

TREATMENT OF RECURRENT LUMBAR DISC HERNIATIONS

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SEG, Istanbul 2010

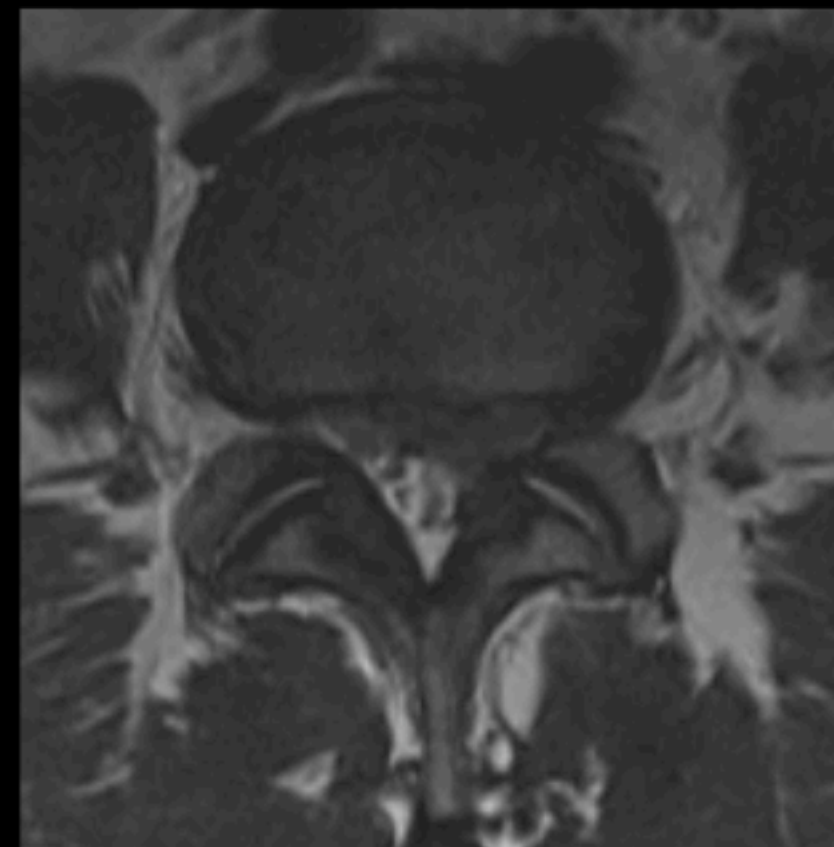
Subjects

- Not the rest, but the recurrent lumbar disc herniations
- Which cases can be the recurrent
- How we can manage the recurrent cases
- How we can treat
- How we can reduce the recurrent rate

Case

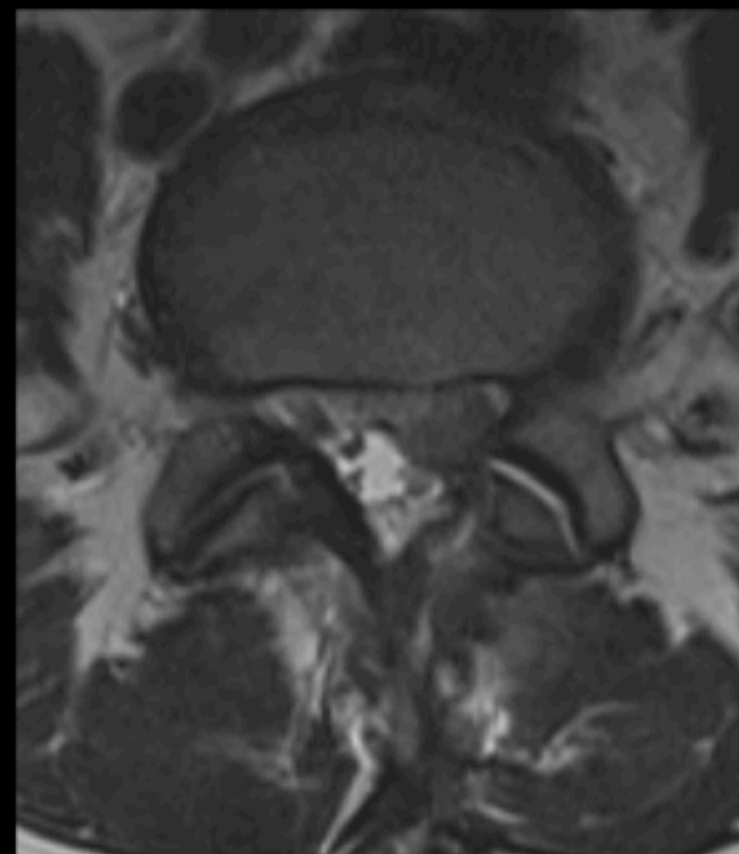
- 53 years old female
- Left leg pain and paresthesia since 1 week
- Left leg raising test (+) at 40 degrees
- Reduced left patella reflex

Before First Surgery



May 2007

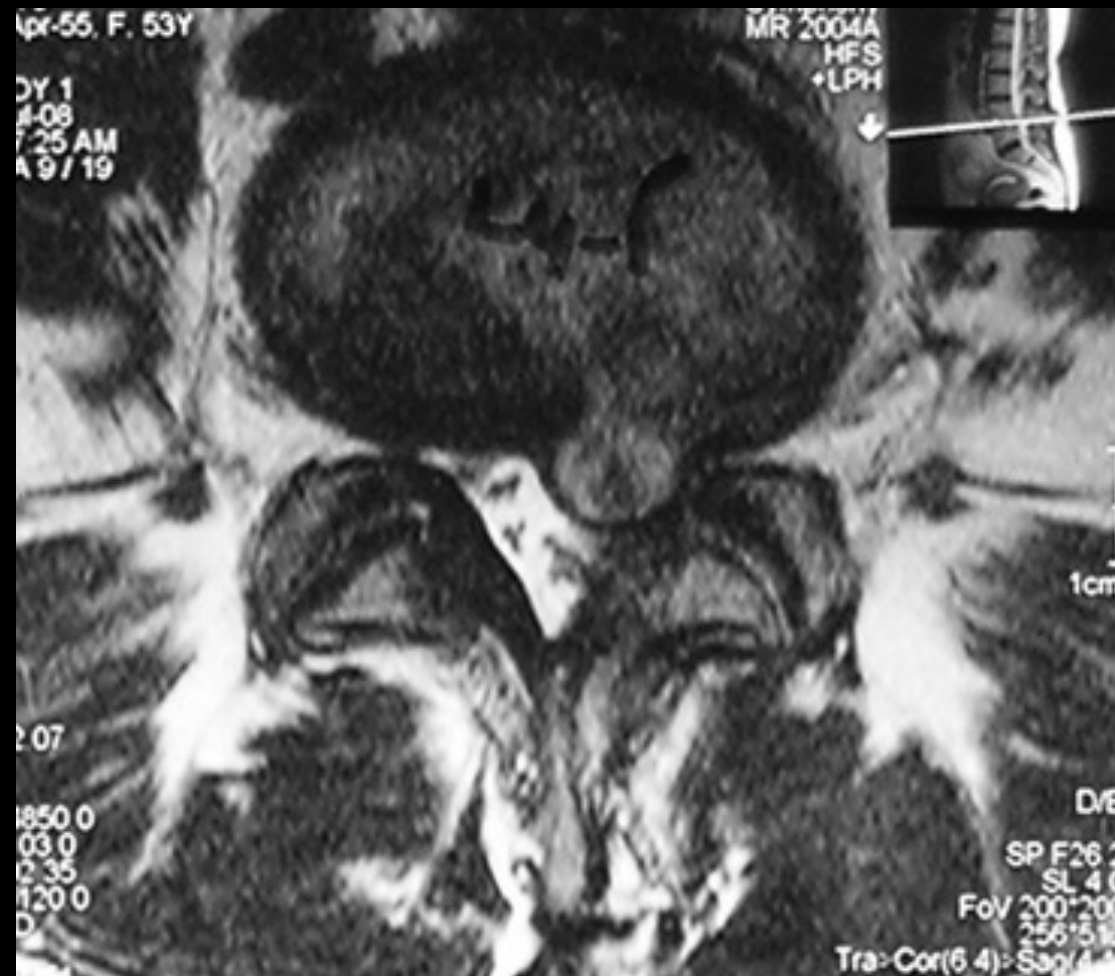
Before Second Surgery (2 months later)



