



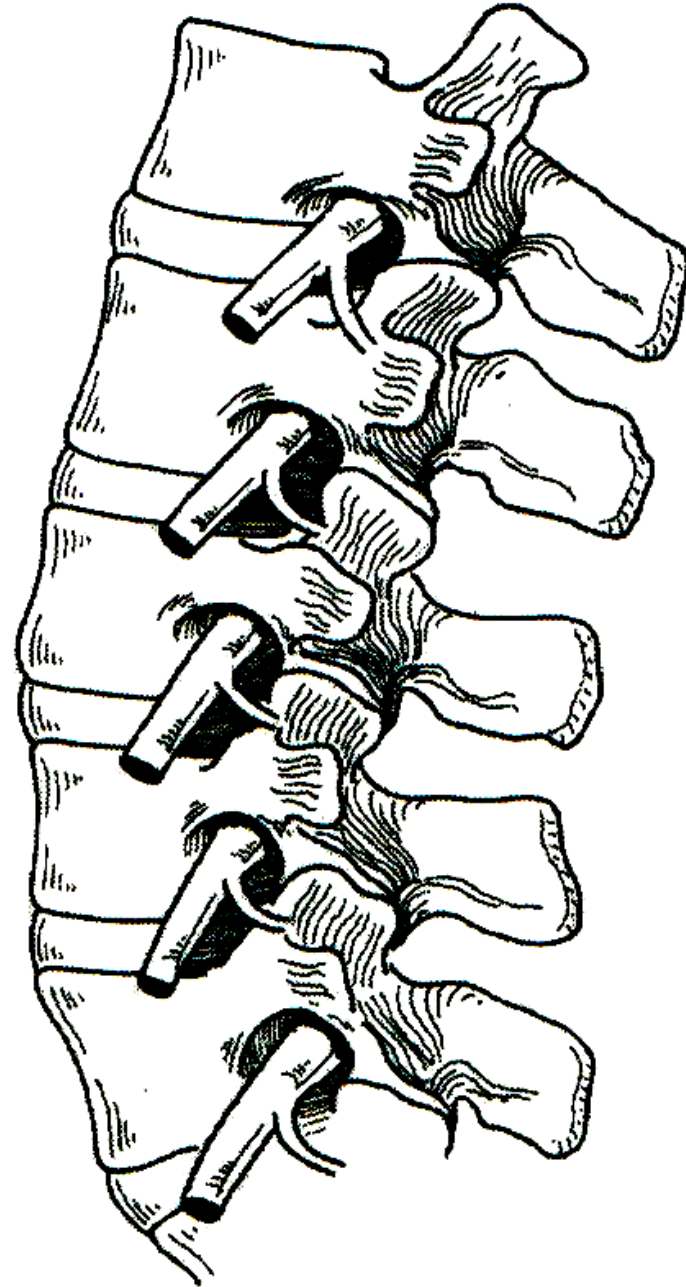
**DISCOGENIC PAIN**

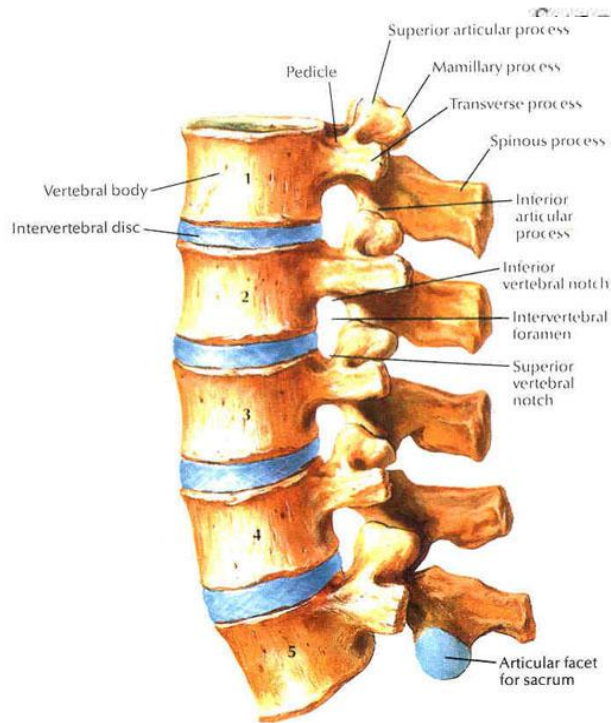
# OUTLINE

---

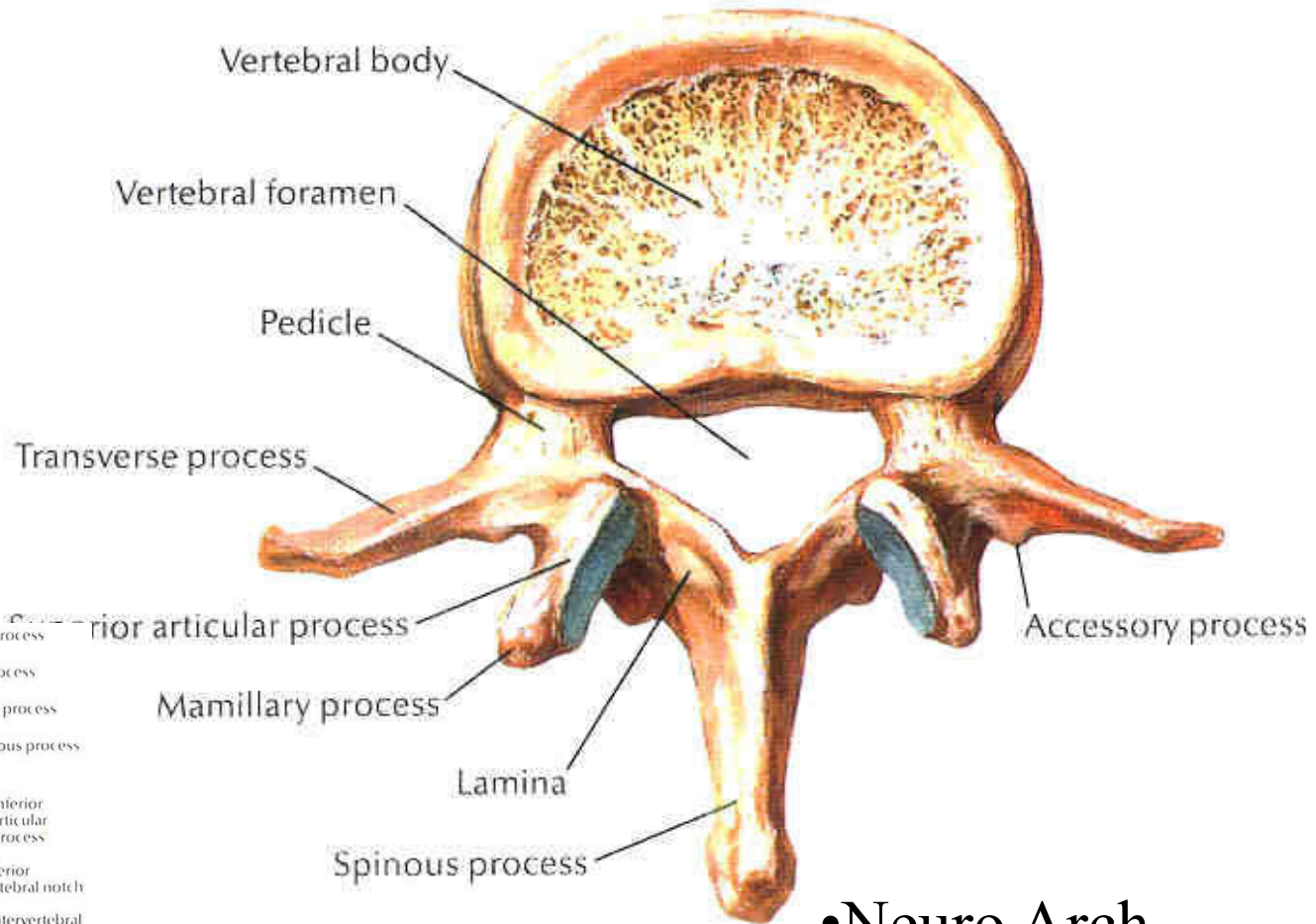
- **Anatomy**
- **Approach to LBP**
- **Discogenic LBP**
  - **Herniated Nucleus Pulposus**
  - **Annular Tear**
- **Treatment**
  - **Non-Surgical**
  - **Surgical**

- **Facet Joints: bear 20% of weight**
- **Discs bear 80% of weight**
- **Neural Foramen**
  
