

XIX

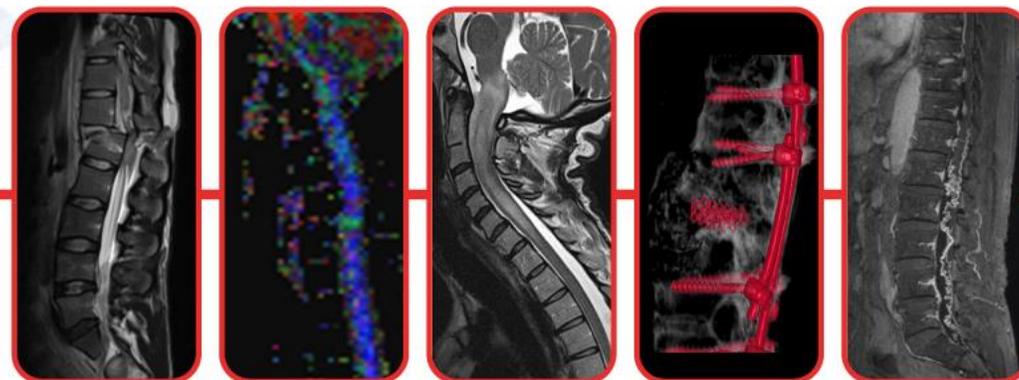
Curso Nacional de **NEURORRADIOLOGÍA**

Radiología Raquimedular

Nomenclatura en la enfermedad degenerativa espinal lumbar

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Fundación IVO
REIDE
Valencia

20 y 21 de abril de 2023 • MADRID
Sede: CINESA. Calle de Fuencarral, 136



Esquema

- Problema
- Técnica imagen
- Nomenclatura discal
- Patrones
- Estenosis espinal
- Qué informar
- Qué NO informar





The NEW ENGLAND JOURNAL of MEDICINE

en de columna

Ca

SOUNDING BOARD

ARCHIVE

[singwisely.org/](https://www.nejm.org/singwisely.org/)

Ina

Our Stubborn Quest for Diagnostic Certainty

N Engl J Med 1989; 320:1489-1491 | June 1, 1989

iN

Absolute certainty in diagnosis is unattainable, no matter how much information we gather, how many observations we make, or how many tests we perform. A diagnosis is a hypothesis about the nature of a patient's illness, one that is derived from observations by the use of inference.^{1 2 3} As the inferential process unfolds, our confidence as physicians in a given diagnosis is enhanced by the gathering of data that either favor it or argue against competing hypotheses. Our task is not to attain certainty, but rather to reduce the level of diagnostic uncertainty enough to make optimal therapeutic decisions.^{4 5 6 7}



Viewpoint

Should radiologists change the way they report plain radiography

BJSM Online First, published on October 20, 2016

It is time to stop causing harm with inappropriate imaging for low back pain

**LET US MAKE IMAGING REPORTS
CLEAR FOR CLINICIANS AND
PATIENTS**
Consistent language

tial barriers to recovery. It is time for consistent, patient-focused terms to be developed which communicate investigation findings in a clear and minimally threatening manner. Consistent language could be organised in a standardised, checklist like fashion (as is the case with

biological information
ment of relevance



Sin diferencias intensidad MR

Protocolo

Sag & coronal

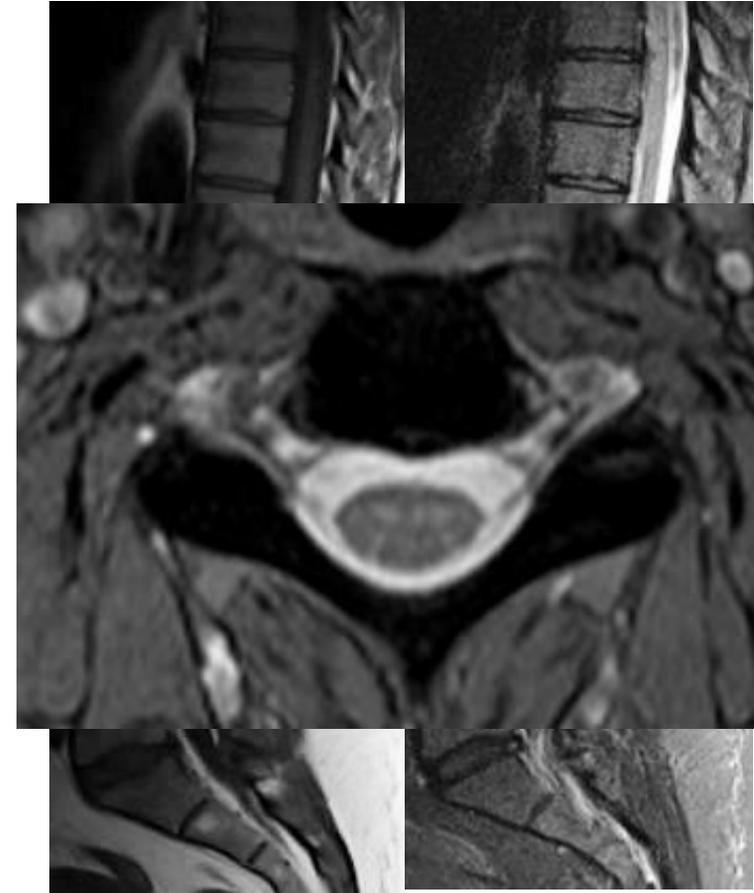
Sag T2WI-FS

Sag T1WI pre-con DIXON

Ax T2WI

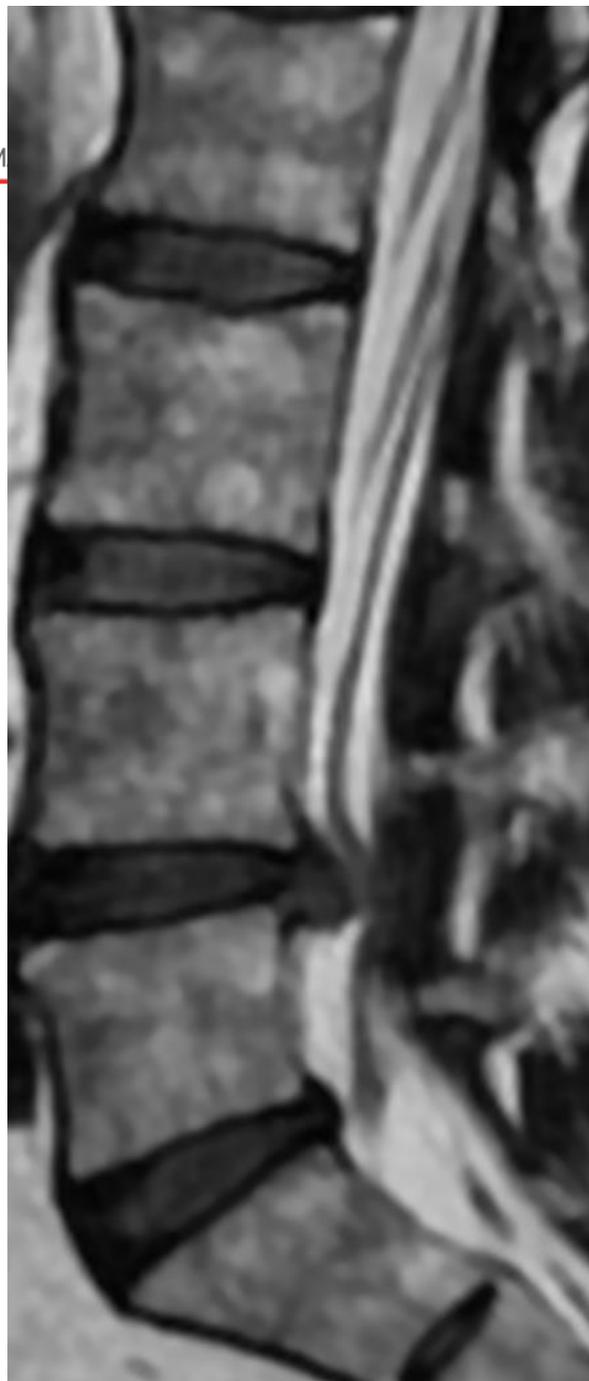
Sag T1WI post-contraste (Fat Sat)

