Why does the back ache?

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mehtaspine

Outline of the talk:

'Why does the back ache?'

- Working definitions
- Scope of the problem
- The flags!
- Pathologic and clinic basis
- How you could approach this problem

Outline of the talk:

'Why does the back ache?'

- When do we operate
- When can we safely defer operating
- When not to operate

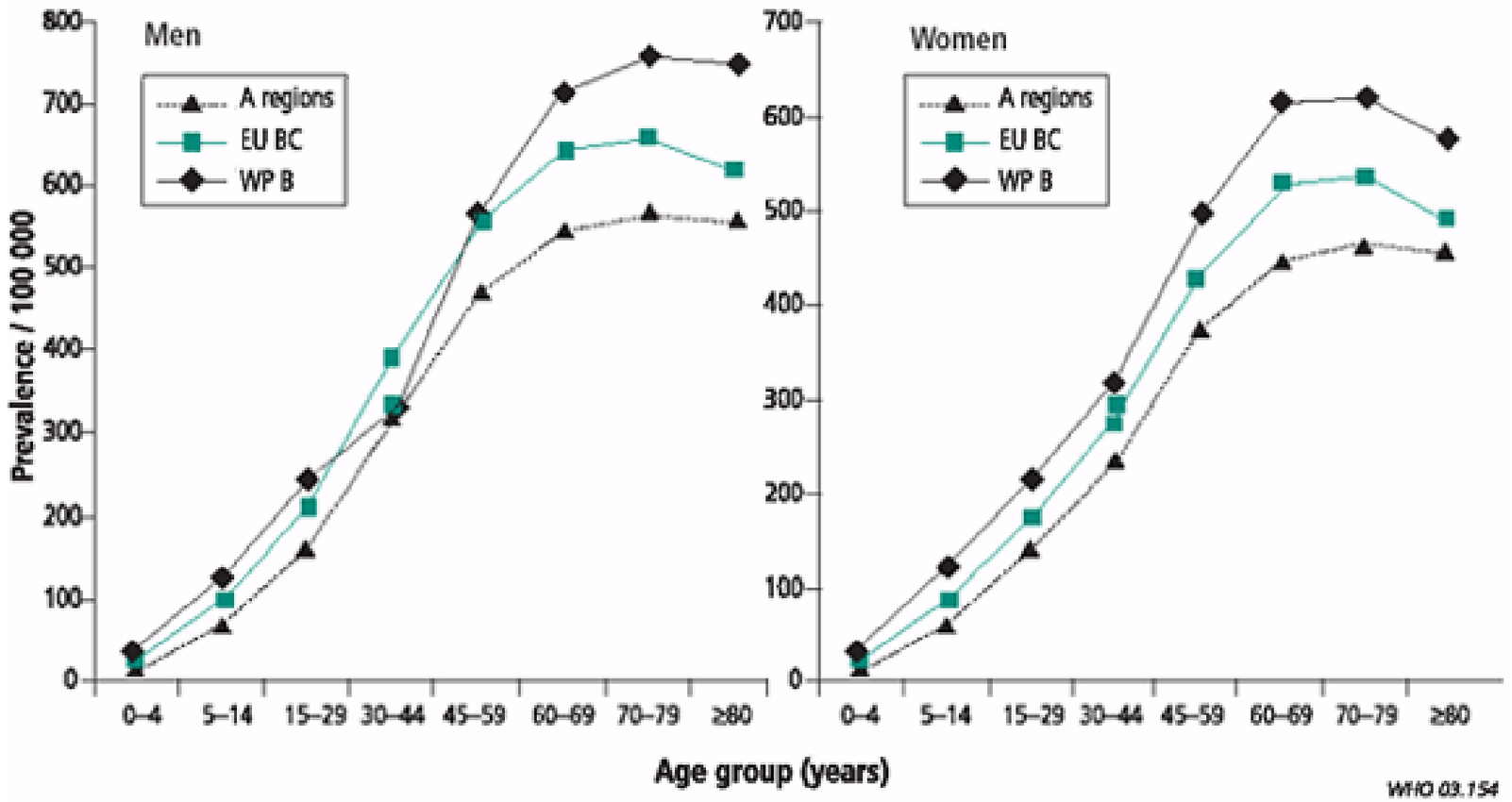
Use and abuse our backs

- Sitting habits
- Smoking
- Diet
- Lack of exercise
- Excessive screen time

Low back pain

- Major Health and socio-economic issue
- Time off work in the economically active
- Point prevalence: 58 - 84%

Fig. 5. **Prevalence of low back pain, by age group, sex, and region, 2000** (unpublished data, WHO, 2000). *Key:* see legend to Fig.1



Low back pain

- **Site:**
  - Below12th rib
  - Above Gluteal fold
- **Cause:**
  - Specific (Cause suspected)
  - Non-specific (??)
- **Severity:**
  - Acute: < 6 weeks
  - Chronic: > 3 mo

Low back pain

Mechanical

Root entrapment

Serious conditions

The flags!

Flag	Nature	Examples
Red	Signs of serious pathology	Cauda equina syndrome, fracture, tumour, unremitting night pain, sudden weight loss of 10pounds over 3 months, bladder & bowel incontinence, previous history of cancer, saddle anaesthesia,
Orange	Psychiatric symptoms	Clinical depression, personality disorder
Yellow	Beliefs, appraisals and judgements	Unhelpful beliefs about pain: indication of injury as uncontrollable or likely to worsen. Expectations of poor treatment outcome, delayed return to work
Red	Signs of serious pathology	Cauda equina syndrome, fracture, tumour, unremitting night pain, sudden weight loss of 10pounds over 3 months, bladder & bowel incontinence, previous history of cancer, saddle anaesthesia,
	Pain behaviour (including pain and coping strategies)	Avoidance of activities due to expectations of pain and possible reinjury. Over-reliance on passive treatments.
Blue	Perceptions about the relationship between work and health	Belief that work is too onerous and likely to cause further injury. Belief that workplace supervisor and workmates are unsupportive.
Black	System or contextual obstacles	Legislation restricting options for return to work. Conflict with insurance staff over injury claim. Overly solicitous family and health care providers. Heavy work, with little opportunity to modify duties.

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Overly solicitous family and health care providers.
Heavy work, with little opportunity to modify duties.

- **Previous cancer**
- **50 +**
- **Unexplained weight loss**
- **Failure to improve**

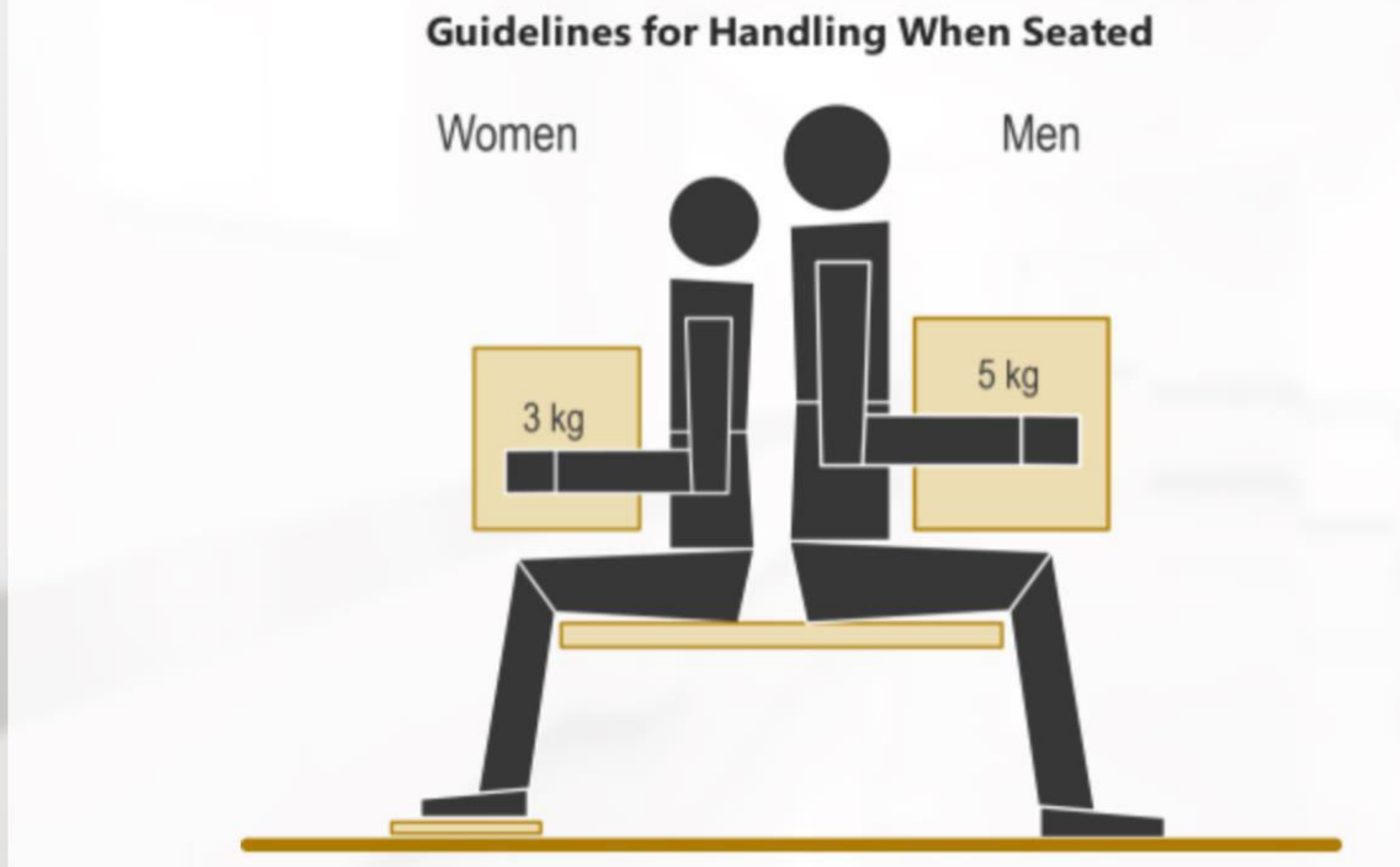
How much can I lift?

Guidelines for Pushing and Pulling

	Men	Women
Guideline figure for stopping or starting a load	20 kg (i.e. about 200 newtons)	15 kg (i.e. about 150 newtons)
Guideline figure for stopping or starting a load	10 kg (i.e. about 100 newtons)	7 kg (i.e. about 70 newtons)

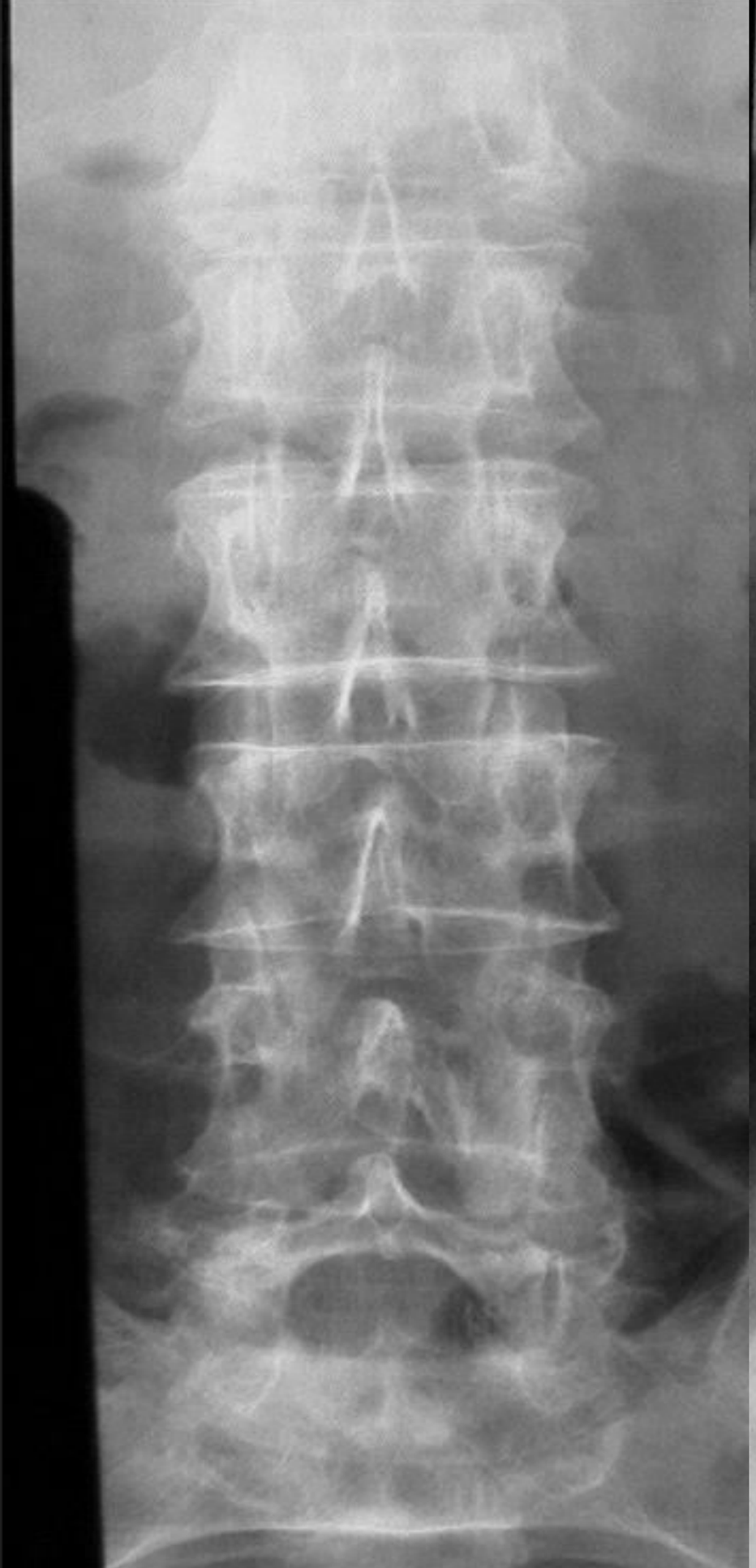
For pushing and pulling operations
(whether the load is slid, rolled or supported on wheels).

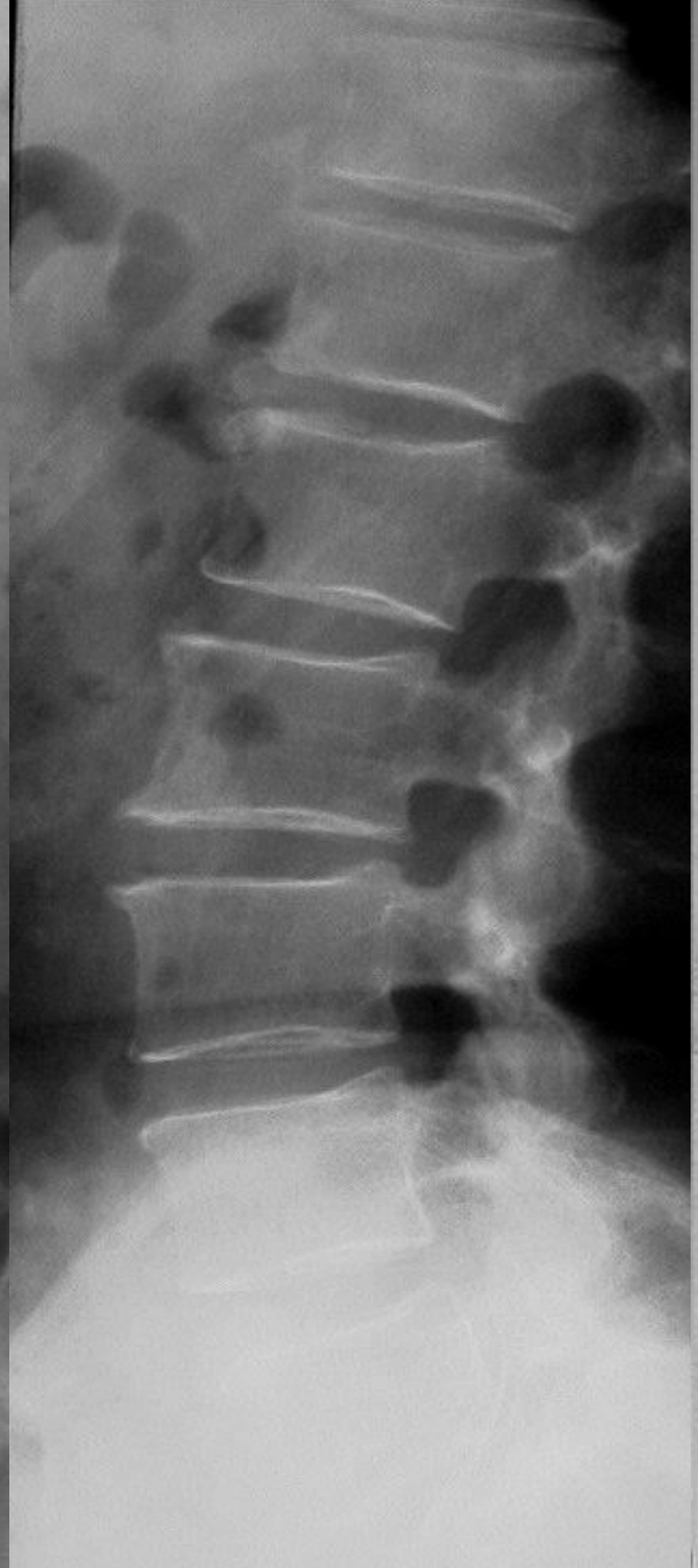
How much can I lift?

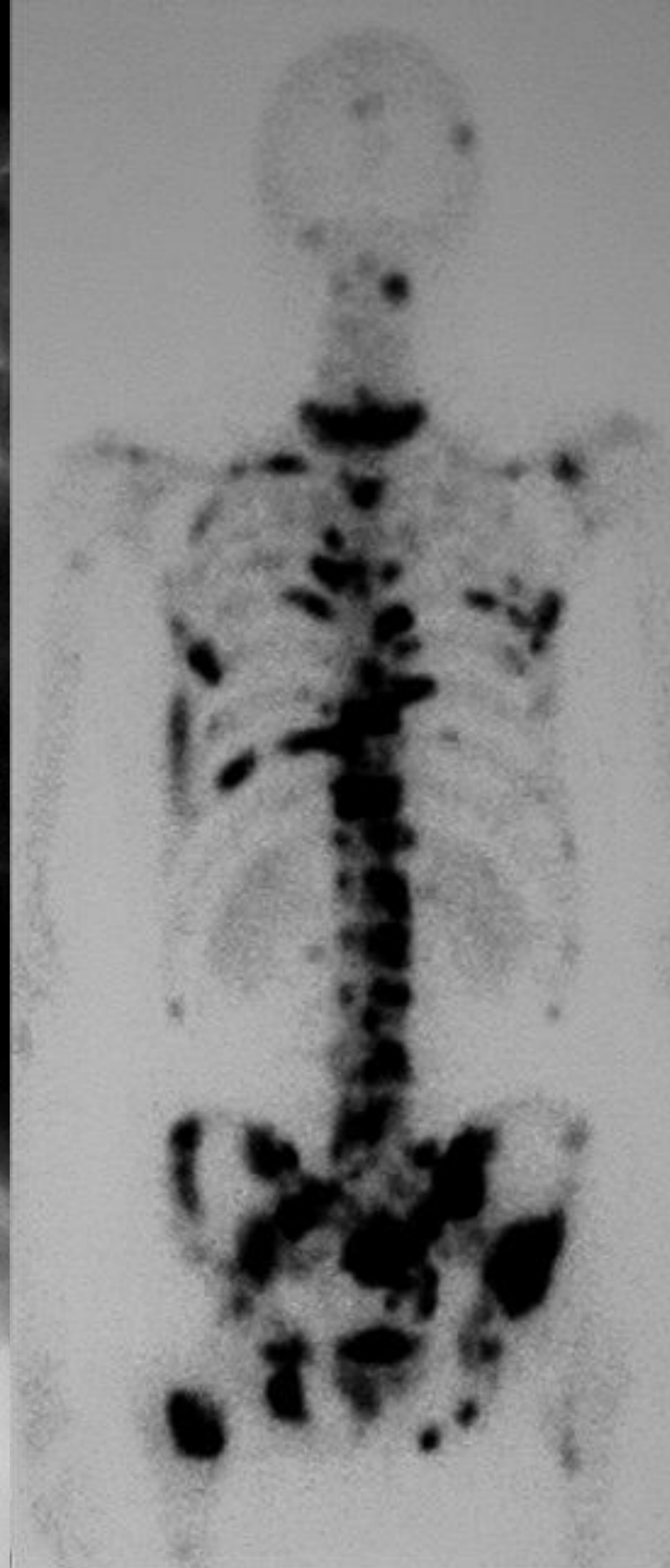


Imaging options

- MRI
- CT scans
- SPECT scans / Bone scans
- Erect radiographs







MRI in 98 asymptomatic volunteers

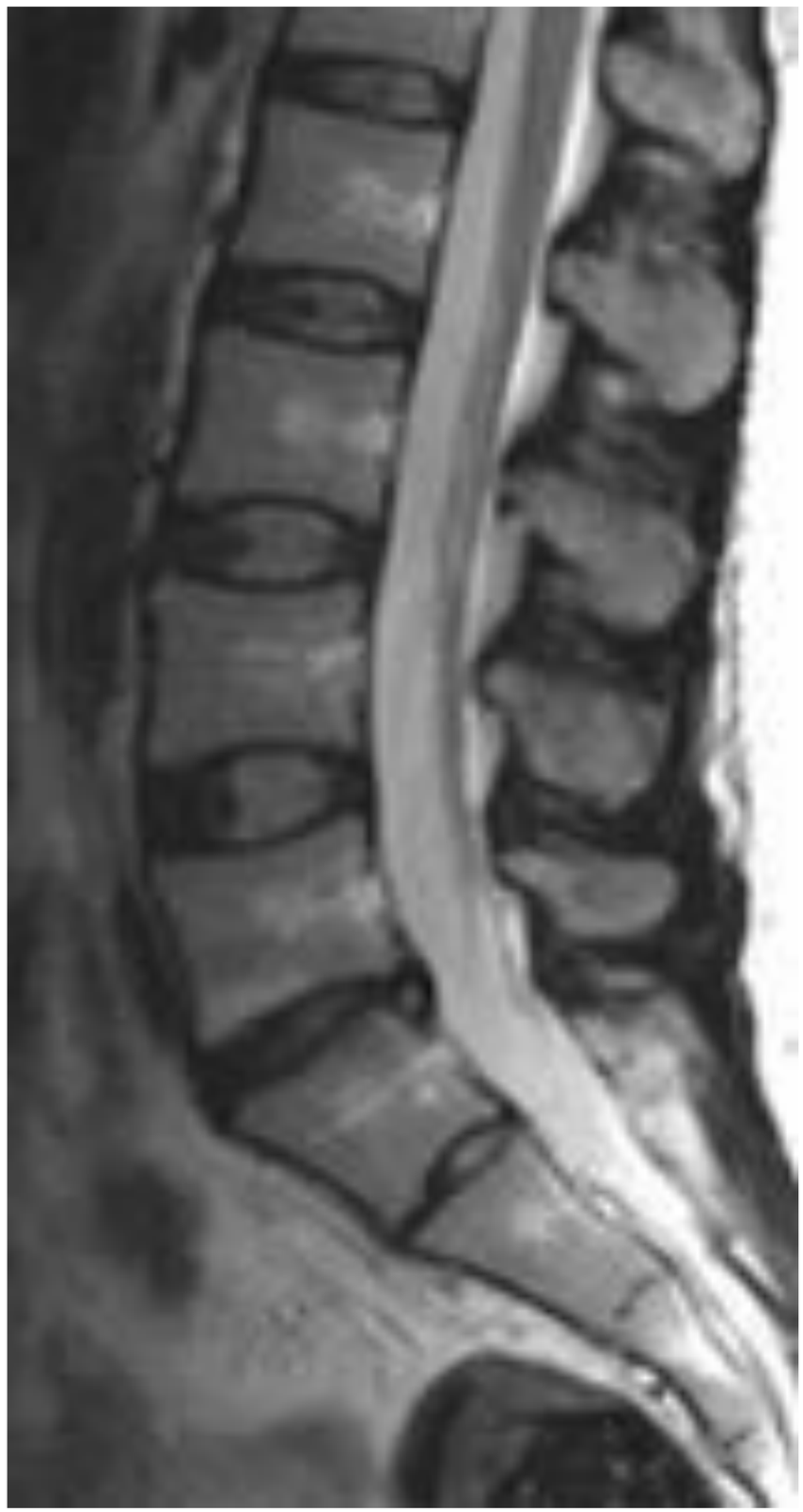
36 % all discs normal

52% bulge at 1 level

27% disc protrusion

38% > 1 disc abnormal

1% disc extrusion



MRI in asymptomatic persons

Disc prolapse

20%	< 60
36%	>60

Boden JBJS 1992

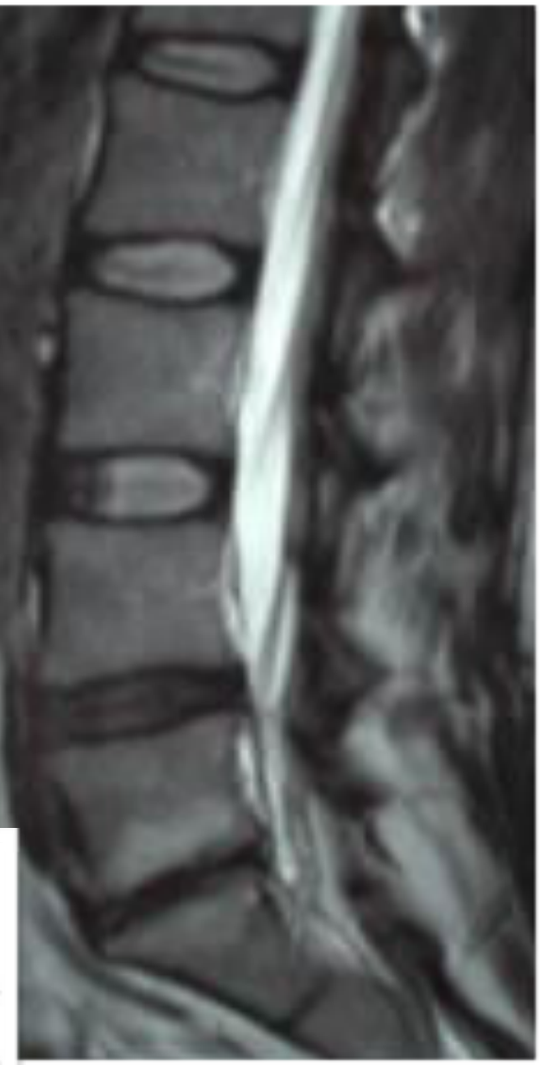
L5S1 degenerative changes

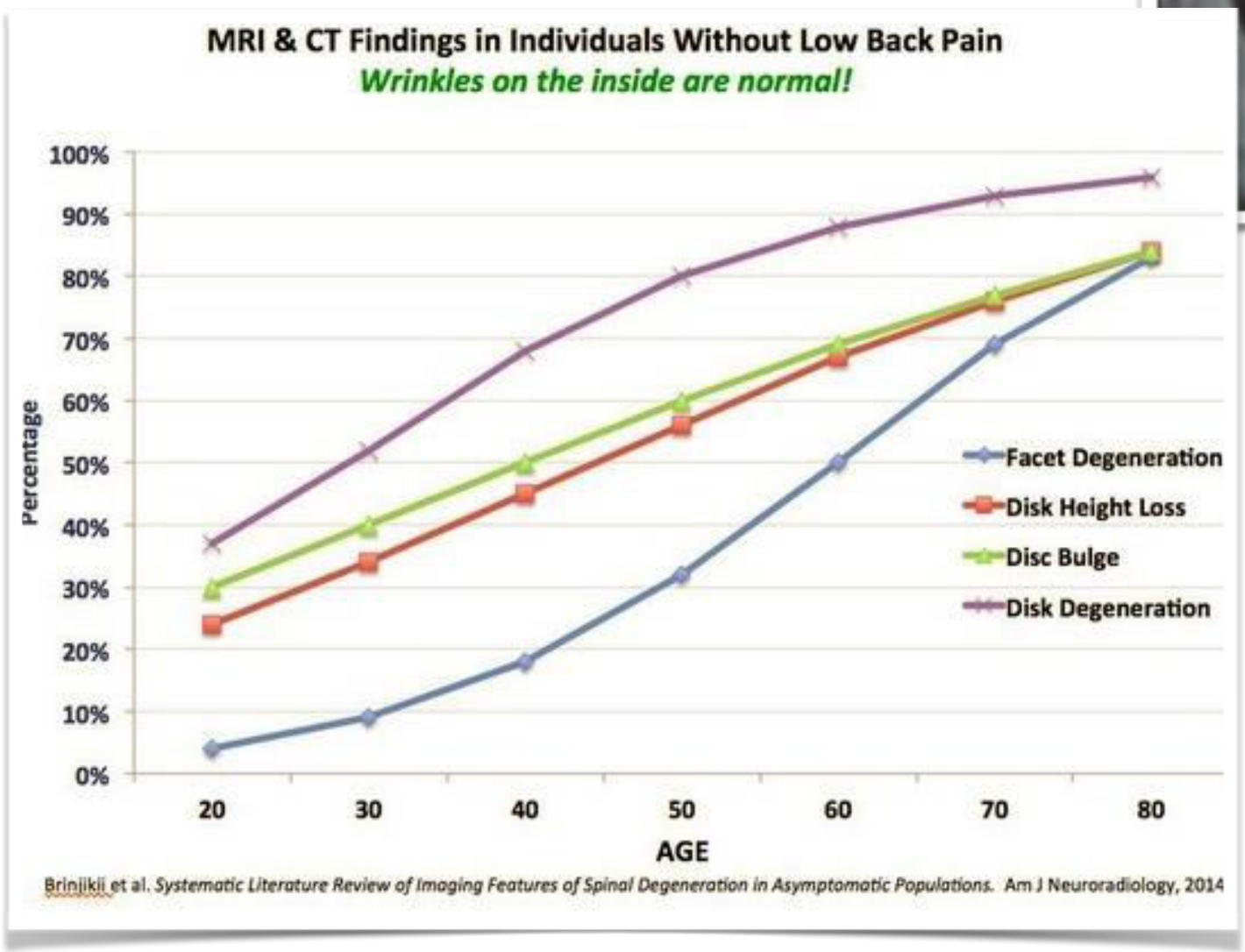
27%	M 20 - 30
52%	M 31 - 58

Savage ESJ 1994

VOMIT

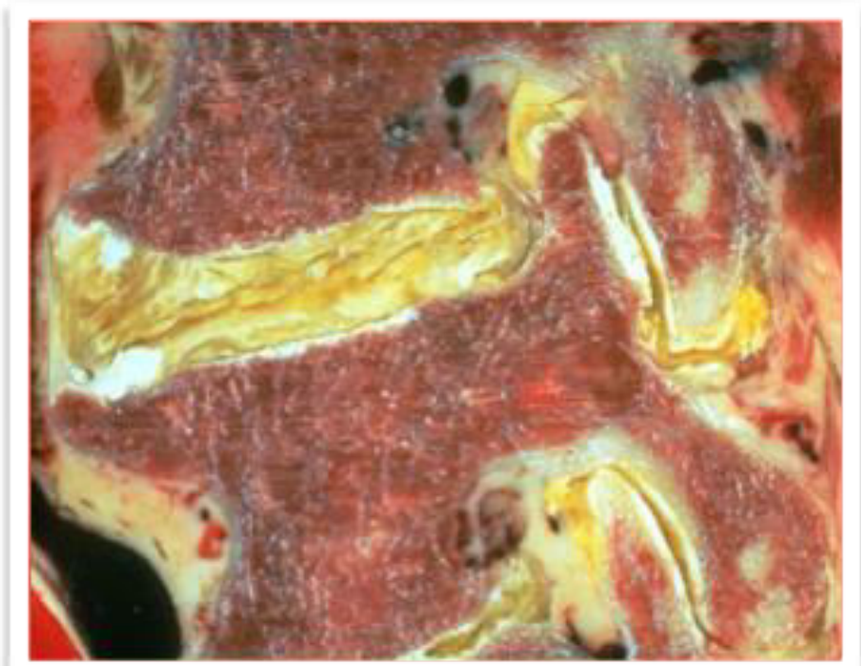
- **V**ictim
- **O**f
- **M**edical
- **I**maging
- **T**echnology

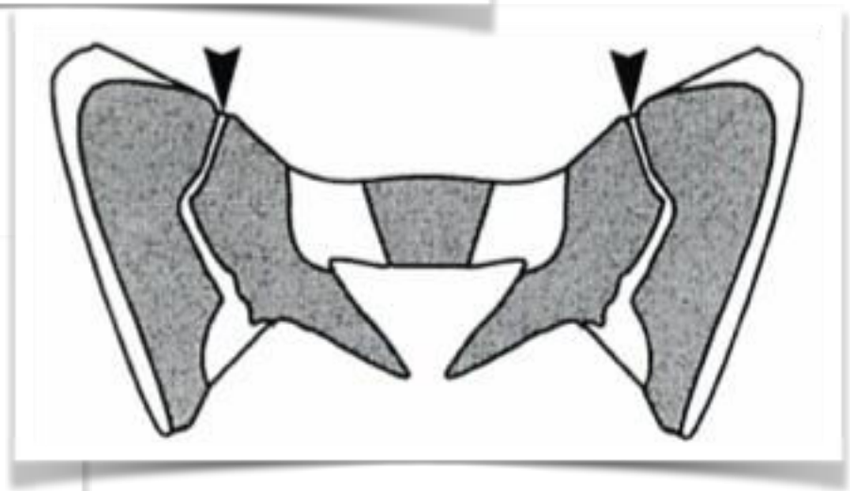


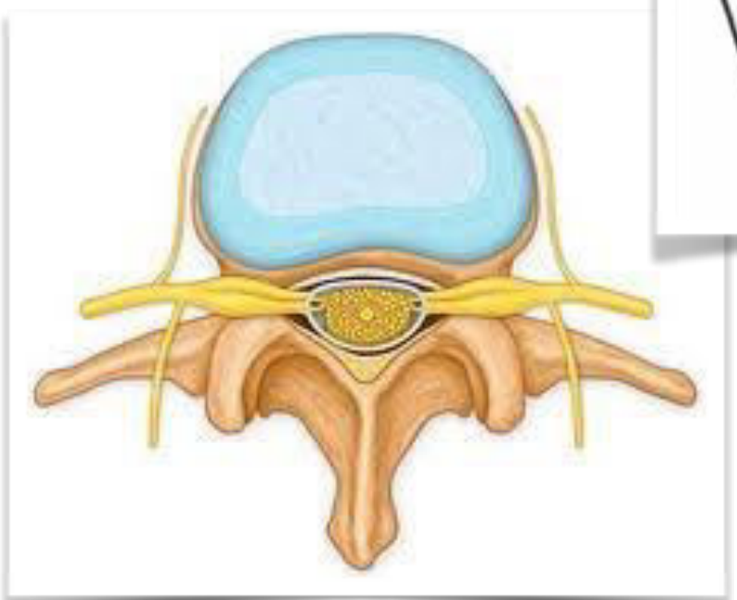


Pain generators

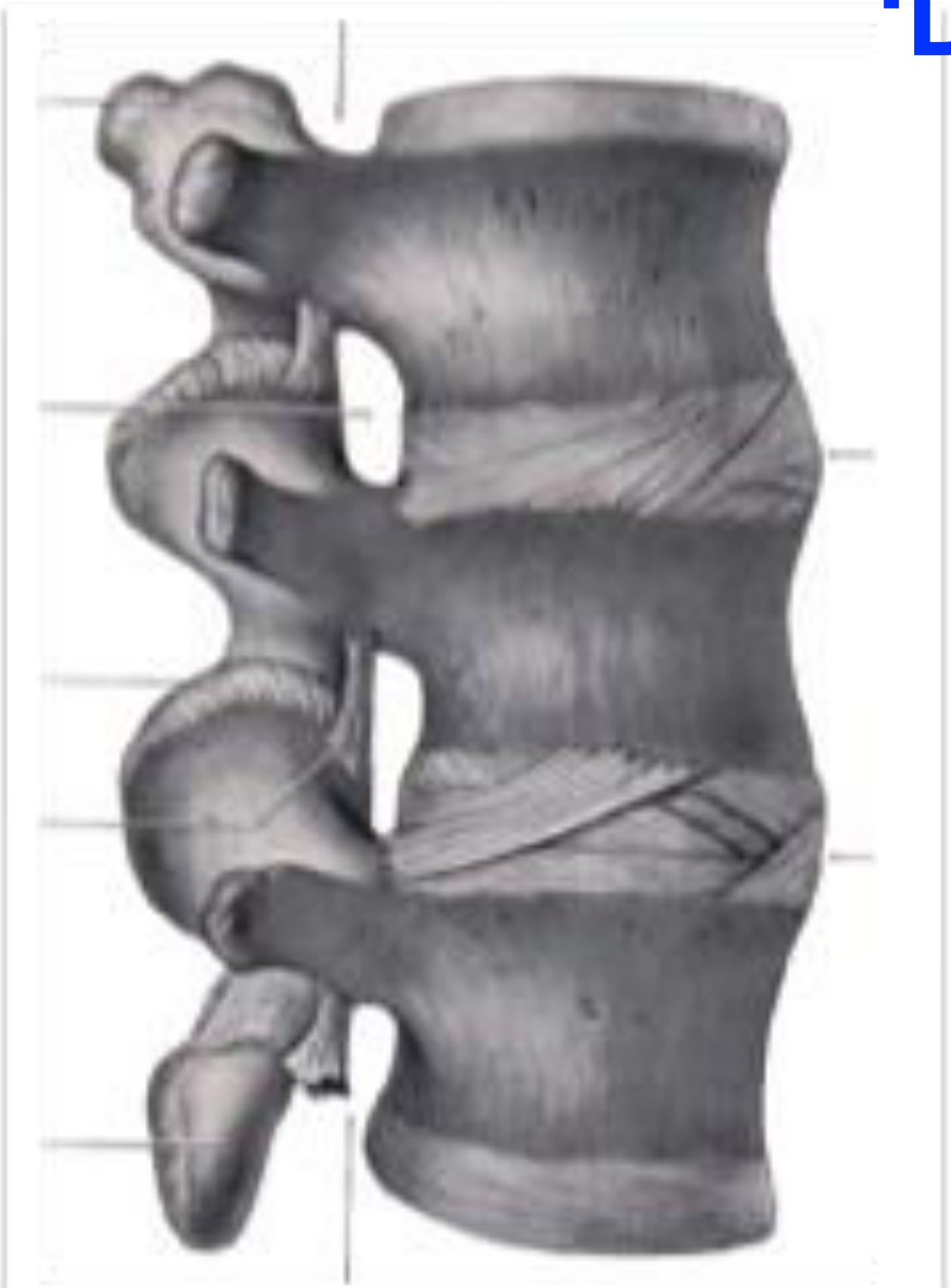
- Inter-vertebral discs
- Facet joints
- Vertebral body failure
- Spinal malalignment