- **Anterior Longitudinal Lig.**
- **Posterior Longitudinal Lig.**

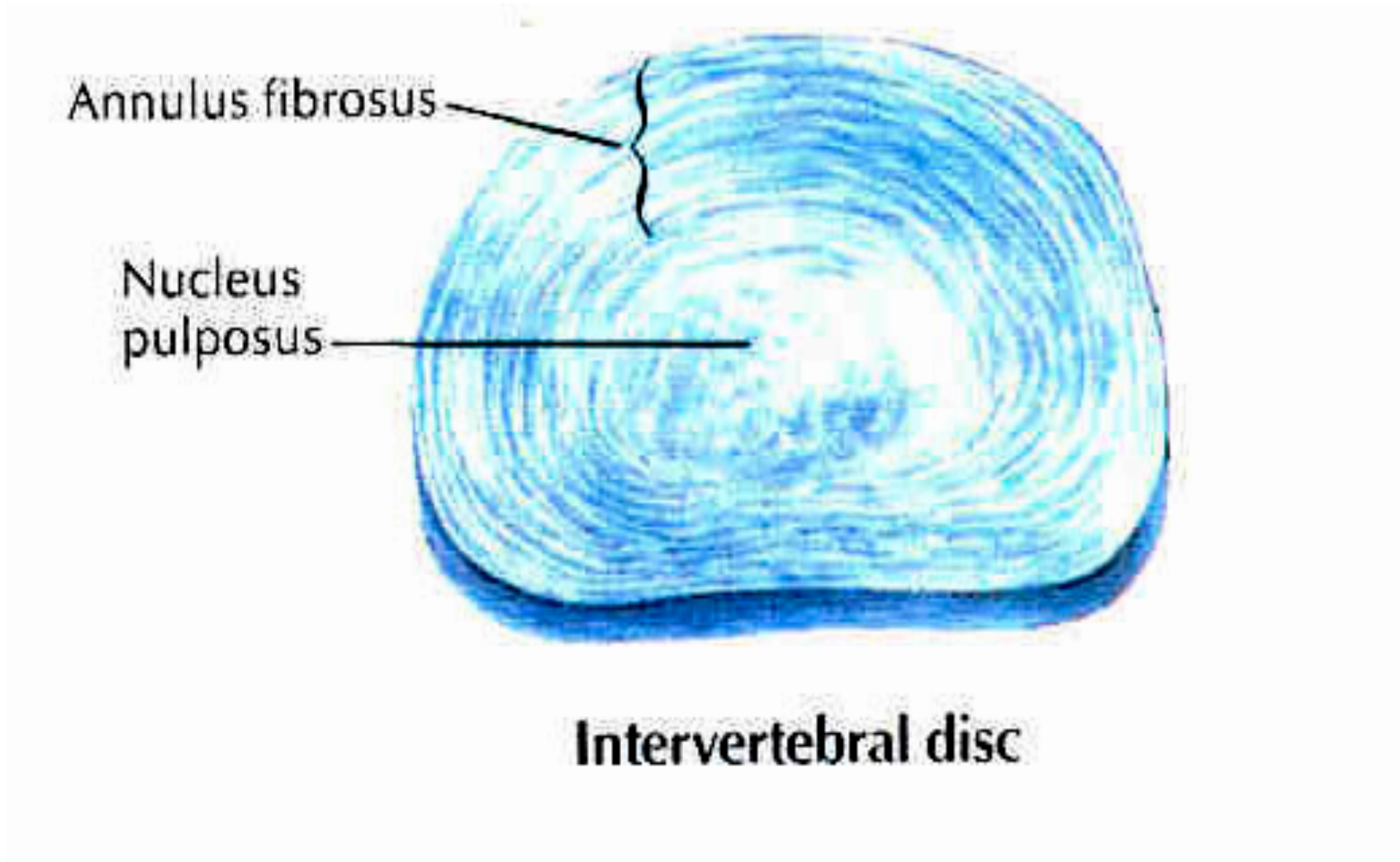




