

The background of the slide is a solid dark brown color. Overlaid on this background are several large, stylized leaves in various shades of brown and tan, creating a layered, autumnal effect. The leaves are scattered across the frame, with some appearing more prominent than others.

Acute Low Back Pain

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Outline

- Introduction / Epidemiology.
 - Most Important lecture!!
- Anatomy / Pain generators
- Diagnosis
- Treatment

Course Objectives

- Know the RED FLAGS in history taking.
- Know the Pain Generators of the Lumbar spine
- Know the Guidelines for Imaging of the spine with acute low back pain.
- Know the general guidelines to rehabilitation.

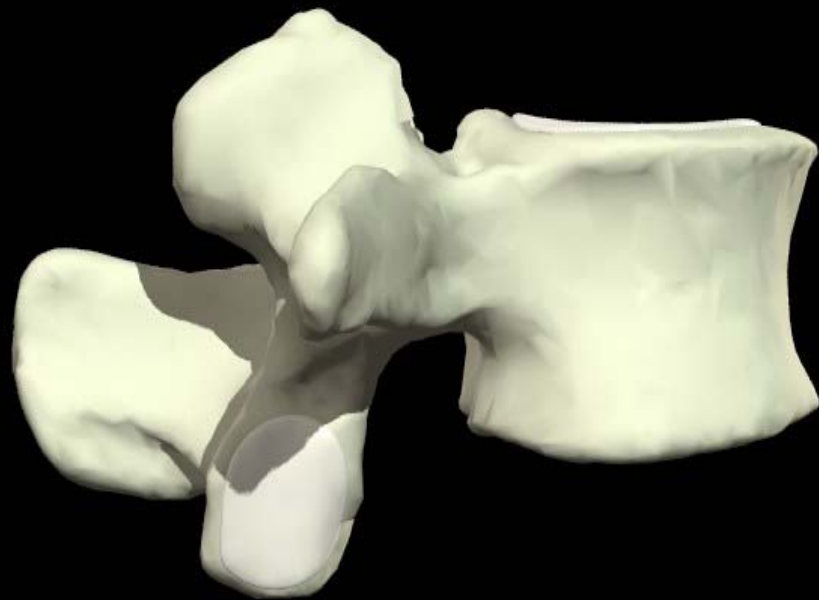
Epidemiology of Back Pain

- Who gets it?
 - 60-90% lifetime prevalence.
 - 80-90% have recurrent episode.
- What is the Natural history?
 - 80-90% resolves in 1 month.
 - 20-30% remains “chronic”
 - 5-10% “disabling”

Anatomy

- 5 lumbar vertebra
 - Transitional segments
- Components
 - Body
 - Pedicles
 - Facets
 - Lamina
 - Spinous and transverse processes

