

# Foraminal and Extraforaminal Disc Herniations

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# Epidemiology

- Incidence: 3-12% of lumbar HNPs
- Average ages 55-65 yo, males – females
- Most commonly at L3-4 (37%) and L4-5 (40%)
  - Less frequent at L1-2, L2-3, and L5-S1 (19%)
    - Epstein, 1995, 2002

# Differences

## versus medial HNP

- Impinges nerve root exiting superiorly (i.e. L4 root at L4-5)
- Lasegue sign less frequently positive
- Bending to ipsilateral side reproduces symptoms (75%)
- More severe pain

# Presentation

- Pain
  - radicular pain > back pain
- Often present with
  - quadriceps weakness
  - diminished patellar reflex
  - dermatomal hypesthesia

# Radiographic Evaluation

- Myelography - suboptimal
- CT
- MRI
- Post-discography CT

# Anatomy

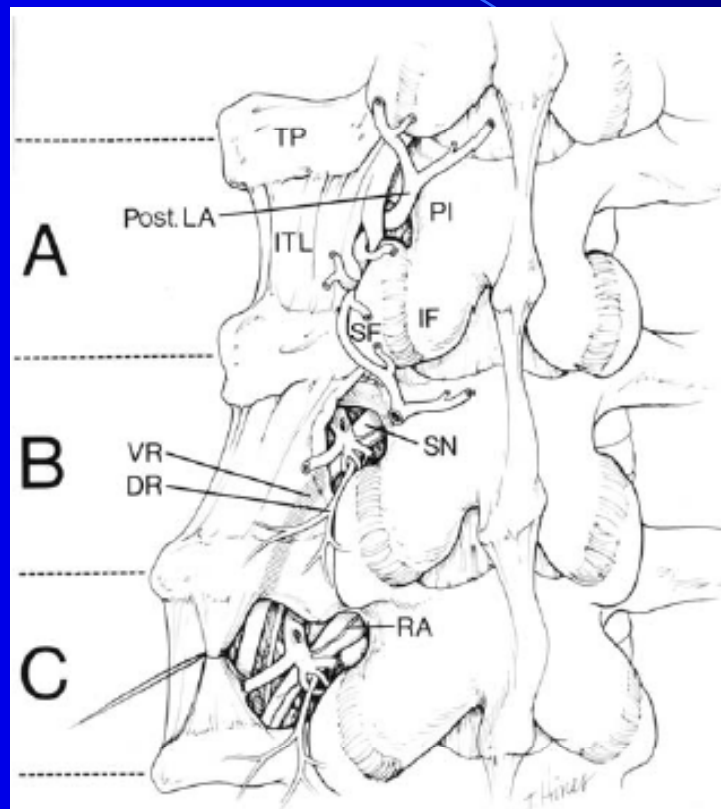
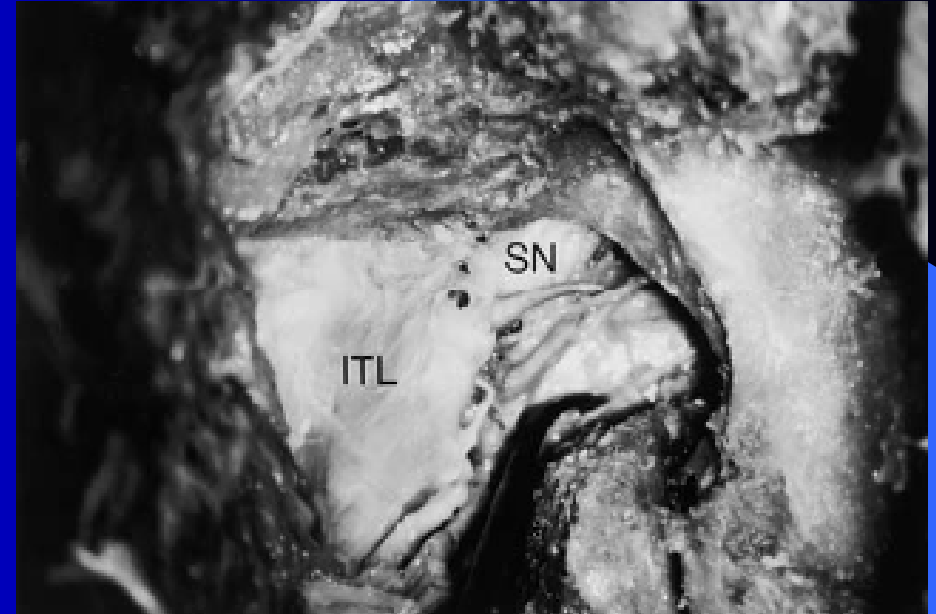
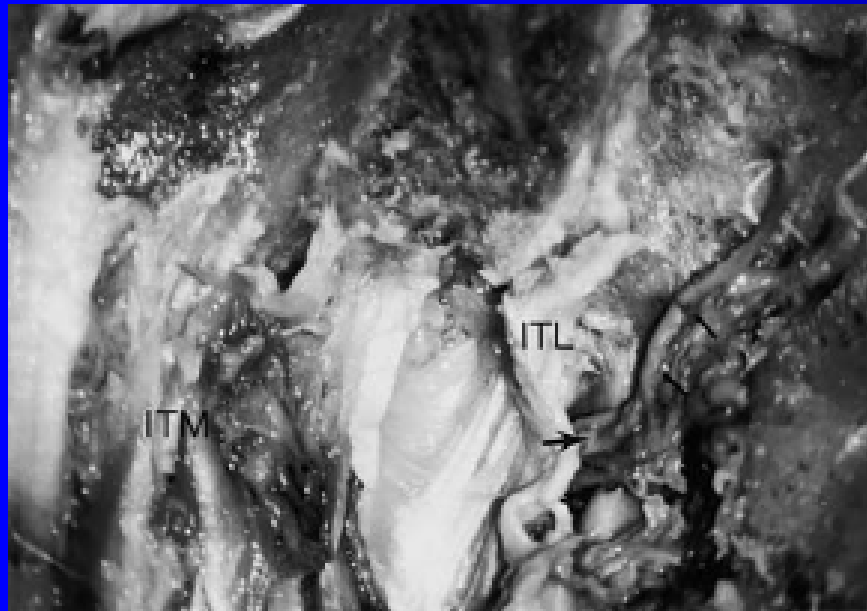


