OZONE SEMINAR CONGRESS 2003

MUNICH 2003

disc hernia.

Minimal invasive treatment.

Salgado H .

Alexandre A.

EU.N.I.

European Neurosurgical Institute

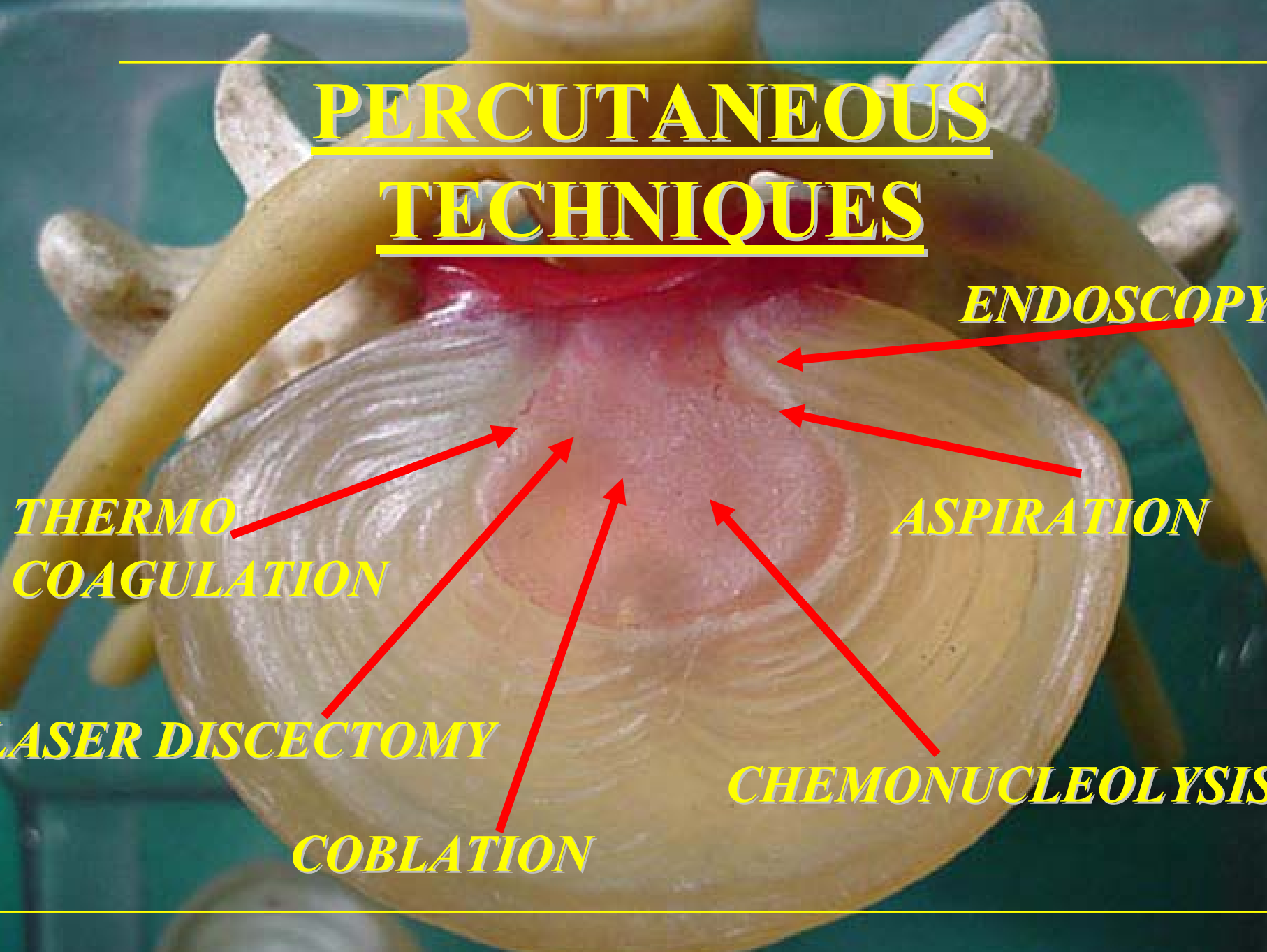
Moldin Clinic Marbella.

Ozone Discolisis (0203)

EU.N.I.

European Neurosurgical Institute

Moldin Clinic Marbella


PERCUTANEOUS TECHNIQUES
ENDOSCOPY
THERMO COAGULATION
ASPIRATION
LASER DISCECTOMY
CHEMONUCLEOLYSIS
COBLATION

percutaneous techniques

do not modifie

normal spinal anatomy

point directly to the disc

avoid bone demolition

minimize peridural scarring

the disc is composed by

type 2 and 3 collagen, Elastine

proteo- glicanes
glicosammino-glicanes
carboidrate chains

Disc tissue:

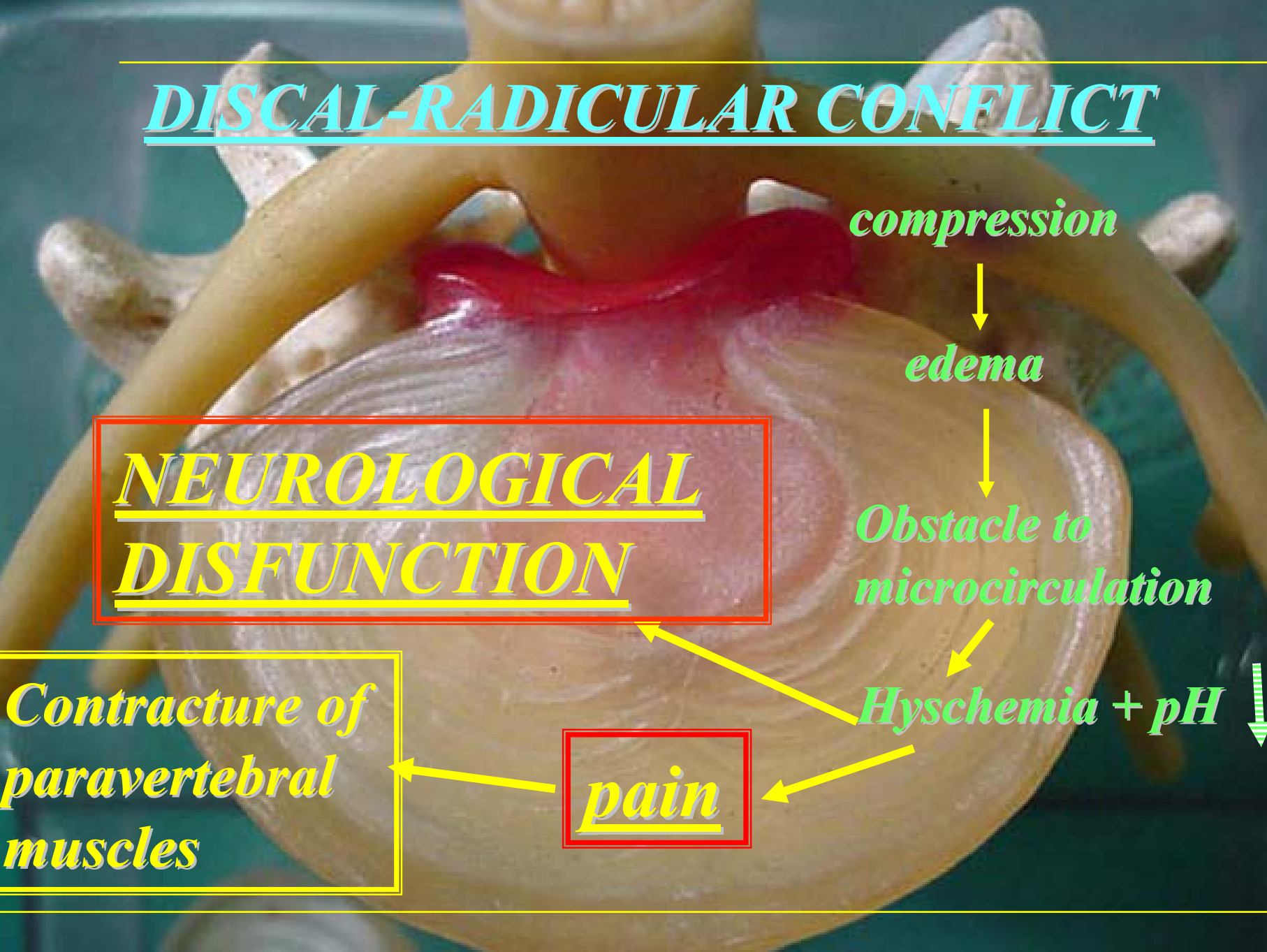
macromolecolar structure

including relevant wather content

allowing amortization

DISCAL-RADICULAR CONFLICT


DISCAL-RADICULAR CONFLICT
MECHANICAL COMPRESSION
OF THE NERVE ROOT
DOES NOT
PROVOKE THE IRRADIATED
PAIN


DISCAL-RADICULAR CONFLICT
compression
edema
Obstacle to microcirculation
Hyschemia + pH
NEUROLOGICAL DISFUNCTION
pain
Contracture of paravertebral muscles

DISCAL RUPTURE

NEUROTOXICITY DUE TO METABOLIC PRODUCTS OF DISC DEGENERATION

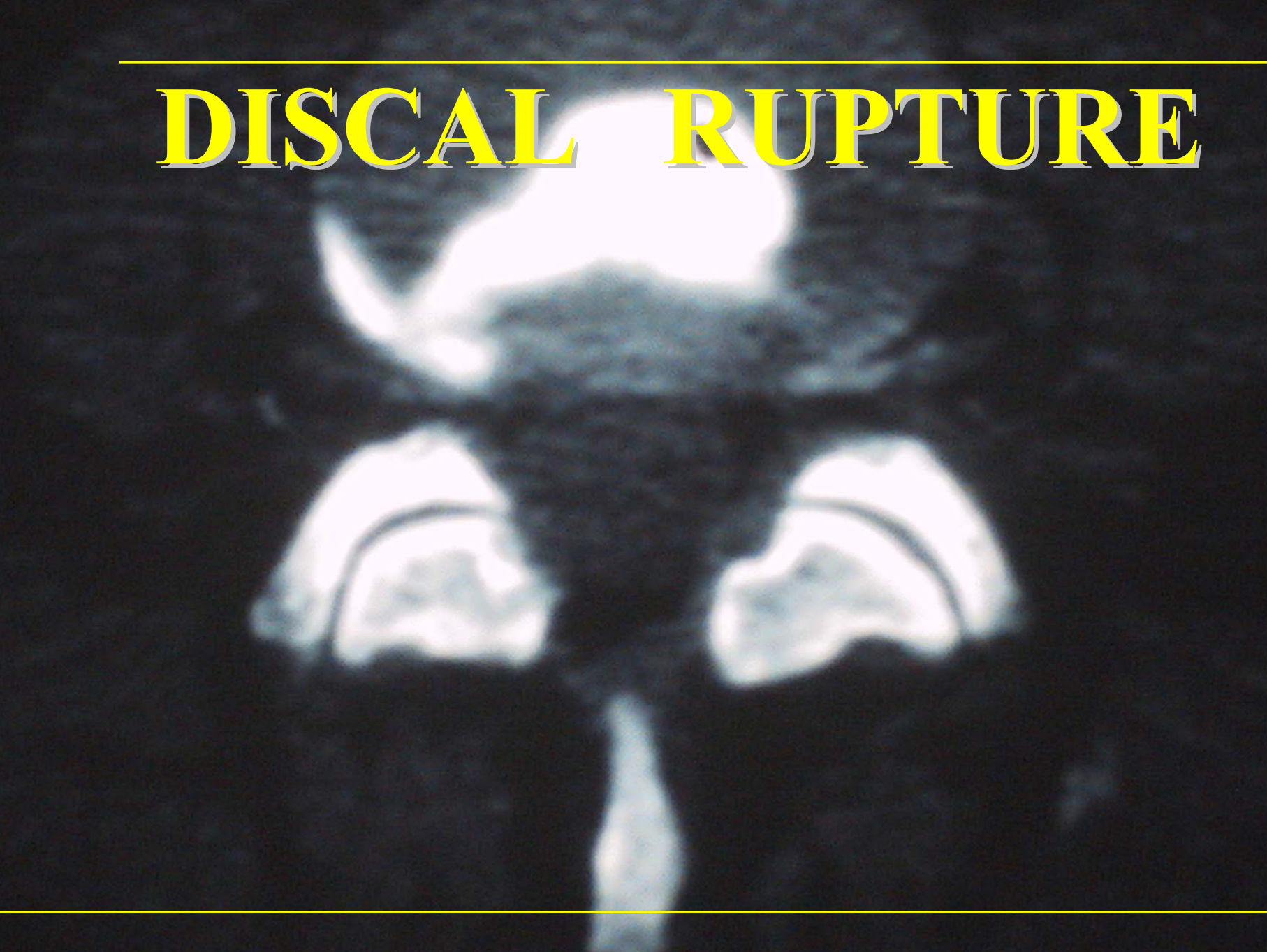
DISCAL RUPTURE

Epidural application

of nucleus polposus

can induce morphologic and functional modifications in the nerve roots

DISCAL RUPTURE



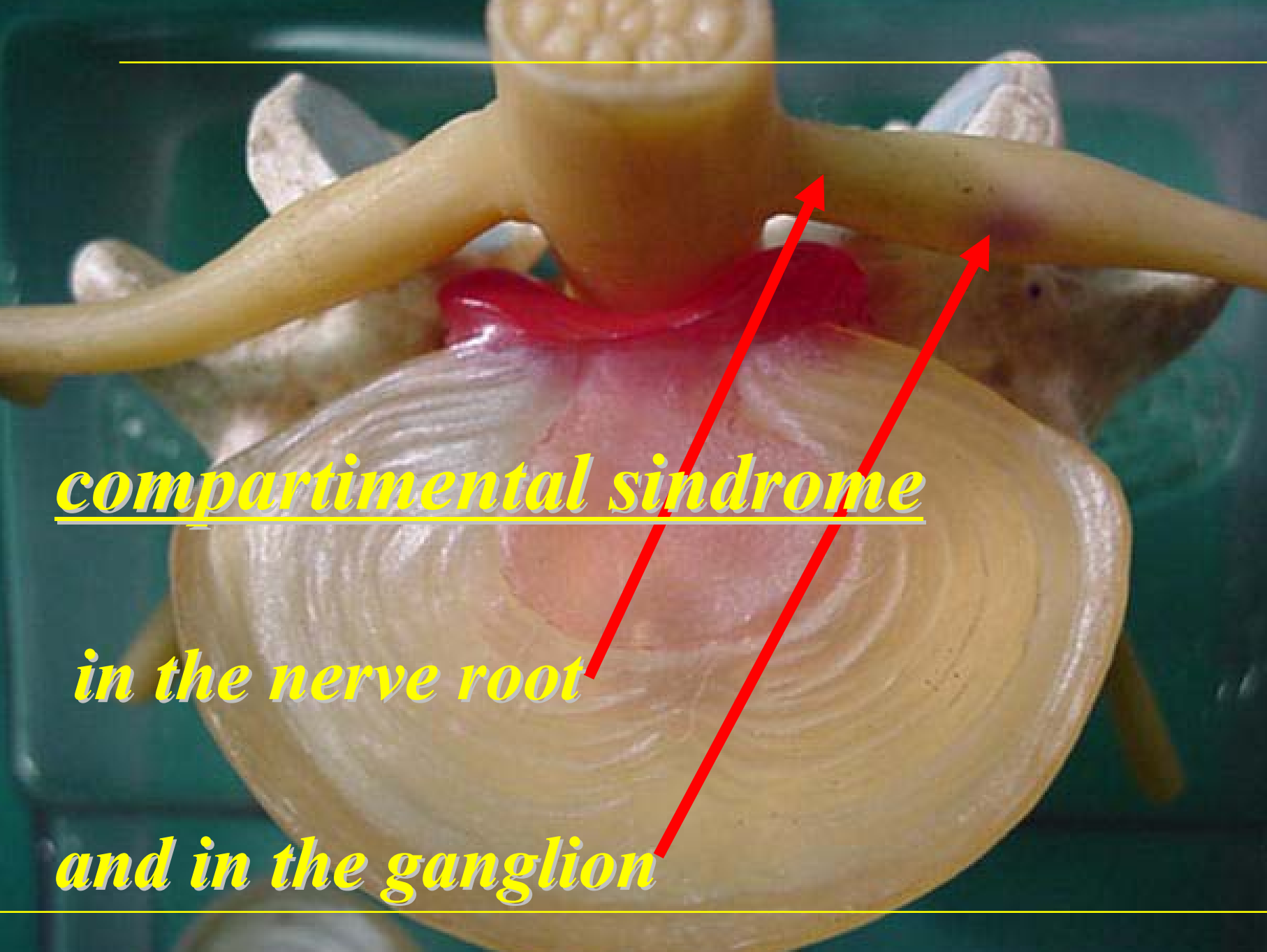
DISCAL RUPTURE

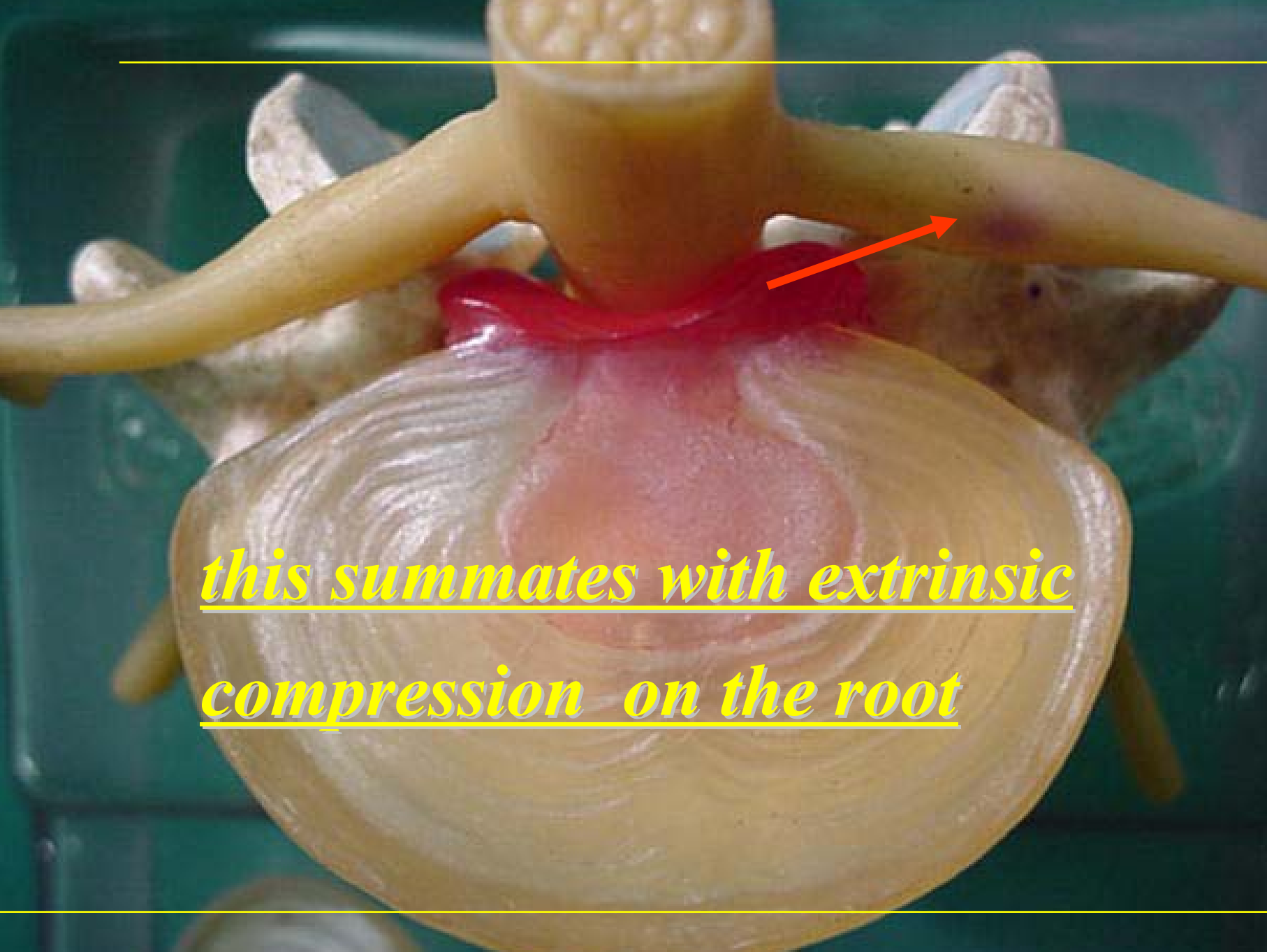
Proteoglycans

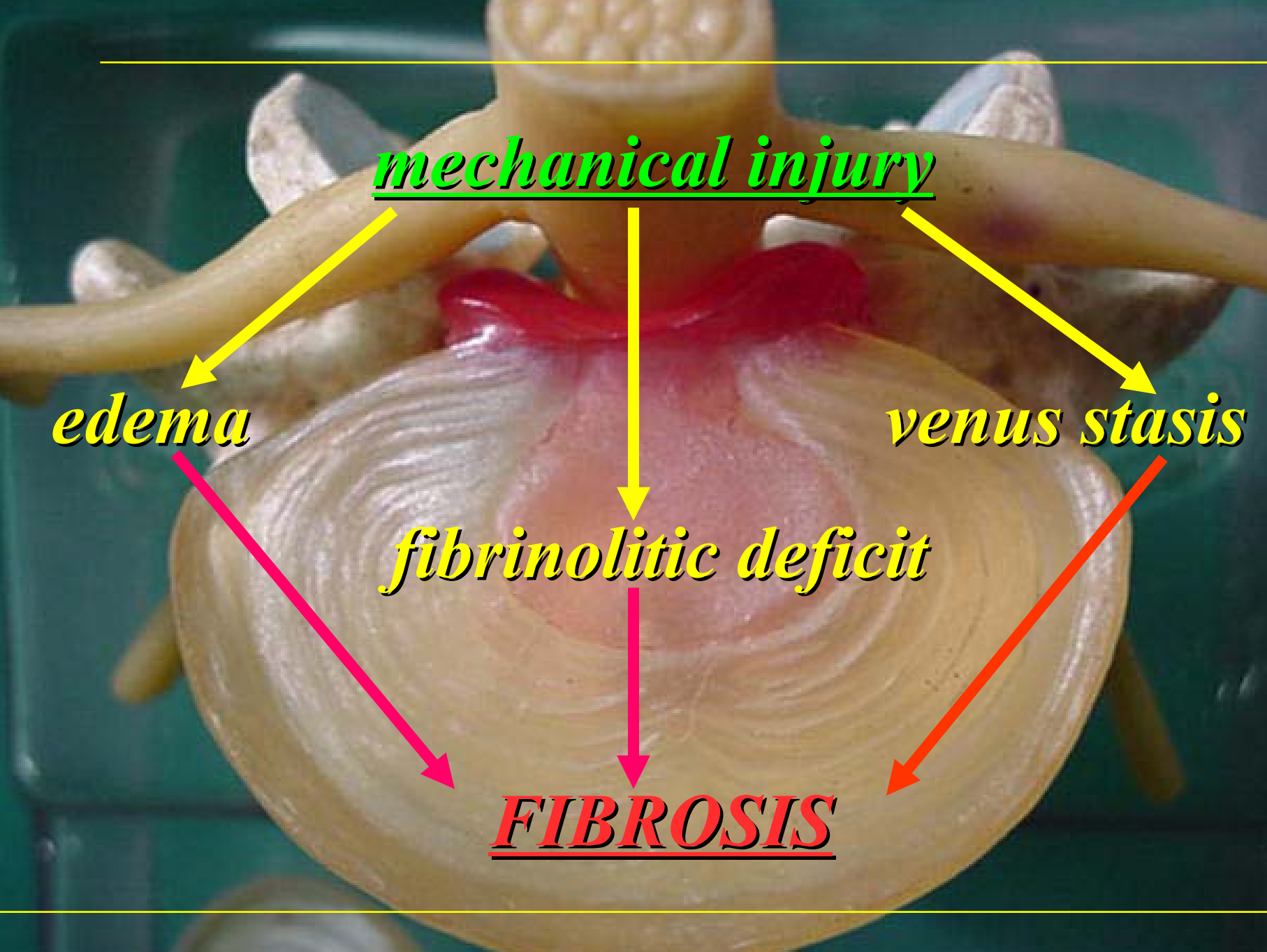
are the immunogenic power of the nucleus pulposus, with production of clinical picture also without heriation,

