

PERCUTANEOUS DISC DECOMPRESSION: ALFADEK



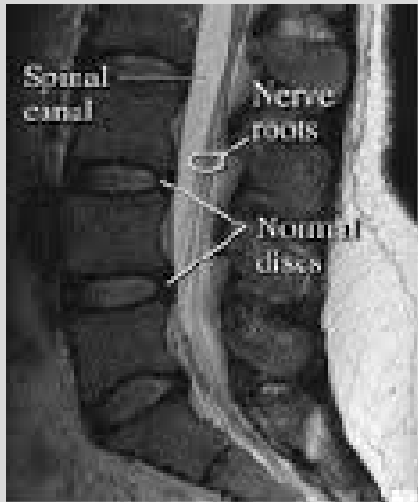
PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**

Percutaneous Disc Decompression is an intra-discal mini-invasive percutaneous treatment.

The procedure is made by local anesthesia, with no surgical incision.

The procedure reduces the pressure that the herniated disc exercises on the nerve.

PERCUTANEOUS DISC
DECOMPRESSION: **ALFADEK**



Normal LUMBAR MRI



**LUMBAR MRI showing
herniated disc**



This method allows decompression, through a percutaneous approach, of the diseased disc that exercises compression effects on Spinal structure

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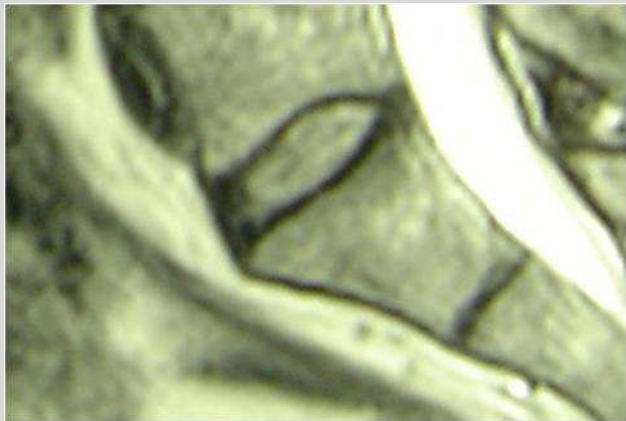
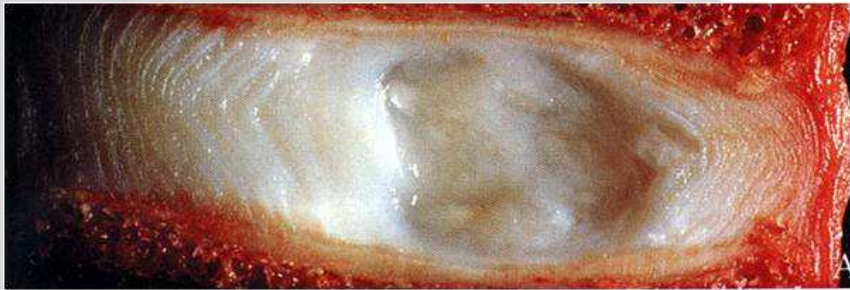
DISEASED DISC

You may recognize many of disc degeneration paintings:

- **DISC PROTUSION:** bulging of the fibers constituting the fibrous annulus, with rear or side compression
- **UNDERLIGAMENT OR CONTAINED HERNIA:** when the nucleus pulposus is herniated through a fibrous ring tear, but is still contained below the posterior longitudinal ligament.
- **EXPELLED HERNIA:** when the nucleus pulposus escapes piercing even posterior longitudinal ligament and protrudes directly into the vertebral channel.
- **FREE HERNIA:** If the herniated material is completely detached from the disk from which it comes and it appears free in the spinal channel, where it can migrate

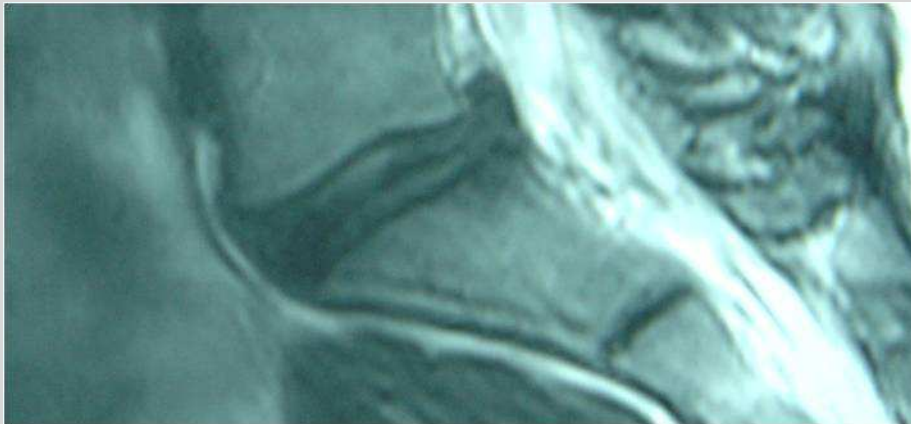
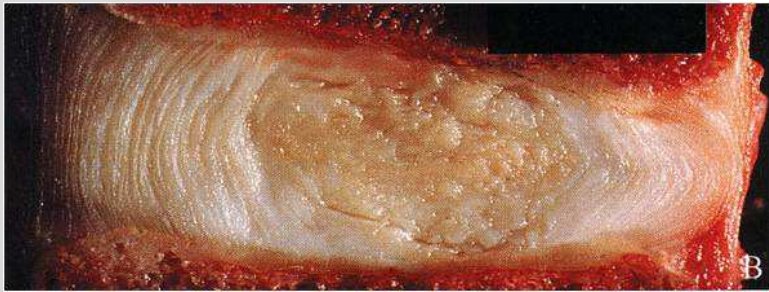
LUMBAR INTERVERTEBRAL DISC

