



Common Spinal Disorders

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Objectives

- Understand basic spine pathology
- Understand presenting symptoms
- Understand common treatment options

Back Pain

- The fifth most common reason to seek medical care in the outpatient setting
- Eighty-four percent of adults have back pain at some point in their lives
 - 23% one month prevalence
- Risk factors for back pain
 - Smoking, obesity, sedentary lifestyle, age, physically strenuous or sedentary work, low education, Workers' compensation, job dissatisfaction, anxiety, depression
- >85% of back pain is non-specific
 - Absence of reliably identifiable cause

<https://www.aafp.org>
 Update.com

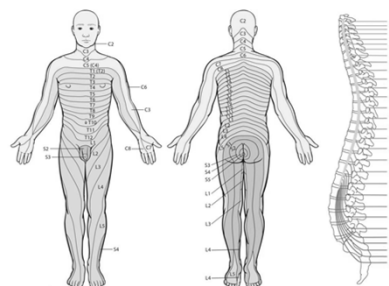
Evaluation of back pain

- Associated factors
 - What makes it better or worse
 - Mechanical vs biological pain
- Location of pain
- Radiating pain
 - Lumbar radiculopathy
- Numbness
- Weakness
- Bowel/bladder symptoms

Physical Exam

- Inspection of back and posture
 - Kyphosis, scoliosis
- Palpation/percussion
- Neurological exam
 - Test major muscle groups, sensory exam, gait, reflexes
- Straight leg raise
- Nonorganic signs
 - Overreaction to exam, exam improves when distracted, breakaway weakness, non-dermatomal sx

Dermatomes



Myotomes

Patient Name: _____ Date/Time of Exam: _____
 Examiner Name: _____

ASIA STANDARD NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY (ISCS)

MOTOR (KEY MUSCLES)

C5	Elbow flexion
C6	Wrist extension
C7	Elbow extension
C8	Handgrip
T1	Shoulder extension
T2	Shoulder abduction
T3	Shoulder adduction
T4	Forearm pronation
T5	Forearm supination
T6	Wrist flexion
T7	Wrist extension
T8	Ulnar deviation
T9	Radial deviation
T10	Hip flexion
T11	Abduction
T12	Adduction
L1	Hip flexion
L2	Knee extension
L3	Knee flexion
L4	Ankle dorsiflexion
L5	Ankle plantar flexion

SENSORY (KEY SENSORY POINTS)

C5	Anterior	Posterior
C6	Anterior	Posterior
C7	Anterior	Posterior
C8	Anterior	Posterior
T1	Anterior	Posterior
T2	Anterior	Posterior
T3	Anterior	Posterior
T4	Anterior	Posterior
T5	Anterior	Posterior
T6	Anterior	Posterior
T7	Anterior	Posterior
T8	Anterior	Posterior
T9	Anterior	Posterior
T10	Anterior	Posterior
T11	Anterior	Posterior
T12	Anterior	Posterior
L1	Anterior	Posterior
L2	Anterior	Posterior
L3	Anterior	Posterior
L4	Anterior	Posterior
L5	Anterior	Posterior
S1	Anterior	Posterior
S2	Anterior	Posterior
S3	Anterior	Posterior
S4	Anterior	Posterior
S5	Anterior	Posterior