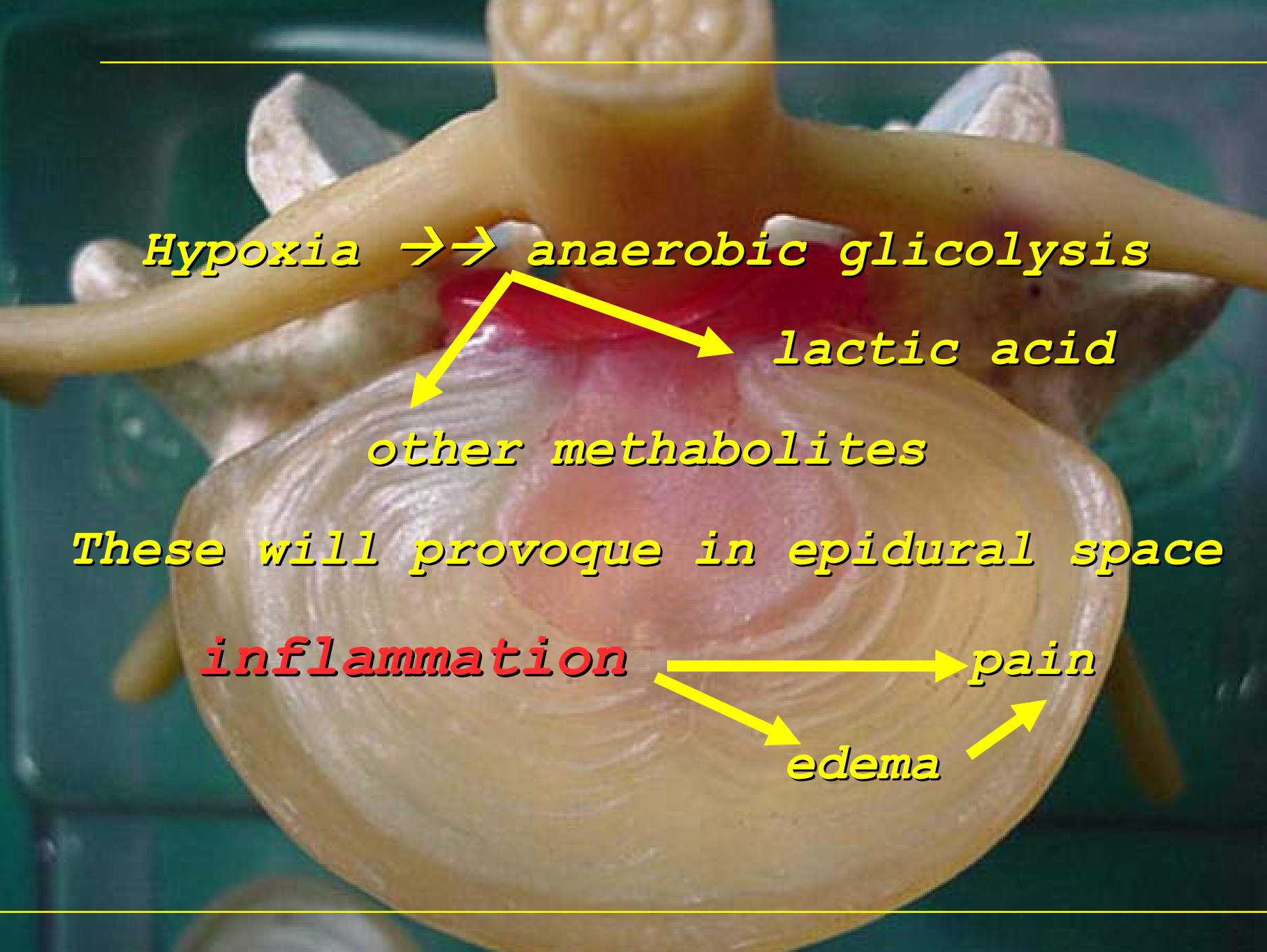
even only by rupture of the anulus

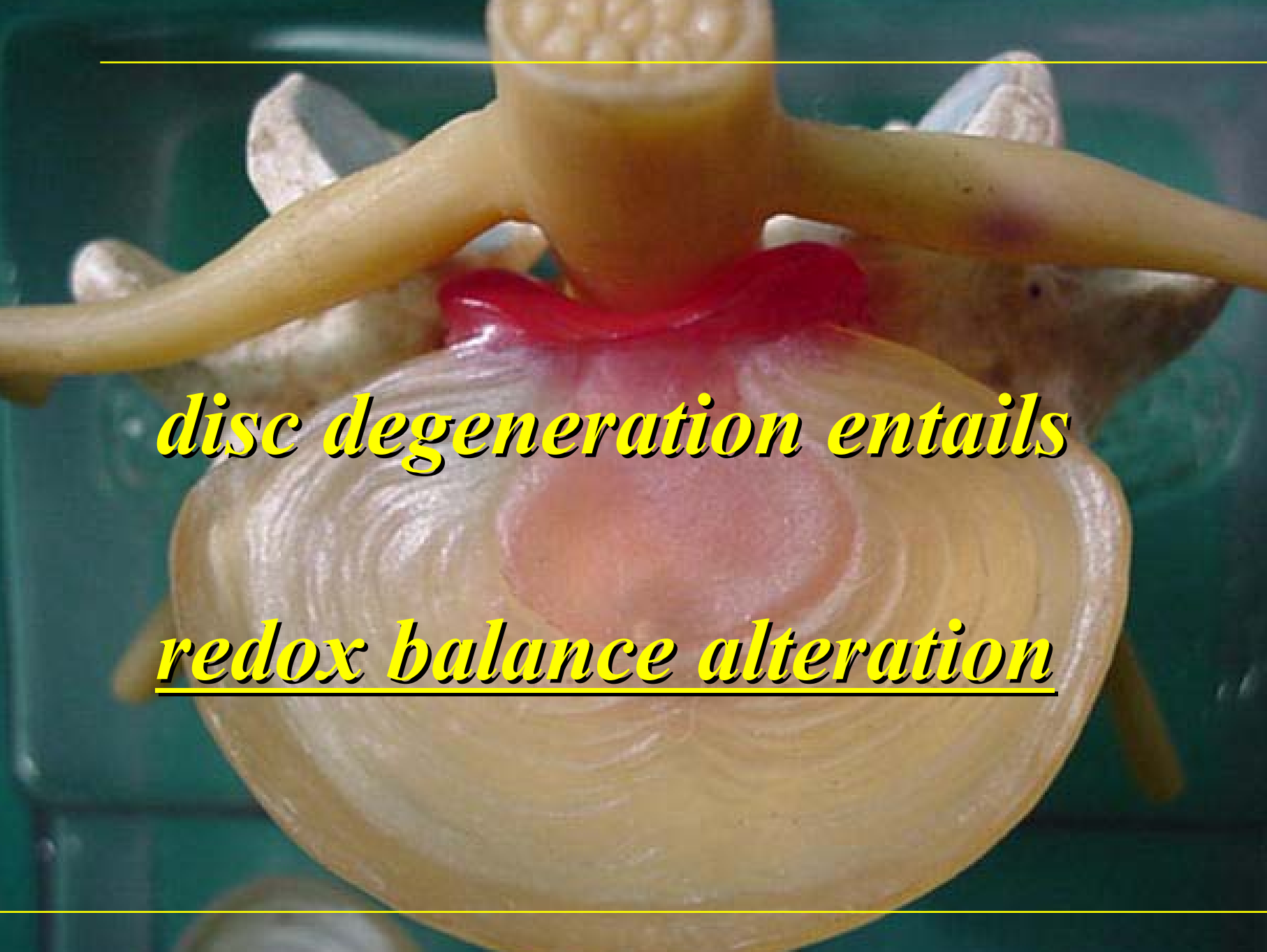

the enzymes Phospholipase A2
prostaglandine E2 & interleukine 6
are elevated in herniated discs
and generate inflammation and pain

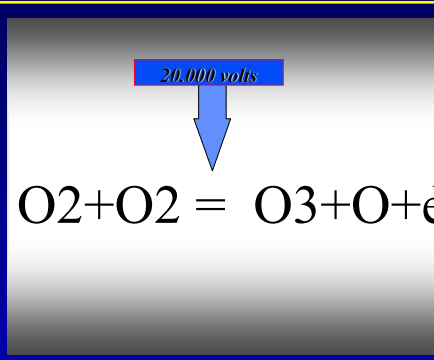

compartimental sindrome
in the nerve root
and in the ganglion


this summates with extrinsic
compression on the root


mechanical injury
edema
venus stasis
fibrinolitic deficit
FIBROSIS

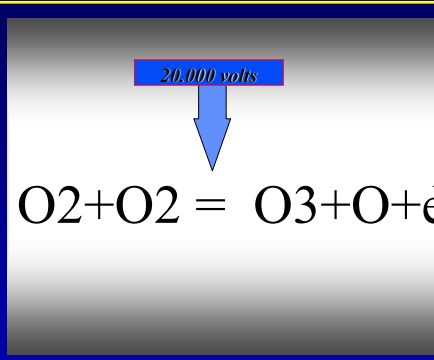

Hypoxia →→ anaerobic glicolysis
lactic acid
other methabolites
These will provoque in epidural space
inflammation
pain
edema


disc degeneration entails
redox balance alteration



Ozone inhibits

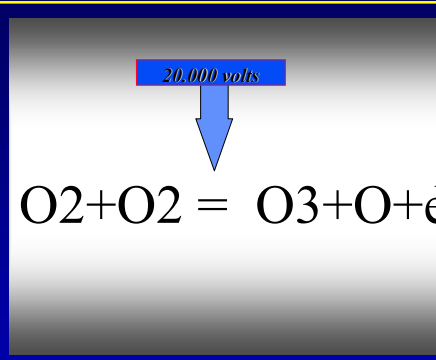
- ***sinthesis of prostaglandines***
- ***liberation of bradikinines and of pain inducing products***
- ***secretion of proteinases from macrophags and polimorph.neutrophiles***



Ozone

Strongly stimulating the local production of antioxidant enzymes

neutralizes endogenous ROS

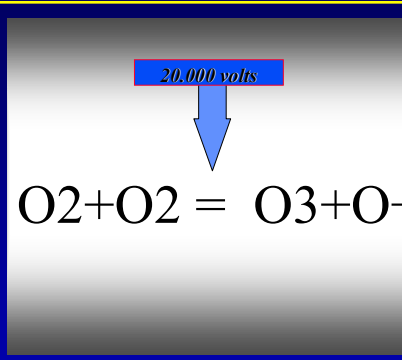


Increases

the release of

immunosoppressive citochines

Entails disruption



of intra/inter-molecular valencies and collapse of the three-dimensional structure

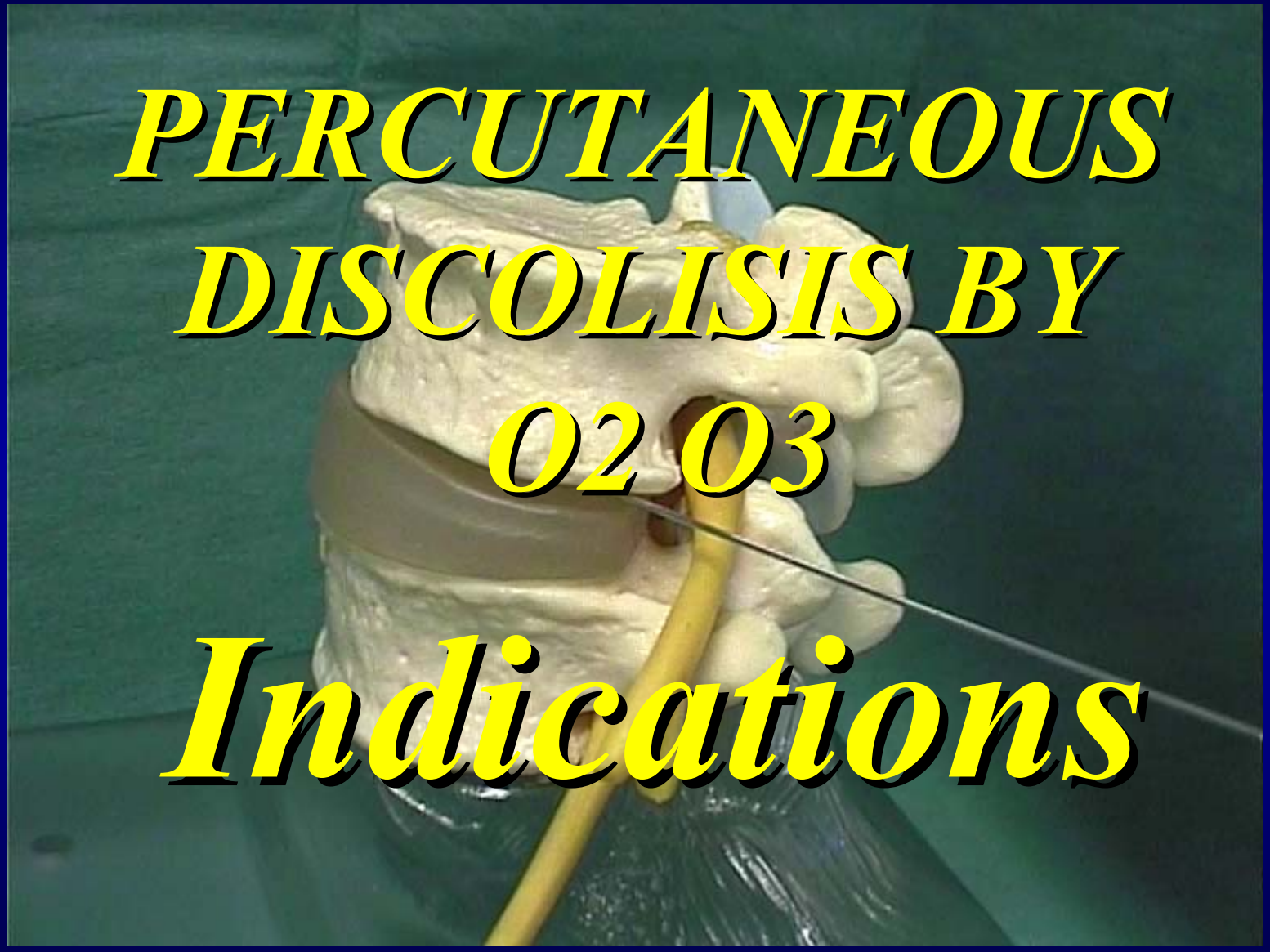
(Hawkins e Davies, 1996)

OZONE INJECTION

Through all these effects our aim is to obtain

- disc dehydration

- nerve metabolism correction



PERCUTANEOUS DISCOLISIS BY O2 O3

Indications

percutaneous O2O3 discolysis

former indications

- *INTACT ANULUS*
- *NOT DISLOCATED H.*
- *NOT CALCIFIED H.*
- *NOT STENOTIC CANAL*

INDICATIONS CHANGE !!

- CERVICAL DISC HERNIA
- LUMBAR HERNIA
  - *PROTUSIONS (DEGREE II & III)*
  - *EXTRUDED*
  - *SEQUESTRATED*

SOME CASES OF

EPIDURAL FIBROSIS

LUMBOSCIATICA IN STENOTIC CANAL

Relative contraindications:

(not optimal results)

1) disc bulging

2) intraforaminal herniation

CONTRAINDICATIONS TO O2O3

- ABSOLUTE
  - FAVISM
- POSSIBLE
  - SEVERE ARTERIAL HYPERTENSION

Special attention is to be payed to patients affected by the following problems:

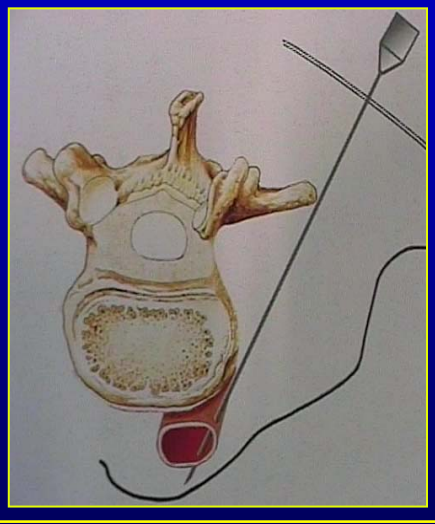
1) hyperthyroidism
2) hypertension
3) patients who refer severe general hypersensitivity

The complications:

Short term: (0.5%)

(immediately after the infiltration)

- perspiration
- hypotension
- bradicardy
- collapse



Long term: (0,2%)

(over a period of months or years)

- fibrotization at the site of infiltration (paravertebra muscles)

The therapy is contraindicated in the pregnant females as there are no conclusive studies on the effect of 03 on fetus

Relative contraindications:

(not optimal results)

- *CERVICAL*
  - *DISCOARTROSIS*
  - *UNCOARTROSIS*
  - *FORAMINAL STENOSIS*
- *CALCIFIED LUMBAR DISC HERNIA*

The 0203 therapy protocol:

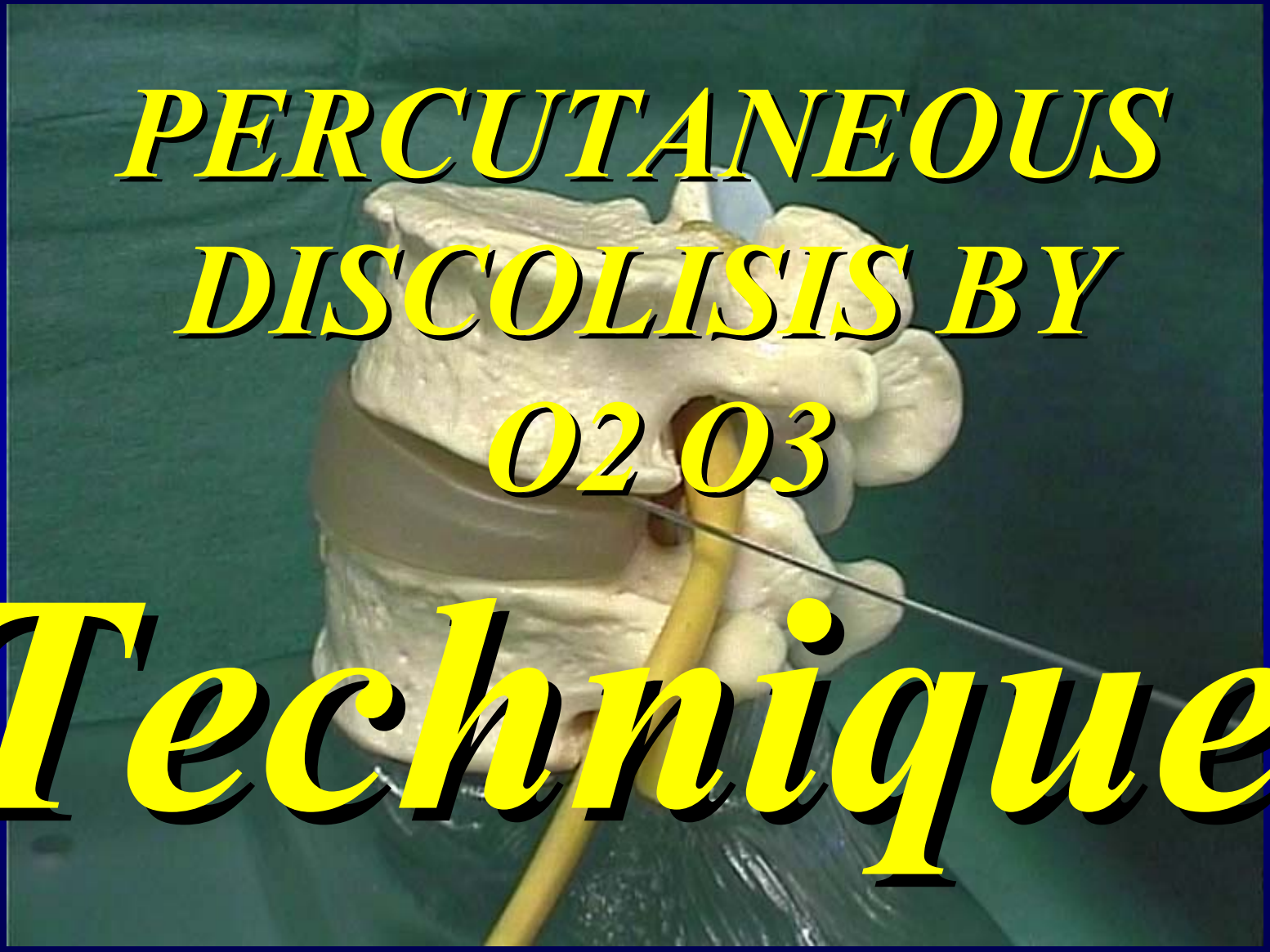
1) Paravertebral infiltration :12 sessions at the affected level, done bilaterally twice a week During this treatment
2) Discolysis : injection of the gas inside the nucleus