July 2007

After a heavy physical exercise

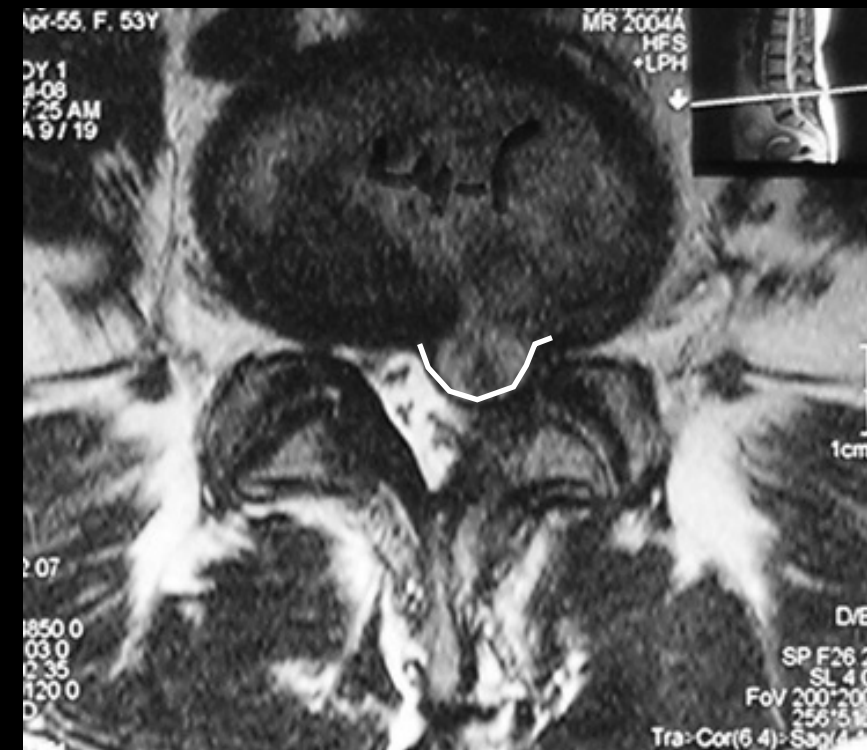
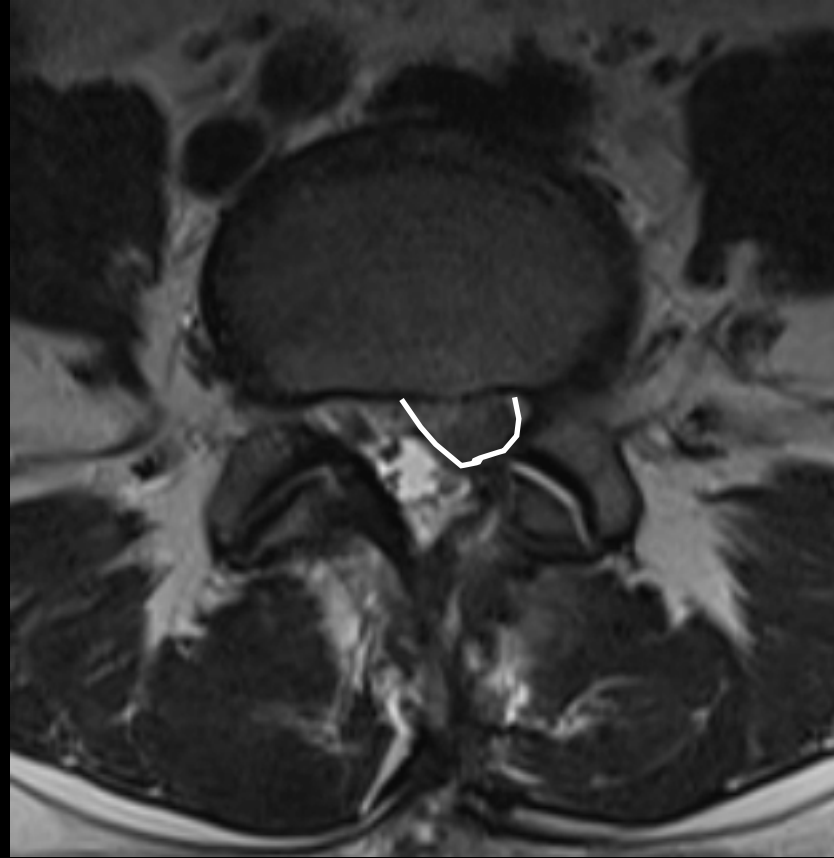
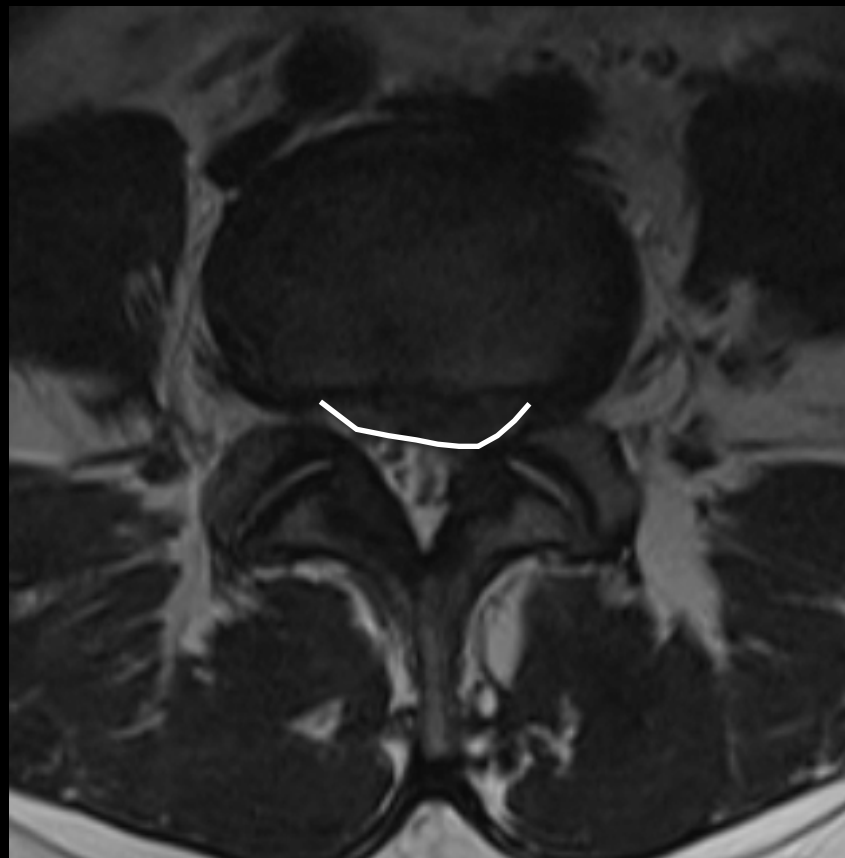
Before Third Surgery (1 year later)



July 2008

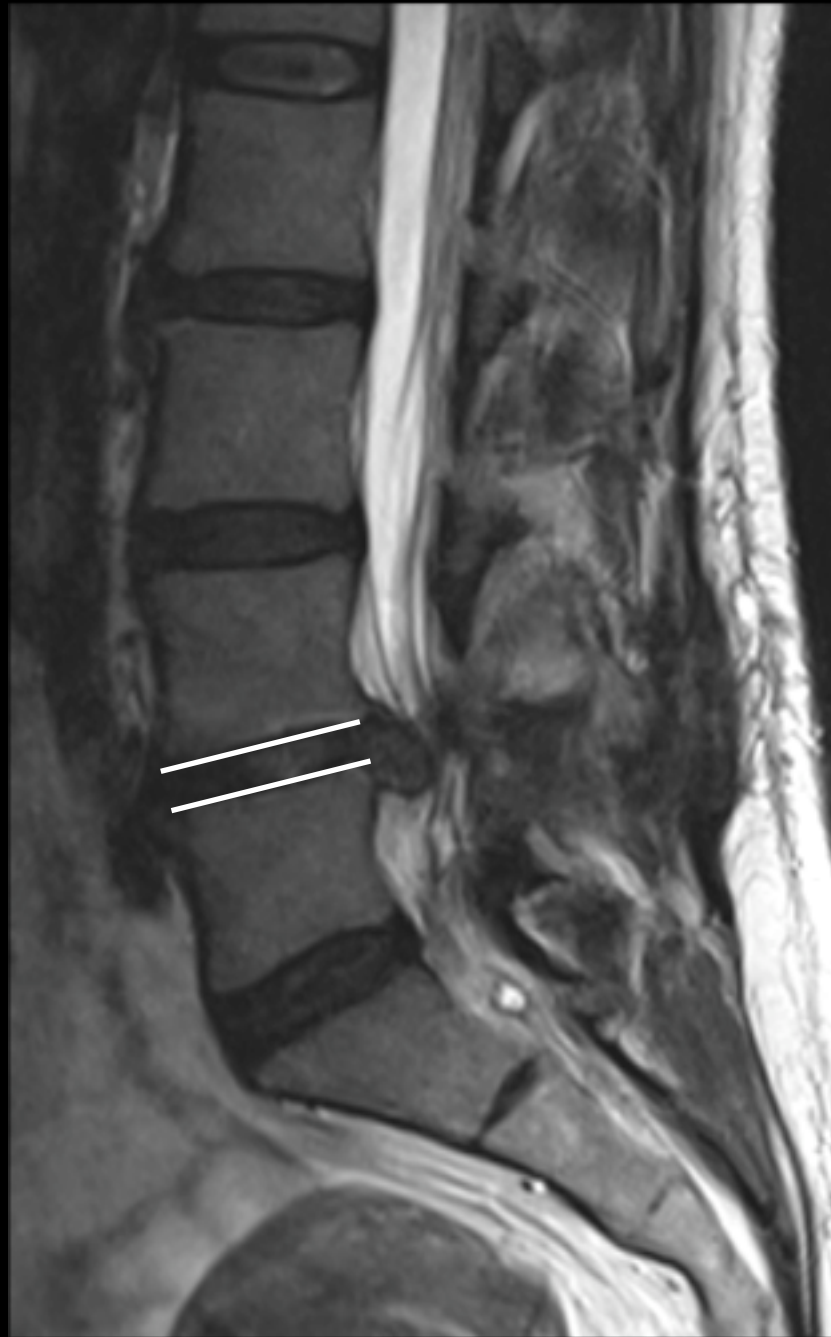
Why it was Recurred ?

Annular Defect !



Why it was Recurred ?

Height of the Disc Space !

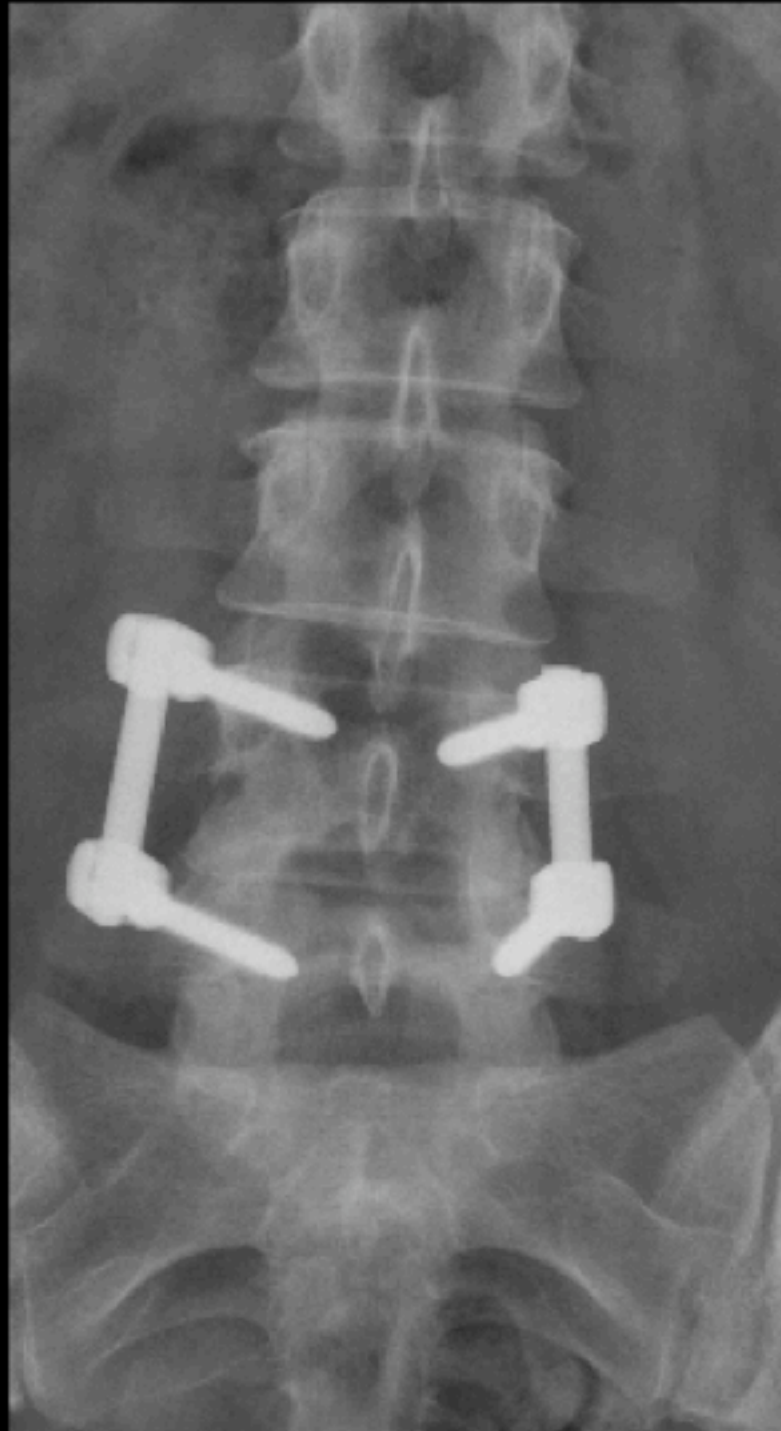


No Fragment Contained Disc Herniation

Third Surgery (1 year later)

Problem;

Progressive collapse of
disc space and 3 times
recurrence



Incidence ?

- 3-18 %

Daneyemez M et al., Minim Invasive Neurosurg 1999

Henriksen L, et al., Br J Neurosurg 1996

Schoegg A et al., 2002

Garces Ambrosi GL, et al., Neurosurg 2009

What are the Risk Factors ?