Lumbar vertebrae, assembled:  
left lateral view

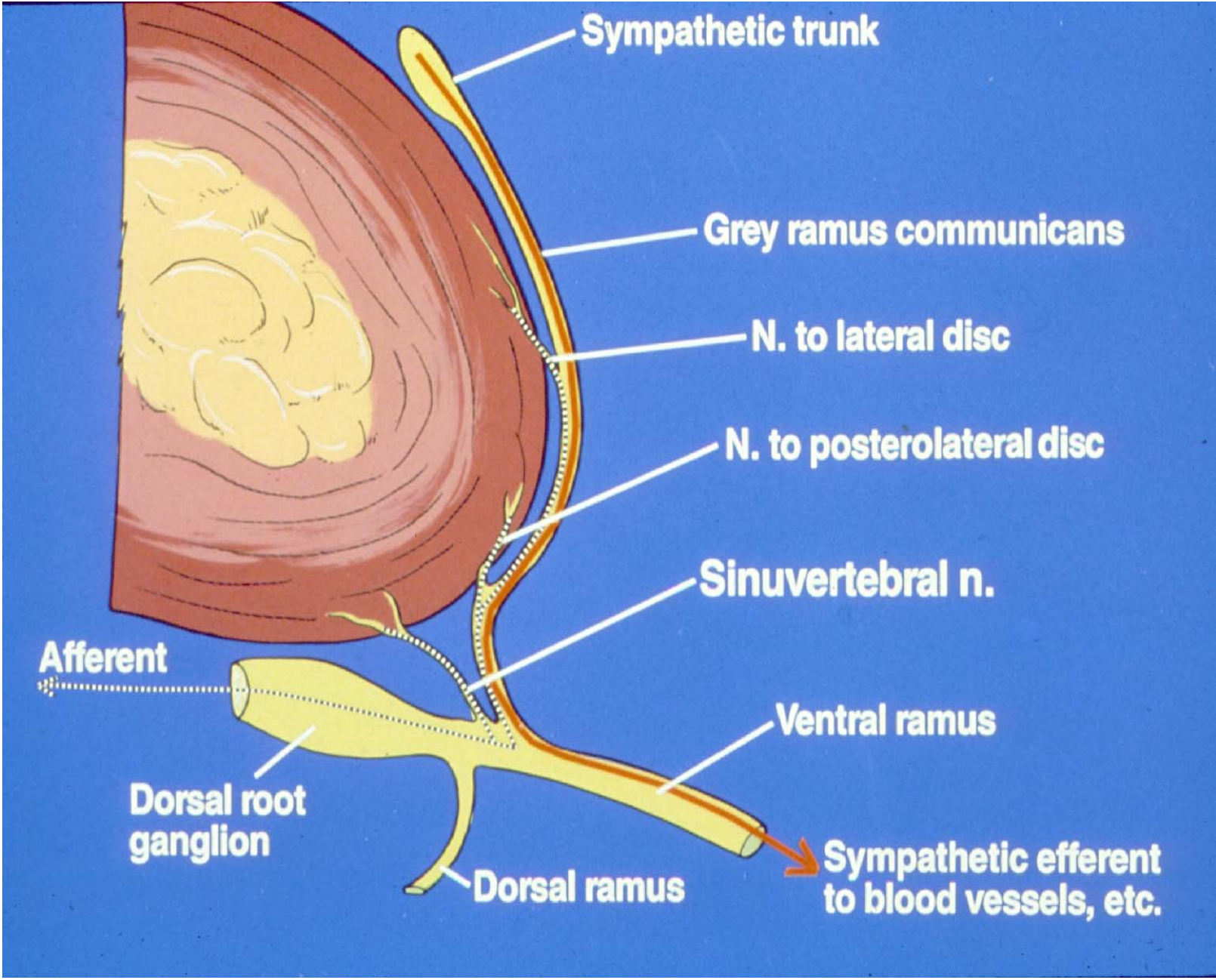


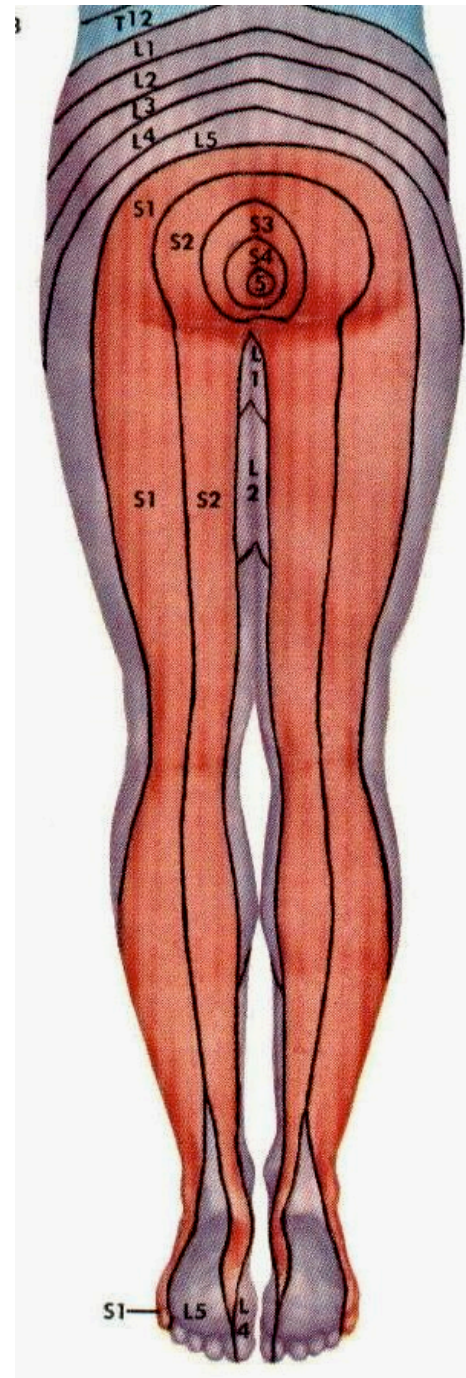