Ax TwWI post-c (Fat Sat)

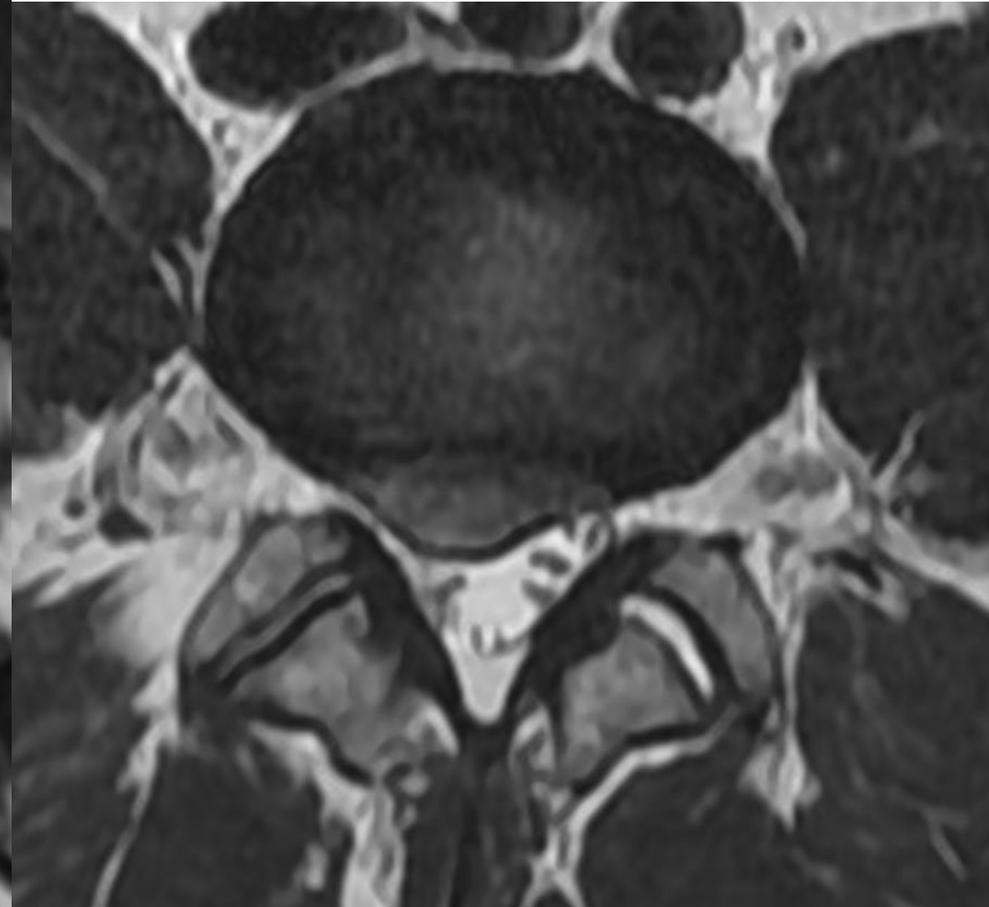




3 • M



Sag 3D Cube



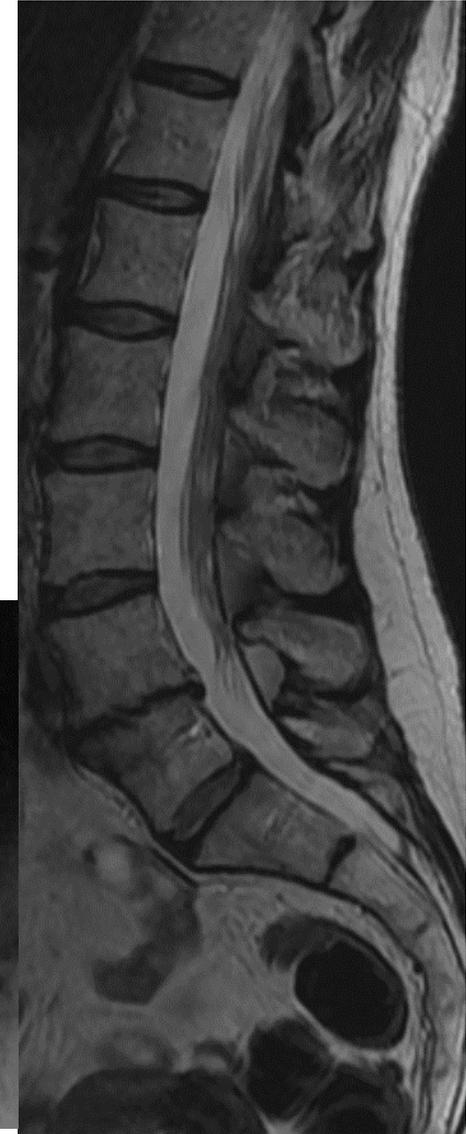
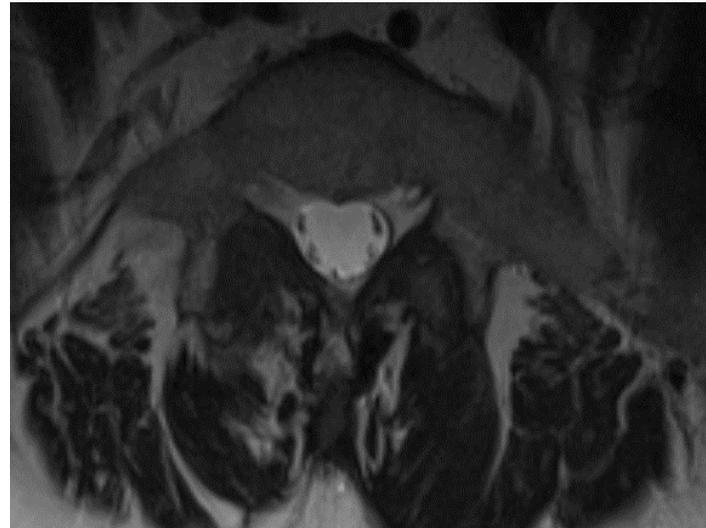
Anomalías de transición

11% prevalencia

50% neurocirujanos erran nivel al menos una vez!

Si no puedes numerarlas:

Morfología de la última
Vértebra lumbar



Exploración neurológica

Precisión diagnóstica general limitada

Resumen de las pruebas: pobre

Más sensible: Lasègue ipsilateral (S92%, SP20%)



Limitaciones de la imagen

No correlación entre hallazgos de imagen y dolor

RM: sensible, pero inespecífica

¡No hay origen del dolor en imagen!

