Hospital Universitario Fundación Jiménez Díaz
Grupo quirónsalud

Tratamiento Percutáneo de la Hernia Discal y la Discopatía Degenerativa

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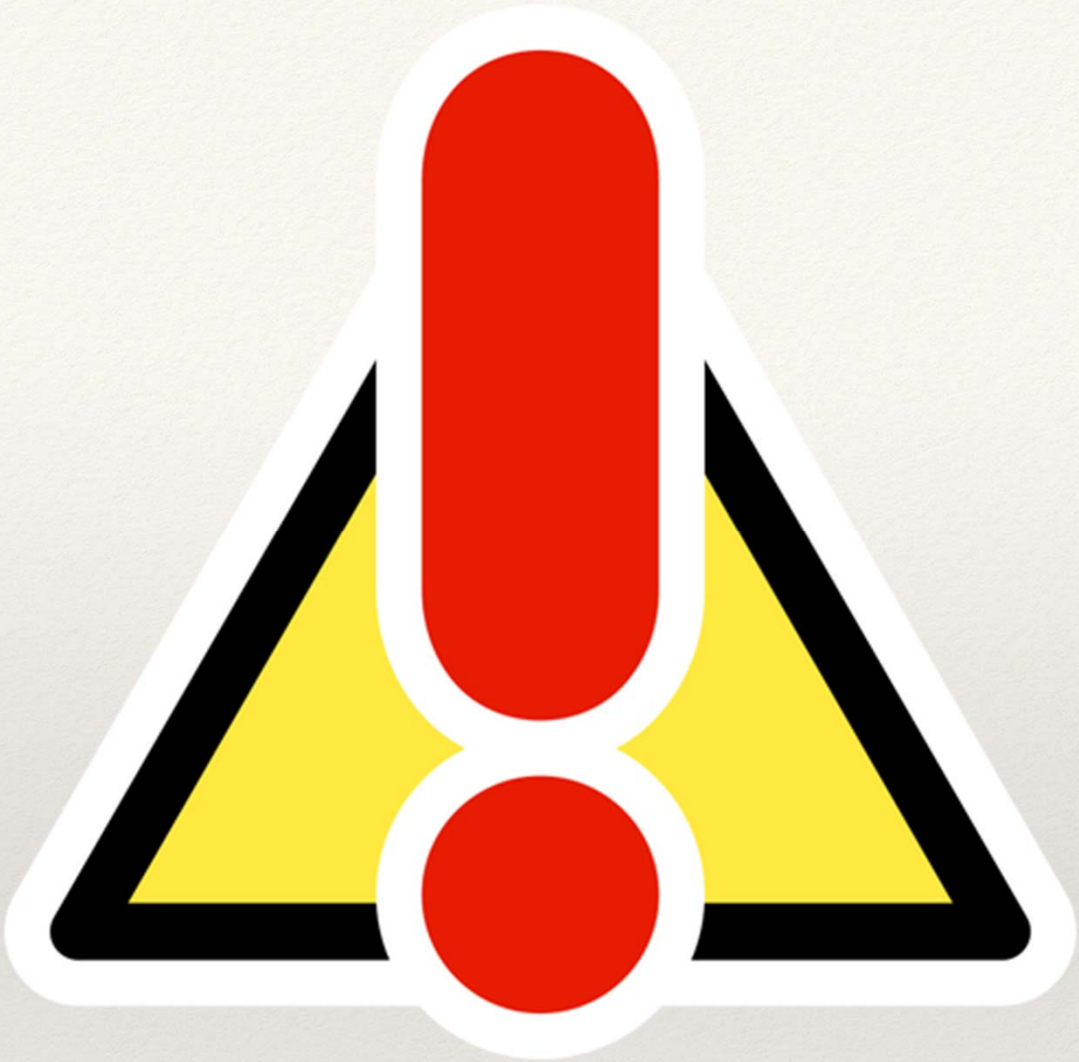
Introducción…

Hernia Discal y Discopatía Degenerativa

- 15-40 % población sufriremos DOLOR DE ORIGEN DISCAL

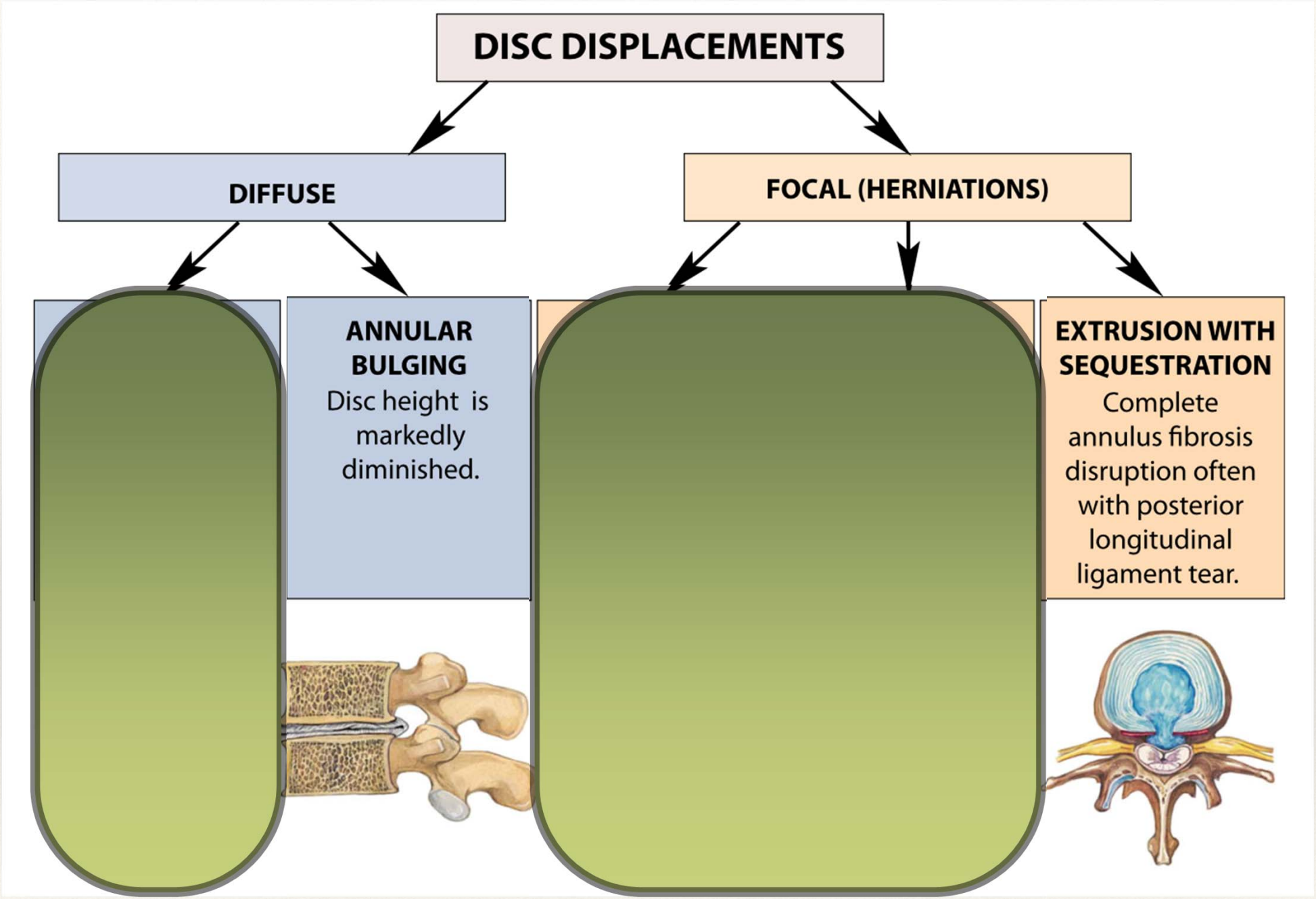
- Gran parte de la clínica ocasionada por las hernias se resuelven de manera espontánea.

- Amplia presencia de HERNIA DISCAL entre población ASINTOMÁTICA:
    - 30% menores de 40 años
    - 60 % < 60 años
    - 95 % > 60 años