Typical Vertebra



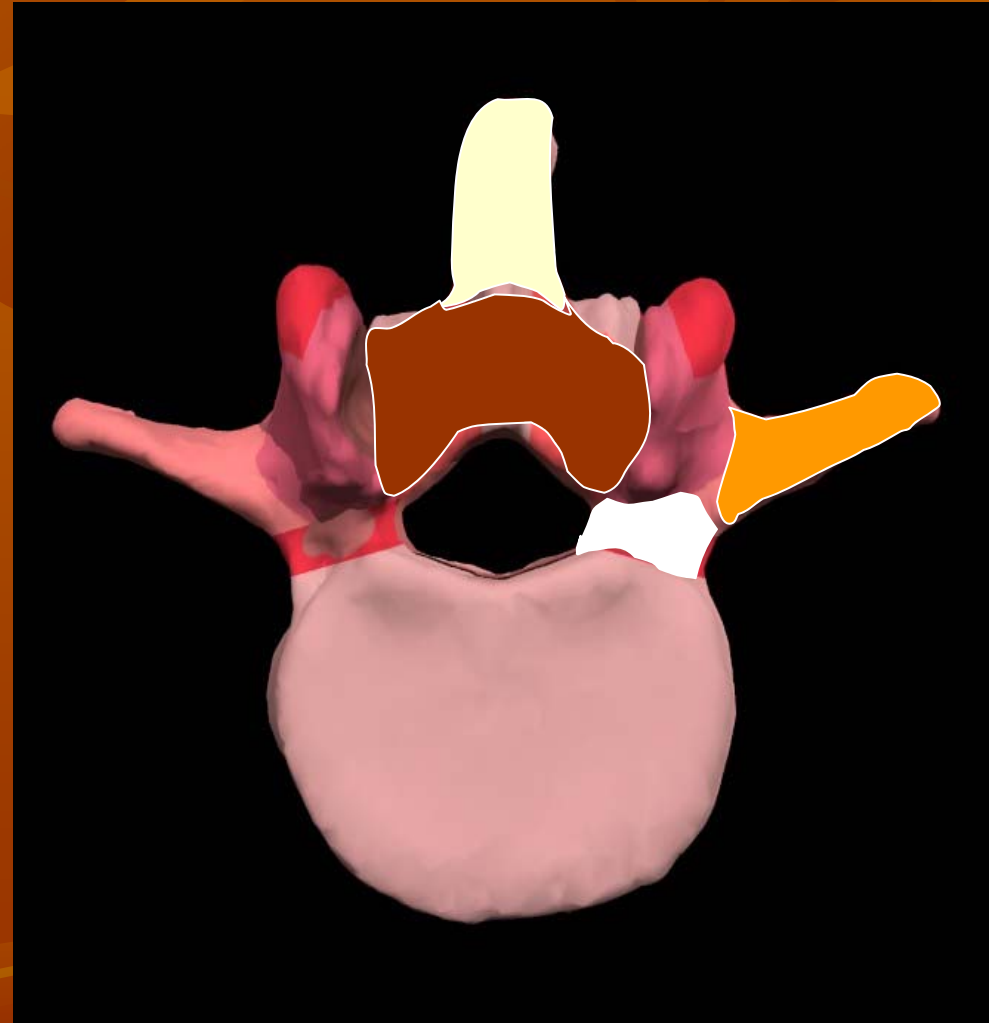
Vertebral Body

- End- plate attachment
- Tall (L1).. Wide (L5)
- L3 Square



Posterior Elements

- Spinous Process
- Lamina
- Pedicle
- Transverse process



Lumbar Intervertebral Disc

- Annulus Fibrosis
 - Dense connective tissue, interwoven matrix
 - Outer 1/3 innervated from sinuvertebral nerve and gray rami communicans.
 - Concentric layers attaching to end plates
- Nucleus pulposus
 - 80-90% water, mucopolysaccharide, collagen.