FIG. 1. Artistic rendering of the L2-4 vertebrae that includes osseous, ligamentous, vascular, and neural structures. Area A represents dissection in Figs. 2 and 3; area B represents dissection in Fig. 5 upper; and area C represents dissection in Fig. 5 lower. DR = dorsal ramus; IF = inferior facet; ITL = intertransverse ligament; LA = lumbar artery; PI = pars interarticularis; RA = radicular artery; SN = spinal nerve; TP = transverse process; VR = ventral ramus. Printed with permission from the Mayfield Clinic.

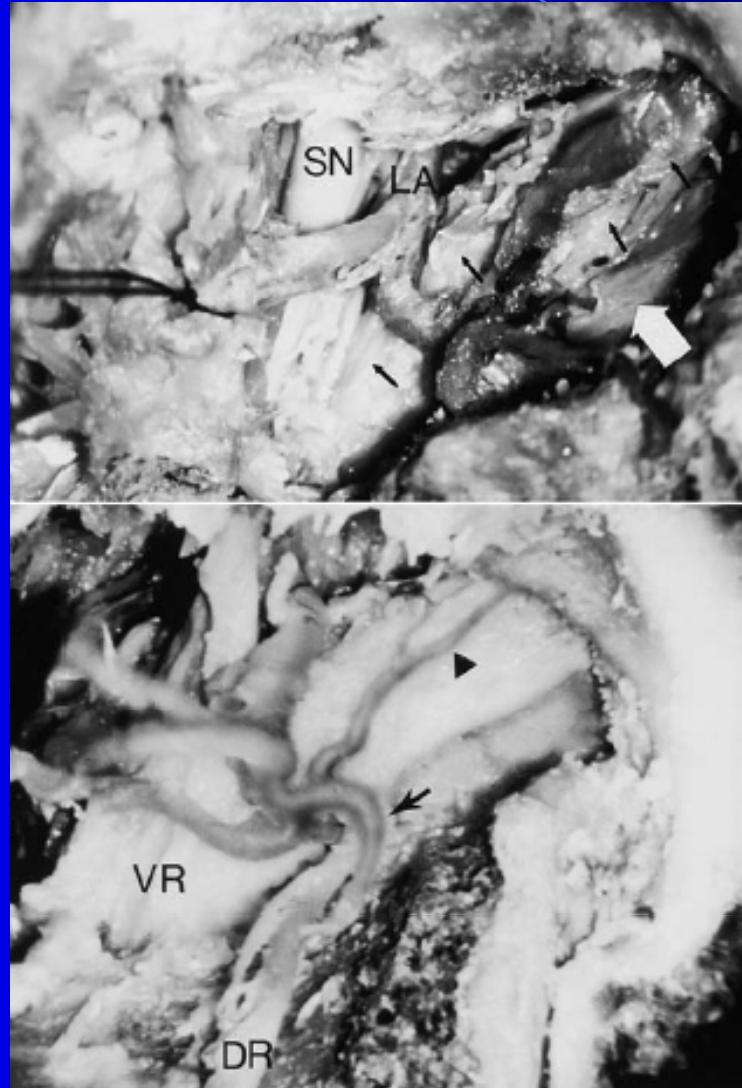
- Viswanathan et al., 1996