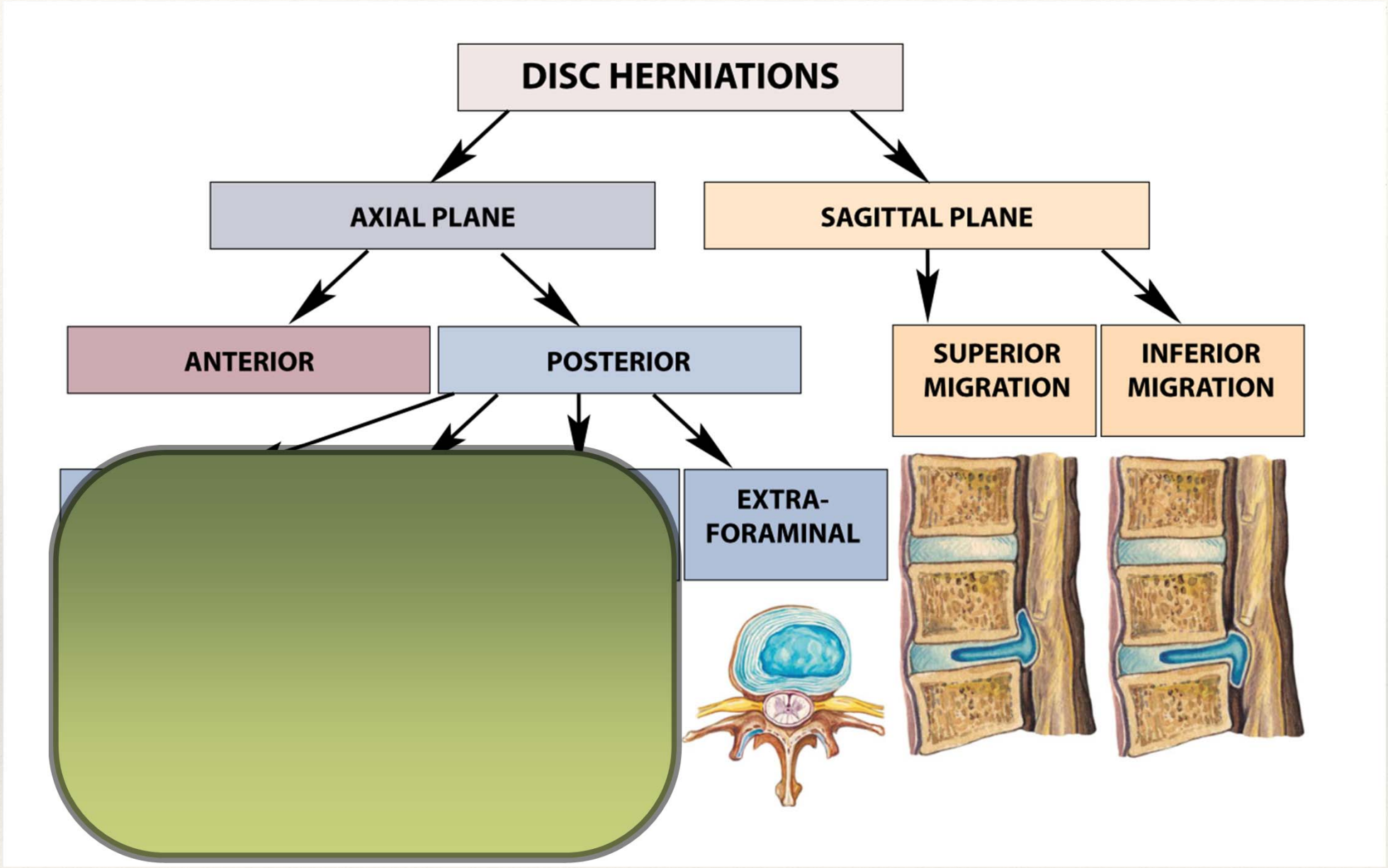
INDICACIONES

- Lumbociatalgia refractaria a tratamiento médico
- RM demostrando protrusión o hernia discal NO secuestrada
- Pfirmann ≤ 3
- Concordancia clínico-radiológica



ABCs of the degenerative spine

Sergiy V. Kushchayev [1] · Tetiana Glushko [1] · Mohamed Jarraya [1] · Karl H. Schuleri [1] · Mark C. Preul [2] · Michael L. Brooks [1] · Oleg M. Teytelboym [1]



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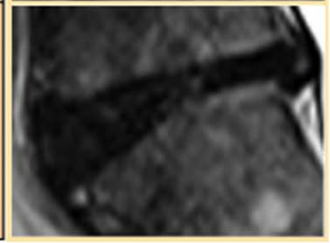
Clasificación Pfirmann

Grade IV	Low signal intensity centrally and blurring of the distinction between nucleus and annulus.	
Grade V	Homogeneous low signal with no distinction between nucleus and annulus.	

OPCIONES TERAPÉUTICAS

- Quimionucleolisis
- Termonucleolisis
- Discectomía Mecánica Percutánea
- Ozonoterapia
- Hernioplastia y Anuloplastia
- Terapia Regenerativa

¿QUÉ TÉCNICA ELEGIR?

- DIFERENCIAS TÉCNICAS DEL PROCEDIMIENTO
- PERFIL DE SEGURIDAD
- EXPERIENCIA Y RESULTADOS

Clinical Study

Percutaneous laser disc decompression versus conventional microdiscectomy in sciatica: a randomized controlled trial

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Received 14 July 2014; revised 8 December 2014; accepted 10 January 2015

BACKGROUND CONTEXT: Percutaneous laser disc decompression (PLDD) is a minimally invasive treatment for lumbar disc herniation, with Food and Drug Administration approval since 1991. However, no randomized trial comparing PLDD to conventional treatment has been performed.

PURPOSE: In this trial, we assessed the effectiveness of a strategy of PLDD as compared with conventional surgery.

STUDY DESIGN/SETTING: This randomized prospective trial with a noninferiority design was carried out in two academic and six teaching hospitals in the Netherlands according to an intent-to-treat protocol with full institutional review board approval.

PATIENT SAMPLE: One hundred fifteen eligible surgical candidates, with sciatica from a disc herniation smaller than one-third of the spinal canal, were included.

OUTCOME MEASURES: The main outcome measures for this trial were the Roland-Morris Disability Questionnaire for sciatica, visual analog scores for back and leg pain, and the patient's report of perceived recovery.

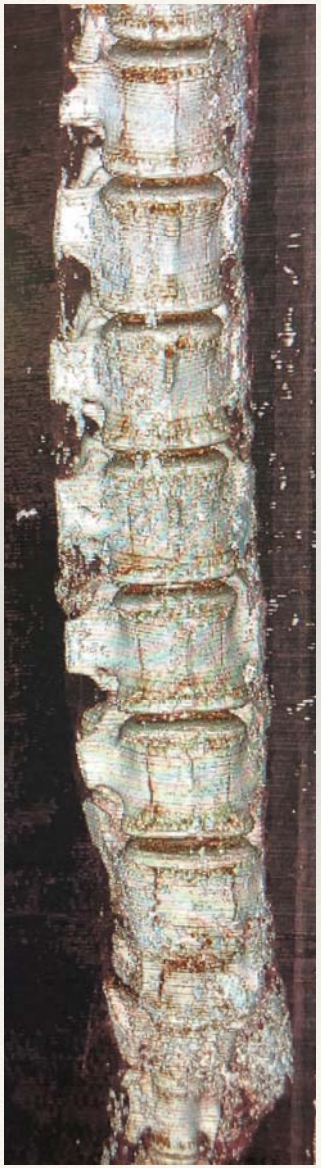
METHODS: Patients were randomly allocated to PLDD (n=57) or conventional surgery (n=58). Blinding was impossible because of the nature of the interventions. This study was funded by the Healthcare Insurance Board of the Netherlands.

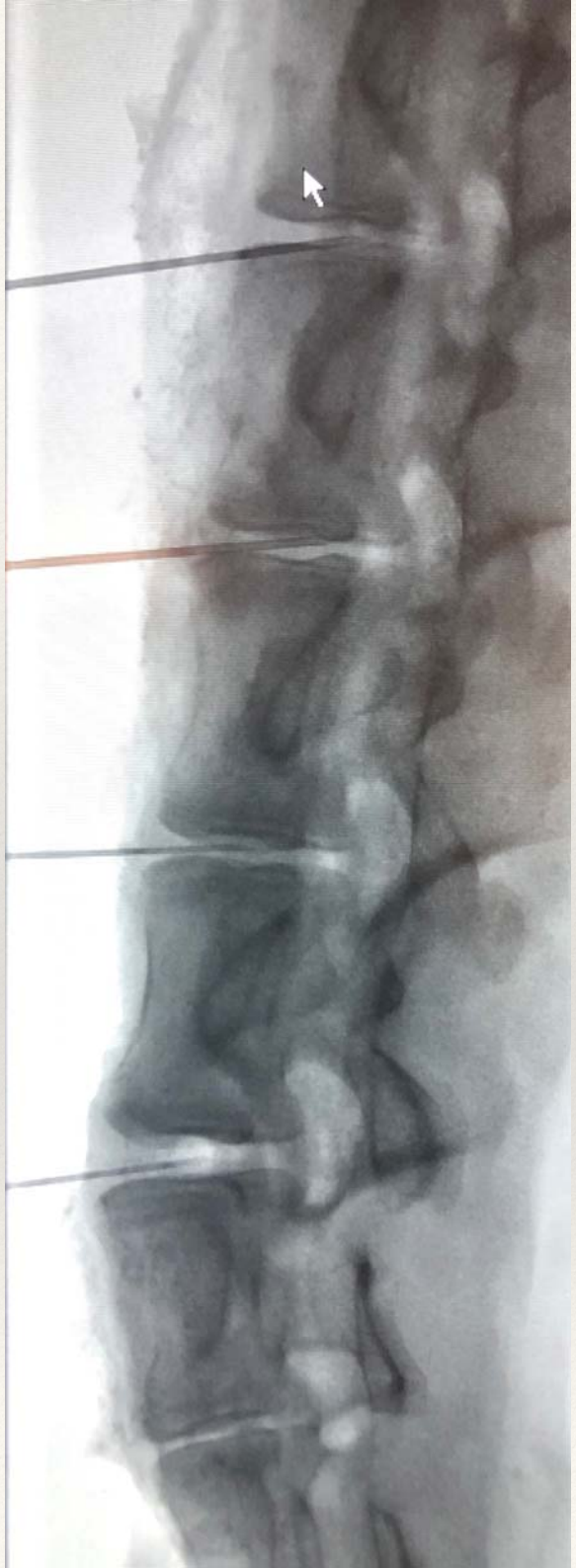
RESULTS: The primary outcome, Roland-Morris Disability Questionnaire, showed noninferiority of PLDD at 8 (−0.1; [95% confidence interval (CI), −2.3 to 2.1]) and 52 weeks (−1.1; 95% CI, −3.4 to 1.1) compared with conventional surgery. There was, however, a higher speed of recovery in favor of conventional surgery (hazard ratio, 0.64 [95% CI, 0.42–0.97]). The number of reoperations was significantly less in the conventional surgery group (38% vs. 16%). Overall, a strategy of PLDD, with delayed surgery if needed, resulted in noninferior outcomes at 1 year.