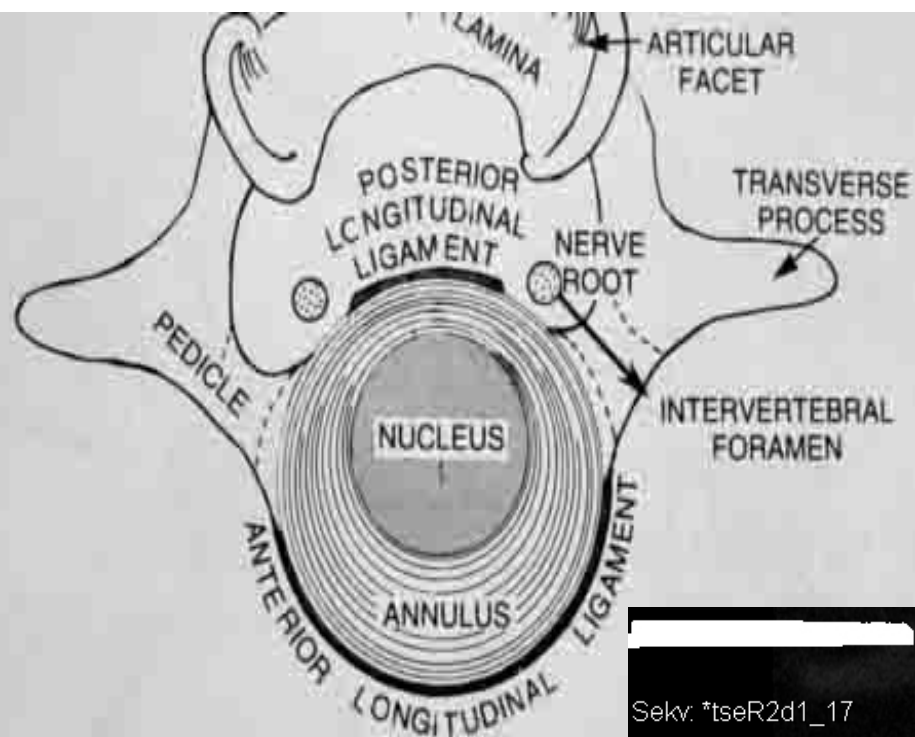


Figure 1-14. Components of the functional unit of a vertebra.

Sekv: *tseR2d1_17
 Slice: 4 mm
 Pos: -53.0175
 TR: 5150
 TE: 91
 AC: 2

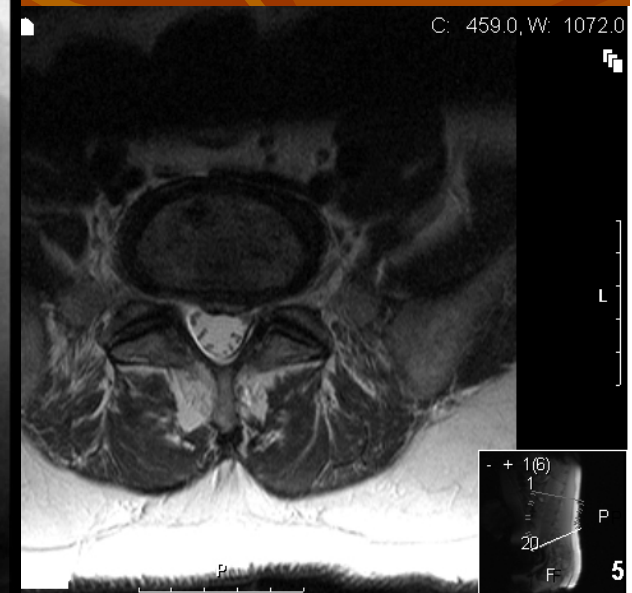
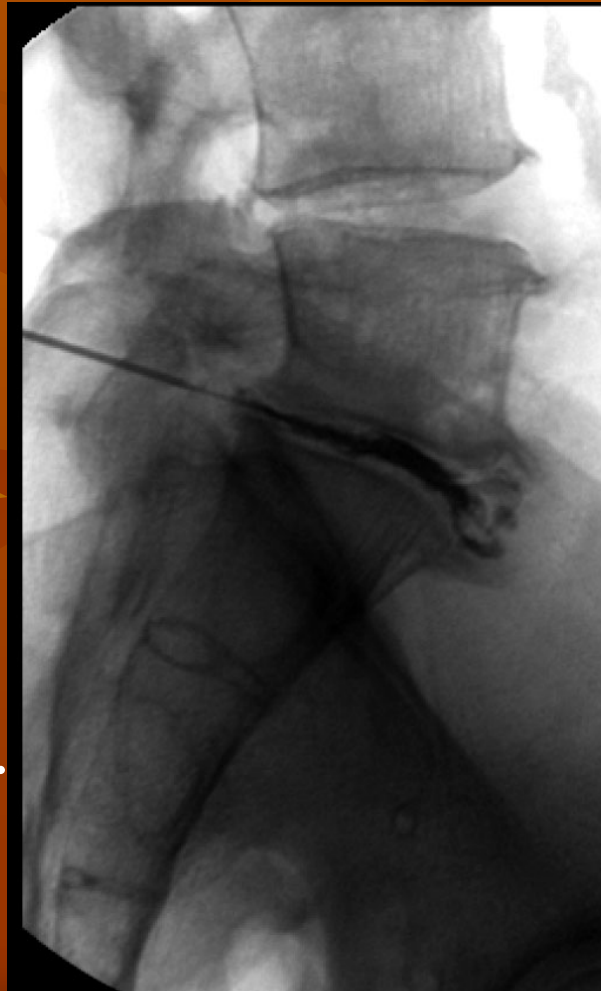
HFS
 FoV: mm
 Image no: 19
 Image 19 of 20



*From Caliet, "Low Back Pain Syndarome", 4th Ed.