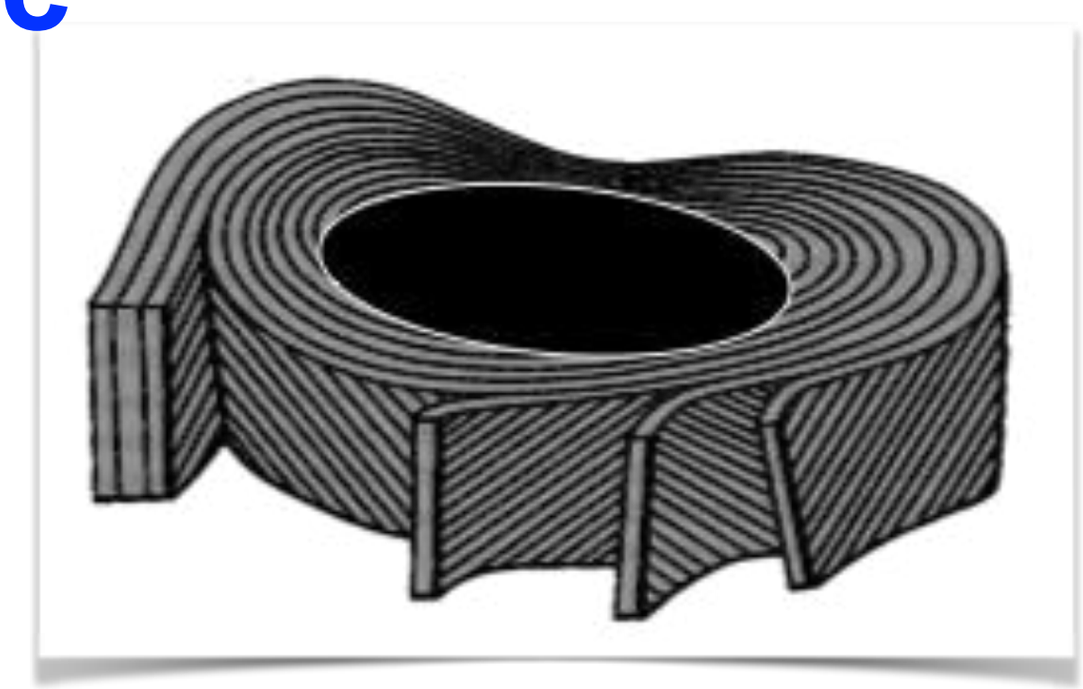


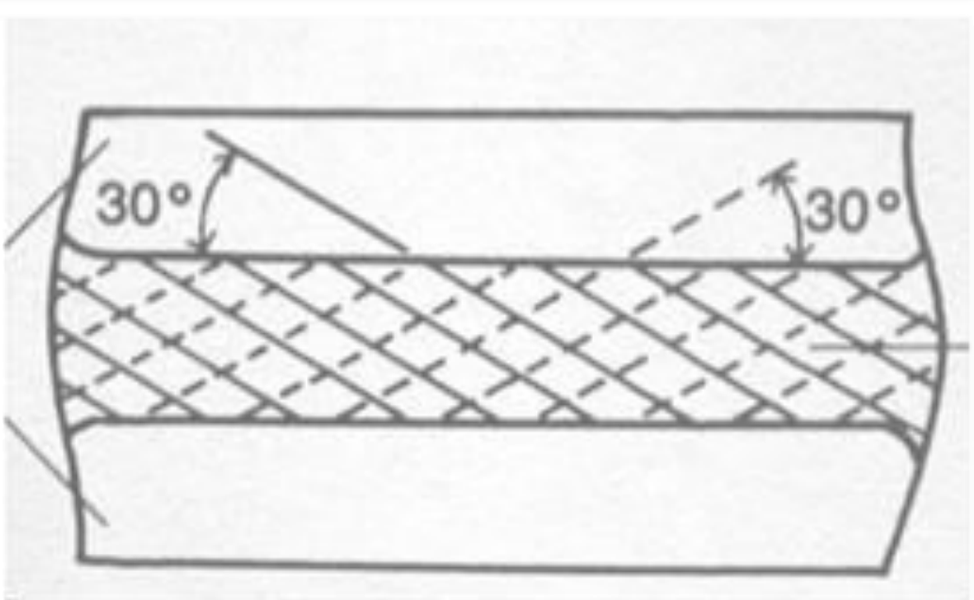


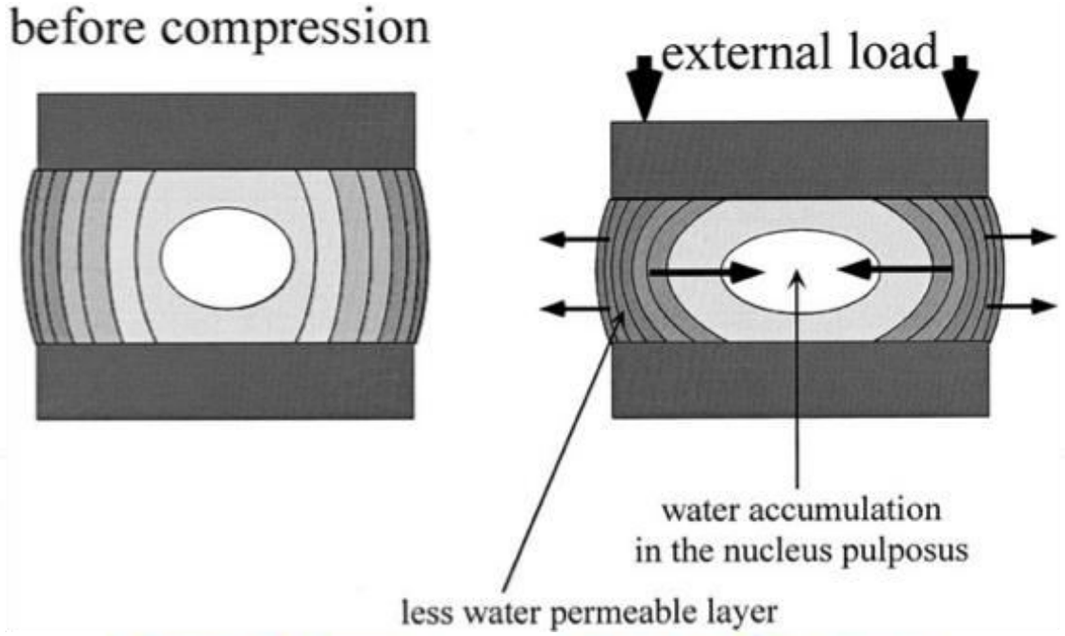


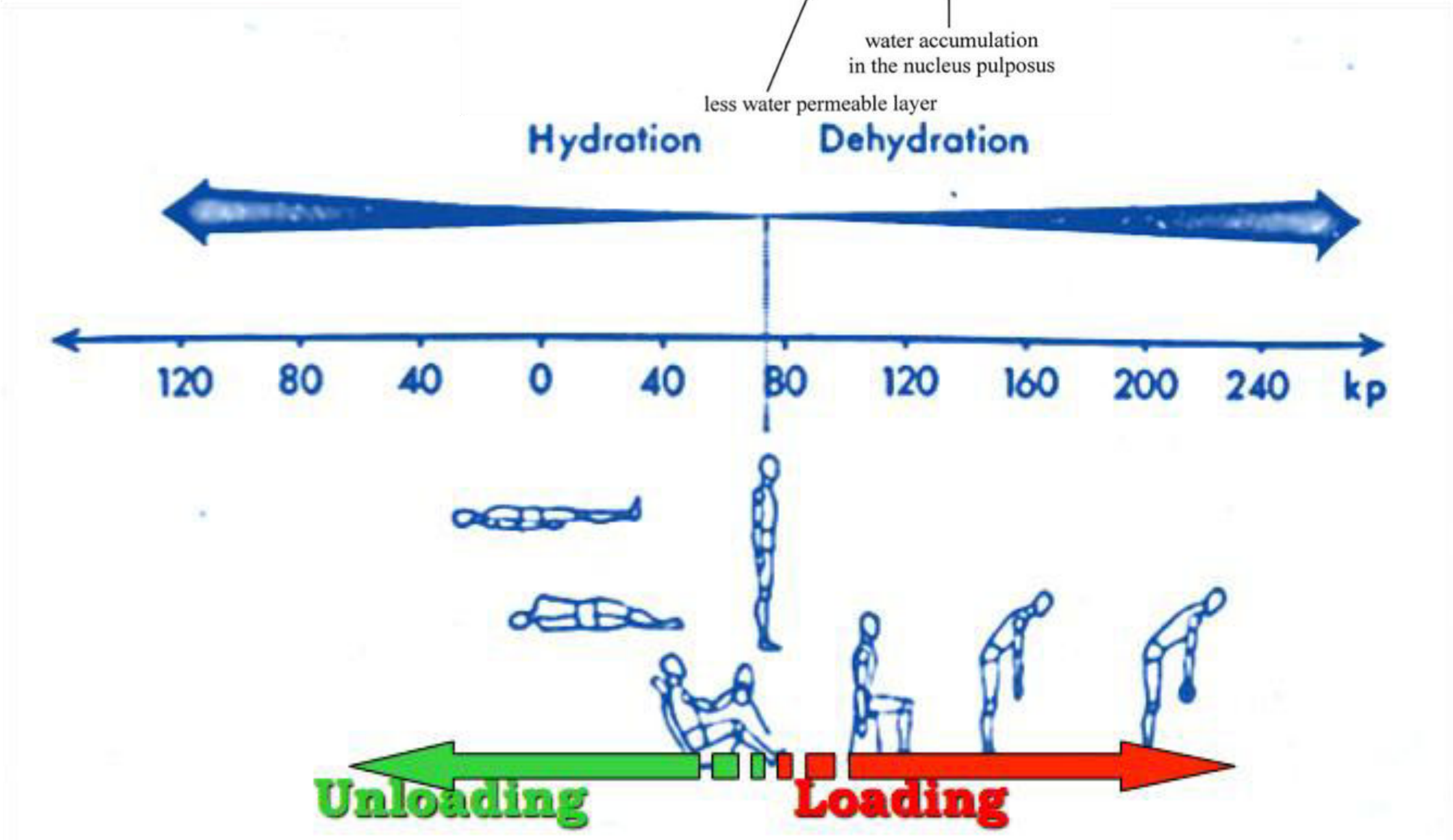
Inter-vertebral disc
‘Disc’



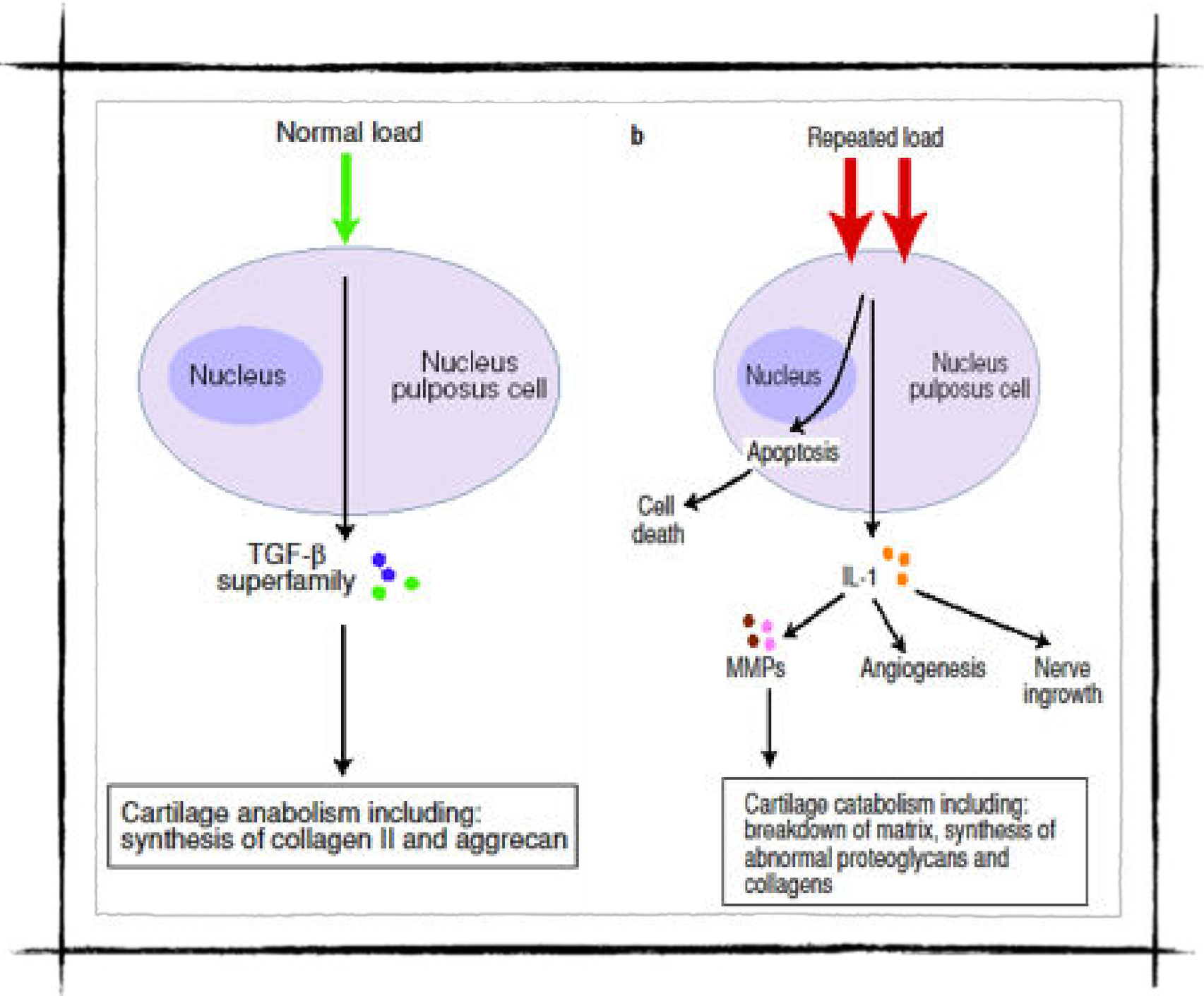


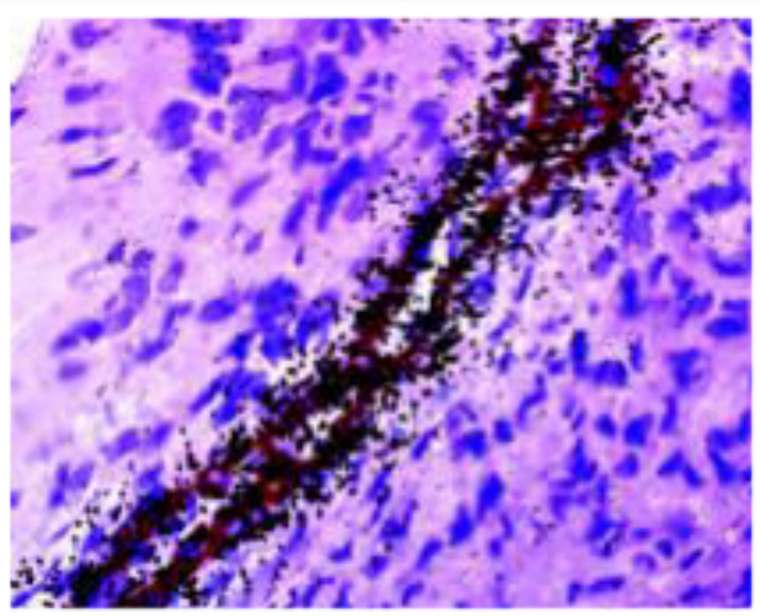


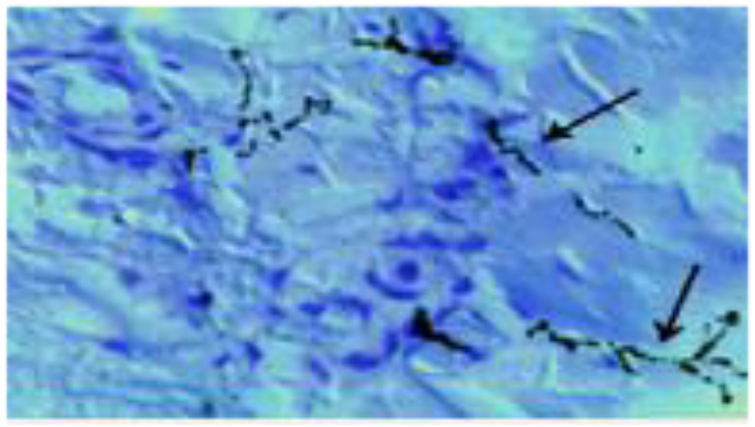

before compression
external load
water accumulation
in the nucleus pulposus
less water permeable layer


Hydration
Dehydration
120
80
40
0
40
80
120
160
200
240
kp
Unloading
Loading

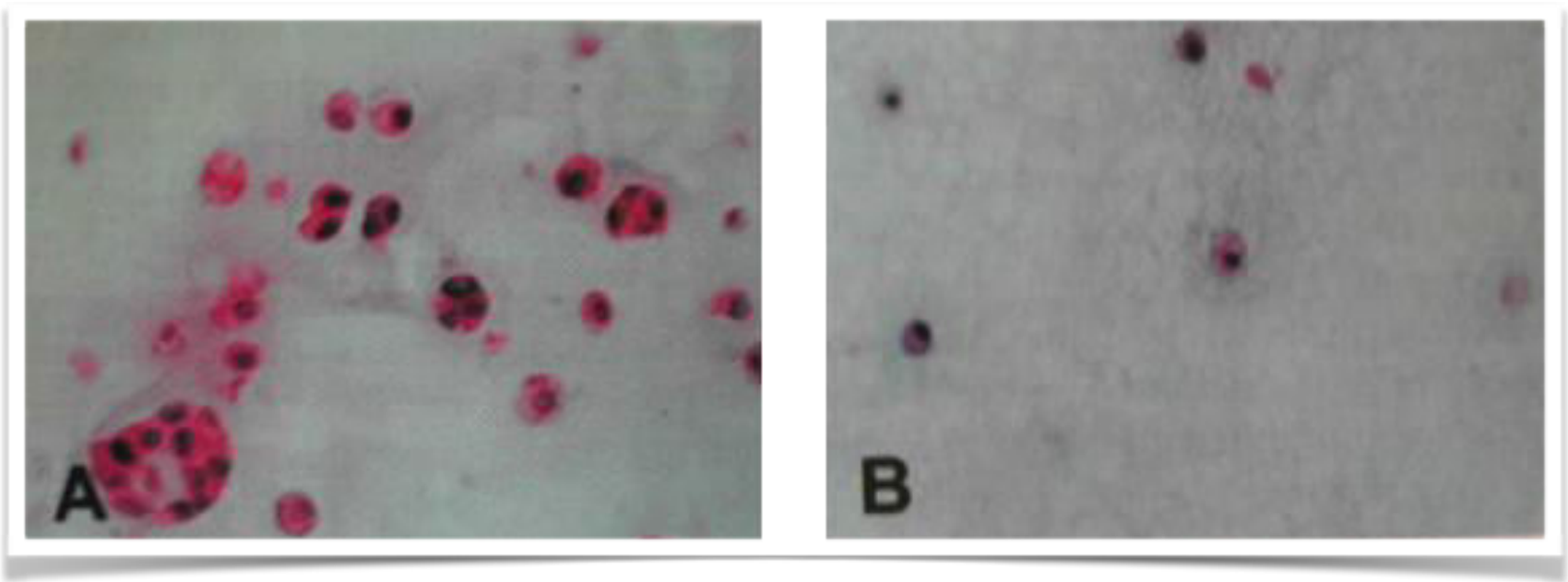
Cellular pathology leading to disc degeneration

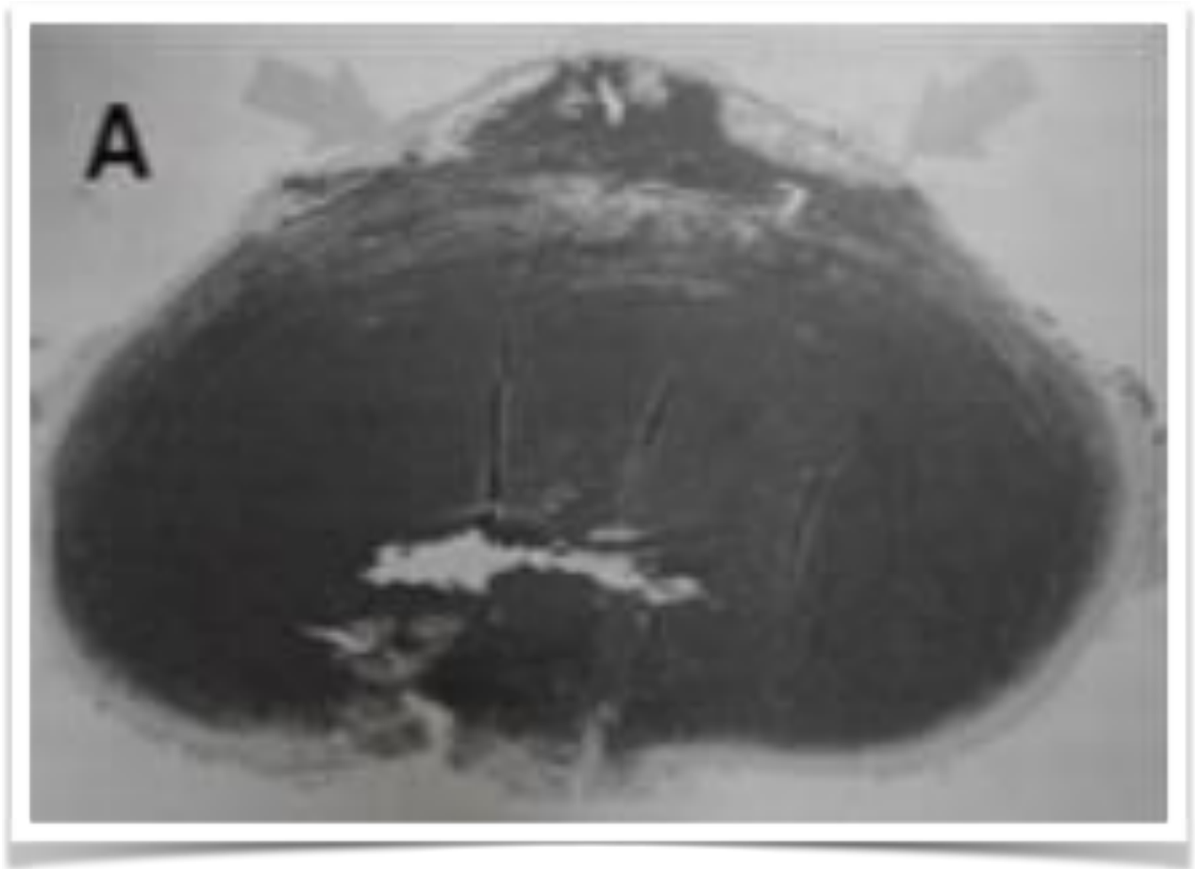


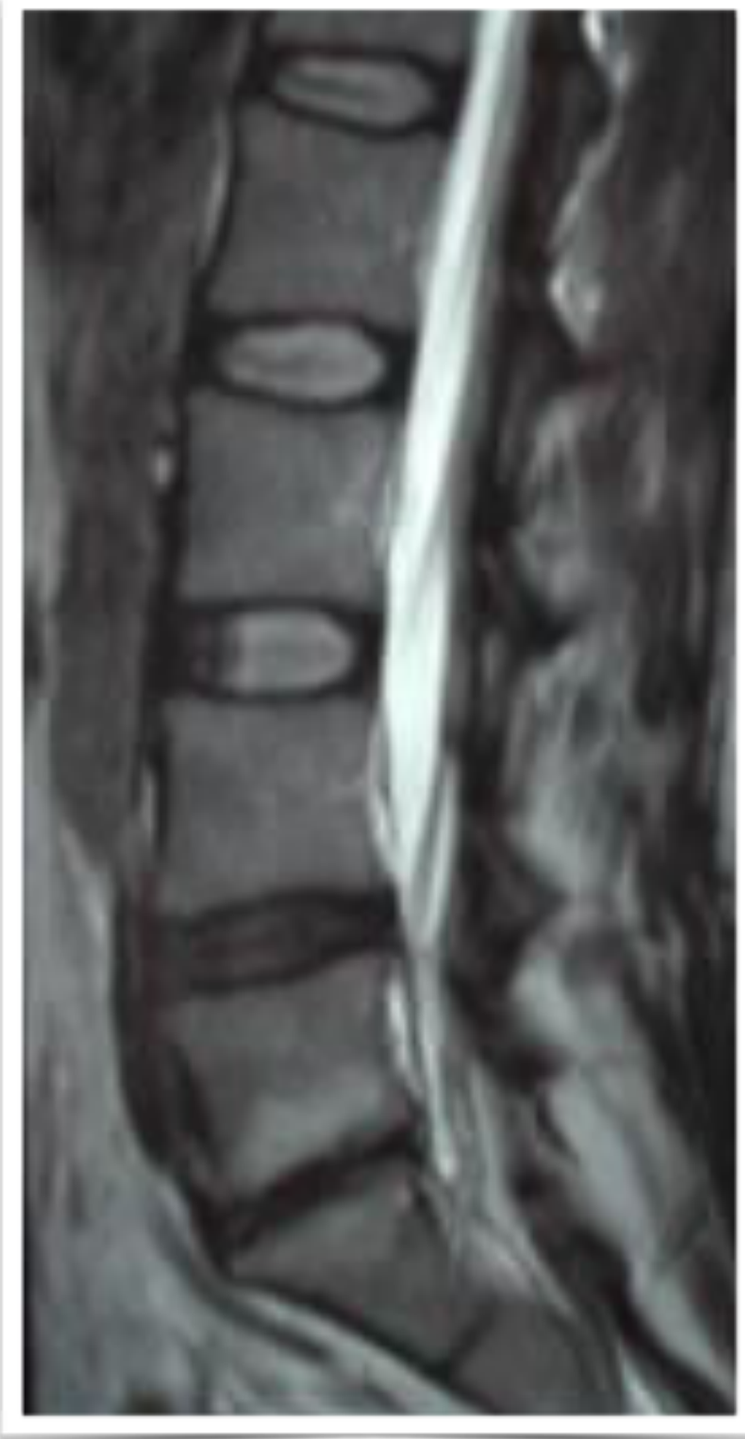




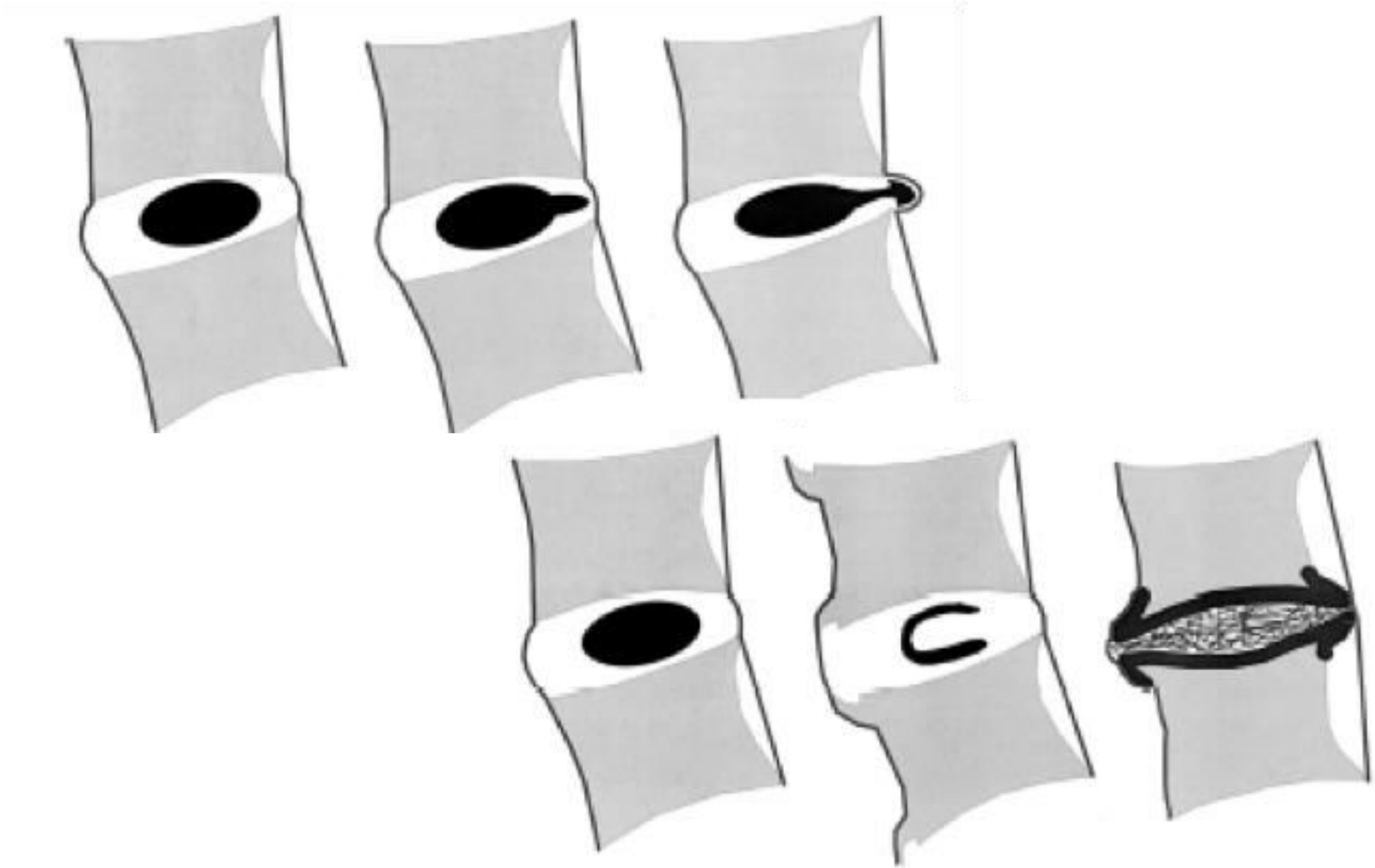
Micro & Macroscopic changes in the degenerate disc