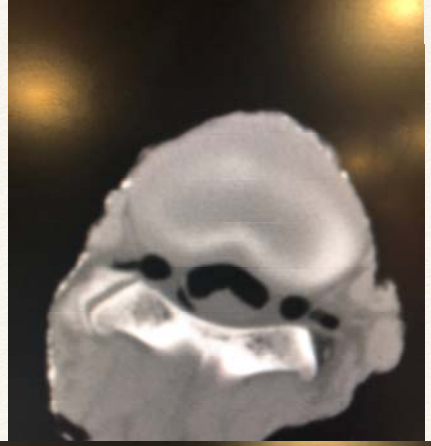
CONCLUSIONS: At 1 year, a strategy of PLDD, followed by surgery if needed, resulted in noninferior outcomes compared with surgery.

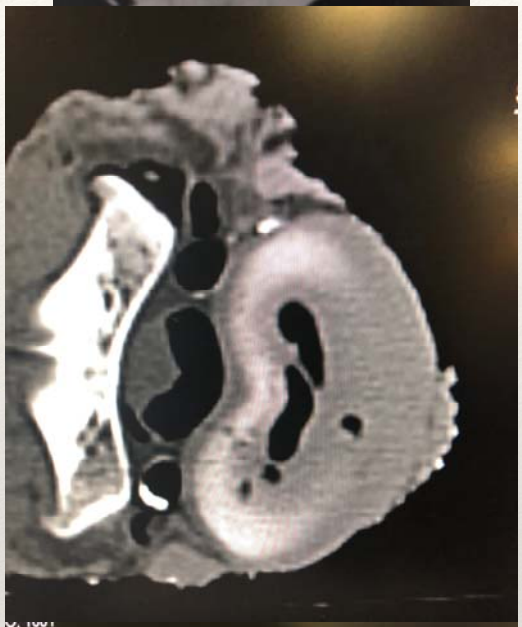
EVALUACIÓN PRECLÍNICA

- EXPERIENCIA SOBRE COLUMNA PORCINA
- MEDICIÓN DE VOLUMEN DE VAPORIZACIÓN
- LASER 1470nm VS LASER 980nm







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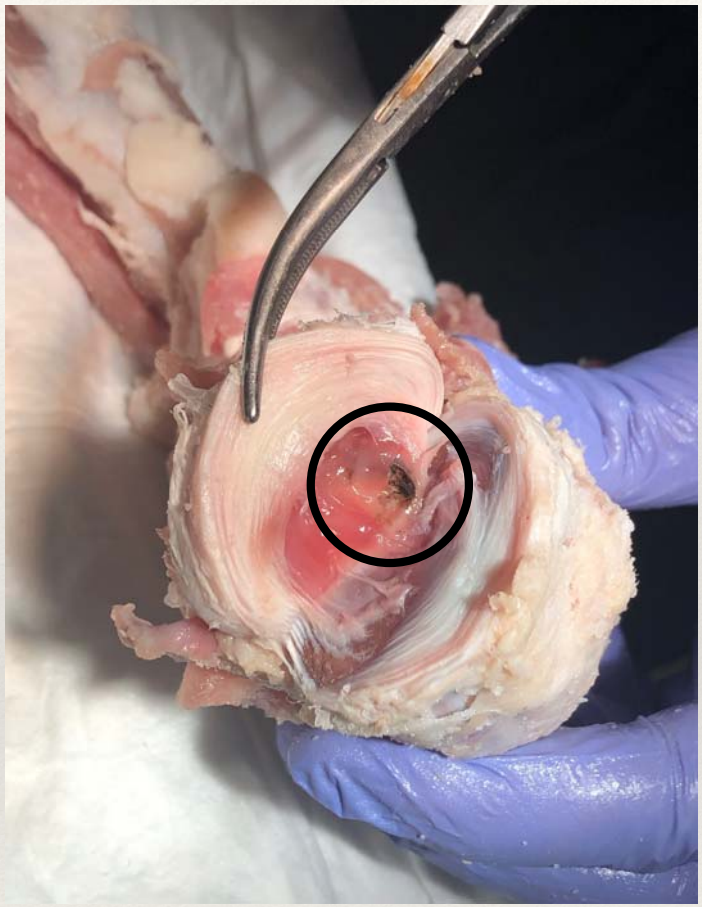
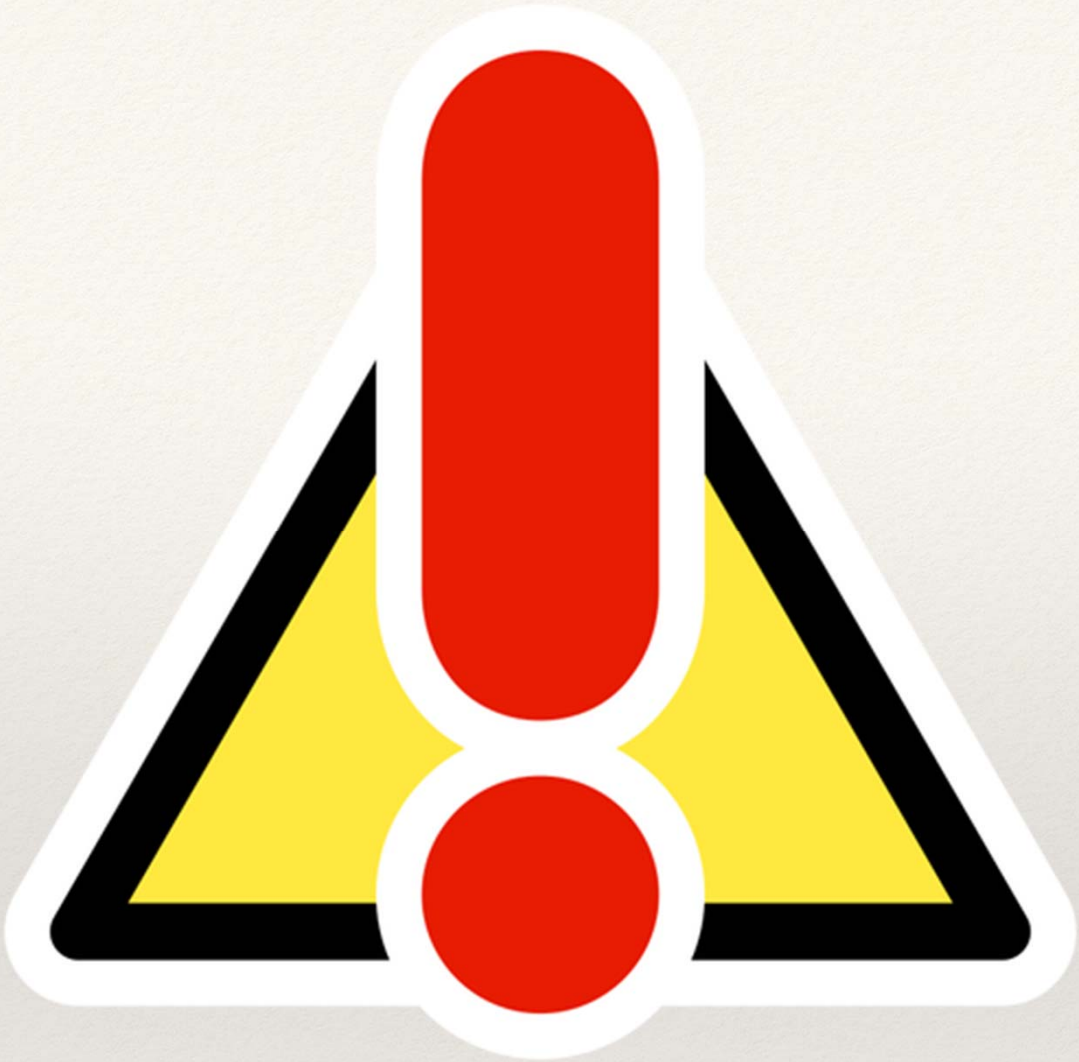
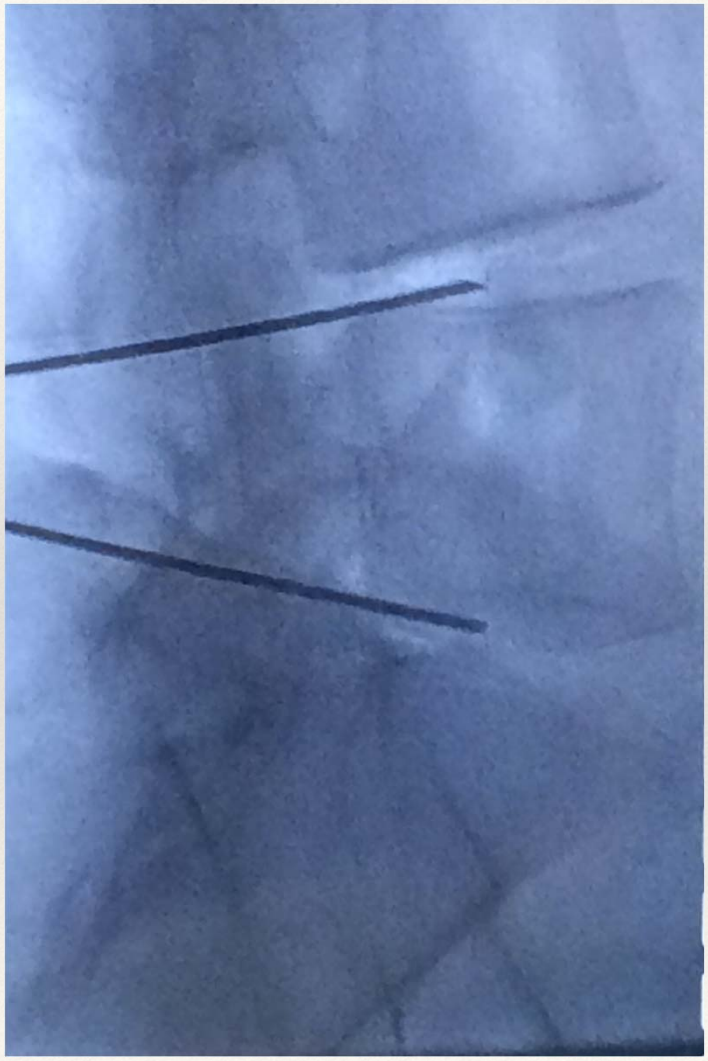
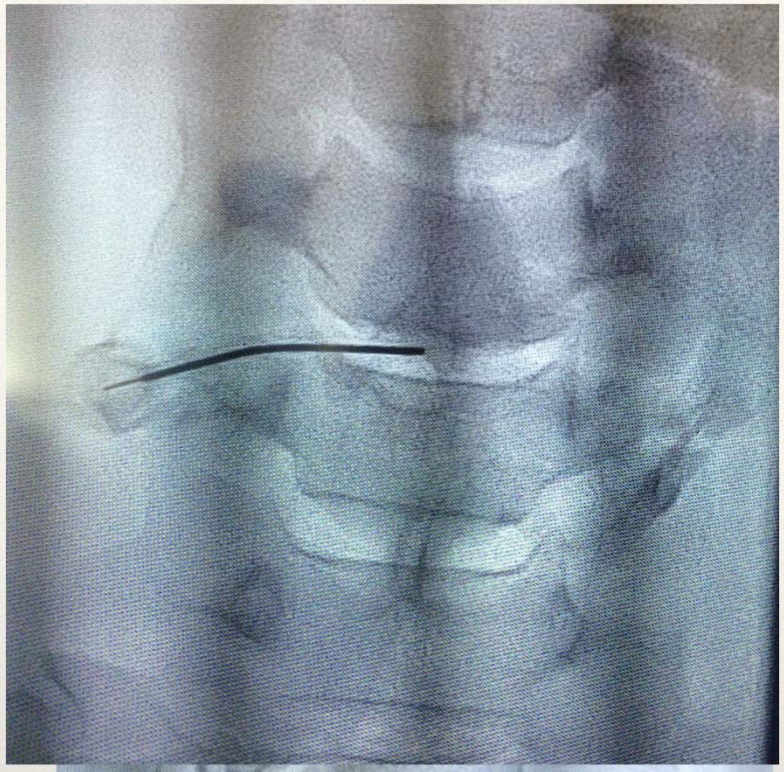