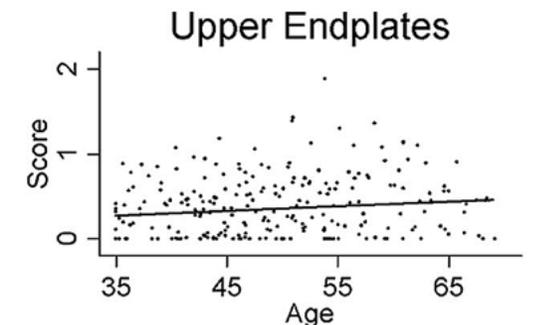
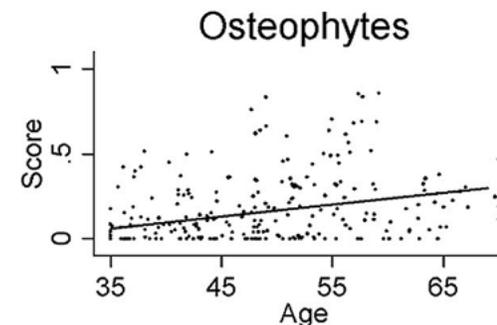
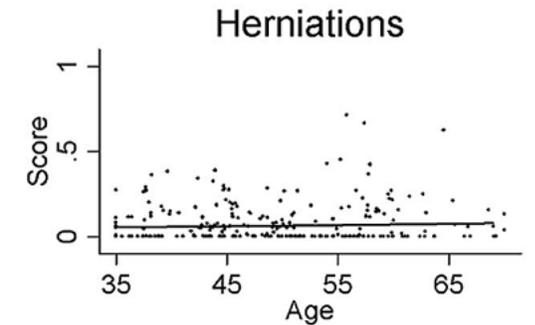
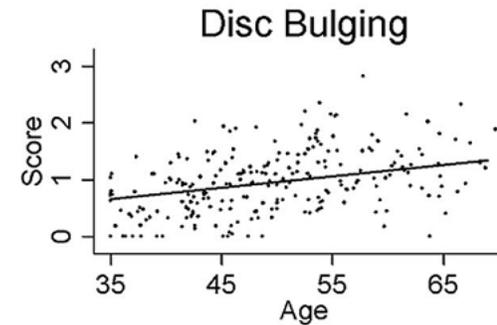
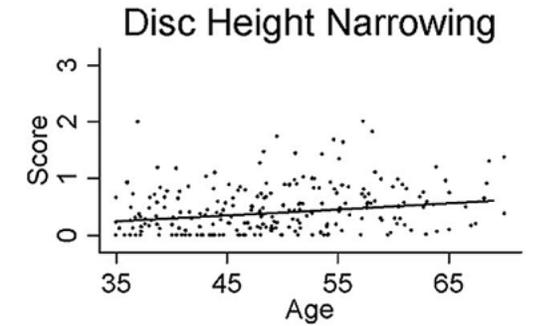
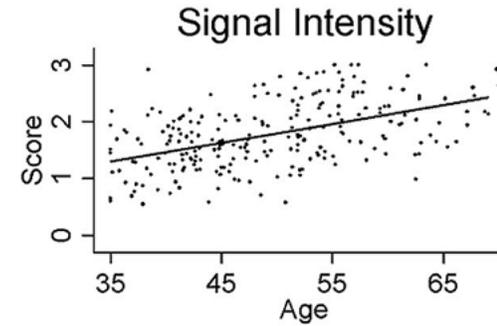
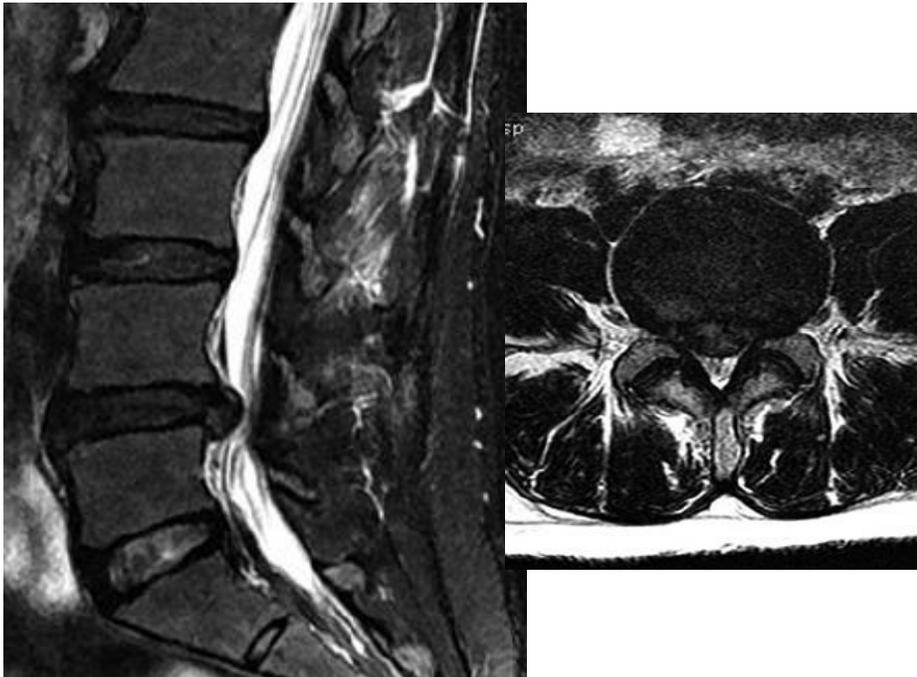
Systematic review of tests to identify the disc, SIJ or facet joint as the source of low back pain Eur Spine J 2007;16:1539–155

Is There an Association Between Pain and Magnetic Resonance Imaging Parameters in Patients With Lumbar Spinal Stenosis? Spine. 2016;41:E1053-E1062