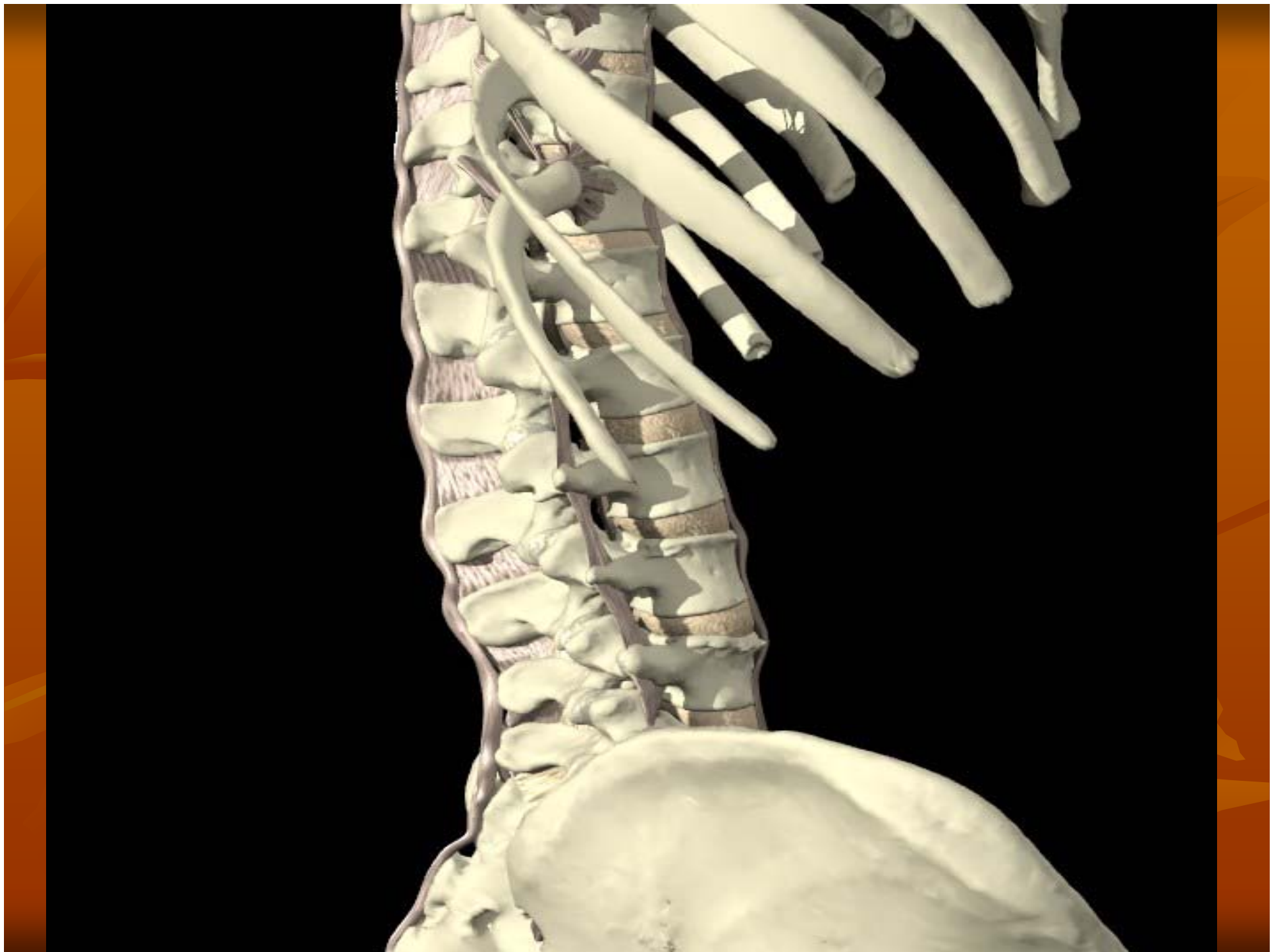
Zygopophyseal Joints

- Joint Capsule
- Meniscoid
- 10% wt bearing
- Sagittal plane L1
45° orientation L5.



