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AAP BRS podcast: Lumbar Spinal Stenosis and Bony Disorders of the Spine

Lumbar Spinal Stenosis

A congenital or acquired, chronic, degenerative condition of the lumbar spine characterized by a narrowing of the spinal canal that may result in pressure on the spinal sac or nerve roots; The most common cause of back surgery in age > 65

- **Presentation:** Low back + leg pain with associated weakness, paresthesia, and numbness; exacerbated by lumbar extension and relieved by lumbar flexion; often "calf pain" or "leg camps" improved by sitting
- **Imaging and Findings:** MRI Lumbar Spine without contrast (Contrast is typically only needed if suspicious of cancer or infection).
  - Most commonly found at **L4-5** > **L5-S1** > L3-4
- **Treatment:** Flexion biased physical therapy; Allows for core strengthening and stability training while avoiding extension-based exercises

Neurogenic Claudication vs Vascular Claudication:

SYMPTOM	NEUROGENIC	VASCULAR
NUMBNESS & PARESTHESIA PRESENT?	Yes	No
PAIN LOCATION	Full leg	Distal > Proximal, usually calves
PAIN DESCRIPTION	Dull, ache	Cramping, tightness
RELIEVING FACTORS	Bending Forward ("Shopping Cart" sign)	Standing/Rest
GOING UPHILL	Improves Pain (lumbar flexion)	Worsens Pain (increased muscle oxygen demand)
SIGNS OF P.A.D. (DYSTROPHIC SKIN, DIMINISHED PULSES, ETC.)	Absent	Present

Spondylosis, Spondylolysis, and Spondylolisthesis

Spondylosis: The degeneration of the vertebral column, similar to what is seen in osteoarthritis.
Spondylolysis: A vertebral defect or fracture at the pars interarticularis, which is considered weakest part of vertebra.

- Often considered "stress fracture of the spine" prior to complete fracture
- Most commonly found at **L5**

Spondylolisthesis: The translation of one vertebral body in relation to another; can be anterior (anterolisthesis) or posterior (retrolisthesis).

- Types of Spondylolistheses: Isthmic, dysplastic, degenerative, traumatic, pathological, and postsurgical.
- Most commonly at **L4-5**

	PRESENTATION	IMAGING	MANAGEMENT
SPONDYLOSIS	Most often asymptomatic, but can present as low back pain	Lumbar XR (typically an incidental finding)	Rest, ice, NSAIDs, flexion or neutral biased physical therapy if not resolving
SPONDYLOLYSIS	Repetitive hyperextension exercises (gymnasts, butterfly swimming, volleyball, weightlifting); Localized pain w/o radicular or radiating pain	Lumbar Spine XR, including oblique view (Scotty Dog) vs MRI	Rest, ice, NSAIDs, flexion biased physical therapy
SPONDYLOLISTHESIS	Similar presentation to spondylolysis; when caused by spondylolysis, it is termed "isthmic spondylolisthesis"	Lumbar Spine XR (flexion + extension vs Lateral XR and supine sagittal MRI to check for dynamic motion). MRI of lumbar spine to evaluate for soft tissue damage	Dependent on grade

Meyerding Scale of Spondylolisthesis:

Grade	1	2	3 Asymptomatic	3 Symptomatic	4	5 (Spondyloptosis)
Degree of Slippage	0-25%	26-50%	51-75%	51-75%	75-100%	>100%
Management	Rest, flexion biased PT	Rest, flexion biased PT Often restricted from contact sports	Rest, flexion biased PT Often restricted from contact sports	Surgical Spine consult and surgical fixation.	Surgical Spine consult and surgical fixation.	Surgical Spine consult and surgical fixation.

Normal **Grade 1** **Grade 2** **Grade 3** **Grade 4**

Helpful Resources:

1) https://www-nejm-org.proxy.mul.missouri.edu/doi/full/10.1056/NEJMcp0708097
2) https://now.aapmr.org/lumbar-spondylolisthesis/
3) https://now.aapmr.org/lumbar-stenosis/