- Male gender, degenerated disc, trauma or heavy physical activity (Cinotti et al, JBJS 1998)
- Young patients, male gender, smoking, trauma (Suk et al., Spine 2001)
- Older patients, obesity, protrusion, Modic changes (Kim et al., Minim Invasive Neurosurg 2007)
- No single risk factor (Swartz et al., Neurosurg Focus, 2003)



A Prospective Cohort Study of Close Interval Computed Tomography and Magnetic Resonance Imaging After Primary Lumbar Discectomy

Factors Associated With Recurrent Disc Herniation and Disc Height Loss

Matthew J. McGirt, MD,* Sandro Eustacchio, MD,† Peter Varga, MD,‡
Milorad Vilendecic, MD,§ Martin Trummer, MD,† Miro Gorenssek, MD,¶ Darko Ledic, MD,||
and Eugene J. Carragee, MD**

108 patients, 2 years follow up, 10 % recurrent needs second surgery

Age, weight; statistically insignificant

Wide annular defect; statistically significant

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LITERATURE REVIEW

2009

RECURRENT DISC HERNIATION AND LONG-TERM BACK PAIN AFTER PRIMARY LUMBAR DISCECTOMY: REVIEW OF OUTCOMES REPORTED FOR LIMITED VERSUS AGGRESSIVE DISC REMOVAL

Medline review between 1980–2007

Limited discectomy (sequestrectomy) 6135 patients

Aggressive discectomy 7224 patients

	LD	AD
Early recurrent rate	14.5%	14.1%
Late recurrent (2 years after surgery)	7%	3.5%
Persistent back/leg pain (2 years after surgery)	11.6%	27.8%

Disc Height and Segmental Motion as Risk Factors for Recurrent Lumbar Disc Herniation

Kyoung-Tae Kim, MD, Seung-Won Park, MD, PhD, and Young-Baeg Kim, MD, PhD

- Smoking
- Disc degeneration (grade 3,4,5)– risk high
 - Disc degeneration (grade 1,2,6)– risk low
- Height of disc space– risk high
- Increased Sagittal ROM– risk high

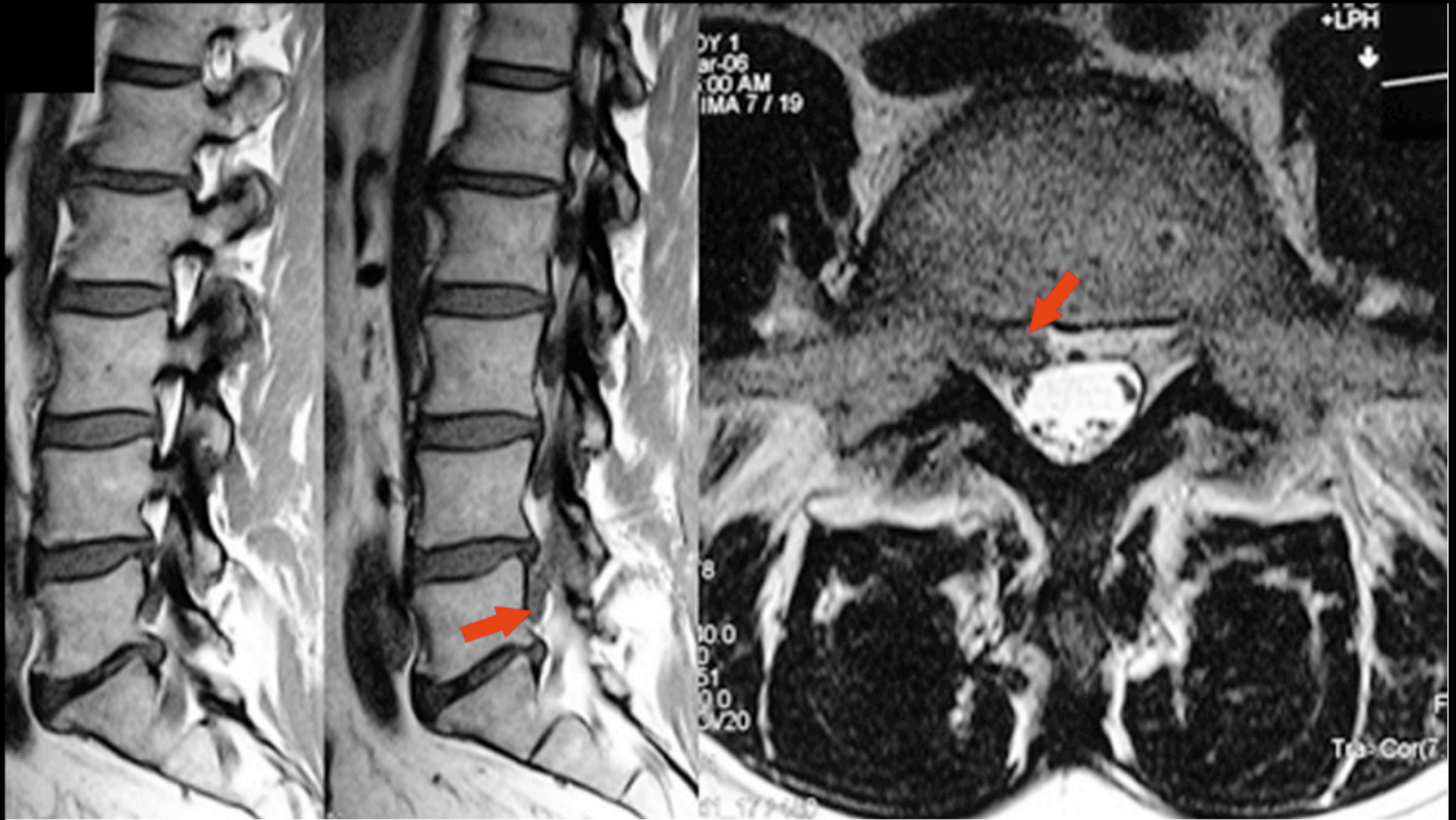
CLINICAL OUTCOMES AFTER LUMBAR DISCECTOMY FOR SCIATICA: THE EFFECTS OF FRAGMENT TYPE AND ANULAR COMPETENCE.

CARRAGEE, EUGENE J. MD; HAN, MICHAEL Y. MD; SUEN, PATRICK W. MD; KIM, DAVID MD [Scientific Articles]

2003;85(1):102-108

	Recurrence	Re-operation
● Fragment-annular fissure	1%	1%
● Fragment-Contained	10%	5%
● Fragment-annular defekt	27%	21%
● No Fragment-Contained	38%	p