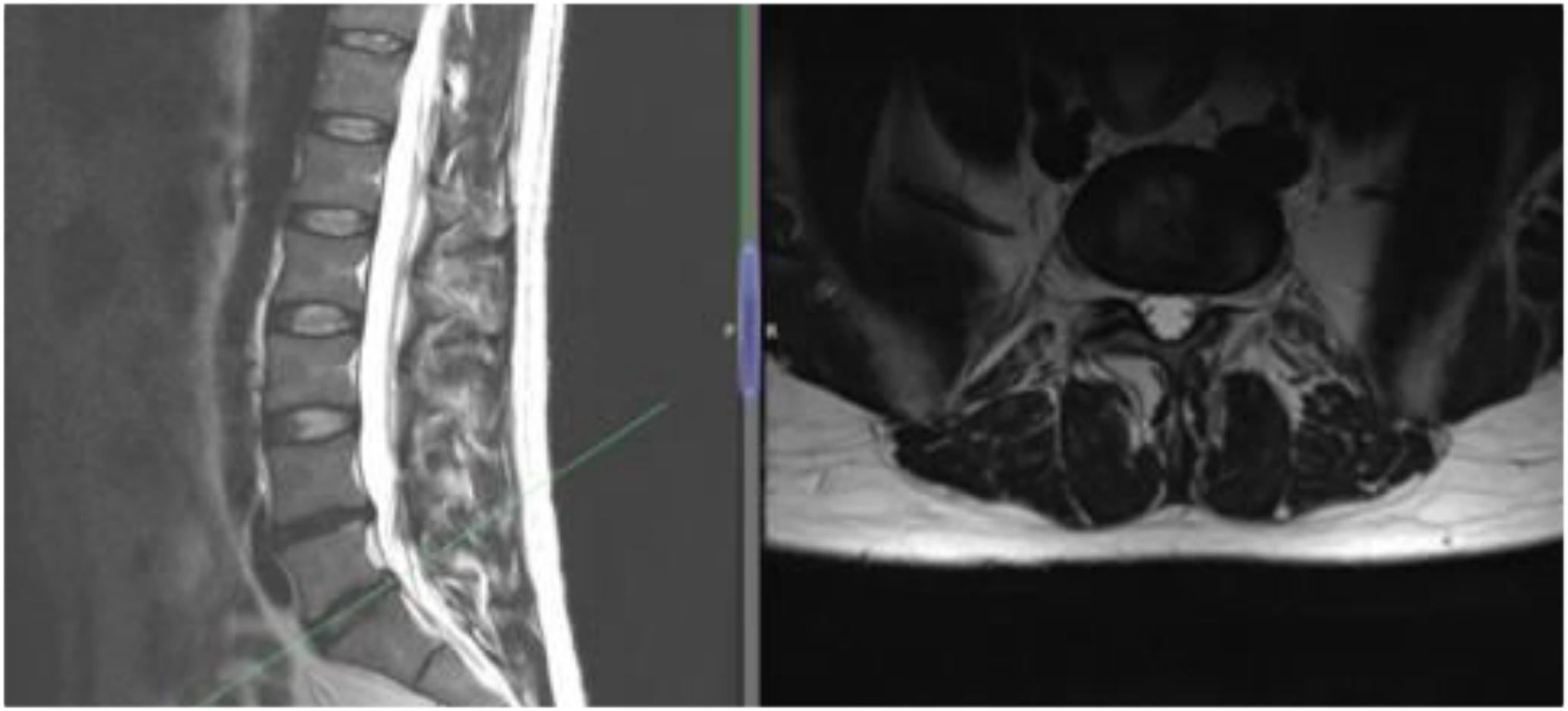


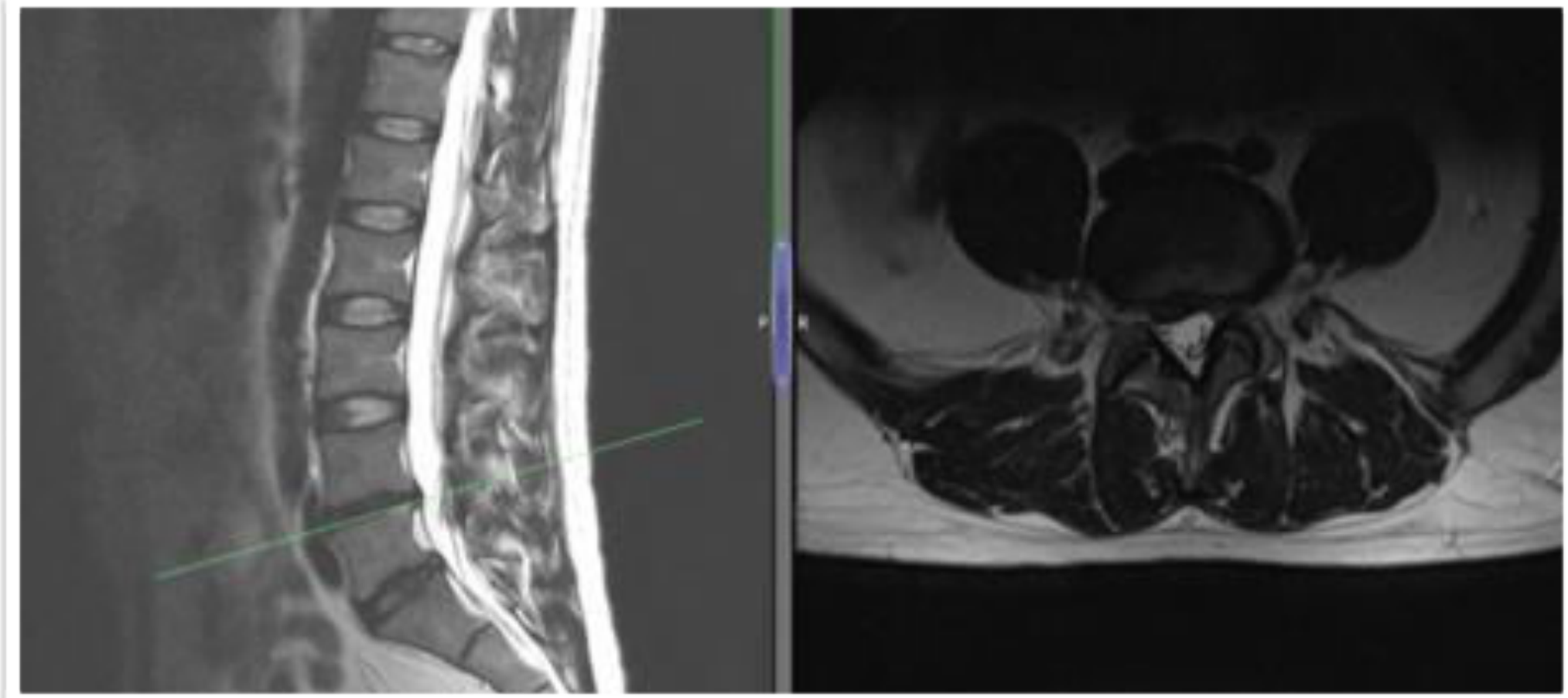




The degenerative cascade

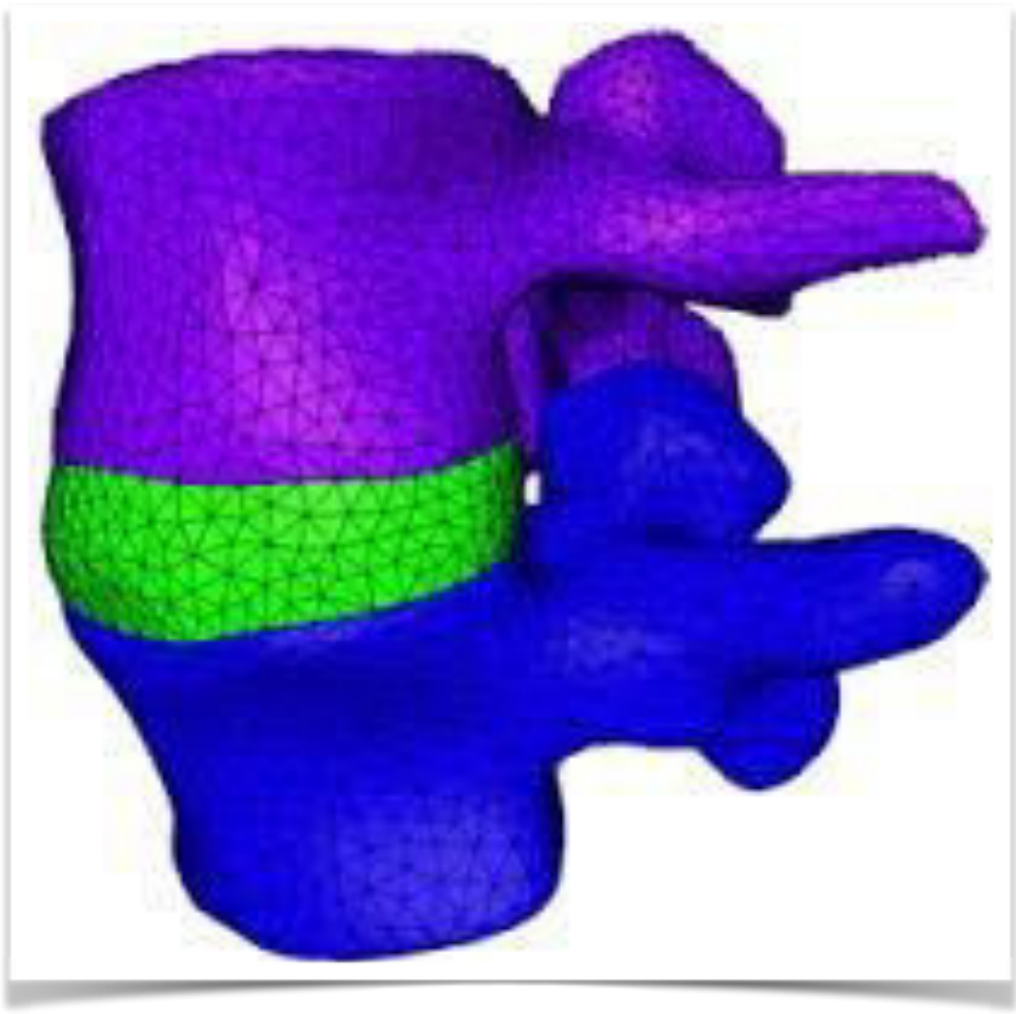




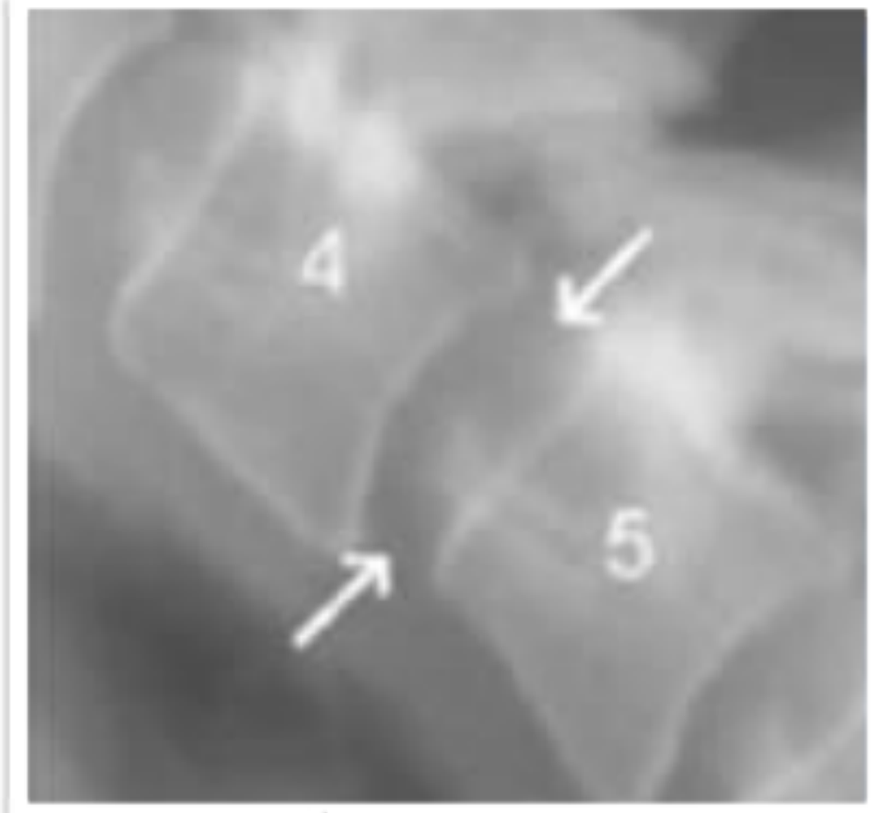


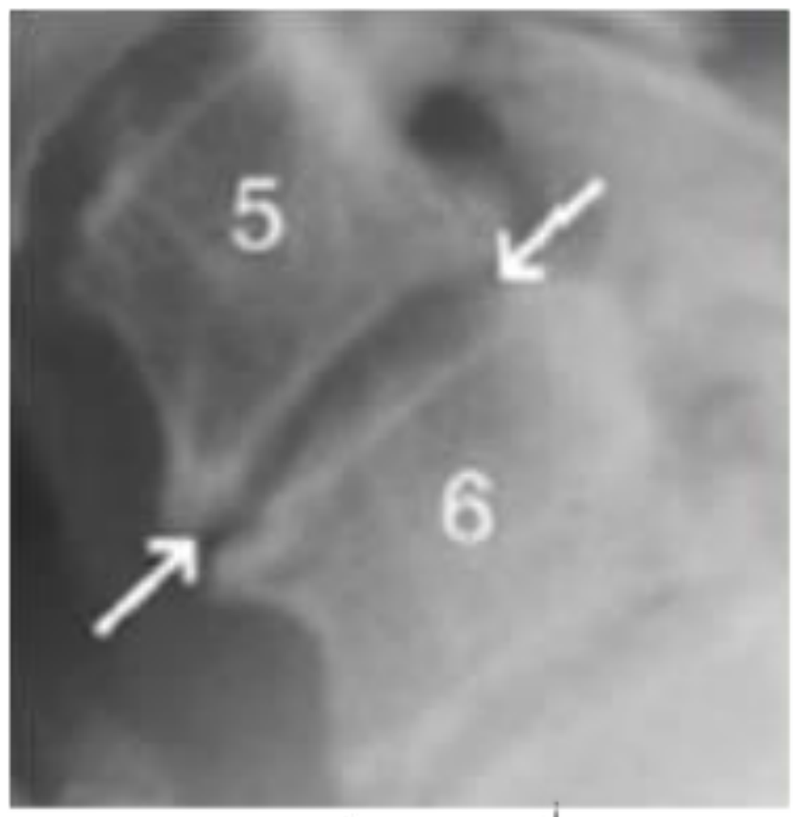
The motion segment

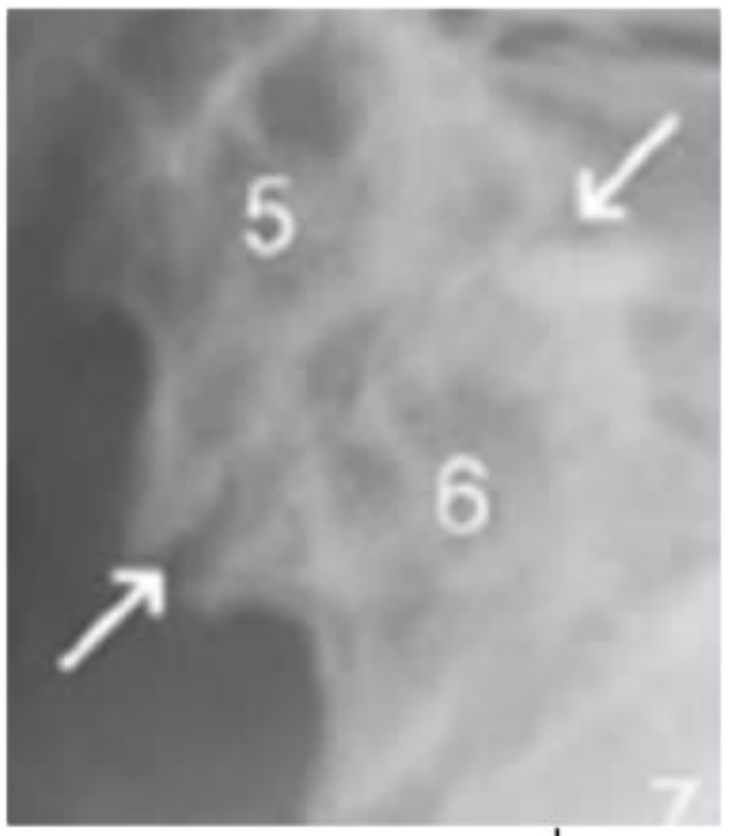
- Inter-vertebral disc
- End-plate: cartilage, bone
- Facet joints
- Passive restraints: Ligaments