Normal Structure



LUMBAR INTERVERTEBRAL DISC

Early degeneration



LUMBAR INTERVERTEBRAL DISC

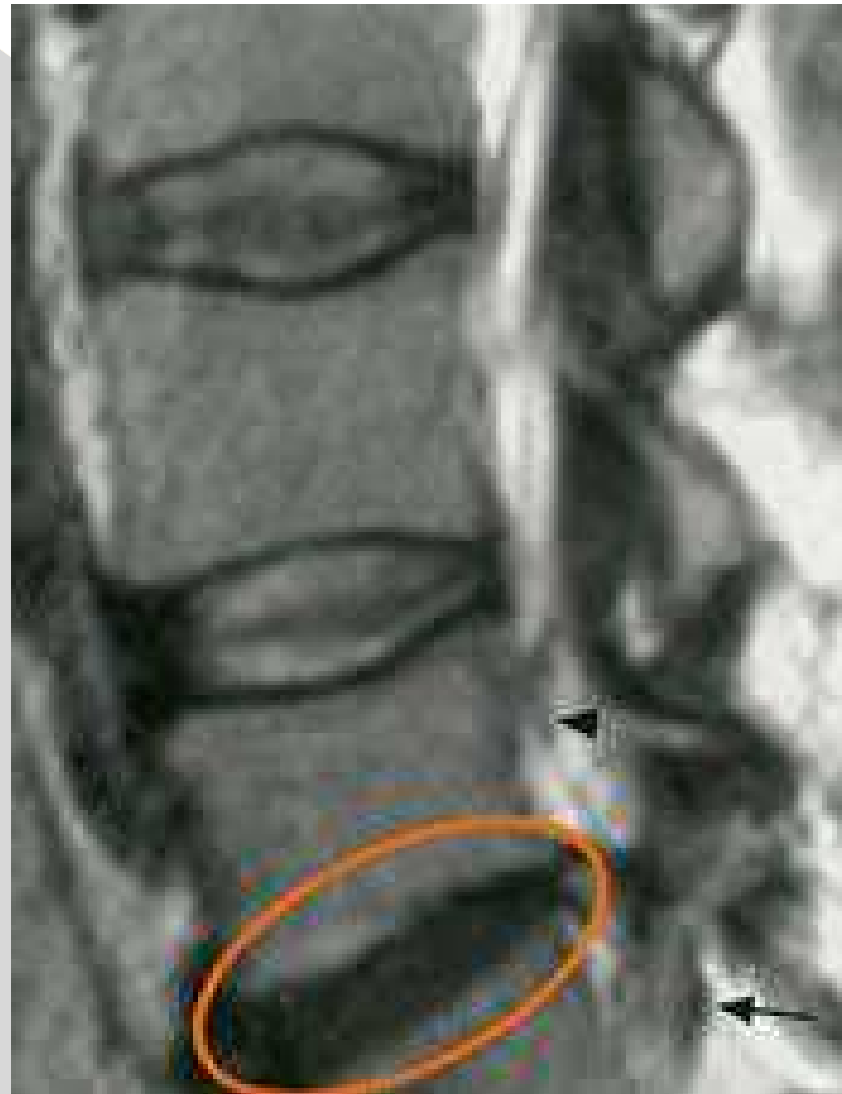
Advanced degeneration



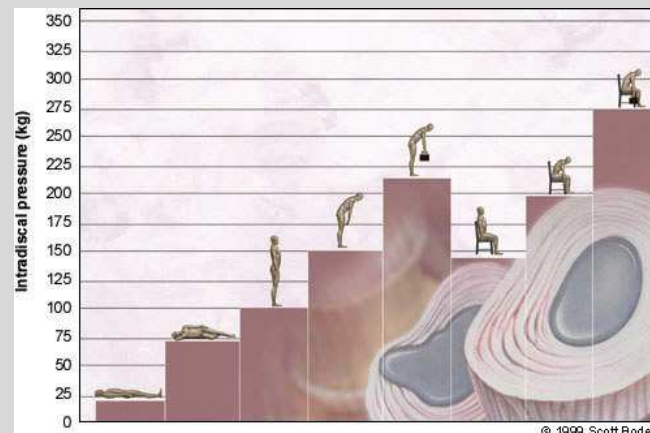
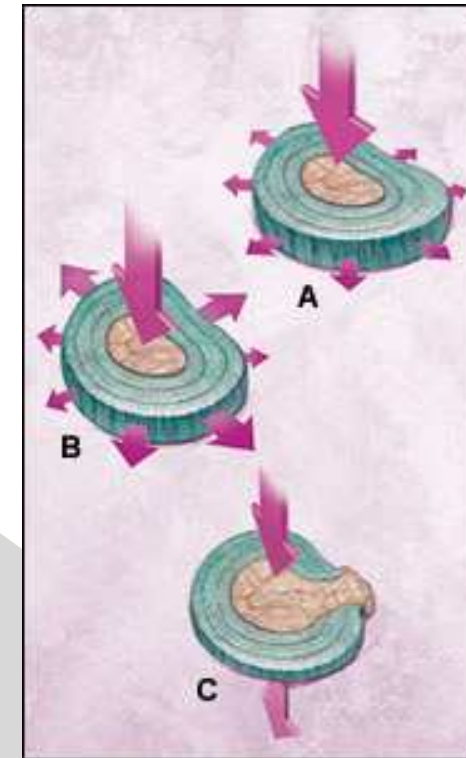
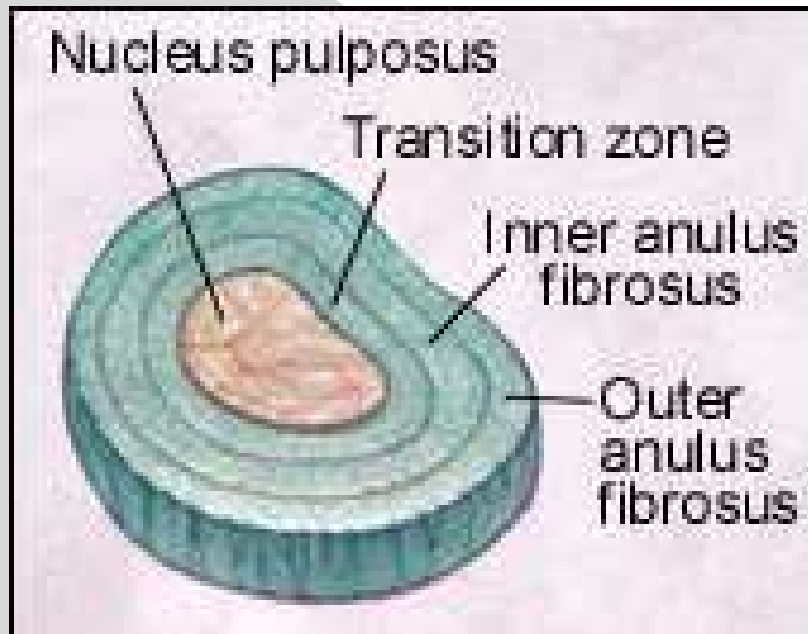
HERNIATED DISC