# Anatomy



• Viswanathan et al., 1996

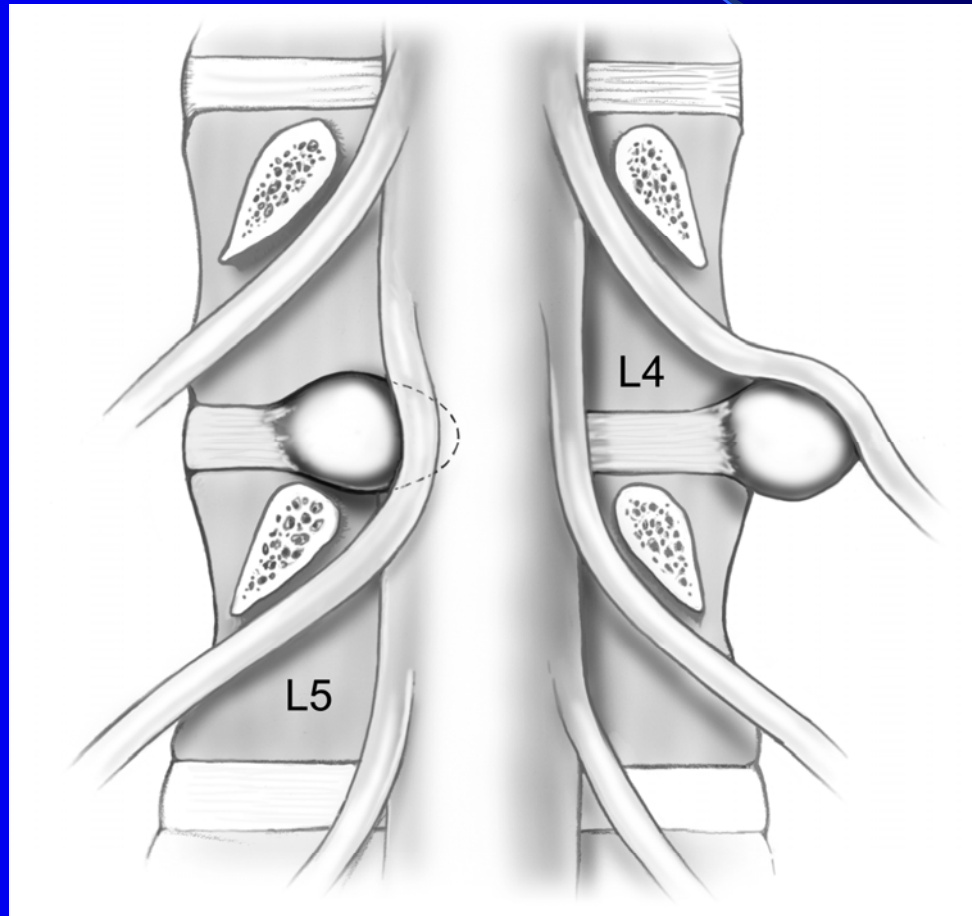
# Anatomy



• Viswanathan et al., 1996

# Anatomy

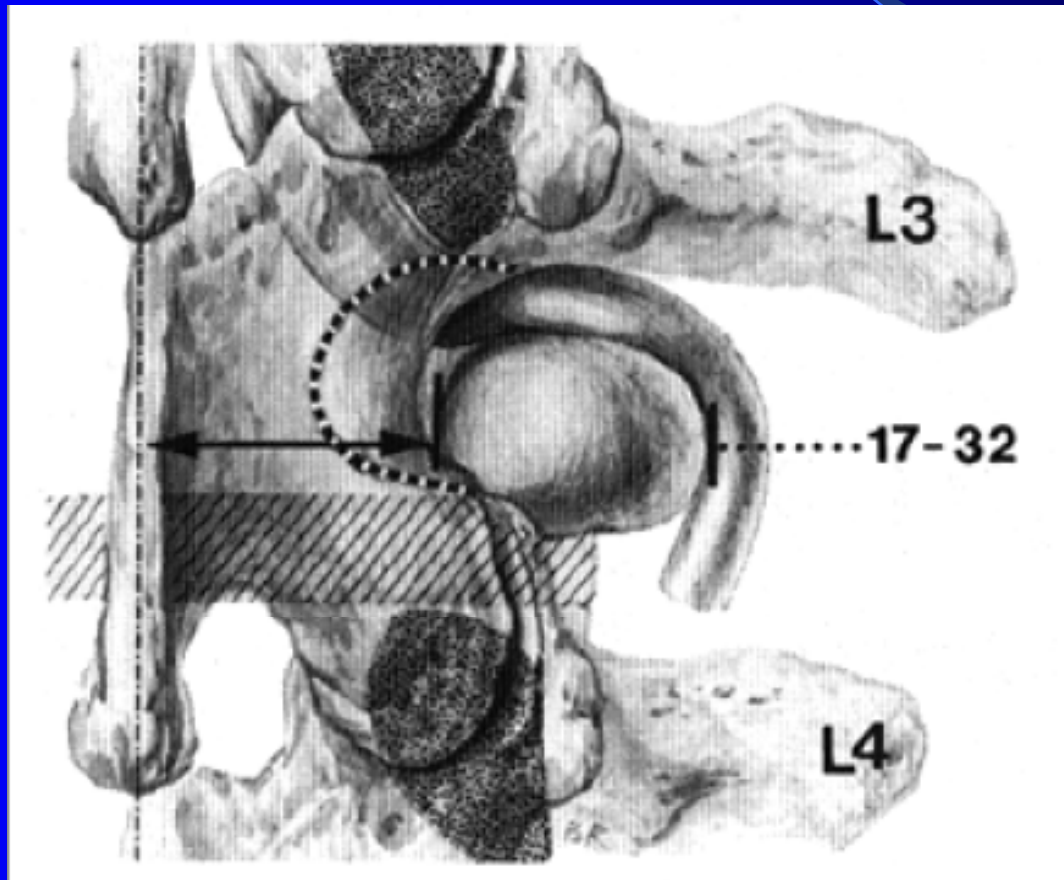
**intra**canalicular



**extra**foraminal

Illustration by Dave Peace

# Anatomy



• Reulen et al., 1996

# Imaging - CT



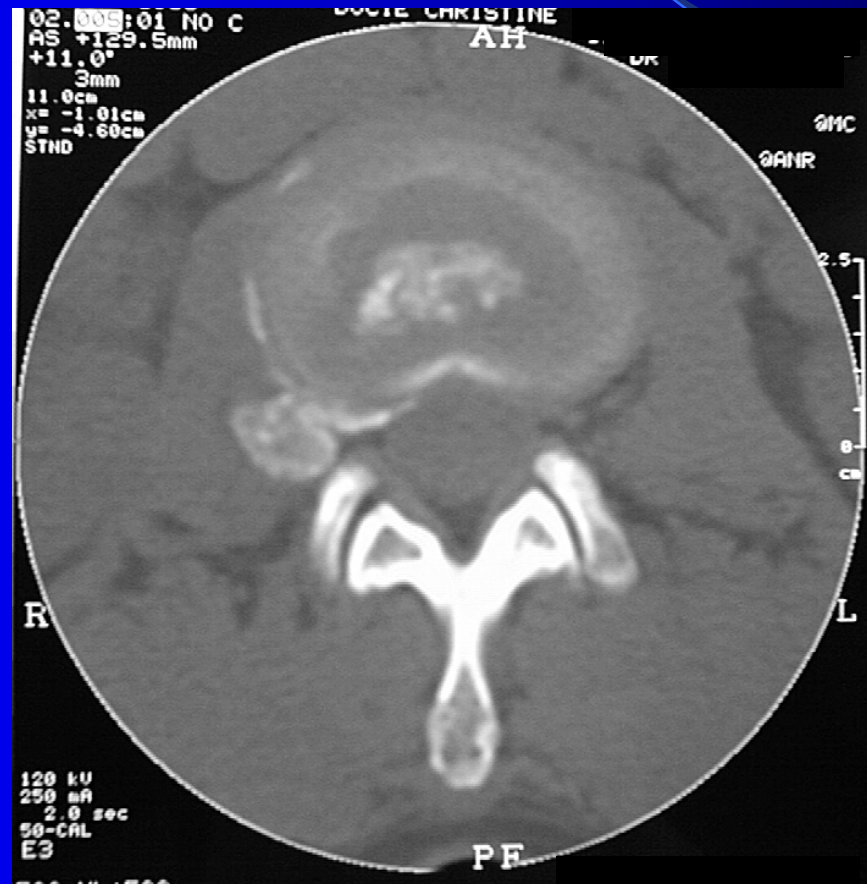