Lumbar ligaments

- ALL
- PLL
- Ligamentum flavum
- Facet capsules
- Interspinous ligaments
- Supraspinous ligaments

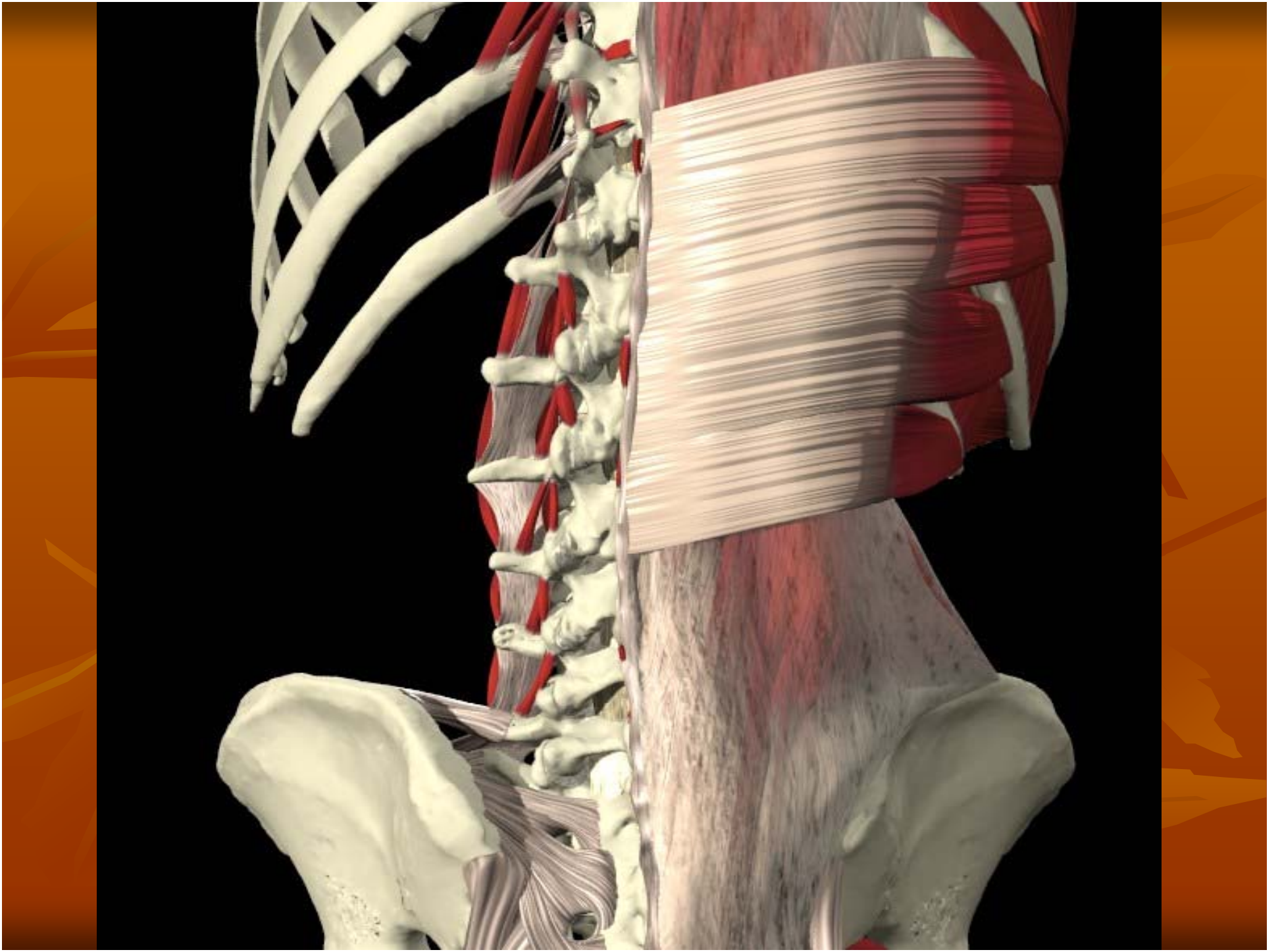




Muscle Layers

