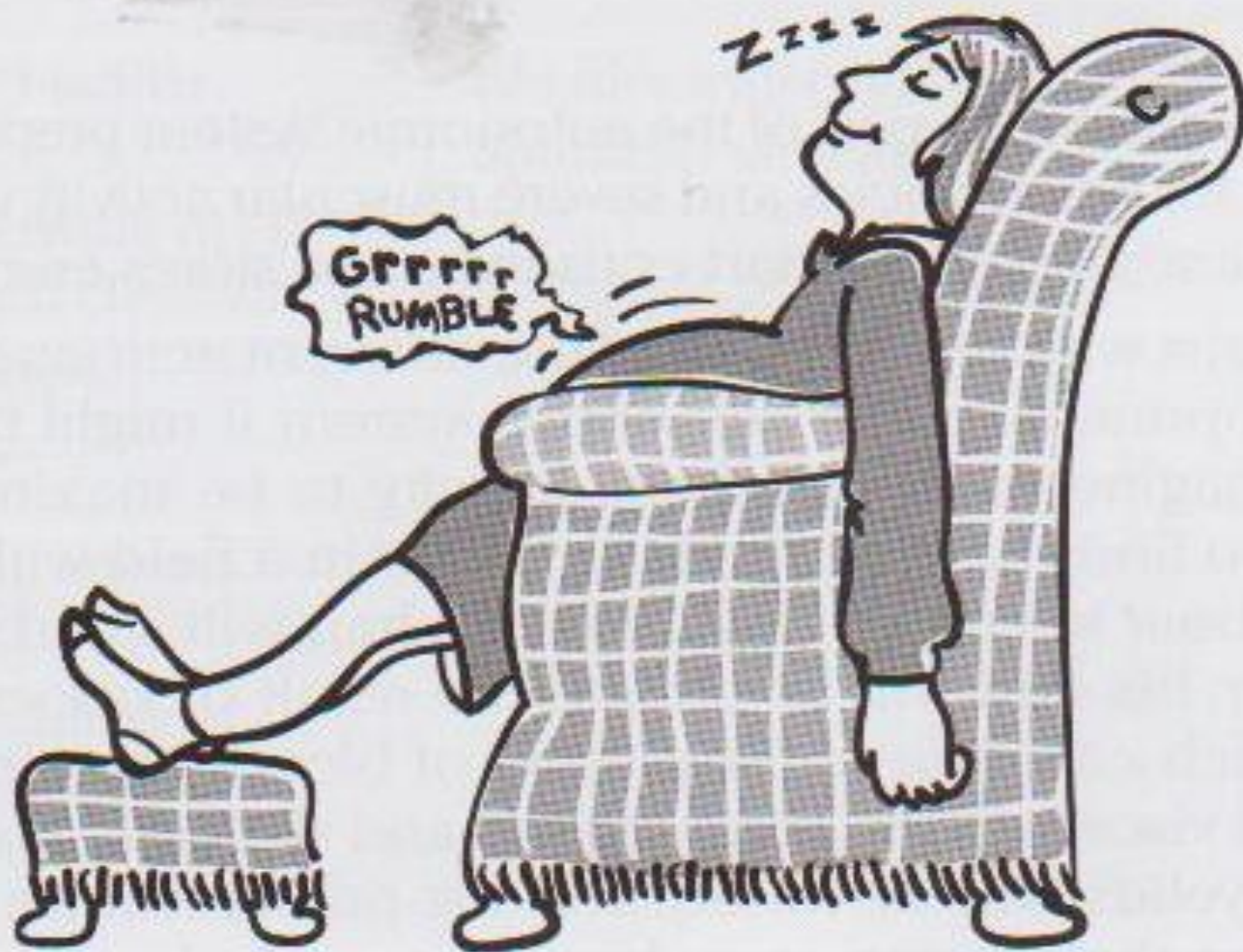


Figure 14-8 There is nothing like a good, large meal and a comfortable armchair to facilitate the activities of the parasympathetic part of the autonomic nervous system.