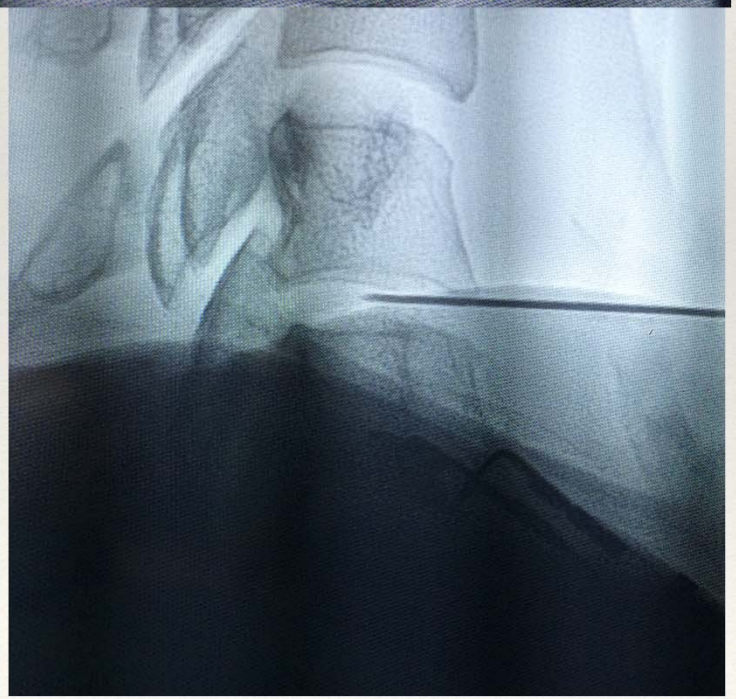


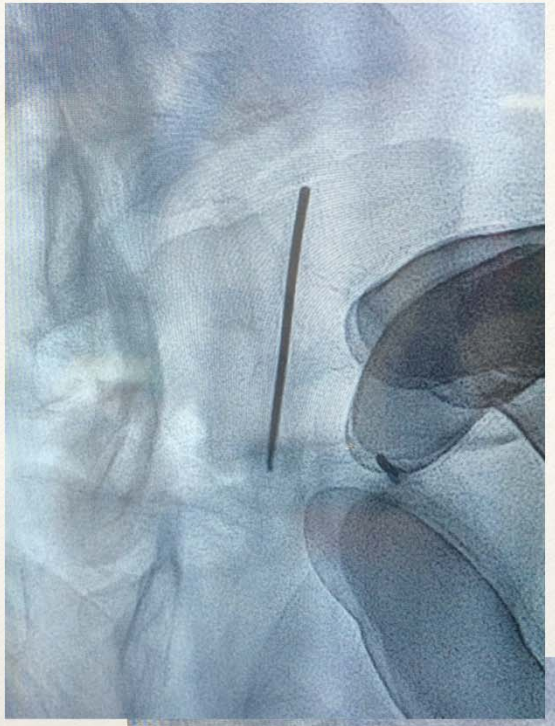
TÉCNICA DE PUNCIÓN DISCAL

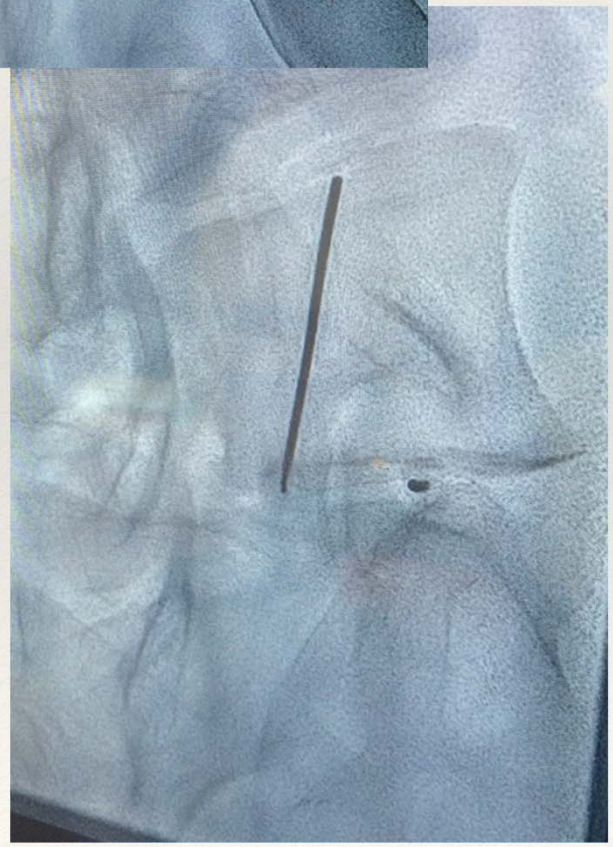
- ¡¡¡ SIEMPRE GUIADA POR IMAGEN !!!!
- Abordaje POSTEROLATERAL
- Abordaje ANTEROLATERAL
- ALTURA MEDIA DEL DISCO