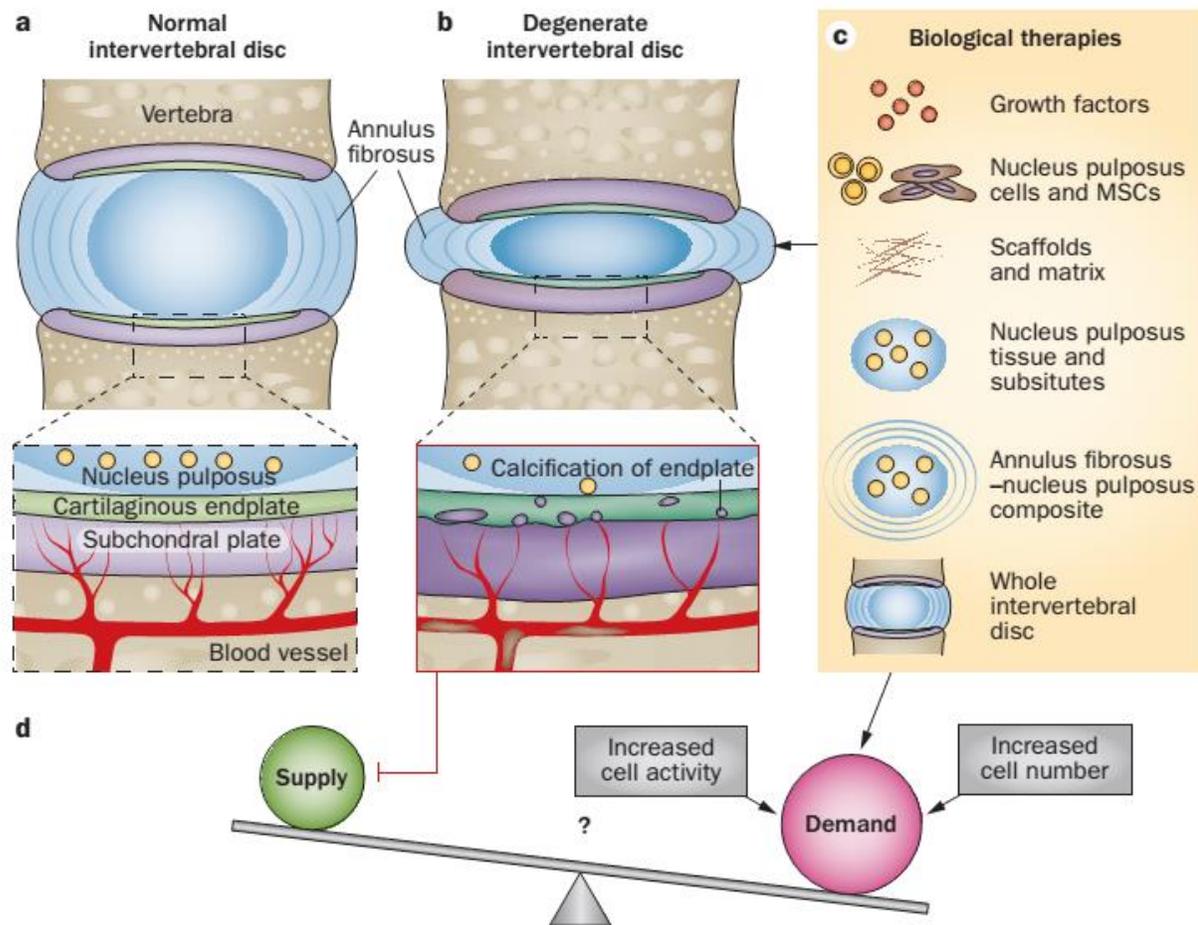


Hallazgos anómalos en asintomáticos

- < 60 y/o: 20%
- > 60 y/o: 57%.
 - 36% Extrusion
 - 21% Estenosis canal



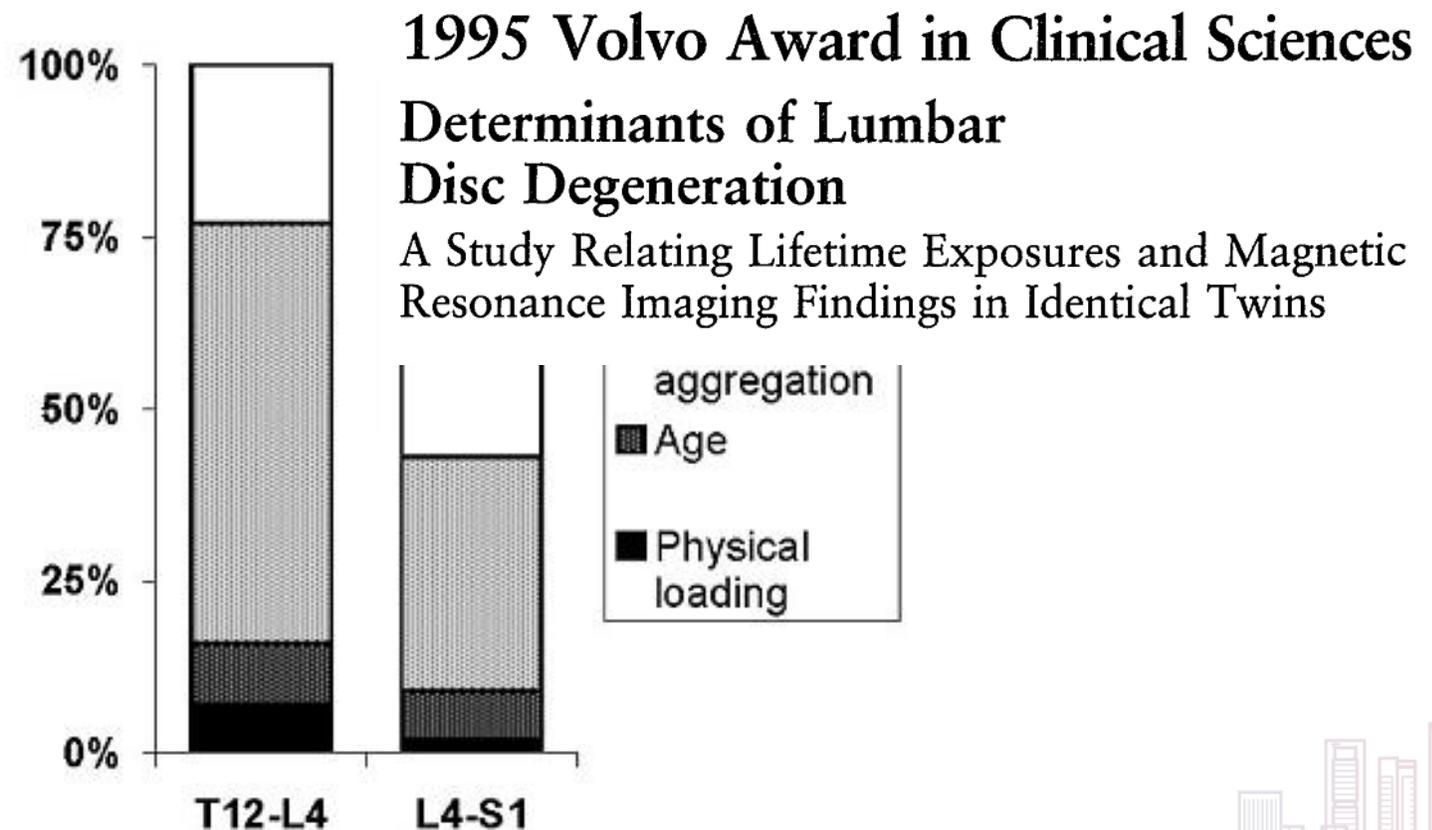
Degeneración discal



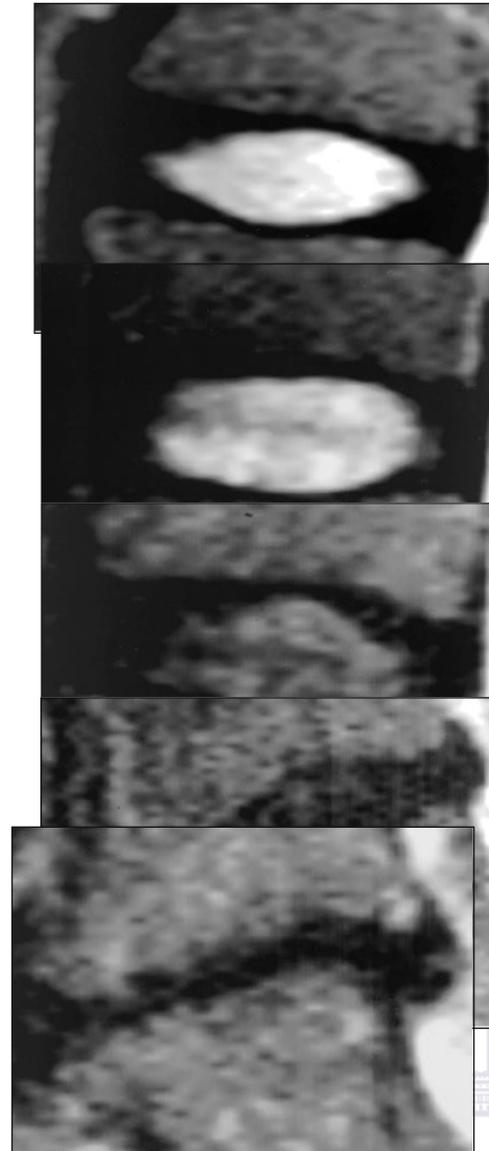
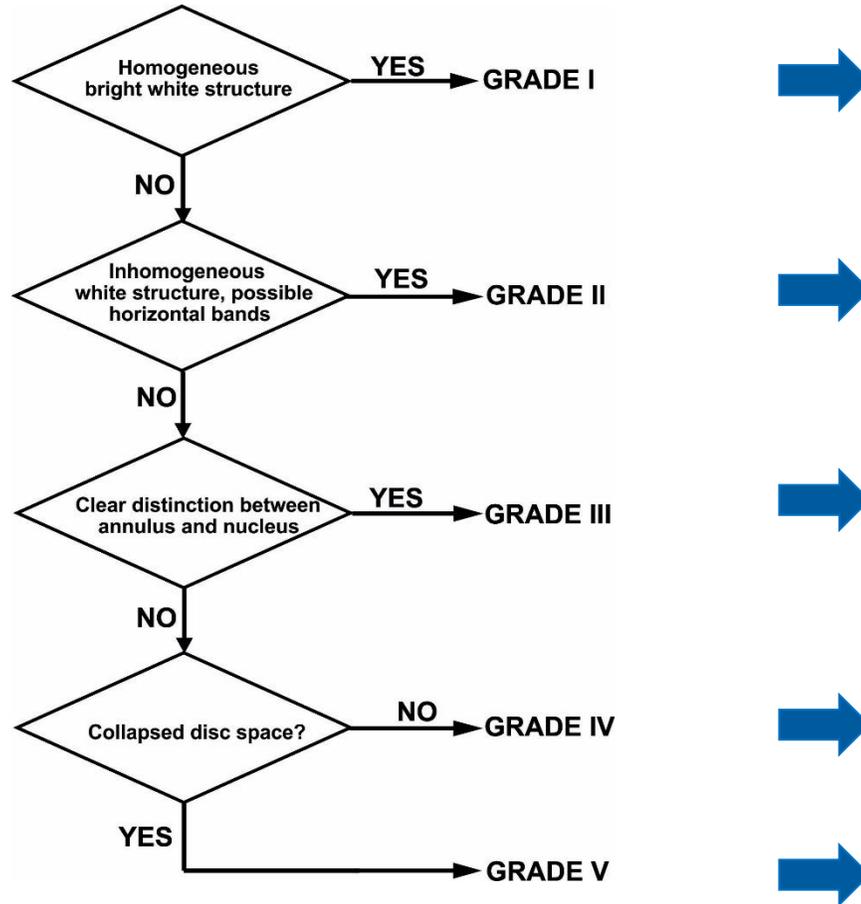
Degeneración discal