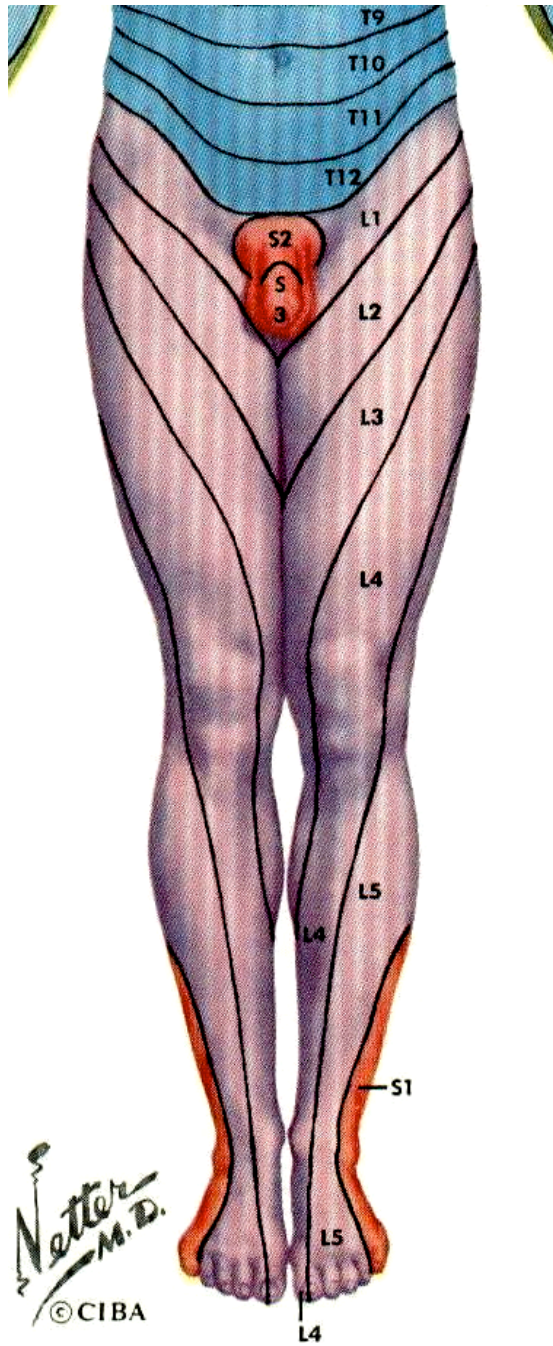
•Neuro Arch  
2nd lumbar vertebra:  
superior view