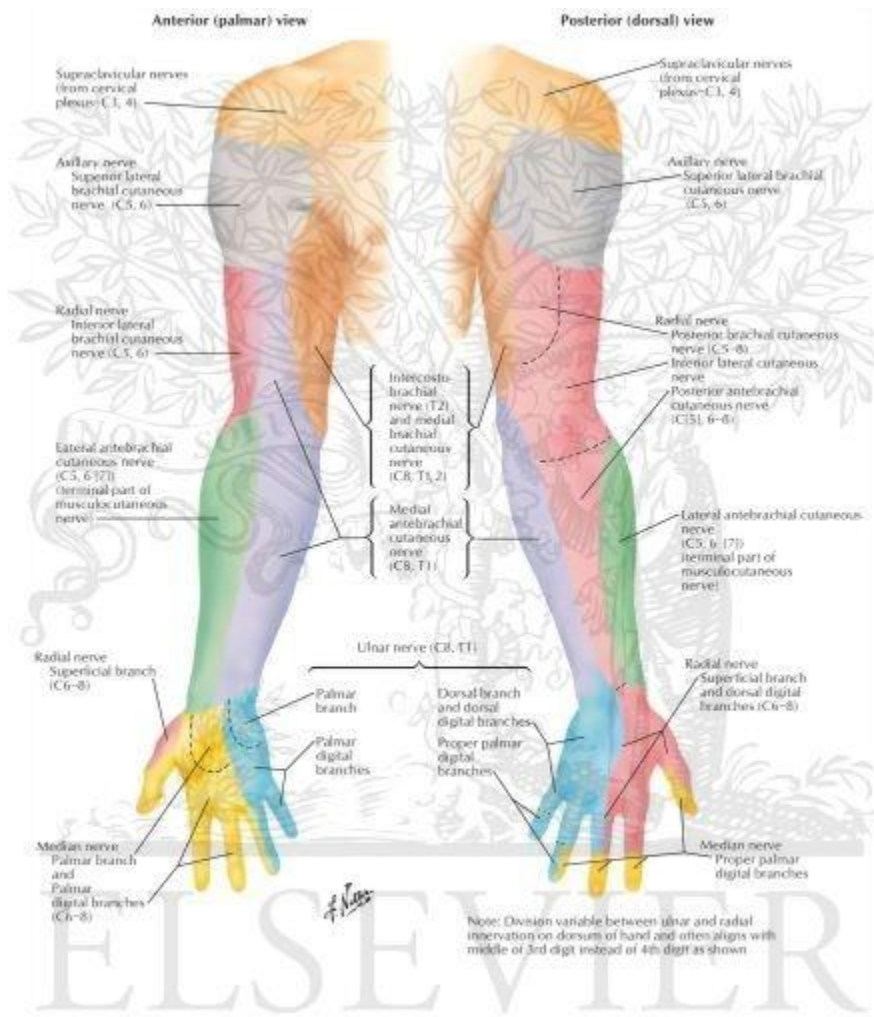


Table 3-4**Important Features Found in Cervical and Lumbosacral Root Syndromes**

| Root Injury | Dermatome Pain | Muscles Supplied | Movement Weakness | Reflex Involved |
|--------------------|--|---|--|------------------------|
| C5 | Lateral side of upper part of arm | Deltoid and biceps brachii | Shoulder abduction, elbow flexion | Biceps |
| C6 | Lateral side of forearm | Extensor carpi radialis longus and brevis | Wrist extensors | Brachioradialis |
| C7 | Middle finger | Triceps and flexor carpi radialis | Extension of elbow and flexion of wrist | Triceps |
| C8 | Medial side of forearm | Flexor digitorum superficialis and profundus | Finger flexion | None |
| L1 | Groin | Iliopsoas | Hip flexion | Cremaster |
| L2 | Anterior part of thigh | Iliopsoas, sartorius, hip adductors | Hip flexion, hip adduction | Cremaster |
| L3 | Medial side of knee | Iliopsoas, sartorius, quadriceps, hip adductors | Hip flexion, knee extension, hip adduction | Patellar |
| L4 | Medial side of calf | Tibialis anterior, quadriceps | Foot inversion, knee extension | Patellar |
| L5 | Lateral side of lower leg and dorsum of foot | Extensor hallucis longus, extensor digitorum longus | Toe extension, ankle dorsiflexion | None |
| S1 | Lateral edge of foot | Gastrocnemius, soleus | Ankle plantar flexion | Ankle jerk |
| S2 | Posterior part of thigh | Flexor digitorum longus, flexor hallucis longus | Ankle plantar flexion, toe flexion | None |

Causes of myelopathy:

- 1- congenital(chiari-malformatin,syringomyelia)
- 2- aquired (stenosis,traumatic,disc,)
- 3-neoplastic
- 4-vascular(hematoma,AVM)
- 5- infectious(TB,others)