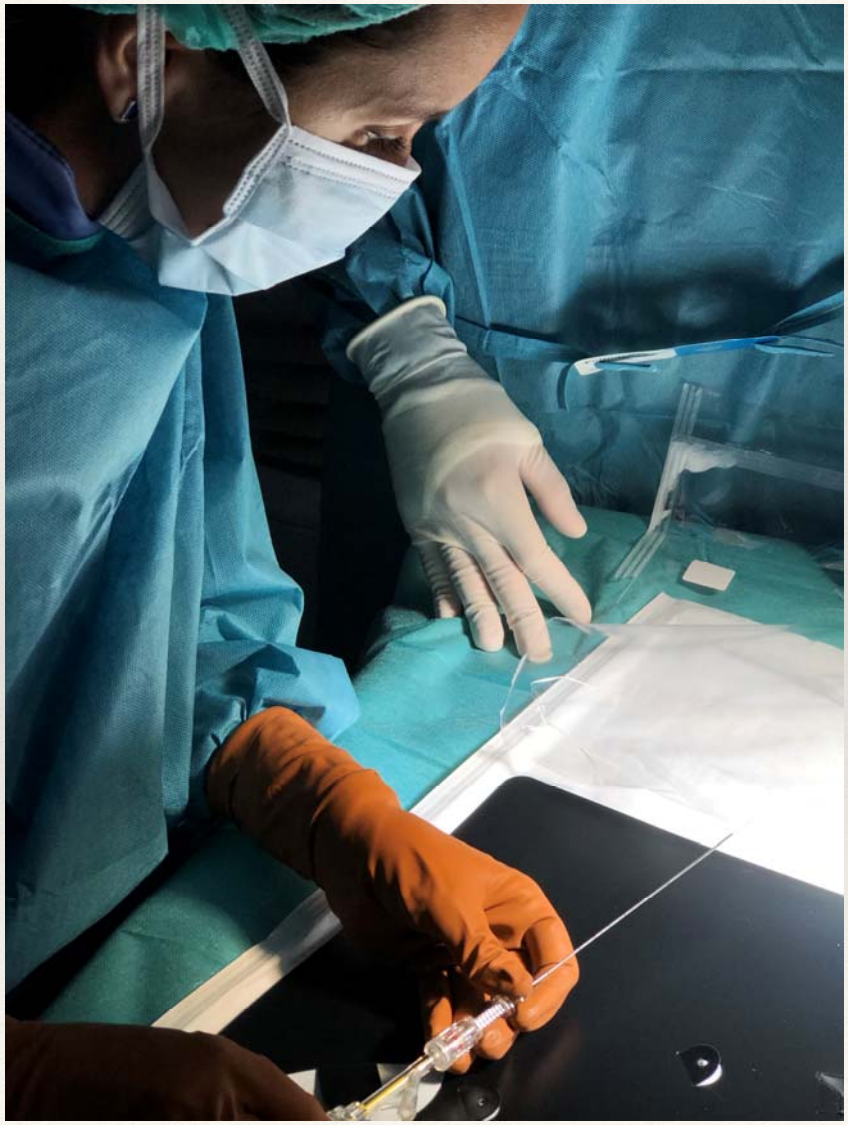


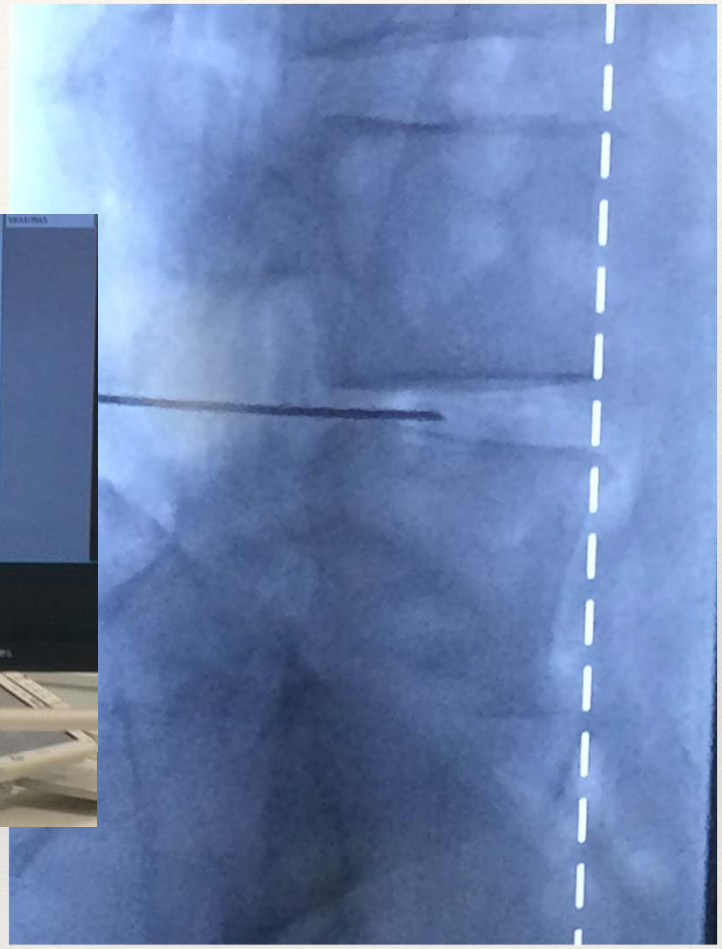




NUCLEOPLASTIA Y HERNIOPLASTIA

- Colocación Coaxial de fibra laser
- 200-300J a 7W. Pausas 5-10 seg.
- Lavado y refrigeración discal
- Inyección Intradiscal PRGF
- Posibilidad de DynaCT



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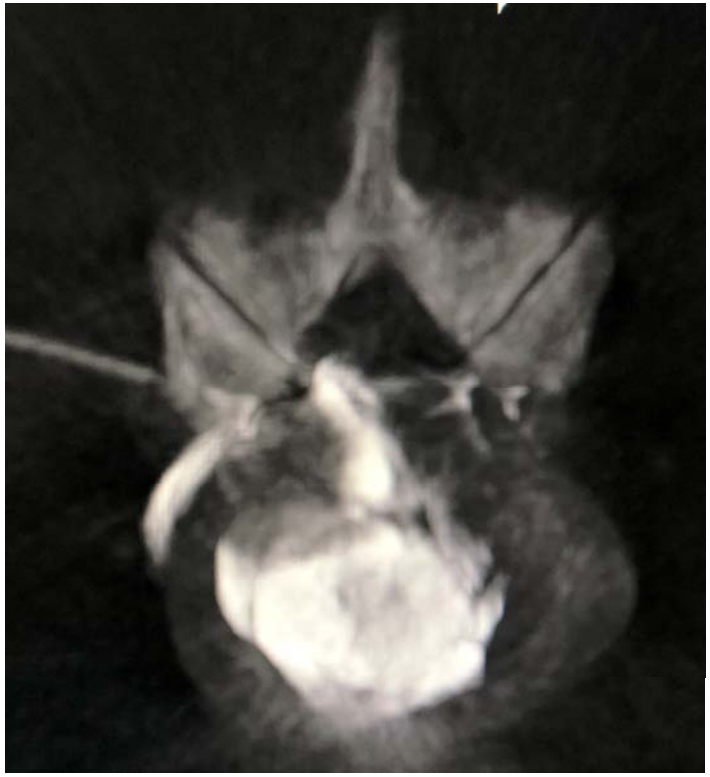
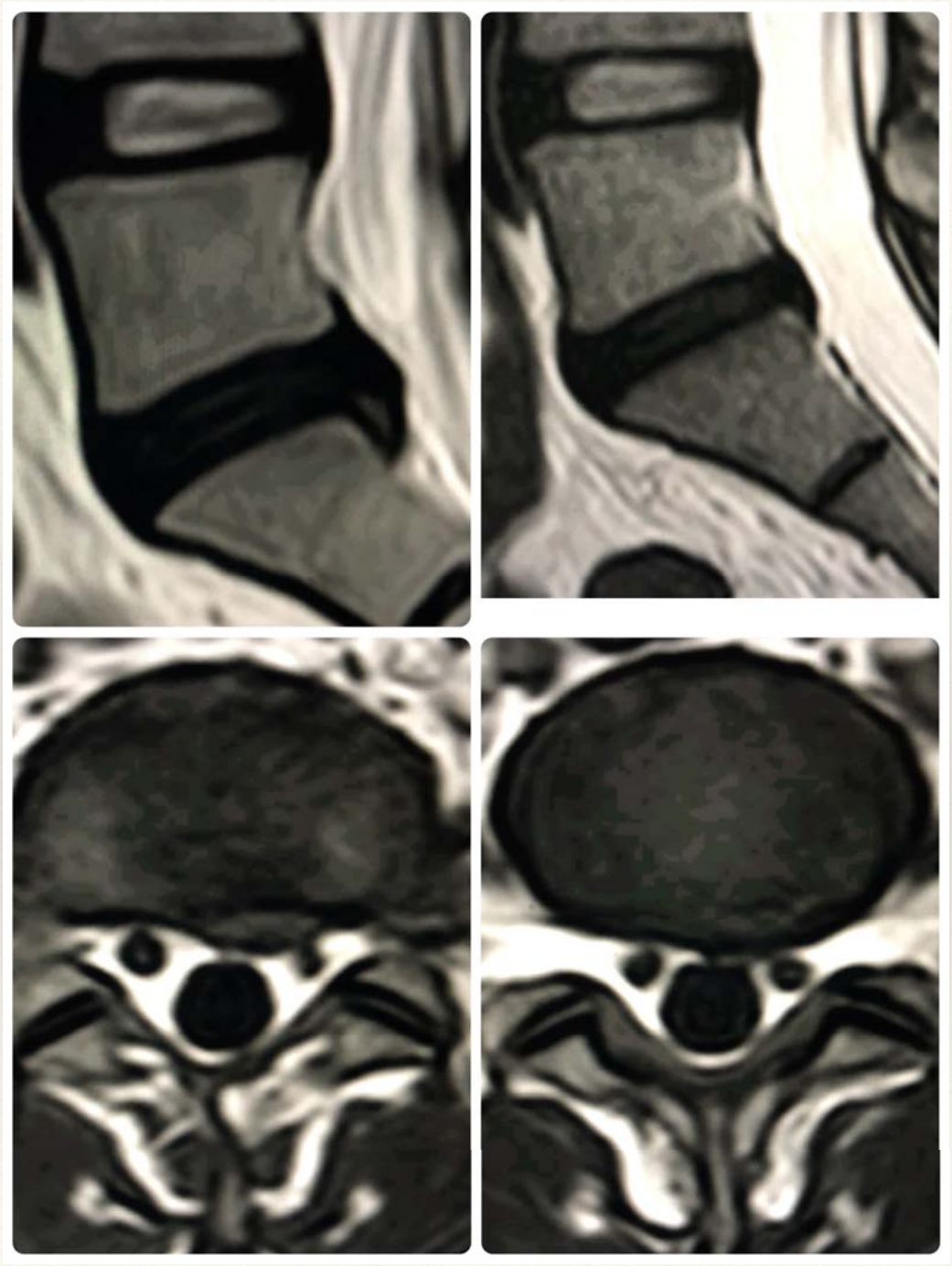




Enfermedad degenerativa discal

- Incidencia:
  - 40% de los < de 30 años
  - 90% de los > de 50 años.
- Clinica:
  - Compresión radicular
  - Dolor axial crónico
- Cirugía 4 millones de pacientes por año en todo el mundo.