• from Epstein, 2002

# Imaging – CT

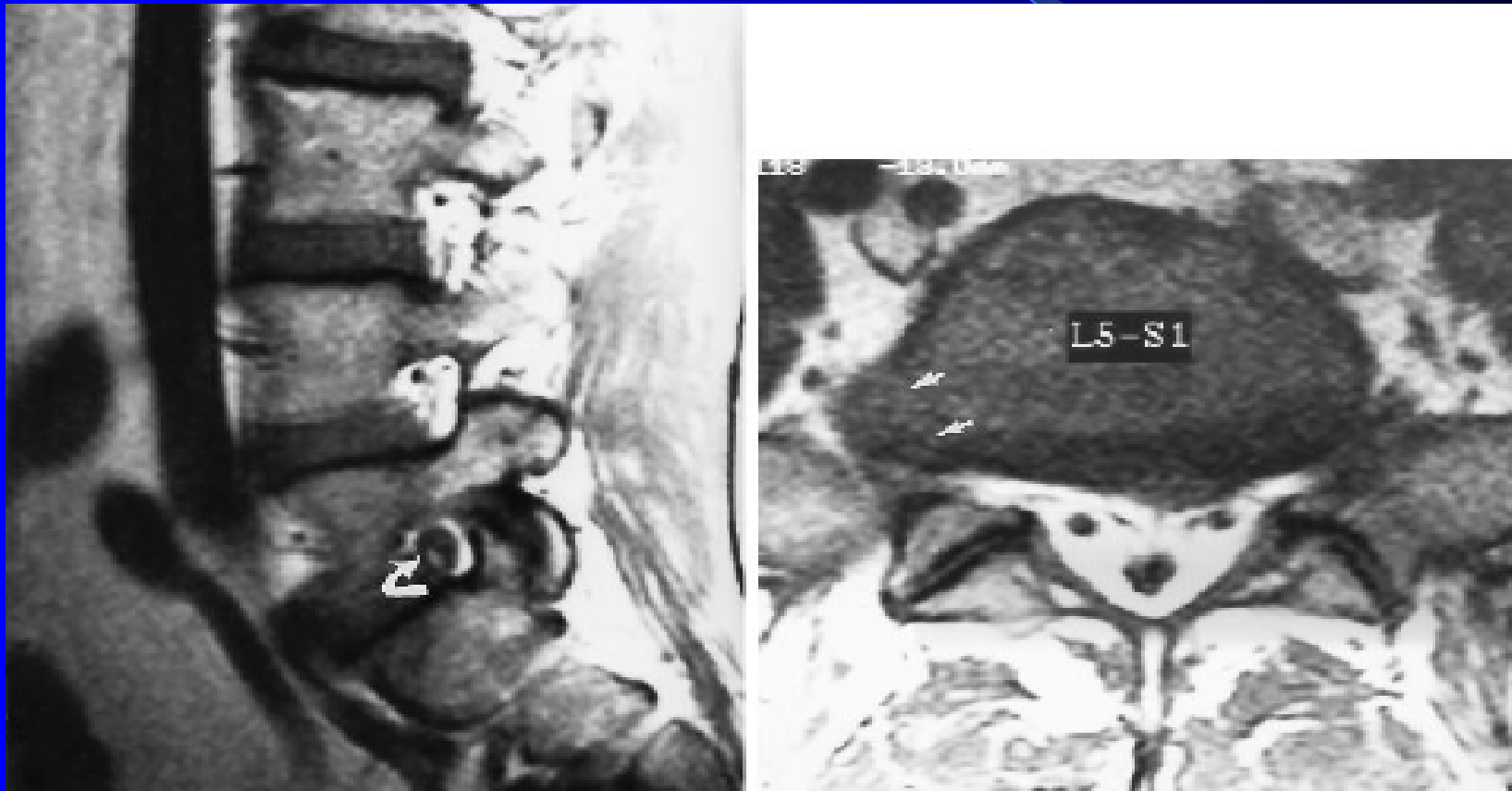


• from Epstein, 1995

# Imaging - CT



# Imaging - MR



• from Epstein, 1995

# Treatment

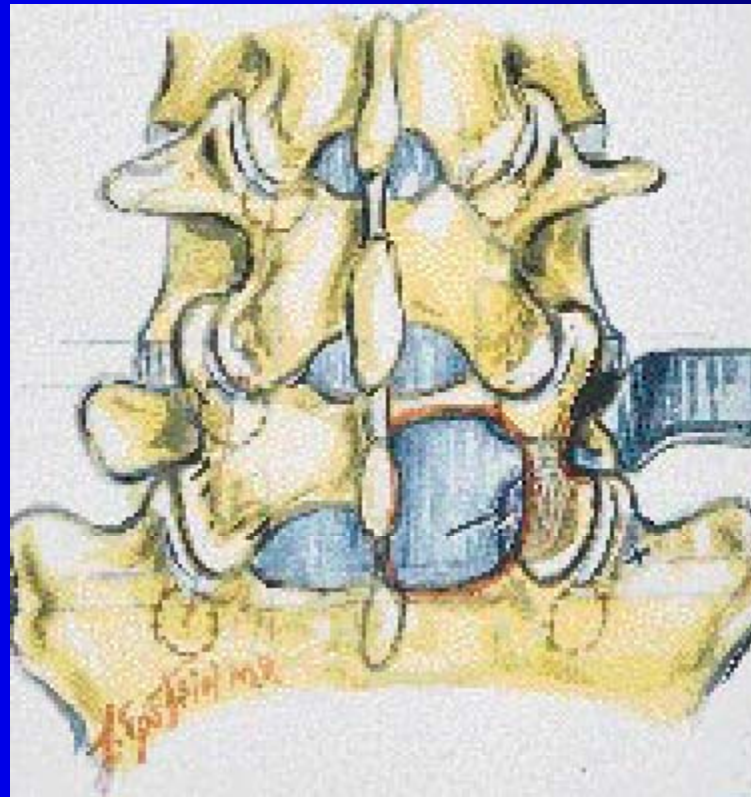
- Conservative
  - Rest
  - NSAIDS
  - Steroids
- Operative