Proteoglycans



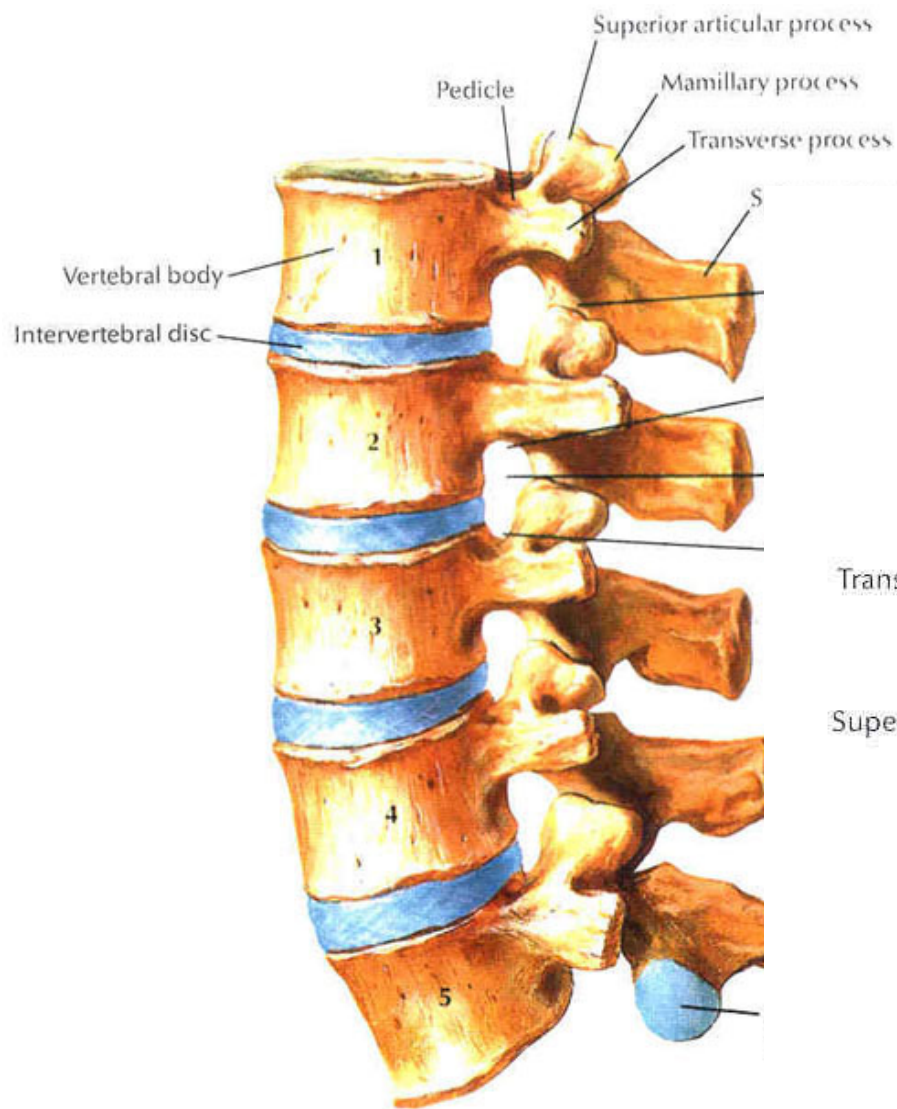




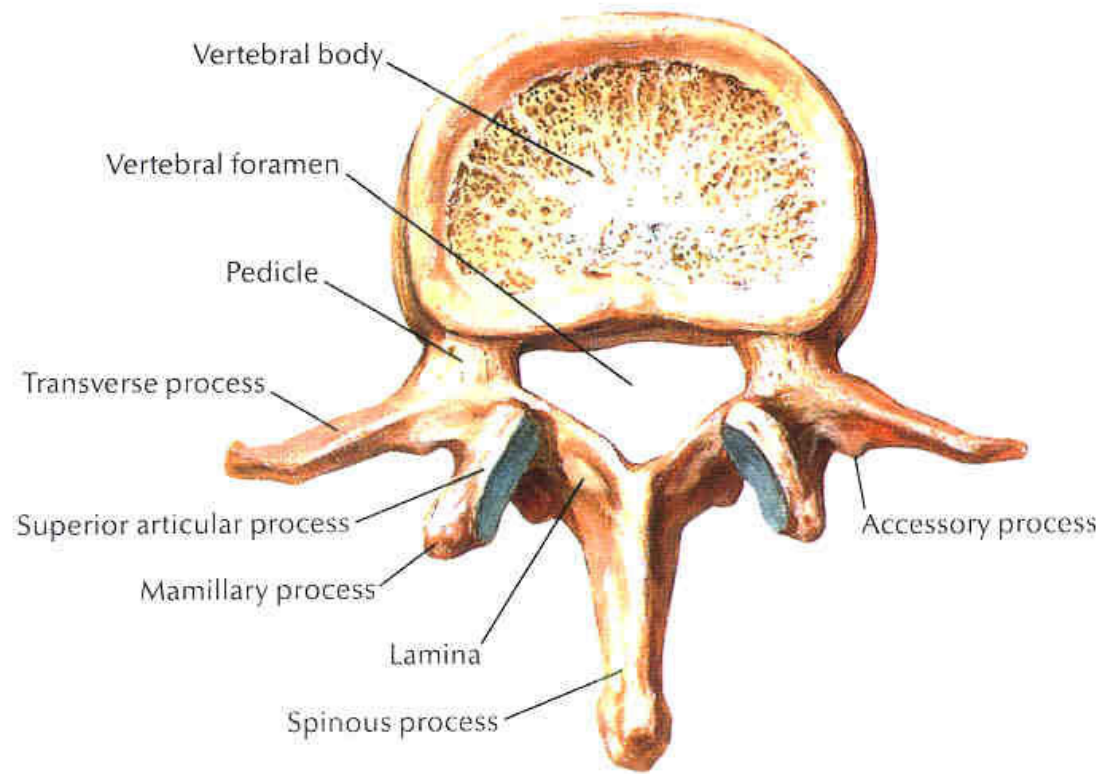
# APPROACH

PAIN GENERATORS  
POSTERIOR TO ANTERIOR





Lumbar vertebrae, assembled:  
left lateral view



2nd lumbar vertebra:  
superior view

# DISCOGENIC LBP

Non-Radicular (Without Leg Pain)

Radicular (With Leg Pain)

Without Leg Pain (Axial Pain)

Annular Tear

Degenerative Disc Disease

# With Leg Pain (Radicular)

Disc Bulge, Protrusion, Extrusion,  
Sesquestration

Neuro-Compressive Lesions



**TREATMENT**

- NATURAL HISTORY of LUMBAR DISC DISEASE
- OUTCOME STUDIES OF NON-SURGICAL TREATMENTS vs SURGICAL TREATMENTS
- CLINICAL VIGNETTES

NON SURGEONS vs  
SURGEONS

WHEN DO WE NOT vs  
WHEN DO WE DO  
OPERATE?