Genética
Inexplicada

SPINE Volume 20, Number 24, pp 2601-2612
©1995, Lippincott-Raven Publishers



❖ Clasificación de Pfirrmann



Zona de alta intensidad (HIZ)

Evite rotura

Hay fisuras en todos los

Discos degenerados

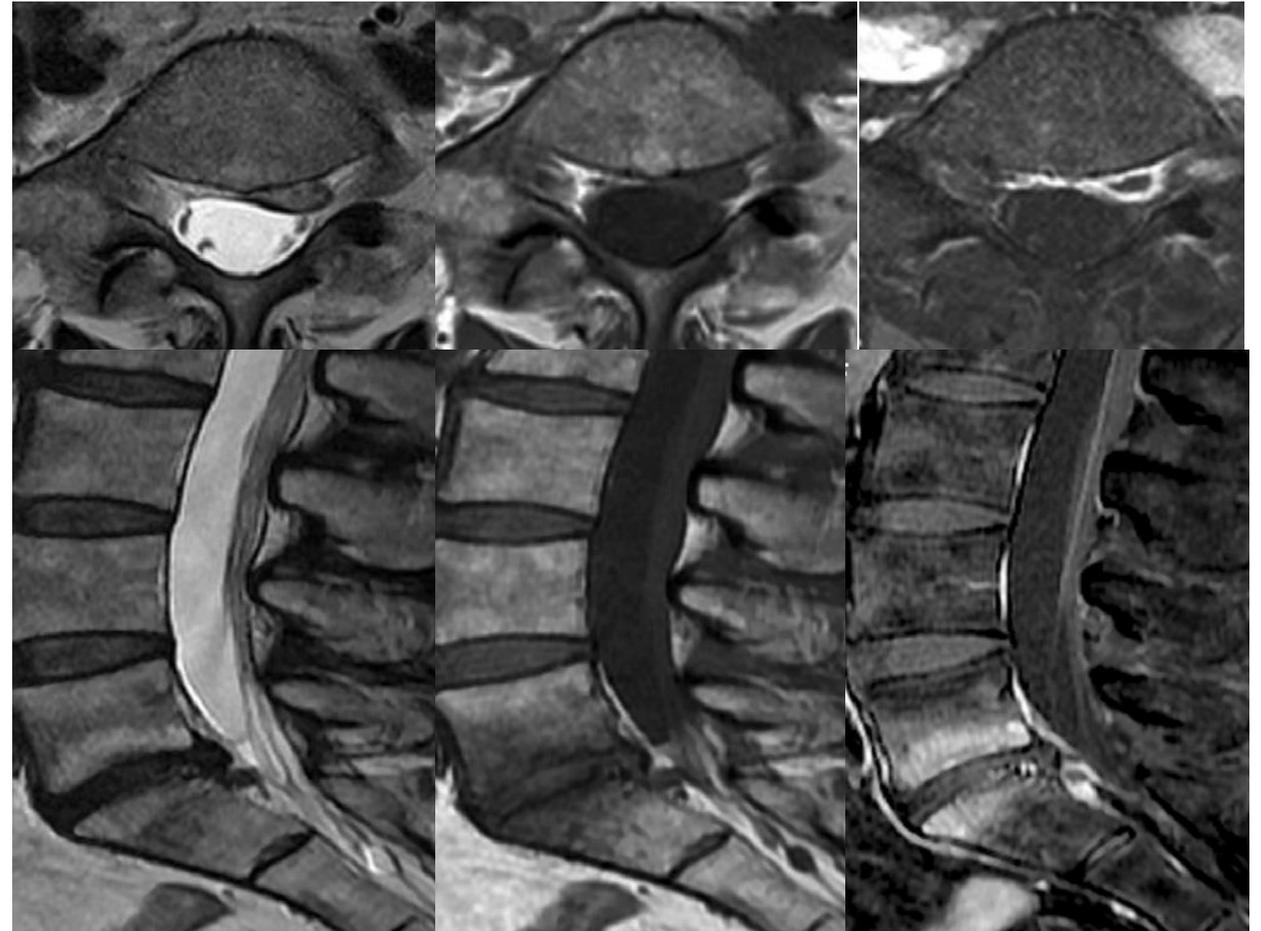
No todas son hiperintensas



Cambios Modic

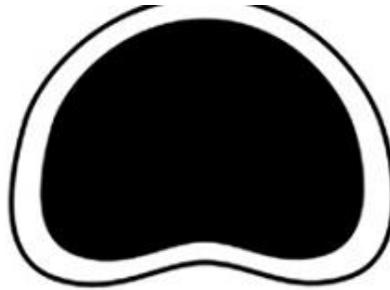
Asociado a degeneración discal

Tipo 1: ciertas poblaciones





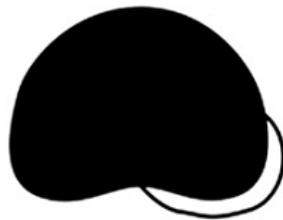
Normal



Protrusión



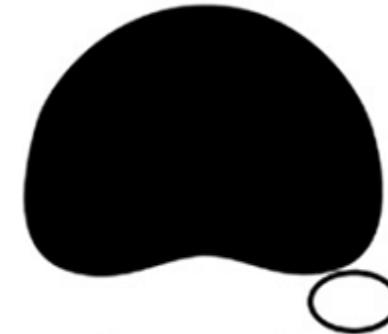
Protrusión de base ancha
25-50%



Protrusión focal (<25%)



Extrusión/Hernia
 $b > a$



Secuestro



Nomenclatura disco lumbar: versión 2.0

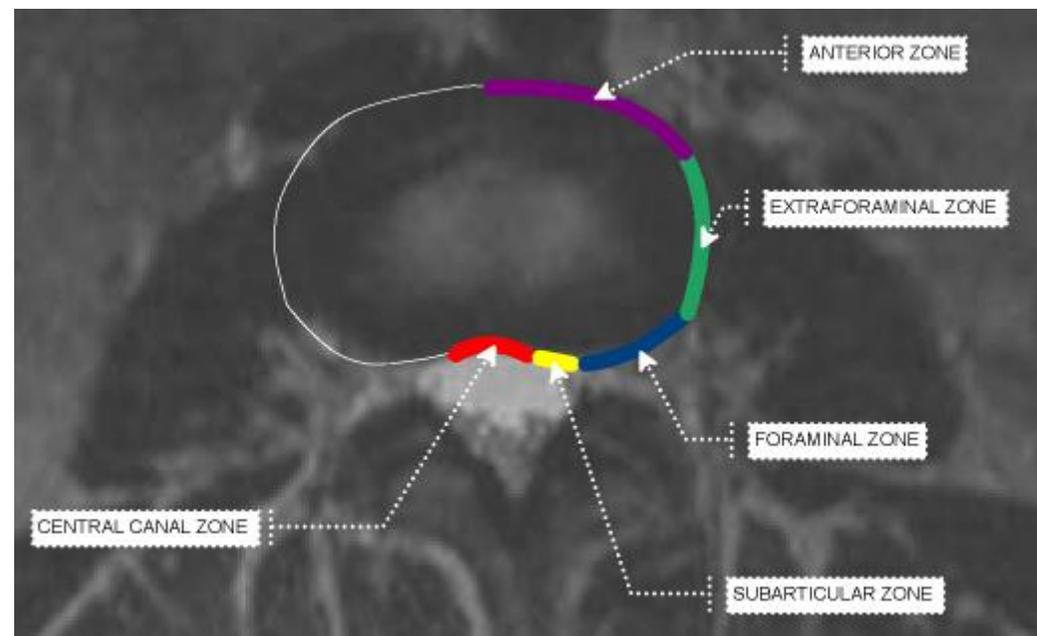
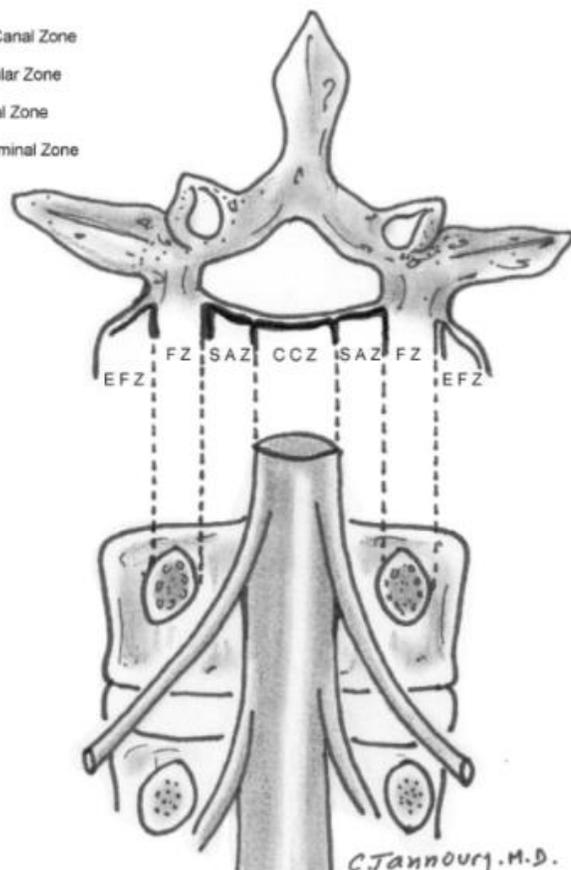
Sea consistente