The oxygen-ozone concentration range is:

- for paravertebral injections: 2-µ10 λg 0_3/ml 0_2
- for discolysis: 50 µg 0_3/ml 0_2

We use:

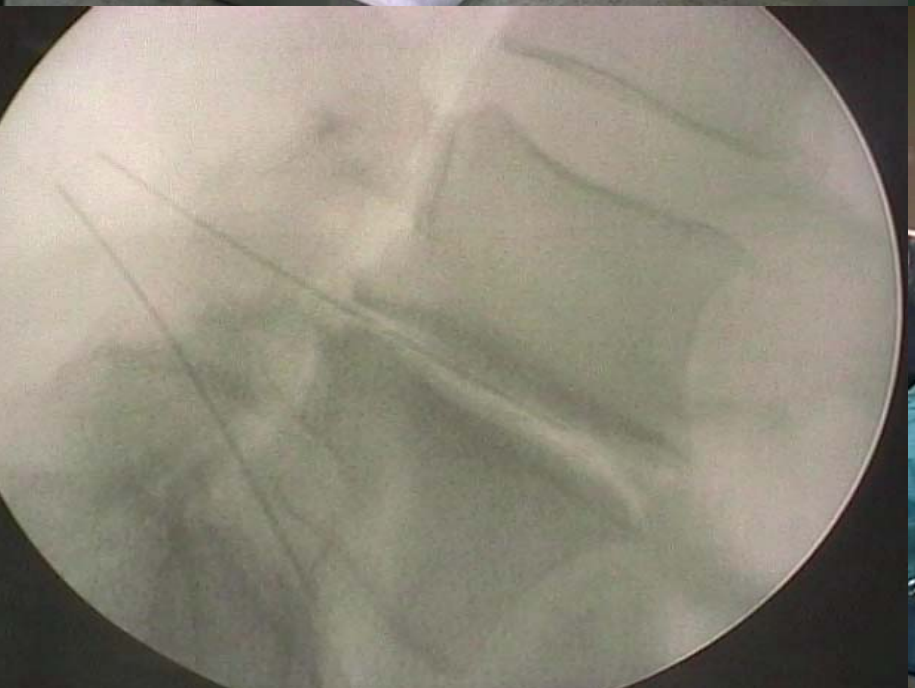
- Cervical and dorsal area.
- Paravertebral.
- 5 cc. O2O3 in each side.
- Intradiscal 6 to 10 cc. O2O3.
- Lumbar area. 20 cc. in each side.
- Intradiscal up to 40 cc. O2O3.



PERCUTANEOUS DISCOLISIS BY O2 O3

Technique

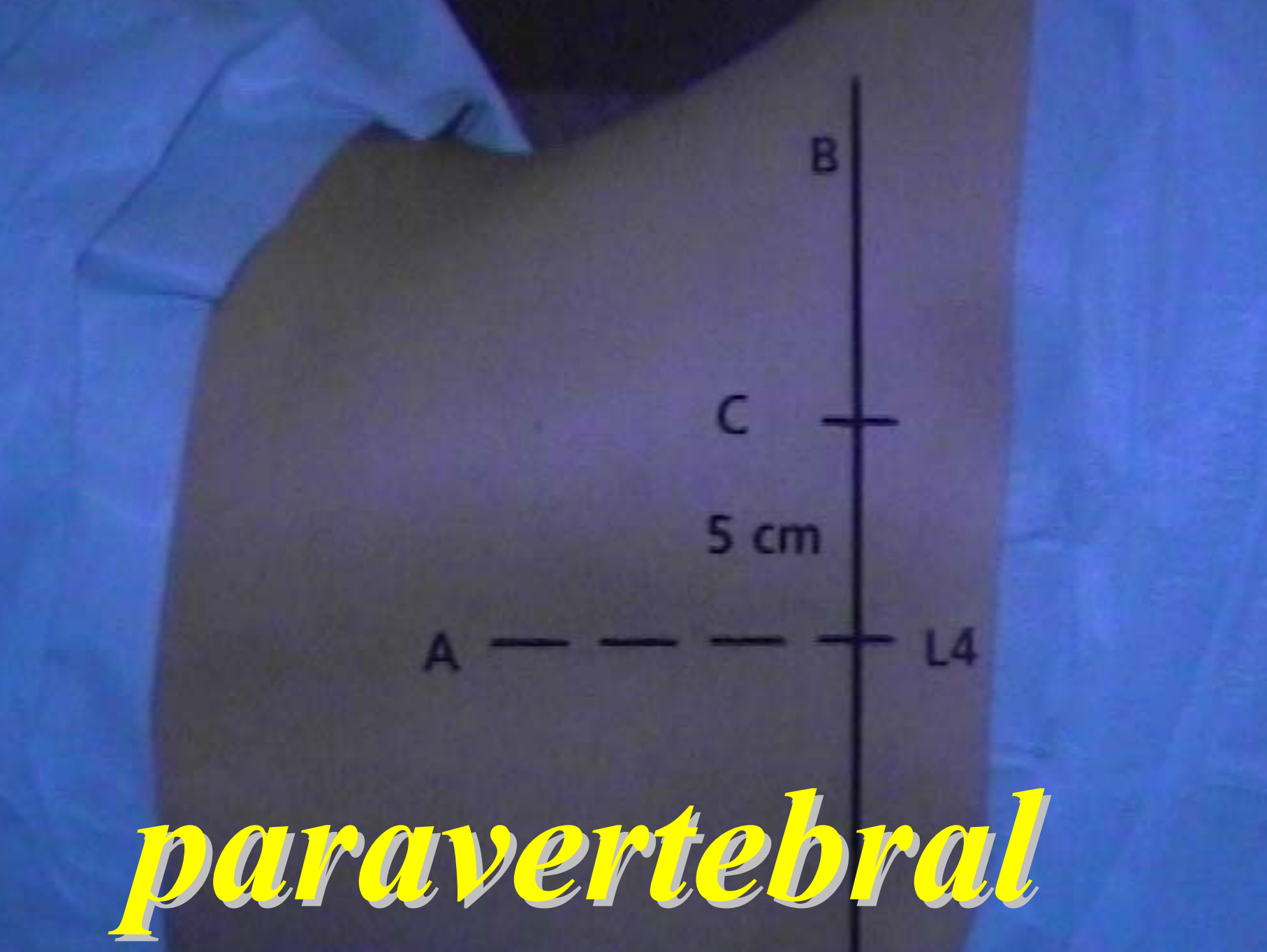

OZONLINE



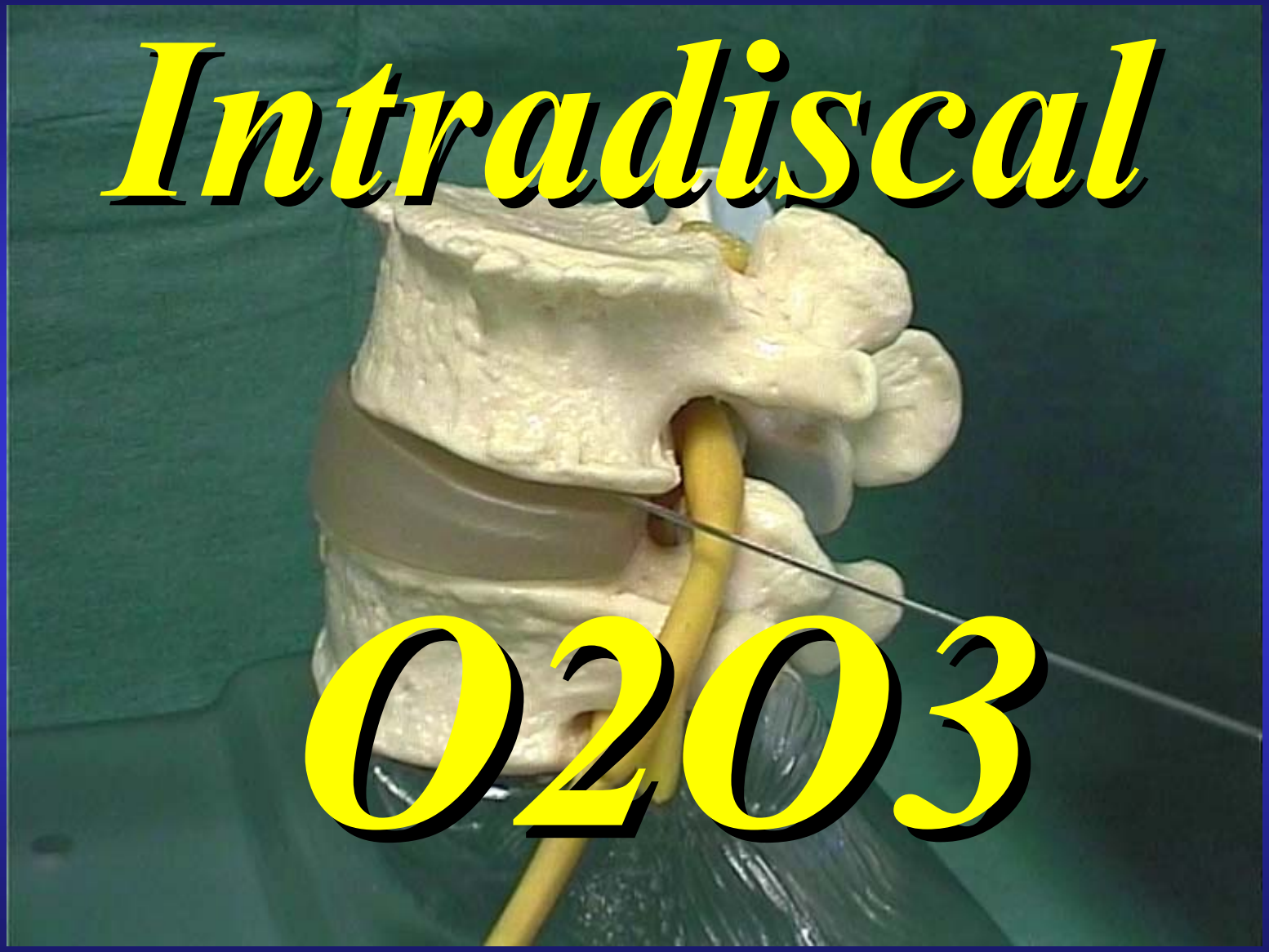
The treatment implies an infiltration of a mixture of oxygen (02) and ozone (03) to perform at two distinct sites:

1) Intradiscal

2) Paravertebral


B
C
5 cm
A
L4
paravertebral

antalgic
miorelaxant
antiflogistic
hyperoxigenating


Intradiscal
O2O3

The surgical procedure is simple:

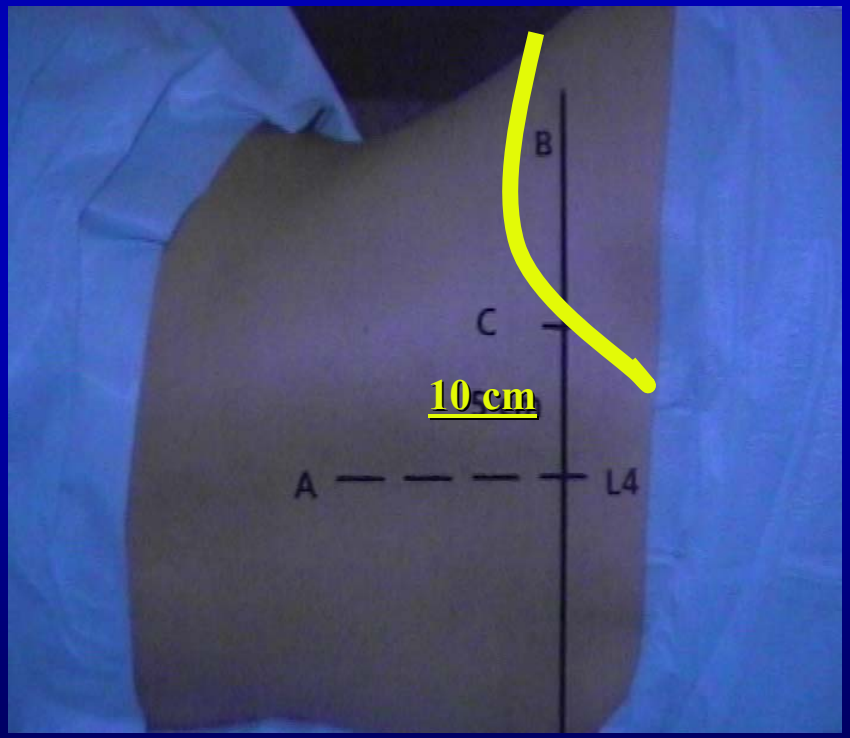
The ozone generators

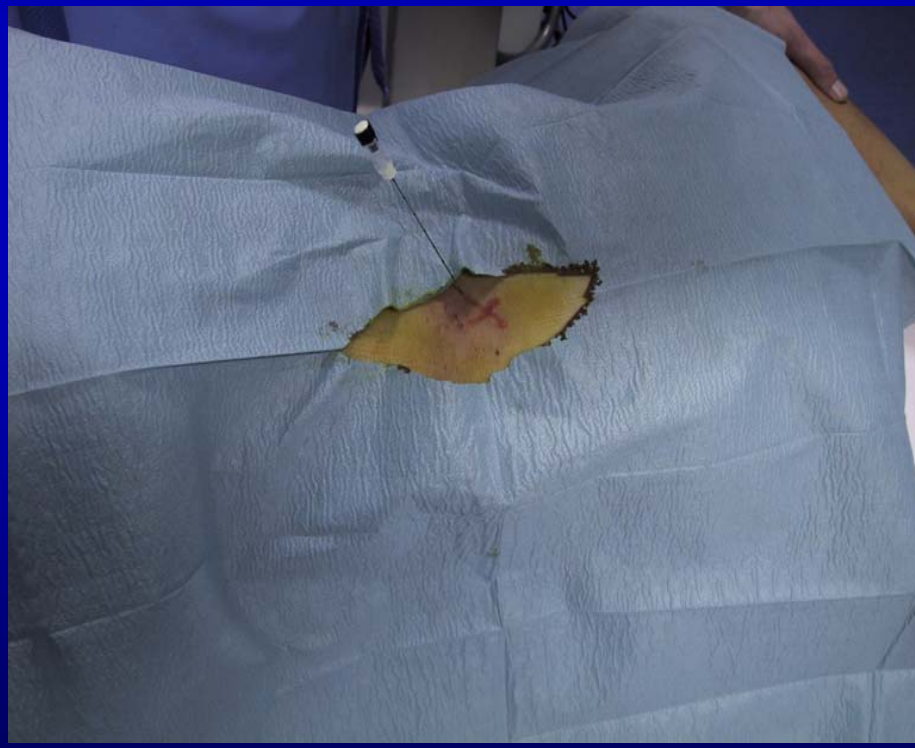
The disposable material

Patient position

Needle introduction

Iliac bone





percutaneous 0203 discolysis

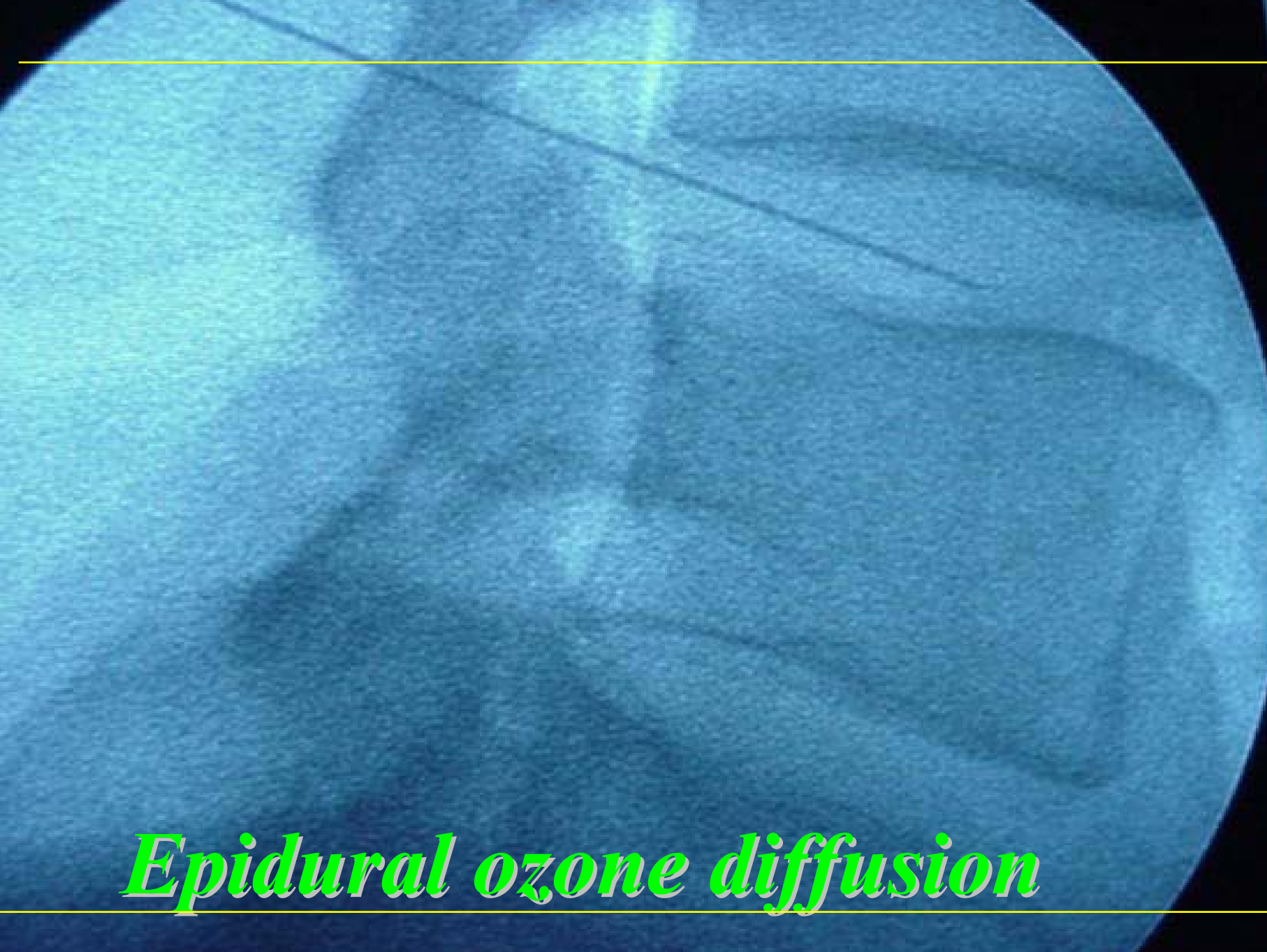
Technique:

posterolateral extrarticular approach


Paralleling the vertebral plates


puncture


Ozone discography

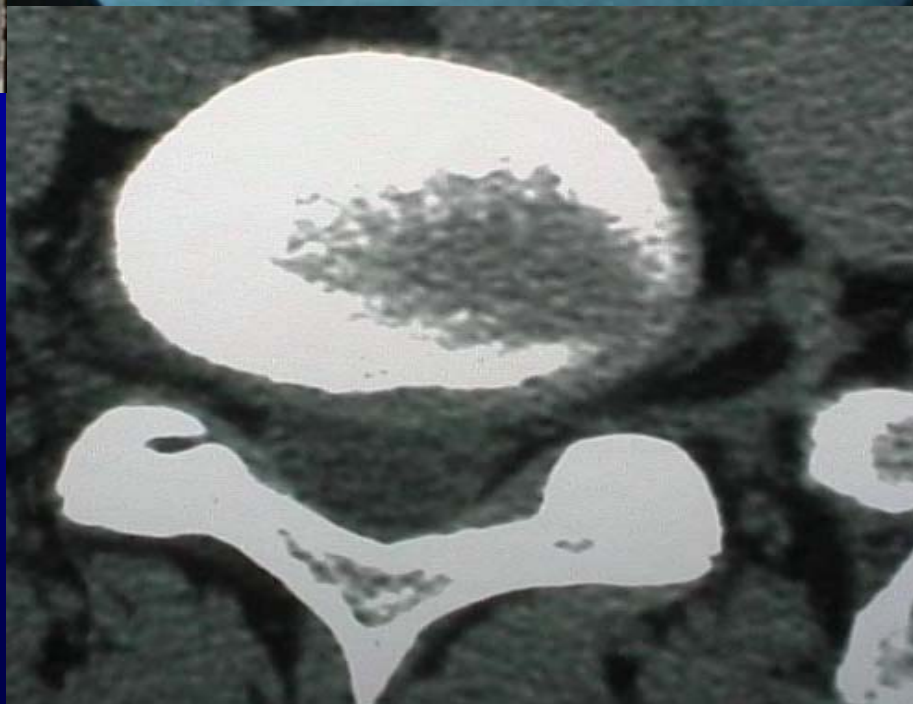

Epidural ozone diffusion

before

60 days later

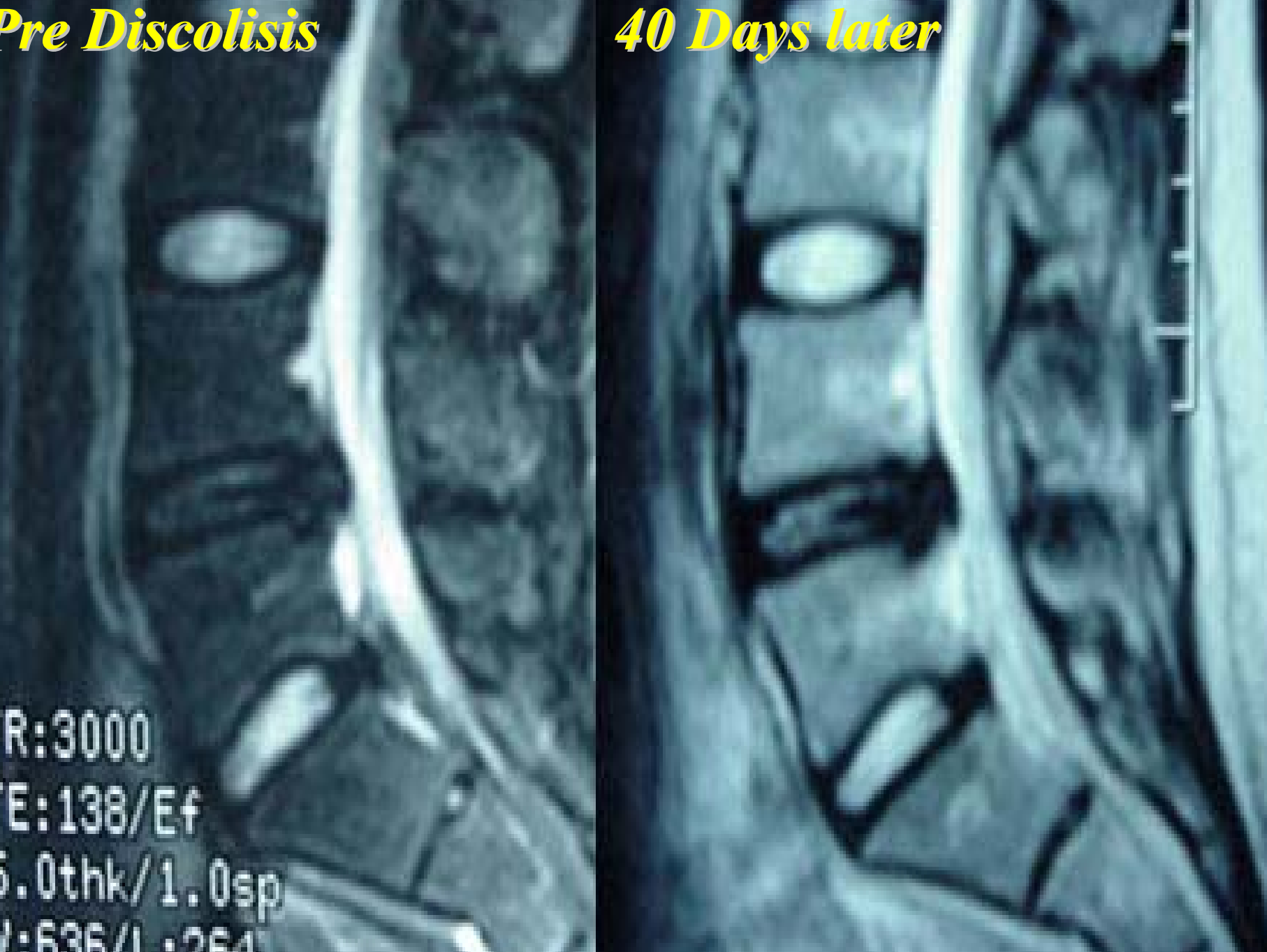
before ↗

50 days later →



BEFORE DISCOLISIS

45 days later


Pre Discolisis
40 Days later
R:3000
E:138/Ef
5.0thk/1.0sp

percutaneous O2O3 discolysis

PATIENT ADVANTAGES

- *LOCAL ANESTHESIA*
- *EXTRASPINAL APPROACH*
- *NO GENEGAL CONTRAINDICATIONS*
- *ABSENT POSTOP FIBROSIS*

percutaneous O2O3 discolysis

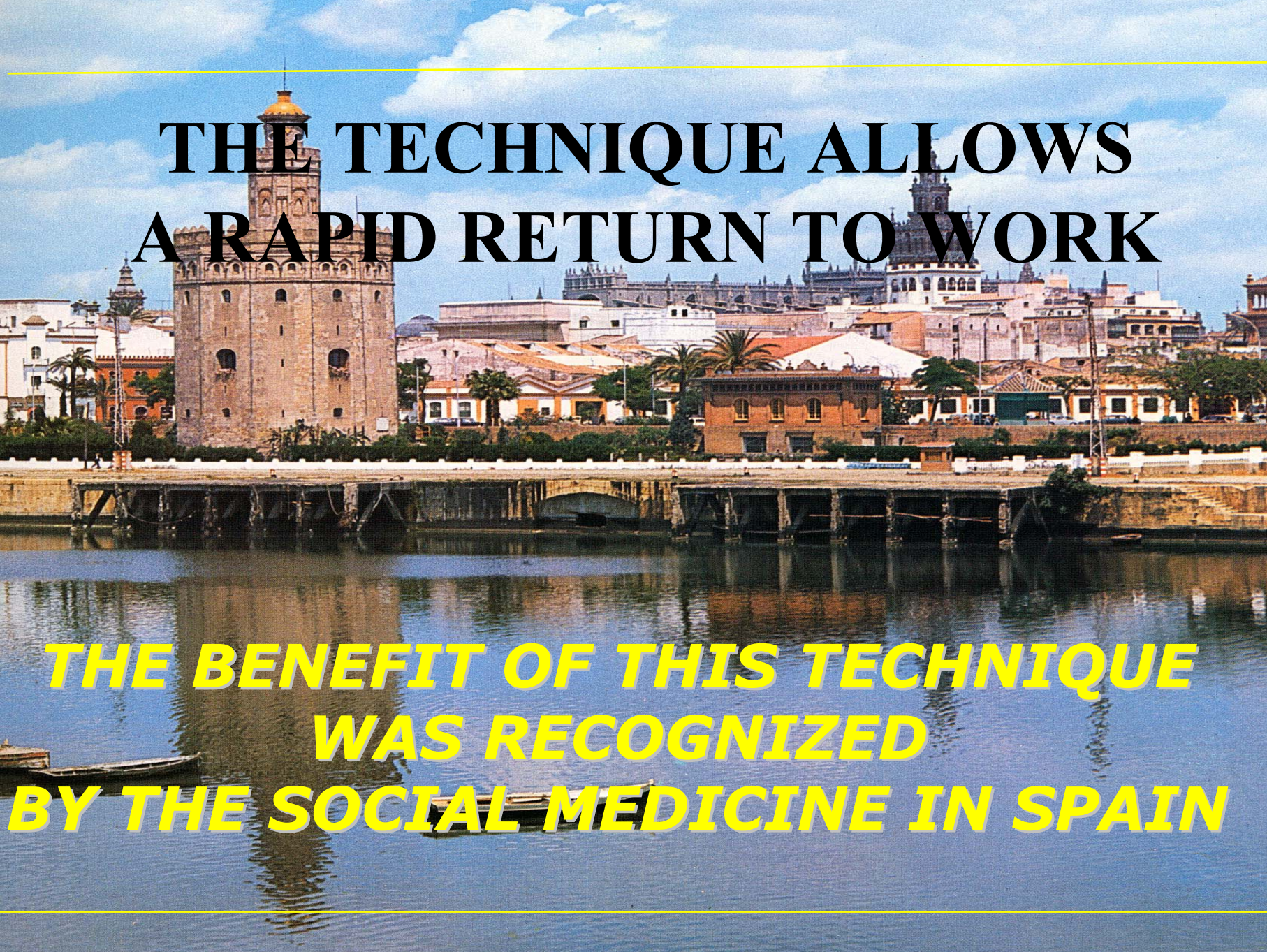
PATIENT ADVANTAGES

ininterrupted FT

riduced need of drugs

riduced morbidity

riduced absence from work



THE TECHNIQUE ALLOWS A RAPID RETURN TO WORK

THE BENEFIT OF THIS TECHNIQUE WAS RECOGNIZED BY THE SOCIAL MEDICINE IN SPAIN

percutaneous O2O3 discolysis

advantages for the service

Reduced hospitalisation time

Reduced time waisting in op.

percutaneous O2O3 discolysis

advantages for the service

Reduced expense for each patient

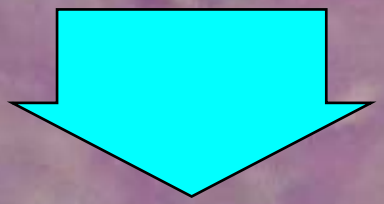
- nursing
- drugs
- instruments and op.

Terapia electiva del conflicto discoradicular

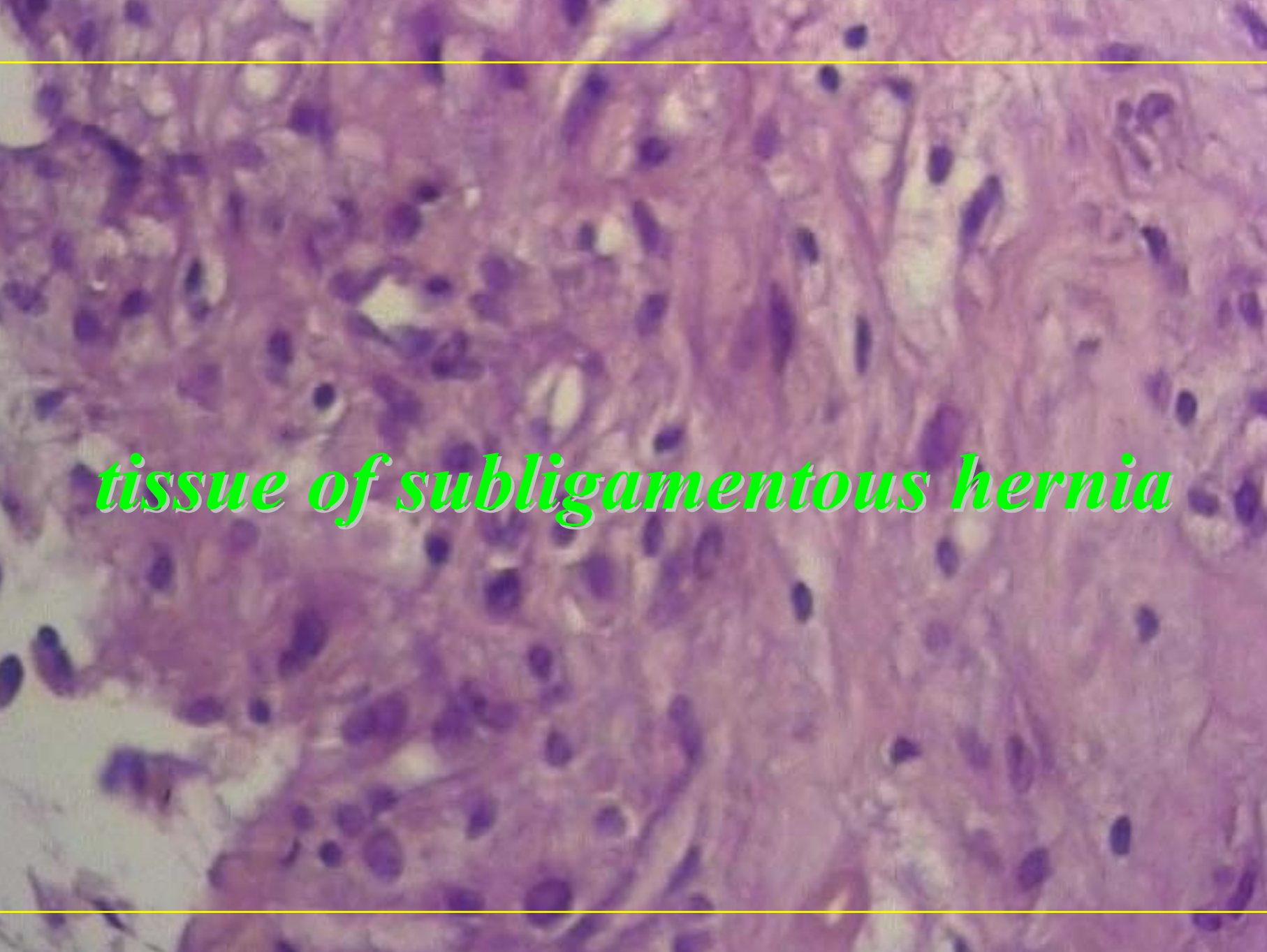
(Ministerio de la Salud italiano)