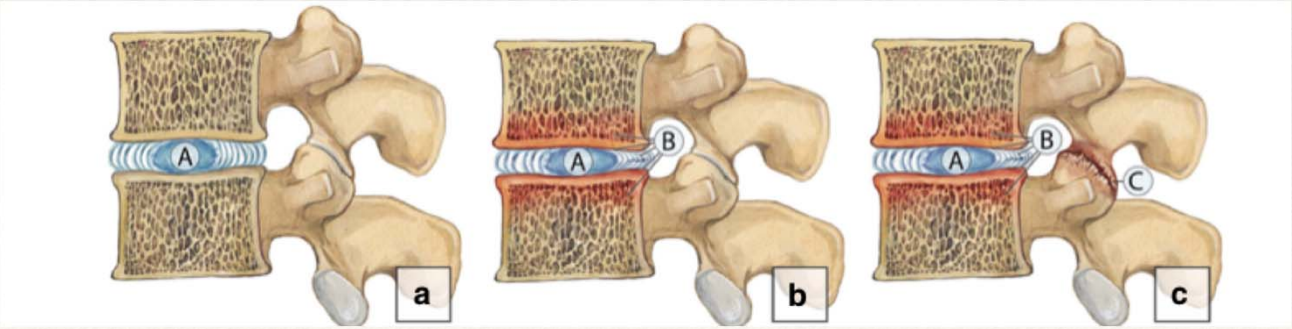
Proceso de degeneración discogéni

1. Afectación Inicial:
Deshidratación del núcleo pulposo,

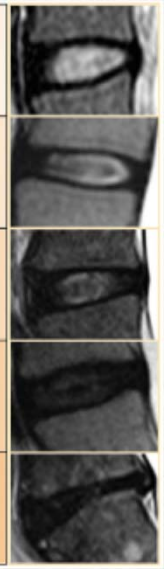
2. Consecuencias:
Sobrecarga del anillo fibroso
Alteración de las placas terminales
Afectación de la medula ósea

3. Evolución:
Sobrecarga del grupo articular posterior (osteoartrosis de articulaciones interapofisarias, hipe

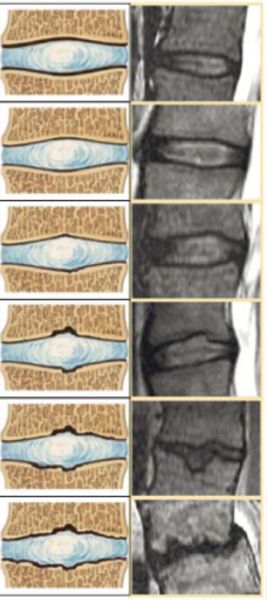
4. Situación final: Estenosis de Canal

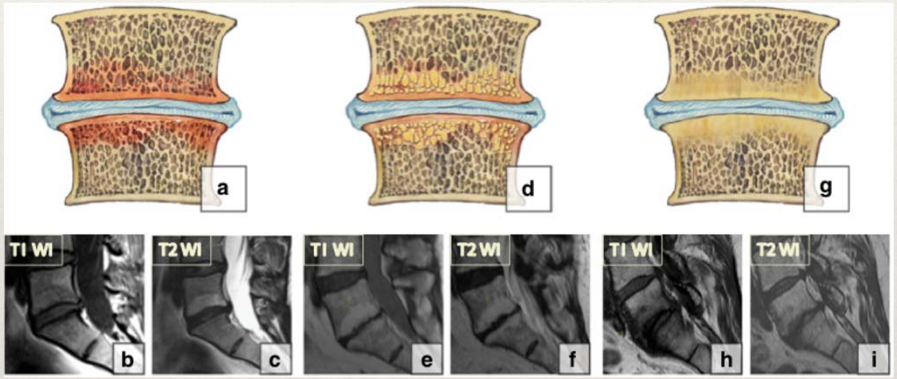


Grade I	Disc has a uniform high signal in the nucleus on T2.
Grade II	Central horizontal line of low signal intensity.
Grade III	High intensity in the central part of the nucleus with lower intensity in the peripheral regions of the nucleus.
Grade IV	Low signal intensity centrally and blurring of the distinction between nucleus and annulus.
Grade V	Homogeneous low signal with no distinction between nucleus and annulus.



Type I Normal endplate, with no interruption.	No Modic changes	**HEALTHY**	
Type II Thinning of the endplate, no obvious break.		**AGING**	
Type III Focal endplate defect with established disc marrow contact but with maintained endplate contour.			
Type IV Endplate defects <25% of the endplate area.	Associated with Modic changes	**DEGENERATIVE**	
Type V Endplate defects up to 50% of the endplate area.			
Type VI Extensive damaged endplates up to total destruction.			





Grade	Facet joint osteoarthritis	
Grade 0 Normal		a
Grade 1 Mild	Mild narrowing and joint irregularity.	b
Grade 2 Moderate	Moderate narrowing and joint irregularity, sclerosis, and osteophyte formation.	c
Grade 3 Severe	Severe narrowing and almost total loss of joint space, sclerosis, and osteophyte formation	d

Grade	Central canal		Lateral recess		Foraminal	
Grade 0 Normal		T2 WI		T2 WI		T2 WI
Grade 1 Mild	Anterior CSF space is mildly obliterated, nerves in cauda equina can be clearly separated from each other.	T2 WI	Narrowing of the lateral recess without root flattening or compression.	T2 WI	Mild foraminal stenosis (<50%).	T2 WI
Grade 2 Moderate	Cauda equina aggregation.	T2 WI	Narrowing of the lateral recess with root flattening and some preservation of the space lateral to the root in the lateral recess.	T2 WI	Moderate foraminal stenosis (>50%).	T2 WI
Grade 3 Severe	Entire cauda equina as a bundle.	T2 WI	Severe root compression with severe narrowing and complete obliteration of CSF space surrounding or lateral to the nerve root.	T2 WI	Severe foraminal stenosis (nerve root collapse).	T2 WI

Cirugía de fusión espinal:

- Pseudoartrosis
- Enfermedad en segmentos adyacentes
- Altas tasas de reintervención
- Sme de espalda fallida

Remplazo protésico del disco (TDR)

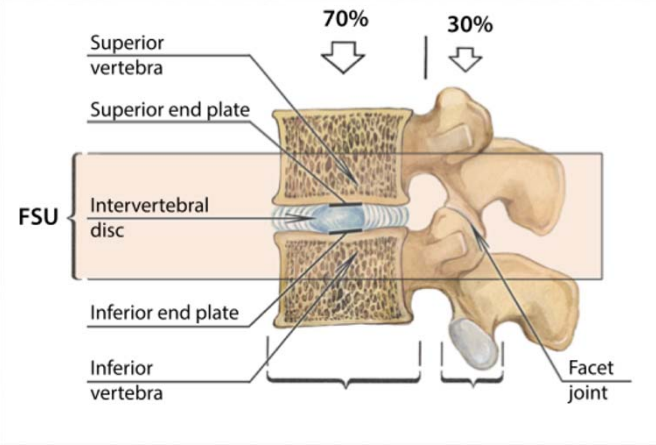
- Desarrollados para mantener la movilidad segmentaria
- Alternativa a la artrodesis,
- Estudios recientes han mostrado que también alteran la biomecánica espinal llevando a enfermedad en segmentos adyacentes.

Problemática Actual

ento actual NO LOGRAN LA RESTAURACIÓN del disco y estructuras a

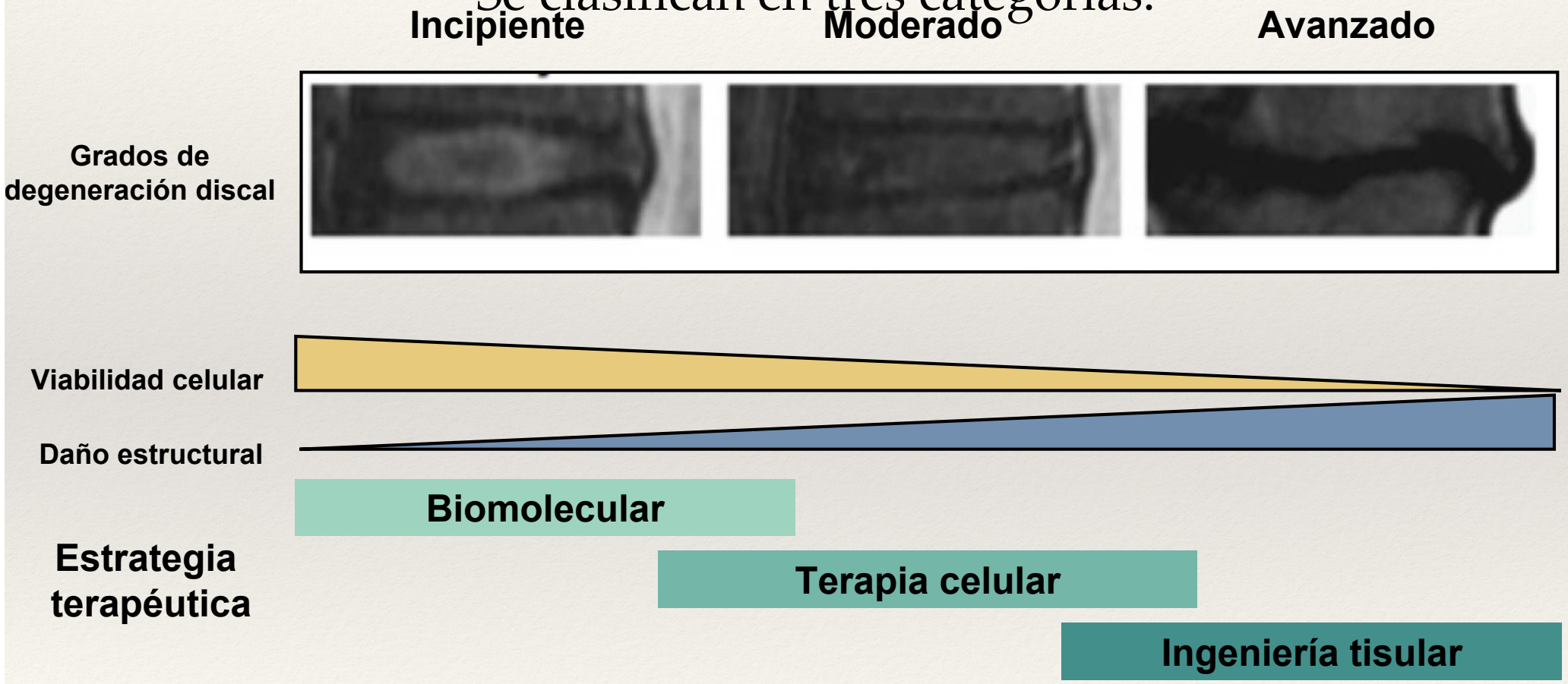
SOLUCIÓN:

TERAPIA REGENERATIVA BIOLÓGICA



Las estrategias utilizadas en la reparación biológica son específicas de la etapa de degeneración.