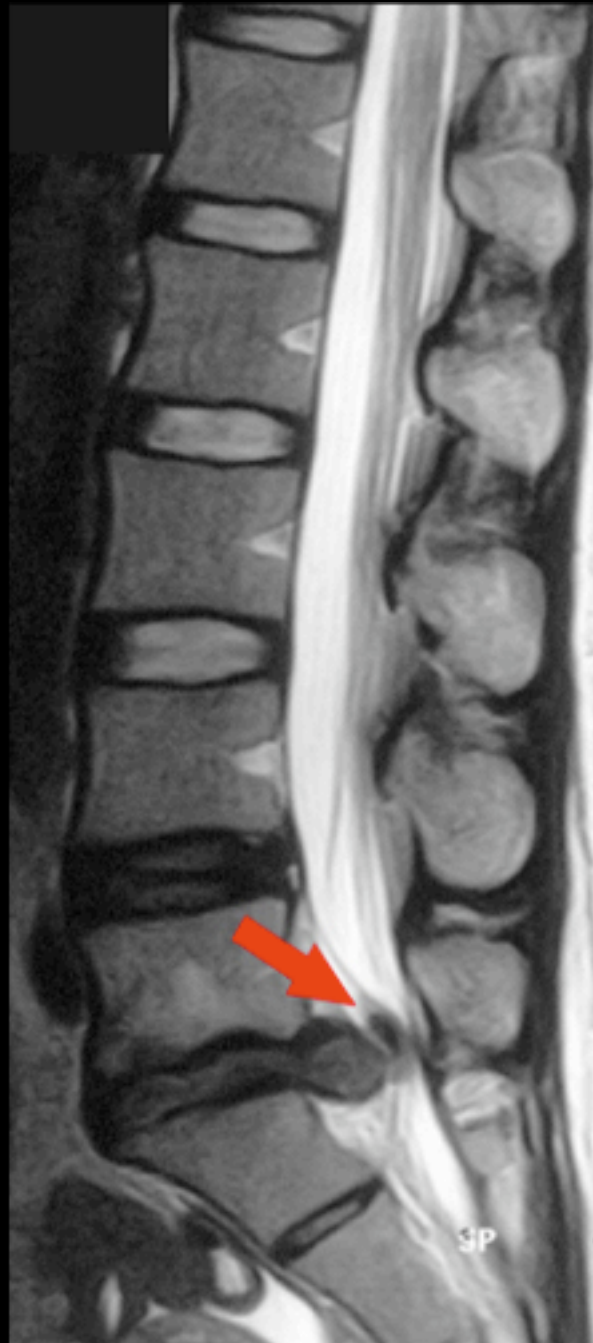
Fragment- Annular Fissure



1%

1%

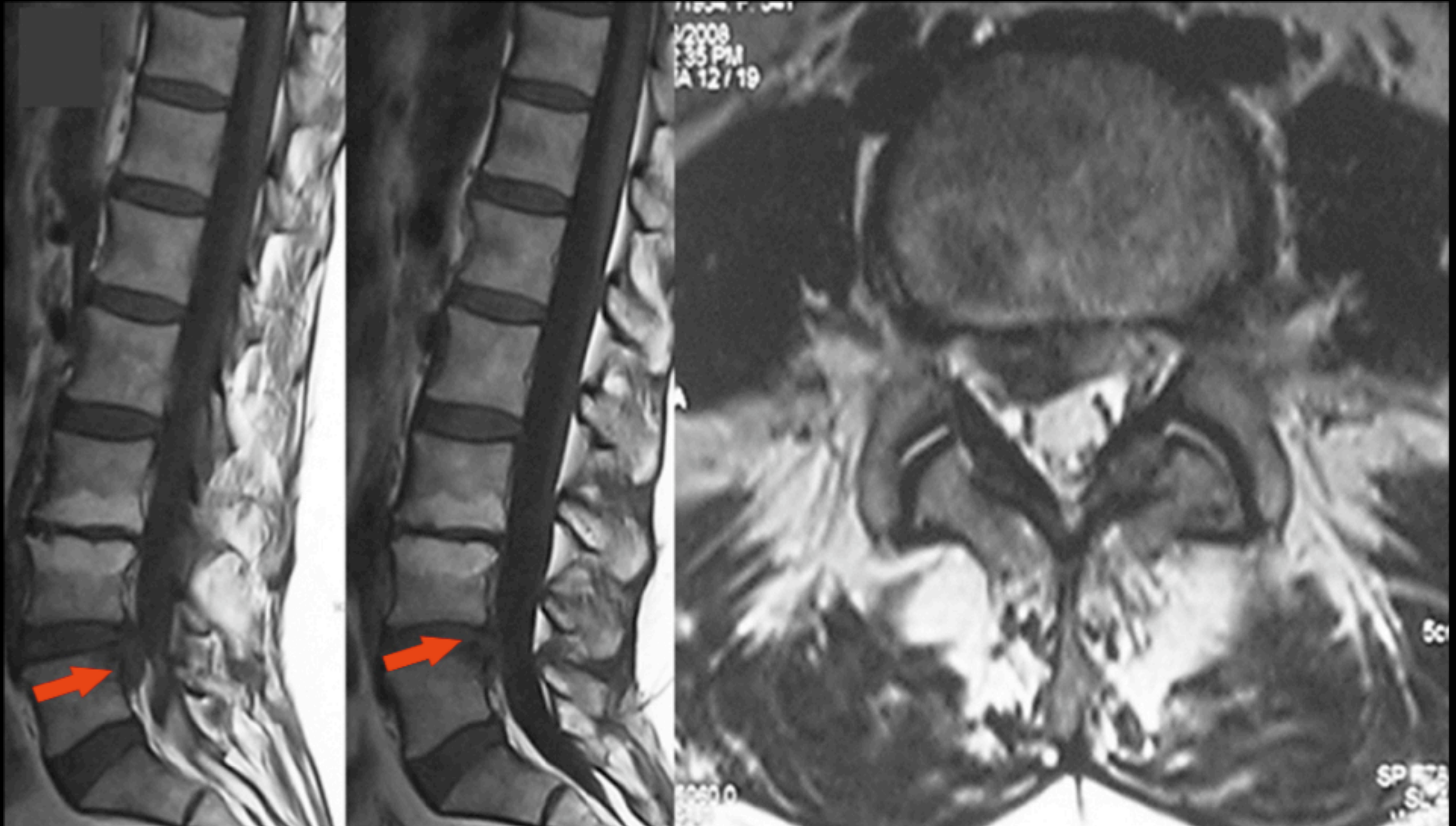
Fragment- Contained



10%

5%

Fragment- Annular Defect



27%

21%

No Fragment- Contained

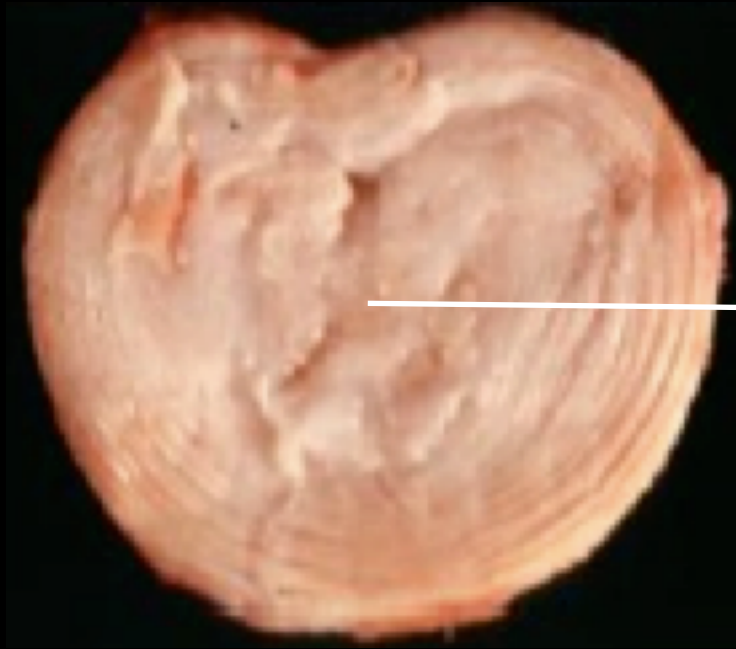


38%

p

Biomechanical Behavior

Nucleus/ Annulus



high compressive stress
low tensile stress

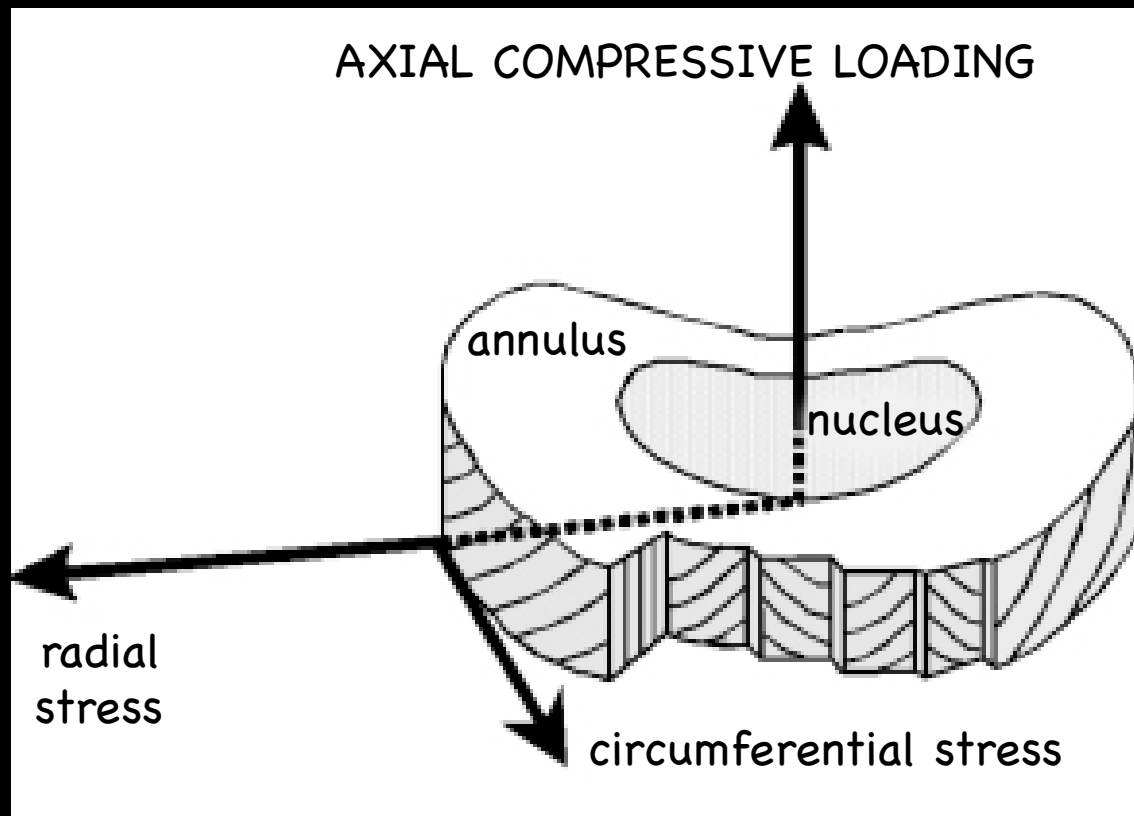


low tensile stress

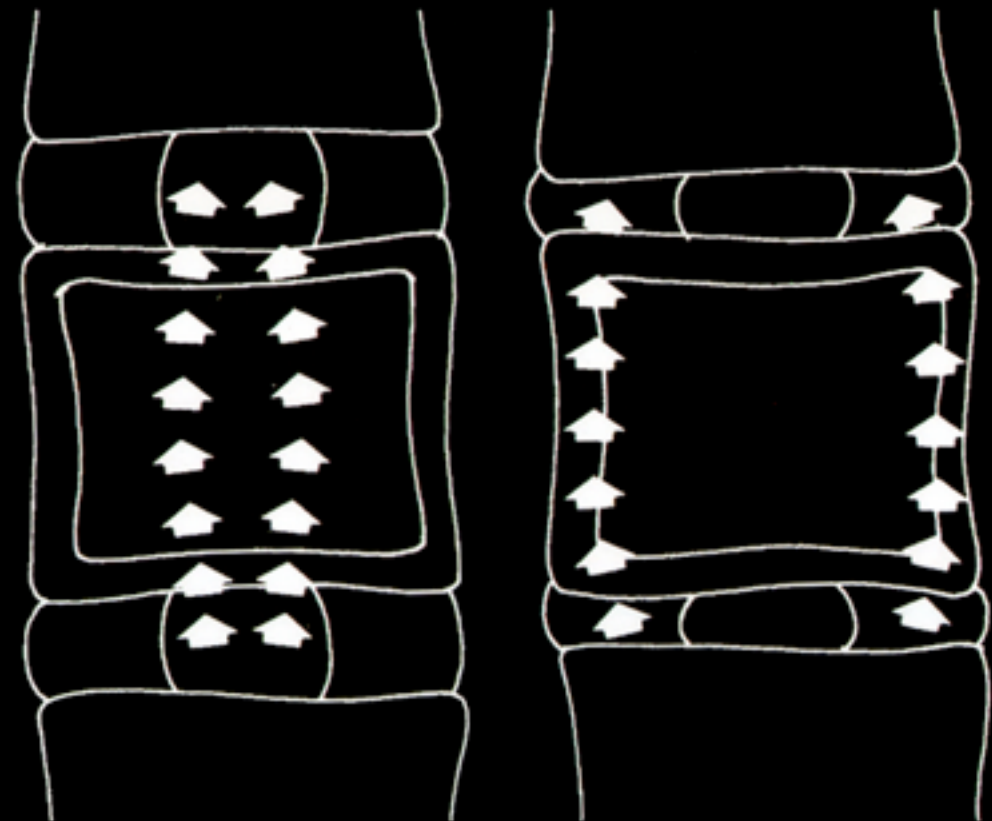
high tensile stress

Why the Annulus is Important

Stress distribution



Load distribution

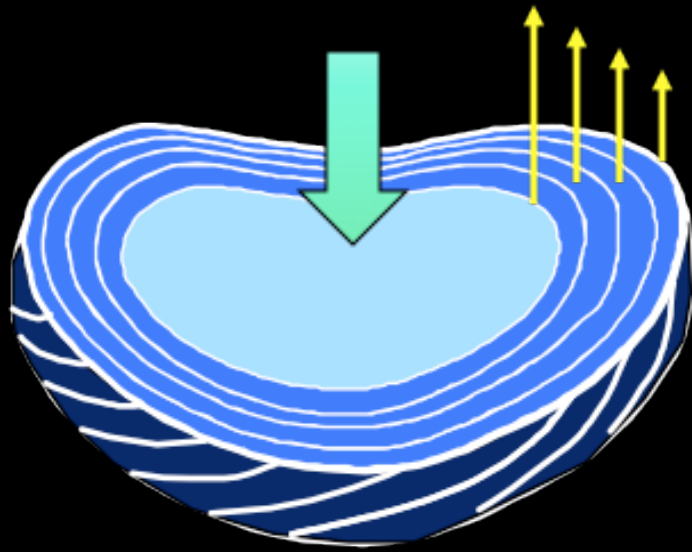


Normal

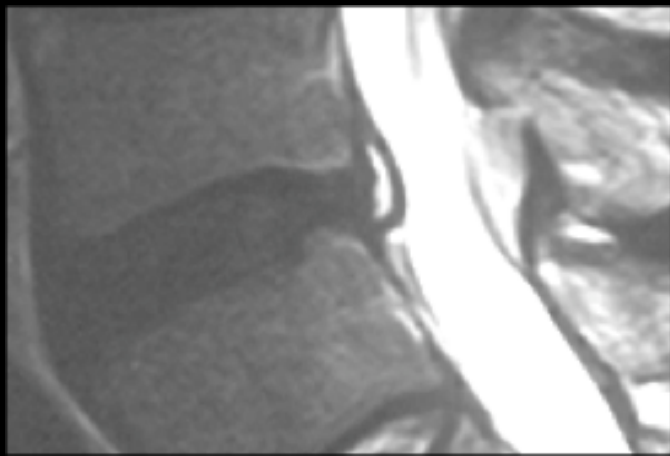
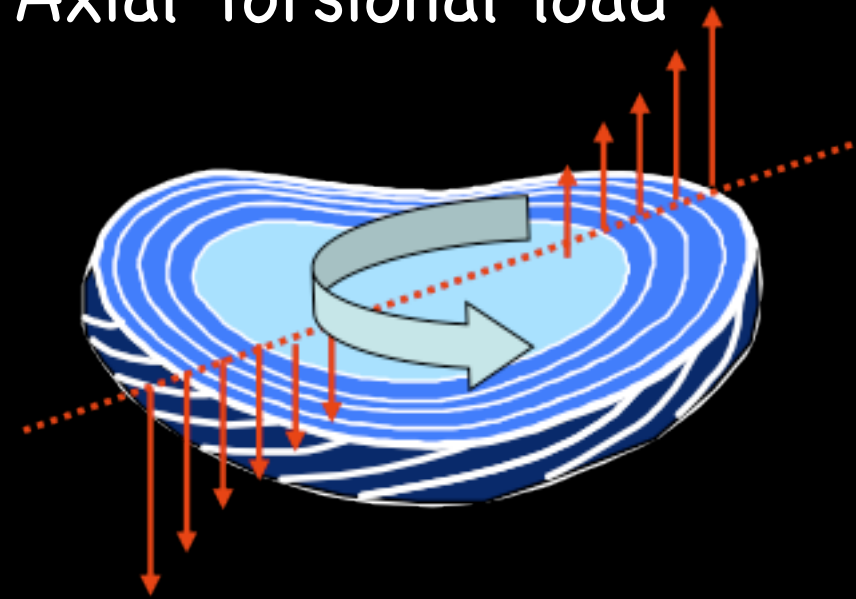
Degenerated

Annular Defect/ Rupture ?