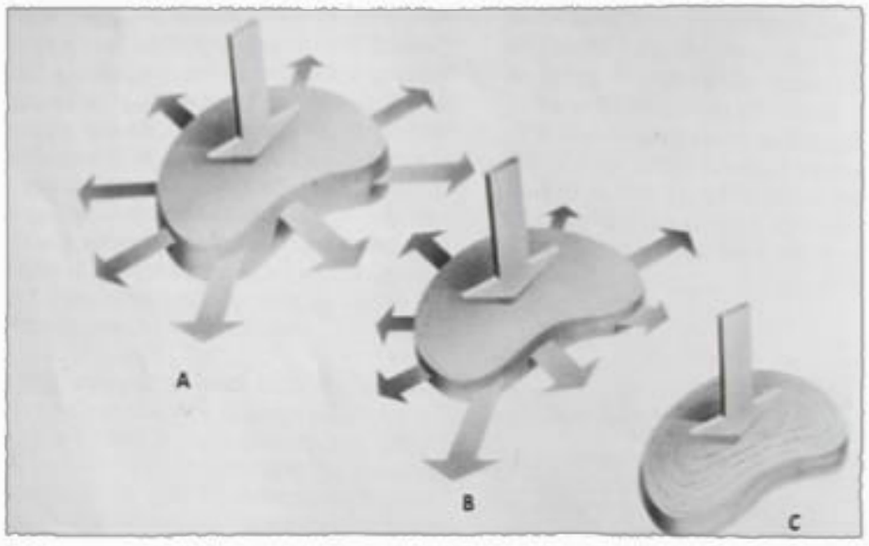


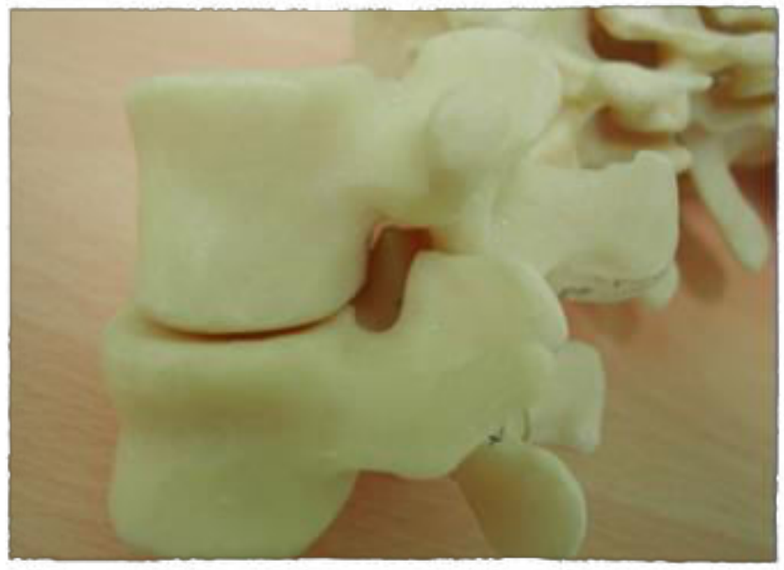
Disc height and degeneration



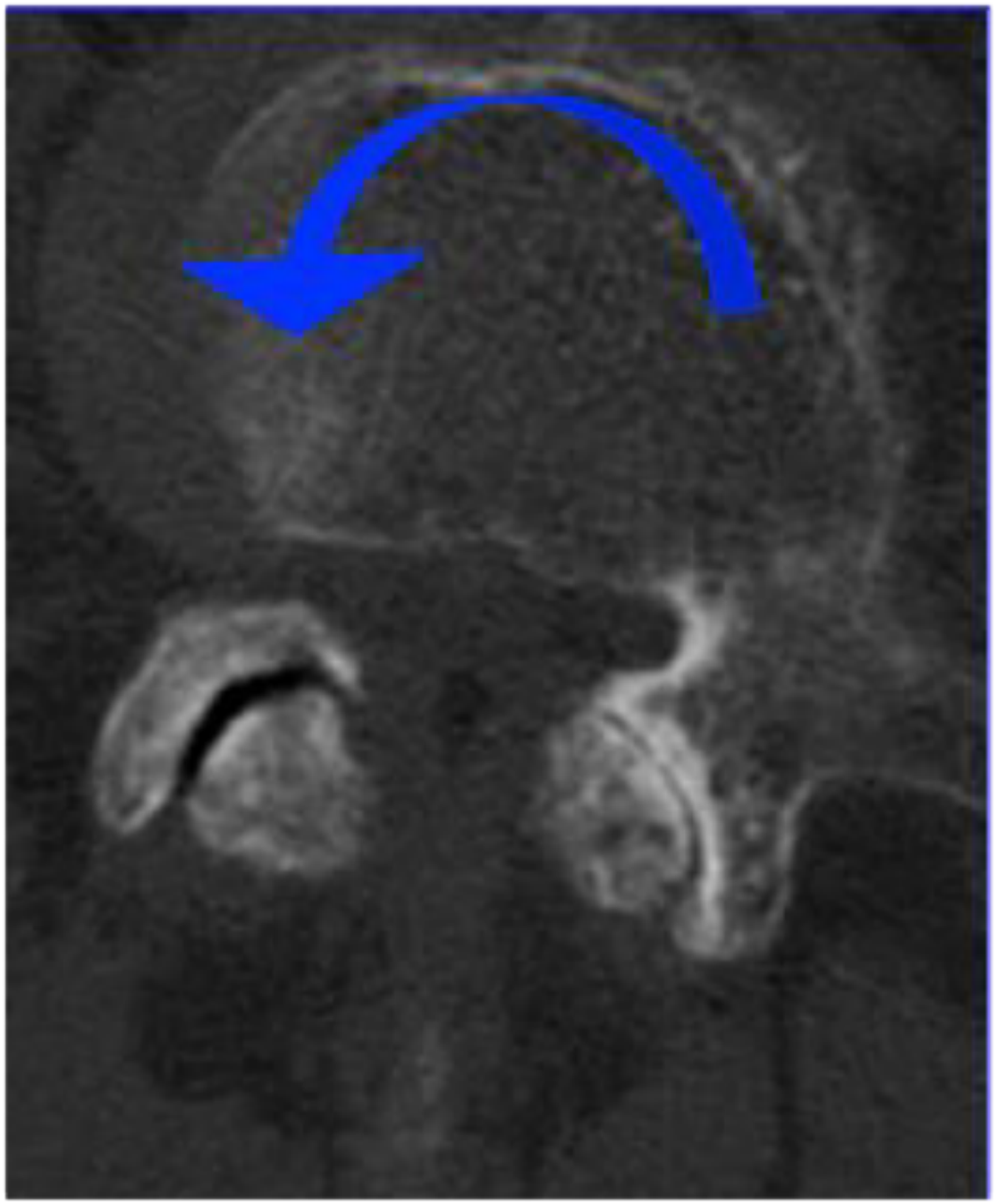


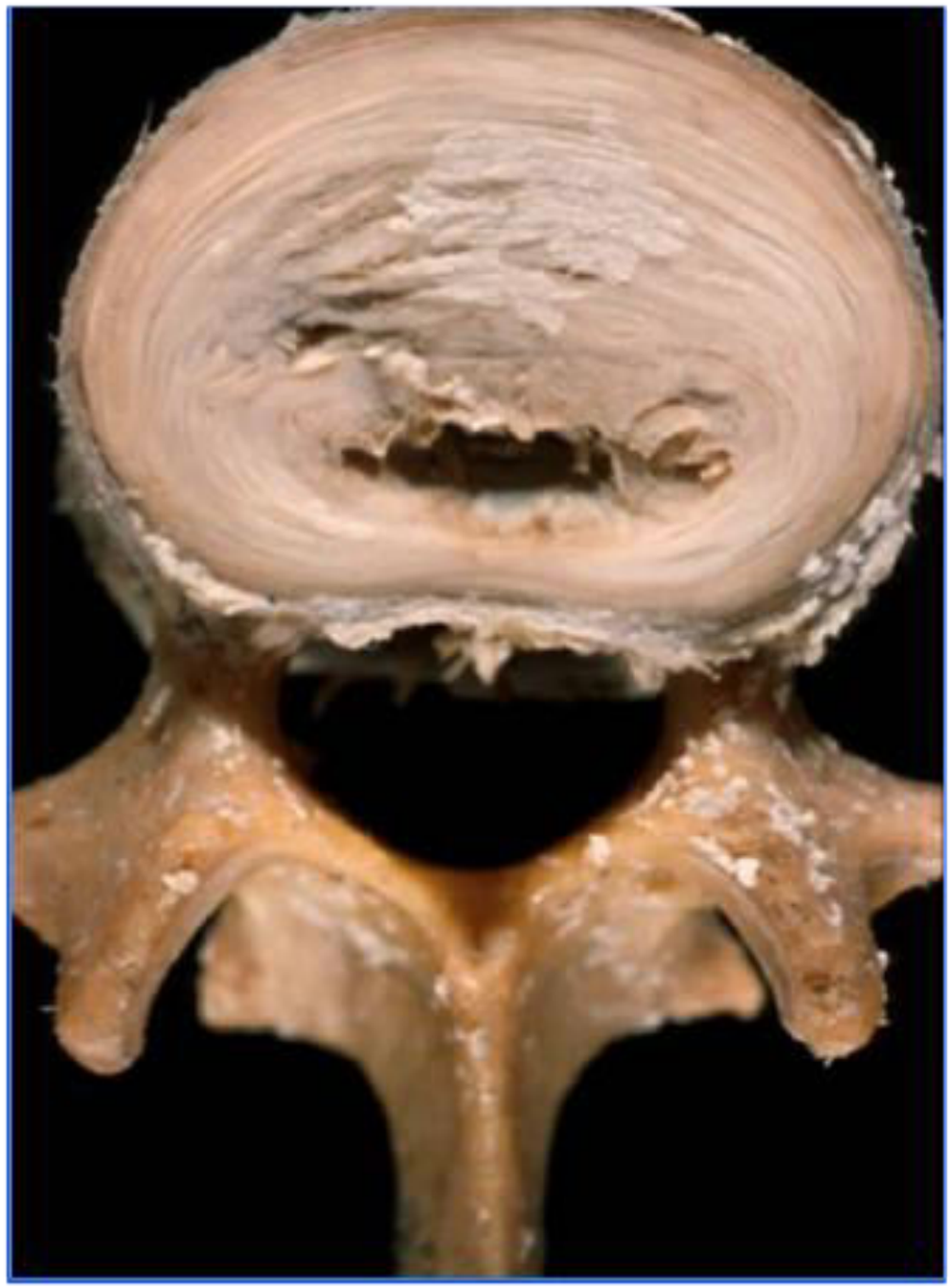




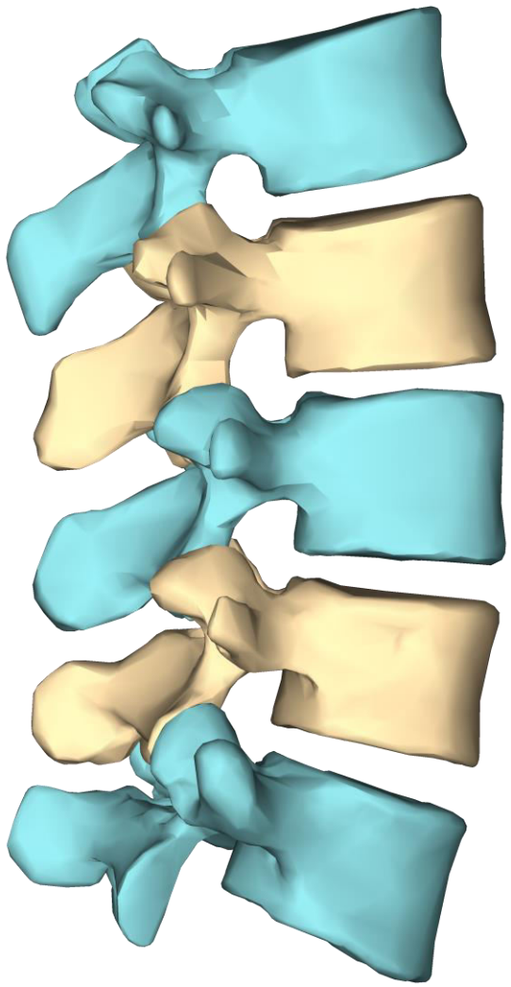


Disc v facet arthritis

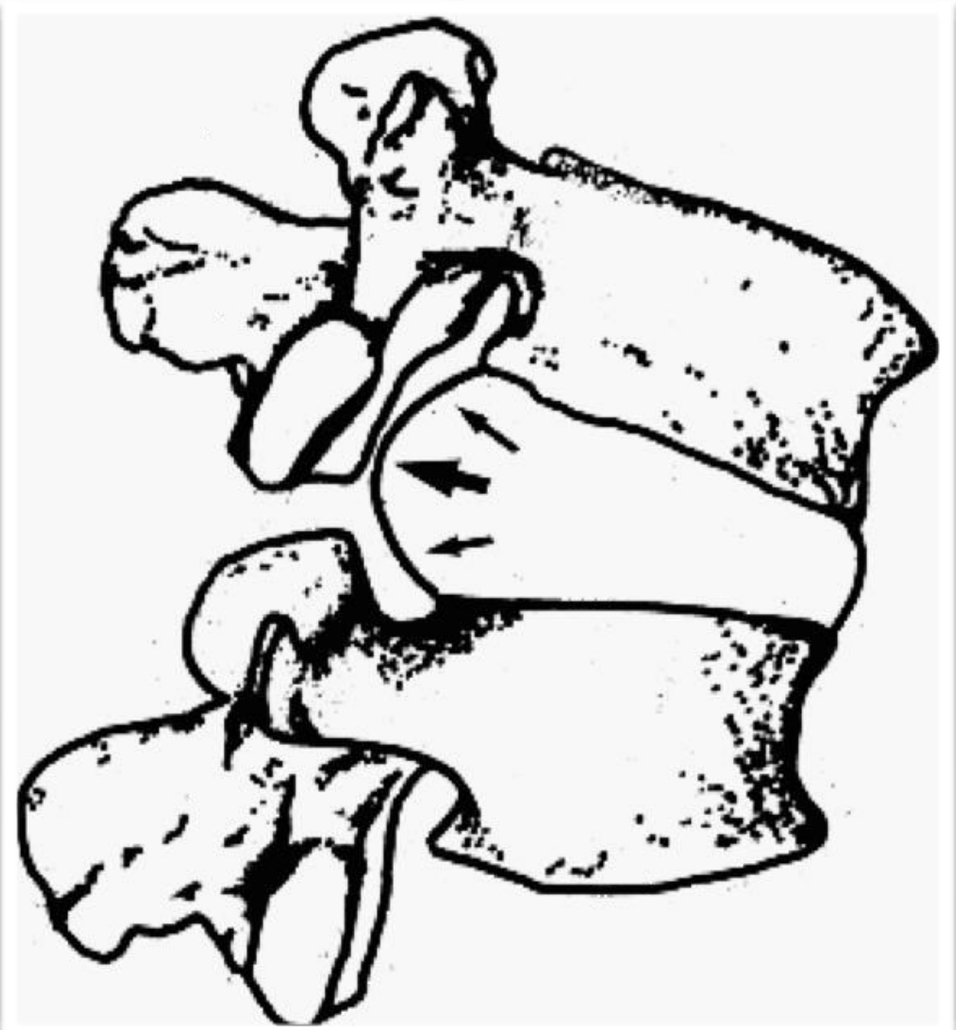




Discogenic v Facetogenic

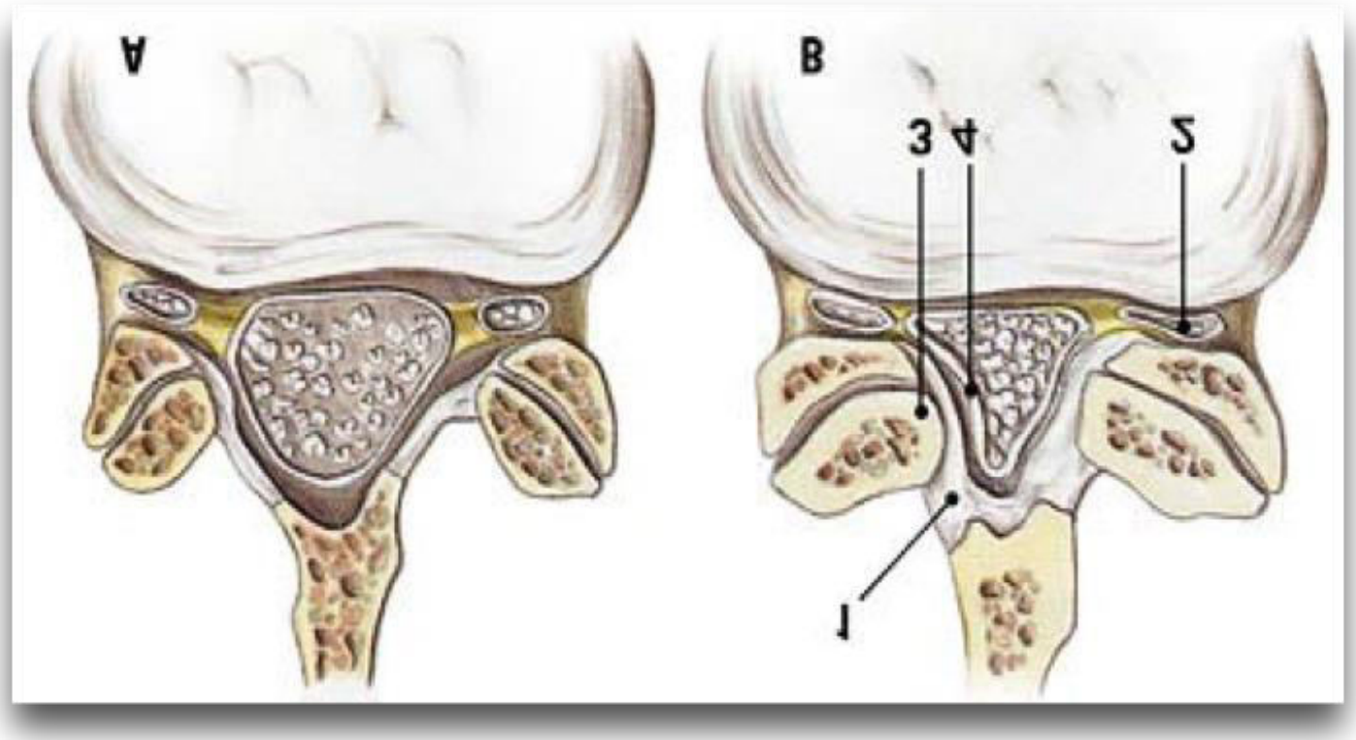


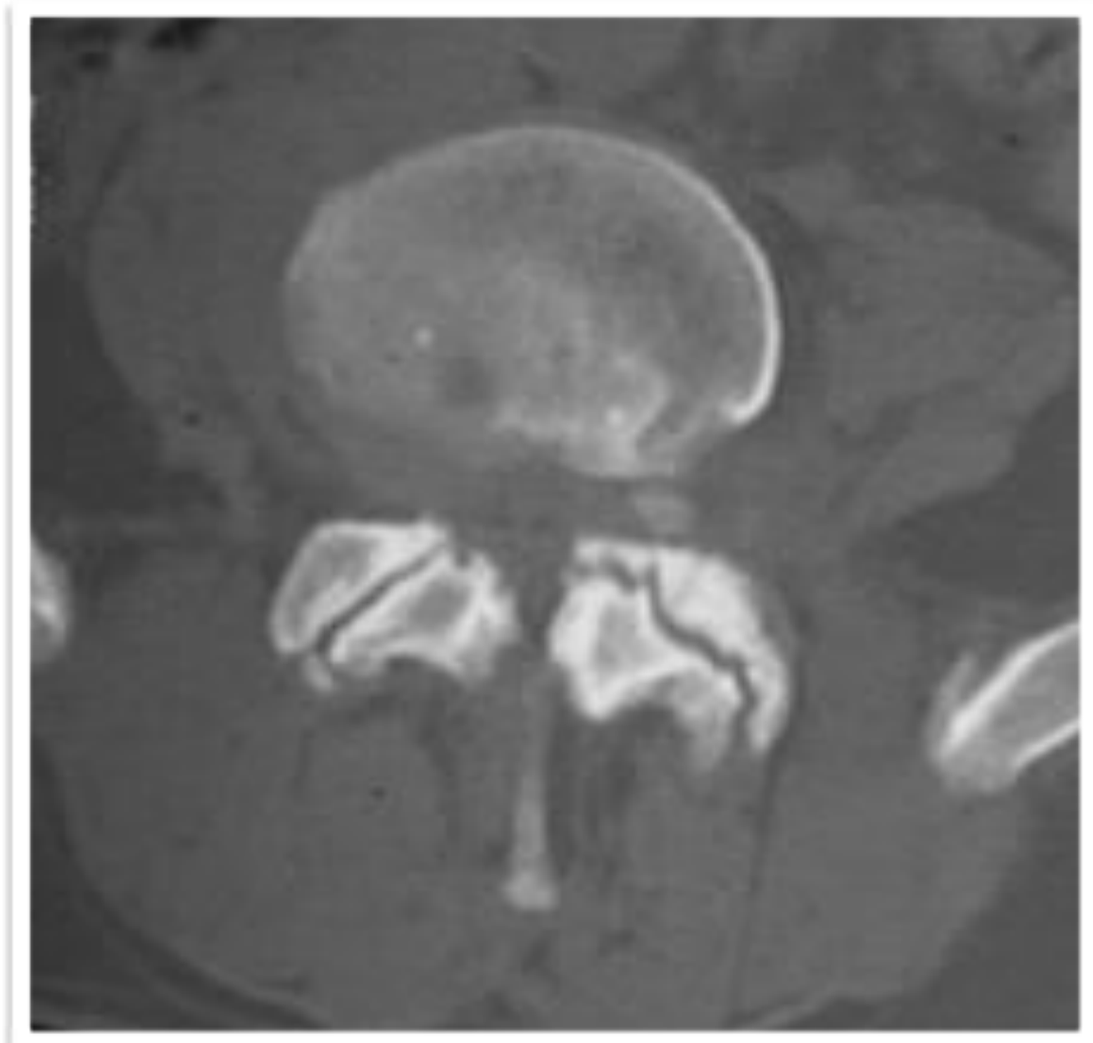
Extension



Flexion

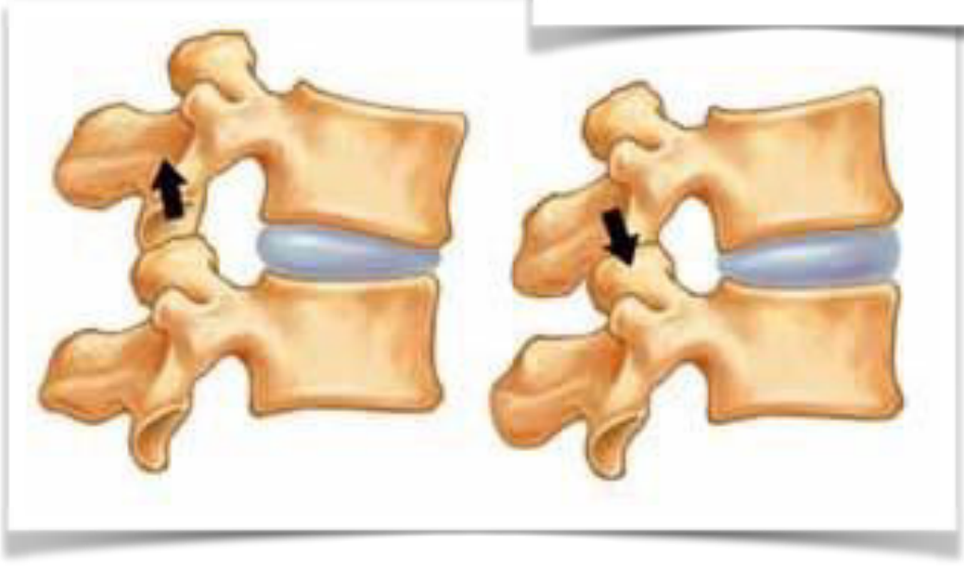
Facet arthritis



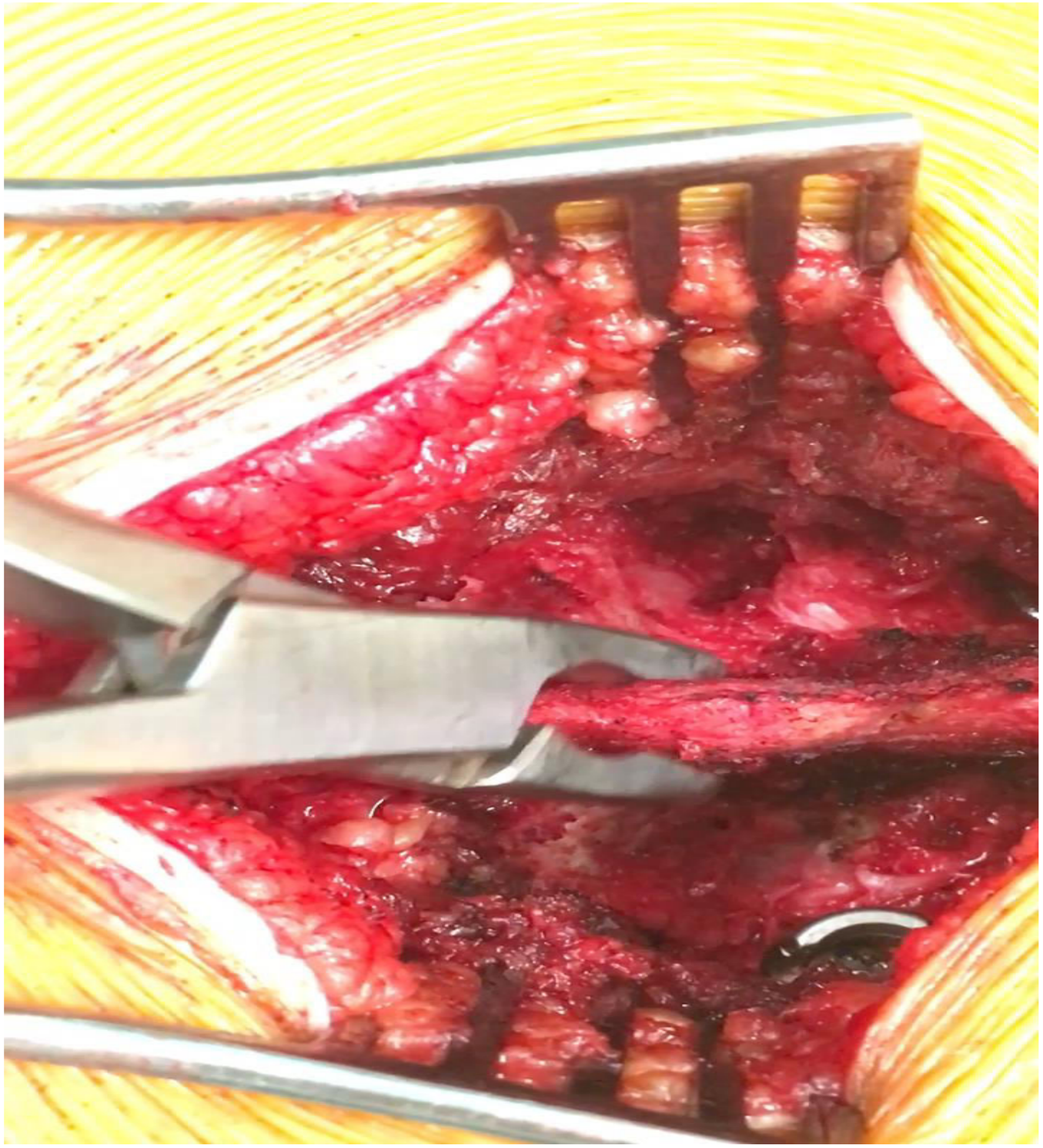


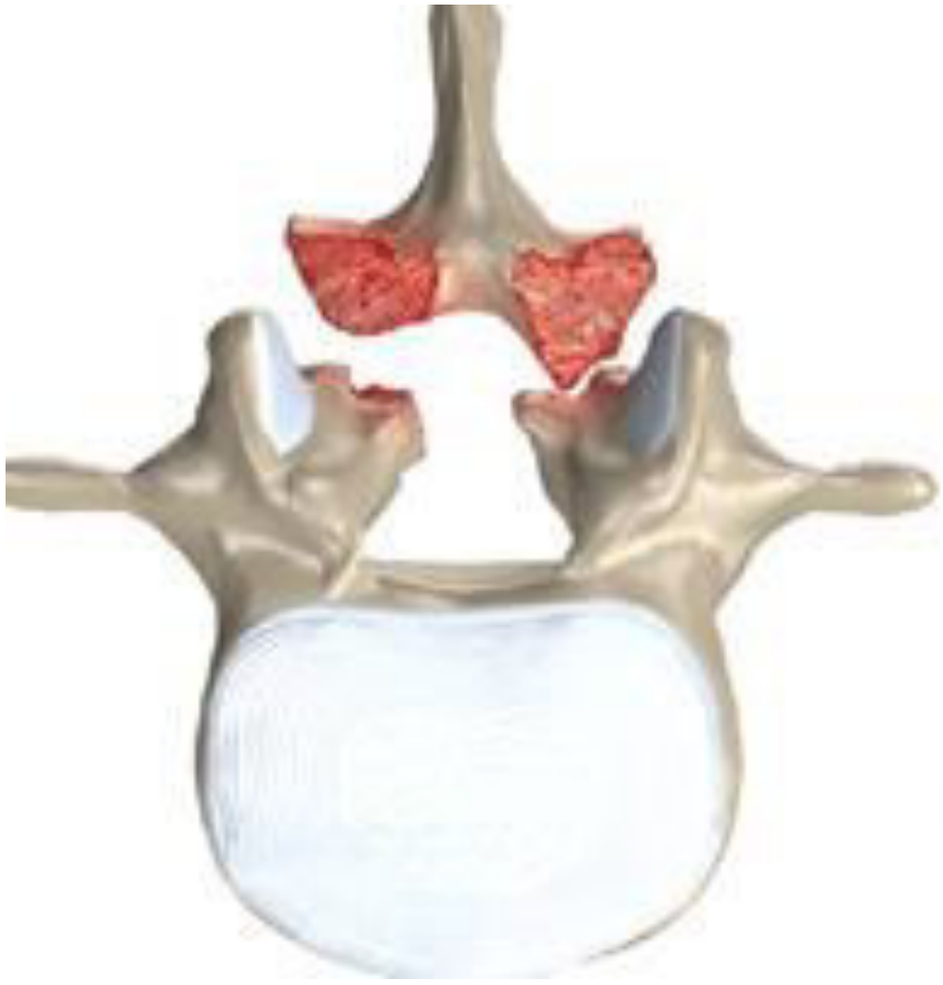
Facetogenic back pain

- Back pain
- Thigh pain
- Worse on extension
- Pain on getting out of bed
- Pain on arising from sitting



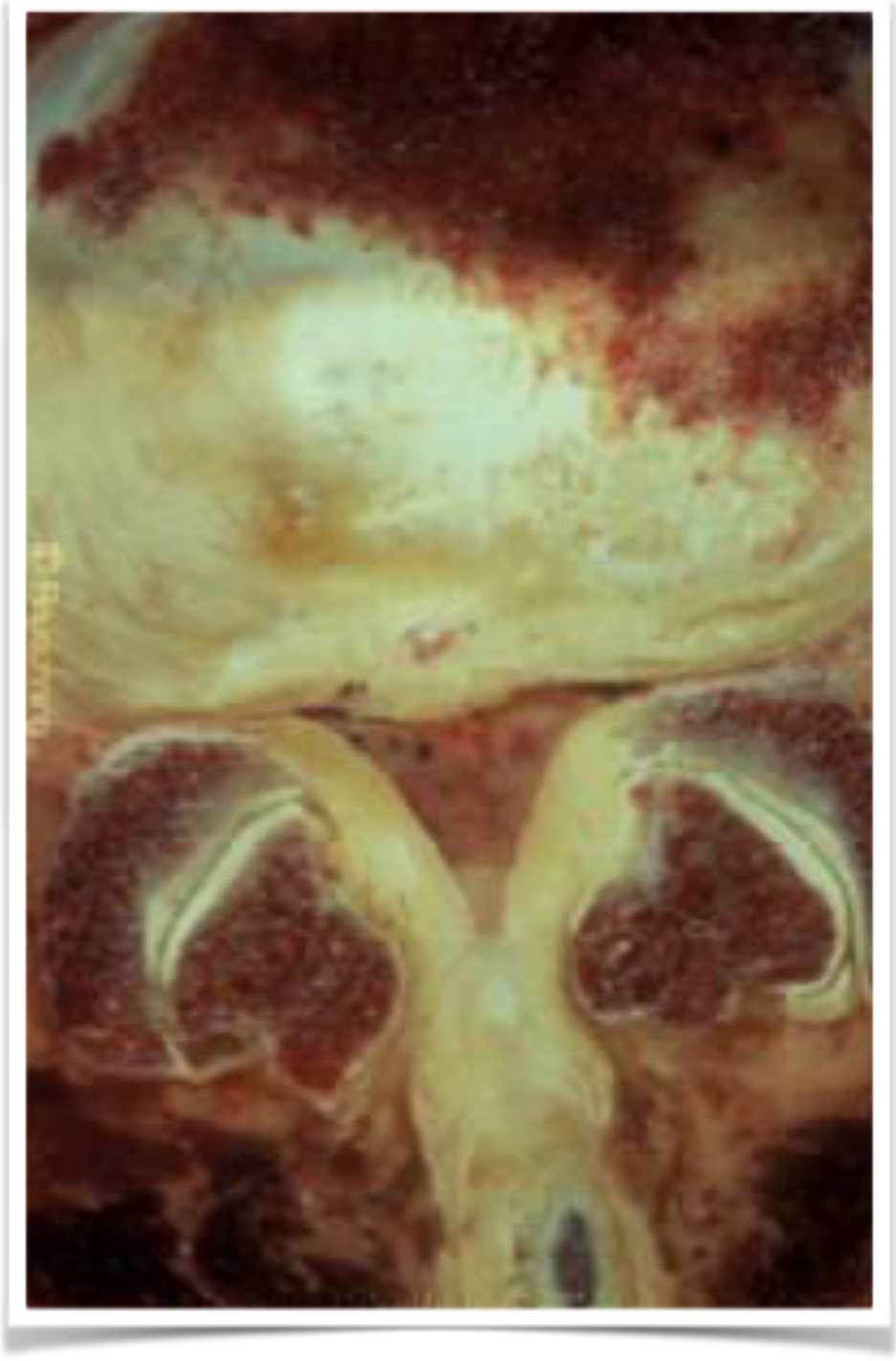
Spondylolysis



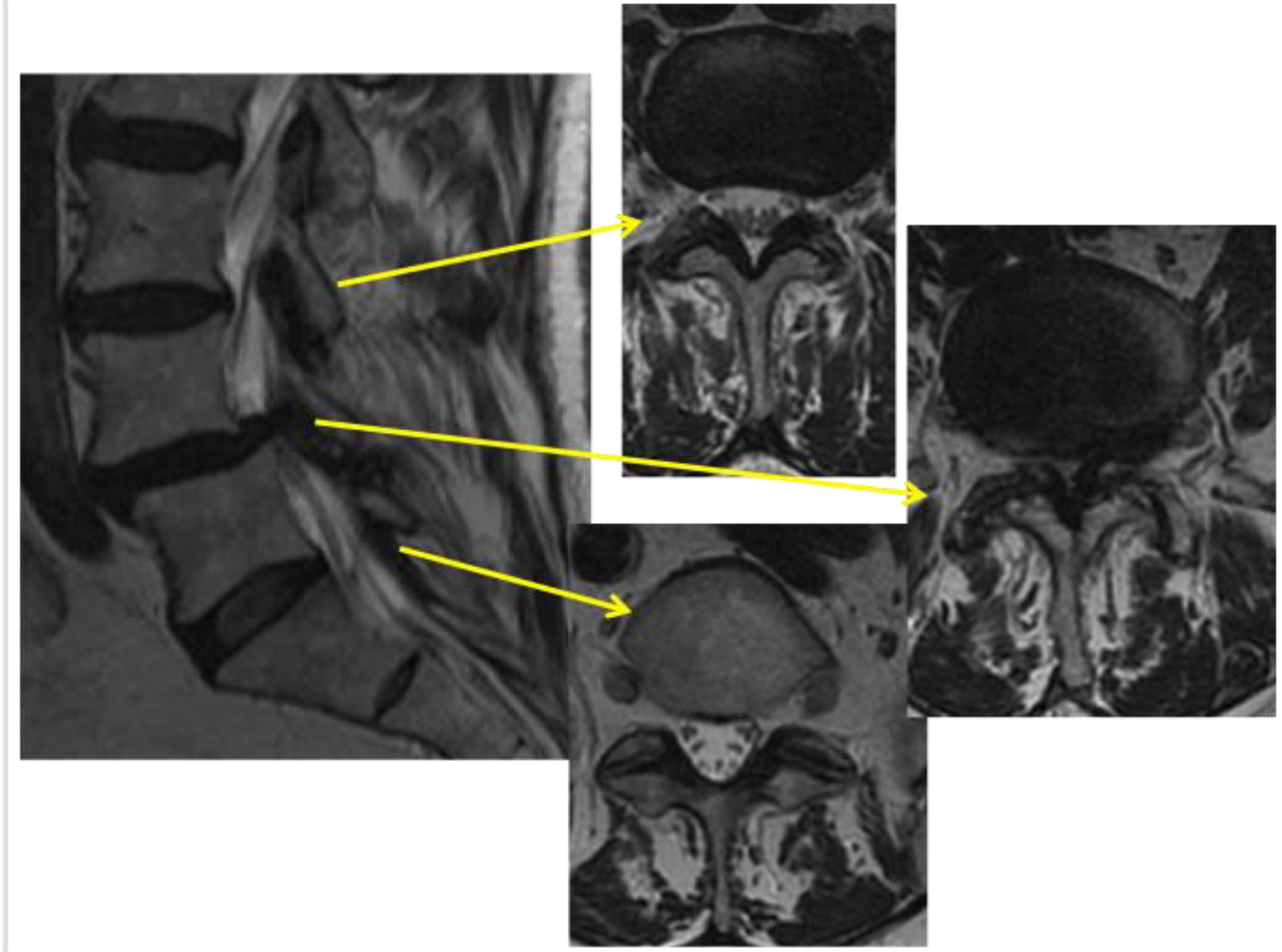


Lumbar canal stenosis

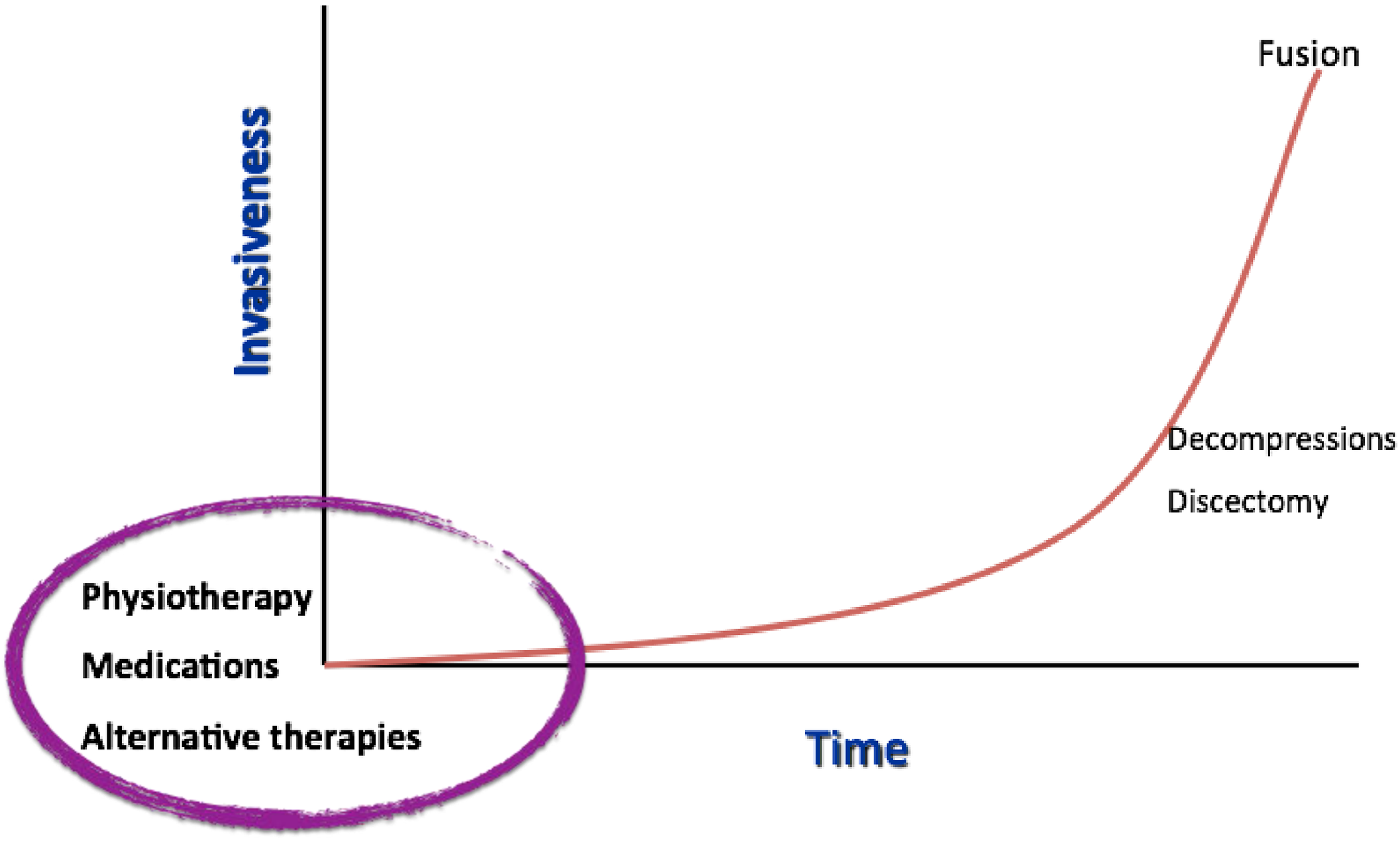
- Narrowing of the spinal canal
- Neural compression
- Directional compression
- Constitutional shape



Degenerate spondylolisthesis

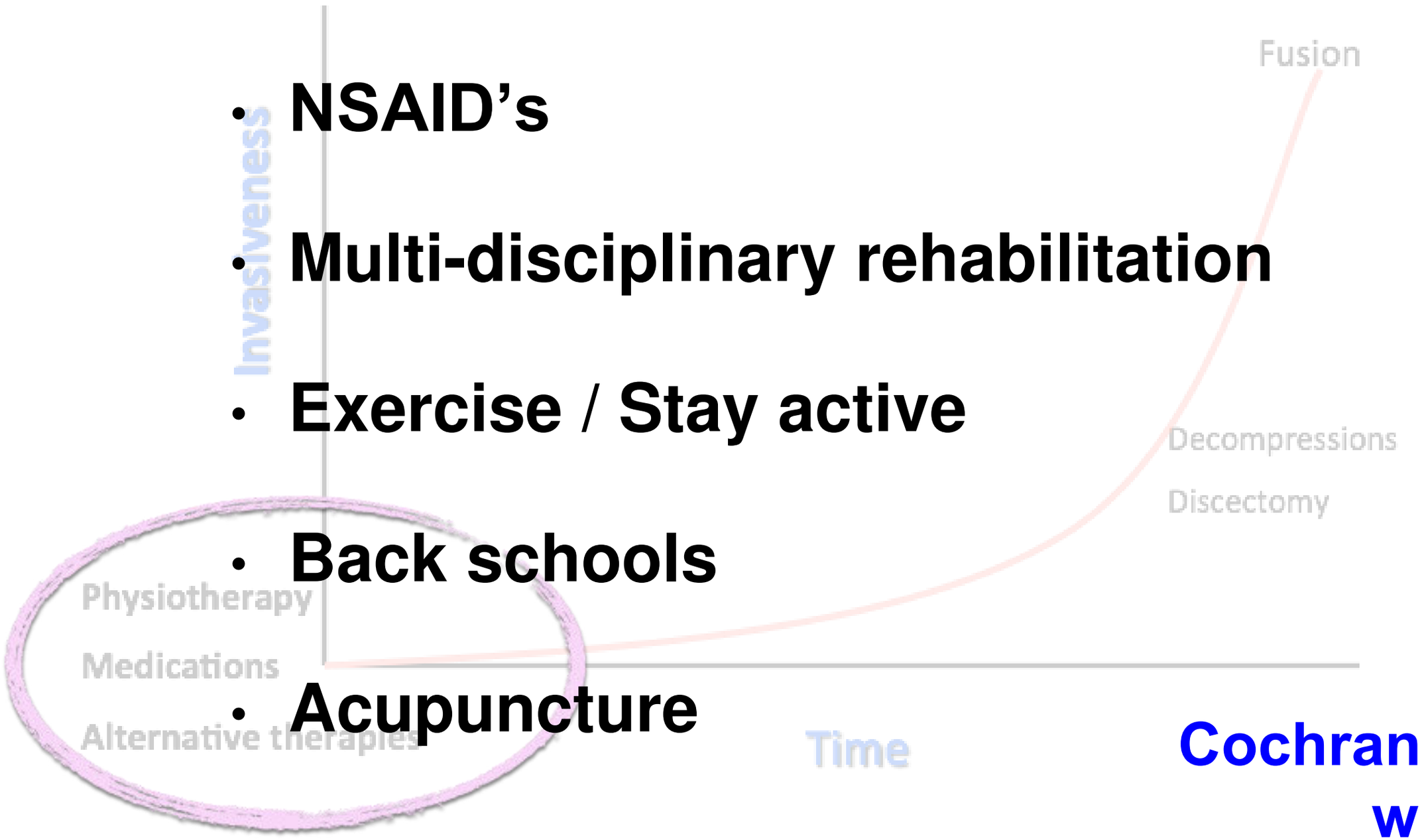


Treatment options



Treatment options with positive benefit

- **Manipulation / Massage**
- **NSAID's**
- **Multi-disciplinary rehabilitation**
- **Exercise / Stay active**
- **Back schools**
- **Acupuncture**



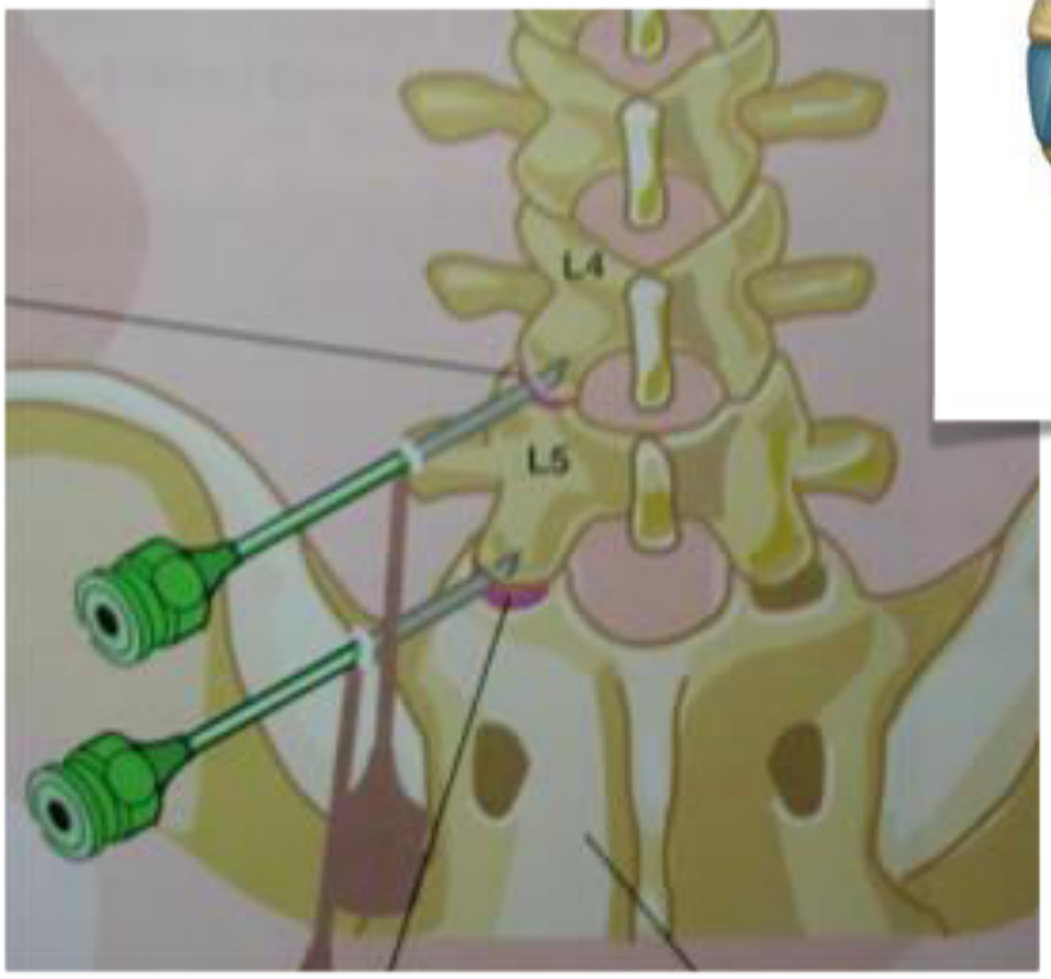
Cochrane revie w

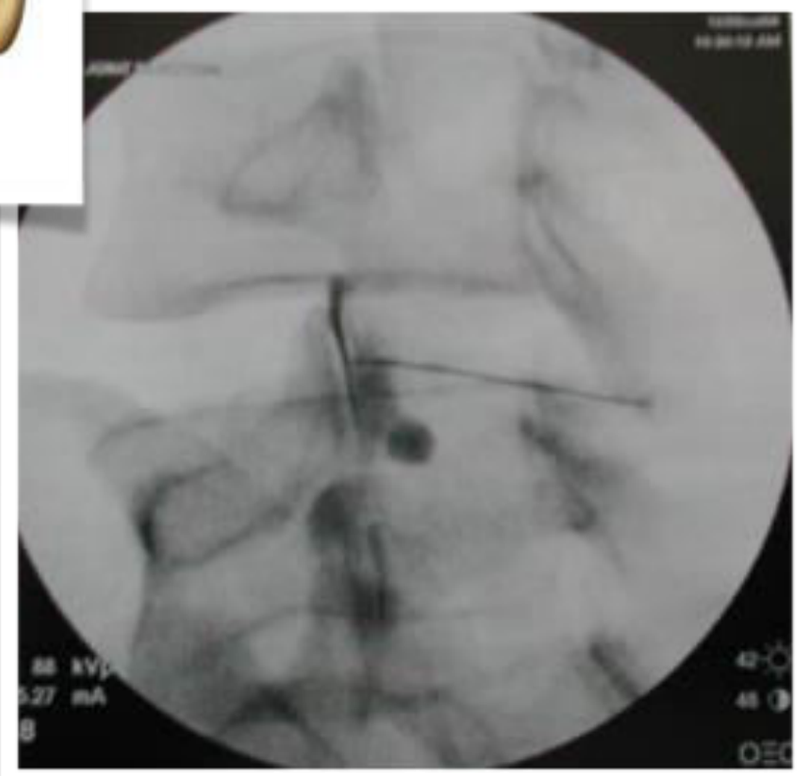
Treatment options with no benefit

- **Passive therapies**
- **Injections**
- **TENS**
- **Traction**
- **Radiofrequency ablation**
- **Supports**
- **Bed rest**