BLACK DISC

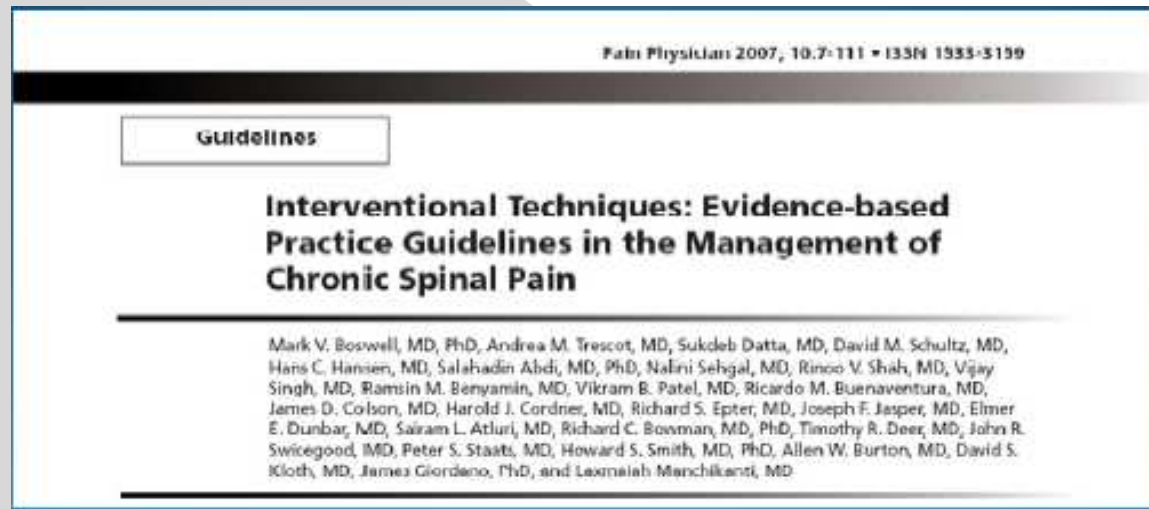


DISC DEGENERATION



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CLINICAL EVIDENCE



Evidence is moderate for short-term and limited for long-term relief

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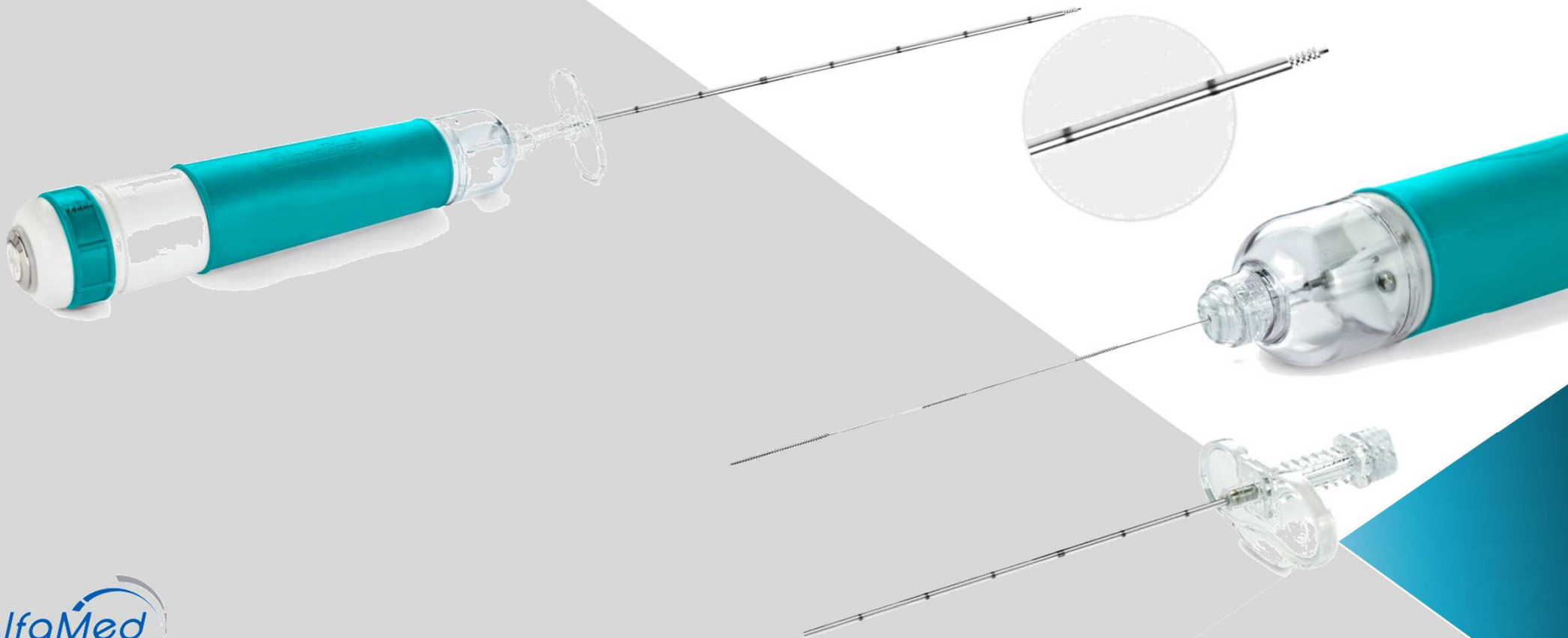
CLINICAL EVIDENCE