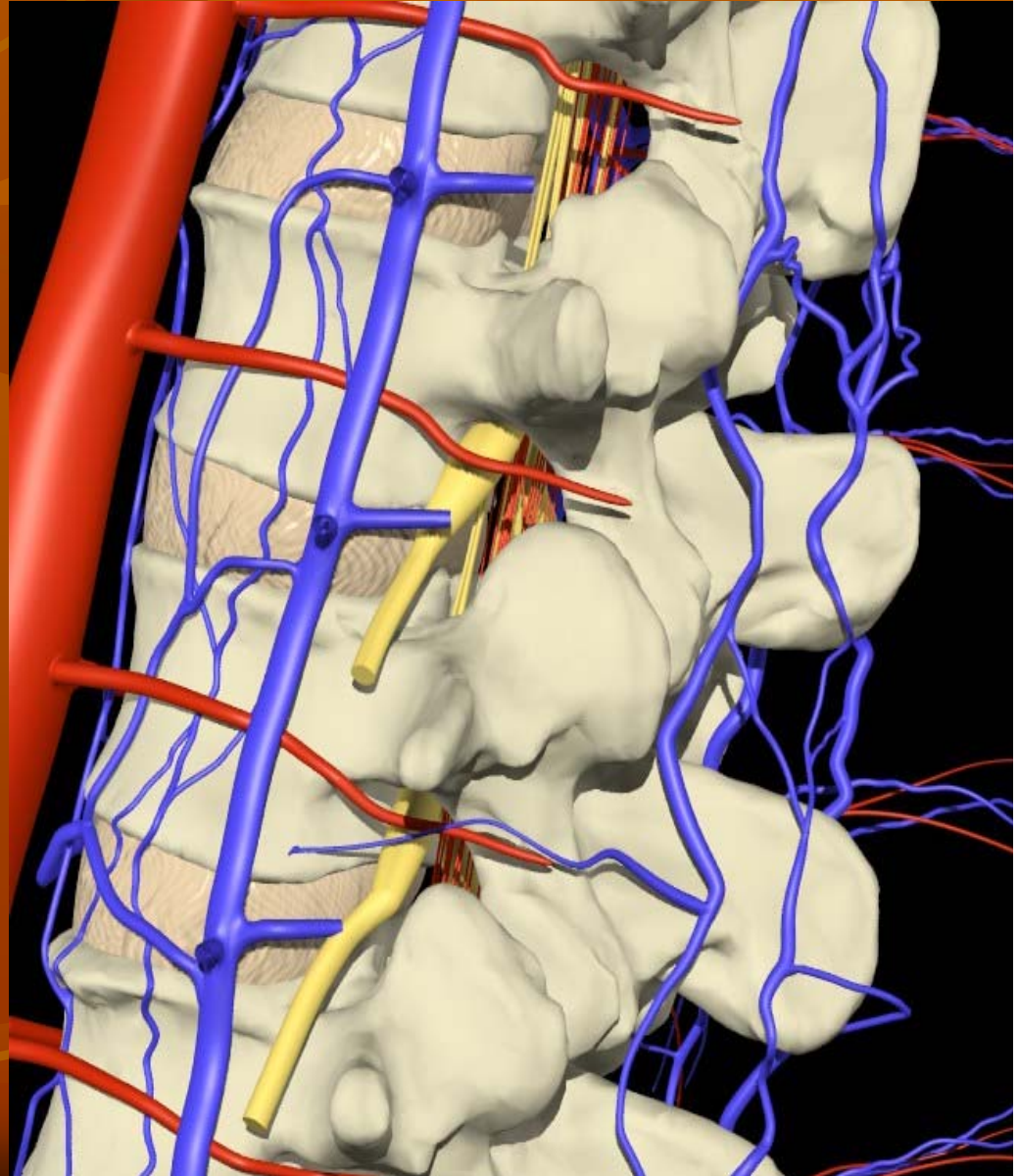
- Deep
 - Multifidus, Quadratus lumborum
 - Iliocostalis, longissimus, (Erector s.)
- Superficial
 - Thoracolumbar fascia
 - Lattissimus dorsi