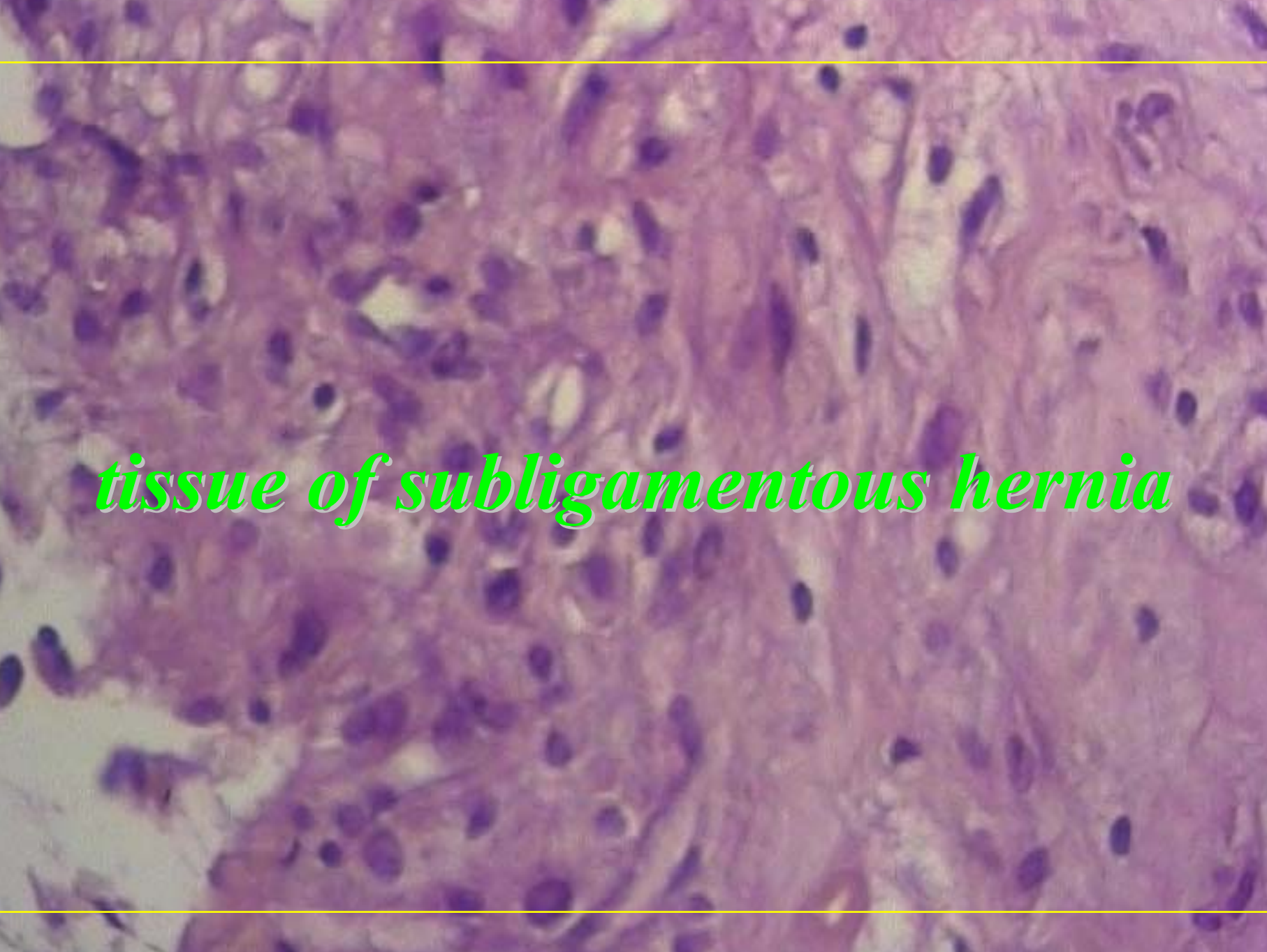

PERCUTANEOUS
DISCOLISIS BY
O2 O3
histology

Break-down of mucopolysaccaridic structure



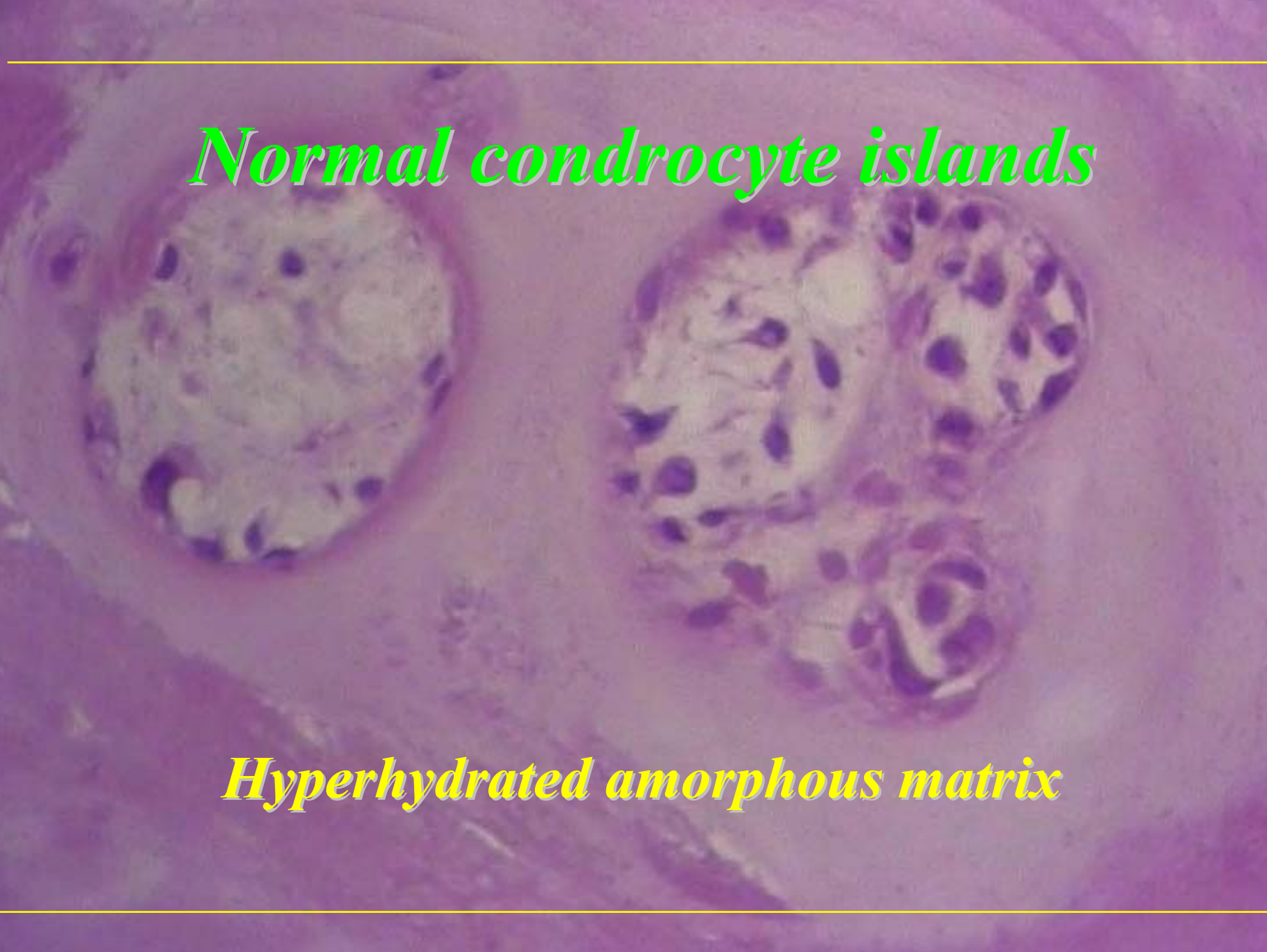
dehydration

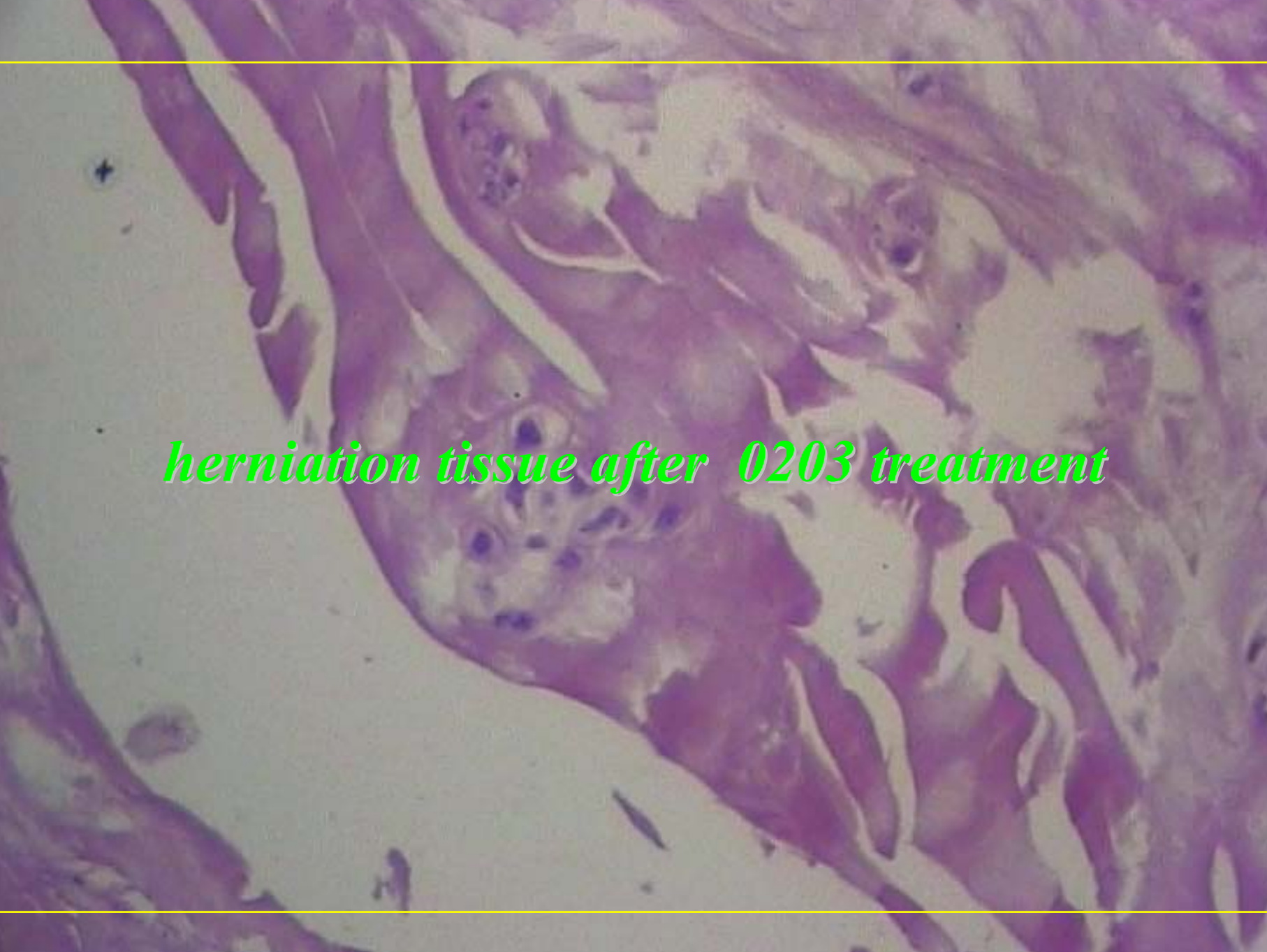

tissue of subligamentous hernia

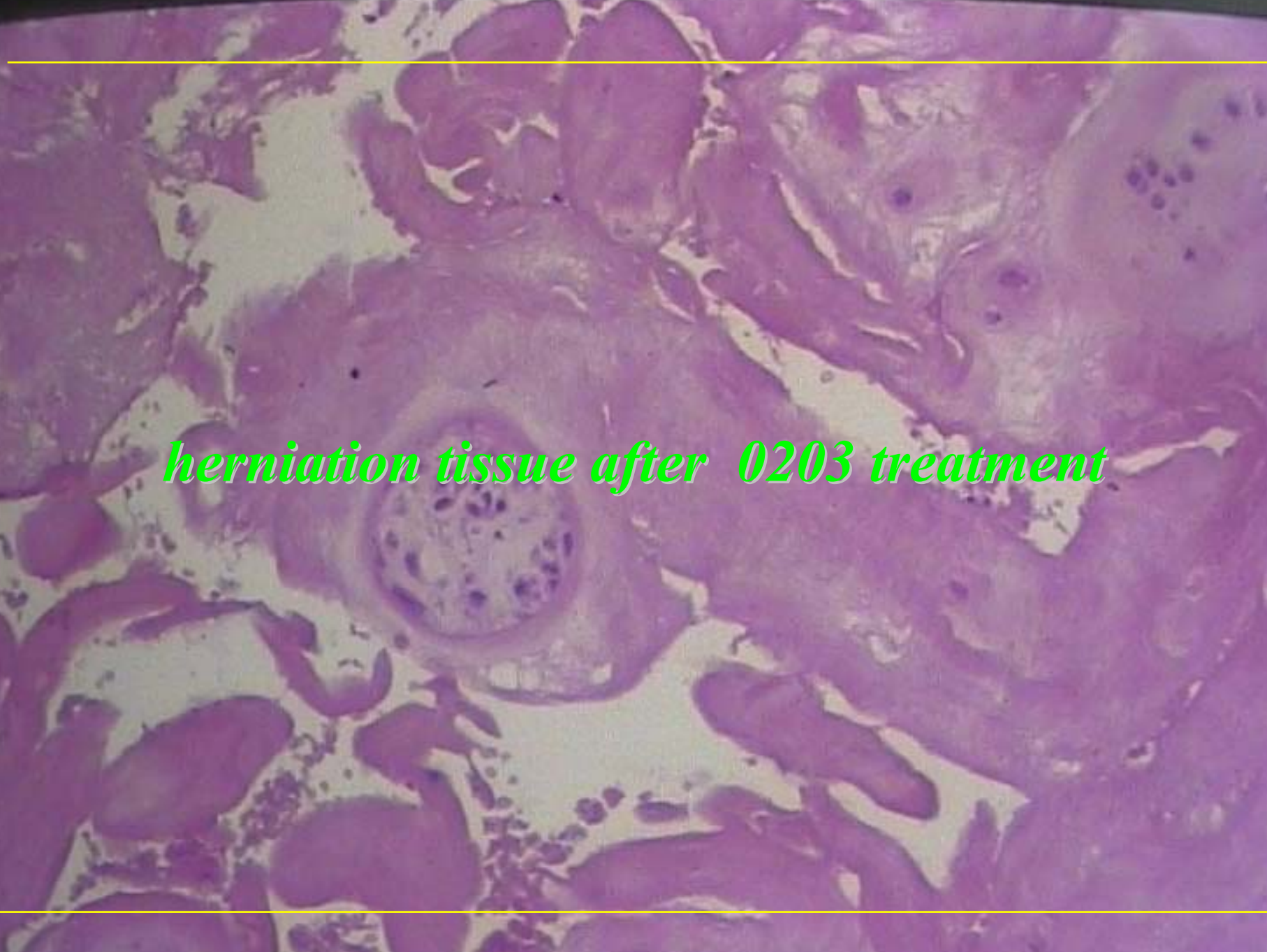

tissue of subligamentous hernia


herniation tissue after 0203 treatment


condrocyte island after
0203 treatment


Normal condrocyte islands
Hyperhydrated amorphous matrix


herniation tissue after 0203 treatment


herniation tissue after 0203 treatment


percutaneous 0203
discolysis
Results
of the treatment

6665 patients

pain symptomatology

abolished	80.9 %	(5392 patients)
amelioration	12.4 %	(827 p)
Poor	6.7 %	(446 p)

sensory dysfunction

abolished 79.35% (5289p)

improved 15.8% (1053 p)

total 95.15%

unchanged 4.85% (323 p)

motor dysfunction

4639 cases, 69.6% of our 6665 p,

mean pre-existence 10.2 days

Out if these, in 297 p marked defect
(4.45% of 6665)
(6.4% of 4639 motor deficit group)

motor dysfunction

4639 cases, 69.6% of our 6665 p.

complete regression 66 % (3061 patients)
partial 20.7% (960 patients)
insufficient 13.3% (617 patients)

total positive results in 86.7%.

motor dysfunction

297 p. marked defect

(4.45% of 6665)

(6.4% of 4639 motor deficit group)

otal recuperation	*18.18% (54 patients)*
partial improvement	*32.65% (97 cases)*
rrelevant	*49.15% (146 cases)*

These last patients underwent open surgery

multiple level disc pathology

in 2972 patients (44.59%)

Treatment simultaneously performed in all the pathological discs

extruded and migrated herniation

933 patients (14%)

complete resolution	234 cases
good result	545 cases
total positive outcomes	83.5% (779 cases)

insufficient result in 154 (16.5%)

CT/MRI control
7 months after the treatment

3317 patients randomly choosed by an external person

volumen of the hernia

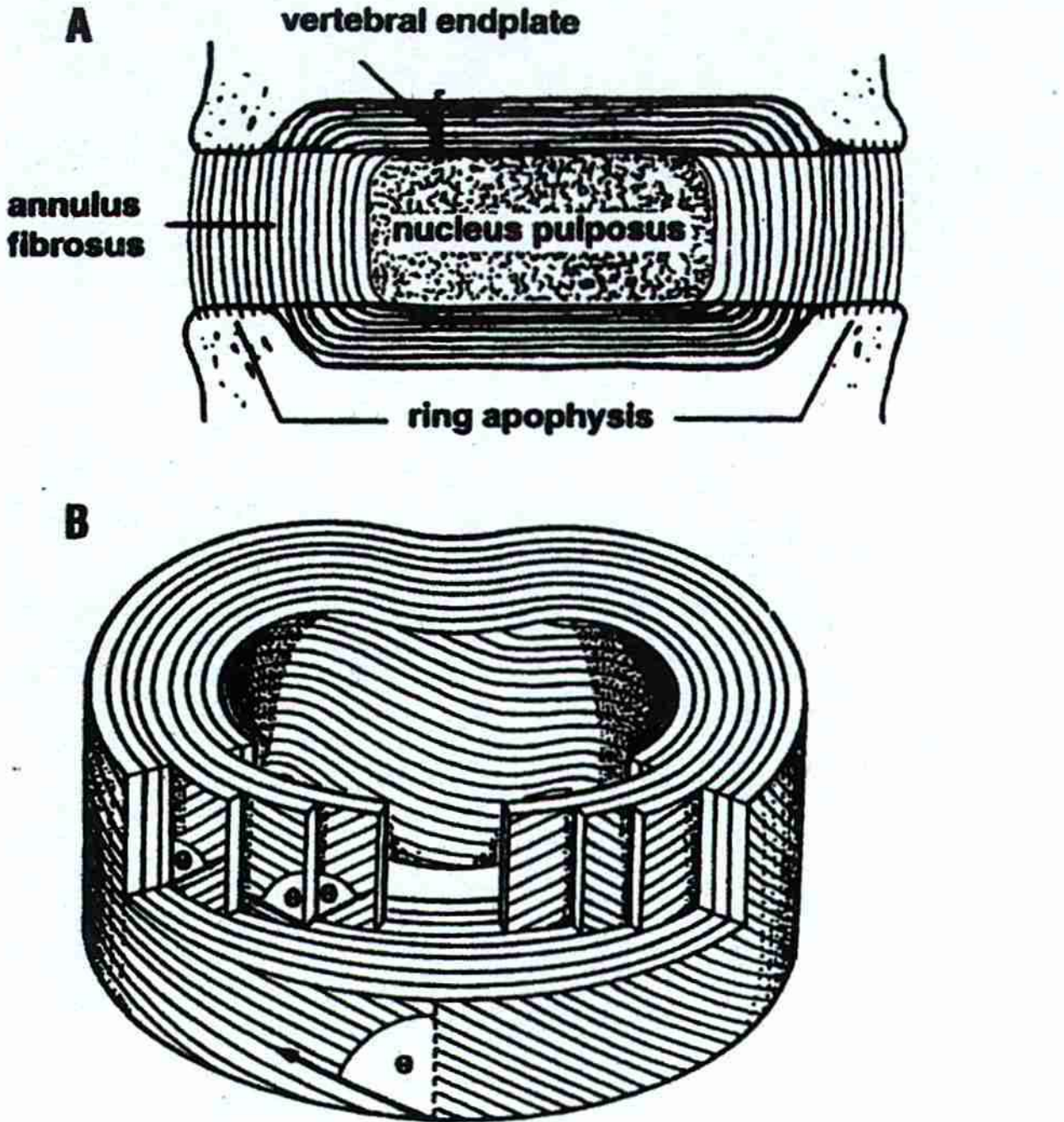
significant reduction 41% (1360 p)

completely eliminated 37% (1227 p)

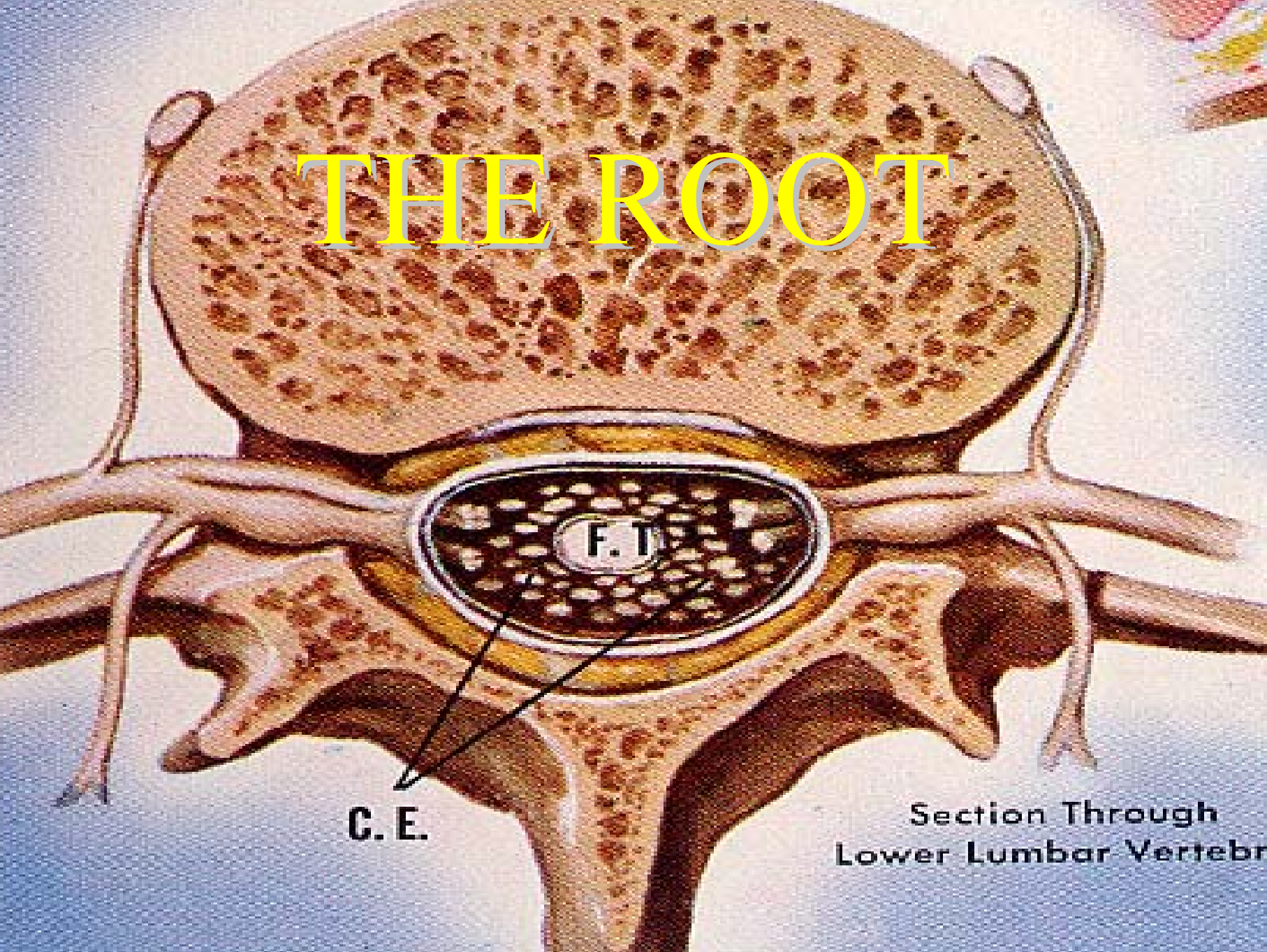
730 cases morphology was inmodified.

OTHER CONSIDERATIONS FOR A TREATMENT.

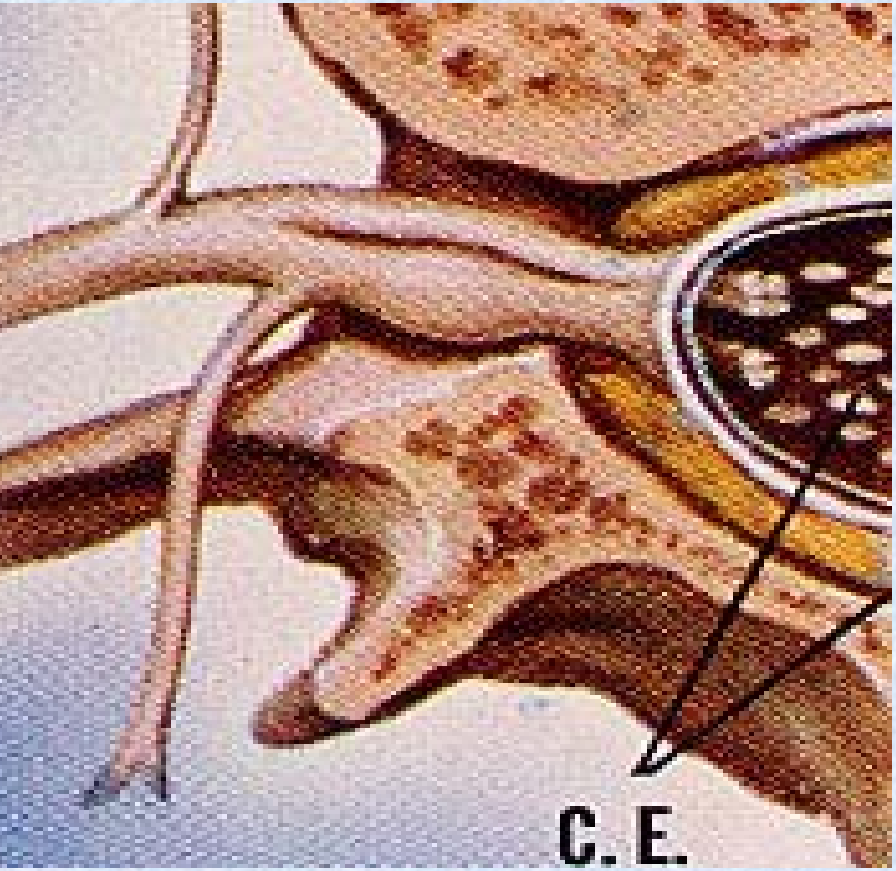
ANY ALTERATION IN THE INTEGRITY OF ONE OF THE THREE COMPONENTS (ENDPLATE CARTILAGE,ANULUS FIBROSUS,AND NUCLEUS PULPOSUS) AND ANY DISTURBANCE OF THEIR INTERPLAY RESULTS IN A COMPROMISED FUNCTION OF THE INTERVERTEBRAL DISC AND MAY LEAD TO LOW BACK PAIN AND SCIATICA