**“TIMING HAS AN AWFUL LOT  
TO DO WITH THE OUTCOME  
OF A RAIN DANCE”**



# LUMBAR DISC DISEASE

- 60-80% Lifetime incidence of LBP
- Natural History has a highly favorable outcomes
- Innovative Technological Treatments
- Timing of Rain Dance

# NORMAL POPULATION

- 35% Healthy Male Volunteers have significant DDD Paajenan et al
- 90% people age >50 have DDD Miller et al
- Analogy between LBP and Gallstones

# DISABILITY

- 95% Patients return to work within 3 months
- Otherwise → Poor prognostic factor
- 20% return to work after 1 year of disability
- 2% return to work after 2 years of disability

# NATURAL HISTORY

- 62% Disc Herniation Resorp Over Time
- The Larger → The More Resorption Matsubara et al
- Large Compressive Discs are usually symptomatic and Respond well to surgery
- Large Discs also have a high rate of clinical improvement with non-operative treatment Saals et al



# RISK FACTORS

- Driving of motor vehicles, Sedentary occupation, Vibration, Smoking, Previous full-term pregnancy, Physical inactivity, Increased body mass, and a Tall stature
- Physical fitness is not preventative
- Physical fitness will improve outcome

# NON-SURGICAL

- In 208 patients, 70% Improvement in 4 weeks
- 60% return to work in 4 weeks Weber et al
- In 64 patients, 90% satisfactory outcome in one year Saals et al
- In 168 patients, 86% satisfactory outcome in one year Bush et al

# SURGICAL

- Indications:
  - Cauda Equina
  - PROGRESSIVE Motor Loss
  - Intractable Pain

# Surgical Outcome Weber et al

- 126 Patients with Absolute Indications for Surgery
- Randomized to Surgery and Non Surgery
- 10 year follow-up

- At 1 year:
  - 90% good outcome with Surgery as compared to 60% with Non-Surgery
- At 4 years:
  - Surgery is slightly better (not statistical)
- At 10 years:
  - Same for both groups

Patients who met the  
indications for surgery

Patients who were operated within  
3 months had better outcome in  
10 years

Response to Transforaminal  
Epidural Injections correlated  
with positive surgical outcomes  
as high as 95%

Stanley and Akkerveeke et al

.)

**“TIMING HAS AN AWFUL LOT  
TO DO WITH THE OUTCOME  
OF A RAIN DANCE”**



# Case #1

- 25 yo male with 2 days h/o LBP and right leg pain.
- Pain 8/10, 80% leg, 20% back
- Pain is debilitating and worsening

## SHOULD YOU?

- Narcotics, Oral Steroids, PT, reassurance
- MRI
- Referral for Physiatry
- Referral for Surgery

**MRI:**

**L5/S1 6 mm disc herniation**

# Case #1

## ***WHAT I WOULD DO?***

- Narcotics
- MRI
- Epidurals
- 90-95% chance of substantial pain reduction
- PT
- 5% chance of needing surgery

# Case #2

- 26 yo male with 2 days h/o LBP and right leg pain, predominantly 80% leg pain.
- Pain is debilitating
- Right foot and toe weakness

## YOU SHOULD DO?

- Narcotics, +/- Oral Steroids, Re-Evaluate
- Referrals for Physiatry
- Referrals for Surgery

# Case #2

- MRI: 3mm Right Disc Protrusion
- Right foot drop is same
- Do Nothing
- Referral for Epidurals
- Referral for Surgery

# Case #2

- Neurologically stable
- Young age
- Don't know long term outcome for discectomy
- Excellent long term outcome for non surgery

# What I would do:

- Narcotics, Cox 2
- Trial of epidurals
- Non-responsive → surgery within 3 months
  
- Aggressive intervention
- Control Pain
- Graduated and aggressive physical therapy

# Case #3

- 28 yo healthy male
- Onset: two weeks ago
- No incontinence
- Right foot weakness 4/5
- Stable Neuro Exam
- MRI: 9 mm L5/S1 disc herniation



# What would you do?

- Narcotics, +/- Oral Steroids, Re-Evaluate
- Referrals for Physiatry
- Referrals for Surgery

# Case #3

- Disc protrusion larger than 8 mm has lower success rate with epidurals
- Disc sequestration however does well conservatively
- Surgery is the best option
- No long term outcome study
- Due to young age → art of medicine

# Case #3

- Due to young age and acute nature
- Epidural
- Two additional Epidurals if continues to improve
- EMG/NCS 3 weeks after injury
- Aggressive exercise
- Surgery if course is protracted
- 70-80% will not need surgery
- Does the patient have the time for conservative care and willing to accept failure?