1. Boswell et al "Interventional techniques: evidence based practice guidelines in the management of chronic spinal pain" *Pain Physician* 2007 Jan; 10(1):7-11
2. Amoretti et al "Clinical follow-up of 50 patients treated by percutaneous lumbar discectomy" *Clin Imaging* 2006, 30(4):242-4
3. Singh et al "Percutanepus lumbar disc decompression" *Pain Physician* 2006 Apr;9(2):139-46 Review
4. Pomerantz et al. "Intradiscal therapies for discogenic pain" *Semin Musculoskelet Radiol.*2006, 10(2):125-35
5. Domskey et al "Critical features of a percutaneous discectomy probe requiring surgical removal during disc decompression" *Reg. Anesth Pain Med* 2006,31(2):177-9
6. Amoretti et al "Percutaneous nucleotomy:preliminary communication on a decompression probe (Dekompressor) in percutaneous discectomy:Ten case report" *Clin Imaging* 2005,29(2):98-101

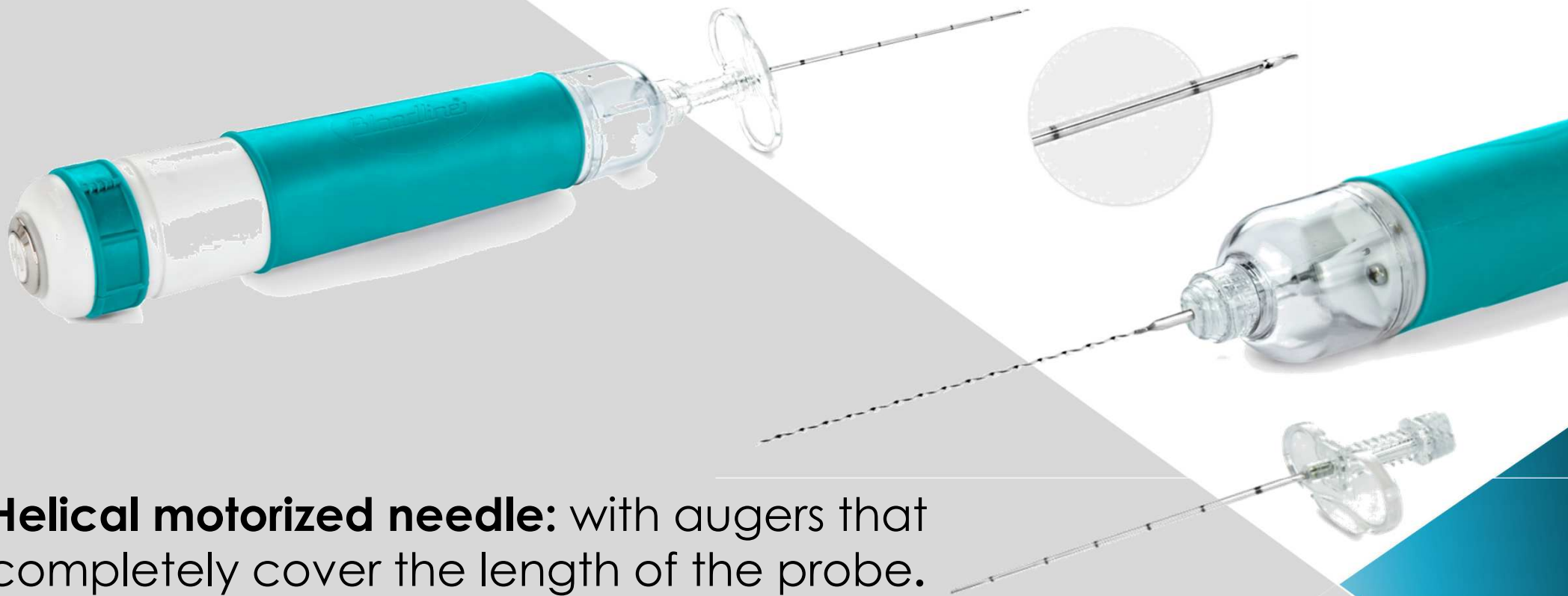
PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**

ALFADEK is available in two variations: STRAIGHT LUMBAR and STRAIGHT CERVICAL. It uses a MECHANICAL ACTION to reduce and eliminate the nucleus pulposus material of the intervertebral disc in the presence of contained hernia.

STRAIGHT LUMBAR SYSTEM FOR PERCUTANEOUS DISC DECOMPRESSION



STRAIGHT CERVICAL SYSTEM FOR PERCUTANEOUS DISC DECOMPRESSION



Helical motorized needle: with augers that completely cover the length of the probe.

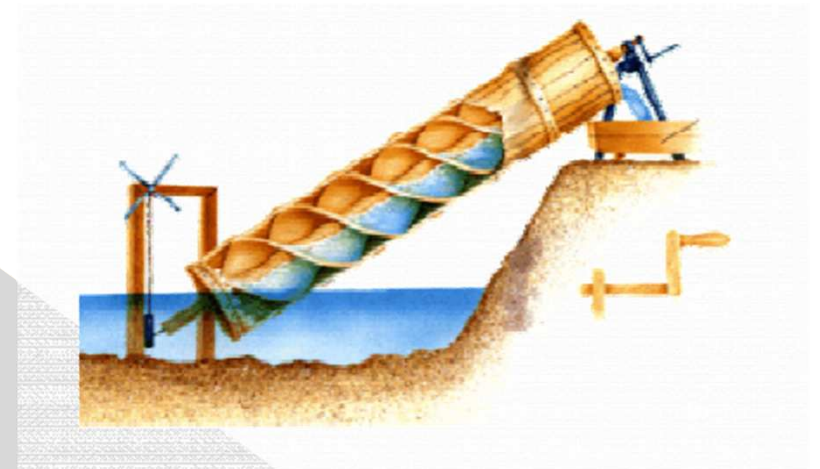
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ARCHIMEDES' SCREW