A
vertebral endplate
annulus
fibrosus
nucleus pulposus
ring apophysis
B

THE ROOT



• Deficient protection of the root

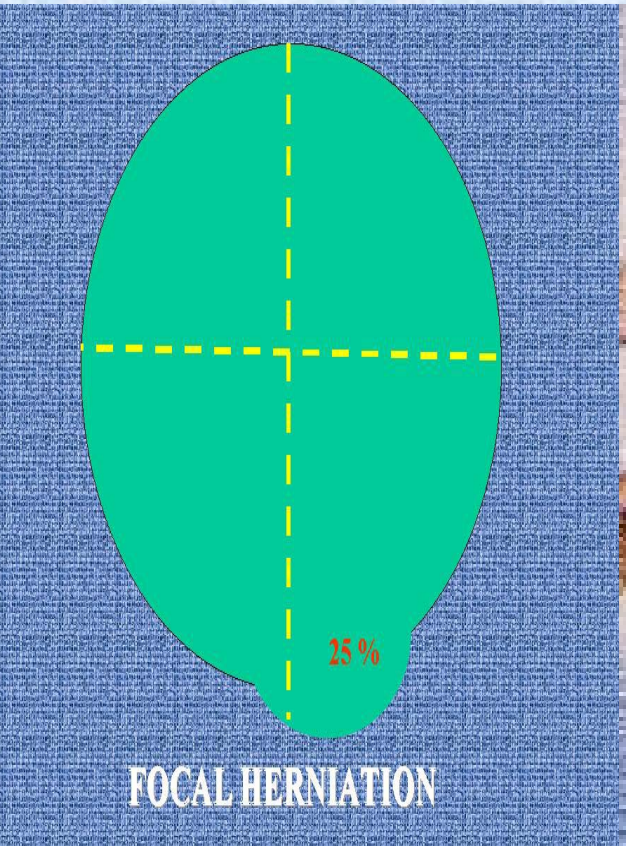


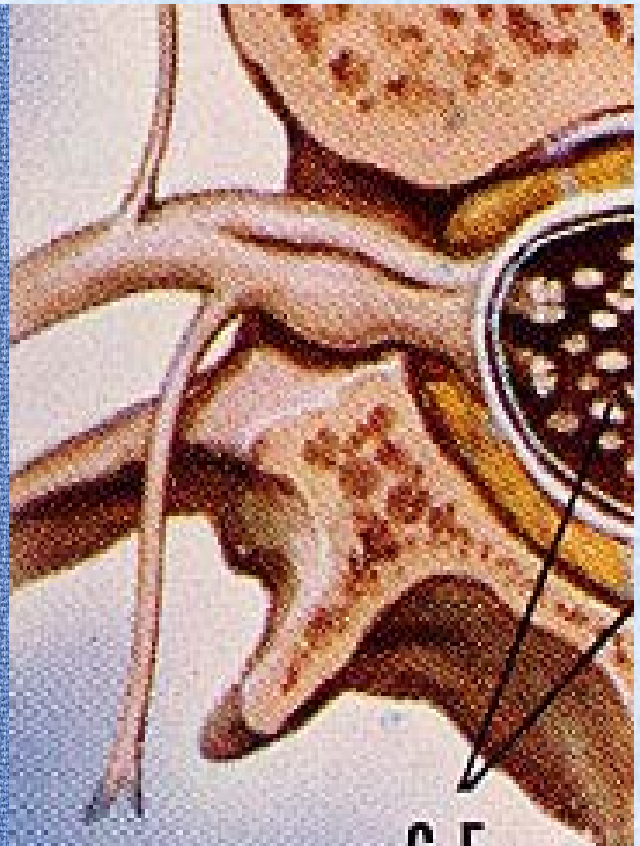
• Mixed nutrition : blood/CSF

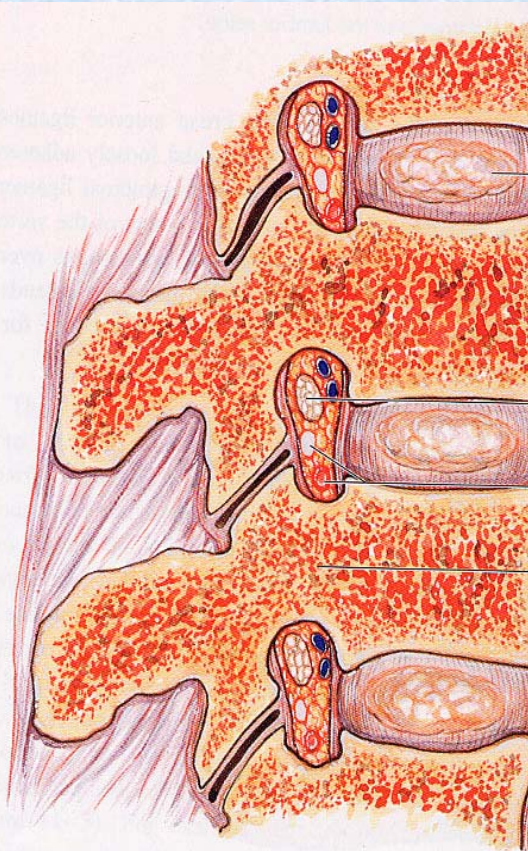
• Vulnerability of the capilar barrier

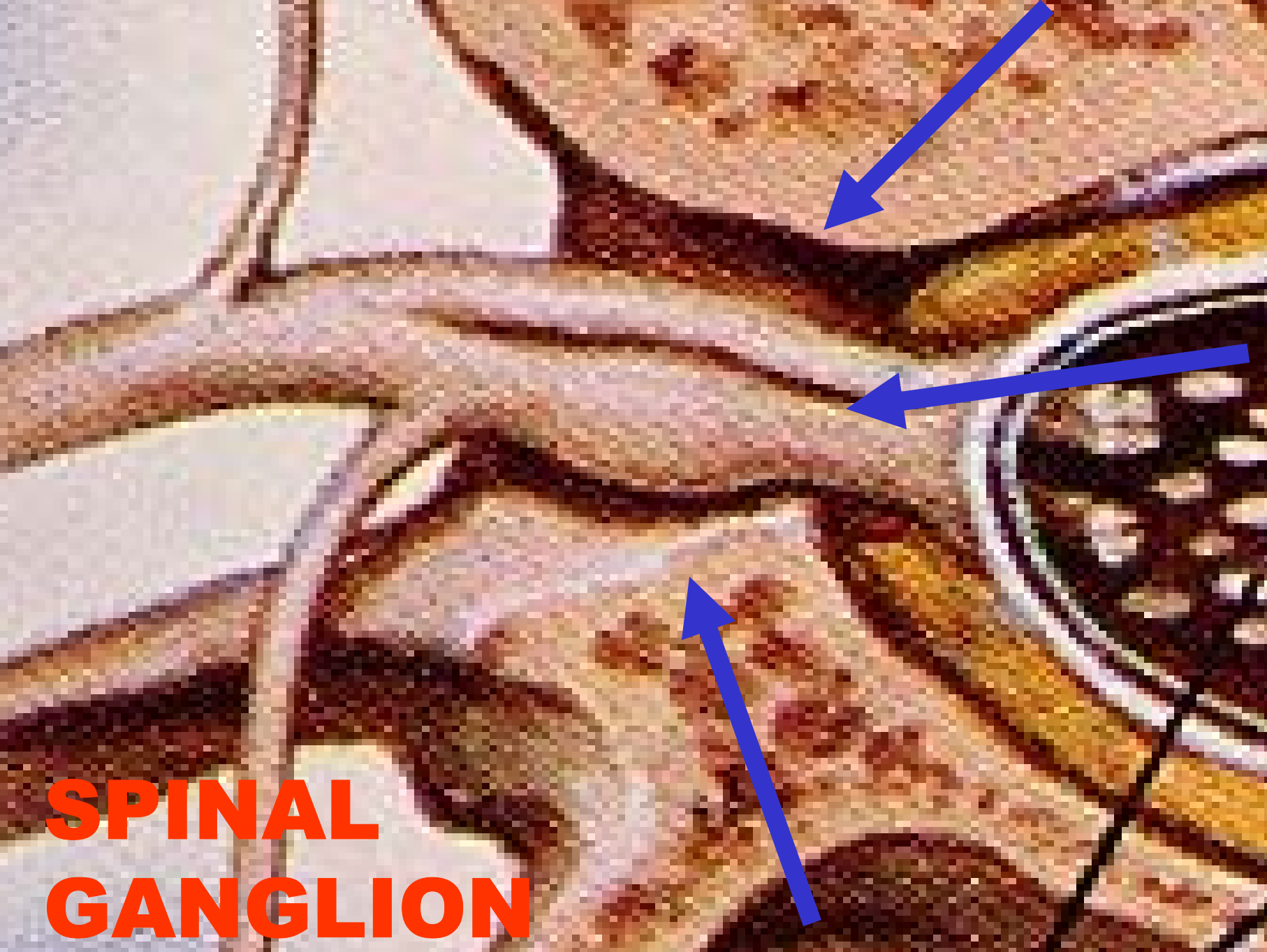
DOUBLE COMPARTIMENTAL FACTOR

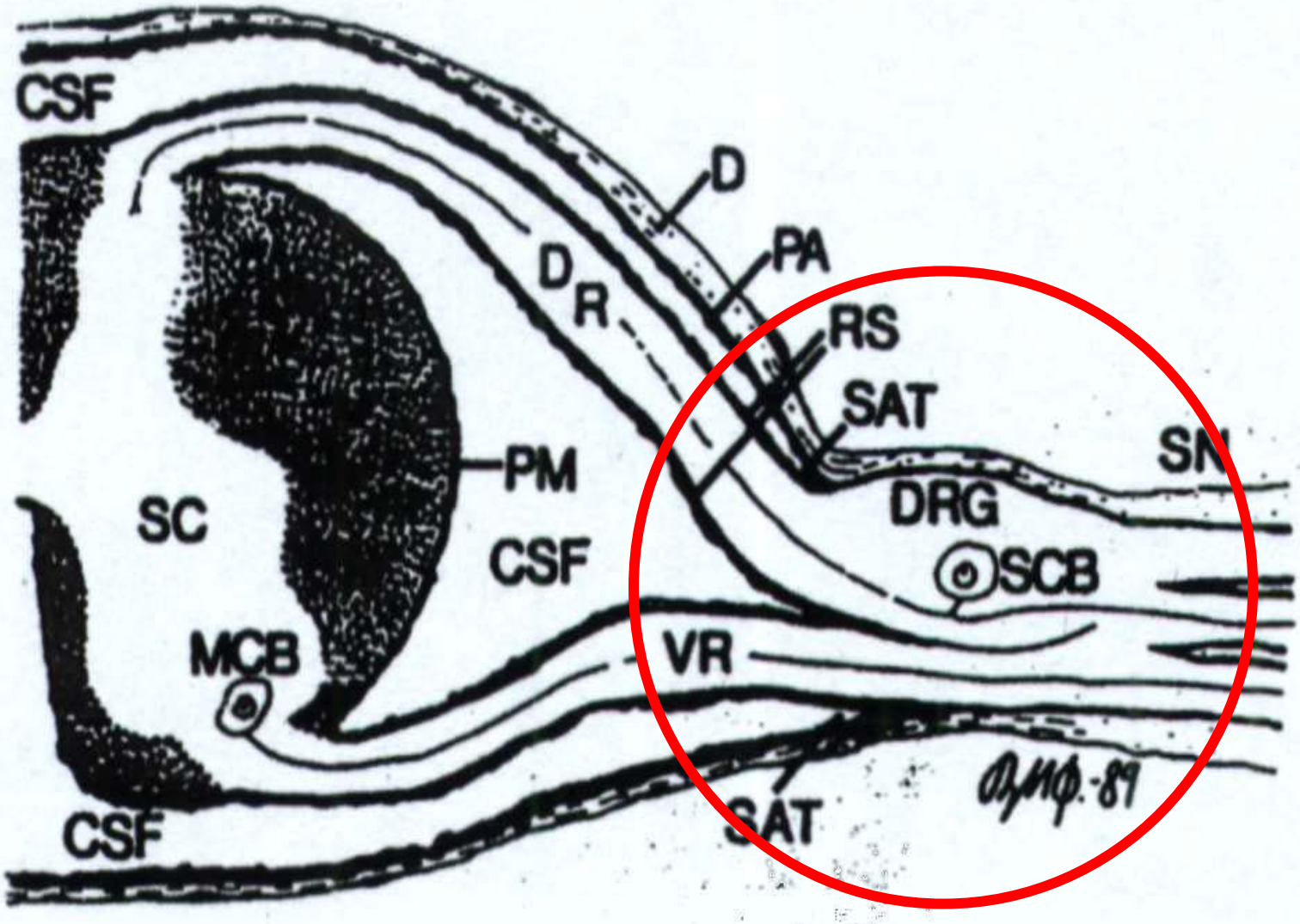
- Root compression - Ischaemia - Edema - Internal swelling
- Undistendible oseus pathway