Axial compressive load



Axial torsional load



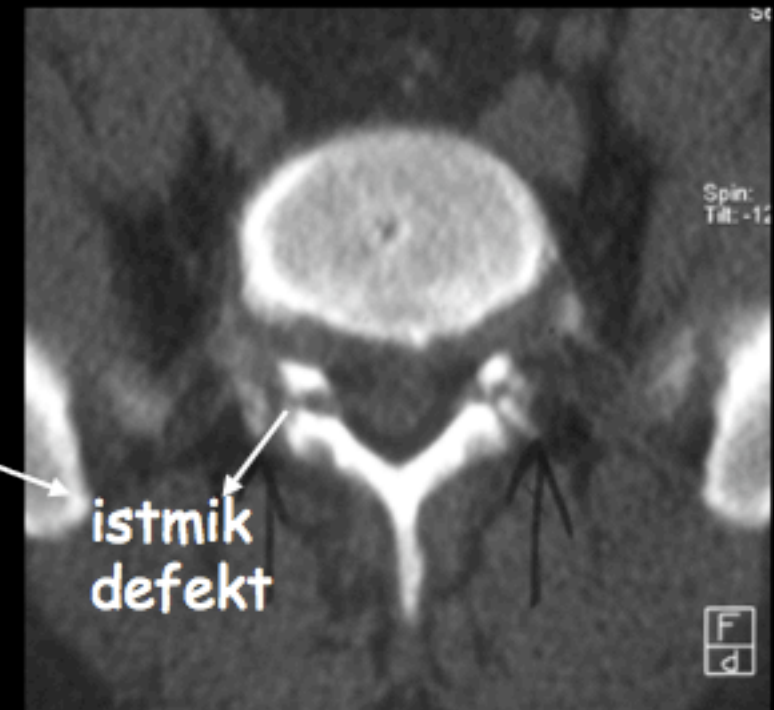
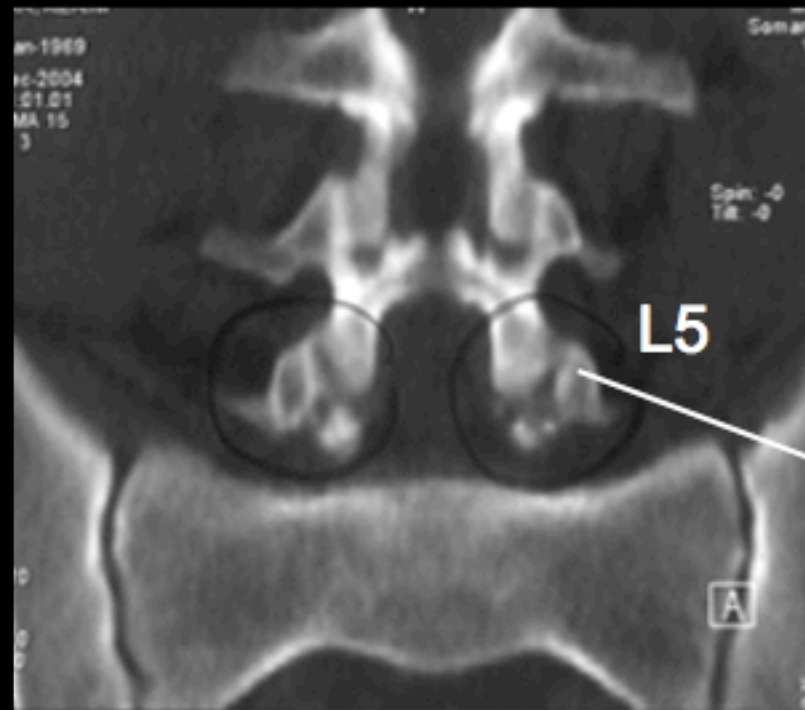
Patient Evaluation

- Neurological examination
- Differential diagnosis
- Radiological examination
 - Static and/or dynamic X-rays
 - CT scan
 - MRI
- Electrophysiological tests

Inform of the Patients

- The recurrence rate
- Why and How the recurrence may occur
- When the stabilization procedure may indicate

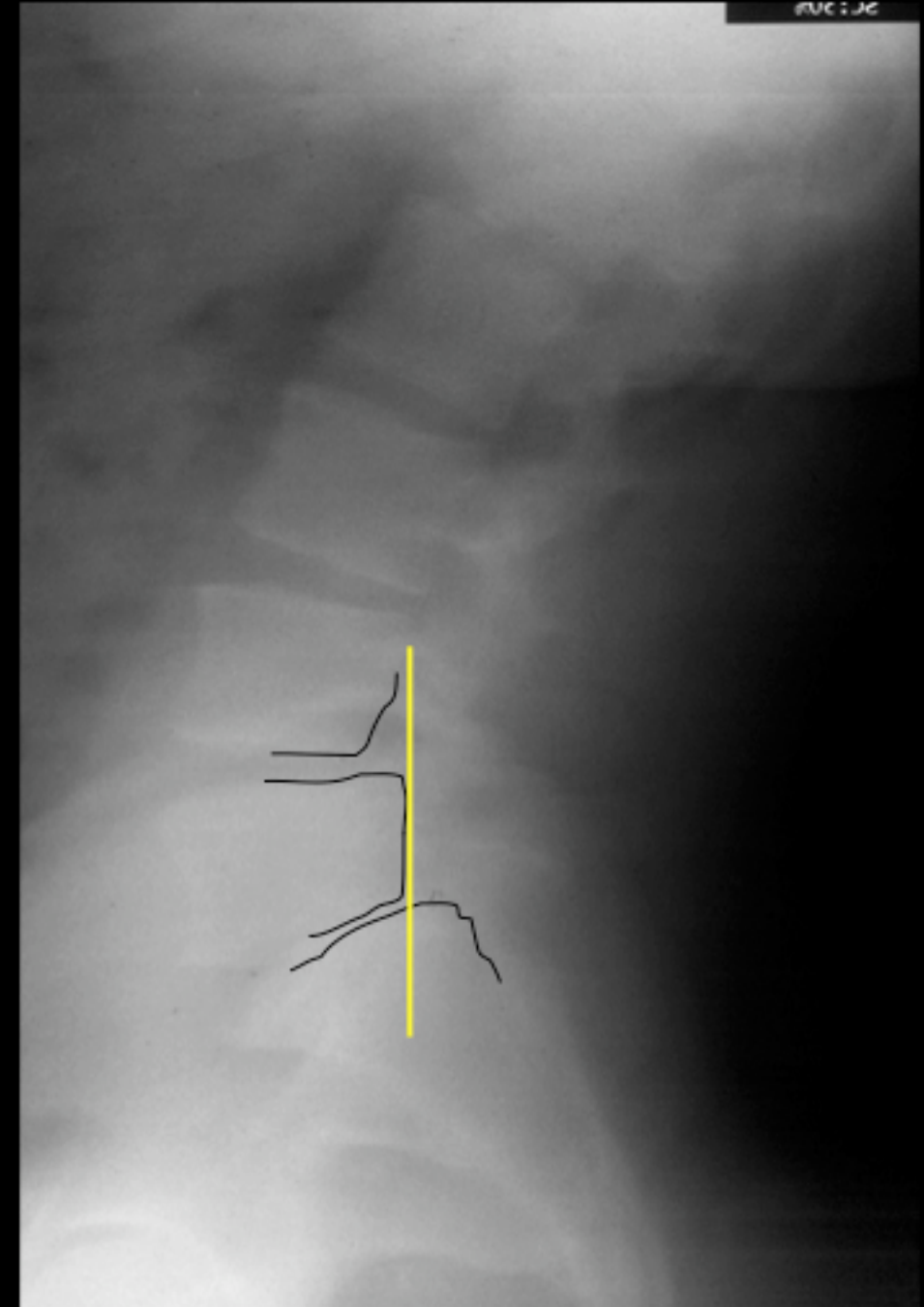
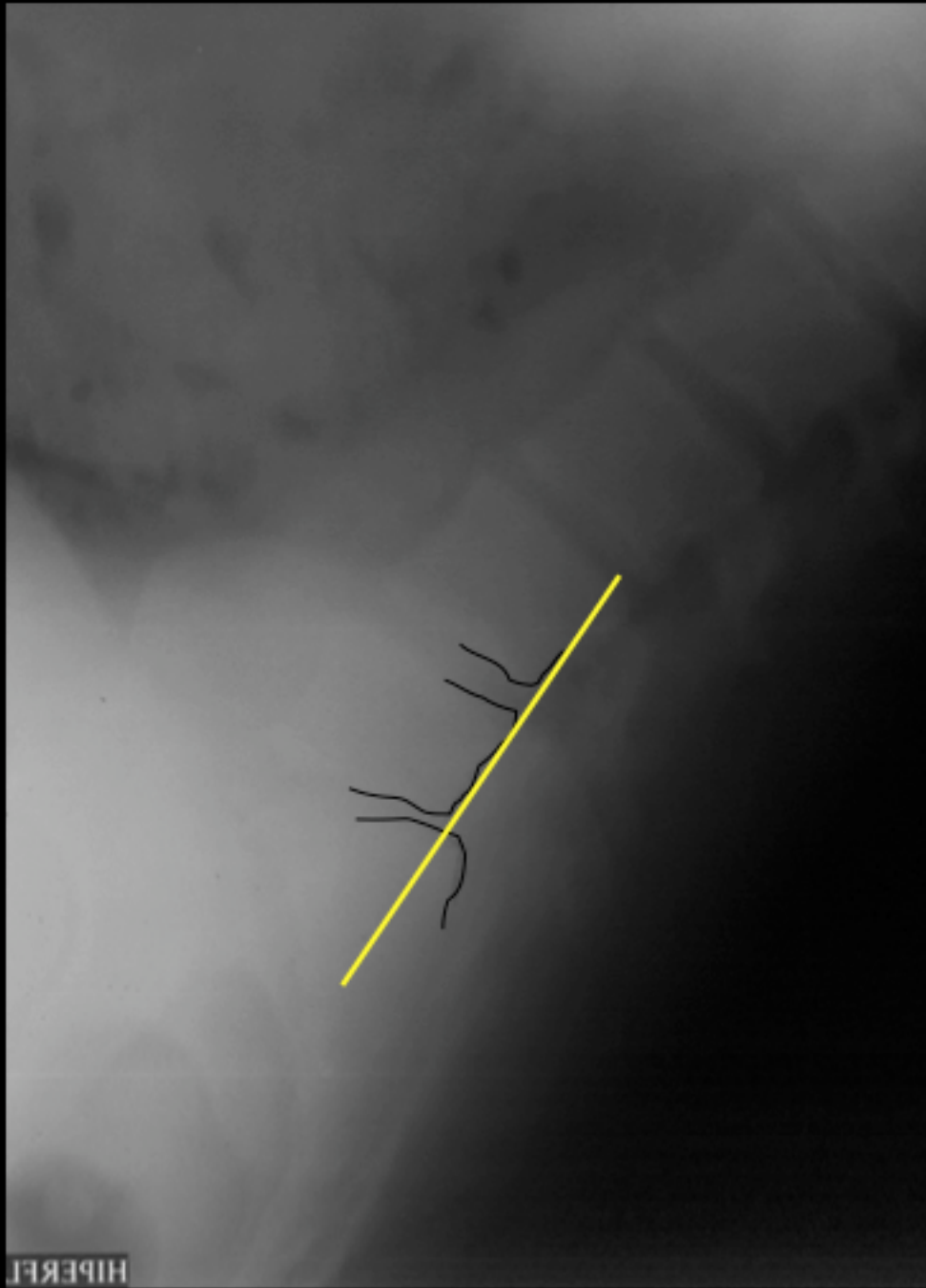
How we can prevent the recurrence