Disco y ar

Zonas

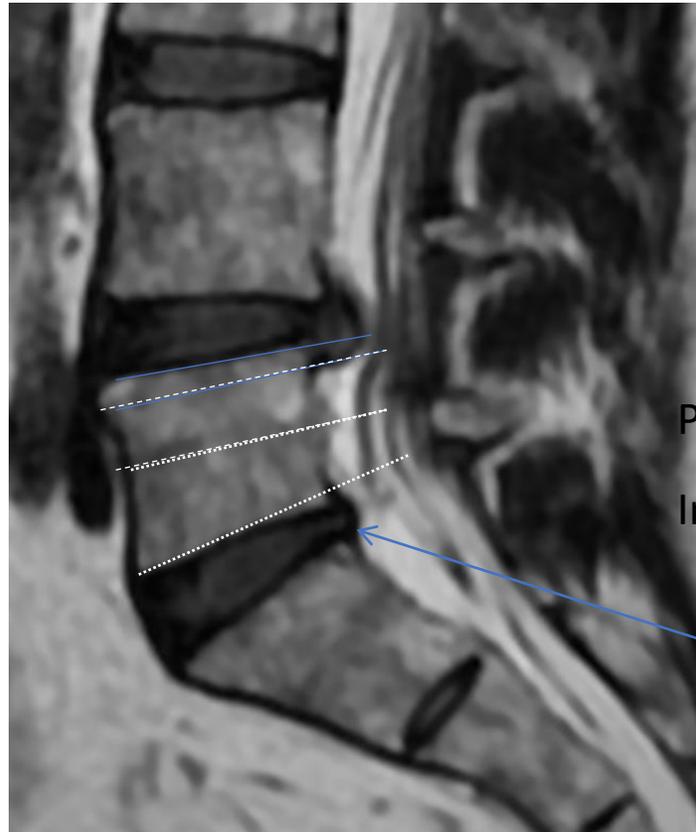
Nivel

CCZ: Central Canal Zone
SAZ: Subarticular Zone
FZ: Foraminal Zone
EFZ: Extraforaminal Zone



Nomenclatura

Localización de la migración



Suprapedicular

Pedicular

Infrapedicular

Nivel discal



Discectomía mínimamente invasiva: contraindicaciones

Migración > 5 mm

Secuestro

¡Protrusión difusa!

Microendoscópica:

Diámetro canal (< 15 mm)



Discografía

Ineficiente y peligrosa

No identifica dolor “discogénico”

Dañina: discitis y más..

!Más degeneración discal;

Does discography cause accelerated progression of degenerative changes in the lumbar disc: a ten-year matched cohort study. Spine 2009;34:2338–45.

Guideline for the Evaluation and Management of Low Back Pain: Evidence Review. American Pain Society; Glenview, IL; 2009. www.ampainsoc.org/pub/pdf/LBPEvidRev.pdf



Sólo hallazgos relevantes

Lo relevante para el tratamiento del paciente
management

Evitar “efecto etiqueta-diagnóstico en imagen”

Añada valor dando un marco de referencia

¡Simple!

Everything should be made as simple as possible. But not simpler

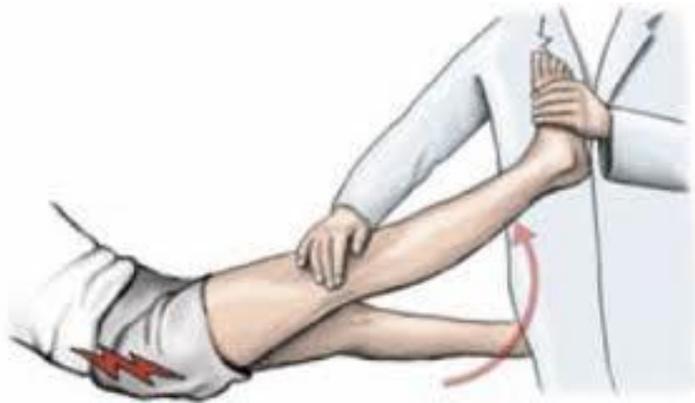
Albert Einstein



Moderate versus Mediocre: The Reliability of Spine MR Data Interpretations¹

Jeffrey G. Jarvik, MD, MPH

REVIEWS AND COMMENTARY ■ EDITORIAL



Comparado con otros
especialista

Excelente en nivel

Discreto en morfología

Sólo 42% informes incluyeron
morfología en ensayos clínicos

Radiology. 2010;254:809-17
Radiology 2009;250:15-17 // 2010;254:809-817
Rheumatology (Ox) 2001;40:460-466
Spine 2009;34:701-705