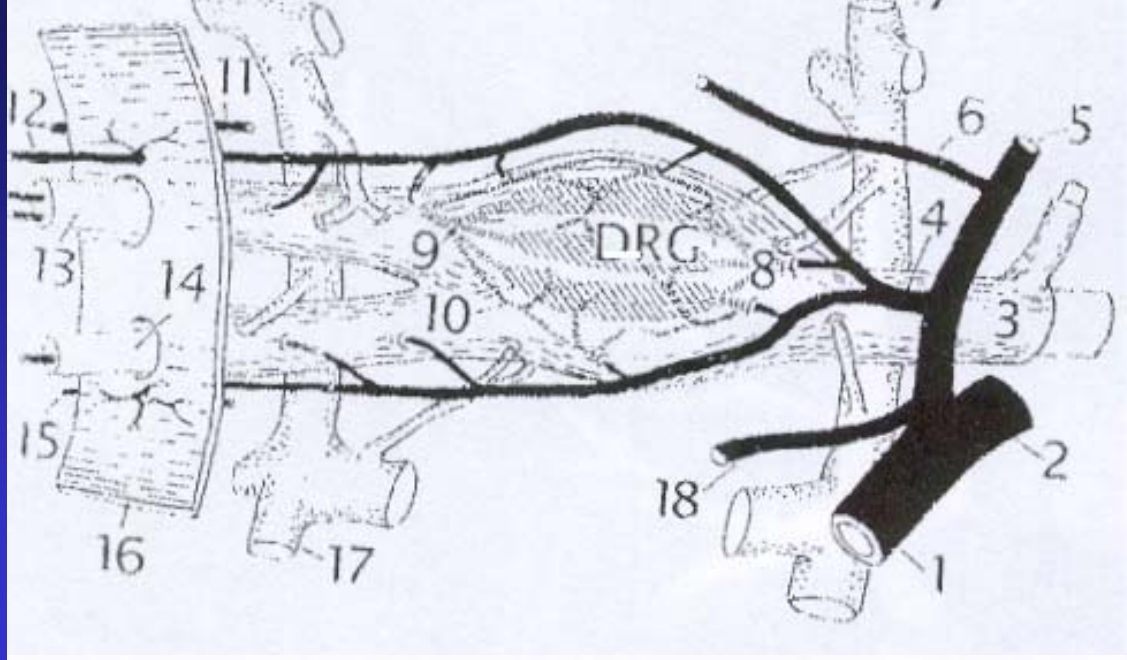


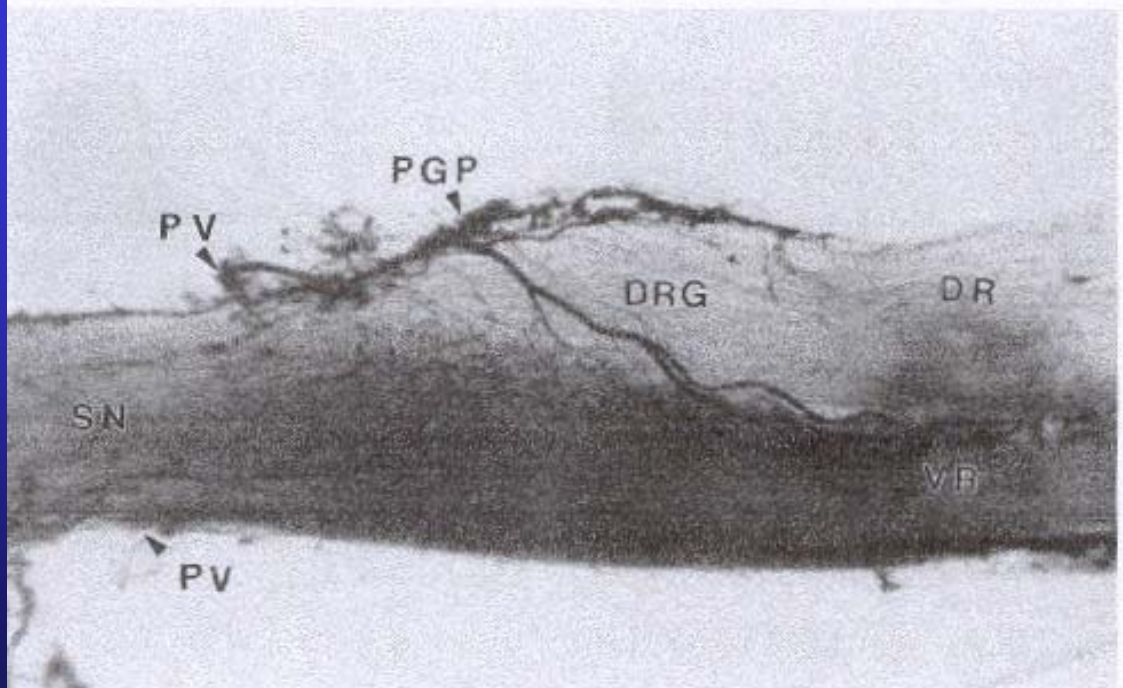


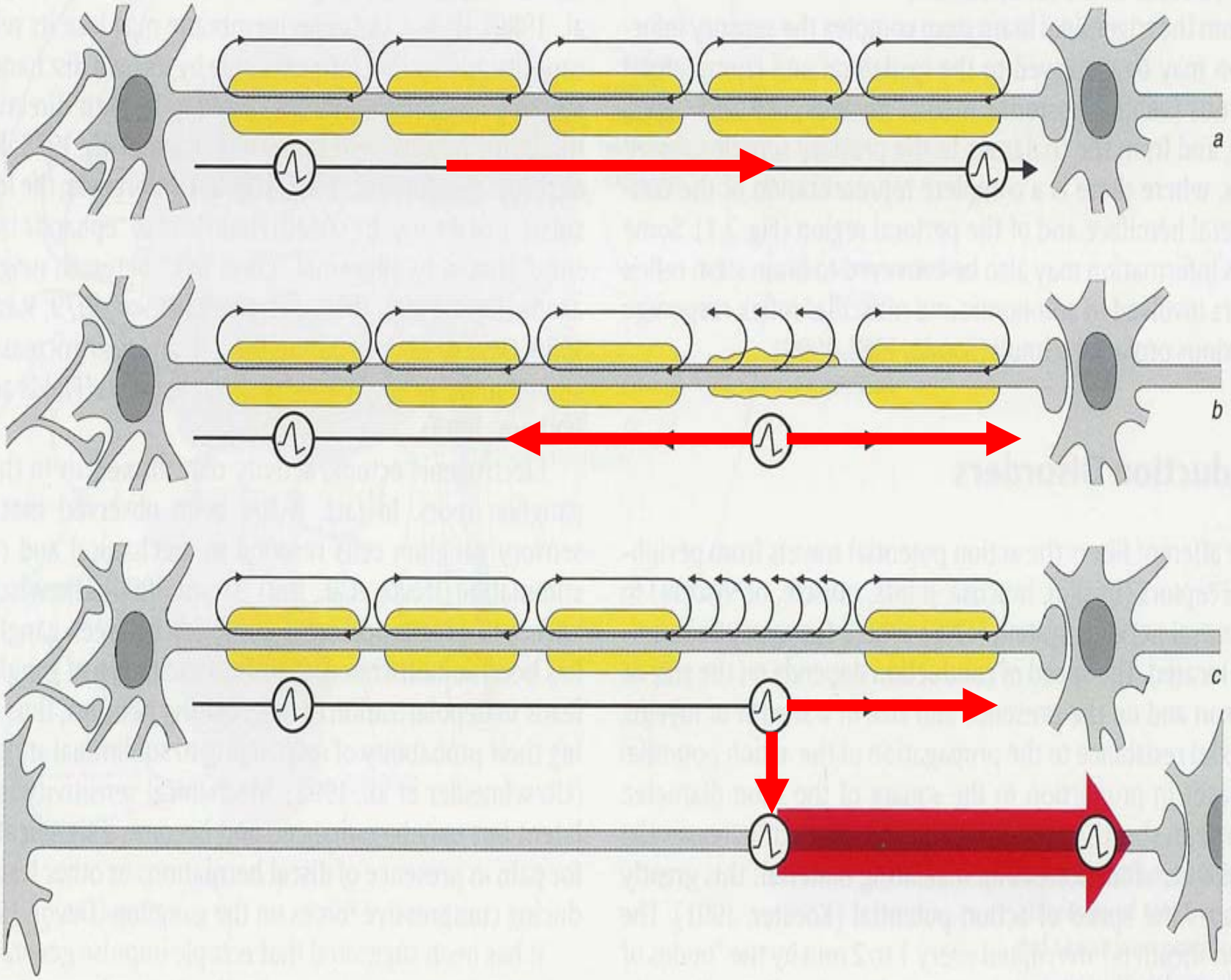

SPINAL
GANGLION

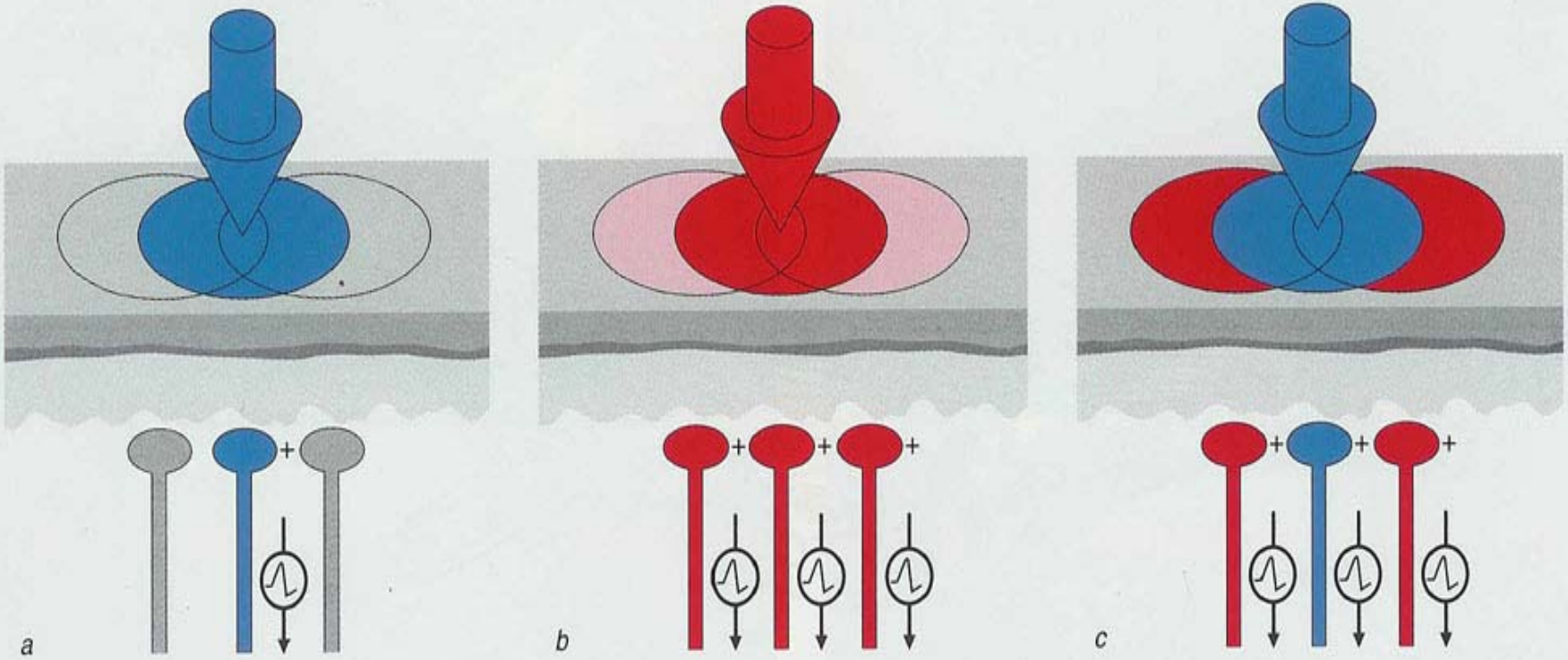


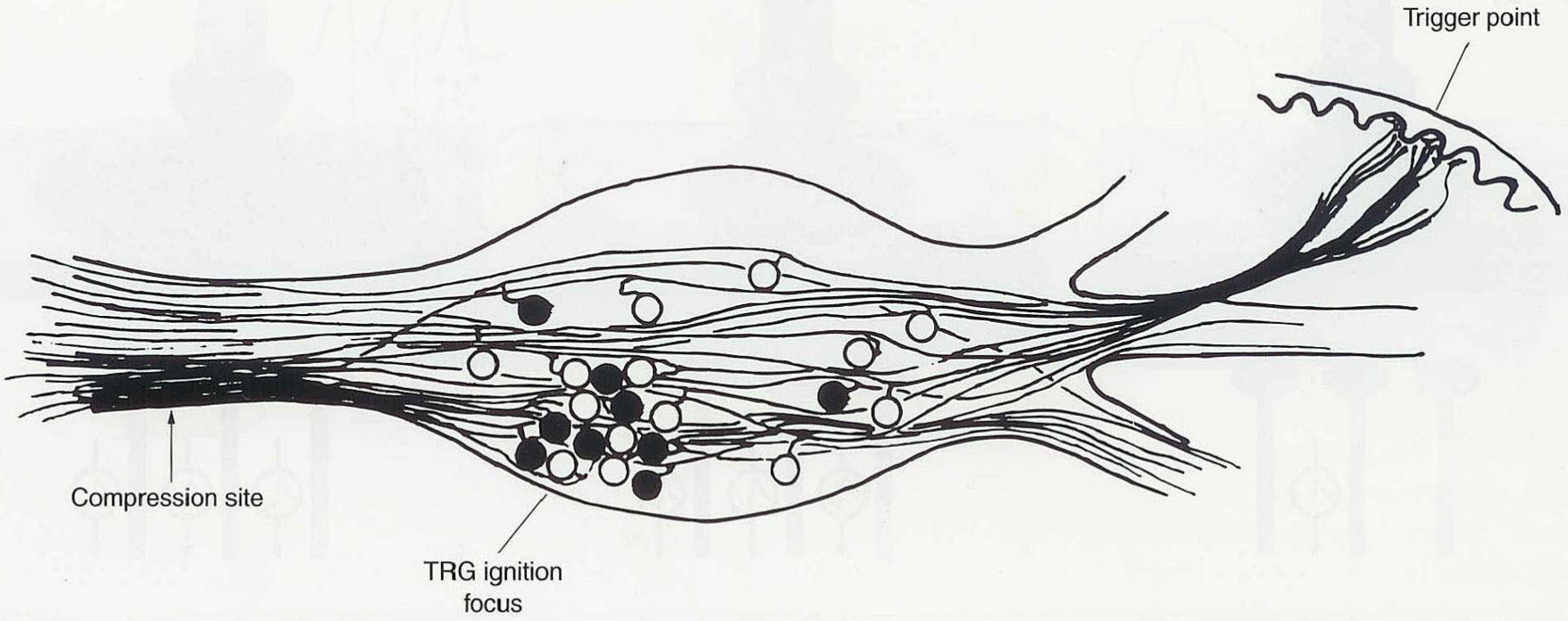
Anterior and posterior roots exiting the spinal cord to form the spinal nerve.


12
11
6
5
4
DRG
9
8
13
14
10
3
15
2
18
16
17
1


PGP
PV
DRG
DR
SN
VR
PV


a
b
c


a
b
c


Trigger point
Compression site
TRG ignition
focus

SHORT-LIVED

(PLASTICITY)

CENTRAL SENSITATION

ØYSTEIN P et all

SPINE2000

SICK-LEAVE 28weeks

TIMING

NOCIOSEPTIVE MEMORY

(DORSAL HORN)

CHRONIC PAIN

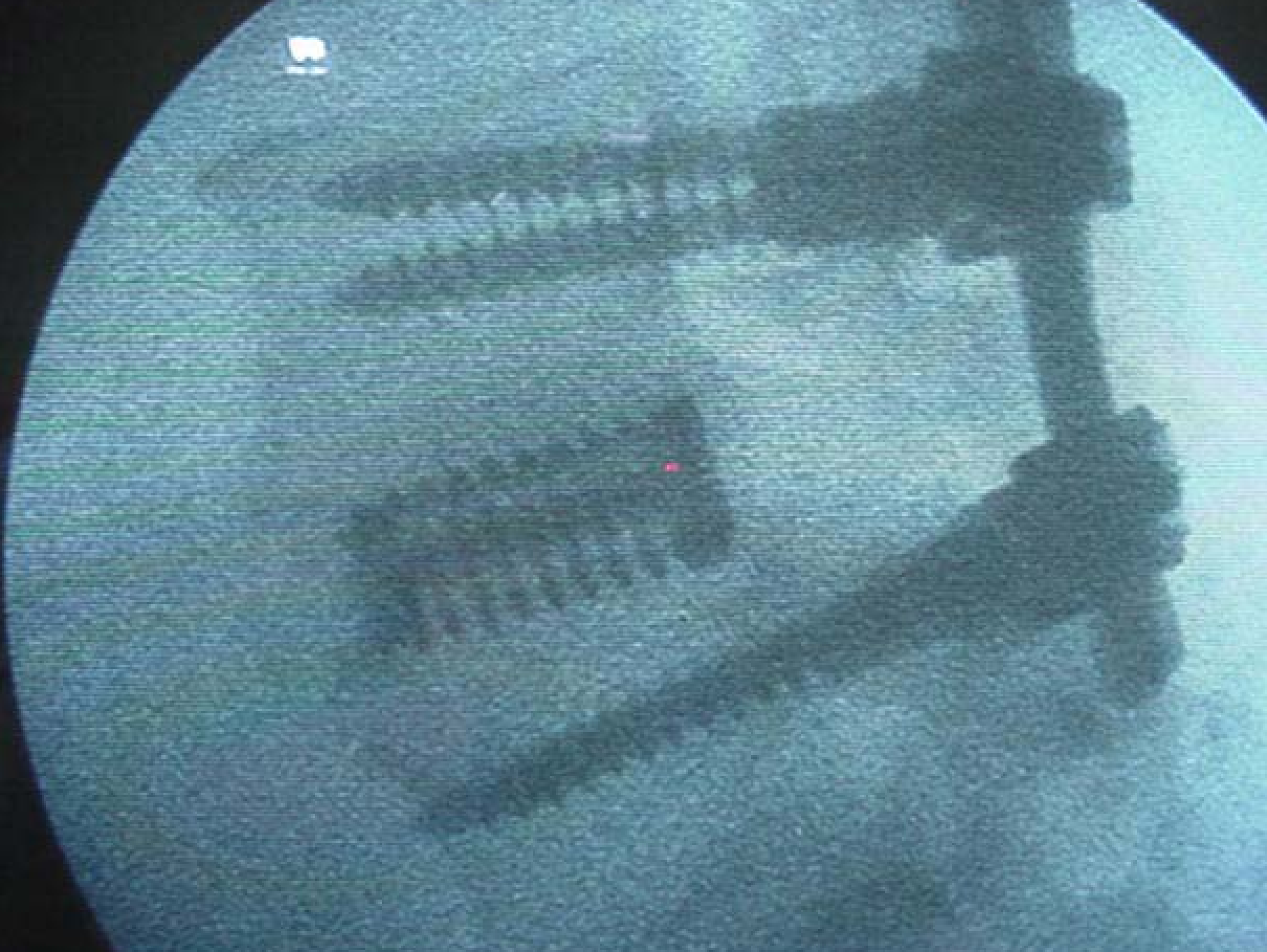
CRONIC PAIN → NEUROPATIC PAIN

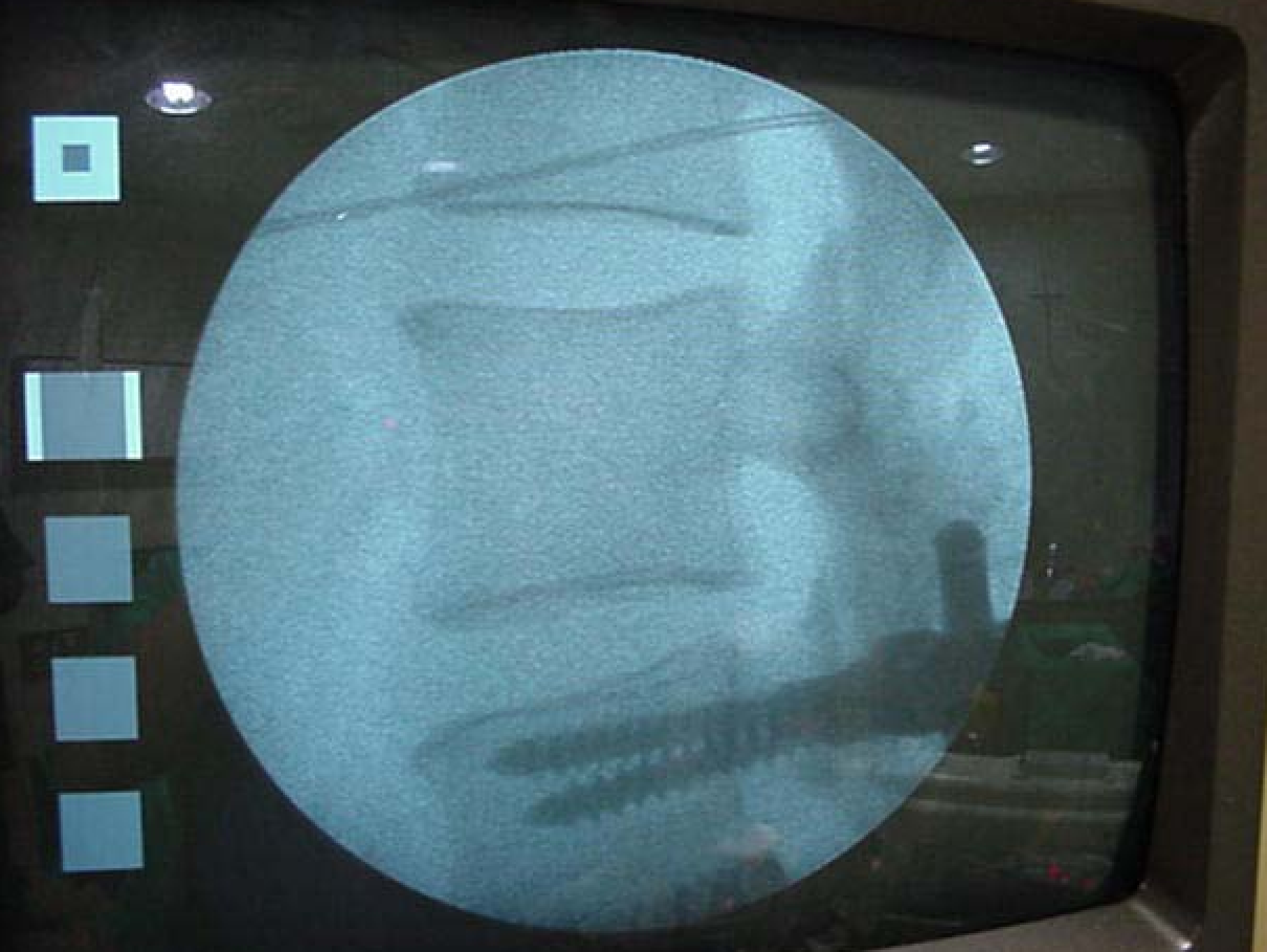
SYSTEM BREAKDOWN

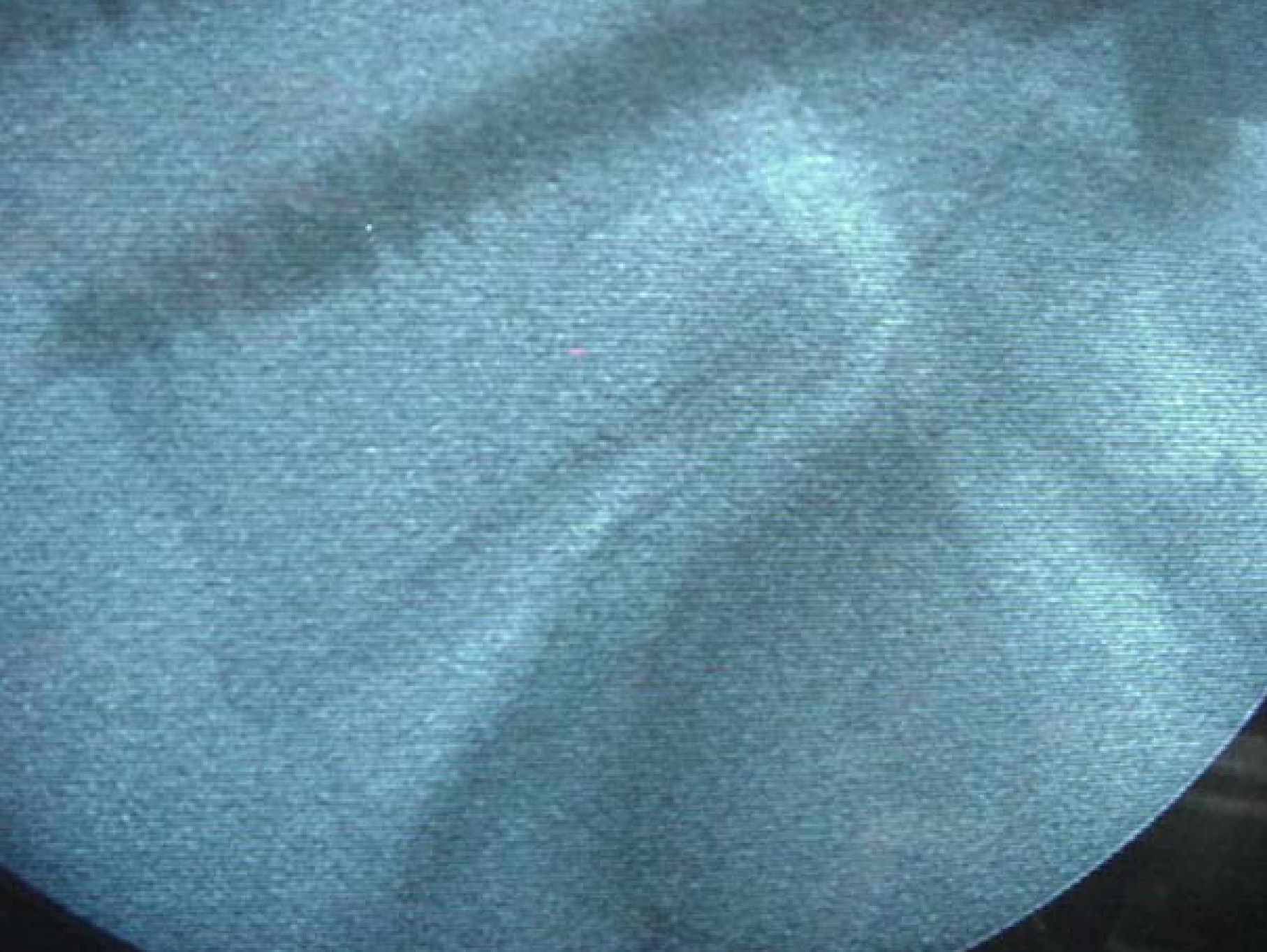
CLINICAL CASE

- MALE 45 YEARS
- DISC HERNIA OPERATED TWICE 1996
- FIBROSIS P.L.
- SEVERAL TREATMENTS
- NEUROSTIMULATOR
- NEW DISC HERNIA L5S1 2001


FL04
340
12/Fr
1/1 12.5kHz
bar CTL








EZ

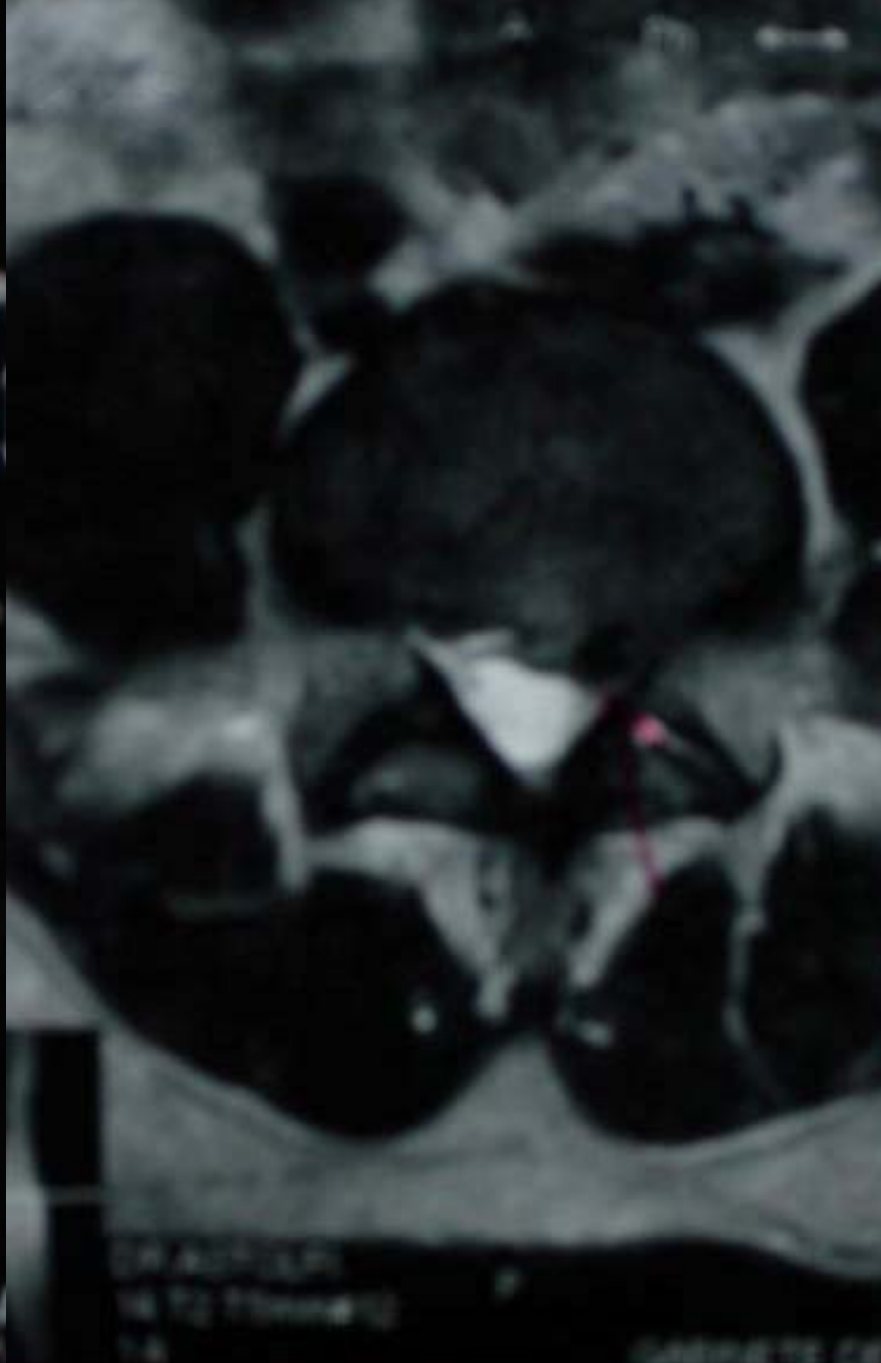
WOULD HAVE THE OZONE A NEUROMODULATOR EFFECT?

