Oh My Aching Back!

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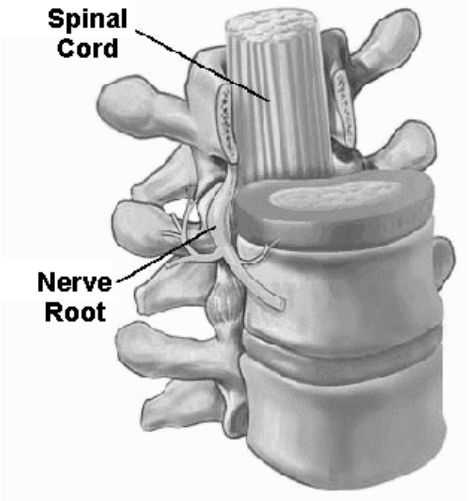
Epidemiology

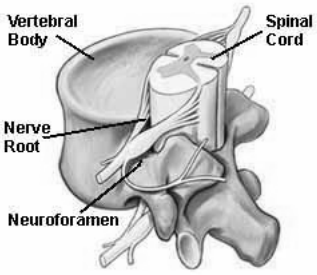
- **Second most common cause for office visit**
- **Greatest risk factor for a future episode of LBP is a history of prior history of medically treated or untreated LBP, recurs in 70-90%**
- **Annual incidence in general population is 5%**
- **Lifetime prevalence 60-90%**
- **Cost to society is 30-50 billion/year**

Epidemiology

- 90% of episodes of LBP resolves in 3 months.
- 75% of patients with radicular pain are pain free in 6 months.
- Pain becomes chronic in 40%
- Injured workers
  - Out of work 6 months, 50% chance RTW
  - Out of work 1 year, 25% chance RTW
  - Out of work 2 year, <5% chance RTW

Anatomy





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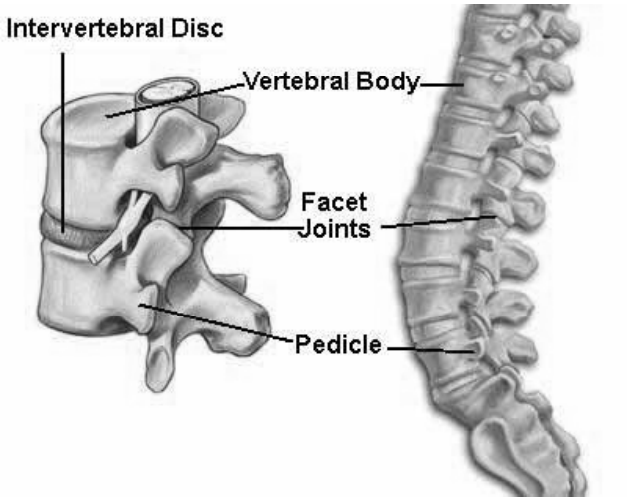
Anatomy



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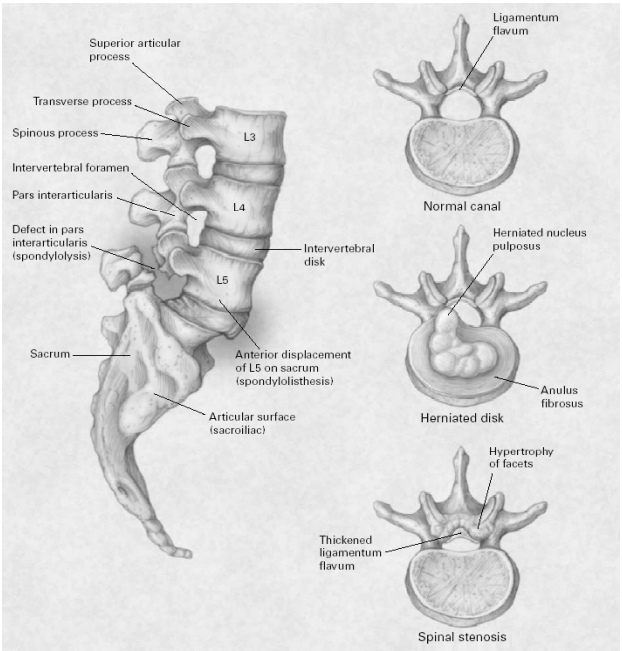

