Conflicts of interest

- No relevant conflicts of interest to report
- Anatomy pictures are taken from Surgical Exposures in Orthopaedics: The Anatomic Approach by Stanley Hoppenfeld.

Approaches to Lumbar Spine

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Lumbar spine surgery

- Decompression
- Fusion
- Deformity correction
- Stabilization
- Excision

Lumbar spine approaches

- Posterior
  - Midline
  - Wiltze
  - Percutaneous
- Lateral
- Anterior

Posterior Lumbar Approach

- Midline approach
  - Traditional approach
  - Anatomy clearly visualized
  - Can do most of lumbar spine surgery through this approach

Posterior Lumbar Approach

- Hemilaminotomy
- Laminectomy
- MIDLIF
- Posterolateral fusion
- Wiltse approach
- Percutaneous approaches for TLIF and pedicle screw placement
Anatomy

**Hemilaminotomy**
- Linear incision in midline on lumbosacral fascia.
- Multifidus dissected off spinous process and lamina, half way over the facet joint.

**Posterior Lumbar Approach**

- **Laminectomy**
  - Same exposure except bilateral
  - Spinous process removed so during closure the multifidus muscles are re-attached to each other.

- **MIDLIF: MIDline Lumbar Interbody Fusion**
  - Same approach as laminectomy except extended all the way around the facet joints.
  - The wider the exposure becomes, the more the incision needs to be extended cranial and caudal.

- **Posterolateral fusion**
  - Expose to the tips of transverse processes
  - Denervates multifidus
  - Have to detach paraspinals off spinous processes at least one level above and below the operative level
  - Pressure from the retractor may damage the muscles (direct pressure and ischemia)
  - Can be associated with significant bleeding
Posterior Lumbar Approach

- Wiltze approach
  - Muscle-sparing paramedian approach
  - Lumbar fascia is split and muscle is divided in-line with fibers.
  - Spares muscular attachment at the spinous and transverse processes.
  - Minimal bleeding or hematoma formation
  - Can be used for discectomy, TLIF, pedicle screws
  - VERY LIMITED VISUALIZATION compared to traditional posterior approach

Posterior Lumbar Approach

Direct Lateral Approach

- Most minimally invasive
  - No muscle cutting involved
  - Blunt dissection through abdominal obliques, retroperitoneal fat, and through psoas muscle.
  - All muscles are split in-line with fibers
  - Bleeding is minimal
  - Large implant can be inserted into the disc space providing immediate stability
  - Have to utilize fluoroscopy and neuromonitoring
Direct Lateral Approach

- Limitations
  - Cannot approach L5-S1 and sometimes L4-5
  - Very limited visualization
  - If abdominal fascia is not repaired, may get hernia
  - Psoas weakness is common but transient
  - May develop contralateral greater trochanteric bursitis from positioning.
  - Potential for injury to great vessels and femoral nerve!

Anterior Approach

- Rectus fascia is cut
- Blunt dissection after that
- Can be transperitoneal or retroperitoneal (more common)
- Pain in rectus abdominis may limit initial postoperative mobilization
- Potential for injury to great vessels and sympathetic chain (retrograde ejaculation)
QUESTIONS?