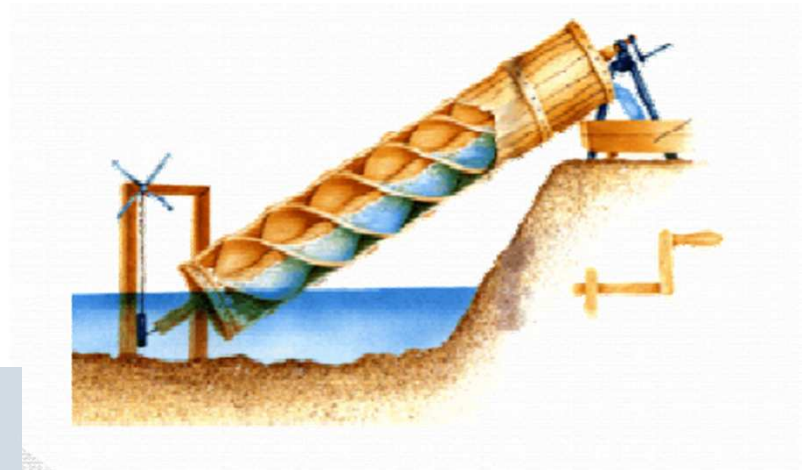
*Archimedes' screw, also called **auger**, is a basic device used to lift up liquid or material.*

The machine is composed by a screw put inside a tube.

At every step, the rotation collects a certain quantity of material.



ALFADECK TIP ARICHIMEDES' SCREW



PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**

THERAPEUTIC INDICATIONS

- Discogenic pain
- Radicular pain caused ONLY by not expelled disc hernia.

PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**

CONTRAINDICATIONS OF INTRADISCAL PROCEDURES:

- disc height <75%
- seriously degenerated disc
- expulsion or seizure of the disc
- hernia > 1/3 of the sagittal diameter of the spinal channel
- abnormalities in coagulation parameters or anticoagulant or antiplatelet therapy in place
- fractures, tumors and spinal infections
- moderate to severe spinal stenosis
- evidence of radiculopathy or neurologic deficits of recent onset
- pregnancy
- clinical and / or psychological contraindications

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DISCOGENIC PAIN

Discogenic pain is usually responsible for “Back-Pain”, incidence: 5% of population.

Patients with chronic low back pain or intermittent pain have a low quality of life, then They cause direct-indirect high costs, and generally have been subjected to various conservative, and not conservative; therapies, with uncertain clinical outcomes.



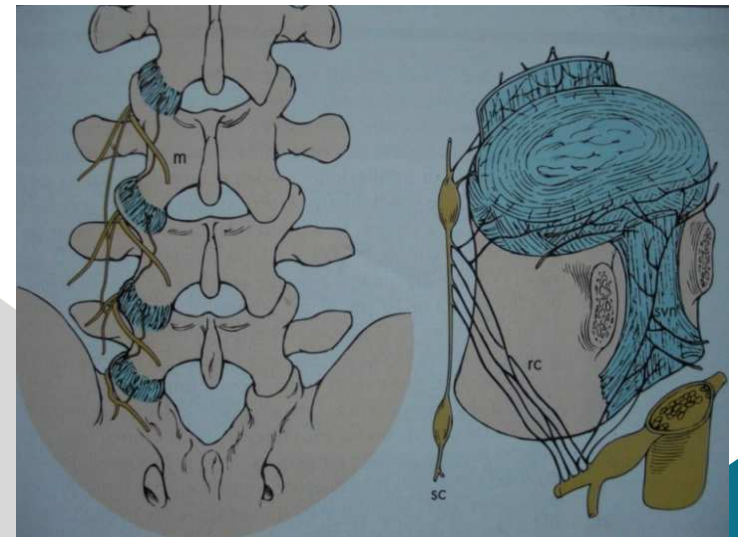
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DISCOGENIC PAIN

The disc is composed by ANULUS, NUCLEUS and the upper and lower plates.

The anterior structures are innervated by the Breast Vertebral Nerve(>III° Post Anulus, Leg. Long. Post, Anterior Dural Sac.)

The posterior structures are innervated by the Medial Branch of the Spinal Nerve Dorsal Branch.



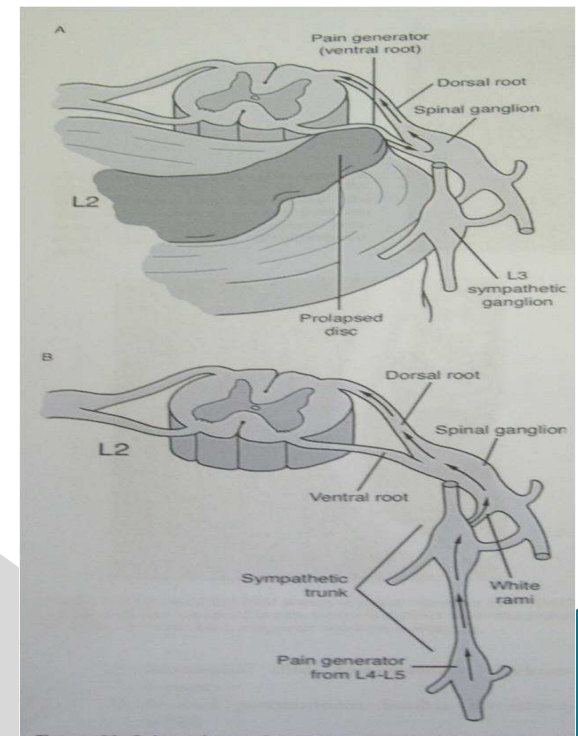
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DISCOGENIC PAIN

Discogenic Pain is caused by two pathogenetic components :

MECHANICAL FACTORS:

- DIRECT: sprain and deformation induced on the nerve fibers, with possible qualitative conduction abnormalities .
- INDIRECT: ischaemic vascular mediated vascular mediated caused by “venous stasis”