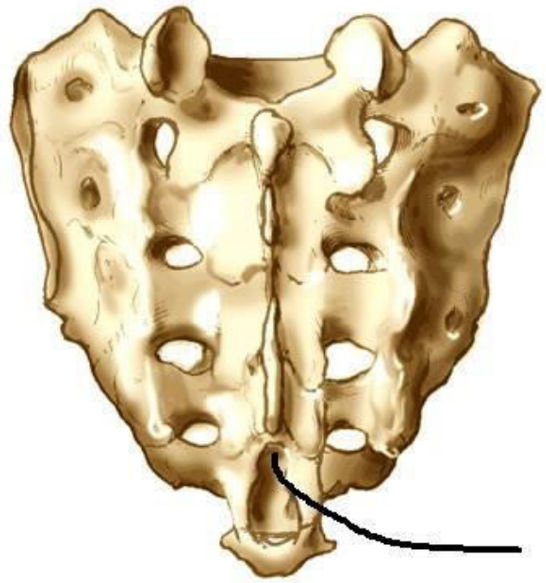
Cochrane revie w

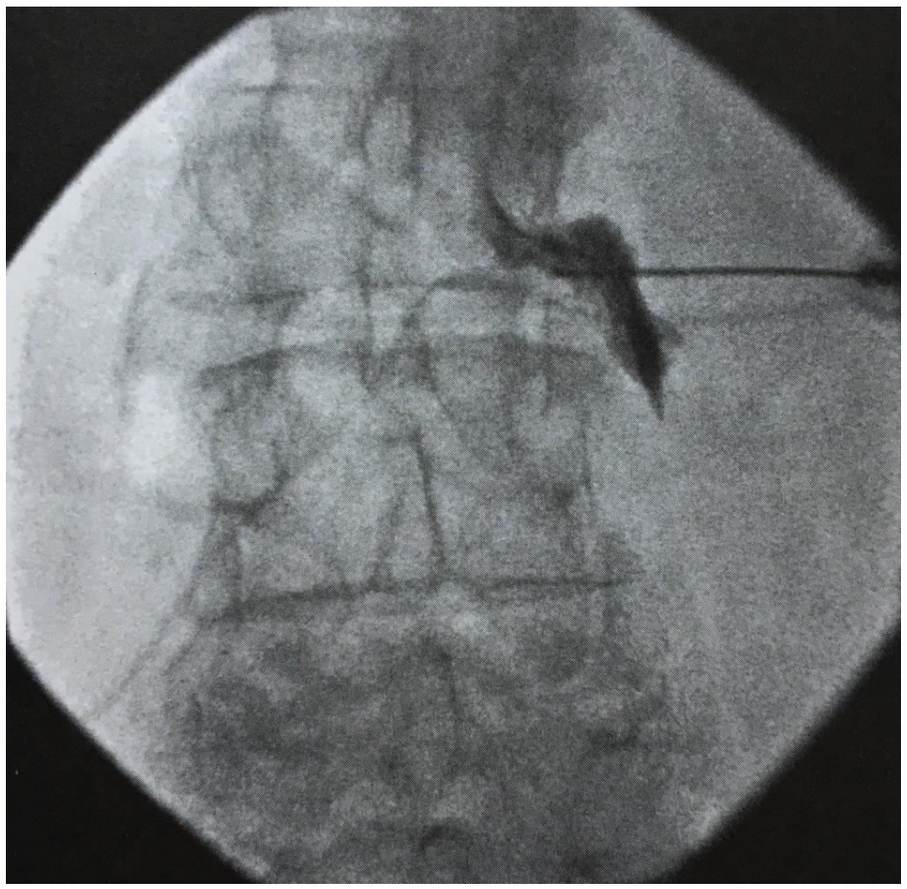
Facet joint blocks

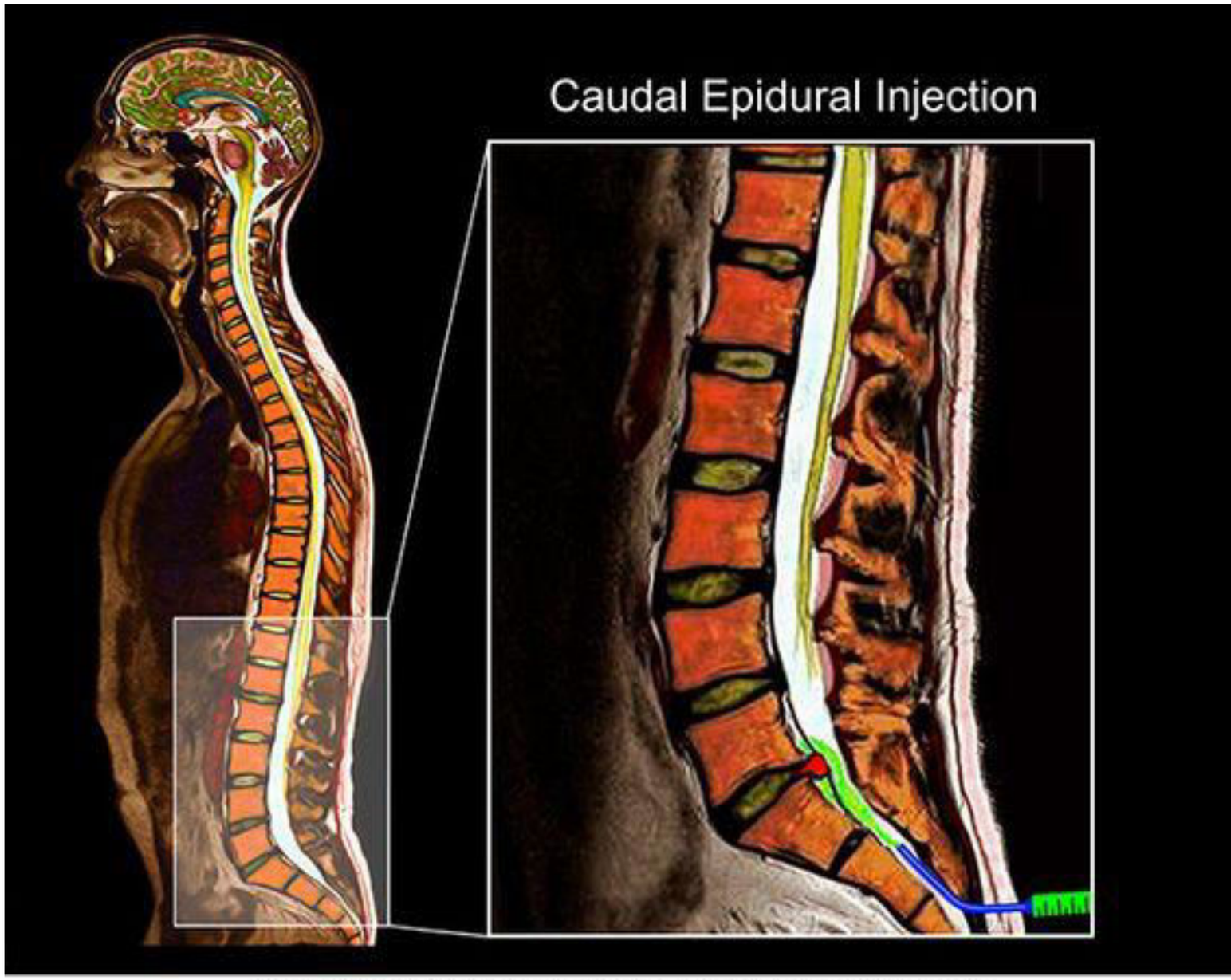




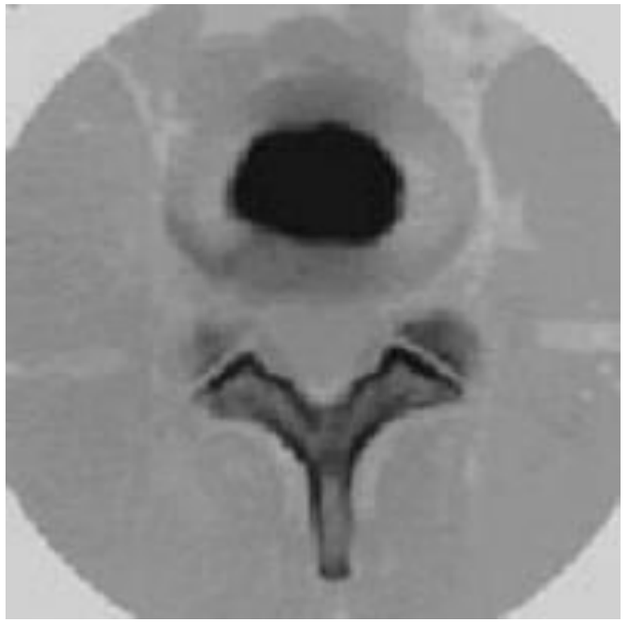
Nerve root blocks
Epidural injections

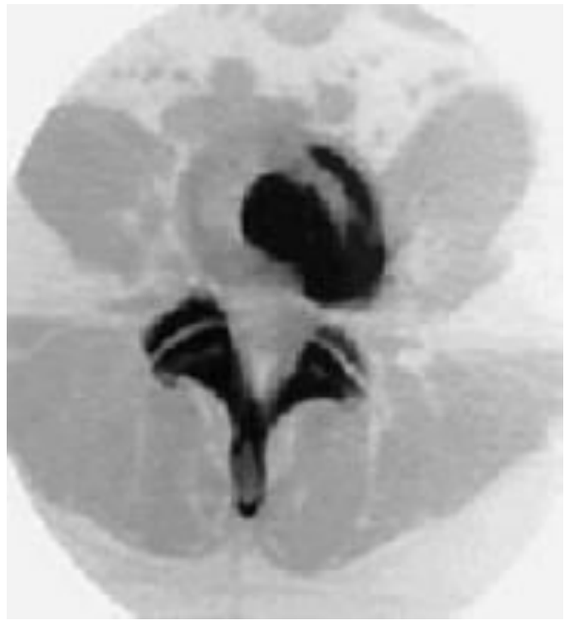


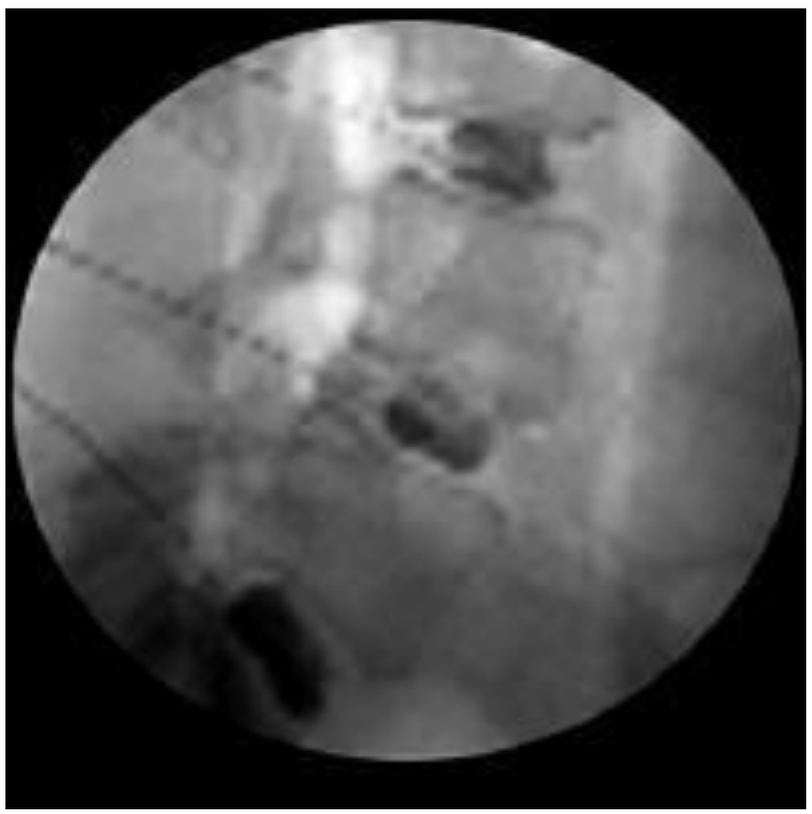


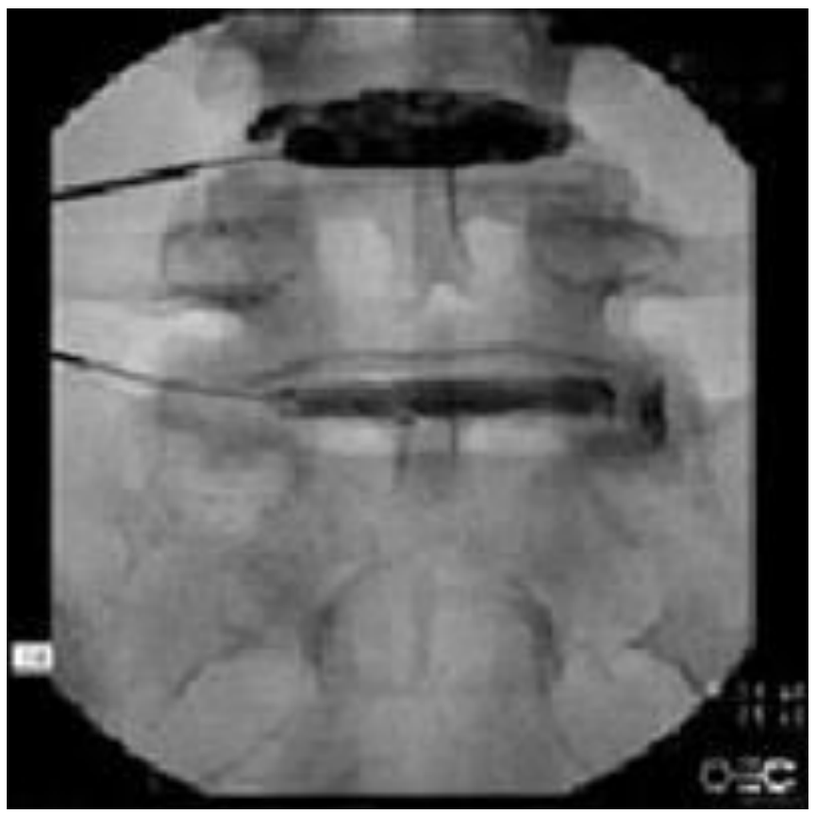


Discography

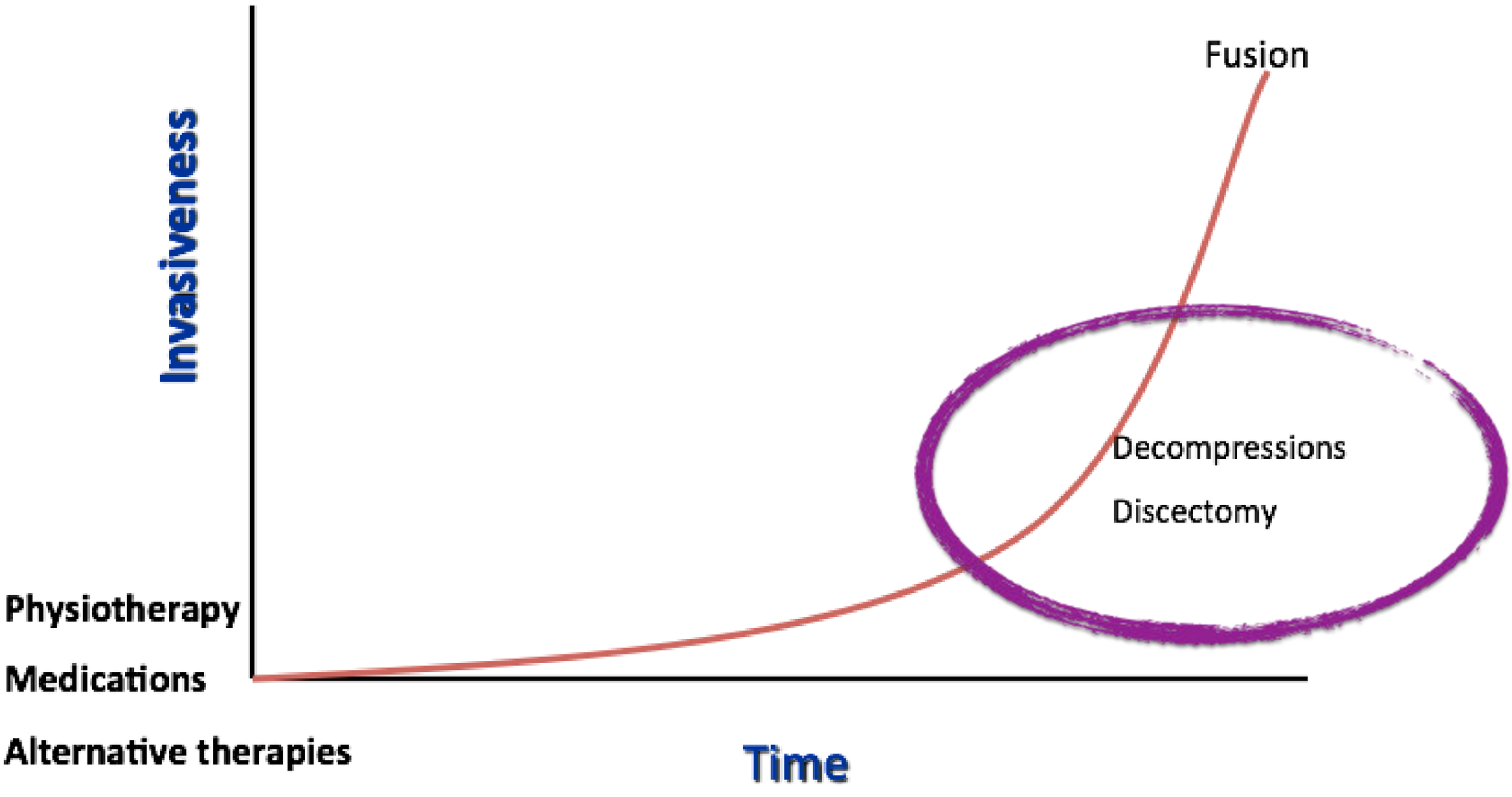




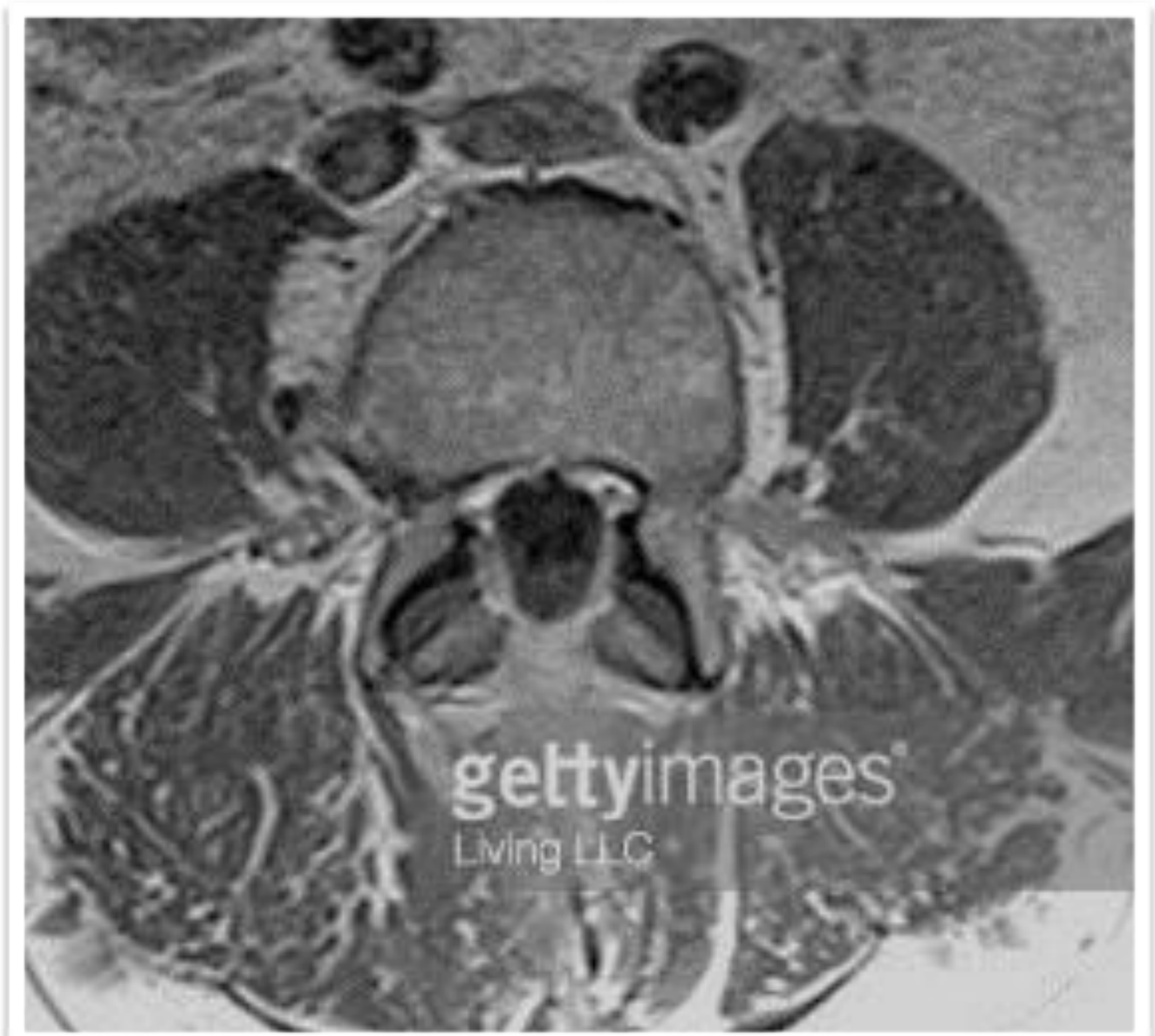


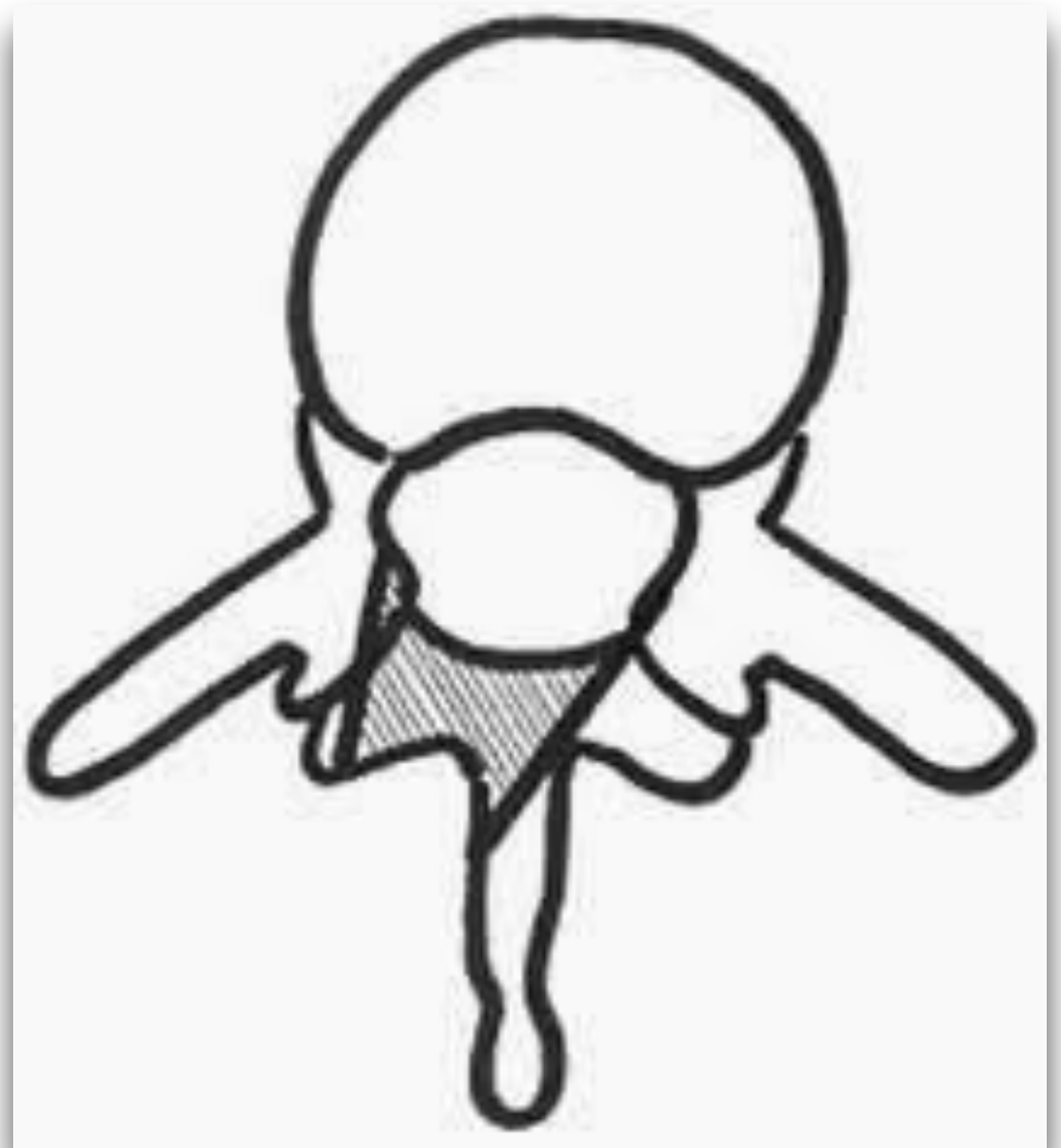


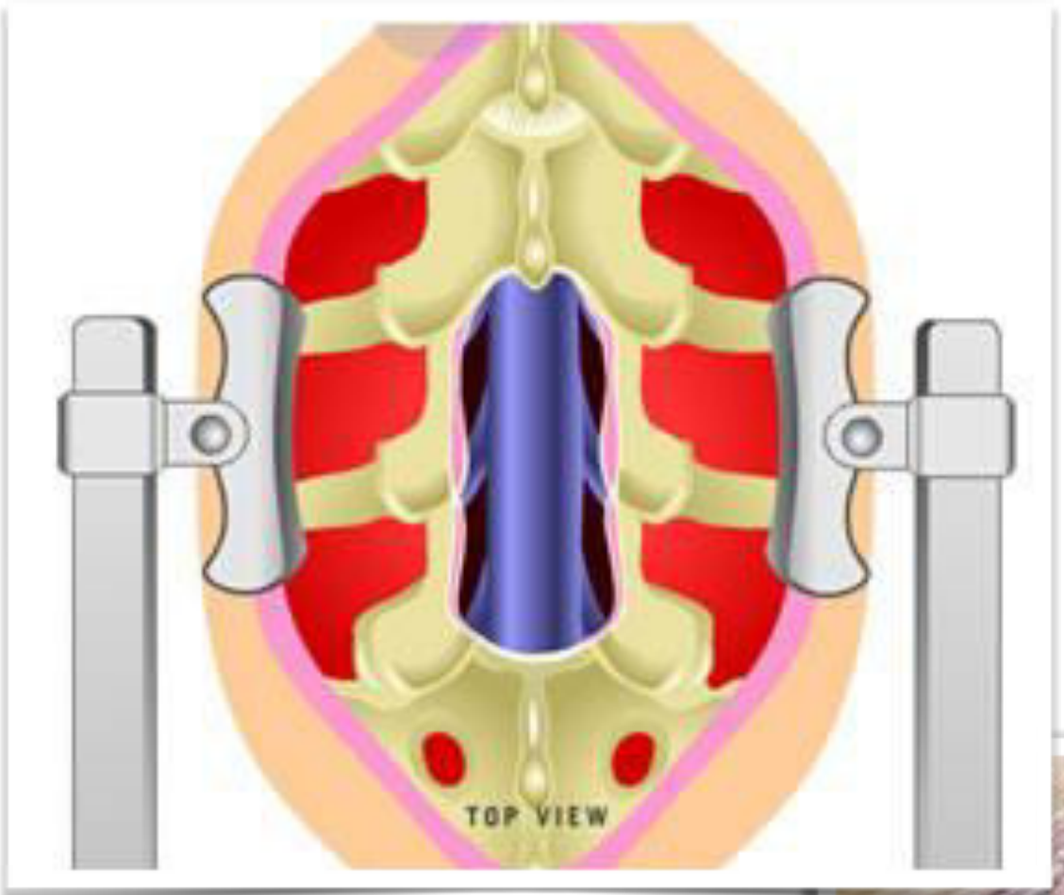
Treatment options

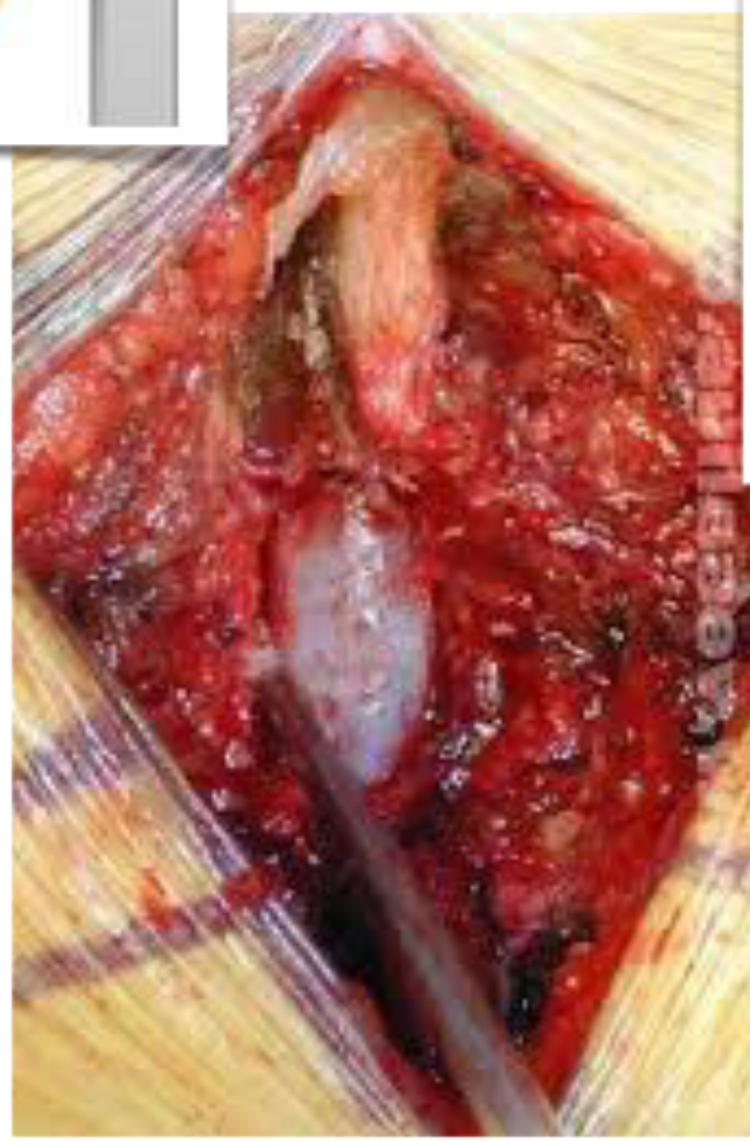


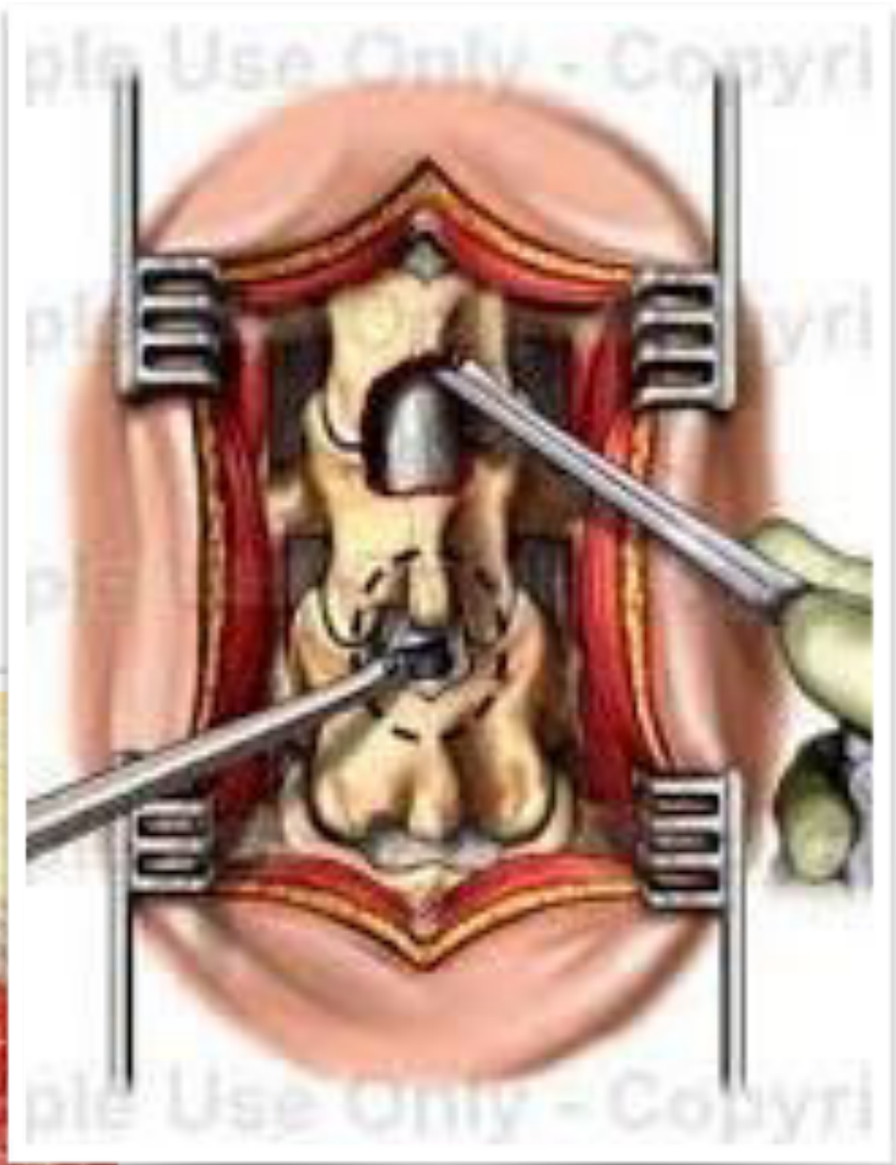
Lumbar decompression

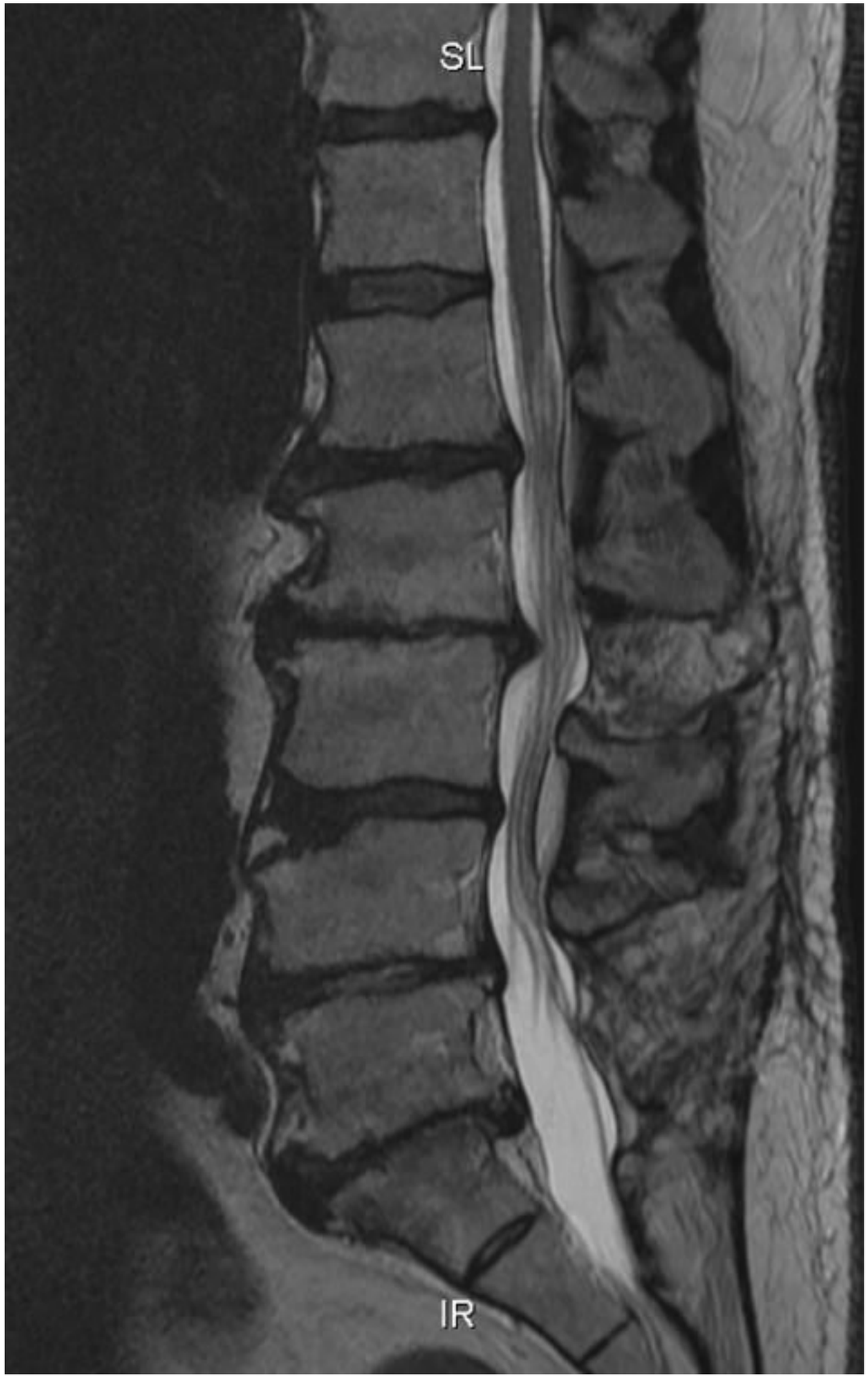




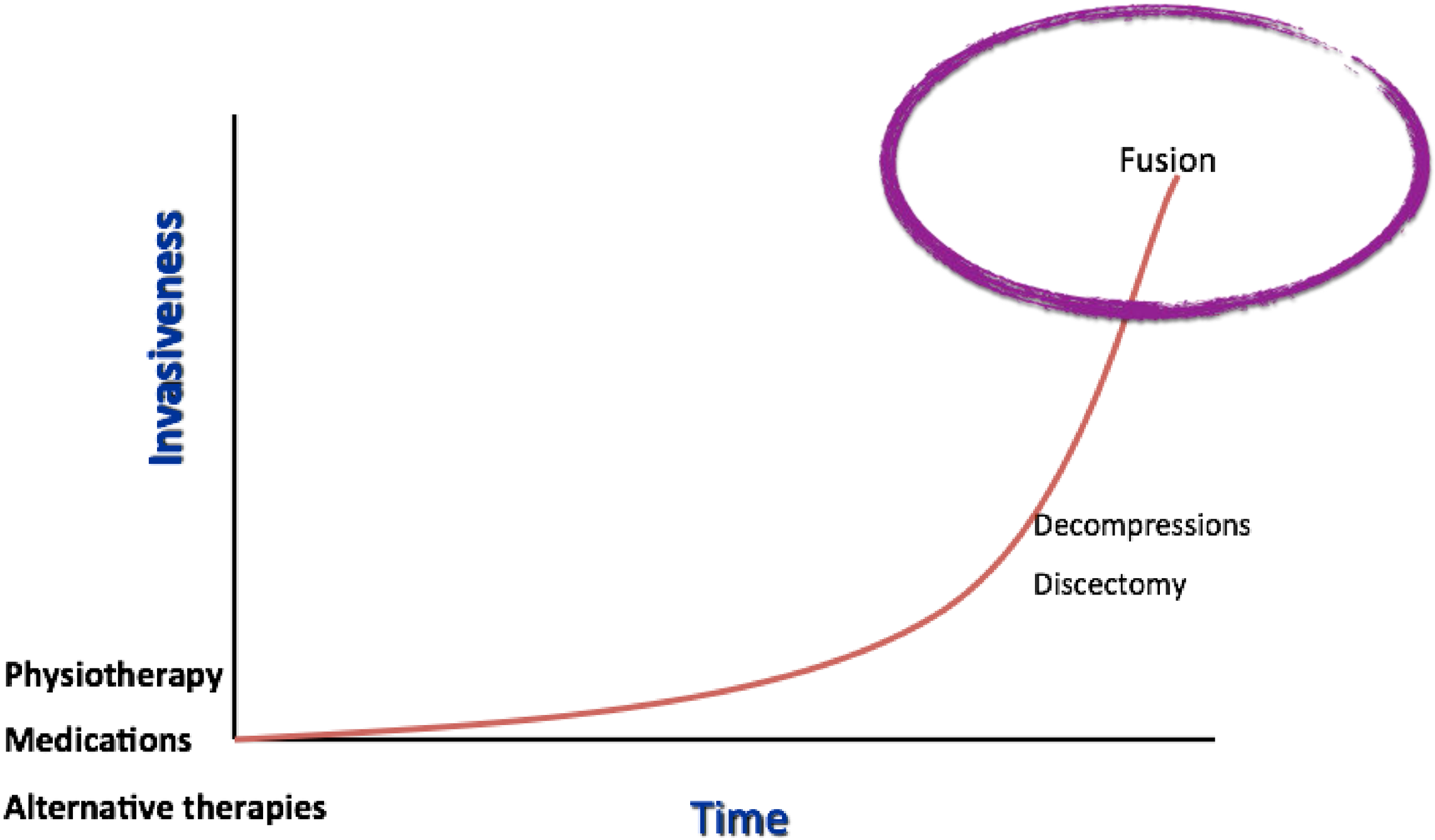

TOP VIEW



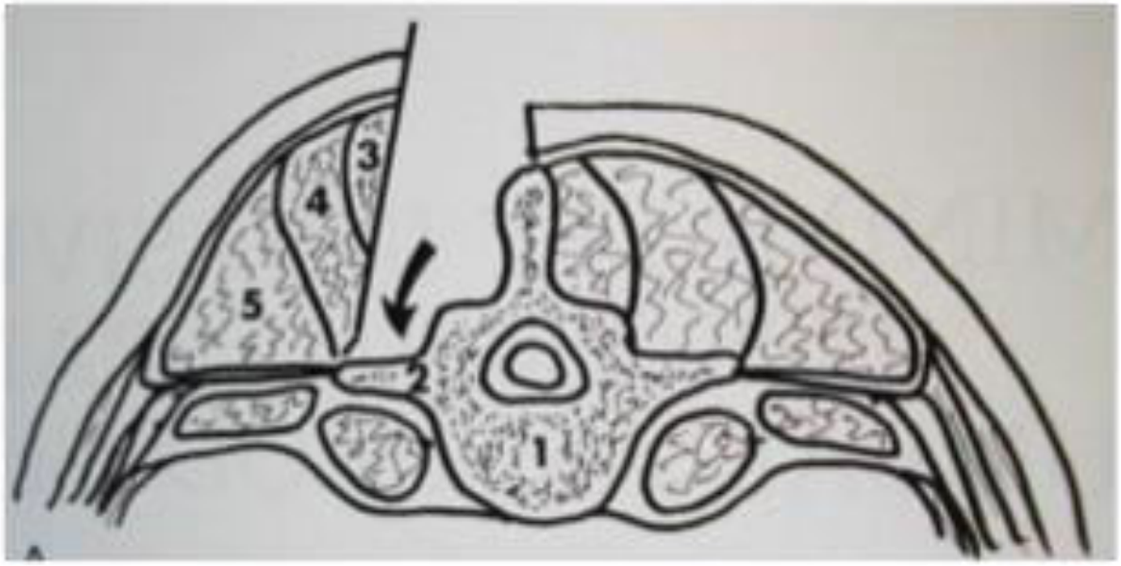


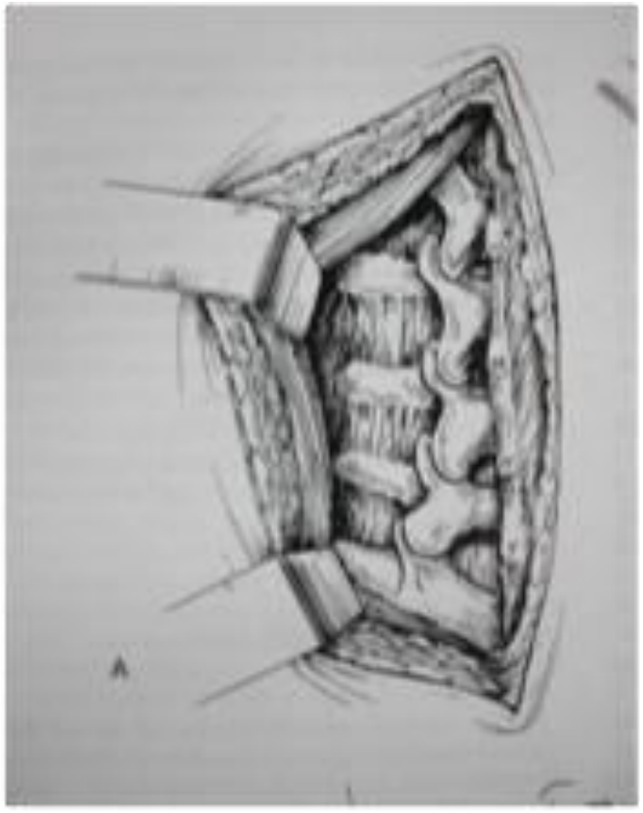

SL
IR

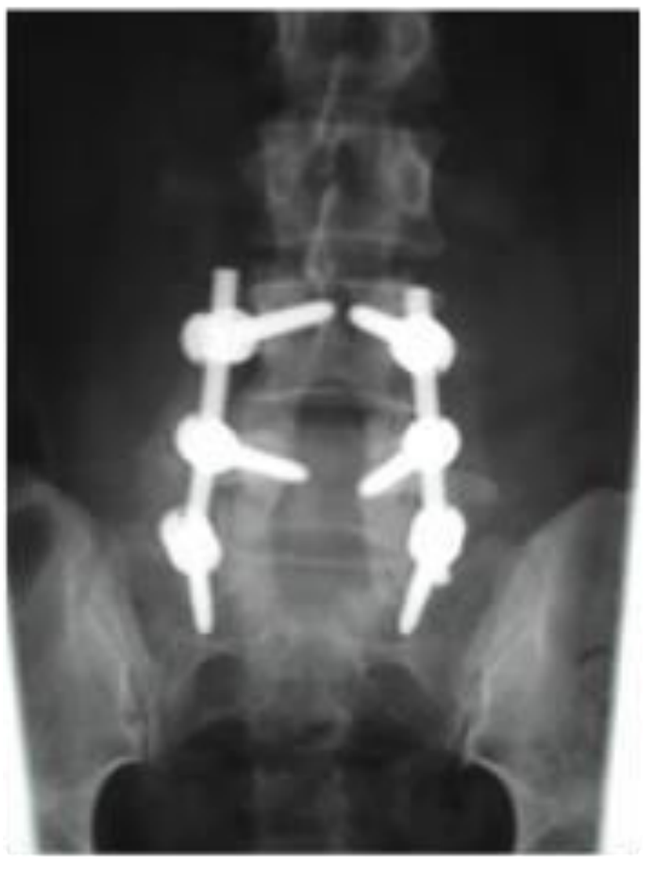
Treatment options

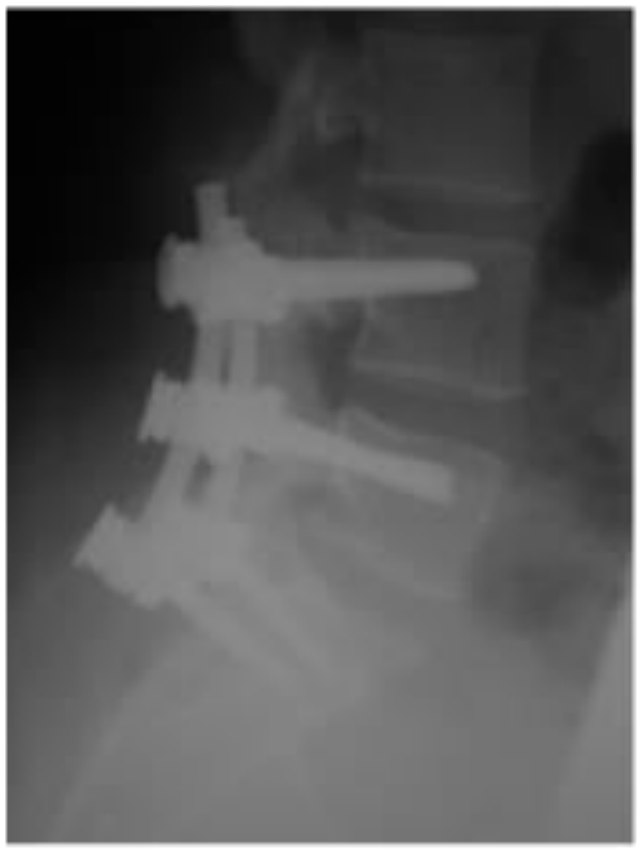