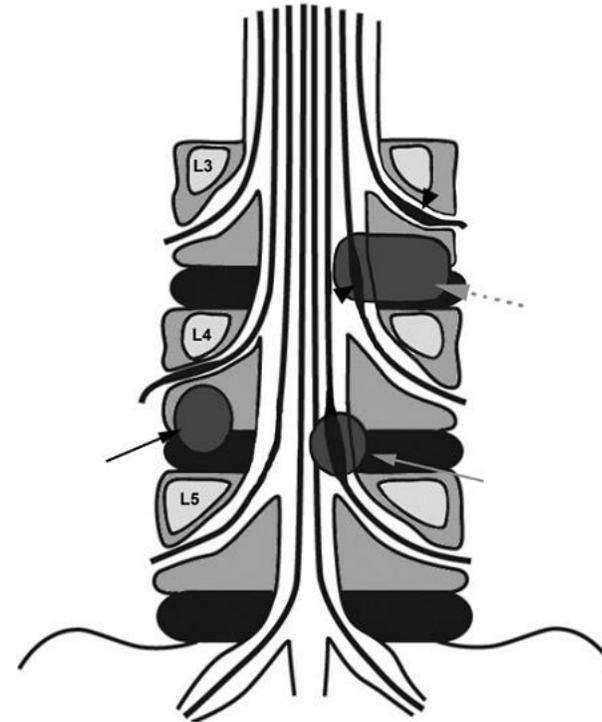


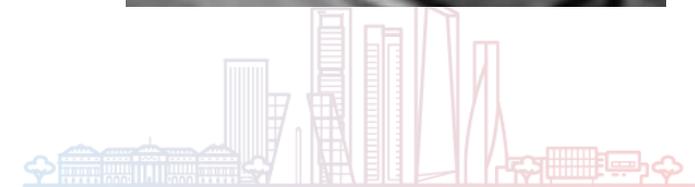
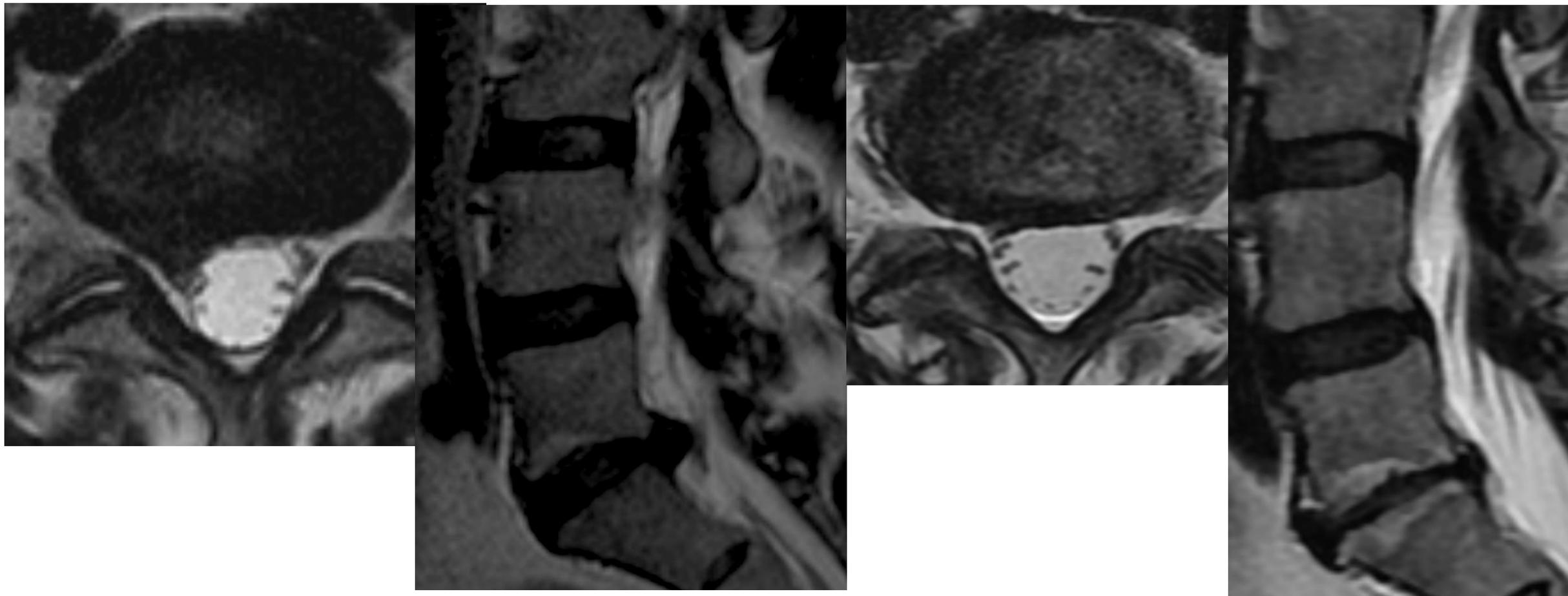
RM y nivel sintomático

>66% nivel de signos no se correlaciona

23% compresión radicular en el lado asintomático

¡Síntomas unilaterales, correctos solo en el 30%!





Resultados Herniaciones discales

Cirugía

Resultados iguales al año de cirugía vs conservadores

RM no predice qué pacientes van mejor

Surgery versus prolonged conservative treatment for sciatica N Engl J Med, 2007;356:2245–2256
Magnetic resonance imaging in follow-up assessment of sciatica N Engl J Med., 2013;368:999–1007
J Neurosurg Spine24:978–985, 2016



Estenosis espinal

Table 1
Sites of measurement, measurement points, and radiologic definitions for central lumbar spinal stenosis

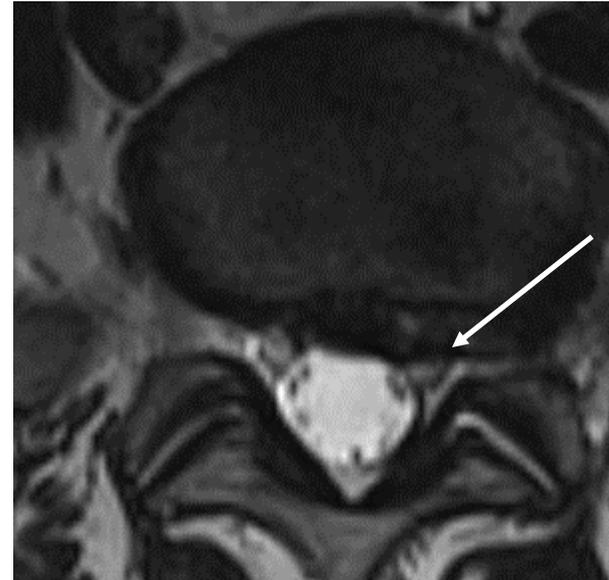
Imaging Method	Author	Site of Measurement	Level, Where Measured (Measurement Points)	Definition of Stenosis (Cut-Off Values)
Magnetic resonance imaging				
		Antero-posterior diameter of spinal canal		
	Fukasaki ¹⁰²		Not reported	<15 mm
	Koc ¹⁰³		Not reported	<12 mm
		Midsagittal diameter of thecal sac		
	Herzog ¹⁰⁴	Midbody of each vertebra		Compression of thecal sac area in % of normal midsagittal diameter: Grade 1: anterior <15%, posterior <10%; Grade 2: anterior 15%–30%, posterior 10%–20%; Grade 3: anterior >30%, posterior >20%
		Cross-sectional area of dural tube or sac		
	Hamanishi ³⁰		Intervertebral levels: L2/3, L3/4, L4/5	<100 mm ² , at more than 2 of 3 intervertebral levels
	Mariconda ¹⁰⁵		Not reported	<130 mm ²
	Laurencin ¹⁰⁶		Motion segment: intervertebral disc level coincident with flexible joint; stable segment: level coincident with the midpedicle unaffected by stenosis	Stenosis ratio: Cross-sectional area of dural sac of motion segment divided by stable segment cross-sectional dural sac area: Level: L3–L4 <0.66 L4–L5 <0.62 L5–S1 <0.73
		Ligamentous interfacet distance		
	Herzog ¹⁰⁴		Distance between the inner surface of flaval	<10 mm (L2–L3) <10 mm (L3–L4) <10 mm (L4–L5)

Imaging Method	Author	Site of Measurement	Level, Where Measured (Measurement Points)	Definition of Stenosis (Cut-Off Values)
	Laurencin ¹⁰⁶			Motion segment: intervertebral disc level coincident with flexible joint; stable segment: level coincident with the midpedicle unaffected by stenosis
	Ullrich ¹⁰⁷		4 zones	Stenosis ratio: Area of motion segment divided by stable segment area Level: L3–L4 <0.66 L4–L5 <0.62 L5–S1 <0.73
Computed tomography				
		Antero-posterior diameter of spinal canal		
	Schönström ¹¹¹		On each CT scan slice	<100 mm ²
	Schönström ¹¹²		Not reported	75–100 mm ² (moderate) <75 mm ² (severe)
	Bolender ¹¹¹		4 zones of measurement: upper, middle, lower zone of vertebral body and disc space	<145 mm ²
	Haig ³³		No	
	Lee ¹⁰⁸		No	
				Ligamentous interfacet distance
	Ullrich ¹⁰⁷		For	Intervertebral disc level <10 mm (L2–L3) <10 mm (L3–L4) <12 mm (L4–L5) <13 mm (L5–S1)
	Verbiest ¹⁰⁹		No	Pedicular, infrapedicular and/or disc level <11 mm (L4–L5)
Myelography conventional				
		Anteroposterior diameter of dural sac		
	Airaksinen ¹¹⁴		Narrowest point	>12 mm 10–12 mm <10 mm Subtotal block Total block
	Herzog ¹⁰⁴			<13 mm
	Bolender ¹¹¹		Intervertebral level	<13 mm
	Herno ¹¹⁵		Not reported	<12 mm
	Jönsson ¹¹⁰		Disc level	≤10 mm
	Sortland ¹¹⁶		Disc level	<10.5 mm (lower limit) <5.5–7.0 mm (considerable)
	Verbiest ¹¹⁷		Superior and inferior borders of the laminae	10–12 mm (relative) <10 mm (absolute)
	Jönsson ¹¹⁰		Dis	Not reported <130 mm ²
Myelography-computed tomography				
		Cross-sectional area of dural sac		
	Bolender ¹¹¹		5-mm intervals from L2 to L5	100–130 mm ² (early stenosis) <100 mm ² (present stenosis)



