NeuroTrace Academy Study Guide

Category: Medical Terminology
Topic: Spine Terms
Style: Definition-based, exam-oriented, anatomy-focused

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1. Core Principles (Must Know)

Spine Anatomy

- **Vertebra = single bone**
- **Spine = entire column**
- **Procedures vs conditions are different**
- **Curvature direction and location matter**

Key Principle

- **Understanding anatomy and procedure vs condition prevents confusion**

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2. Basic Anatomy

Vertebra

- **Definition:** Any one of the 33 bones that make up the spine
- **Key point:** Single bone
- **Number:** 33 total vertebrae
- 🔑 **Key:** Single bone = vertebra

Spine

- **Definition:** The column of bones and cartilage running along the middle of the back that surrounds and protects the spinal cord and supports the head
- **Key point:** Entire column
- **Components:** All vertebrae + cartilage
- 🔑 **Key:** Entire column = spine

🔑 **Exam Trap:** Vertebra = single bone. Spine = entire column. These are different.

Lumbar Spine

- **Definition:** The lower part of the spine between the lowest pair of ribs and the pelvis, made up of five vertebrae
- **Location:** Lower back (ribs to pelvis)
- **Number:** Five vertebrae
- 🔑 **Key:** Lower back + five vertebrae = lumbar spine

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3. Spinal Curvatures

Scoliosis

- **Definition:** A condition in which the spine curves to one side and usually curves toward the opposite side in another section to compensate, producing a characteristic S shape
- **Direction:** Side-to-side curve
- **Shape:** S-shaped

- **Features:** Often has compensating curves
- 🔑 **Key:** Side-to-side + S-shape = scoliosis

Kyphosis

- **Definition:** Excessive curvature of the spine which usually affects the top part of the spine causing a hump
- **Direction:** Outward curve
- **Location:** Thoracic region (upper spine)
- **Appearance:** Hump
- 🔑 **Key:** Outward + thoracic + hump = kyphosis

Lordosis

- **Definition:** The inward curvature of the spine at the lower back which is normal to a certain degree and abnormal as a result of certain medical conditions such as being overweight or having muscle problems
- **Direction:** Inward curve
- **Location:** Lumbar region (lower back)
- **Normal vs Abnormal:** Normal in degree, abnormal when excessive
- 🔑 **Key:** Inward + lumbar + normal vs excessive = lordosis

🔑 **Exam Trap:** Direction (outward vs inward) AND location (thoracic vs lumbar) distinguish kyphosis from lordosis

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4. Spinal Conditions

Spondylolisthesis

- **Definition:** The slipping of a vertebra in the spine over the one below it
- **Mechanism:** Vertebra slipping forward
- **Can result from:** Spondylolysis (vertebral defect)
- 🔑 **Key:** Vertebra slipping = spondylolisthesis

Spondylolysis

- **Definition:** A disorder in which the lower part of the spine is weakened by an abnormally soft vertebra, often involving a defect or stress fracture in the pars interarticularis
- **Mechanism:** Vertebral defect/stress fracture
- **Location:** Pars interarticularis
- **Can progress to:** Spondylolisthesis
- 🔑 **Key:** Vertebral defect = spondylolysis

🔑 **Exam Trap:** Defect (spondylolysis) can progress to slipping (spondylolisthesis)

Spondylitis

- **Definition:** Inflammation of the joints between the bones of the spine
- **Suffix:** "-itis" = inflammation
- **Location:** Spinal joints
- 🔑 **Key:** "-itis" suffix = inflammation

Spina Bifida

- **Definition:** A birth defect in which a section of the baby's spine fails to develop completely, leaving the spinal cord exposed in that section

- **Types:**
  - **Spina bifida occulta:** Least dangerous form with no protrusion
  - **Myelomeningocele:** Most severe (cord + meninges protrusion)
- 🔑 **Key:** Birth defect + severity varies by type

Disk Prolapse

- **Definition:** A disorder in which one of the disks located between the vertebrae breaks down and the pulpy interior squeezes out, causing pressure on a nerve. Also called a slipped or ruptured disk
- **Mechanism:** Disk herniation with nucleus pulposus extrusion
- **Effect:** Nerve compression
- **Also called:** Herniated disk, slipped disk, ruptured disk
- 🔑 **Key:** Disk herniation + nerve compression = disk prolapse

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Sciatica

- **Definition:** Pain along the sciatic nerve which runs down the length of the leg to the foot, usually caused by pressure on the nerve due to disk prolapse, tumor, abscess or blood clot
- **Location:** Sciatic nerve distribution (leg)
- **Causes:** Disk prolapse, tumor, abscess, blood clot
- 🔑 **Key:** Sciatic nerve pain = sciatica