Se clasifican en tres categorías.



Aproximación del tratamiento biológico en la enfermedad degenerativa discal

1. TERAPIA BIOMOLECULAR (degeneración incipiente):

¿Cuándo?: Si existen suficientes poblaciones de las células viables.

¿Cómo?: Biomoléculas (genes o proteínas recombinantes) que DISMINUYEN CATABOLISMO y FAVORECEN ANABOLISMO, con el objetivo de REGENERAR LA MATRIZ EXTRACELULAR

2. TERAPIA CELULAR (degeneración intermedia):

¿Cuándo?: Células viables menos activas y que desaparecen rápidamente.

¿Cómo?: Mediante IMPLANTACIONES CELULARES para satisfacer la mayor demanda del disco.

3. INGENIERIA TISULAR (estructuras del disco gravemente comprometidas):

¿Cuándo? No existe población celular suficiente.

¿Cómo?: IMPLANTACIÓN DE CONSTRUCCIONES en forma de disco diseñadas por el tejido es la opción más potente.

Terapia biomolecular: PRGF

Table 3. *Function of growth factors stored in platelet-rich plasma.*

Growth Factor	Function
PDGF	Stimulates cell proliferation, chemotaxis, and differentiation Stimulates angiogenesis
TGF-β	Stimulates production of collagen type I and type III, angiogenesis, re-epithelialization, and synthesis of protease inhibitors to inhibit collagen breakdown
VEGF	Stimulates angiogenesis by regulating endothelial cell proliferation and migration
EGF	Influences cell proliferation and cytoprotection Accelerates re-epithelialization Increases tensile strength in wounds Facilitates organization of granulation tissue
bFGF	Stimulates angiogenesis Promotes stem cell differentiation and cell proliferation Promotes collagen production and tissue repair
IGF-1	Regulates cell proliferation and differentiation Influences matrix secretion from osteoblasts and production of proteoglycan, collagen, and other noncollagen proteins

Original Research—CME

Lumbar Intradiskal Platelet-Rich Plasma (PRP) Injections: A Prospective, Double-Blind, Randomized Controlled Study

Yetsa A. Tuakli-Wosornu, MD, MPH, Alon Terry, MD, Kwadwo Boachie-Adjei, BS, CPH, BS, Caitlin K. Gribbin, BA, Elizabeth E. LaSalle, BS, MPH, Jennifer L. Solomon, MD, Gregory E. Lutz, MD

PubMed PRP AND INTERVERTEBRAL DISC

FILTER: None

SORT: Most recent

Search Results 48 items

Optimizing the safety of intradiscal platelet-rich plasma: an in vitro study with Cutibacterium acnes.
Prysak MH, et al. Regen Med. 2019
Full text

Treatment of symptomatic degenerative intervertebral discs with autologous platelet-rich plasma: follow-up at 5-9 years.
Cheng J, et al. Regen Med. 2019
Full text

Spondylodiscitis due to Cutibacterium acnes following lumbosacral intradiscal biologic therapy: a case report.
Beatty NR, et al. Regen Med. 2019
Full text

Efficacy of Platelet-Rich Plasma Containing Xenogenic Adipose Tissue-Derived Stromal Cells on Restoring Intervertebral Disc Degeneration: A

Tissue-Engineered Intervertebral Disc and Chondrogenesis Using Human Nucleus Pulposus Regulated through TGF-β1 in Platelet-Rich Plasma

EI-HONG CHEN,[1] WEN-CHENG LO,[1] JIE-JEN LEE,[2] CHING-HUA SU,[3] CHE-TONG LIN,[4] HEN-YU LIU,[3] TSOU-WEN LIN,[3] WEI-CHAO LIN,[5] TE-YANG HUANG,[6]** AND WIN-PING DENG[3]*
[1]*Graduate Institute of Medical Sciences, Taipei Medical University, Taipei, Taiwan, ROC*
[2]*Department of Surgery, Mackay Memorial Hospital, Taipei, Taiwan, ROC*
[3]*Graduate Institute of Biomedical Materials, Taipei Medical University, Taipei, Taiwan, ROC*
[4]*Graduate Institute of Oral Rehabilitation Sciences, Taipei Medical University, Taiwan, ROC*
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[6]*Department of Orthopedics, Mackay Memorial Hospital, Taipei, Taiwan, ROC*

Biological Treatment Approaches for Degenerative Disk Disease: A Literature Review of In Vivo Animal and Clinical Data

Yu Moriguchi[1] Marjan Alimi[1] Thamina Khair[1] George Manolarakis[1] Connor Berlin[1] Lawrence J. Bonassar[2] Roger Härtl[1]

PM R 8 (2016) 1-10

www.pmrjournal.org

Original Research—CME

Lumbar Intradiskal Platelet-Rich Plasma (PRP) Injections: A Prospective, Double-Blind, Randomized Controlled Study

Yetsa A. Tuakli-Wosornu, MD, MPH, Alon Terry, MD, Kwadwo Boachie-Adjei, BS, CPH, Julian R. Harrison, BS, Caitlin K. Gribbin, BA, Elizabeth E. LaSalle, BS, Joseph T. Nguyen, MPH, Jennifer L. Solomon, MD, Gregory E. Lutz, MD

Conclusion

Participants who received intradiskal PRP experienced significantly greater improvements in FRI, NRS—Best Pain, and NASS satisfaction scores compared with those who received contrast agent alone over 8 weeks. Additionally, the significant improvement in FRI score was sustained for up to 1 year or more after PRP injection. Under sterile conditions, intradiskal PRP seems to have an excellent safety profile. There were no reported complications after injection among enrolled participants. Although these results are encouraging, further studies are needed to determine who the best candidates are for this treatment, what the optimal PRP concentration and composition is, whether multiple injections improve or worsen outcomes, and how the cellular physiology responsible for IVD regeneration can be considered to optimize the therapeutic effect.

Guidelines

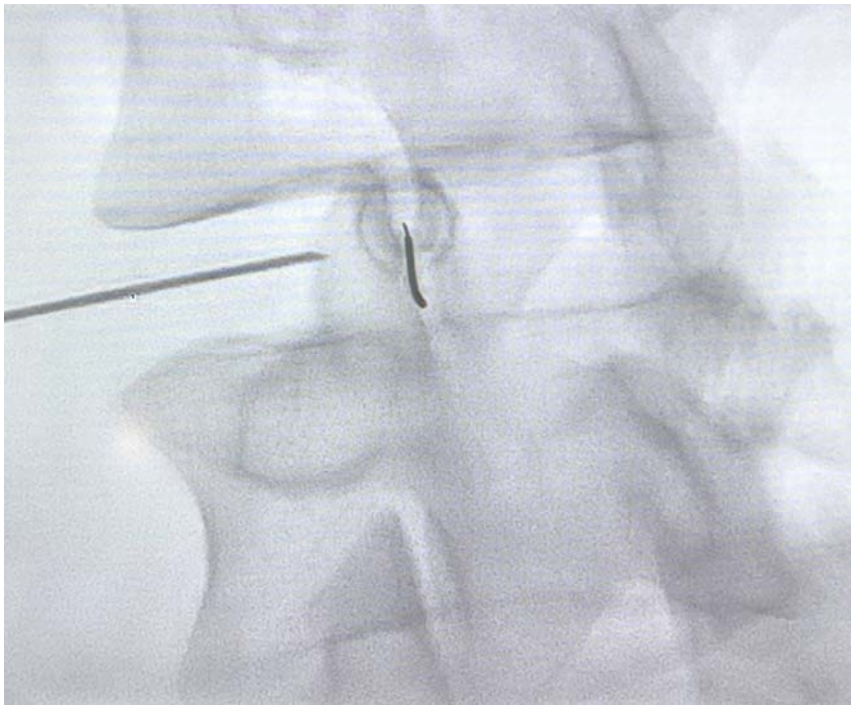
Responsible, Safe, and Effective Use of Biologics in the Management of Low Back Pain: American Society of Interventional Pain Physicians (ASIPP) Guidelines