Comments: _____

INJURY LEVEL: _____

NEUROLOGICAL LEVEL: _____

INCOMPLETE OR INCOMPLETE: _____

ASIA IMPAIRMENT SCALE: _____

SIZE OF PARALYSED AREA: _____

PRESENCE OF: _____

KEY SENSORY POINTS: _____

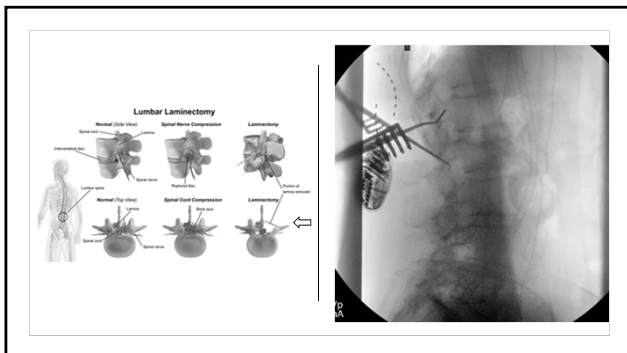
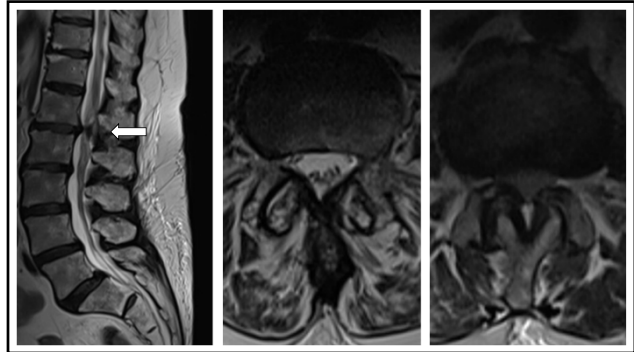
Red Flags

- Progressive neurologic deficits
 - Weakness
 - Bowel/bladder dysfunction
- Fever
- Sudden onset pain with spine tenderness
- History of trauma
- Serious underlying condition
 - Infection
 - Malignancy
- Osteoporosis or chronic steroid use
 - May be at increased risk of fractures

Lumbar Stenosis

Lumbar stenosis is a condition that involves narrowing of the central canal

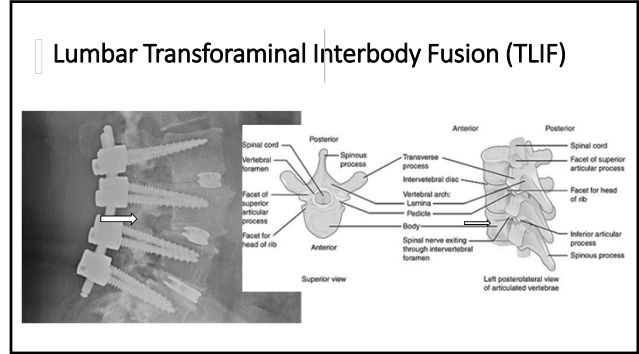
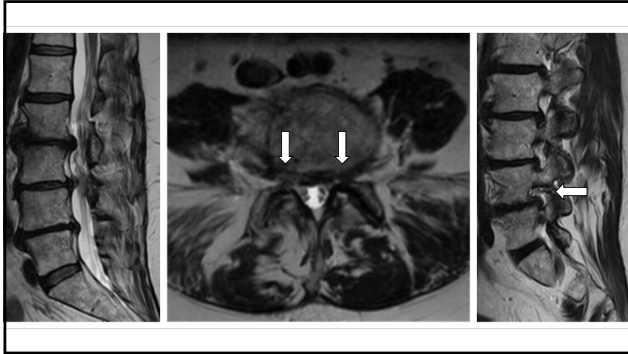
- symptoms can include radicular leg pain, numbness, bowel/bladder incontinence
- Neurogenic Claudication is a classic sign of lumbar stenosis



Foraminal Stenosis

Foraminal stenosis is a condition that involves narrowing of the neuroforamen (i.e. where the nerve exits)

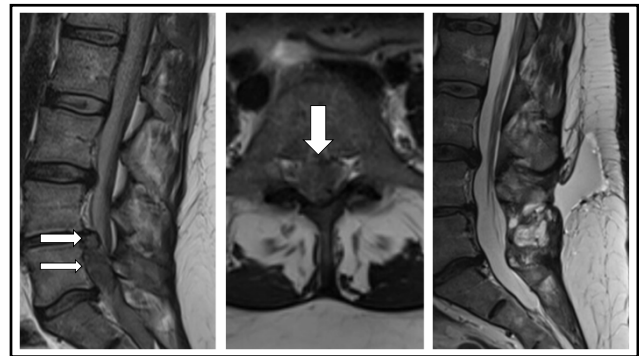
- Symptoms can include radicular leg pain, numbness,
- Neurogenic Claudication is NOT a classic sign of lumbar stenosis
- Does Not cause bowel/bladder issues