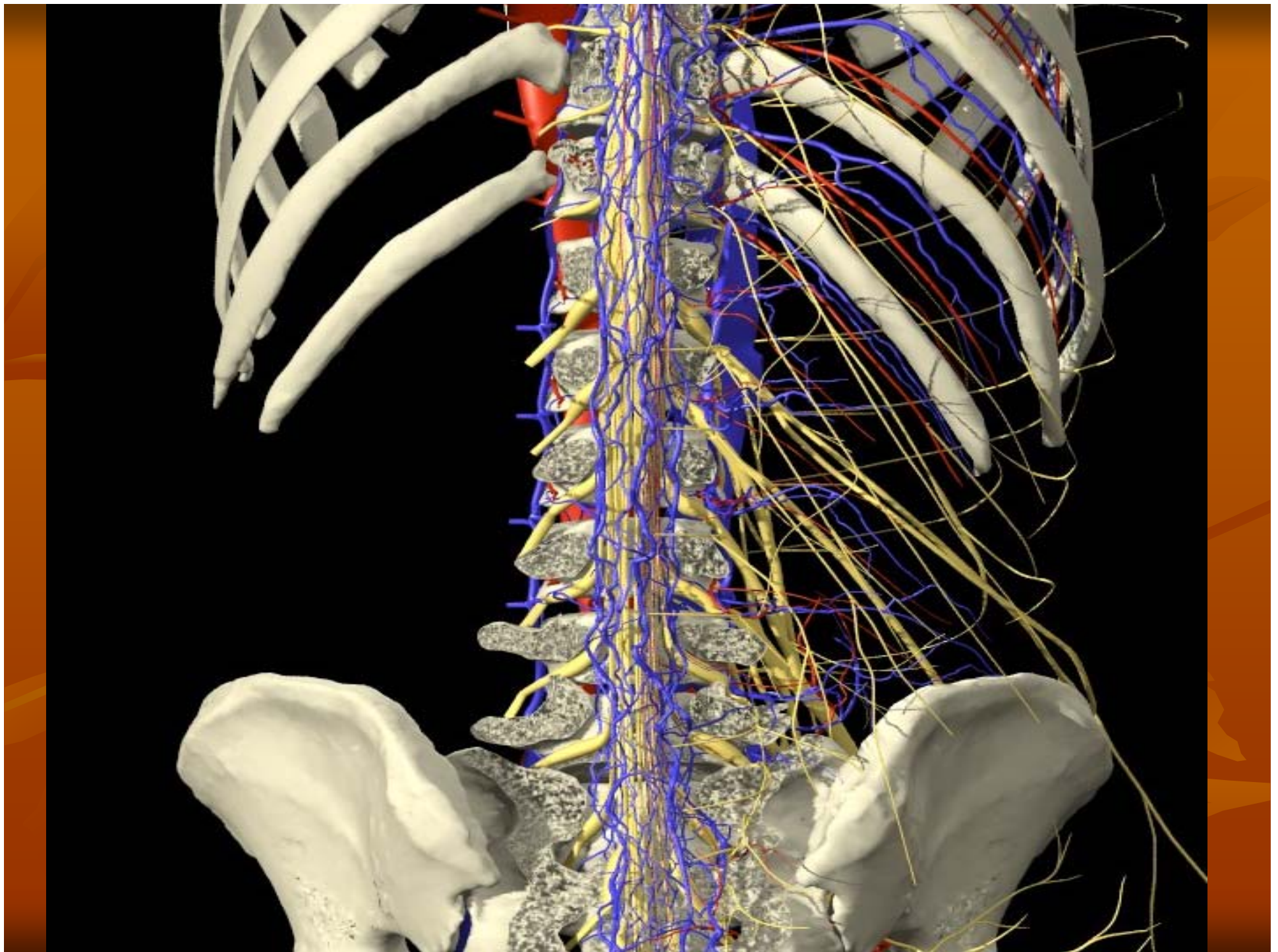




Nerves and Vessels

- Neural Foramen
- Spinal Nerve
- Dorsal Root ganglion
- Relationships







Pain Generators

- Annulus Fibrosis (outer 1/3 only?)
- Periosteum
- Neural Membranes (Anterior Dura)
- Ligaments/ Z-joint capsules
- Muscles.

