

# Why does the back ache?



mehtaspine

Jwalant S. Mehta

*MBBS, MS (Orth), D (Orth), FRCS, MCh (Orth), FRCS (Orth)  
Consultant Spinal Surgeon*

***The Royal Orthopaedic Hospital***

***Birmingham Childrens' Hospital***

***BMI The Priory and Edgbaston Hospitals***

***Bromsgrove Private Clinic***



# Outline of the talk:

*‘Why does the back ache?’*

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

# Use and abuse our backs

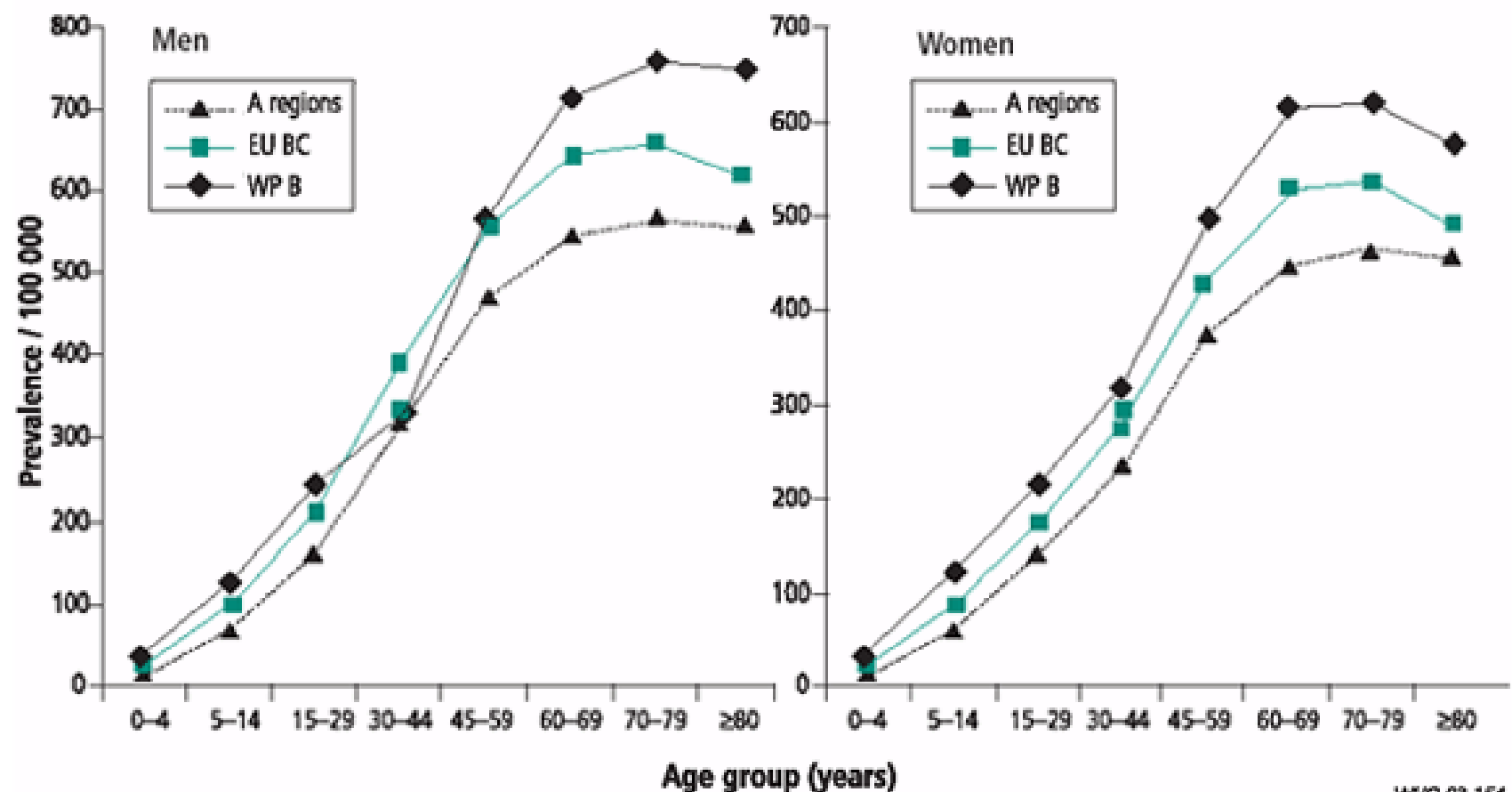
- Sitting habits
- Smoking
- Diet
- Lack of exercise
- Excessive screen time



# 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 Prevalence of low back pain, by age group, sex, and region, 2000 (unpublished data, WHO, 2000).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:**

- Below 12th 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 10 pounds 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 10 pounds 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 re-injury. 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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- **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).