Lumbar Disc Herniation

Lumbar Disc Herniation can cause impingement of a lumbar nerve

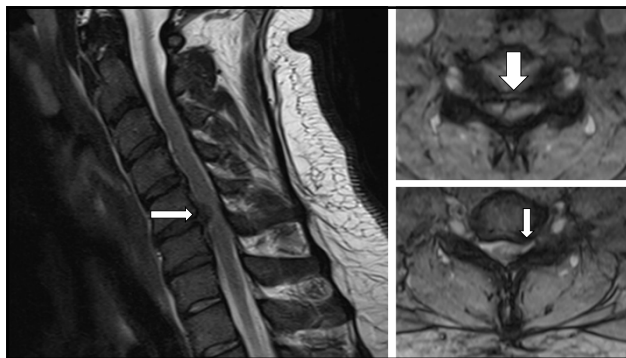
- Symptoms can include radicular leg pain, numbness, weakness
- Severe disc herniations can cause cauda equina syndrome



Cervical Stenosis

Cervical Stenosis can cause impingement on exiting nerves (radiculopathy) or spinal cord (myelopathy)

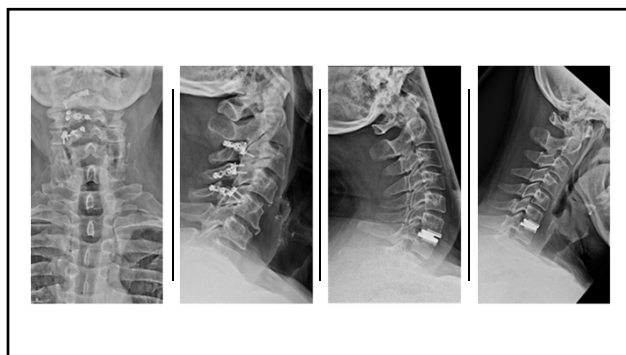
- Symptoms of cervical radiculopathy can be radiating pain, numbness, or weakness.
- Loss of reflexes
- Cervical myelopathy can cause coordination problems, balance problems, numbness, weakness, bowel/bladder issues
- Hyperreflexia, Hoffman's Sign



Cervical Stenosis

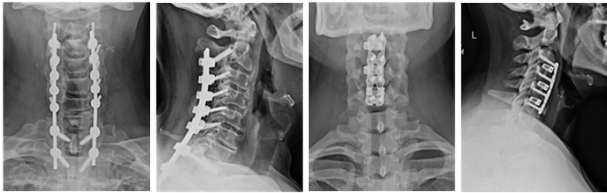
Treatment options include

- Decompression and Fusion
 - Anterior (ACDF) or Posterior
- Laminoplasty (posterior)
- Cervical Disc Arthroplasty (artificial disc)



•Cervical Decompression and Fusion

- Anterior vs. Posterior



Spinal Deformity

Problem with spinal alignment

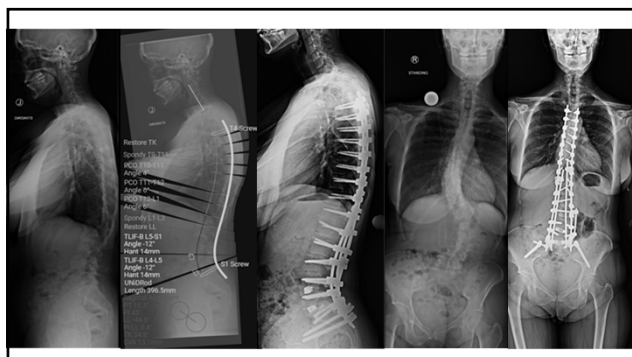
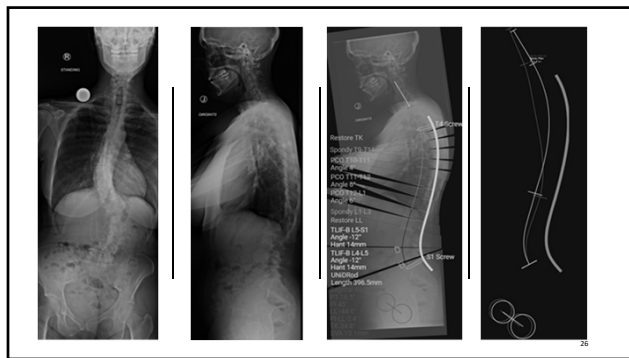
- Can cause pain from difficulty standing upright
- Often times combined with stenosis, foraminal stenosis, disc herniations, etc...