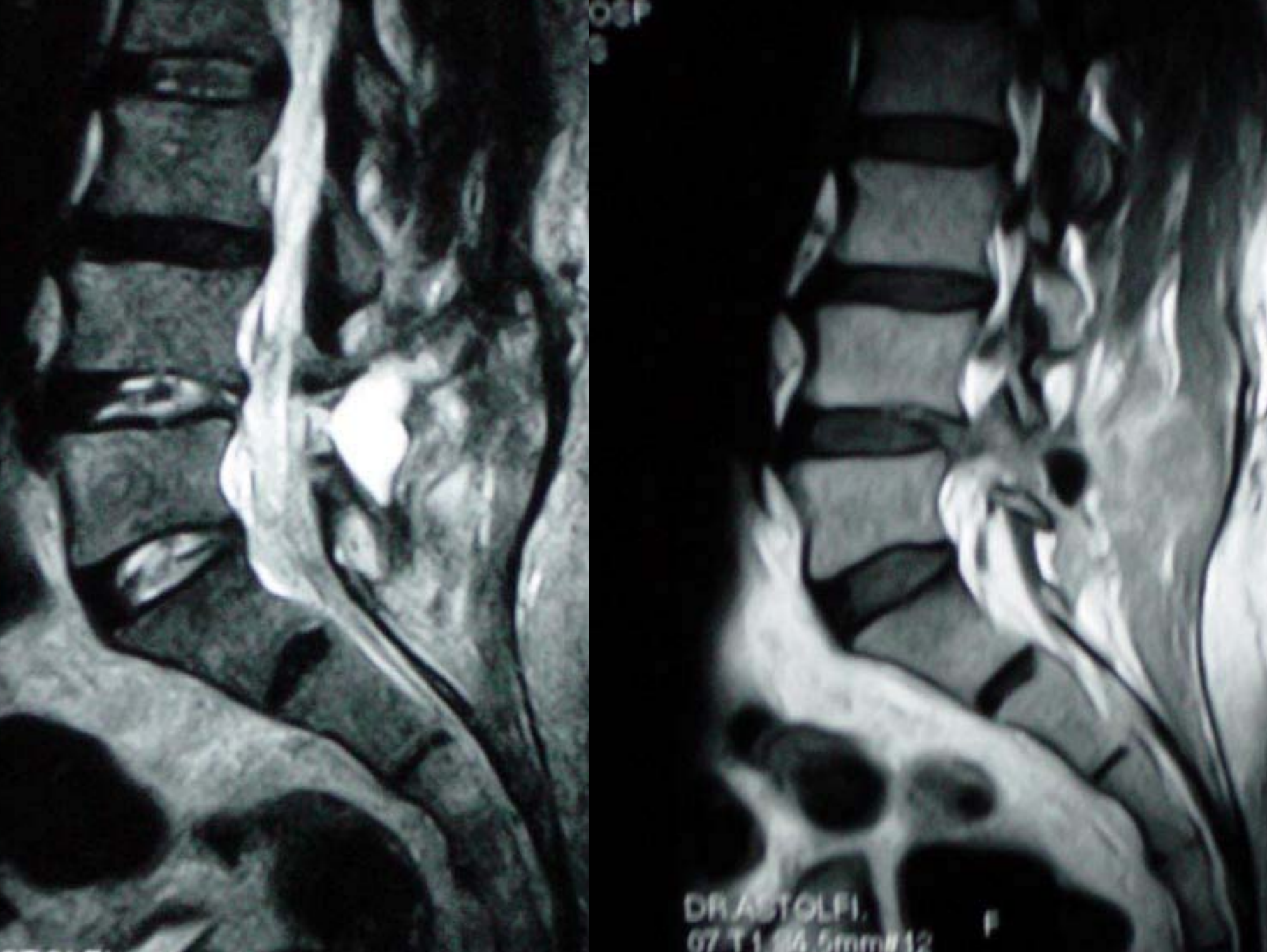
CONCLUSIONS

- **INICIATE THE TREATEMENT AS SOON AS POSSIBLE.**
- **THE PATIENT SHOULD CONTINUE WHITH NORMAL LIFE.(IF POSSIBLE).**
- **THE DISCOLISIS SHOULD INCLUDE ALL THE PROTRUDED DISKS IN THE LUMBAR AREA.**

CONCLUSIONS.

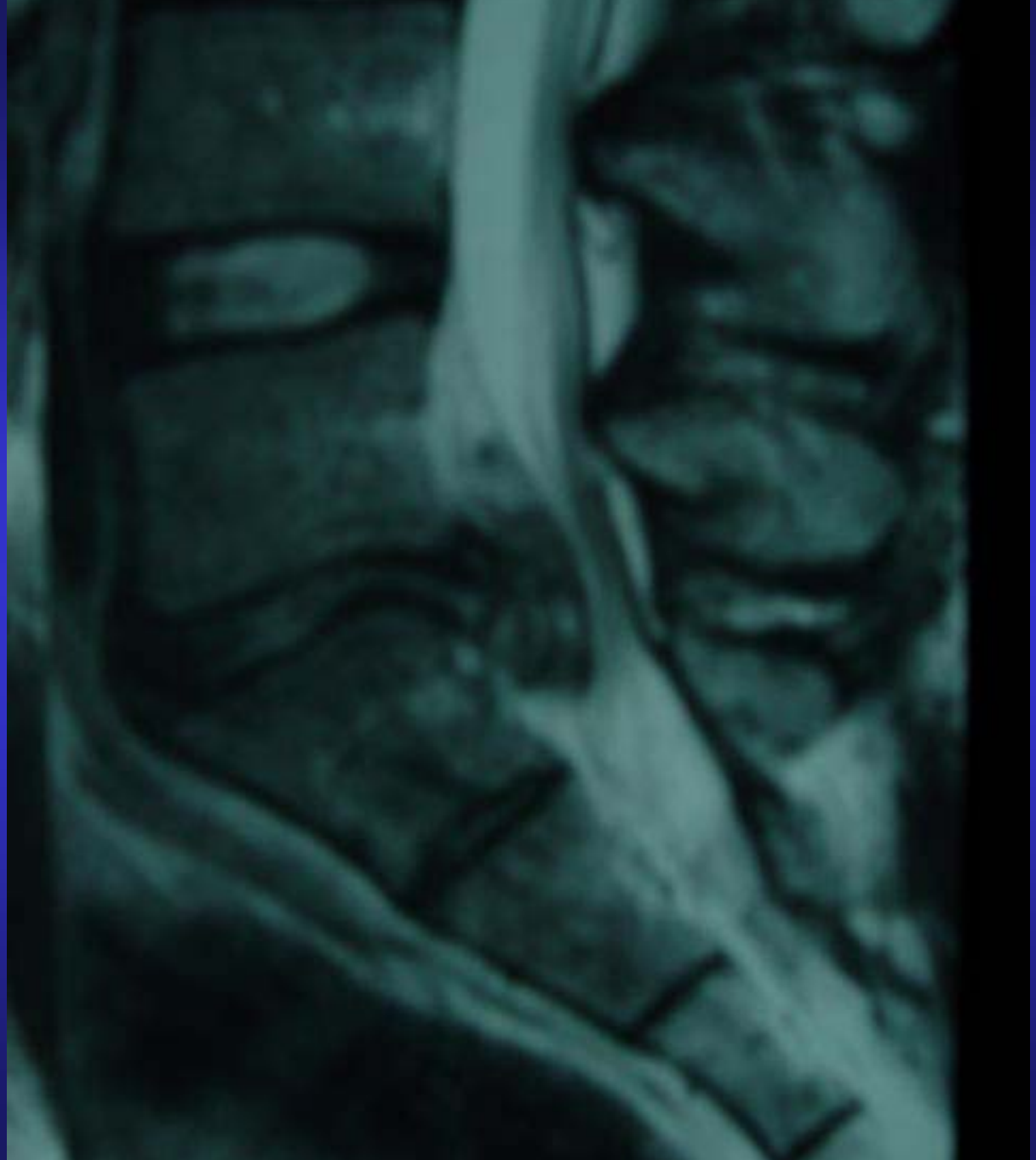
- **IN CASES OF EPIDURAL FIBROSIS IS POSSIBLE TO OBTAIN A GOOD DEGREE OF RECOVERY.**

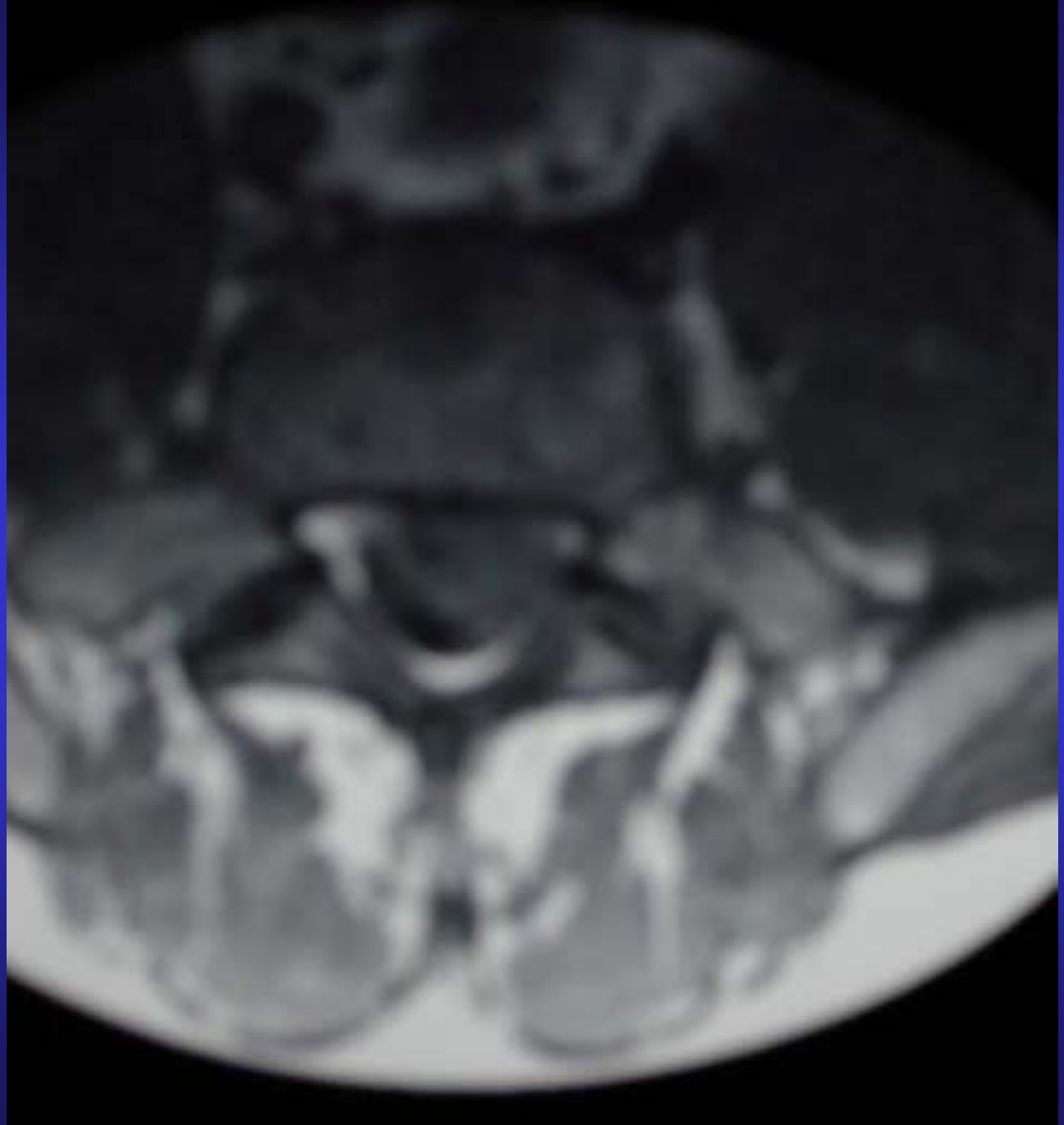




CONCLUSIONS.

- **IN SECUESTERED DISKS OR MIGRATED ONES THE DISCOLISIS SHOULD BE DONNE IMMEDIATELY WHITH THE EXEMPTION OF SERIOUS NEUROLOGICAL DAMAGE (C.E.S.)**






ET:16
fse-x1/90
TR:3600
FOV:28x28

IN STENOTIC CANAL THERE ARE SOME GOOD RESULTS

(OZONE INTRADISCAL, EPIDURAL AND INTRAFORAMINAL)

PROPOSALS

- A NEW OUTCOME SCALE FOR OZONE THERAPY
- THE SEVILLE-TREVISO OUTCOME SCALE (ST SCALE)
- DATABASE FOR OUTCOME

Evolucion

EVOLUCION DEL PACIENTE

aciente: Rosa Ayuso Guzman — Fecha: 17/04/00

iagnostico: Doble Hernia Discal Lumbar

ECHA: 14/05/00 — Resumen: ALTA gran mejoria

olor: Ninguno — Sensibilidad: Conservado — Fuerza: Conservado

ECHA: 18/05/00 — Resumen: Infiltracion Postdiscolisis. Asintomatica

olor: Ninguno — Sensibilidad: Conservado — Fuerza: Conservado

ECHA: 18/06/00 — Resumen: Tras 2ª discolisis. Mejora

olor: Disminuido — Sensibilidad: Conservado — Fuerza: Conservado

ECHA: 07/08/00 — Resumen: Ha mejorado mucho pero sigue con dolor debajo de nalga

olor: Disminuido — Sensibilidad: Conservado — Fuerza: Conservado

xploracion Dr.: Murga

Imprime Evolucion

ALTA: 07/08/00

egistro: 1 de 1 (Filtrado)

PROTOCOLO DE OZONOTERAPIA VERTEBRAL

ciente: Rosa Ayuso Guzman | Fecha: 17/04/00

reccion: Avda Arcangel 11 3º D | Intervencion Prevista

mpañia: ASEPEYO | DISCOLISIS D3

INFILTRACIONES PREVIAS

nfiltracior	17/04/00	1ªDosis	20 cc Conc 1 x 4	1ªIncidencia	Ninguna
nfiltracior	24/04/00	2ªDosis	20 cc Conc 2 x 4	2ªIncidencia	Mejoria
nfiltracior	27/04/00	3ªDosis	20 cc Conc 2 x 4	3ªIncidencia	Dias mejores alternativos
nfiltracior	01/05/00	4ªDosis	20 cc Conc 2 x 4	4ªIncidencia	Normal

DISCOLISIS

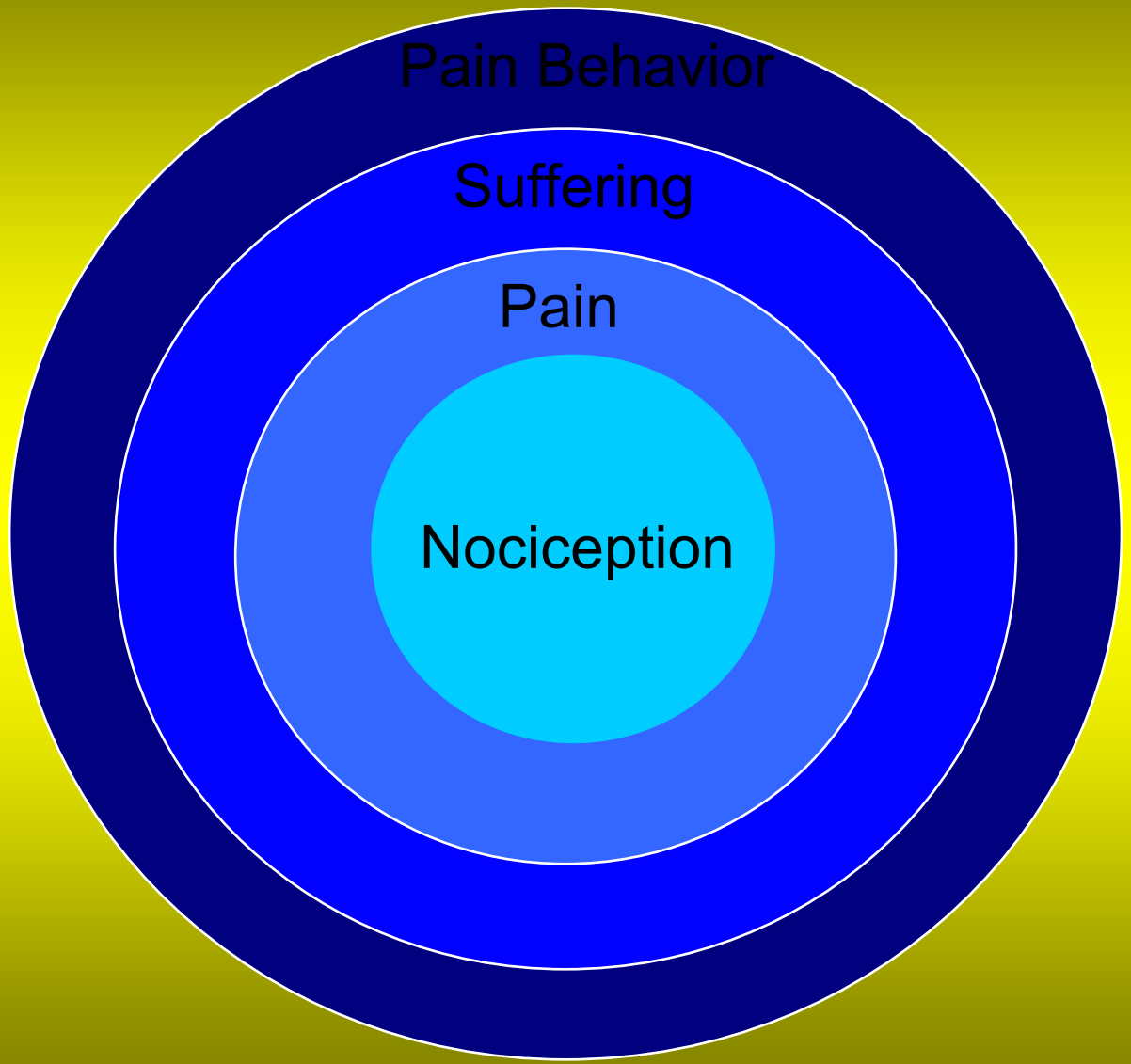
Pag 1
Av Pao

cha: 13/05/00 | Tecnica: P Intradiscal L4-L5 y L5-S1 | Dosis: 100 cc Conc 4

cidencia: Gran dolor al despertar

estesia: INTRAVENOSA | AR ☐

rmacos: Diprivan + Limifen | Anestesiologo: Baena


Pain Behavior
Suffering
Pain
Nociception

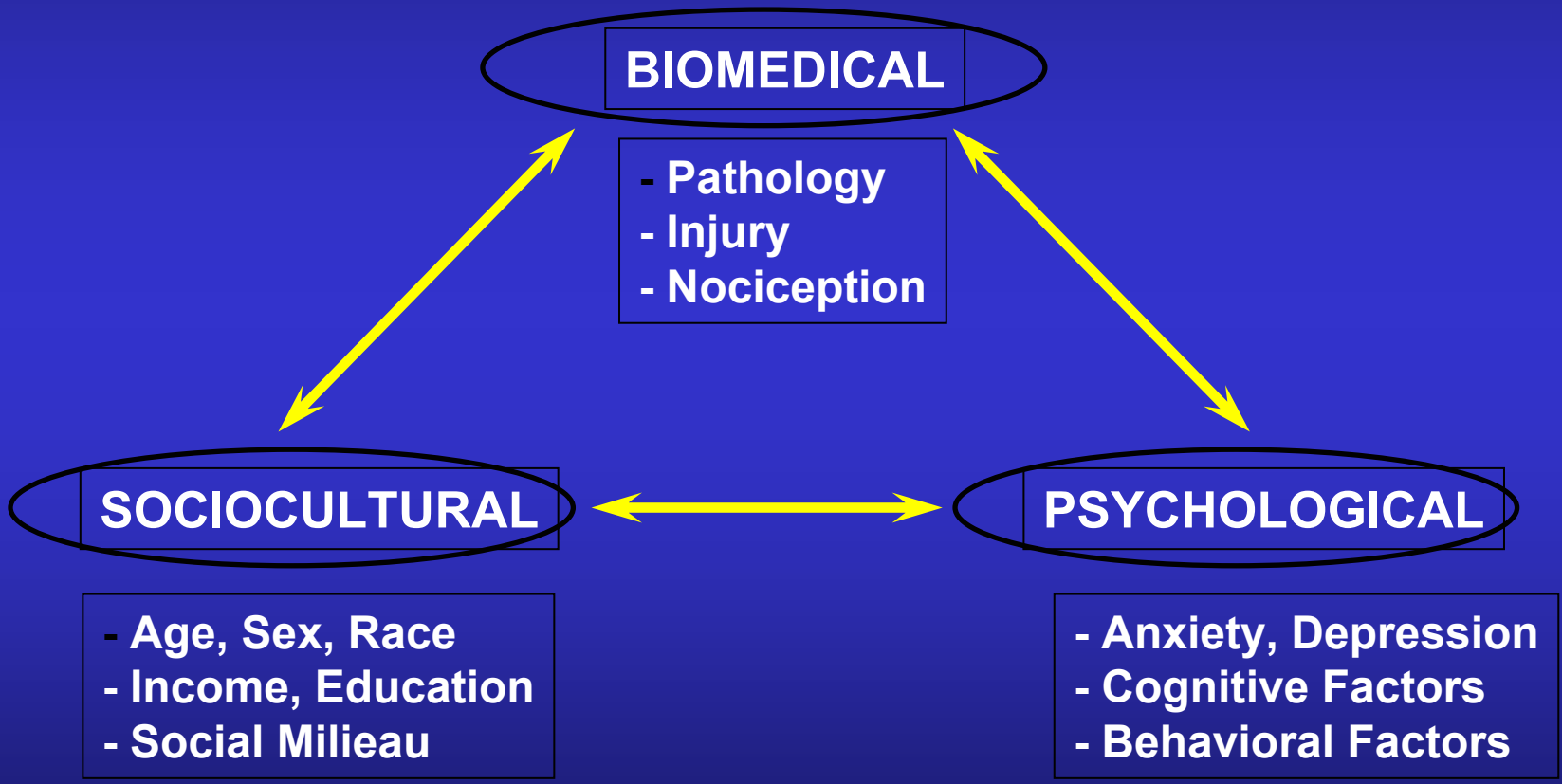
Assessment of Pain: Modalities

- Observation of Pain Behavior
- Patient Report
  - Numerical Scales
  - Visual Analog Scales
  - Verbal Descriptor Scales
  - Multiple Item Scales

Approaches to Defining the Outcome of a Condition

- bio-medical
- symptom focused
- multidimensional syndrome

BIOPSYCHOSOCIAL MODEL OF PAIN (and symptoms)



OCTOBER 2003.MOLDING CLINIC. MARBELLA.

DR. SALGADO. NEUROSURGICAL DEPARTMENT.

OZONOTHERAPY , DR. J. SOLER.

EUROPEAN INSTITUTE OF NEUROSURGERY.

(EUNL). DR. ALEXANDRE

THANK YOU