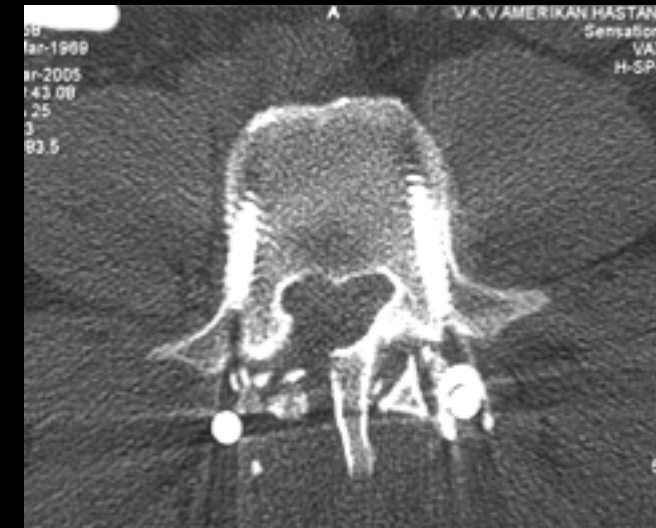
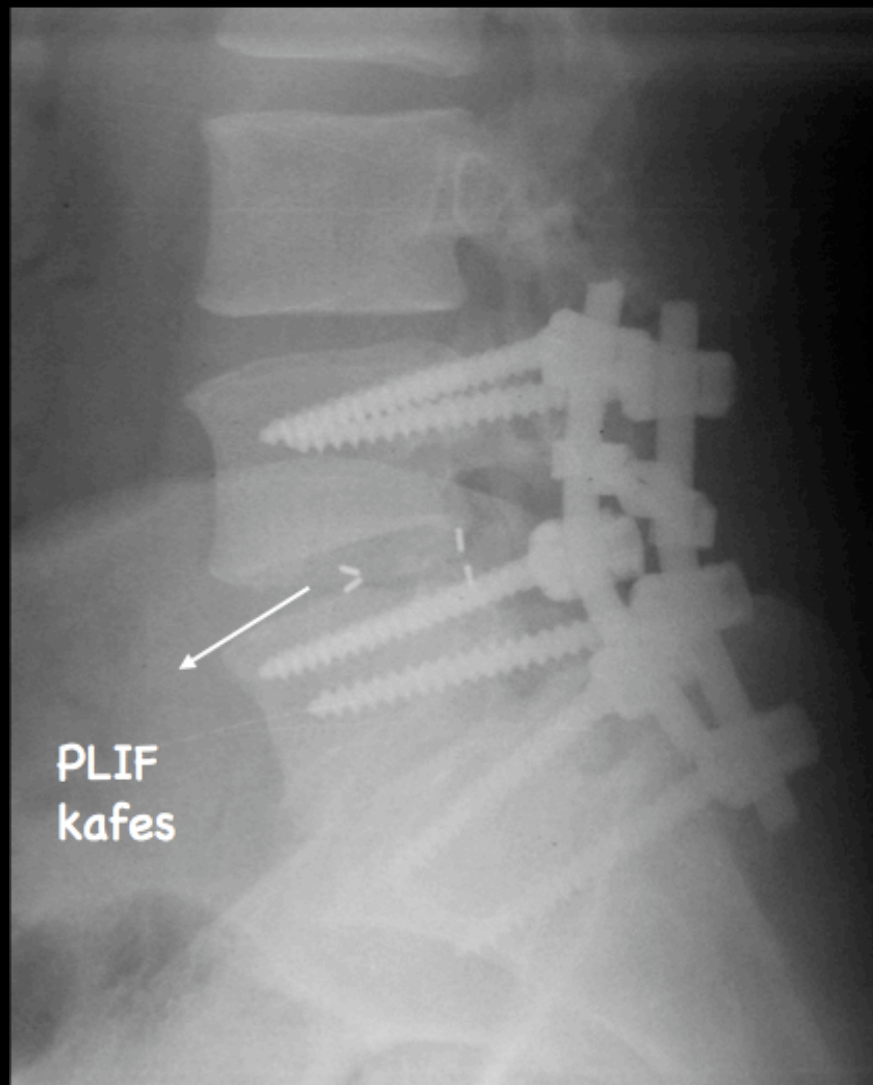
How we can prevent the recurrence



How we can prevent the recurrence

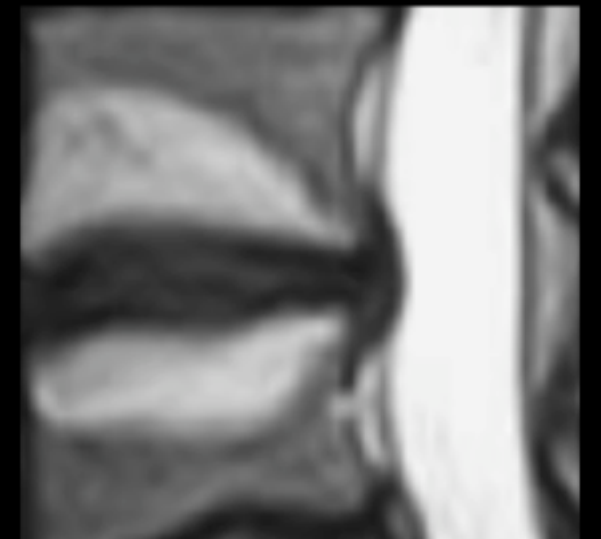
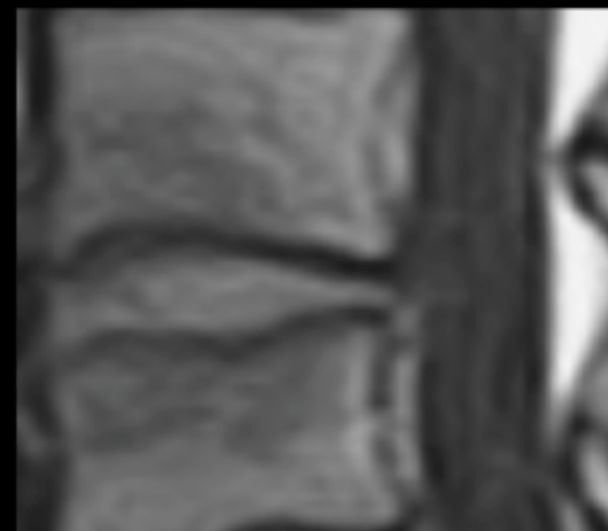
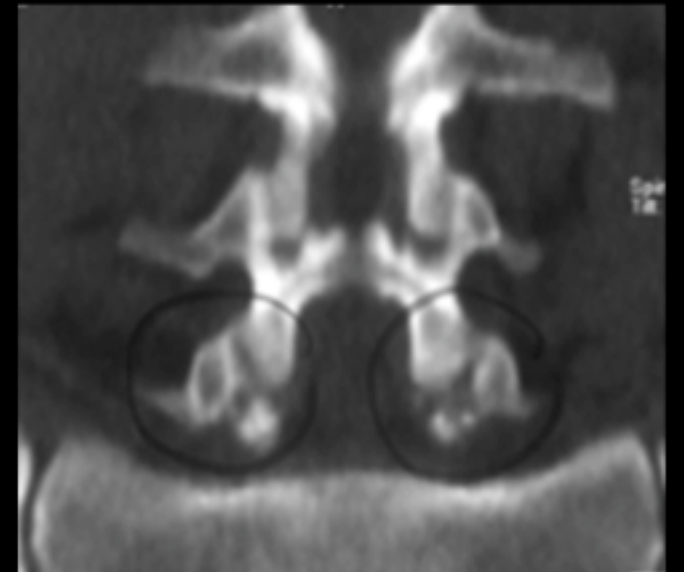
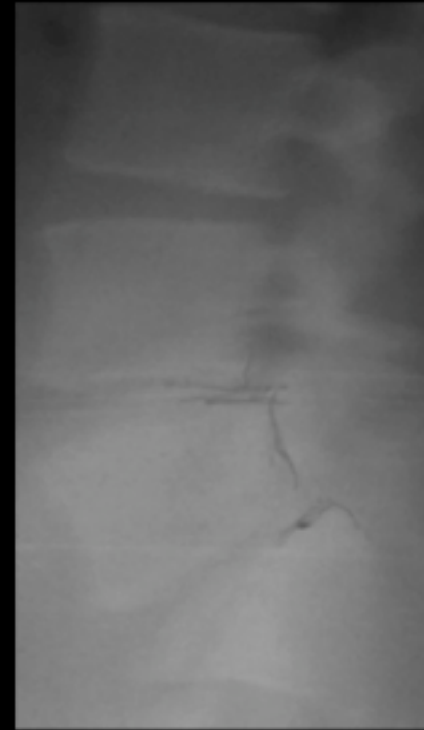


How we can prevent the recurrence



How we can prevent the recurrence

- Segmental instability ?
 - Isthmic defect
 - Anterior or Retrolisthesis
 - Modic changes



Michael T. Modic, MD • Peter M. Steinberg, MD • Jeffrey S. Ross, MD
• Thomas J. Masaryk, MD • John R. Carter, MD

**Degenerative Disk Disease:
Assessment of Changes in Vertebral
Body Marrow with MR Imaging¹**

Evaluation of 424 MRI exams

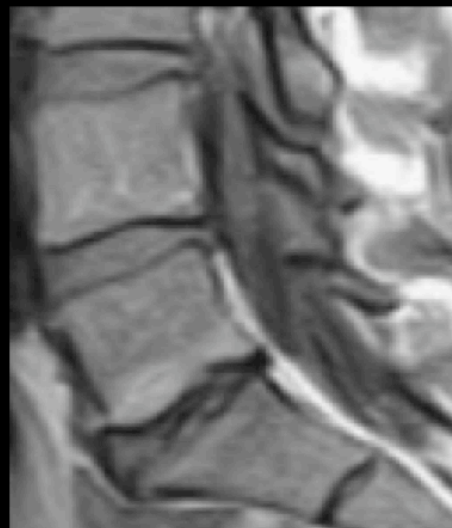
	T1	T2
Type I	hypo	hyper
Type II	hyper	hyper
Type III	hypo	hypo

Modic Endplate Changes

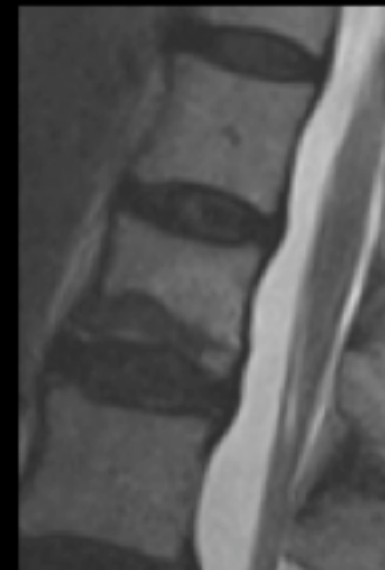
Type I



Type II



Type III



Editorial

Modic Type 1 and Type 2 changes

MICHAEL T. MODIC, M.D.