Datos clave radiológicos para estenosis lumbar

Estenosis central
Estenosis lateral
Estenosis foraminal
Compromiso neural



Hernias y raíces

↑ Especificidad: Moderate y grave
disminución

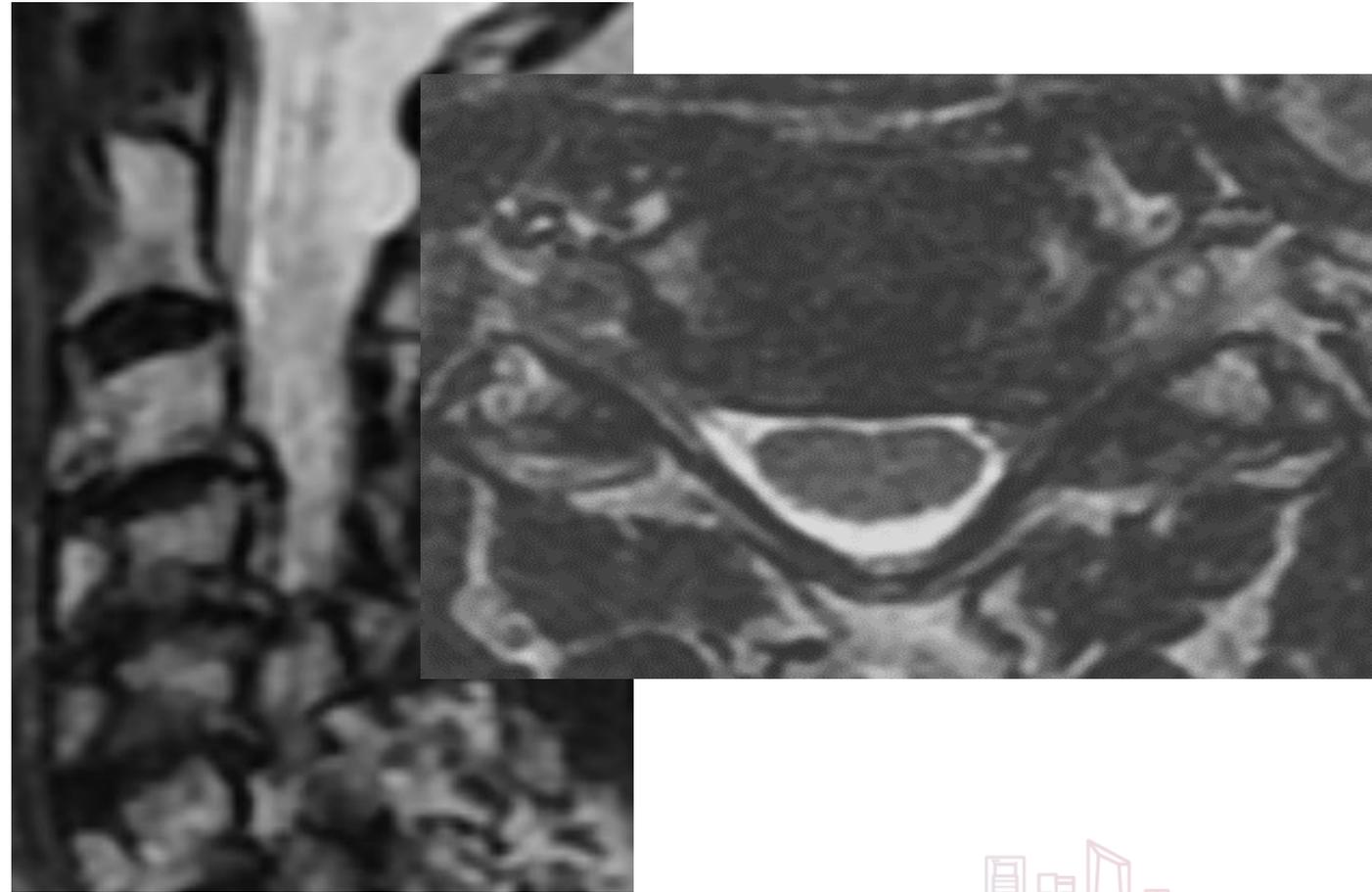
> 2/3

Compresión y desplazamiento



Estenosis foraminal

No diferencien disco / hueso
Eviten atrapamiento, impacto,



Elementos posteriores

Nociceptivo

No se correlaciona con dolor

Infraestimamos degeneración

Algo mejor CT

Bloqueo anestésico no es una prueba diagnóstica !mejora en otros niveles!





Spine 2004;29:874-878



Qué informar

Extrusión/hernia discal

Desplazamiento/compresión raíz neural

Estenosis moderada o grave

Fractura

Espondilolistesis grado ≥ 2

Edema meseta vertebral (Modic 1)



Qué NO informar

- Discopatía, pérdida de altura discal
- Fisura anular, anillo fibroso
- Estenosis leve/discreta
- Contacto con raíz neural
- Espondilolistesis grado I
- Degeneración discal, protrusión (difusa o no)
- Degeneración facetaria (cualquier grado)



Epidemiología en práctica clínica

Diagnóstico: degeneración y protrusión discal lumbar L1-2 a L5-S1

↓ narcóticos

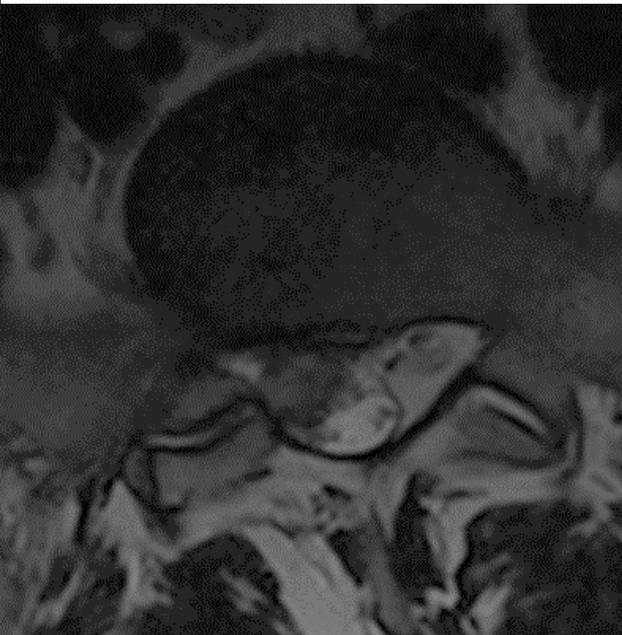
Repetición de imagen y fisioterapia

Notas

1 Los hallazgos individuales en imagen (degeneración/protrusión discal, desplazamiento radicular y zonas hiperintensas del anillo fibroso) no se pueden asociar como causa inequívoca de lumbalgia. Spine 2011;36:160–169

2 Los signos Modic son igualmente frecuentes en población sintomática y asintomática española. AJNR Am J Neuroradiol 2012;33:1519 –24





L5-S1: hernia discal subarticular derecha, emigrada al nivel pedicular de S1 con compresión de raíz S1 ipsilateral.

Resto de hallazgos acordes a cronopatología

Evitar :

L4-L5 rotura del anillo fibroso como probable origen también de dolor discogénico
“claramente visible en estudio previo”



Ejemplo

Protrusión focal en disco L4-L5 en foramen de
conjunción con compresión de la raíz L4