# Open Surgical Approaches

- Medial Approaches
  - Hemilaminectomy with facetectomy
- Lateral Approaches
  - Extreme lateral
- Combined
  - Intertransverse

# Surgery

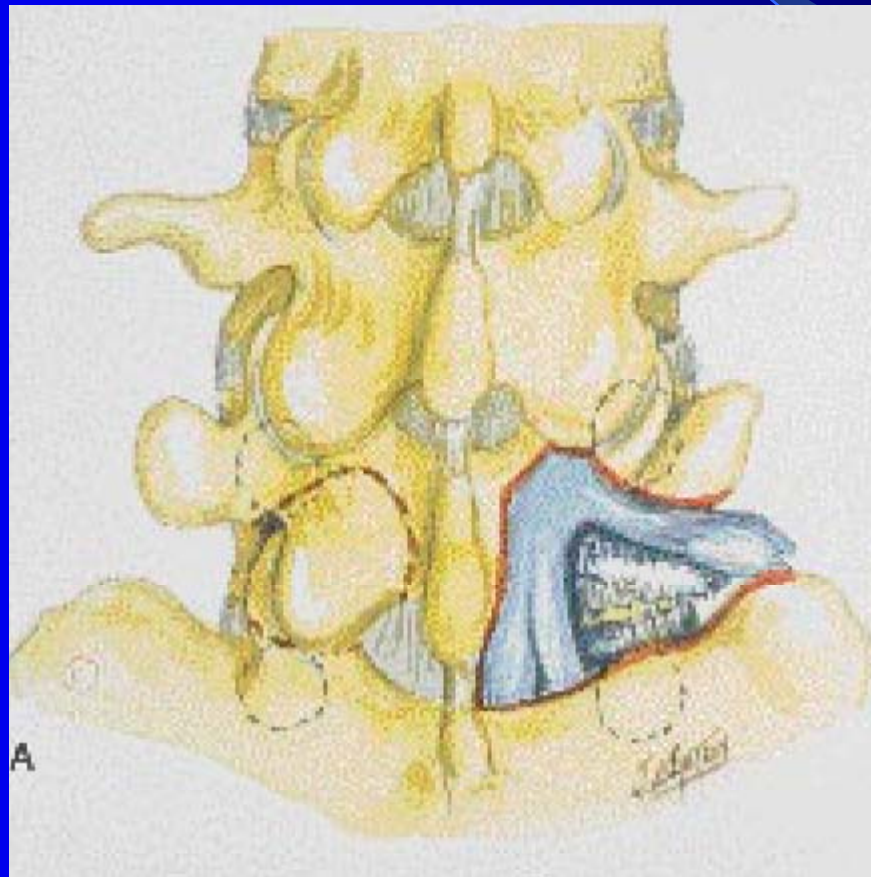
## Medial Approaches



• from Epstein, 1995

# Surgery

## Medial Approaches



• from Epstein, 1995

# Medial Approaches

- Pros

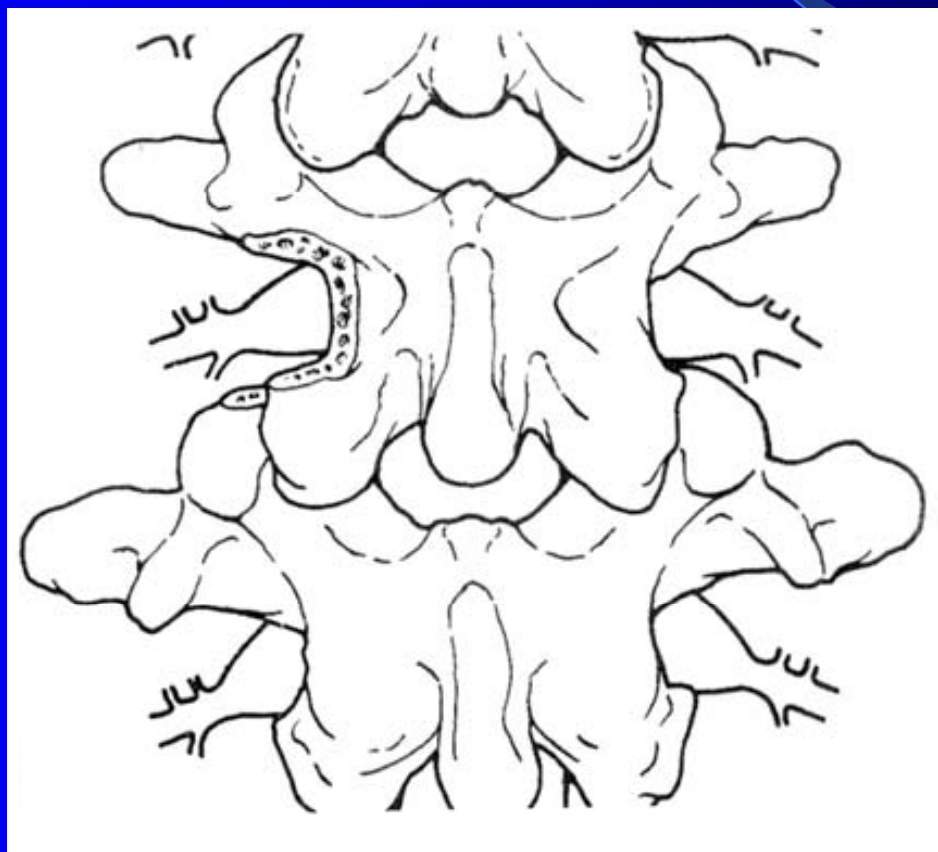
- Complete facetectomy allows complete exposure of nerve root
- Anatomy most familiar

- Cons

- Instability, need for fusion (2-4%)
- Partial facetectomy may not permit clear view of lateral pathology