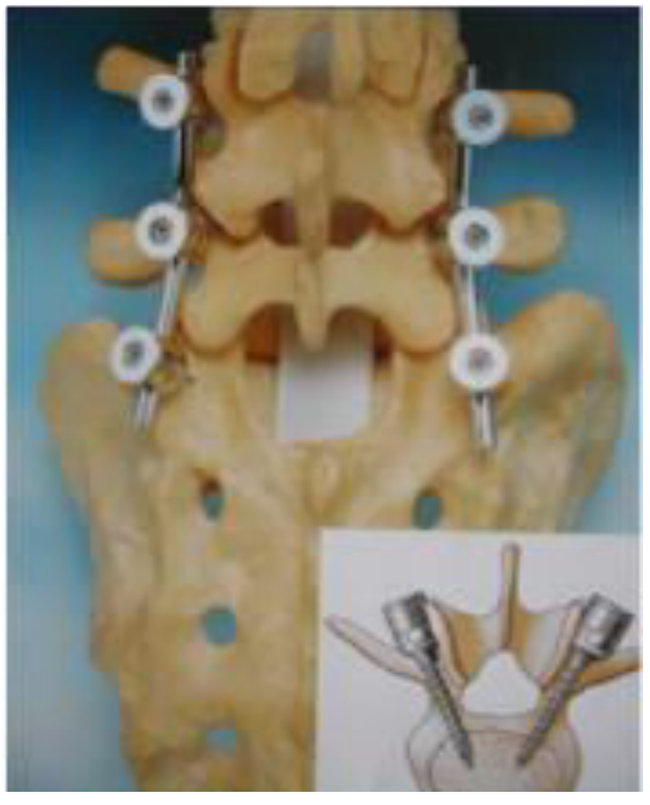
Postero-lateral fusion



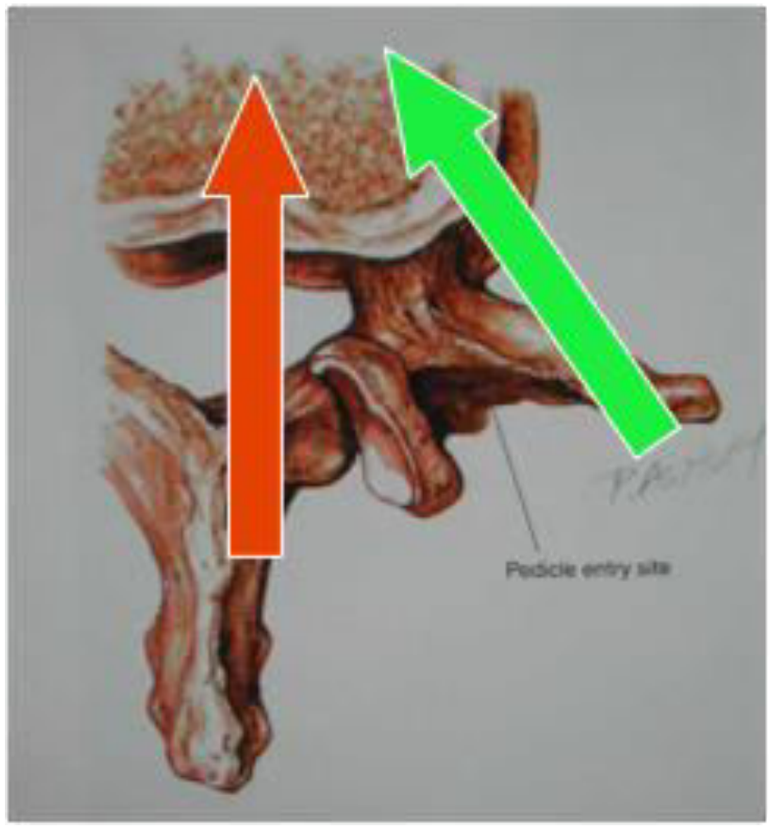


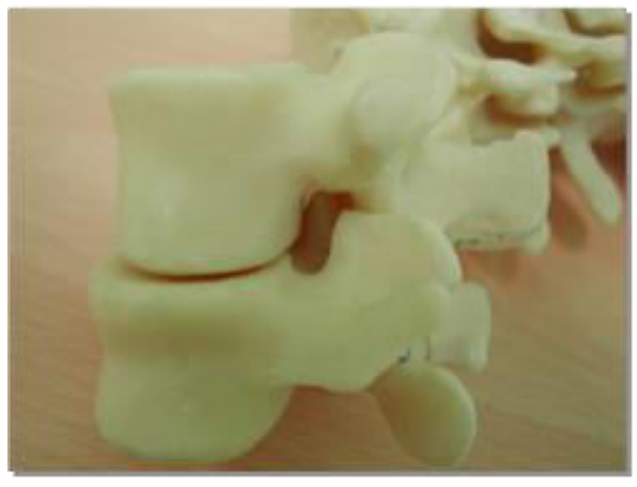


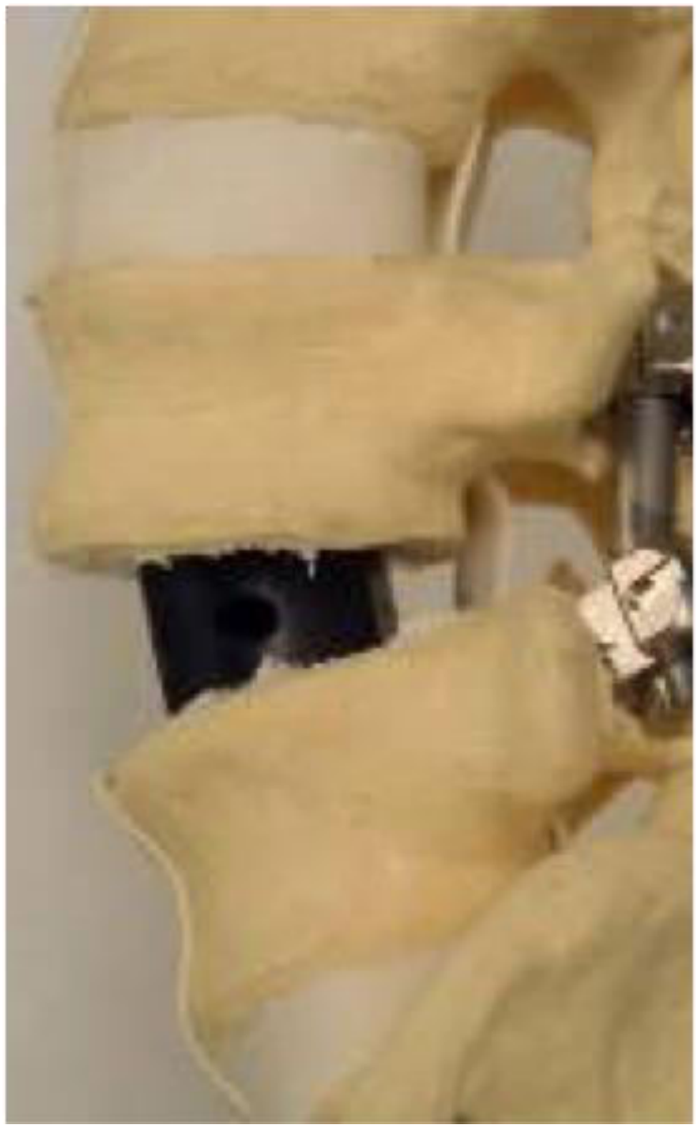




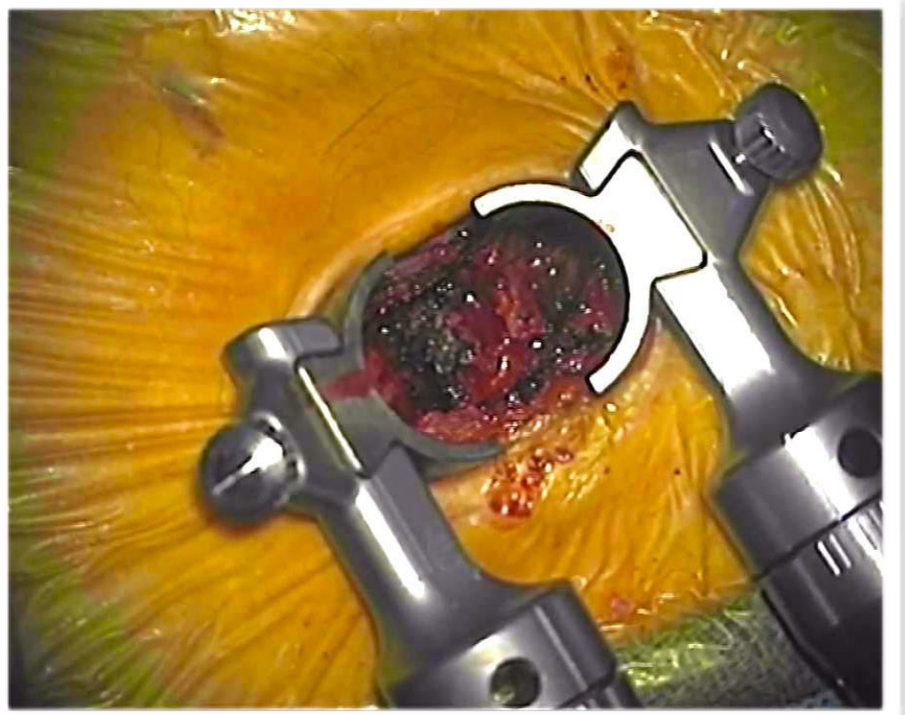
Inter-body fusion

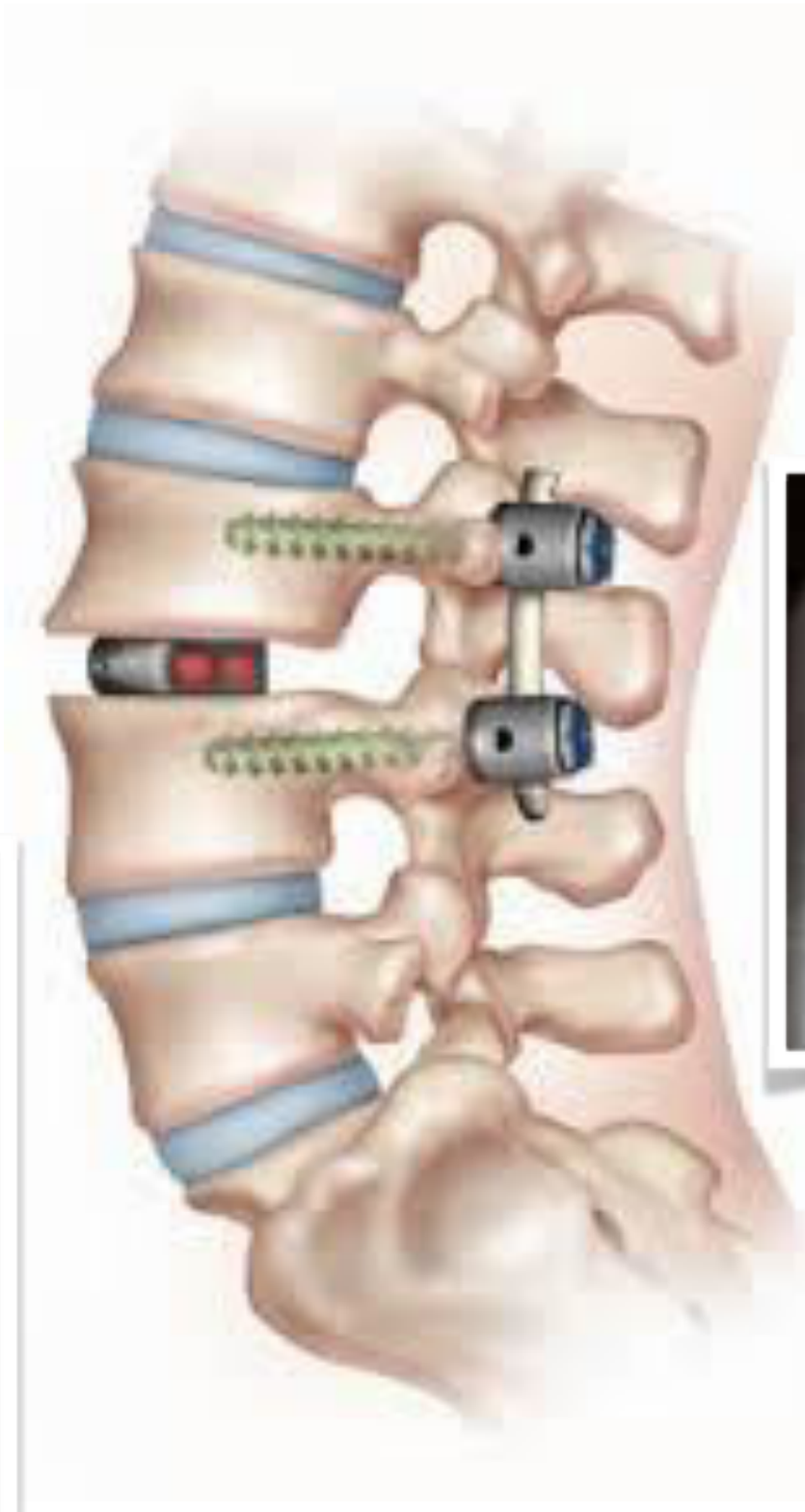


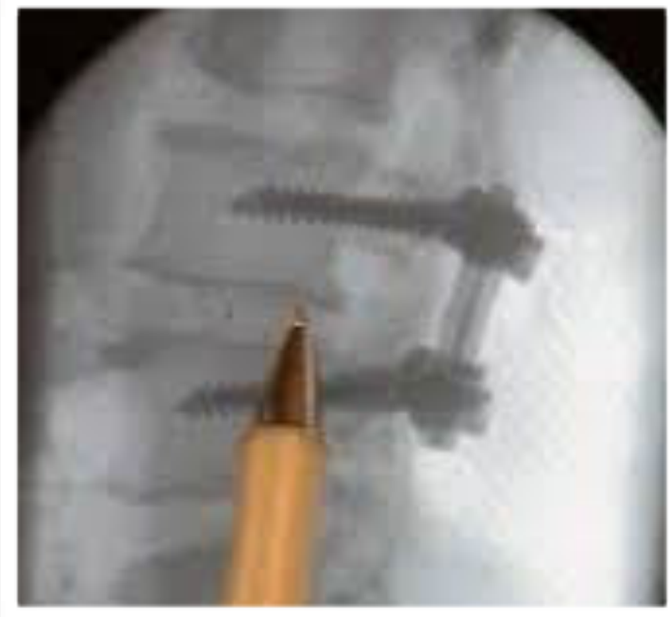


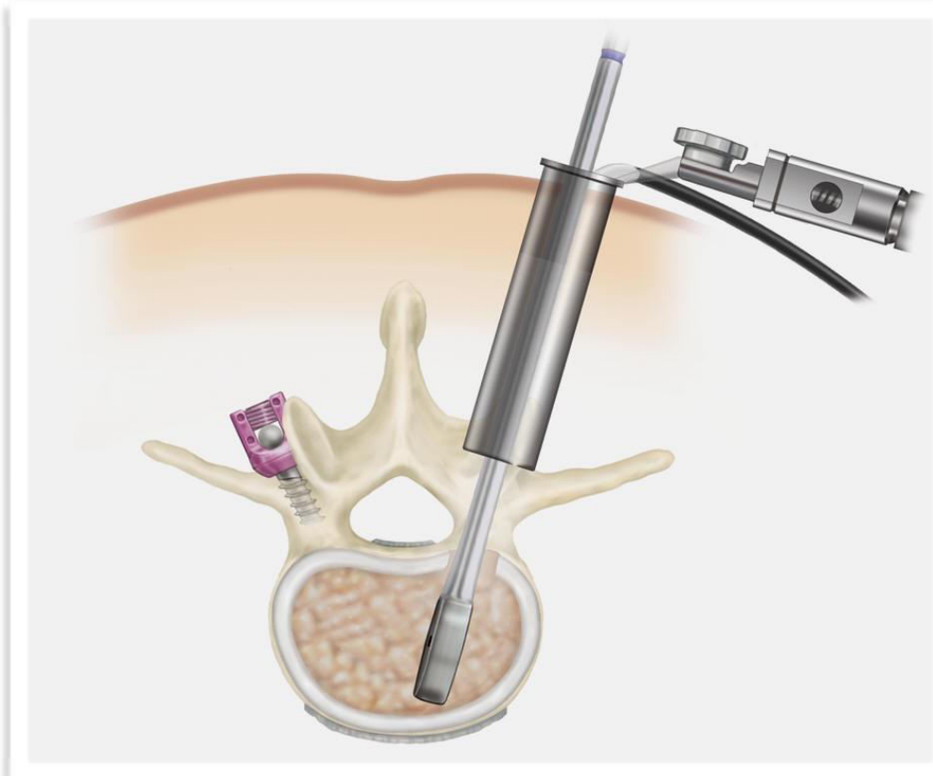


Minimally invasive surgery









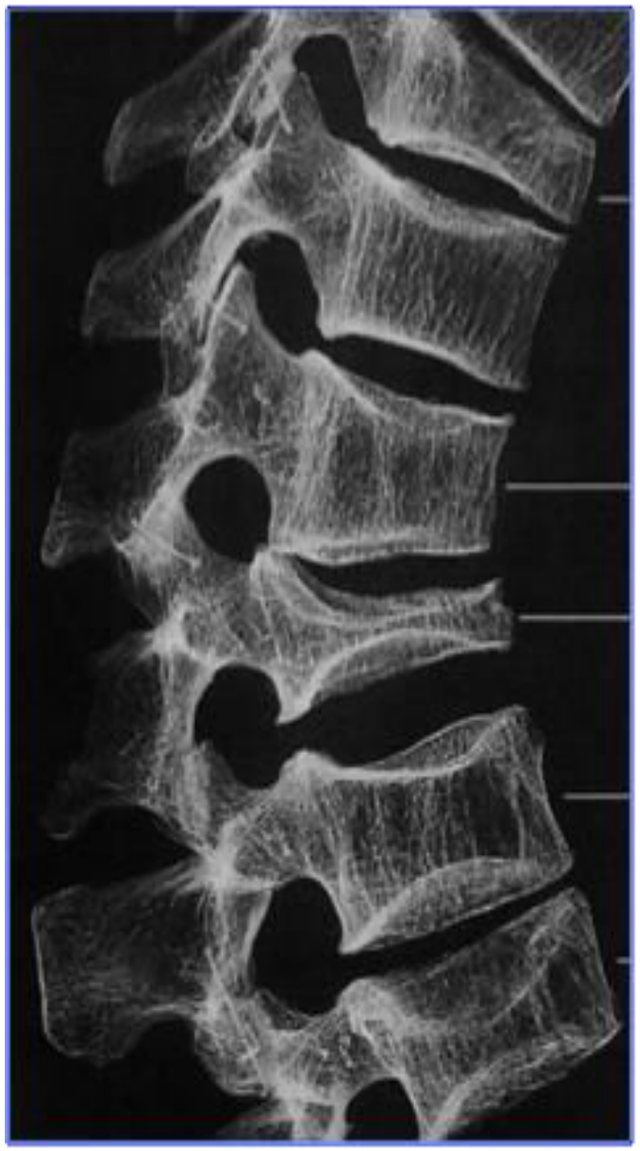
Exploring expectations and treatment options

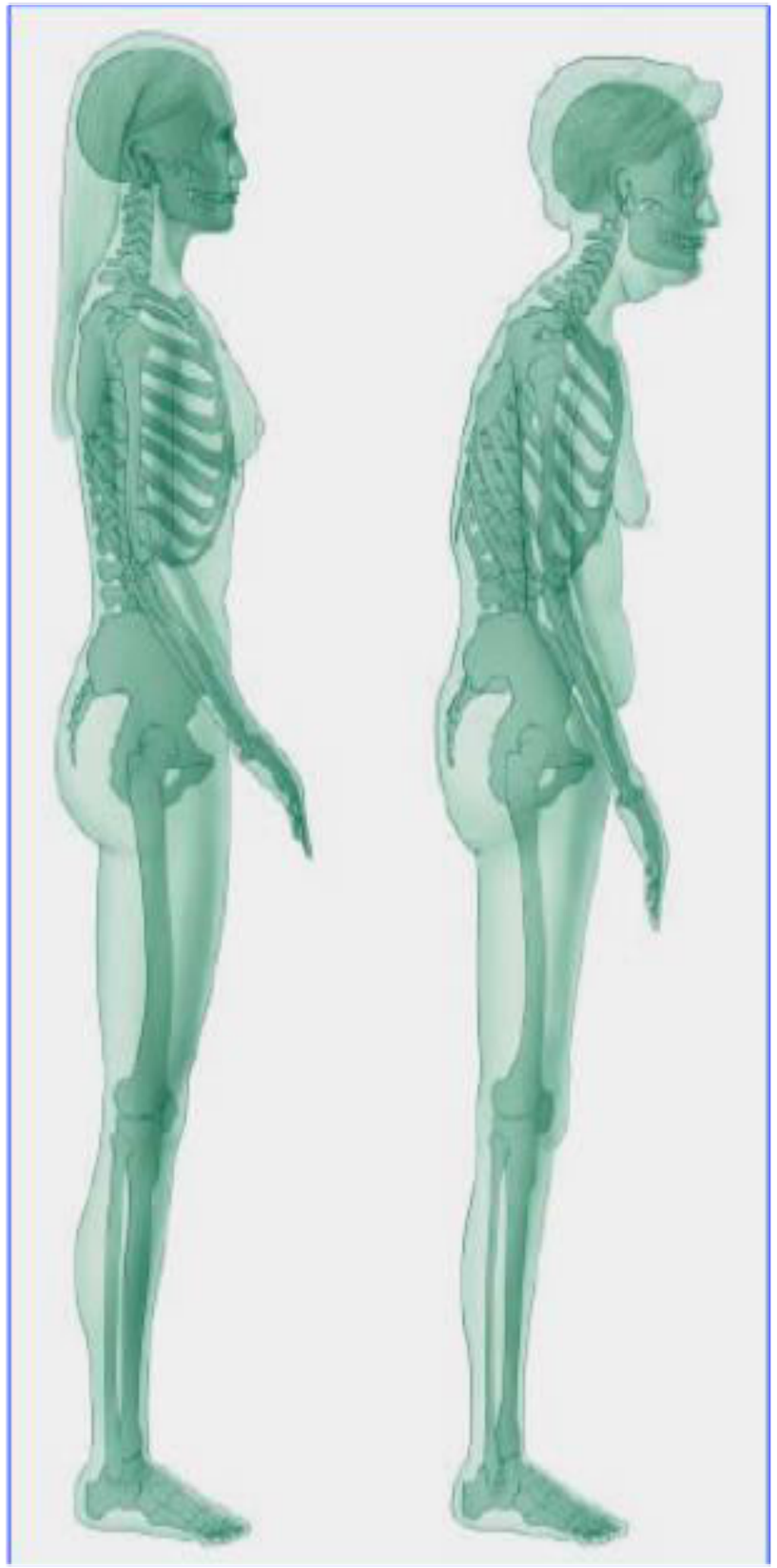
Age or Mileage

- Changing expectations from life
- Longevity
- Doing more…….
- ……..for longer!

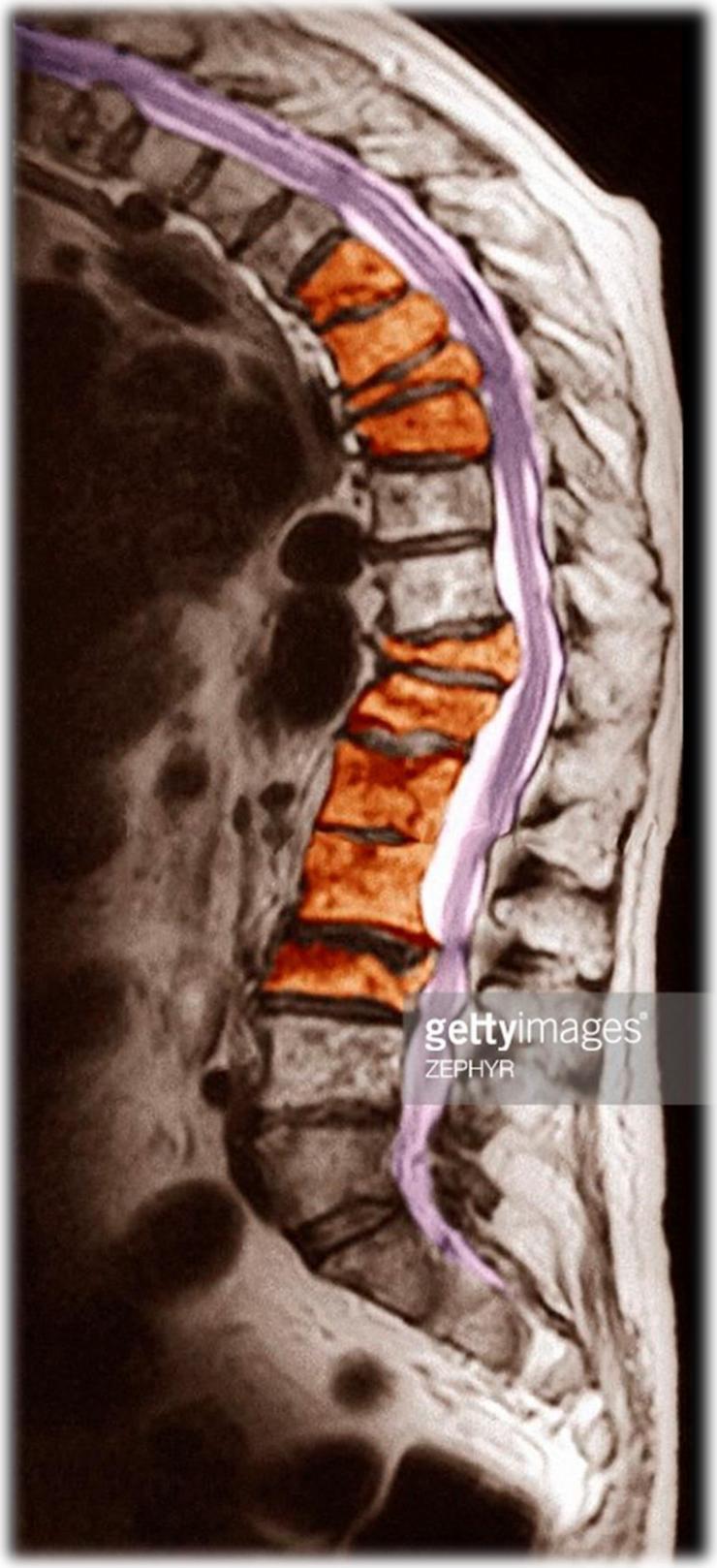
Truncal mal-alignment

Life is a kyphosing event

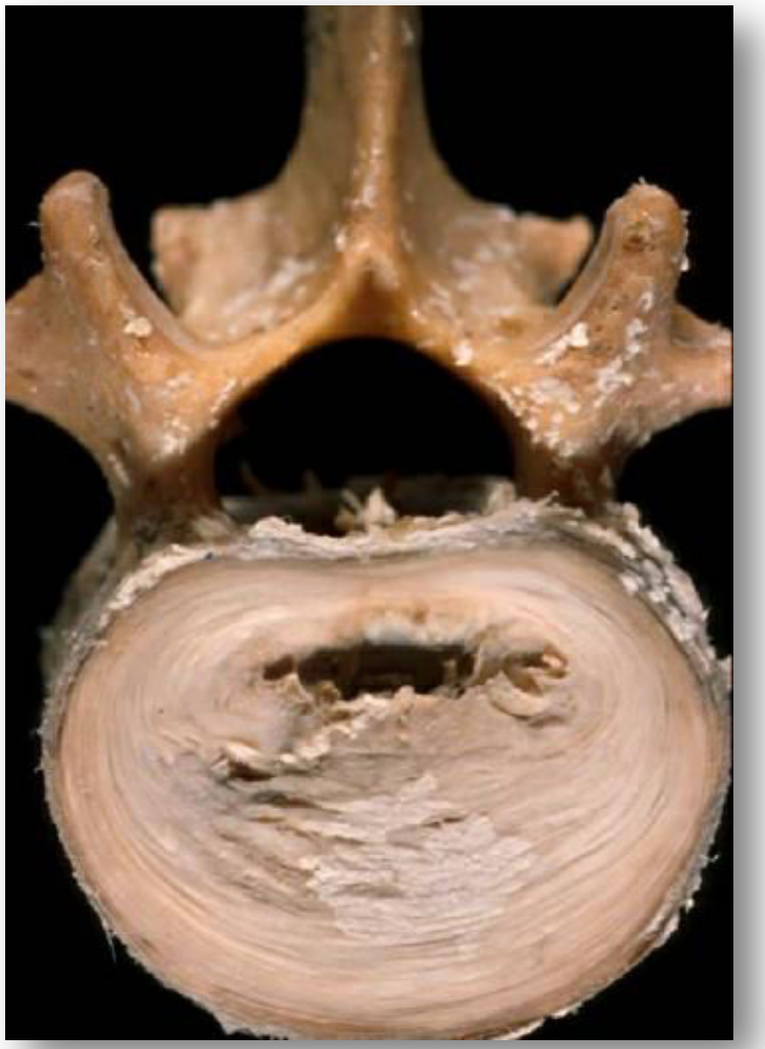


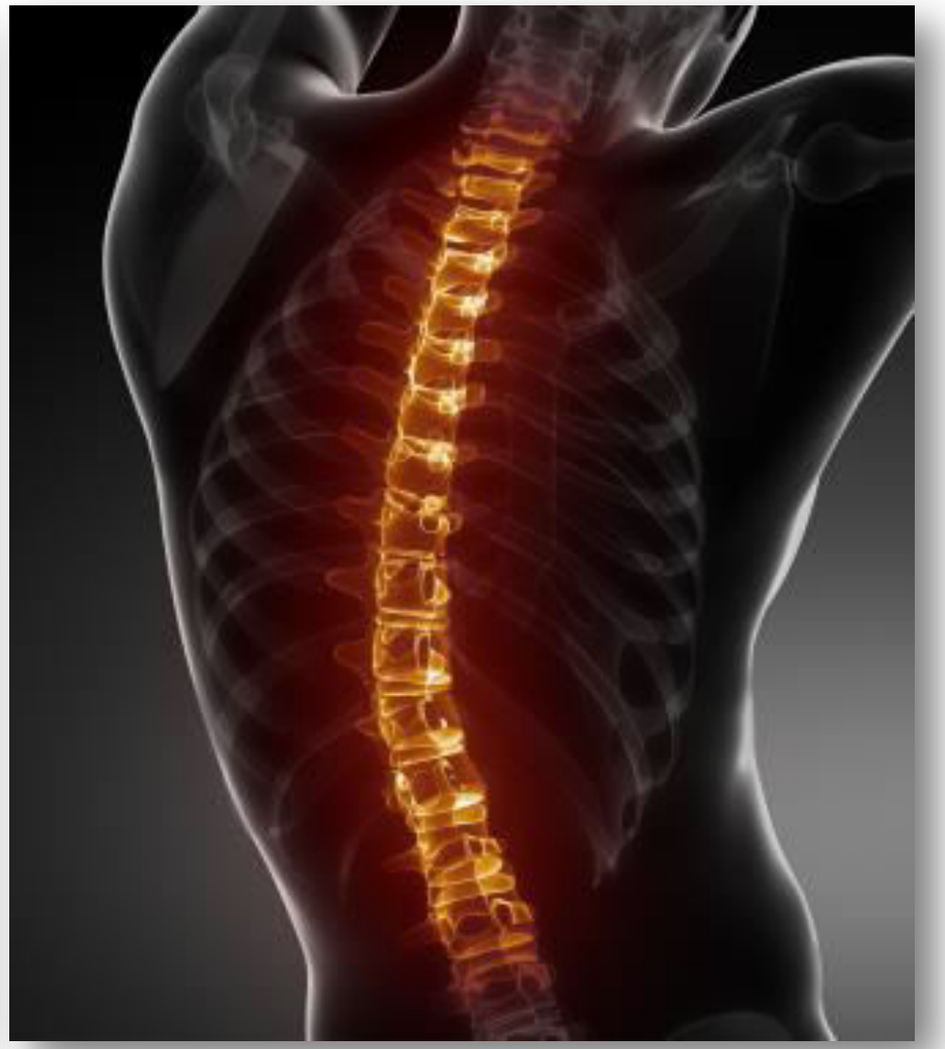


Spectrum of pathology



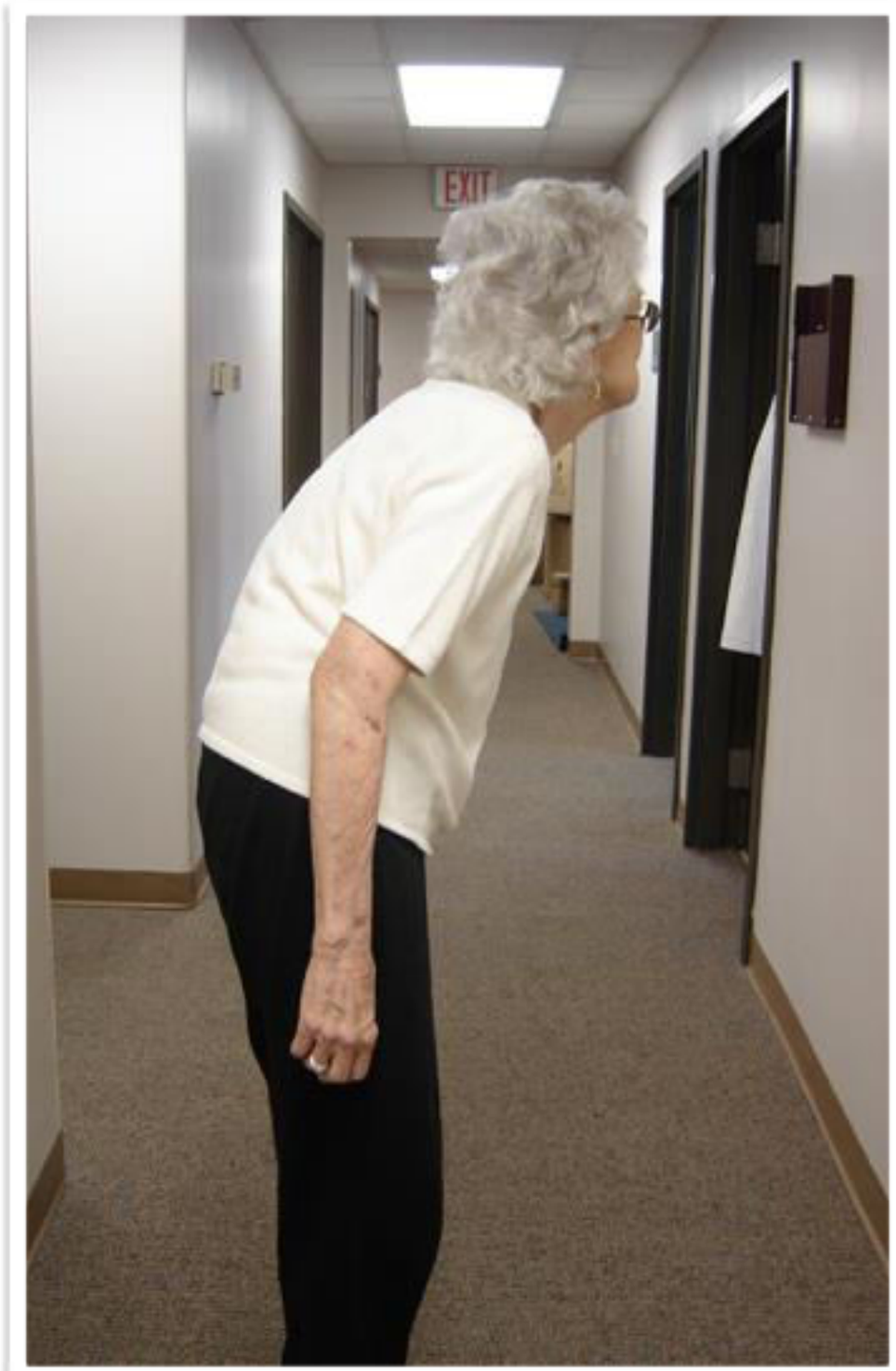
- Osteoporosis
- Discs and facet joints
- Failure of the spinal column

