Spinal Stenosis

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Cervical Spinal Stenosis

Definition

- Central canal diameter <13 mm (normal is 17 mm)

Causes

- Congenital
- Traumatic arthritis
- Degenerative arthritis

Evaluation

History

- Often asymptomatic.
- Advanced stenosis may cause cervical myelopathy, ask about clumsiness with buttons and other hand dexterity tasks.
- May also cause radiculopathy.

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Physical Exam

- Neurologic exam, with special attention to myelopathy
- Check for Hoffman's sign
- Check all reflexes
- Observe for steady gait

Imaging

- AP, lateral, flexion, extension plain radiographs of the cervical spine may show canal narrowing.
  - Measure Torg-Pavlov ratio, which is the ratio of the width of the canal to the width of the vertebral body (<0.8 is abnormal).
- MRI.

Treatment

- If asymptomatic, may observe.
- If myelopathy, perform decompression +/− fusion.
- If radiculopathy, consider injection vs. decompression +/− fusion.
- Athletes – may not participate in sports if history of neurologic symptoms, even if transient
  - Interpretation of Torg ratio is controversial.

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Lumbar Spinal Stenosis

Types

- Central stenosis <100 mm^2 on CT scan
- Lateral recess stenosis, narrowing lateral to the dura, and medial to the pedicle
  - Usually compresses the traversing root, which is the lower nerve root, e.g., L5 at the L4–L5 level.
- Foraminal stenosis
  - Usually compresses the exiting root, which is upper root in the lumbar spine, e.g., L4 at the L4–L5 level.

Causes

- All types may be caused by bulging or herniated discs, depending on where the disc presses on the neurologic structures.
- Central stenosis may be caused by ligamentum flavum hypertrophy or degenerative spondylolisthesis.
- Lateral recess and foraminal stenosis may be caused by degenerative spondylolisthesis or arthritic facets, which can hypertrophy or form synovial cysts.

Evaluation

History

- Patients complain of "pressure" and pain in their buttocks and lower extremities.
- Neurogenic claudication – pain and weakness in the lower extremities that is worst in lumbar extension and relieved by lumbar flexion, which opens the central canal.
- May have bladder dysfunction.

Physical Examination

- Neurologic exam.
- Phalen test – extend back for 1 min, then flex forward. Exacerbation and relief of symptoms is a positive test.
- Kemp sign – radicular pain worsened by extension.

Imaging

- AP, lateral, flexion, extension plain radiographs may show degenerative disease or spondylolisthesis.
  - May see instability in flexion/extension
- MRI, though may note stenosis in asymptomatic patients.

Treatment

- Anti-inflammatories, physical therapy, and cortisone injections may improve symptoms.
- Decompression alone should be performed for persistent symptoms if conservative therapy fails or for neurologic deficits.
- Decompression and fusion should be performed if there is evidence of instability, such as in some cases of degenerative dynamic spondylolisthesis.