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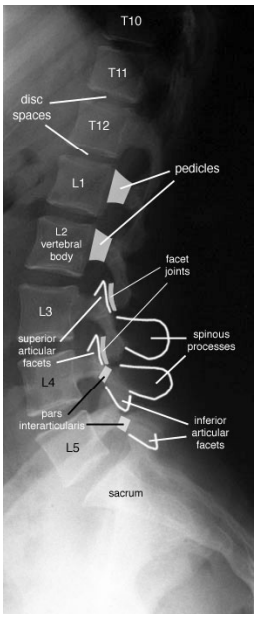
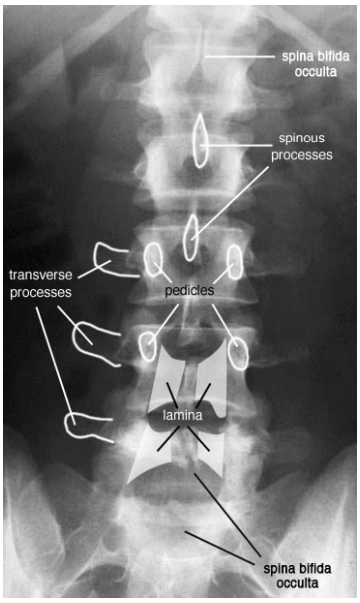
Case 1





History

- **Quality: sharp, dull, shooting, burning, etc**
- **Location: Axial vs. radicular vs. referred**
- **Onset/Duration: Gradual vs. Acute**
- **Severity: Pain scales**
- **Frequency: Constant vs. intermittent**
- **Exacerbating and Alleviating Factors**
- **Time of Day: If worse at night, consider malignancy**

Differential Diagnosis: Predominately back pain

- Sprain/strain
- Discogenic: DDD, annular tear
- OA/facet arthropathy/spondylosis
- Compression fracture
- Spondylolisthesis/Spondylolysis
- Sacroiliac joint

Differential Diagnosis: Predominately back pain

- Inflammatory spondylitis
- Tumor
- Visceral pathology

Differential Diagnosis: Predominately leg pain

- Disc Herniation
- Central or foraminal stenosis
- Sciatic Neuropathy
- Hip pathology
- Tumor

History Red Flags

- History of trauma, minor if elderly
- Bowel or bladder dysfunction
- Progressive neurological deficits
- Constitutional symptoms: Fever/Chills, Wt. loss, lymphadenopathy
- Progressive low back pain without history of trauma lasting greater than 3-4 months

Evaluation

- Physical exam
  - Gait
  - Palpation
  - ROM
  - Strength
  - Sensation
  - Reflexes
  - Provocative maneuvers

Evaluation

- Imaging
  - Xray
  - CT scan
  - Myelogram
  - MRI
  - Bone Scan
- Electrodiagnostics

Treatment

- Medications
- Physical Therapy
- Chiropractic
- Acupuncture
- Massage
- Interventional spinal procedures
- Surgery

Case 1

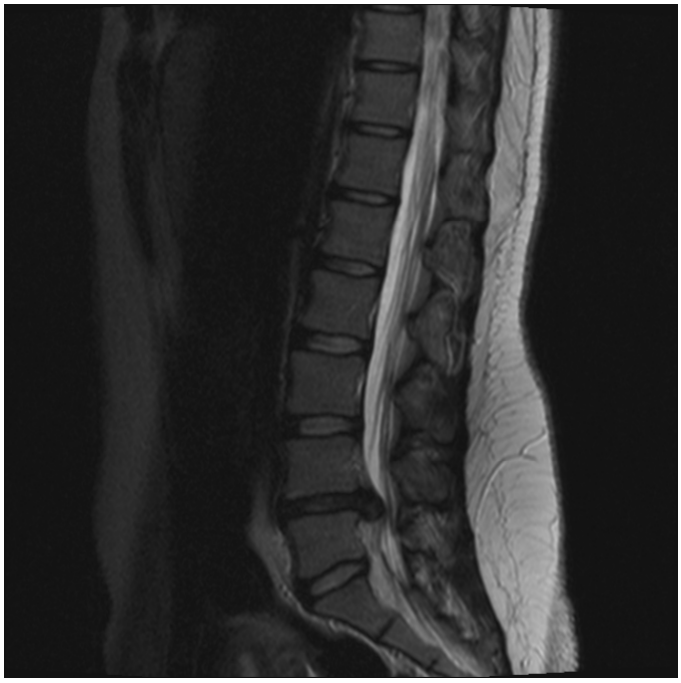
- 43yo woman who presents with worsening low back pain over the past 3 days after doing lawn work and landscaping.
- She denies any lower limb symptoms.
- On exam, she appear uncomfortable and has painful limited ROM.
- Xray is normal with the exception of early degenerative changes

Case 1
Dx: Lumbar Strain

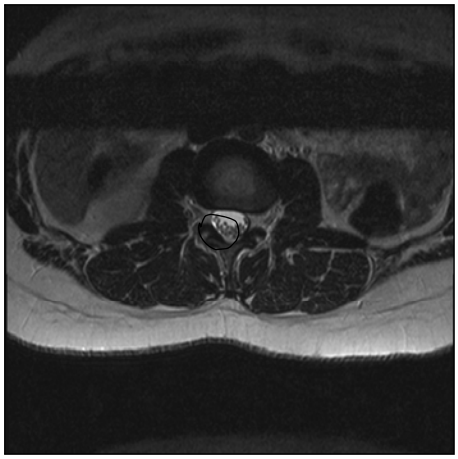
- Treatment
  - Relative rest
  - NSAIDS
  - Physical therapy
    - Modalities: Ice, electrical stimulation
    - Exercises: improve flexibility and strength
    - Instruction on home exercise program

