Lumbar Surgery for Spinal Stenosis and Spondylolisthesis

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What is Spondylosis?

- degenerative disease of the spine
Lumbar Spondylosis

• Lumbar spondylosis can cause symptoms of neurogenic claudication or lumbar radiculopathy in a number of ways:
  o Lumbar stenosis
  o Foraminal stenosis
  o Facet arthropathy with root compression from synovial cyst or instability
Spinal stenosis and lateral recess stenosis

Normal Spinal Canal

Moderate Stenosis

Severe Stenosis
Lumbar Stenosis

- Degenerative changes in the lumbar spine cause narrowing of the spine canal due to:
  - Thickening of the ligamentum flavum
  - Facet joint hypertrophy
  - Sagging of the intervertebral disc
Neurogenic Claudication from Spinal Stenosis

- Leg pain, numbness, and/or weakness that is precipitated by walking or lumbar extension, and relieved by sitting or lumbar flexion.
- Patients may assume a “stooped” posture (e.g., lean on a shopping cart) to relieve their symptoms.
- Patients frequently identify a fixed distance that they can walk before needing to stop because of these symptoms (e.g. 1 or 2 blocks).
- Leg sensory symptoms are usually bilateral though they may be asymmetric
Lumbar Stenosis: Signs and Symptoms (cont.)

- Neurologic deficit such as footdrop or loss of bowel and bladder function are rare, even when the MRI shows severe stenosis. This is because compression of the nerves occurs slowly and gradually. This is different than sudden compression that may occur with a disc herniation in which case neurologic deficits are more commonly seen.
Radiculopathy from Foraminal Stenosis

- Leg pain that follows a pattern of the discrete root that is compressed
- May be aggravated by walking or movement
- Most often unilateral
Synovial Cyst with foraminal stenosis
These Diseases typically have predominance of leg pain over any complaint of back pain

• neurogenic claudication or lumbar radiculopathy
Goal of Surgical Treatment: decompress the nerves

- Decompressive laminectomy: removal of the lamina and underlying ligamentum flavum to create more space for the nerves.
Open Laminectomy vs. MIS

VS.

MIS

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Case Example: 68 year old man with neurogenic claudication

Preop: L2/3 and L3/4 severe stenosis

Postop L2-4 Laminectomy with good symptom relief
Spondylolollihesis

- Slippage of a vertebra with respect to next level, often resulting from degeneration of facet joints and loss of disc space height
Why a fusion?

- In the course of decompressing the spinal canal, a portion of the facet joints are resected; this can lead to instability, especially when spondylolisthesis is already present.

Why Instrumentation?

- The rate of successful arthrodesis (fusion) is higher when supplemented with internal fixation.

Nonoperative Therapy

Surgical versus Nonsurgical Treatment for Lumbar Degenerative Spondylolisthesis

Surgical versus Nonsurgical Treatment for Lumbar Degenerative Spondylolisthesis

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- Prospective trial of randomized and observational cohort, over 600 patients
- Laminectomy with or without fusion versus best medical therapy
- “patients with degenerative spondylolisthesis and spinal stenosis treated surgically showed substantially greater improvement in pain and function during a period of 2 years than patients treated nonsurgically”
Drawbacks to Fusion with Instrumentation

- Fusion introduces stiffness into back, limiting range of motion
- Some patients may develop accelerated degenerative changes at the spinal level next to the fusion (AKA “adjacent segment degeneration”)
57 yom severe low back and bilateral leg pain, exacerbated by walking
L4/5 Fusion
Thank You