# 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

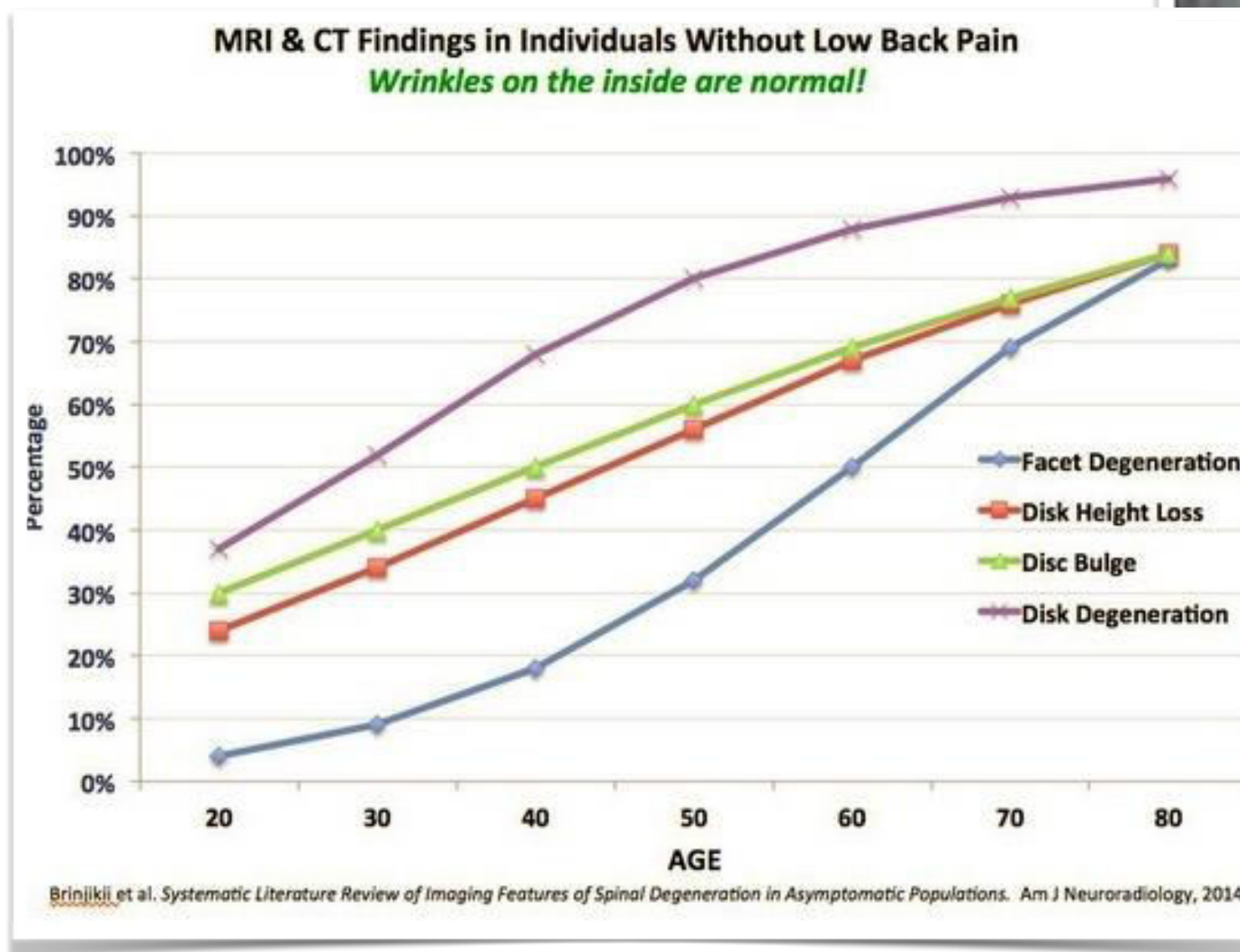
52% M 31 - 58

***Savage ESJ 1994***