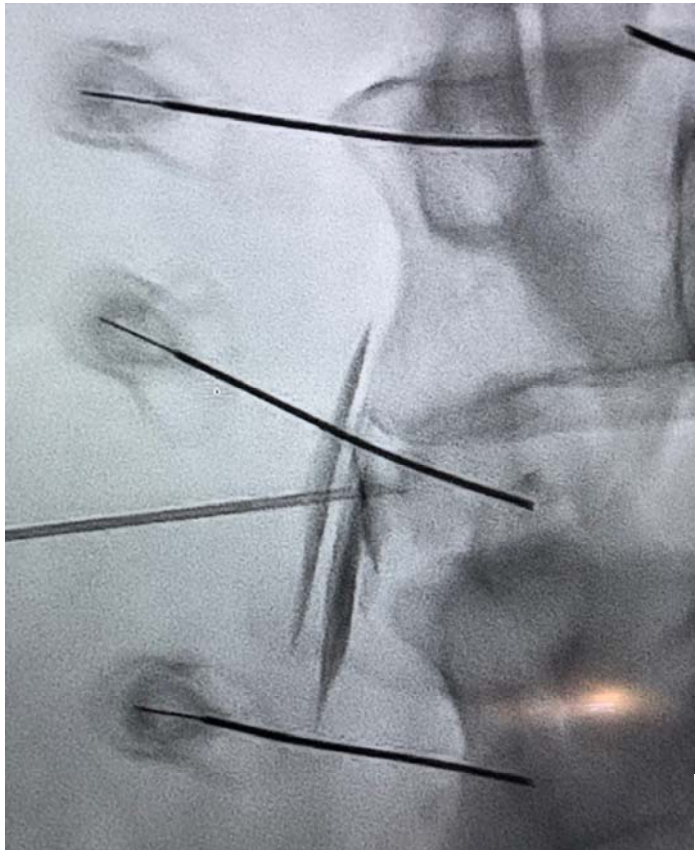
Annu Navani, MD[1], Laxmaiah Manchikanti, MD[2], Sheri L. Albers, DO[3], Richard E. Latchaw, MD[4], Jaya Sanapati, MD[5], Alan D. Kaye, MD, PhD[6], Sairam Atluri, MD[7],Sheldon Jordan, MD[8], Ashim Gupta, PhD, MBA[9], David Cedeno, PhD[10], Alejandro Vallejo, BS[11], Bert Fellows, MA[12], Nebojsa Nick Knezevic, MD, PhD[13], Miguel Pappolla, MD[14], Sudhir Diwan, MD[15], Andrea M. Trescot, MD[16], Amol Soin, MD[17], Adam M. Kaye, PharmD, FASCP, FCPhA[18], Steve M. Aydin, DO[19], Aaron K. Calodney, MD[20], Kenneth D. Candido, MD[21], Sanjay Bakshi, MD[22], Ramsin M. Benyamin, MD[23], Ricardo Vallejo, MD, PhD[24], Art Watanabe, MD[25], Douglas Beall, MD[26], Todd P. Stitik, MD[27], Patrick M. Foye, MD[28], Erik M. Helander, MBBS[29], and Joshua A. Hirsch, MD[30]

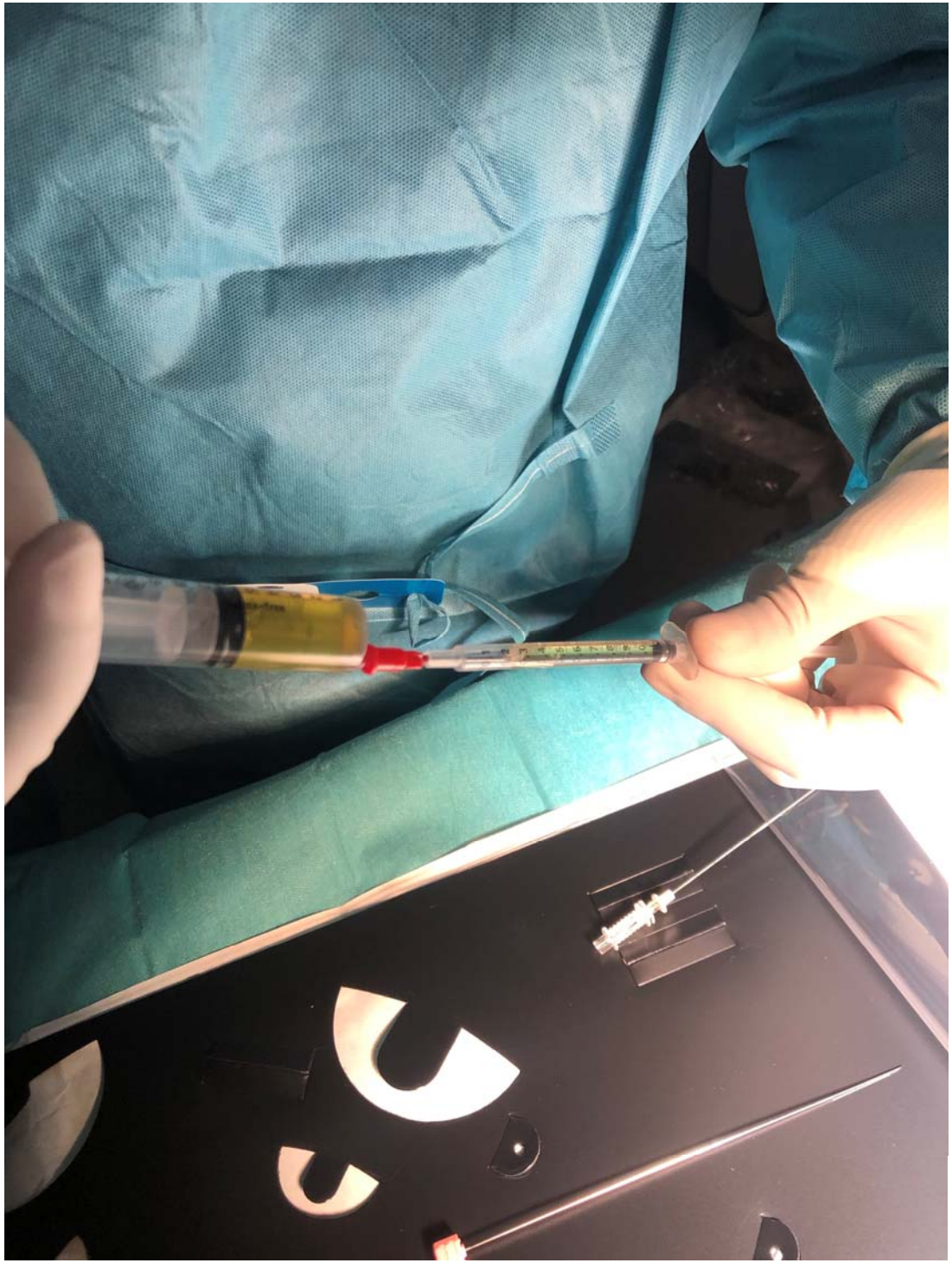
NIVEL DE EVIDENCIA para PRP Intradiscal:

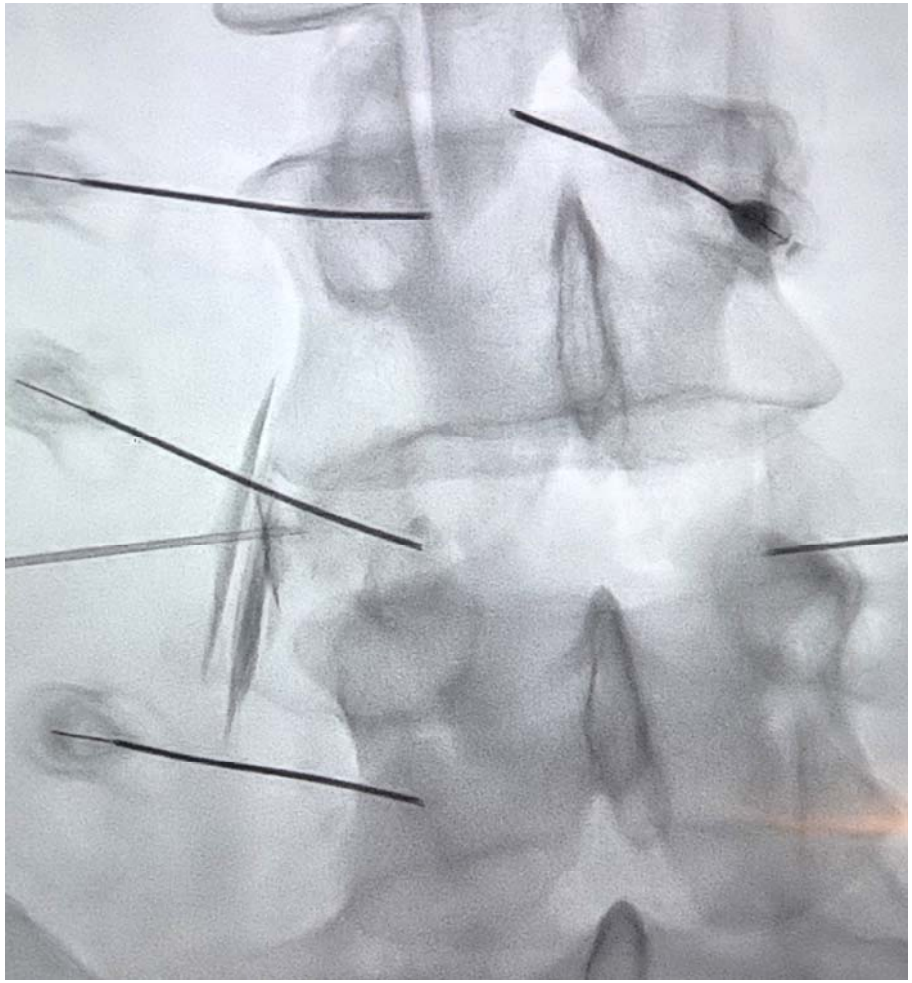
- **Grado III (razonable)**

Level I	Strong	Evidence obtained from multiple relevant high quality randomized controlled trials for effectiveness
Level II	Moderate	Evidence obtained from at least one relevant high quality randomized controlled trial or multiple relevant moderate or low quality randomized controlled trials
Level IV	Limited	Evidence obtained from multiple moderate or low quality relevant observational studies
Level V	Consensus based	Opinion or consensus of large group of clinicians and/or scientists for effectiveness as well as to assess preventive measures, adverse consequences, effectiveness of other measures.









EVOLUCIÓN POST - TRATAMIENTO A 3 MESES (VISUAL ANALOGUE SCALE)

80 % BUEN RESULTADO