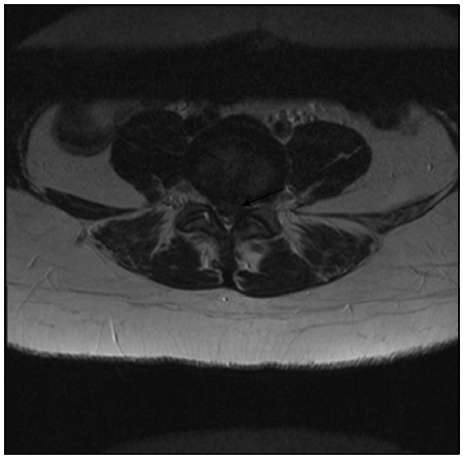
Case 2

- 32yo woman complains of sudden onset of low back pain and leg pain, left>right after ballroom dancing the evening before.
- Leg pain and paresthesias refer to the posterior thigh, posterolateral calf, dorsum of the foot, greatest in great toe.
- Reflexes intact. ROM and strength testing limited by pain but 4/5 strength with left great toe extension.



Case 2





Case 2
Dx: Lumbar disc disruption

- >95% occur at L4-5 and L5-S1
- 75% of discs substantially improve with conservative treatment in 6 months.
- Sitting, bending, and twisting exacerbate pain.
- If no significant radicular symptoms, annular tear.
- Far lateral herniations may have leg pain without much LBP

Case 2
Dx: Lumbar disc disruption

- Exam:
  - Inflexibility due pain and muscle tightness
  - Pain with flexion>extension
  - Neurological signs and symptoms in distribution of nerve impingement
  - Dural tension signs

Case 2
Dx: Lumbar disc disruption

- **Diagnostics**
  - **Imaging:**
    - **MRI – provides the best soft tissue detail**
    - **CT myelogram – may be necessary if MRI contraindicated or history of prior fusion**

Case 2
Dx: Lumbar disc disruption

- **Diagnostics**
  - **Electrodiagnostics:**
    - **Helps localize nerve involvement and degree of injury**
    - **May not see changes in paraspinals for 10-14 days and limb muscles for 3-4 weeks**
    - **Can assist indetermining chronic vs. acute**
    - **Identify contributing sources of pathology**

Case 2
Lumbar disc disruption

- **Anular fissure: Focal disruption of anular fibers in concentric, radial or transverse distribution**
- **Disc bulge: *Circumferential*, diffuse, symmetric extension of anulus beyond the adjacent vertebral end plates by 3 or more mm, usually due to weakened or lax anular fibers**
- **Disc protrusion: Focal, asymmetric extension of disc segment beyond margin of vertebral end plates into the spinal canal with most of anular fibers intact**

Case 2
Lumbar disc disruption

- **Disc extrusion: Focal, asymmetric extension of disc segment and / or nucleus pulposis through the anular containment into the epidural space**
- **Disc sequestration: Extruded disc segment that is detached from original with migration into the canal**
- **Disc degeneration: Irreversible structural and histiological changes in nucleus seen on MRI T2WI images (commonly associated with bulge)**

Case 2
Dx: Lumbar disc disruption

- **Boden study 1990 JBJS:**
  - **20 % of asymptomatic population less than 60 years with "HNP"**
  - **36 % of asymptomatic population of 60 years**
- **Jensen study 1995 NEJM:**
  - **52 % of asymptomatic patients with disc bulge at one or more levels**
  - **27 % of asymptomatic patients with disc protrusion**
  - **1 % of asymptomatic patients with disc extrusion**

Case 2
Dx: Lumbar disc disruption

- **Treatment**
  - **Medications: NSAIDS, oral steroids, muscle relaxers, membrane stabilizers, narcotic analgesics**
  - **Physical Therapy: modalities, traction, exercises for flexibility and strengthening**
  - **Epidural steroid injections**
  - **Surgery: 5-10% of patients with persistent sciatica require surgery. Emergent in cauda equina**

Case 3

- 59yo gentleman with complaints of chronic low back pain which has slowly worsened over the past 1 year.
  - referral to the buttocks and posterior thighs, right >left
  - denies numbness or tingling
  - Worse with standing and walking
  - Works as an electrician and has difficulty with overhead activities due to back pain

Case 3

- Exam:
  - Tenderness in the lower lumbar paraspinals
  - Pain with lumbar extension > flexion
  - Strength, sensation, and reflexes intact
  - Hip ROM minimally limited without pain