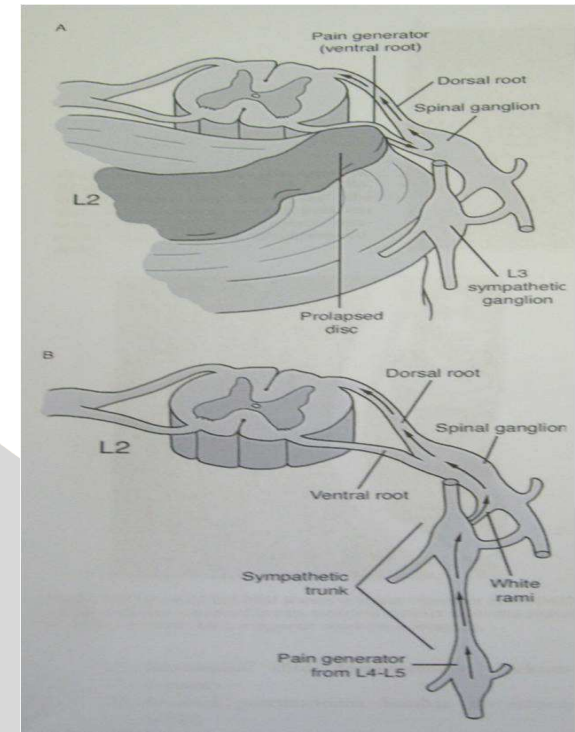


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DISCOGENIC PAIN

INFLAMMATORY FACTORS :

- *immune-mediated
(cell-mediated reaction)*
- *inflammatory reaction by biohumoral
factors related to the disc tissue*



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PATIENT SELECTION FOR PERCUTANEOUS DISC DECOMPRESSION WITH DISCOGENIC PAIN

- a) *Discogenic Low-Back Pain for more than 6 months*
- b) *No improvement from rehabilitation programs and systemic therapies.*
- c) *Absence of inflammatory arthritis processes and/or diseases that can imitate lumbar pain*
- d) *Exclude patients who had disc surgery in the symptomatic level*
- e) *Herniated disc contained by evidence from specific tests (MRI and CAT)*

Pauza et al, 2004; Saal and Saal, 2002; Bogduk and Karasek, 2002; Kapural et al, 2004

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PATIENT SELECTION FOR PDD

Before performing the Percutaneous Disc Decompression, some users recommend to perform two selective tests :

- a) Discography***
- b) Pain "evocative" Disc Manometry***

PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**

DISCOGRAPHY

1. Identify the pathological disk
2. Preliminary test for decompressive technique
3. Identify the "compliance" of the nucleus pulposus to the injection of contrast medium
4. Cause Pain
5. Highlight annulus fissures and/or spillage into the epidural space

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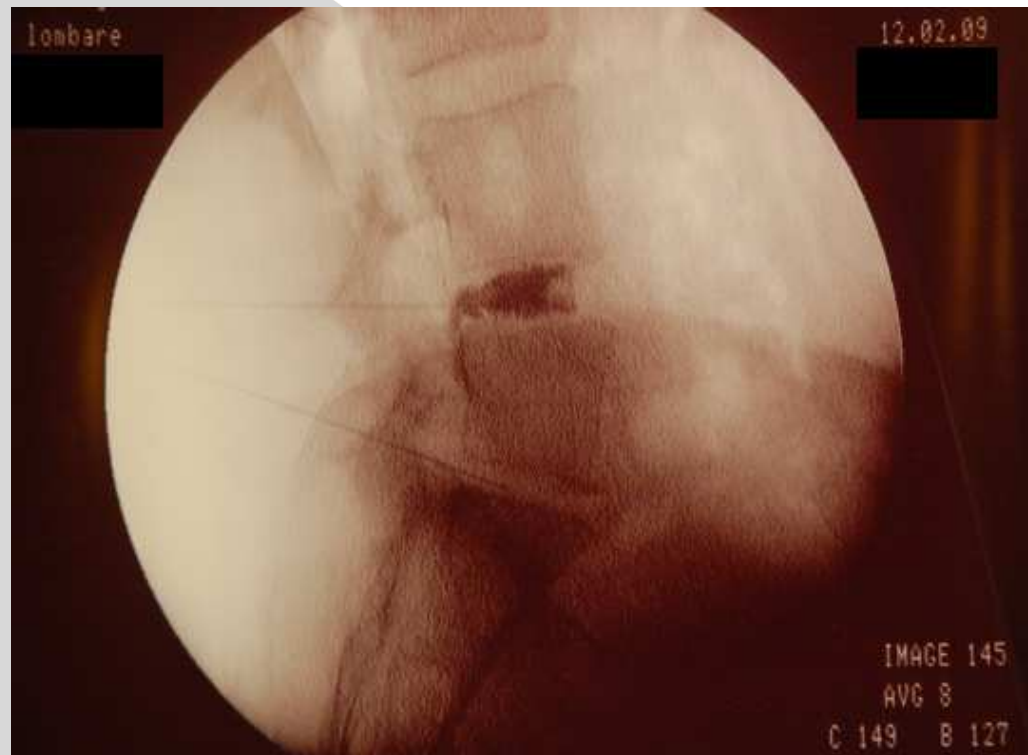
DISCOGRAPHY



PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**



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PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**

EVOCATIVE DISC MANOMETRY

Discogenic Pain is highly dependent on the pathological increase or increase caused by intradiscal pressure.