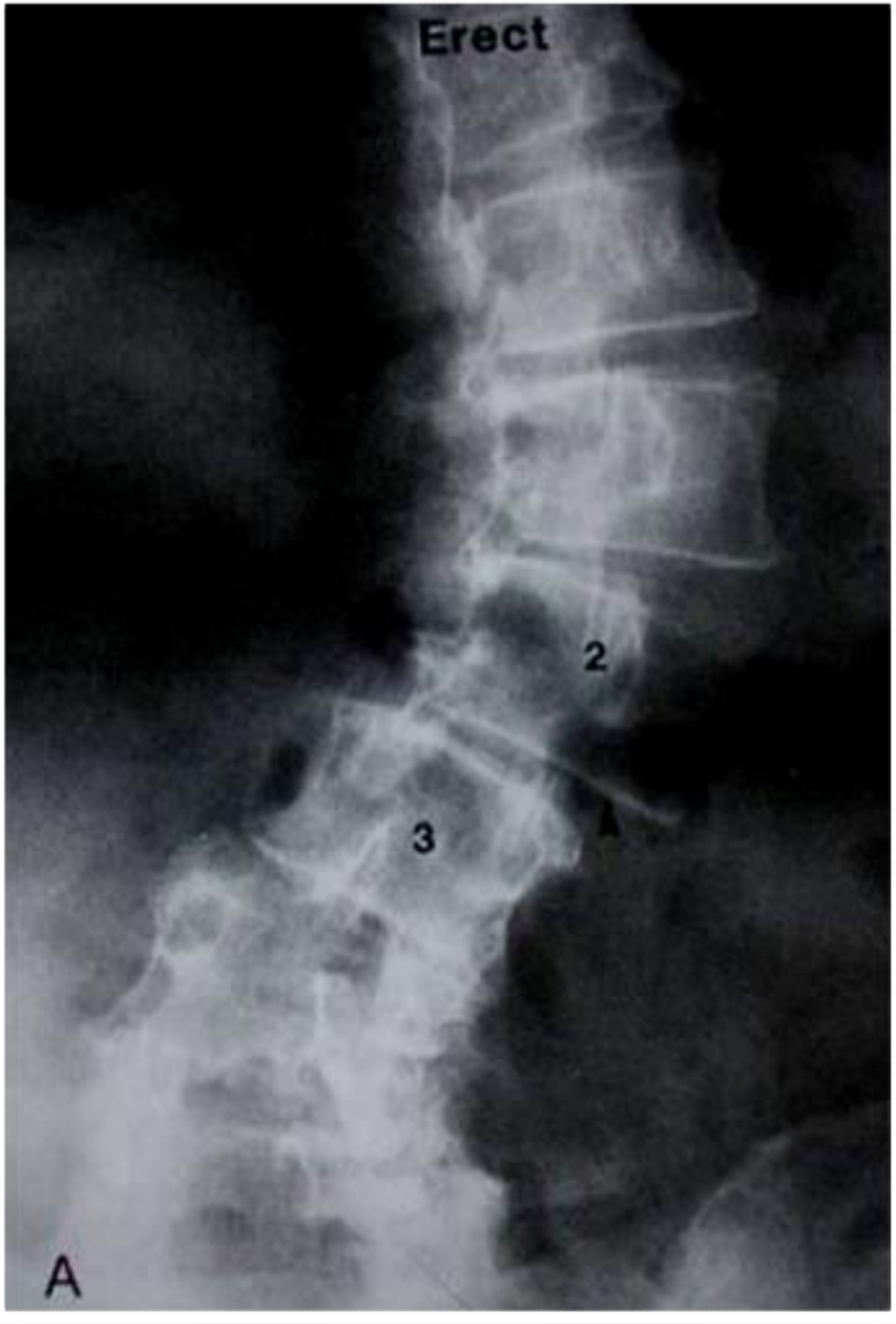


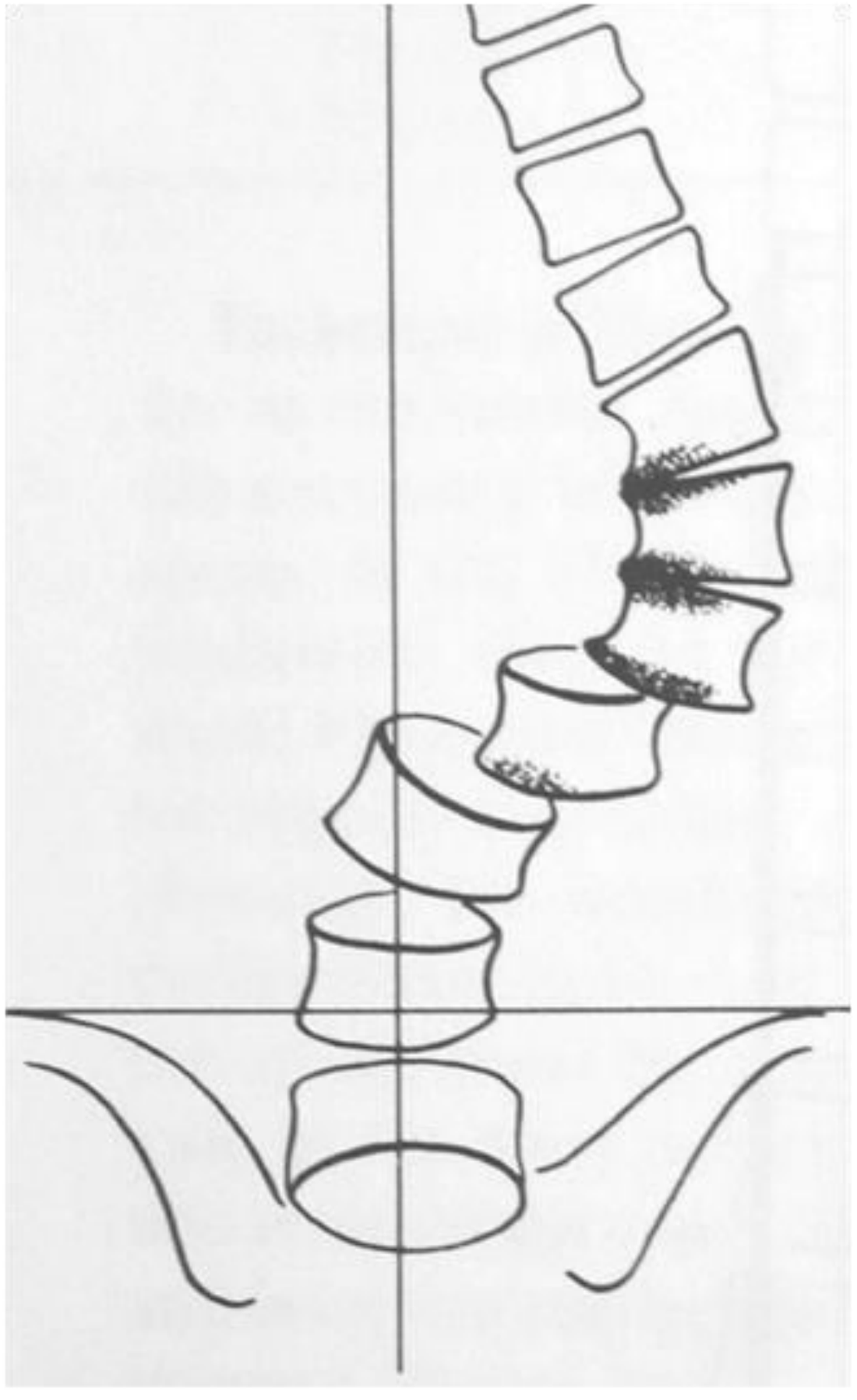


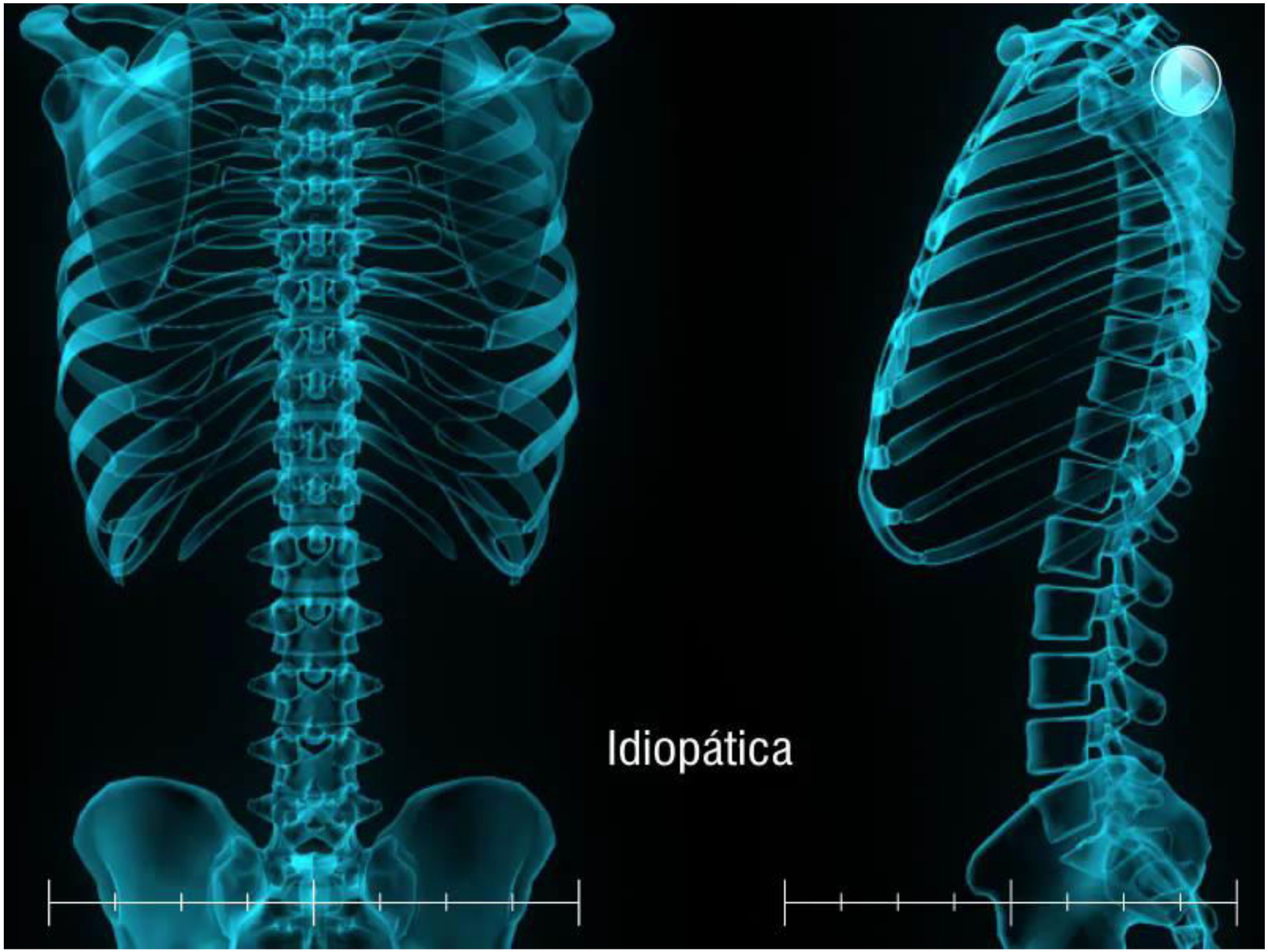
Degenerate deformity

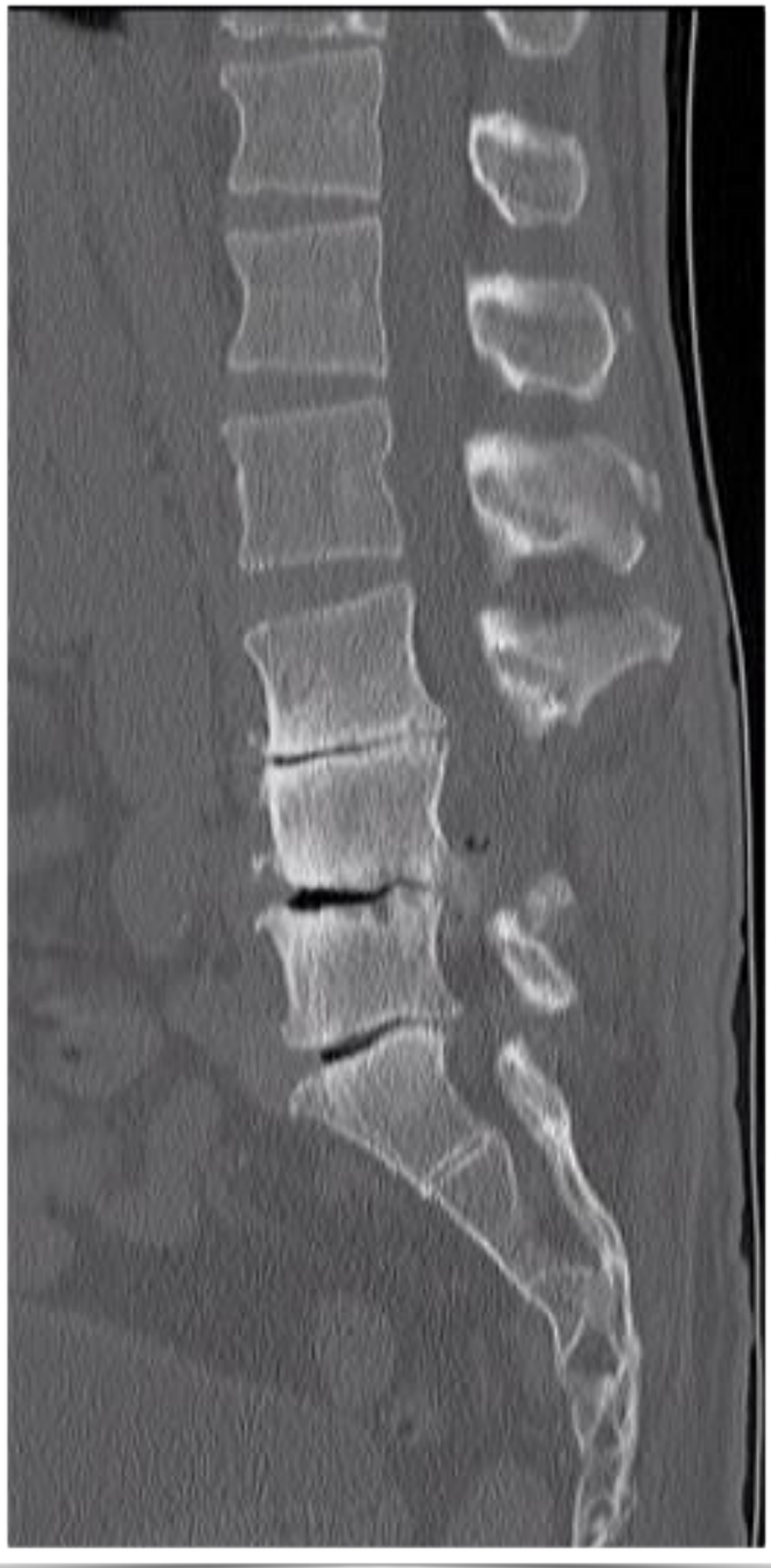
- Loss of ability to stand upright
- Mechanical dis-advantage
- Asymmetric degeneration
- Spinal column ‘collapse’

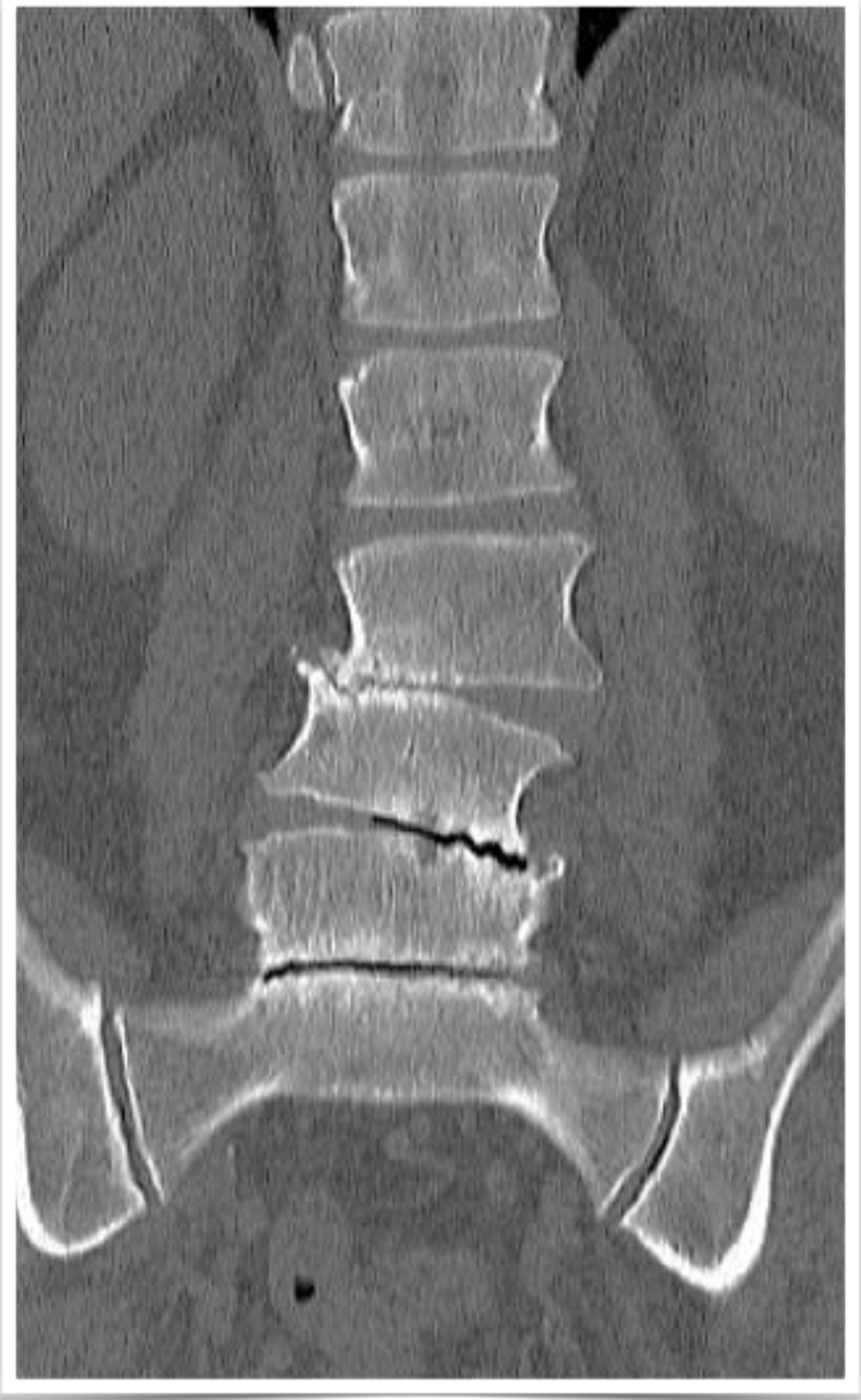



Erect
2
3
A
A



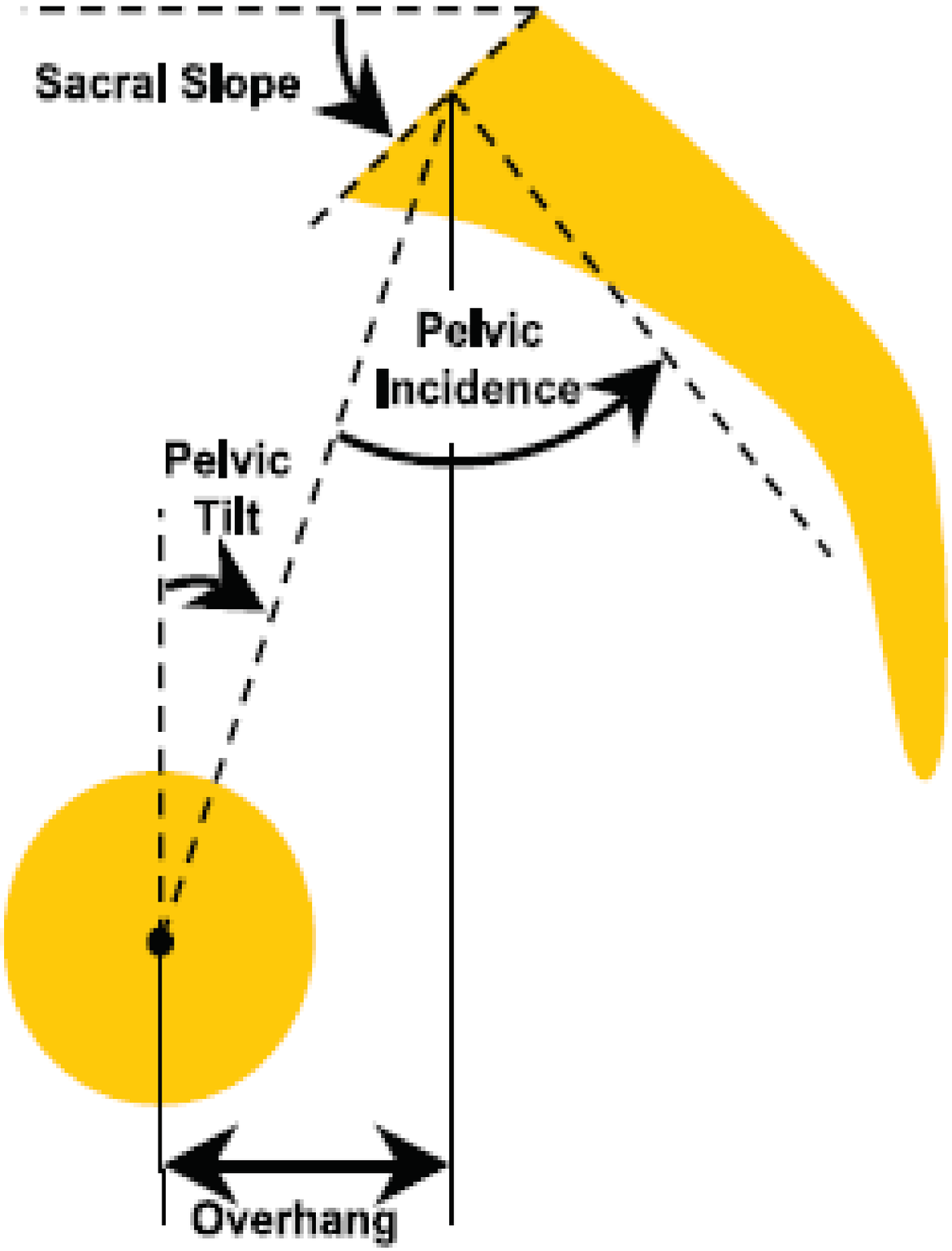

Idiopática

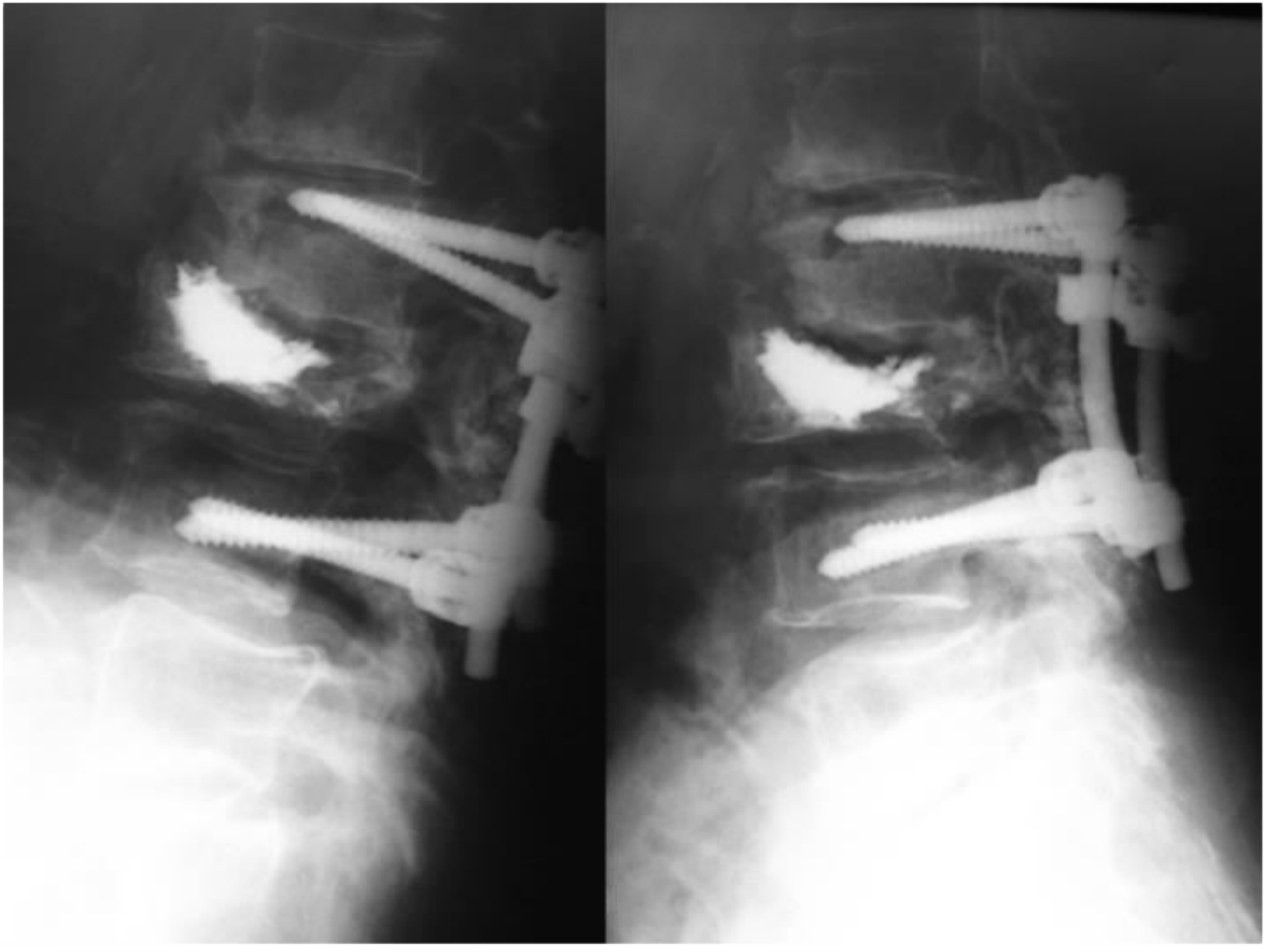


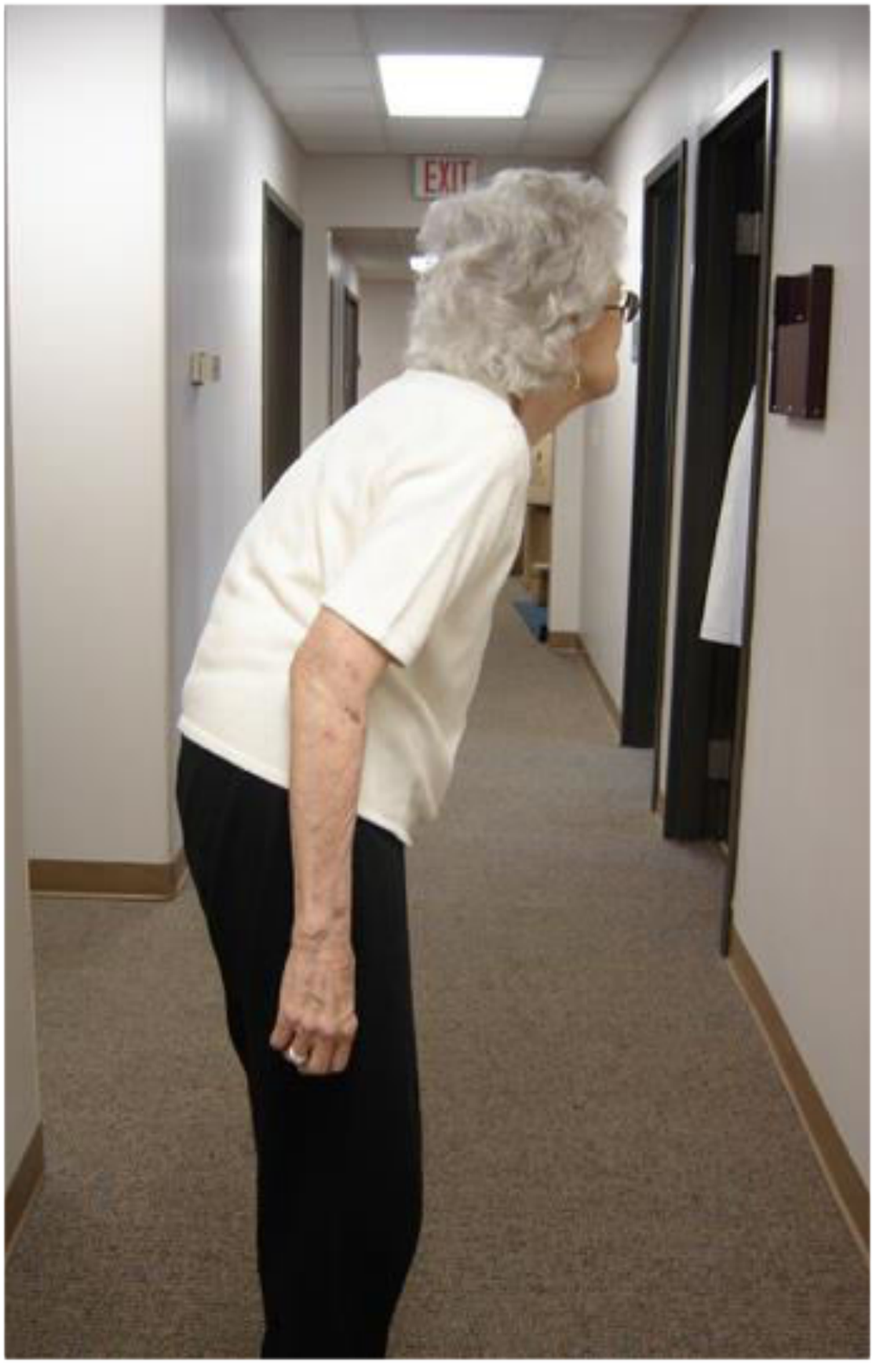


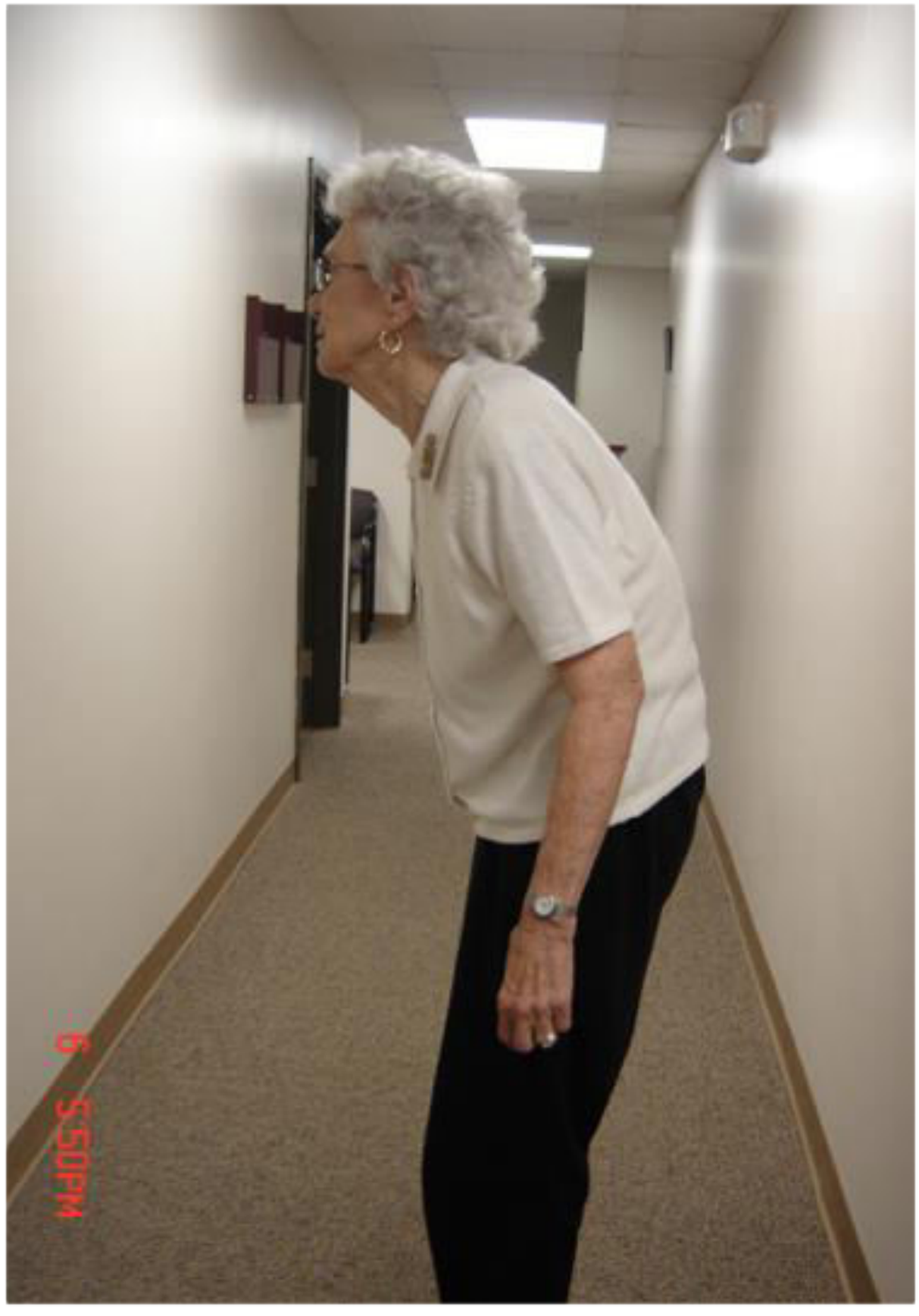
Pelvic compensation

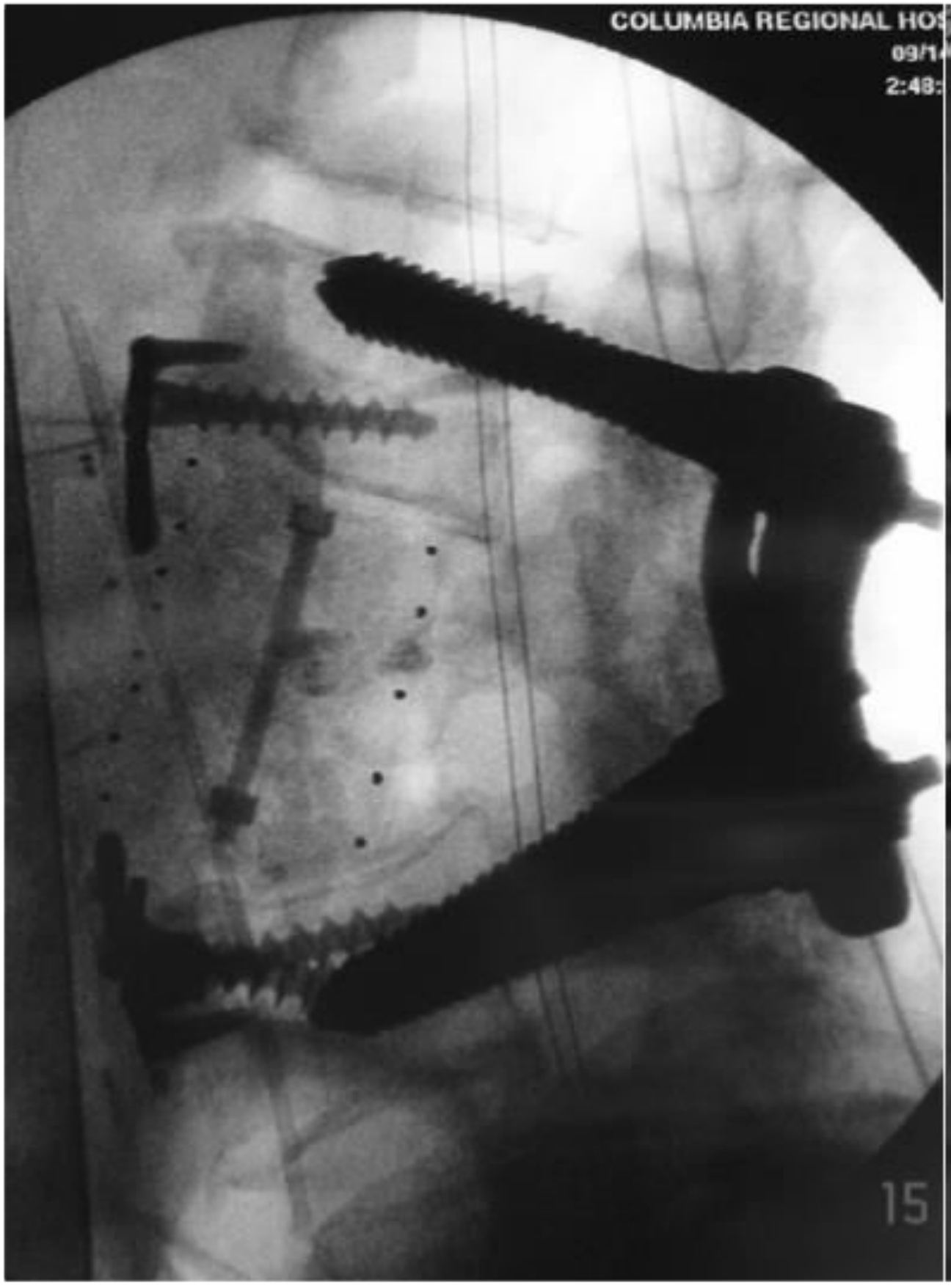
- Sacral slope (SS)
- Pelvic tilt (PT)
- Pelvic incidence (PI)