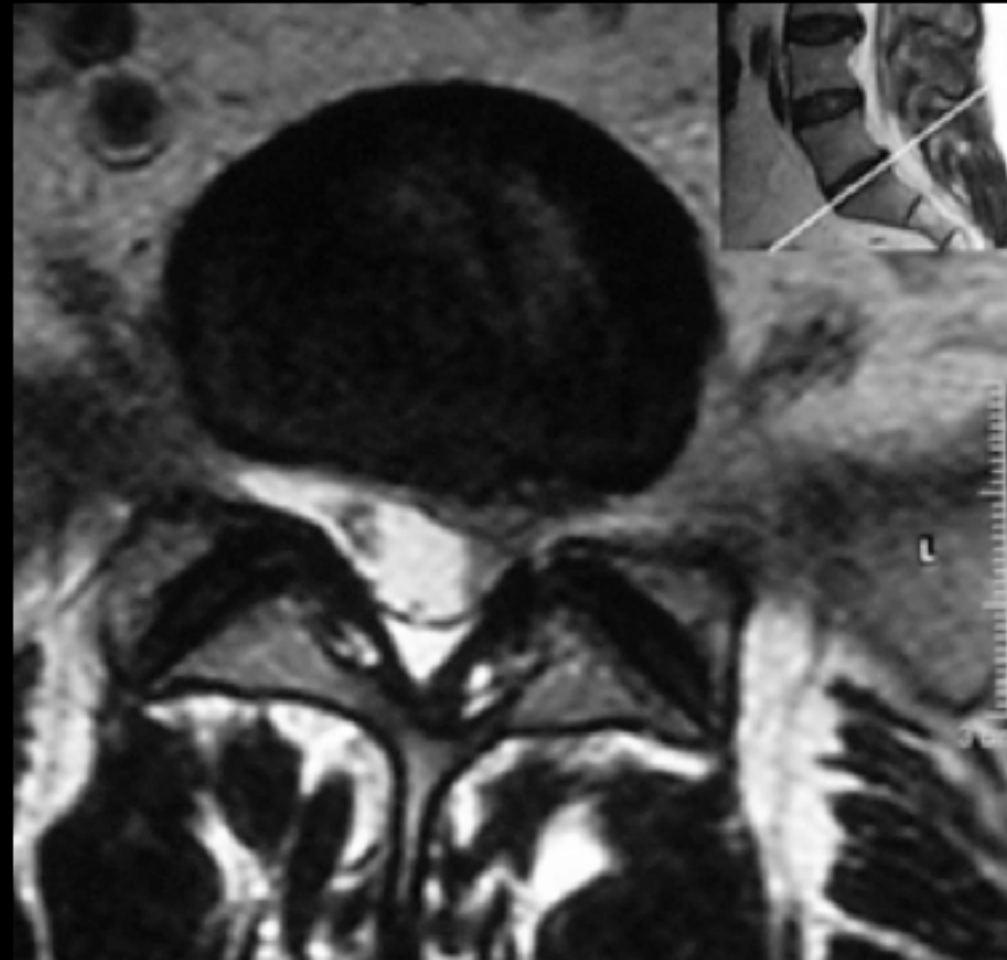
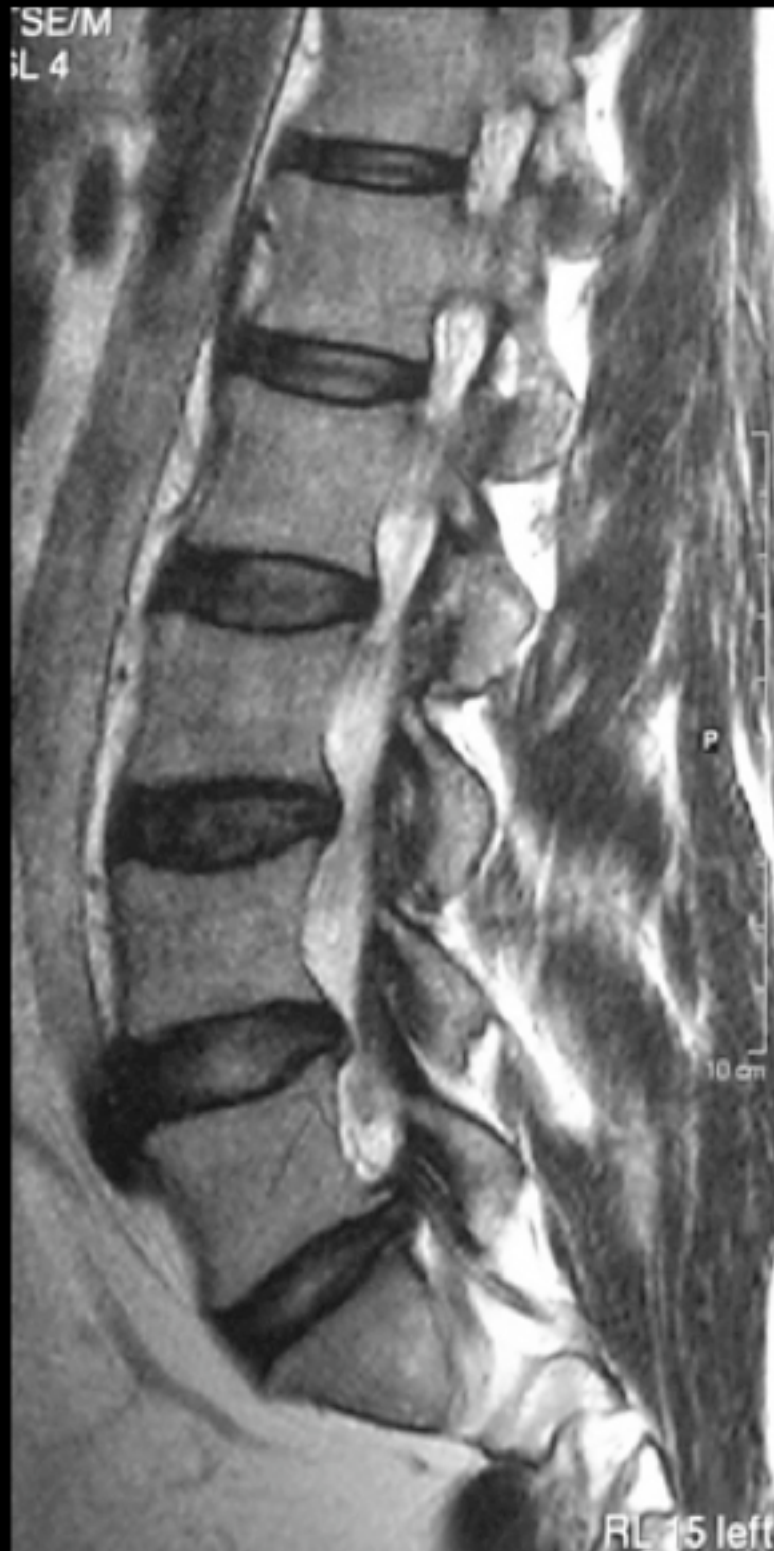
Division of Radiology, Cleveland Clinic Lerner College of Medicine, Cleveland, Ohio

Type I changes are variable

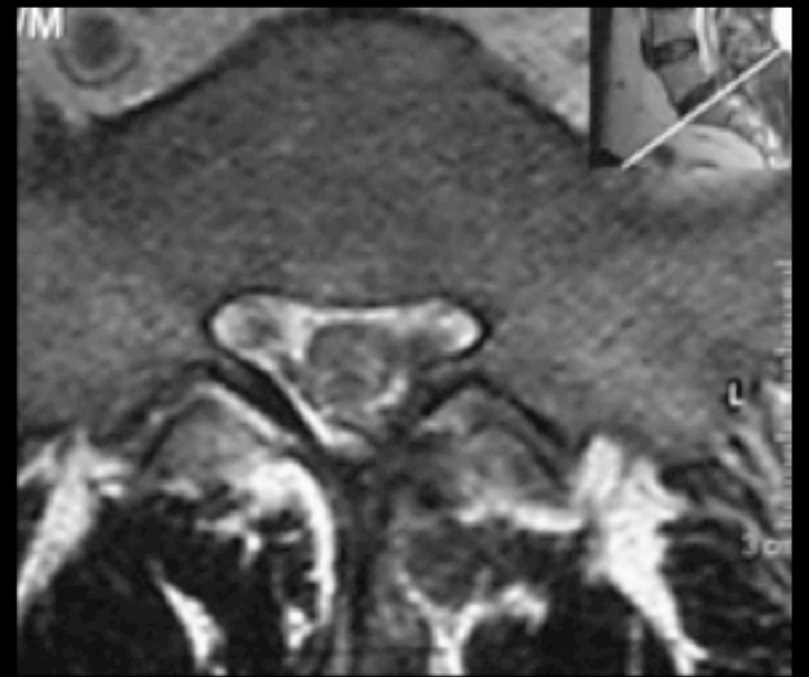
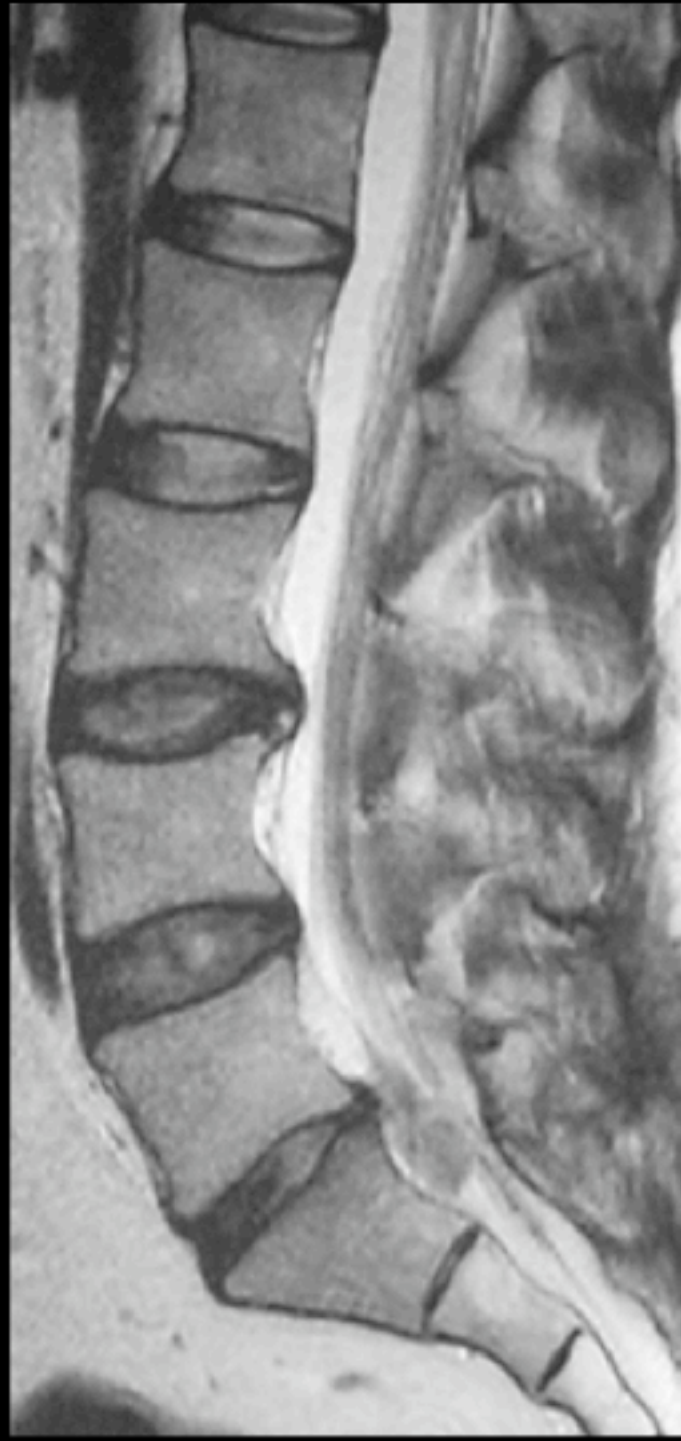
Type II changes are more stable

If Type II turns to Type I, it may present degeneration
or osteomyelitis

Stabile- Recurrent Disc Herniation ?