# Surgery

## Lateral Approaches



- Hood

# Lateral Approaches

- Pros

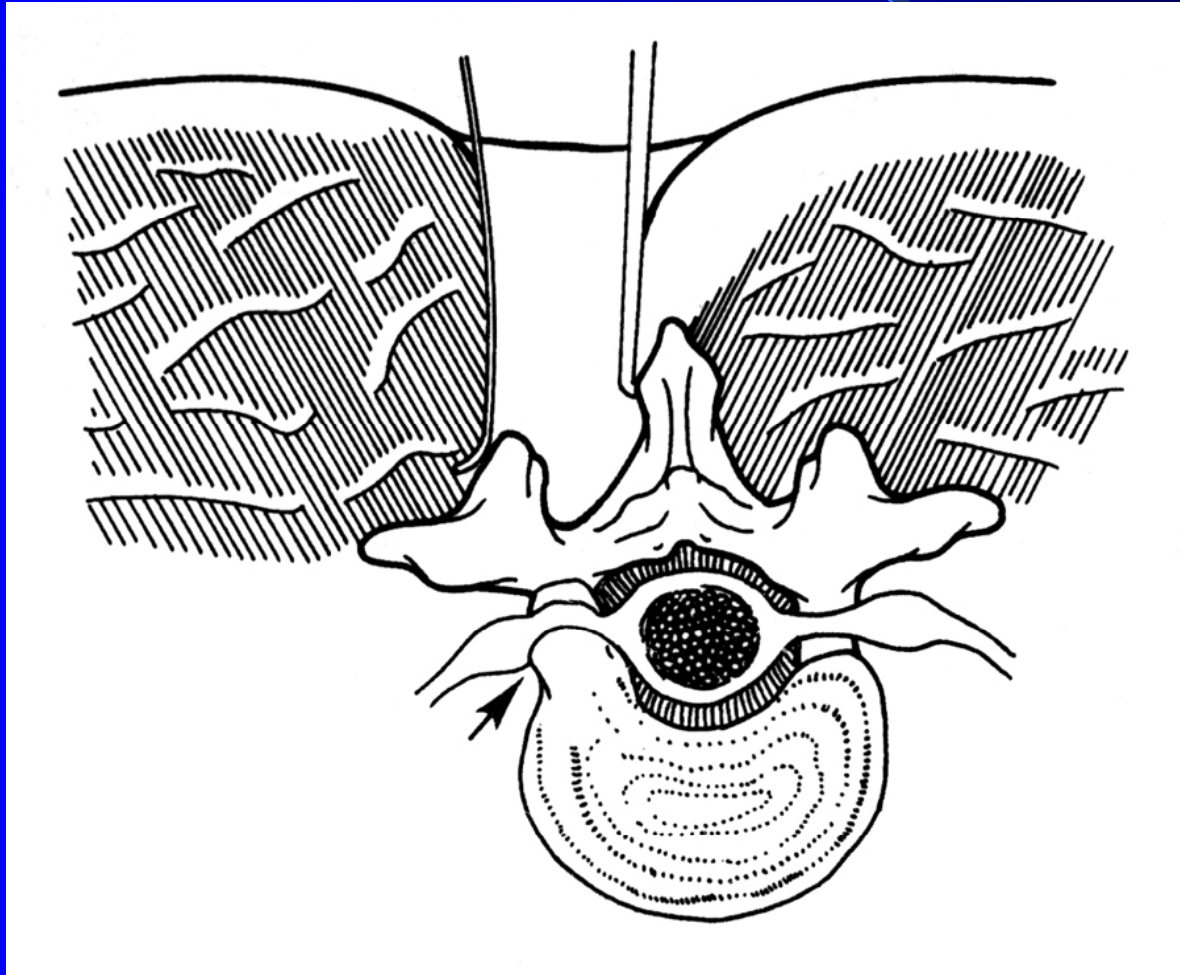
- Facet remains intact

- Cons

- No means to access intracanalicular space
- Unfamiliar anatomy

# Surgery

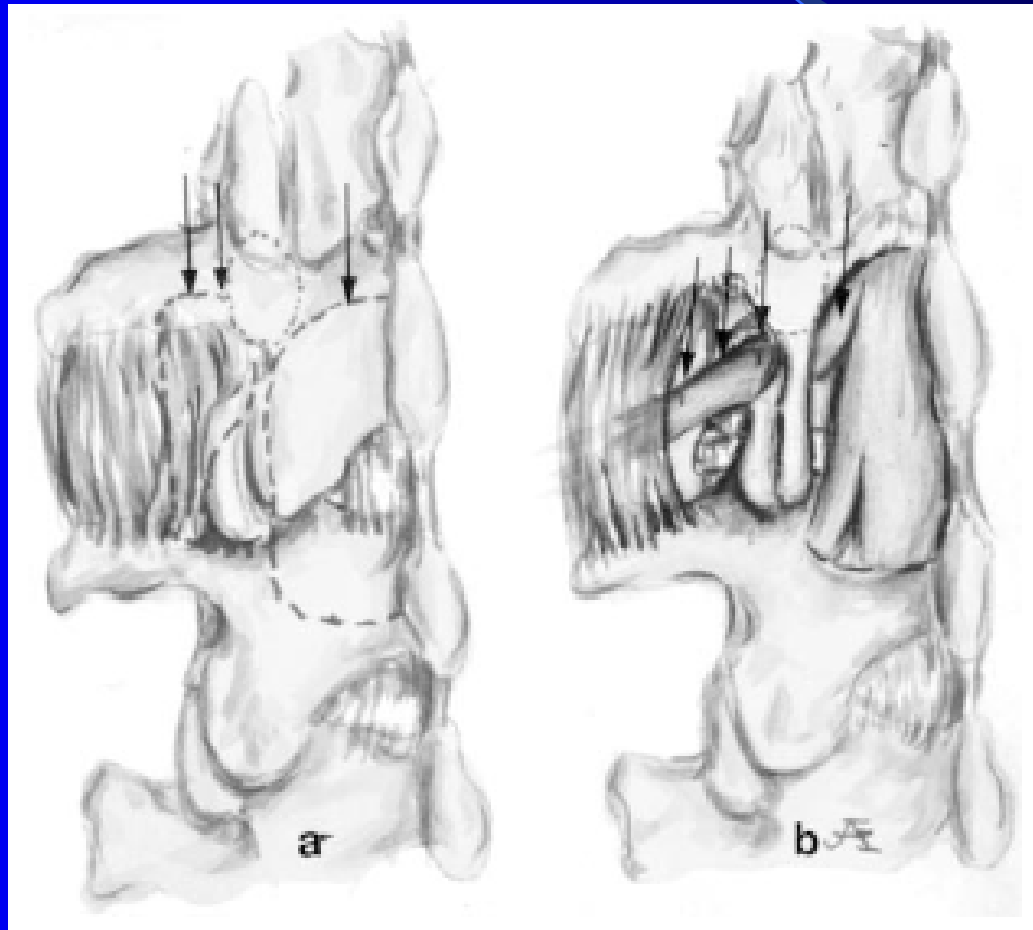
## Combined approach



- Hood

# Surgery

## Intertransverse approach



• from Epstein, 2002

# Surgery

## Intertransverse approach

- Pros
  - Both medial and lateral exposure
- Cons
  - Instability an issue if facetectomy performed

# Summary

- Foraminal/extraforaminal herniations are not uncommon phenomenon
- Surgical approach should be tailored to individual pathology and surgeon's comfort level