Diagnostic

- Pain- location (radiation), qualitative, what makes pain better / worse.
- Neurologic Symptoms
 - Paresthesias.
 - Bladder /Bowel retention or incontinence.
 - Weakness.

Diagnostic

- History:

- RED FLAGS

- Trauma,
 - Age >50,
 - Hx of CA,
 - Unexplained wt loss,
 - fever or immunosuppression,
 - IV Drug use,
 - Neurologic deficit.

Examination

- Range of Motion (document range and pain)
 - Flexion- 40°
 - Extension- 15°
 - Lateral bending- 30°
 - Rotation- 45°

Neurologic Examination I

- Strength tests
 - L1, L2- Hip flexion (Psoas, rectus femoris)
 - L2,3,4 – Knee extension (Quads)
 - L2,3,4 -- Hip adductors (adductors and gracilis)
 - L5 – ankle/ toe dorsiflexion (ant. Tibialis, EHL)
 - L5– Hip abductors (gluteus medius, TFL)
 - S1- ankle plantarflexion (gastroc/ soleus)
 - S1– Hip extensors (Gluteus max., Hamstrings)

Neurological examination II

- Reflexes

- L2,3,4- Quads
- L5- Medial hamstring
- S1- Achilles

- Sensation

- Pin prick- primarily spinothalamic tract
- Vibration/ position sense- dorsal columns
 - Vibration tested with 256cps fork!
 - Position on 3-4th digit

Provocative Maneuvers

- Straight Leg Raise (supine or seated)
 - For L5-S2 radicular symptoms
- Femoral Stretch
 - For L2-4 radicular symptoms
- FABER's test
 - For SI joint, hip joint, lumbar z-joint symptoms

Provocative Manuvers

Seated SLR (Slump Test)



Standing Femoral Stretch



Imaging or Not?

- Low yield without RED FLAGS present.
- “Abnormal” findings in Asymptomatic.
 - Jarvik- LAIDback study.
- Psychological.
 - Anxiety, fear-avoidance- possibly help?
 - Depression- “there must be something wrong”

Guidelines for Imaging

- NO RED FLAGS!
- Acute pain- symptomatic treatment for 4 weeks, re-evaluate. Image if pain continues.
 - AHCPR Guidelines for Acute LBP.
- Sub acute pain- Pain for >4wks. Failed symptomatic treatment. Image.
- Chronic pain- none, unless changes in sx's
- Chronic intermittent- TX as acute patients



Treatments

Medications

- NSAID's- anti-inflammatory, mild pain relief.
- Tylenol- mild- moderate pain relief.
- Narcotics- moderate to severe pain. (fail above).
- Anticonvulsants- neurogenic pain.
- TCA's- neurogenic symptoms, paresthesias.
- Muscle relaxants- acute spasm.

General Therapy Guidelines

- Pain Control (symptomatic TX.).
- Tissue injury (physiologic TX.)
- Motion in Pain-free range.
- Restore Full pain free range of motion.
- **Core CONTROL for Neutral spine.**
- Restore Muscle **ENDURANCE.**
- Restore Functional movements.

Therapies

- Bed Rest.
 - Less than 2 days.
- ROM.
 - Lower extremity, multifidus, lats.
- Core strengthening.
 - Transversus Ab., quadratus, multifidus, glutes.
- Multiplanar exercises.

Modalities

- Thermal (hot/cold)
- Ultrasound
- Electrical Stimulation (NMES)
- TENS (transcutaneous electrical neurostim.)
- Bracing

Injections

- Epidural procedures
 - Helpful in radicular pain and stenosis
- Z-joint Blocks
 - Short-term relief for furthering therapy.
- Medial branch blocks
 - radiofrequency lesions.

Who needs Surgery?

- Unstable Spine
 - Acute fractures with Neurologic deficit.
- Severe Stenosis
 - After failure of aggressive non-operative tx.
- Tumor?
- Progressive Neurologic deficit