Case 1

- 52 yo Female who presents with a several year of progressive axial low back pain along with maintaining a standing posture.
- Conservative management: Physical therapy, multiple epidural steroid injections, radiofrequency ablation

Case 1

- Physical Exam:
 - Alert and oriented x 3
 - Cranial nerves 2-12 intact
 - 5/5 strength in bilateral upper and lower extremities
 - Sensation intact
 - Posture: left leaning posture

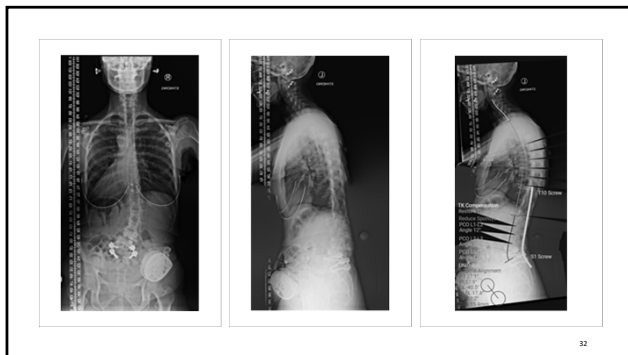
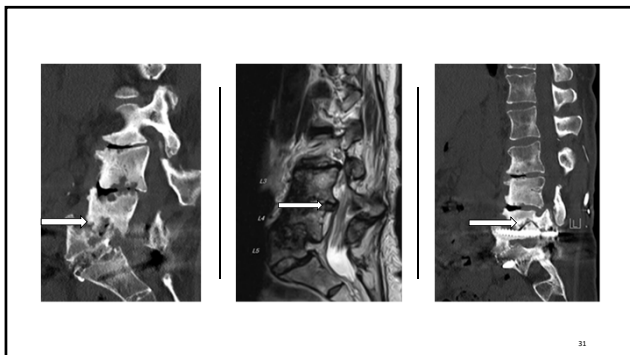


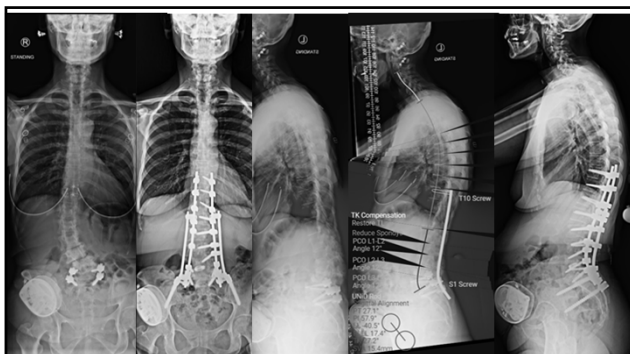
Case 2

- 62 year old female presents with progressive back and leg pain, lower extremity numbness and weakness.
- Several recent falls, uses a wheelchair for long distances
- Conservative management: Physical therapy
- Past medical/surgical history: L5/S1 TLIF in 2012, baclofen pump placement

Case 2

- Physical Exam:
 - Alert and oriented x 3
 - Cranial nerves 2-12 intact
 - 5/5 strength in bilateral upper extremities
 - 4/5 in bilateral lowers, 3/5 in right dorsiflexion/extensor hallucis longus
 - Sensation diminished in bilateral legs