Case 3
Dx: Facet joint arthropathy

- **Most often due to osteoarthritis**
- **May be related to segmental instability or acute injury**
- **Imaging not diagnostic for a painful or nonpainful joint**
- **Flouroscopically guided injection can be helpful for diagnostic and therapeutic purposes**

Case 3
Dx: Facet joint arthropathy

- Treatment
  - Medications: NSAIDs, acetaminophen, tramadol, narcotic analgesics
  - Physical therapy, activity modification, weight management
  - Flouroscopically guided injections, if beneficial may be candidate for radiofrequency ablation
  - Surgery not indication unless associated with nerve impingement or instability

Case 4

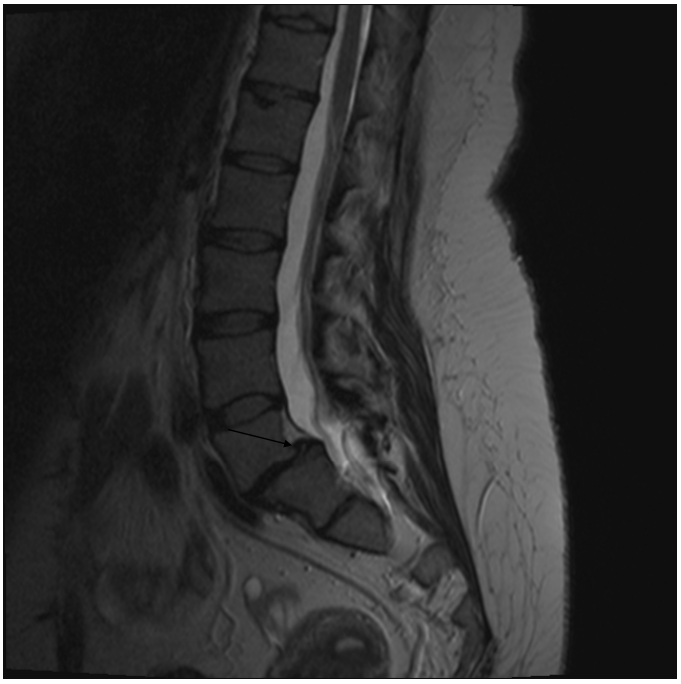
- 68yo gentleman with a 7 year history of DM and complaints of chronic low back pain with increasing bilateral leg pain over the past 2 years.
- Minimal pain with sitting.
- Standing and walking limited by leg pain
- Leg pain alleviated by bending or sitting
- Chronic numbness in his feet with intermittent numbness and tingling in his calves.

Case 4
Dx: Lumbar Stenosis

- History is the key to diagnosis
- Patients often describe their leg symptoms as feeling aching and tired
- Neurological exam is often non-localizing
- Treatment:
  - Medication: NSAIDs, acetaminophen, membrane stabilizers, tramadol, narcotic analgesics
  - Physical Therapy
  - Interventional Spinal Procedures and Surgery as symptoms become less tolerable or with progressive neurological deficits.

Case 5

- **36yo woman with history of motor vehicle collision 5 years prior and low back pain with referral to bilateral lower limbs, left > right**
- **Back pain worse with standing and transitioning from sitting to standing**
- **Leg pain worse with standing or walking for short distances.**
- **She is frustrated because it is affecting her quality of life due to activity restrictions**



Case 5
Dx: Spondylolisthesis

- **Congenital: often assoc with spina bifida or kyphosis**
- **Isthmic: due to lesion in pars interarticularis**
- **Degenerative: due to degeneration of the supporting structures and longstanding instability**
- **Traumatic**

Dx: Spondylolisthesis

- Chronic, dull, aching low back pain
- Exacerbated by rotation and extension
- Underlying history of chronic repetitive motion.
- Imaging: Include flexion/extension xrays to evaluate for instability
- Bone Scan: Helpful if evaluating for an acute injury (ex. Pars defect)

Dx: Spondylolisthesis

- Management options
  - Bracing
  - Physical Therapy
  - Epidural injections if associated radicular component
  - Surgery

Case 6

- 54yo woman with a history of a lumbar fusion from L4-S1 and a recent fall on the ice landing on her right buttock and hip.
- Complains of persistent right buttock pain with referral to the right posterior thigh and groin
- Sensation of numbness in the posterior thigh.
- Strength and reflexes are intact
- Xrays reveal no acute changes

Case 6
Dx: Sacroiliac joint dysfunction

- Due to movement abnormality because of increase or decrease of joint mobility.
- No validated method for diagnosis
- Combination of more than one test more helpful
- Diagnostic and therapeutic steroid injection with flouroscopy.

Sacroiliac Joint Dysfunction

- **Treatment**
  - **Physical therapy including manual techniques**
  - **SI belt**
  - **Injections**

Scoliosis