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5. Spinal Procedures

Lumbar Puncture

- **Definition:** A procedure in which a needle is inserted into the lower region of the spinal canal to take out a sample of spinal fluid or inject a drug
- **Also called:** Spinal tap
- **Type:** Diagnostic and therapeutic needle procedure
- **Purpose:**
  - Obtain CSF sample
  - Inject medication
- 🔑 **Key:** Needle procedure (not surgery) = lumbar puncture

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Spinal Tap

- **Definition:** Same as lumbar puncture
- 🔑 **Key:** Lumbar puncture = spinal tap (same procedure)

Laminectomy

- **Definition:** A surgical procedure that removes part of the vertebra to relieve pressure on the spinal cord or a nerve branching from the spinal cord
- **Type:** Surgical (bone removal)
- **Purpose:** Decompressive (relieve pressure)
- 🔑 **Key:** Bone removal + decompressive = laminectomy

Spinal Fusion

- **Definition:** The surgical joining of two or more adjacent vertebrae to help severe back pain and prevent damage to the spinal cord or nerve roots

- **Type:** Surgical (bone joining)
- **Purpose:** Stabilizing (prevent movement)
- 🔑 **Key:** Bone joining + stabilizing = spinal fusion

🔑 **Exam Trap:** Laminectomy = decompressive (removes bone). Spinal fusion = stabilizing (joins bone). Different surgical goals.

Microdiscectomy / Microdiskectomy

- **Definition:** Surgical removal of just the protruding part of a prolapsed disk
- **Type:** Minimally invasive surgery
- **Purpose:** Remove only herniated portion
- 🔑 **Key:** Partial removal + "micro" = microdiscectomy

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6. Vascular Terms

Vertebrobasilar Insufficiency

- **Definition:** Episodes of dizziness and weakness caused by insufficient blood flow to the brain
- **Location:** Vertebral/basilar arteries
- **Effect:** Brainstem/cerebellum ischemia
- **Symptoms:** Dizziness, weakness
- 🔑 **Key:** Vertebral/basilar arteries + dizziness = vertebrobasilar insufficiency

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7. High-Yield Exam Discrimination Table

Term	Type	Key Feature
Vertebra	Anatomy	Single bone
Spine	Anatomy	Entire column
Scoliosis	Condition	Side-to-side curve
Kyphosis	Condition	Outward thoracic
Lordosis	Condition	Inward lumbar
Spondylolisthesis	Condition	Vertebra slipping
Spondylolysis	Condition	Vertebral defect
Disk prolapse	Condition	Disk herniation
Laminectomy	Procedure	Bone removal (decompressive)
Spinal fusion	Procedure	Bone joining (stabilizing)
Lumbar puncture	Procedure	Needle (diagnostic/therapeutic)

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8. ABRET Exam Pearls

Critical Distinctions

1. **Vertebra vs Spine:** Single bone vs entire column

2. **Scoliosis vs Kyphosis vs Lordosis:** Side-to-side vs outward thoracic vs inward lumbar
3. **Spondylolysis vs Spondylolisthesis:** Defect vs slipping
4. **Laminectomy vs Spinal fusion:** Decompressive (removes) vs stabilizing (joins)
5. **Procedure vs Condition:** Surgery/needle vs disease/anomaly

Common Exam Traps

- Mixing vertebra (single) with spine (entire column)
- Confusing curvature directions (outward vs inward) and locations (thoracic vs lumbar)
- Mixing procedures (laminectomy, fusion) with conditions (spondylolisthesis, disk prolapse)
- Forgetting that spondylolysis can progress to spondylolisthesis

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9. Quick Reference Summary

Must-Know Anatomy

- **Vertebra:** Single bone (one of 33)
- **Spine:** Entire column
- **Lumbar spine:** Lower back, five vertebrae

Must-Know Curvatures

- **Scoliosis:** Side-to-side (S-shape)
- **Kyphosis:** Outward thoracic (hump)
- **Lordosis:** Inward lumbar (normal vs excessive)

Must-Know Conditions

- **Spondylolisthesis:** Vertebra slipping
- **Spondylolysis:** Vertebral defect
- **Disk prolapse:** Disk herniation
- **Sciatica:** Sciatic nerve pain

Must-Know Procedures

- **Laminectomy:** Bone removal (decompressive)
- **Spinal fusion:** Bone joining (stabilizing)
- **Lumbar puncture:** Needle procedure (CSF/drugs)

Memory Anchors

- Vertebra = single (think "one")
- Spine = entire (think "spine" = "all")
- Scoliosis = S-shape (think "S")
- Kyphosis = hump (think "hump" = outward)
- Lordosis = lower (think "L" = lumbar = inward)

Next Steps:

- Memorize anatomy (vertebra vs spine)
- Learn curvature directions and locations
- Understand procedure vs condition distinction
- Practice discrimination between similar terms