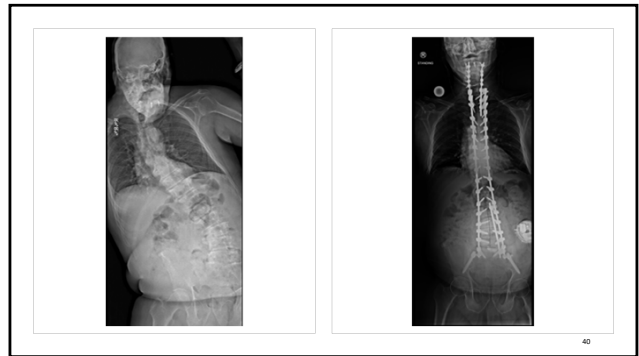
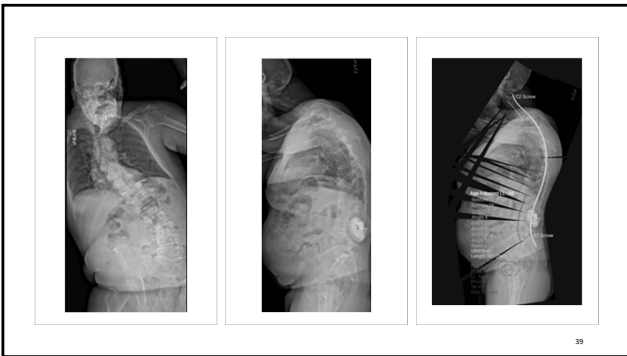
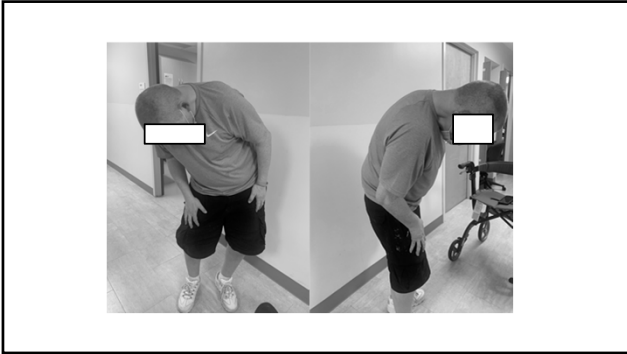
	PRE-OP VISIT 2/1/2022	CASE 1	VISIT 8/11/2022	VISIT 12/1/2022
Pelvic TIR, PT (°)	34	27	23	25
Pelvic Incidence, PI (°)	58	58	58	58
Sacral Slope, SS (°)	24	31	35	33
Lumbar Lordosis, LL (°)	-4	-40	-47	-49
PH LL (°)	53	17	11	9
T1 Pelvic Angle, TPA (°)	36	22	18	20
Sagittal Vertical Axis, SVA (mm)	82	15	18	19
T1-T12 Thoracic Kyphosis, TK (°)	-1	27	29	34

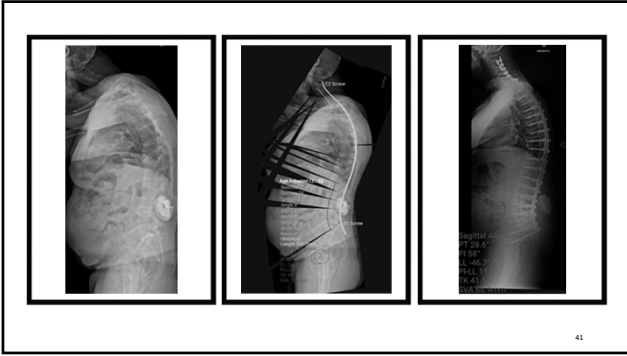
Case 3

- 54 yo M presents to clinic with progressive back pain and difficulty standing upright over two years
- PMH: MS
- PSH: baclofen pump

Case 3

- Exam:
- A+Ox3
- CN 2-12 intact
- Strength 4+/5 in RUE/RLE, 5/5 in LUE/LLE
- Sensation mildly diminished on R
- No Hoffman Sign
- 1+ reflexes in BLE
- Gait slow and antalgic
- Severely kyphotic posture, leaning to R





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