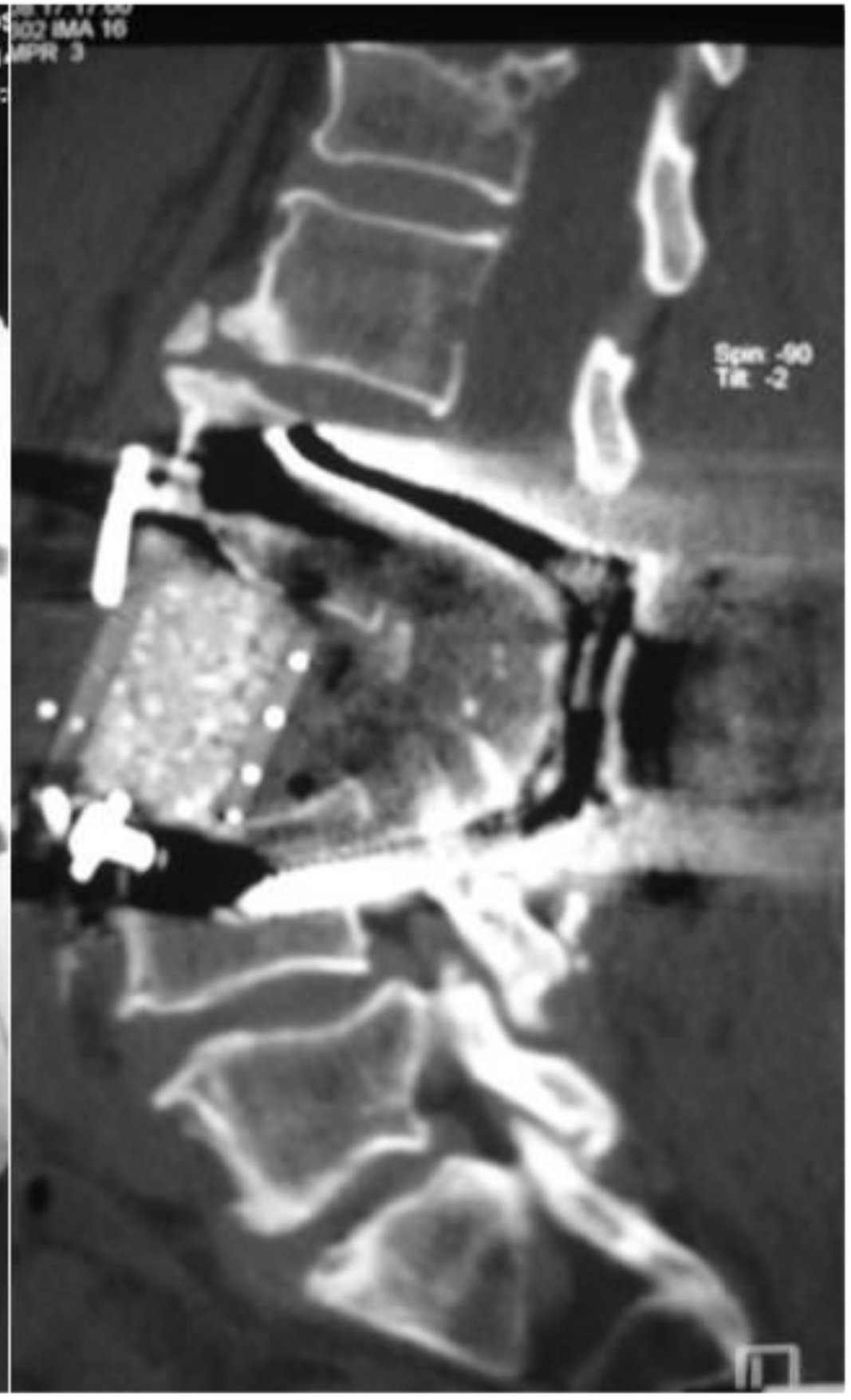




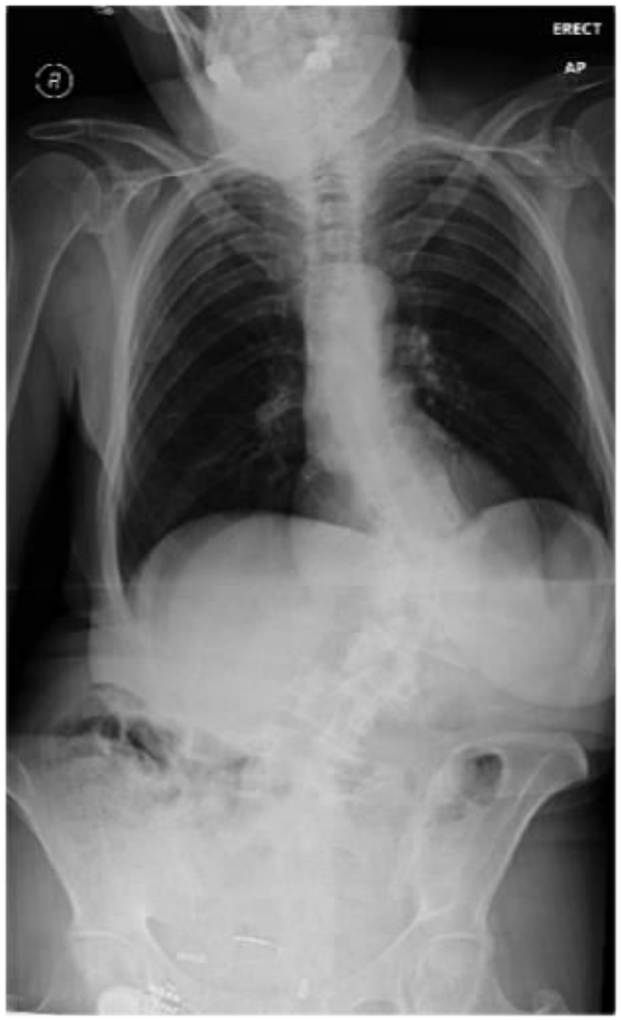

EXIT

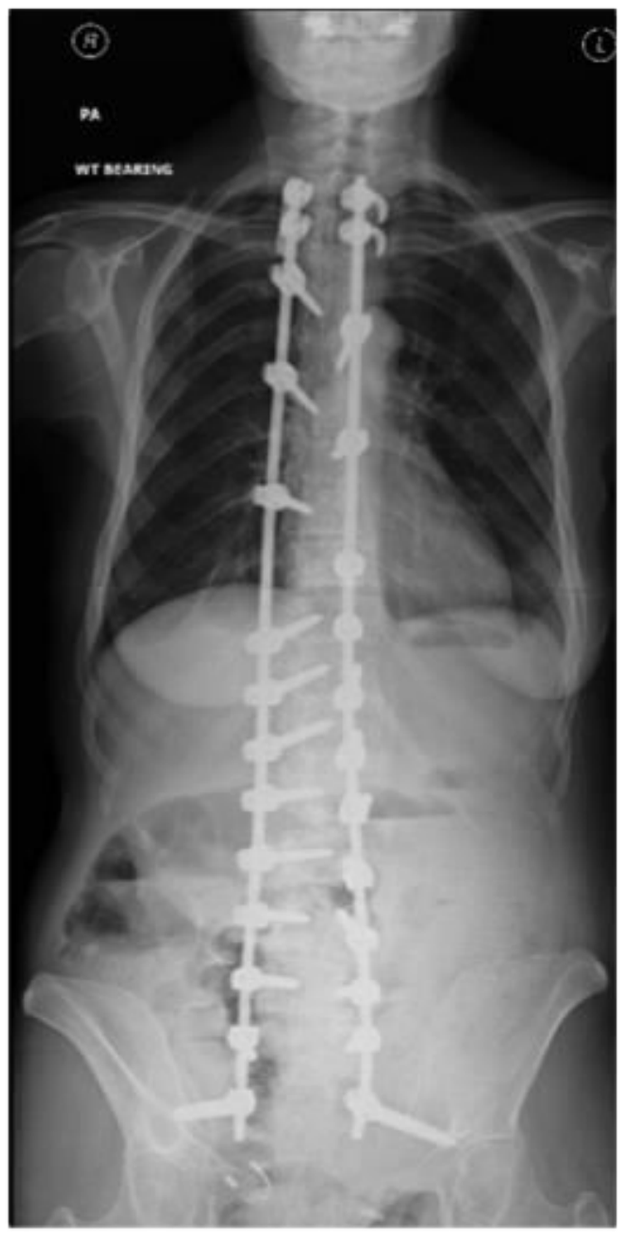

6:55PM

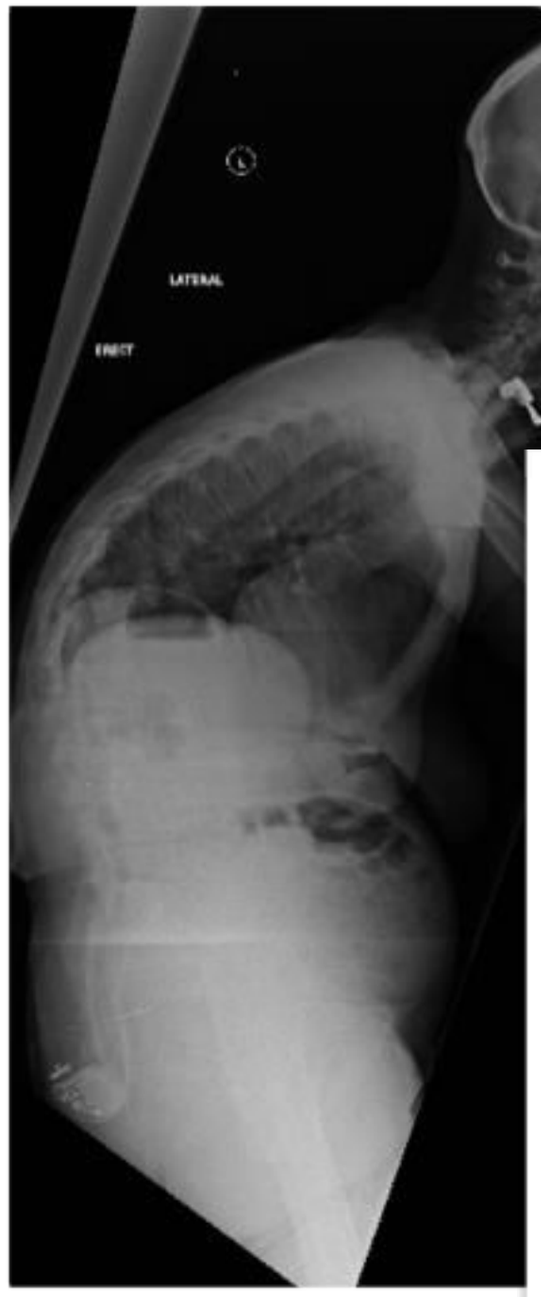

COLUMBIA REGIONAL HOS
09/1
2:48:
15

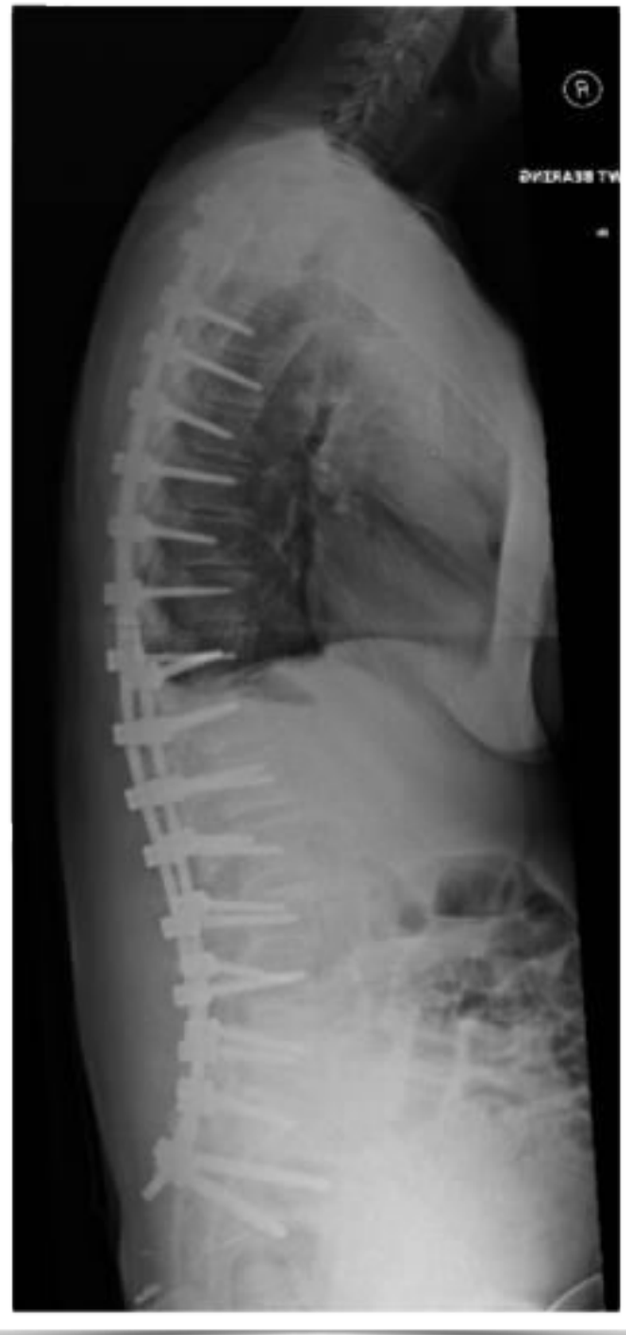

Spin -90
Tilt -2

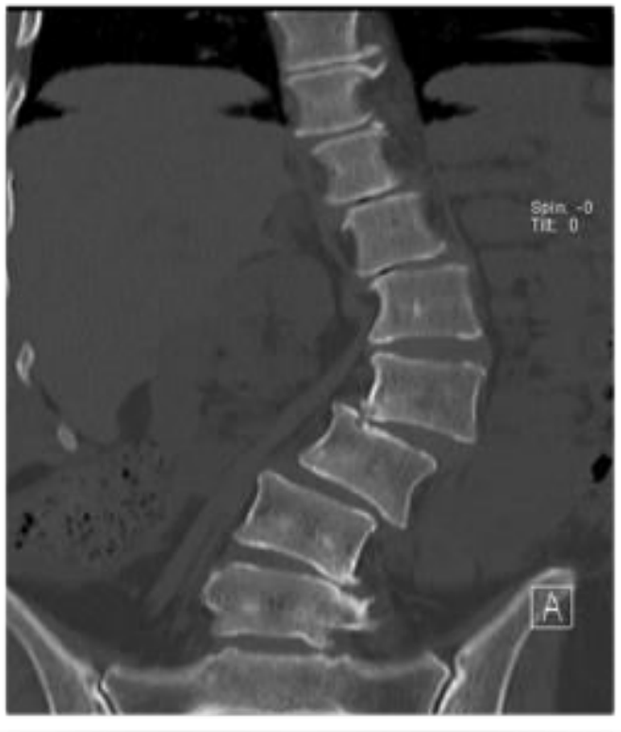

18 1:54PM

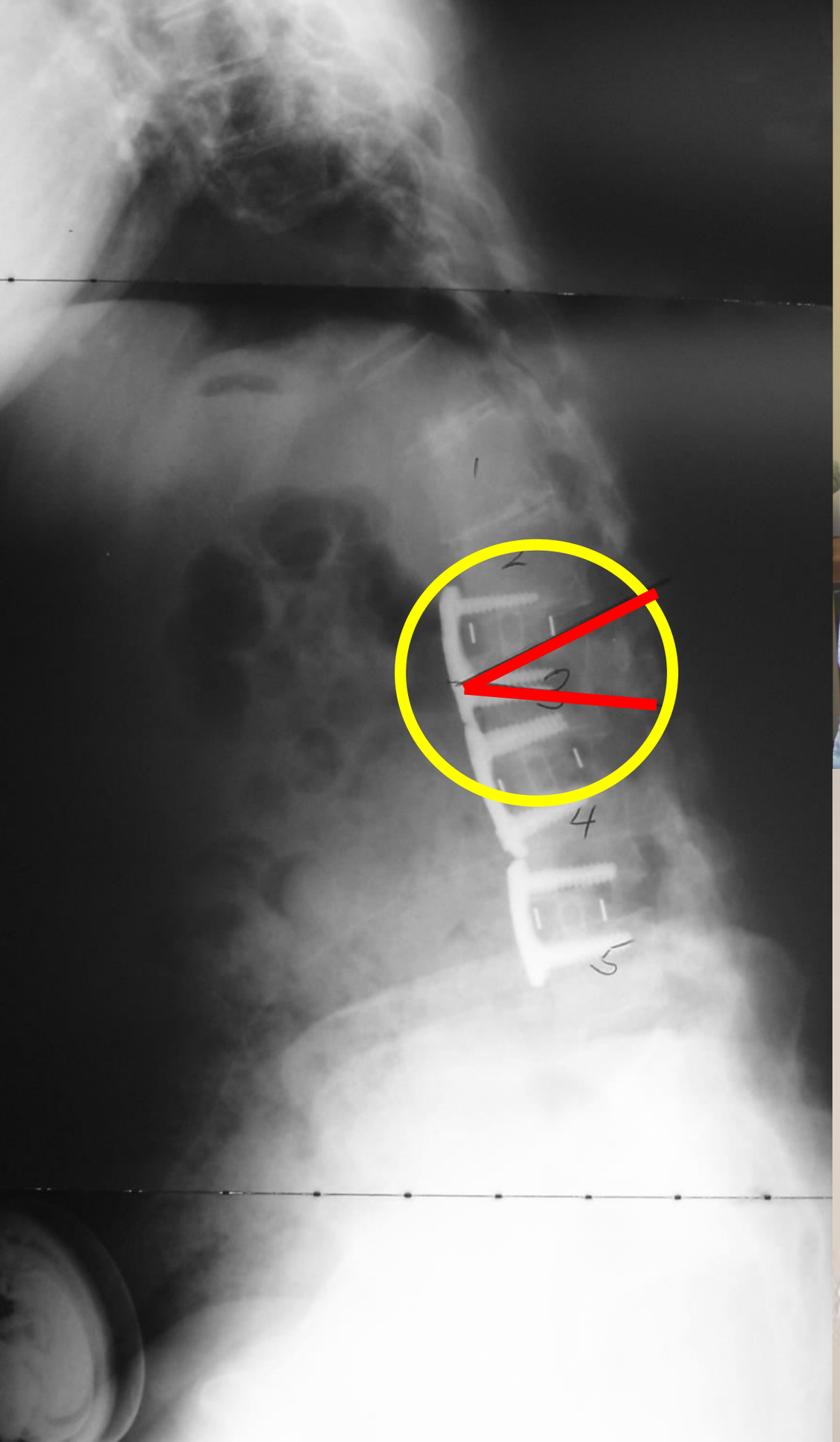

ERECT
AP


PA
WT BEARING


LATERAL
ERECT




Spin: -0
Tilt: 0
A


1
2
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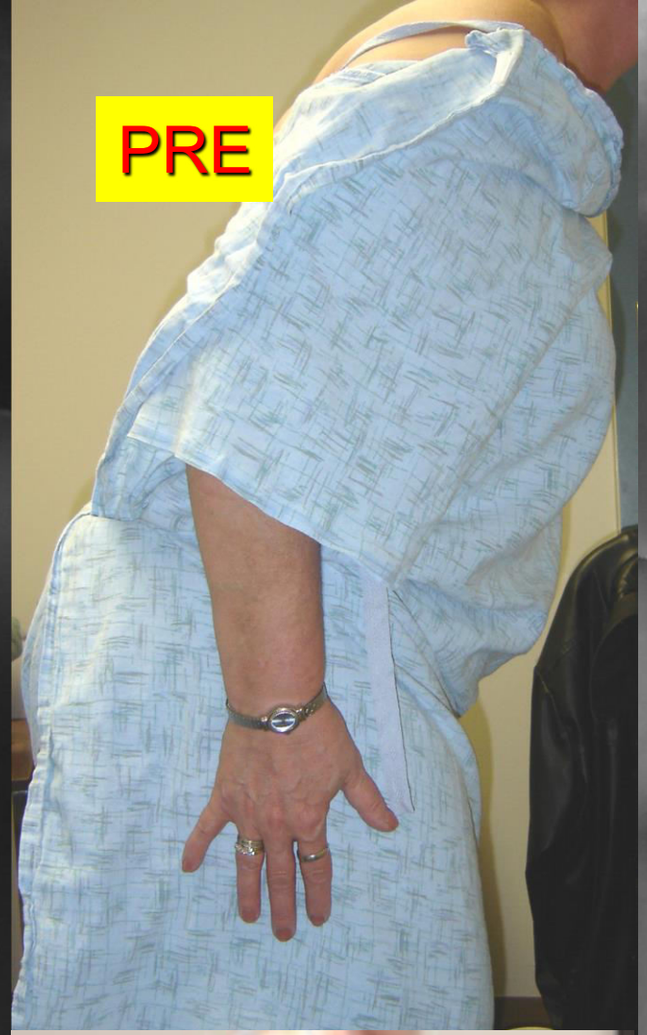
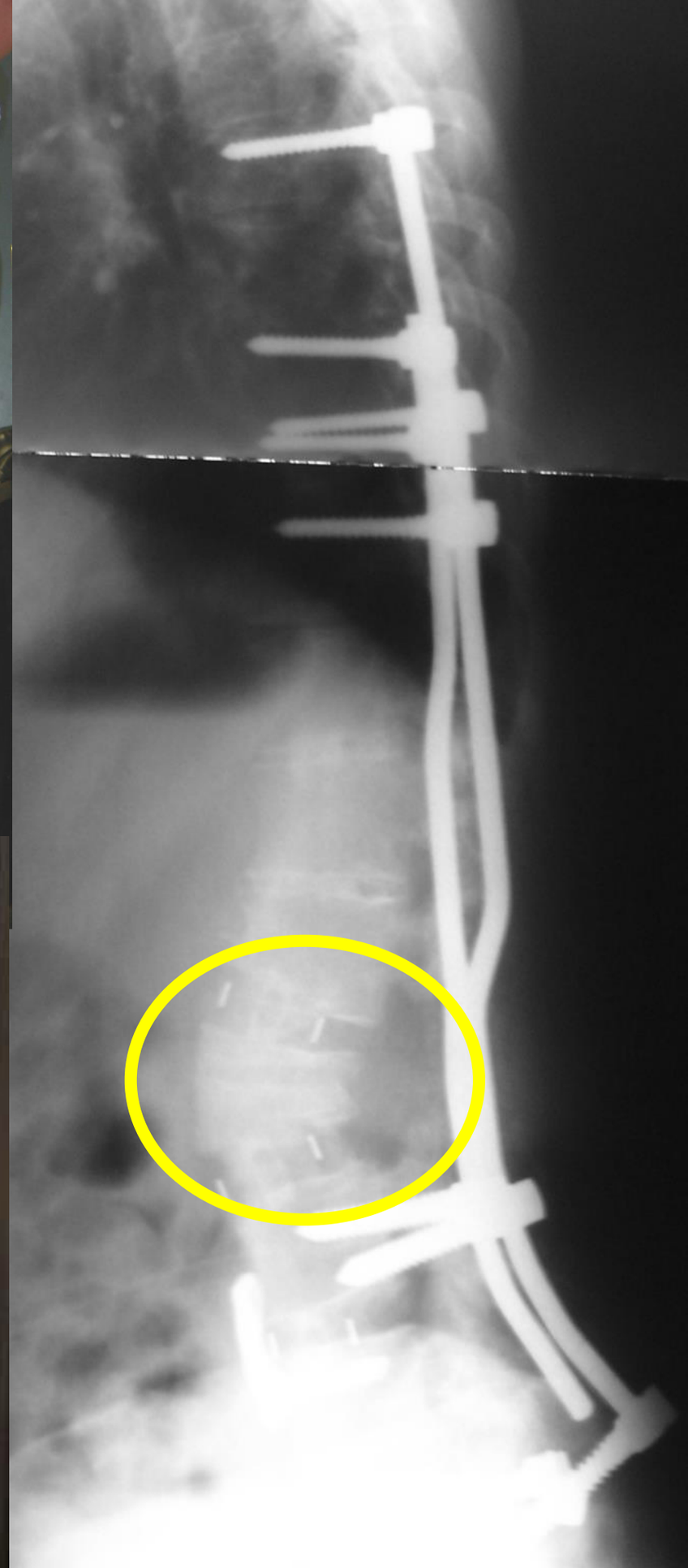
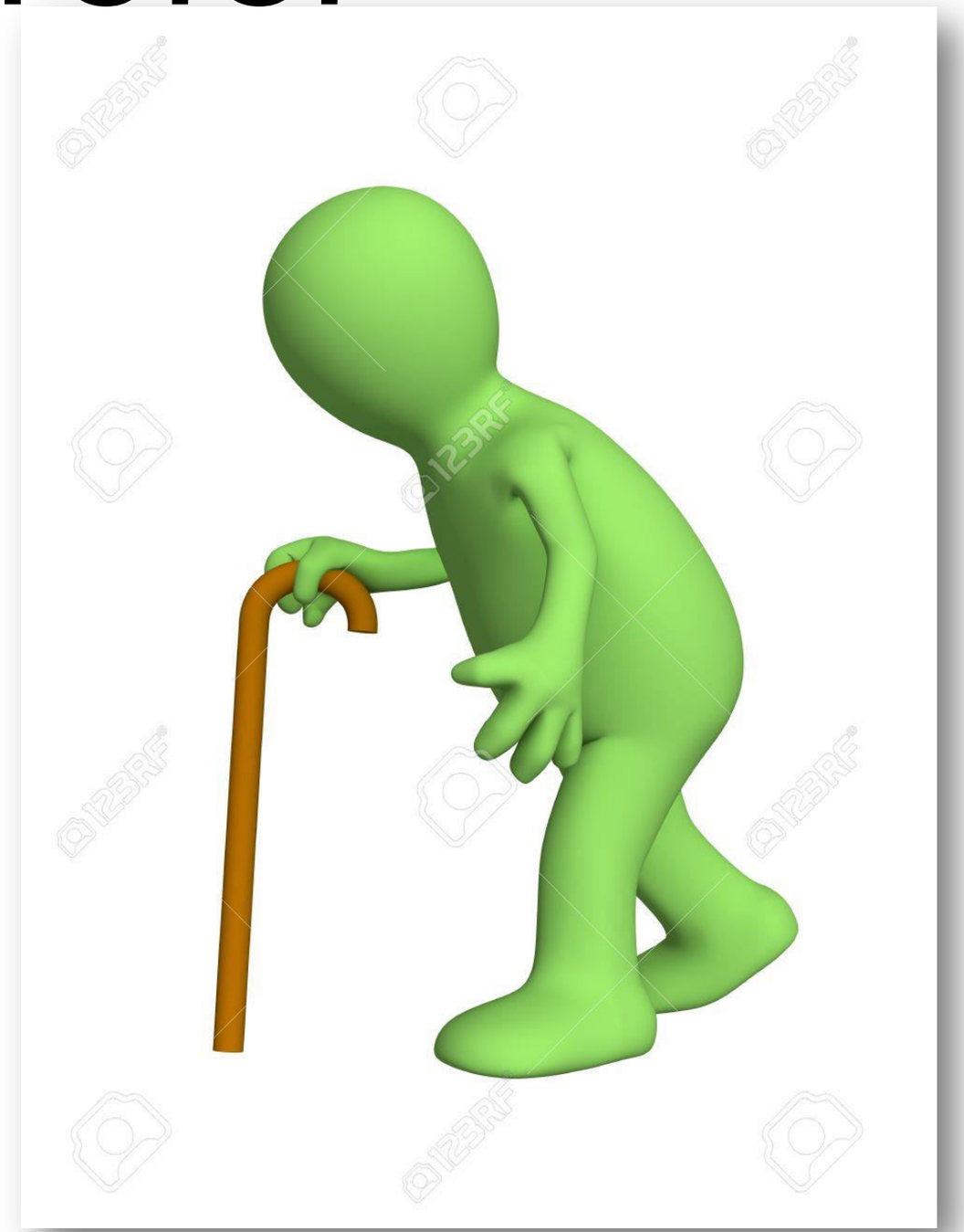

PRE


POST



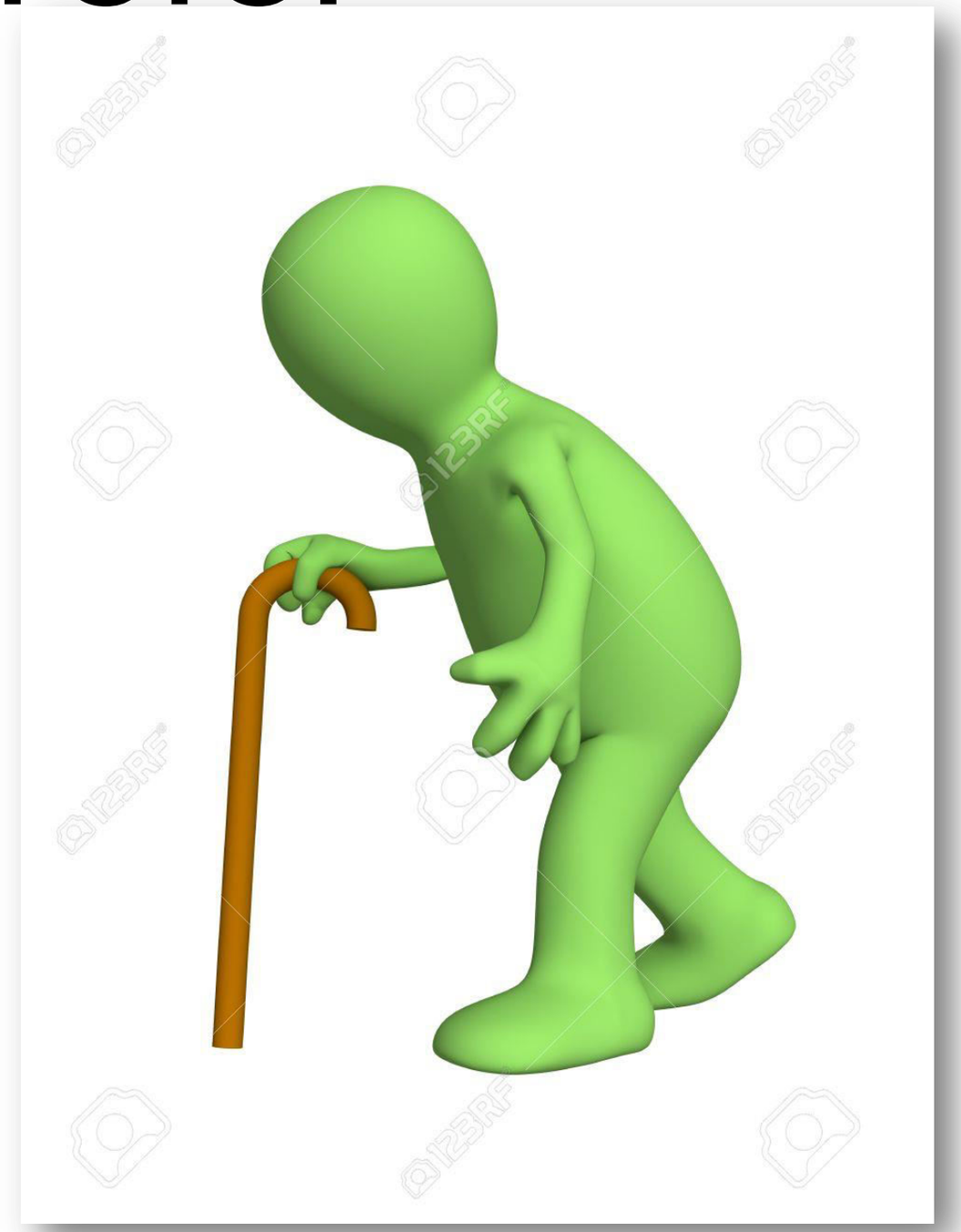
When to refer

- Axial back pain
- Thigh pain; groin pain
- Muscle fatigue
- Claudication



When to refer

- Unable to stand upright
- New ‘forward gaze’ issues
- Static or dynamic ‘stoop’
- Loss of ‘height’



Refer early……not all need surgery