**“TIMING HAS AN AWFUL LOT  
TO DO WITH THE OUTCOME  
OF A RAIN DANCE”**

# Case #4

- 60-70 yo with axial low back pain for 2 years and vague intermittent leg pain.
- Usual medical history
- No cancer history
  
- Needs full work up, Labs, MRI, EMG's
- NSAIDS, 6 weeks of PT

# Case #4

- EMG is normal
- MRI: Moderate DDD at L4/5 and L5/S1, small disc bulge/protrusion at L4/5 L5/S1,
- Facet hypertrophy with mild foraminal narrowing and mild spinal stenosis

# Would You?

- Do nothing
- Refer patient to a Physiatrist
  - What could a physiatrist do?
- Refer patient to a Spine Surgeon
  - What would a spine surgeon do?

# Case #4

- **Physiatrist**
  - Trigger point injections
  - Facet injections
  - Epidurals
  - Discograms
  - CT Myelograms
- **Surgeon**
  - Foraminotomy
  - Decompressive Laminectomy
  - Discectomy and Fusion



# Case #5

- 75 yo with 6 months h/o low back pain and bilateral buttock and leg pain.
- Usual medical problems
- Used to walk ½ hour. Now only two blocks
- Neurogenic claudication
  - Better with rest
  - Worse with ambulation
  - Poor balance and clumsiness
- No incontinence

# Case #5

- MRI: Spinal Stenosis at L4/5 and L5/S1. In conjunction with facet and ligamentum hypertrophy result in central and foraminal stenosis.
- EMG/NCS: 1. Normal, 2. Single level radiculopathy, or 3. Polyradiculopathy

# What would you do?

- Surgery or NOT surgery?
- Modify lifestyle
- or Conservative Treatment
- or Epidural
- or Spinal Decompression

# What I would do?

- If patient is healthy and active, we must do something!
- Epidurals are very effective
- Spinal decompression is very effective also. Has the best outcome of all spine surgeries.

# Case #6

- 40 yo professional with 2 years of intermittent low back pain and leg pain
- Acute exacerbation
- MRI: small disc protrusion at L5/S1
  
- Non surgical approach
- EMG is normal
- Epidurals give partial relief
- Able to work but not satisfied with result

# Case #6

- How far should we go with the work up?
- Discogram?
- Nucleoplasty, IDET, Surgery, Fusion????

# Case #6

- Exercise for 6 months → pain improves
- 2 years later → full activity, minimal pain
- Able to run on treadmill for one hour at 8.5 minute/mile. Able to play two sets of tennis at 4.0 level
- Not able to lift more than 20 lbs without pain

# Case #7

- 50 yo with 5 years h/o low back pain.
- No leg pain
- Has had all conservative measures
  - PT, Chiropractic, Accupunctures, Herbals
  - Pilates, Yoga
- Vicodin 6 tabs/day, Neurontin
- Norco
- Fentanyl patch



# Case #7

- MRI:
  - Disc desiccation and disc bulge at L4/5 L5/S1
  - No spinal or foraminal stenosis
  - Mild facet arthropathy

# Physiatrist #1

- Trigger point injections
- Facet injections
- Epidural injections
- Discogram: Annular Tear at L4/5 with concordant pain
- Nucleoplasty
- IDET
- Intradiscal radiofrequency
- Patient becomes chronic Pain

# Physiatrist #2

- Facet Injections
- Epidurals
- Exercise Program
- Patient is functional

# Physiatrist #3

- Aggressive exercises
- Education and Psychological support
- Patient is able to manage pain and is functional

# Surgeon #1

- CT Myelogram
- Discogram
- Microdiscectomy L4/5
- Exercise Program
- Patient has residual pain but functional

# Surgeon #2

- Two level interbody fusion at L4/5 and L5/S1 with pedicle screws
- Patient has residual pain
- Fusion at L3/4
- Patient with more pain
- Spinal Cord Stimulator
- Epidural Pump
- Living with Pain.

# You are in control of your patient's destiny

- Large disc herniation does NOT always need surgery
- Neurologic loss is NOT an absolute indication for surgery
- Small disc bulge is NOT always normal
- Interventional pain management works but not 90% of the time
- Surgery does not have an 80% success rate
- Conservative treatment is reversible. Surgery is not.

# Take Home Points

- Stay conservative
- Think conservative
- Early intervention to reduce pain and return to activity
- **Thorough work up but DON'T OVERTREAT**
- Surgery: Cauda Equina, progressively neurologic loss, intractable pain
- Everything else: think NON-Surgical