What Are the Spinal Ligament Relationships?

Worksheet

Spinal ligaments form two functional groups: anterior/posterior longitudinal ligaments limiting flexion-extension of vertebral bodies, and posterior ligaments (ligamentum flavum, interspinous, supraspinous) limiting flexion between vertebral arches.

Questions

1. Which ligament resists hyperextension of the vertebral column?

A) Posterior longitudinal ligament
B) Anterior longitudinal ligament
C) Ligamentum flavum
D) Interspinous ligament

2. Which ligament connects adjacent vertebral laminae?

A) Ligamentum flavum
B) Supraspinous ligament
C) Anterior longitudinal ligament
D) Ligamentum nuchae

3. Why is posterolateral disc herniation more common than central herniation?

A) The ALL is weak laterally
B) The PLL is narrower and weaker laterally
C) The ligamentum flavum is absent laterally
D) There is no ligament support laterally

4. What is the ligamentum nuchae?

A) A cervical muscle
B) The cervical extension of the supraspinous ligament
C) A cranial nerve
D) A cervical vertebra

5. Explain which ligament resists hyperextension of the spine and where it is located.

6. Trace the ligaments encountered from skin to spinal cord during a posterior (midline) needle approach, such as a lumbar puncture.

7. Identify which ligament is most commonly implicated in disc herniation and why.

8. Define: What does the anterior longitudinal ligament (ALL) resist?

9. Define: What does the posterior longitudinal ligament (PLL) resist?

10. Define: What does the ligamentum flavum connect?

Answer Key

1. B) Anterior longitudinal ligament - The ALL runs along the front of the vertebral bodies and tightens during extension.

2. A) Ligamentum flavum - The ligamentum flavum spans between laminae and is highly elastic.

3. B) The PLL is narrower and weaker laterally - The PLL narrows laterally, offering less resistance to posterolateral herniation.

4. B) The cervical extension of the supraspinous ligament - The ligamentum nuchae is the supraspinous ligament's continuation in the neck.

5. The anterior longitudinal ligament (ALL) runs along the anterior surface of the vertebral bodies, from the skull base to the sacrum Because it is under tension when the spine extends backward, it resists hyperextension It also reinforces the anterior anulus fibrosus of the intervertebral discs

6. Skin and subcutaneous tissue Supraspinous ligament (connects tips of spinous processes) Interspinous ligament (connects the bodies of spinous processes) Ligamentum flavum (connects laminae) - a 'give' is felt as the needle passes through Epidural space, then dura mater into the subarachnoid space

7. The posterior longitudinal ligament (PLL) is narrower and weaker laterally than centrally This lateral weakness makes posterolateral disc herniation the most common direction Central herniations are resisted more effectively by the broader central PLL

8. Hyperextension of the spine; it runs along the front of the vertebral bodies.

9. Hyperflexion and posterior disc herniation; it runs inside the vertebral canal.

10. Adjacent vertebral laminae; it is elastic and resists flexion.