- a) *A healthy disc does not cause pain*
- b) *Intradiscal pressures less than 15 psi recall inflammatory chemical pain type*
- c) *Intradiscal pressures between 15-50 psi recall a mechanical pain type*

Psi=0.069=51,715 MMHG

Derby et al. "De ability of pressure-controlled discography to predict and sugical and Not surgical outcome Spine 1999; 24:364-371

PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK TECHNIQUE**

*Incision point on the
skin angled of 40-45° C*



PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK TECHNIQUE**

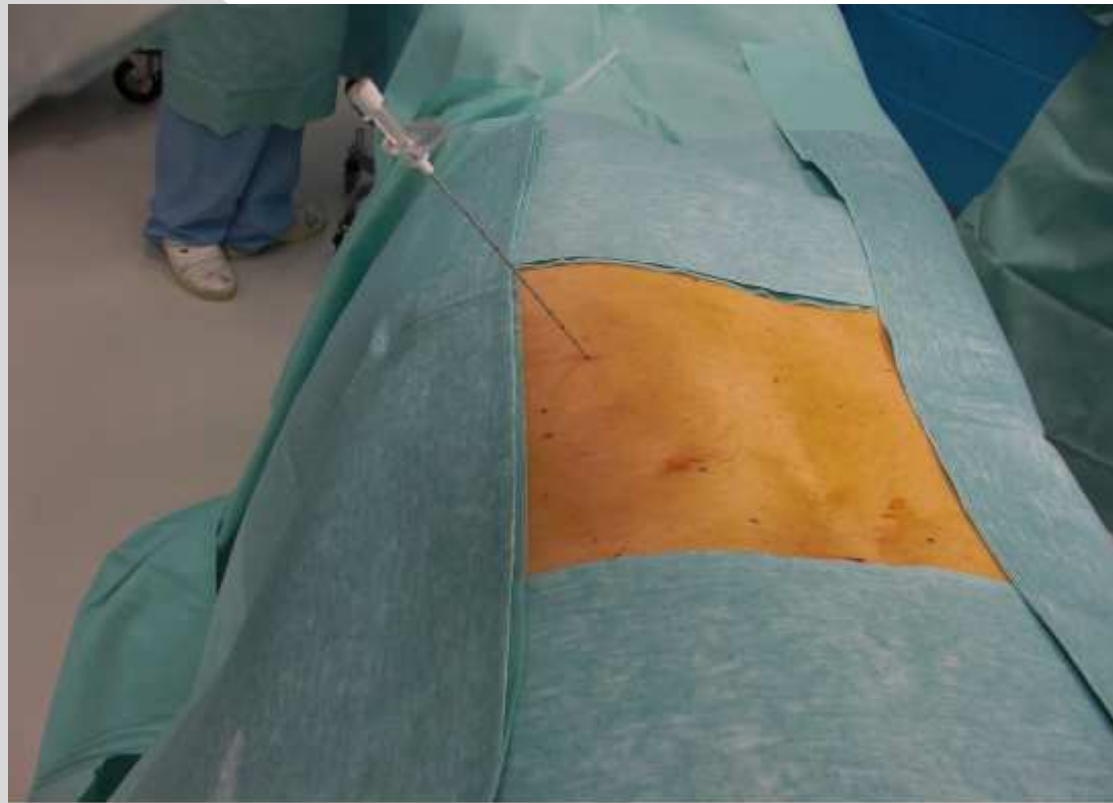
*Incision point on the
skin angled of 40-45° C*



PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK TECHNIQUE**



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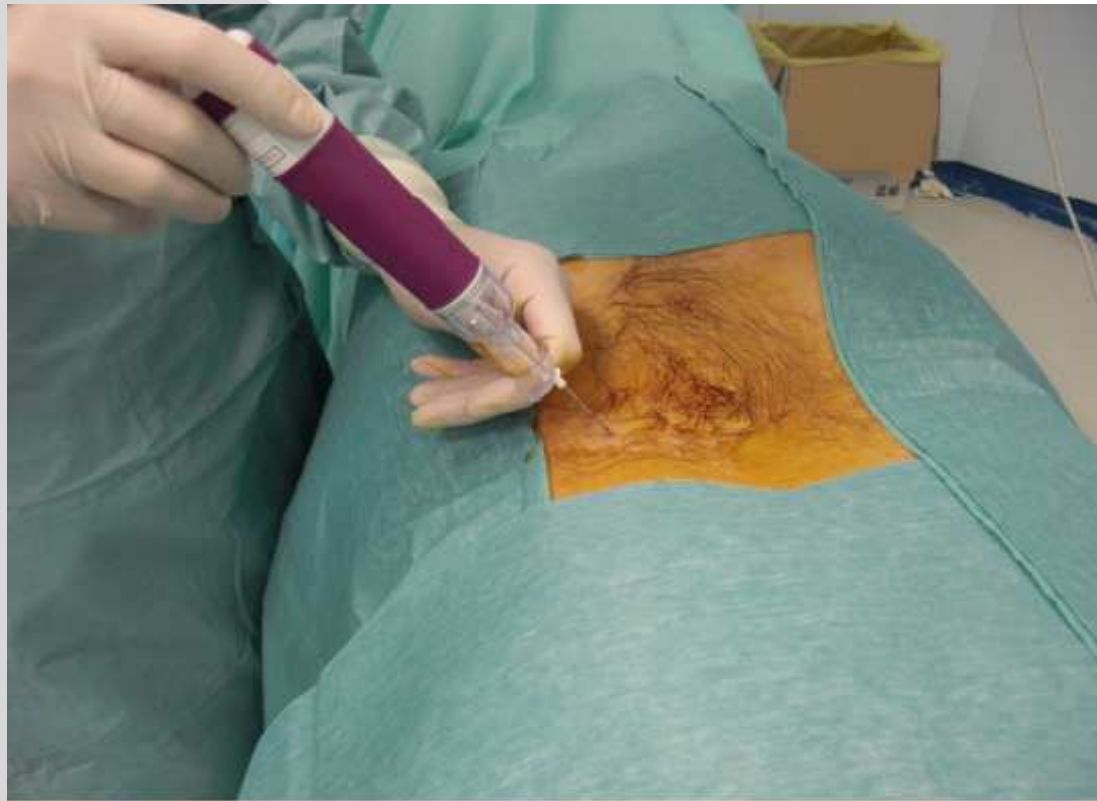


PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK TECHNIQUE**

DISCOGRAPHY

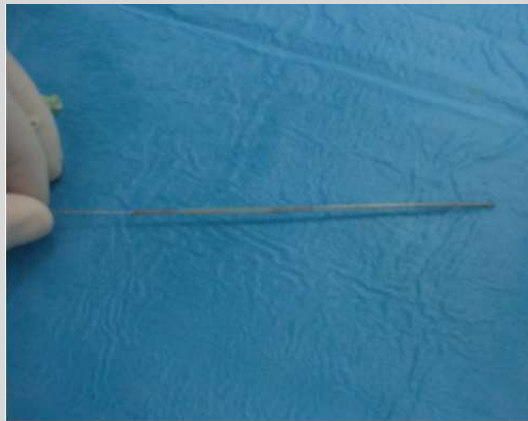


PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK TECHNIQUE**



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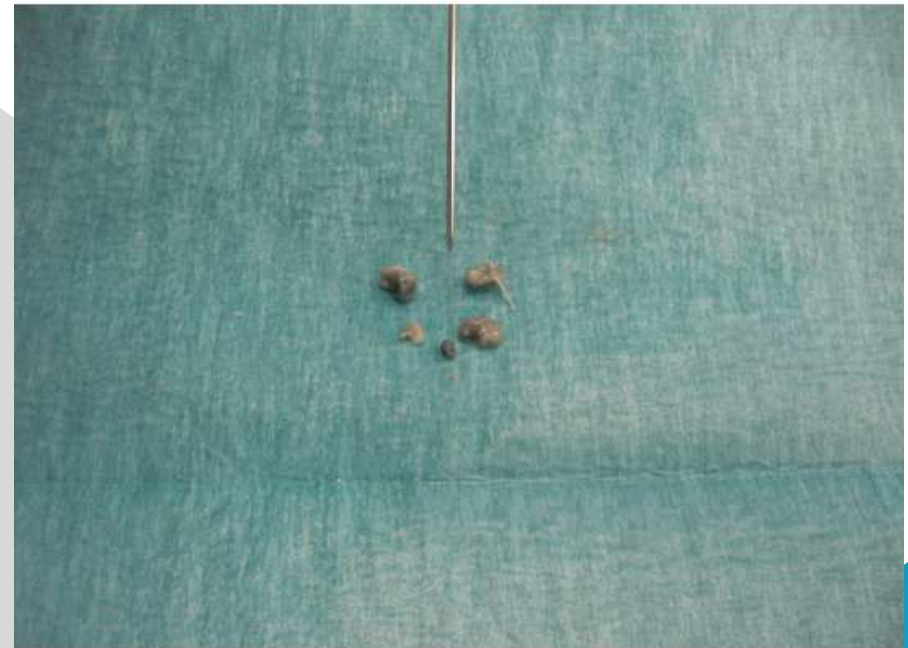
DISC MATERIAL REMOVED AT THE END OF THE TREATMENT



*Application Time:
about 60''-180''*

PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK TECHNIQUE**

DISC MATERIAL REMOVED AT THE END OF THE TREATMENT



PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**

BENEFITS

- More than 70% of patients confirm pain relief
- The percutaneous approach avoids the occurrence of surgical complications
- It shows the reduction of analgesics
- One day-Hospital stay: good compromise cost-effectiveness

PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**

PRELIMINARY DATA

- 41 patients, 32 underwent follow-up of 2 months
- 21 L4-L5 patients
- 9 L5-S1 patients
- 2 L3-L4 patients

All patients, under Magnetic Resonance Imaging (MRI) had a contained disc hernia

PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**

METHODS

- o VAS/NRS evaluation
- o ODQ evaluation
- o Time 0 – first visit
- o Time 1 – 15 days after the procedure
- o Time 2 - after 30 days
- o Time 3- after 60 days
- o Change in the use of analgesics

PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**

Drug therapy before the procedure

- *PARACETAMOL*
- *FANS*
- *TRAMADOL*

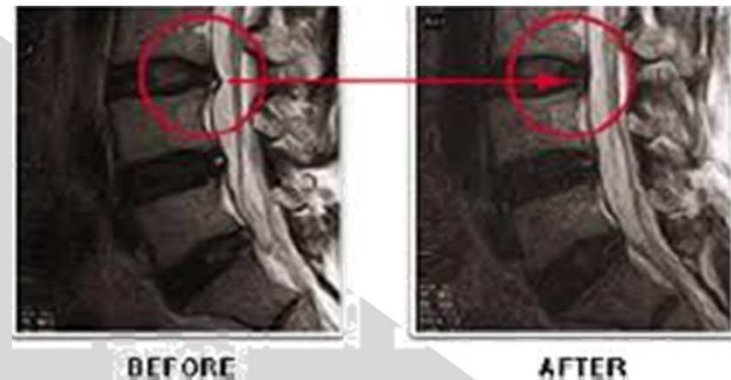
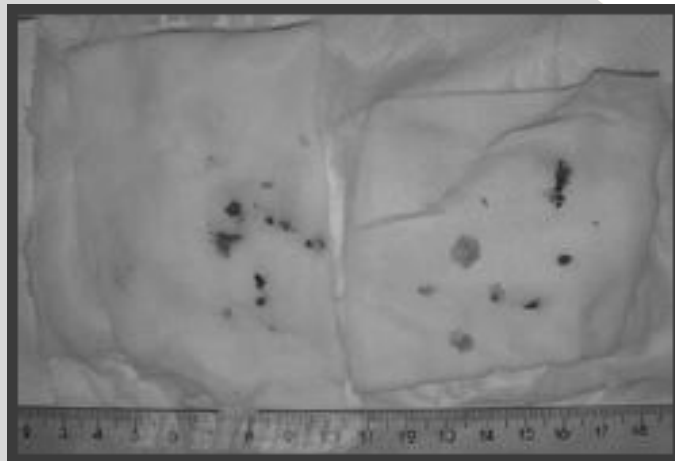
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Drug therapy after the procedure

- *PARACETAMOL* -50%
- *FANS* -50%
- *TRAMADOL* -20%

.... a good percentage of patients don't assume
drugs after the procedure ...

PERCUTANEOUS DISC DECOMPRESSION: **ALFADEK**



With the removal of moderate amounts of disc material we have a good solution of the clinical problem