Stabile- Recurrent Disc Herniation ?



14 months after surgery, After lifting heavy object !

Stabile- Recurrent Disc Herniation ?



Stabile- Recurrent Disc Herniation ?

The Journal of Bone and Joint Surgery (American). 2008;90:10-15.
doi:10.2106/JBJS.F.01569
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Failure within One Year Following Subtotal Lumbar Discectomy

Glenn D. Wera, MD¹, Randall E. Marcus, MD¹,
Alexander J. Ghanayem, MD² and Henry H. Bohlman, MD¹



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WORLD NEUROSURGERY

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2009

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Volume 64, Issue 3, Pages 226-231 (September 2005)

Recurrent lumbar disc herniation after discectomy: outcome of repeat discectomy

Li-Yang Dai, MD, PhD✉, Qing Zhou, MD, Wei-Fang Yao, MD, Lei Shen, MD

Reherniation and Failure After Lumbar Discectomy: A Comparison of Fragment Excision Alone Versus Subtotal Discectomy J Spinal Disord 20

Glenn D. Wera, MD,* Clayton L. Dean, MD,* Uri M. Ahn, MD,† Randall E. Marcus, MD,*
Ezequiel H. Cassinelli, MD,*‡ Henry H. Bohlman, MD,*‡ and Nicholas U. Ahn, MD*‡

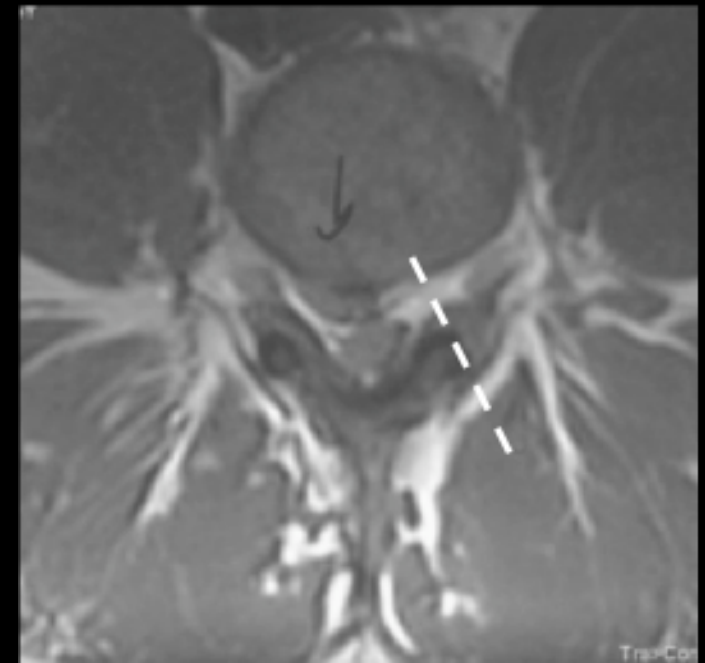
What is Important During Surgery ?

Supra/Interspinous ligaments
Increase of the flexion

Facet Capsule
Increase of the flexion/ axial rotation

Facet Orientation
Sagittal oriented facets

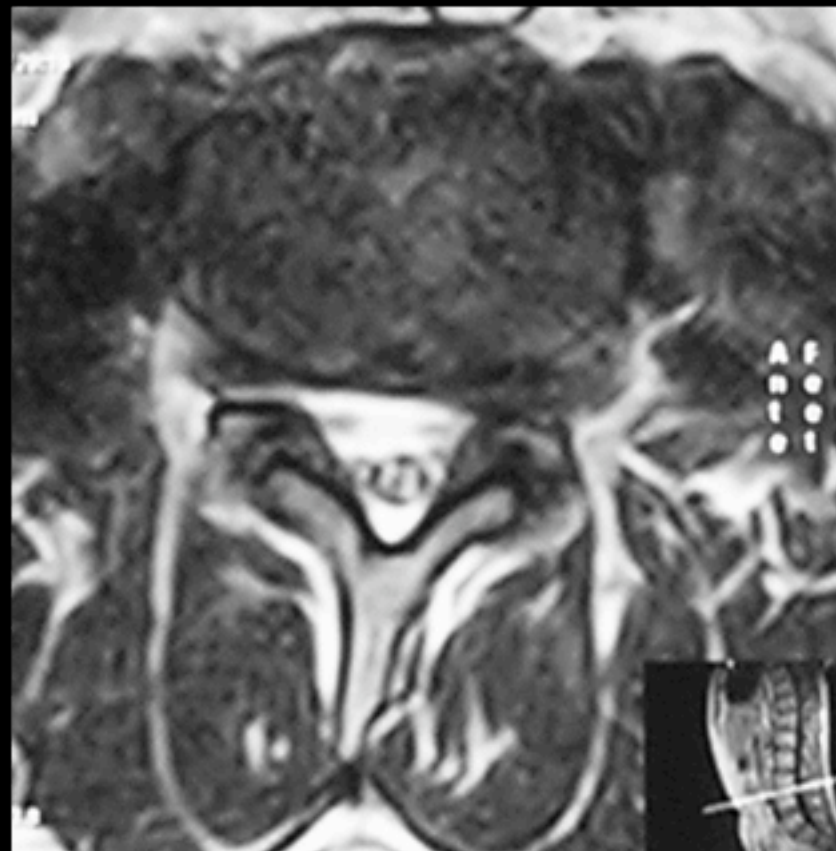
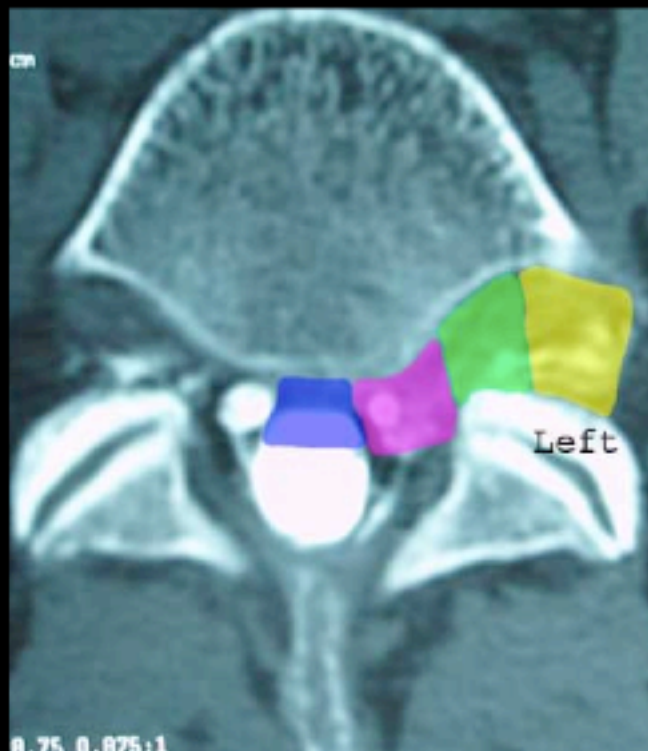
Facetectomy
Increase the flexion/ axial rotation



How to protect from the recurrence ?

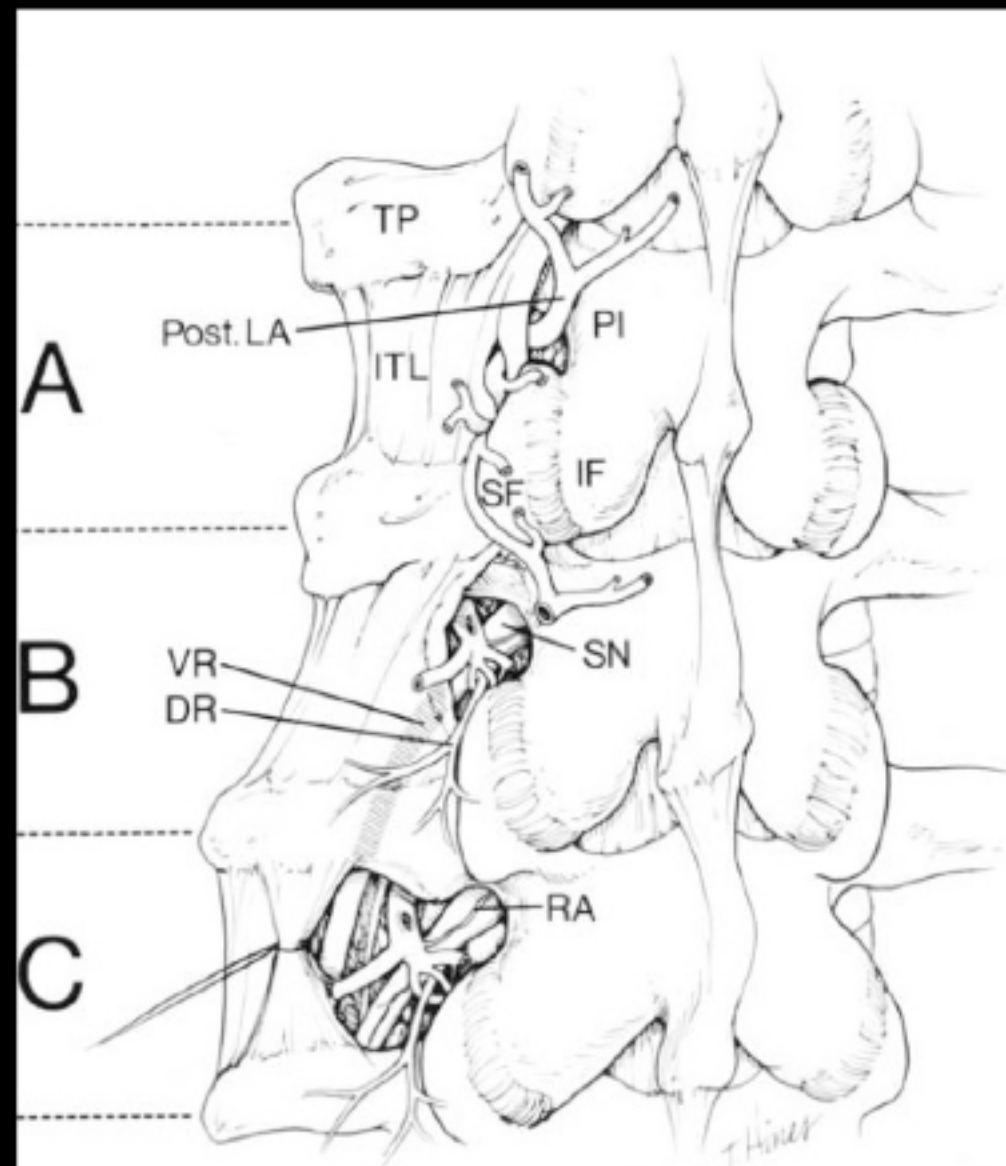
Extra-foraminal disc herniations

- Protect of the facet joint
- Stabilization if needed



Extraforaminal lumbar disc herniations: microsurgical anatomy and surgical approach

RAJARAMAN VISWANATHAN, F.R.C.S.(SN), NARAYANA K. SWAMY, M.Ch., WILLIAM D. TOBLER, M.D., ALSON L. GREINER, M.D., JEFFREY T. KELLER, Ph.D., AND STEWART B. DUNSKER, M.D.



Surgical tricks for extra-foraminal disc herniations

- Inter-transvers approach
- Microscope/ endoscope
- Stabilization if needed

Home Messages !

The recurrence rate after lumbar discectomy is between 5%–10%

Be aware if there is segmental instability before the surgery

Identify type of the annular defect before the surgery

Using microscope

Protection of the facet joint/ facet capsule

Advice to the patient avoid of heavy exercise



THANK YOU