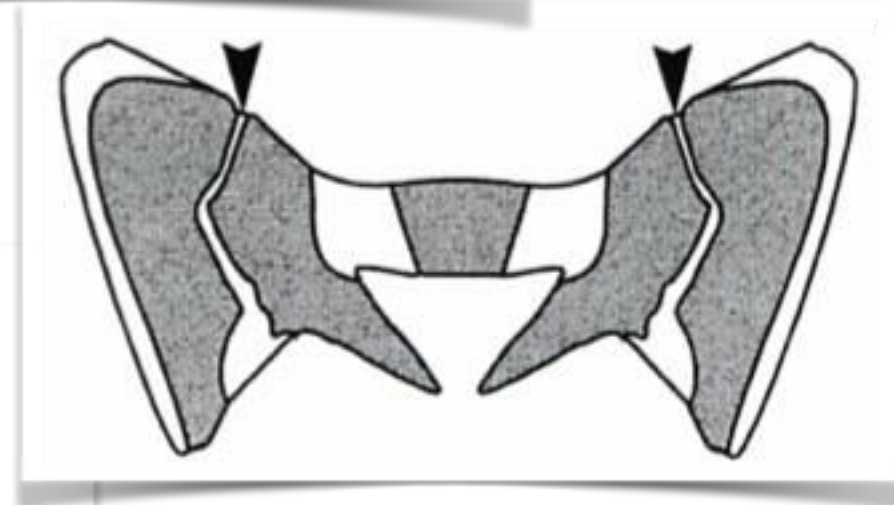
# VOMIT

- Victim
- Of
- Medical
- Imaging
- Technology

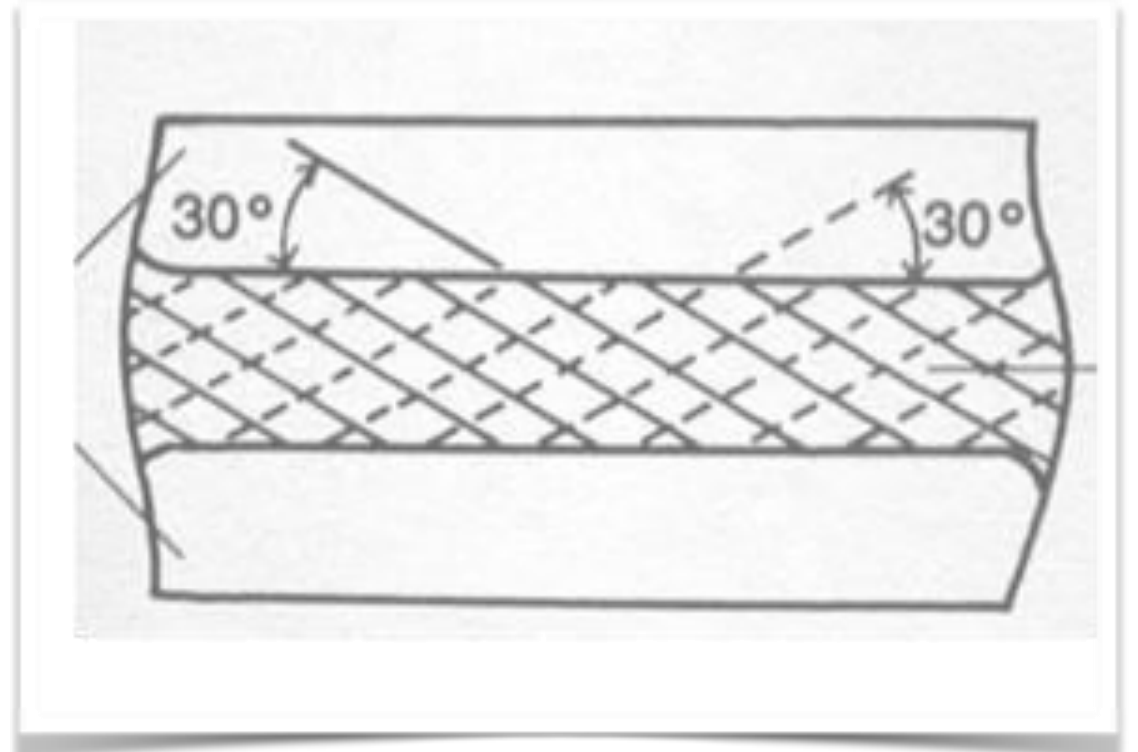
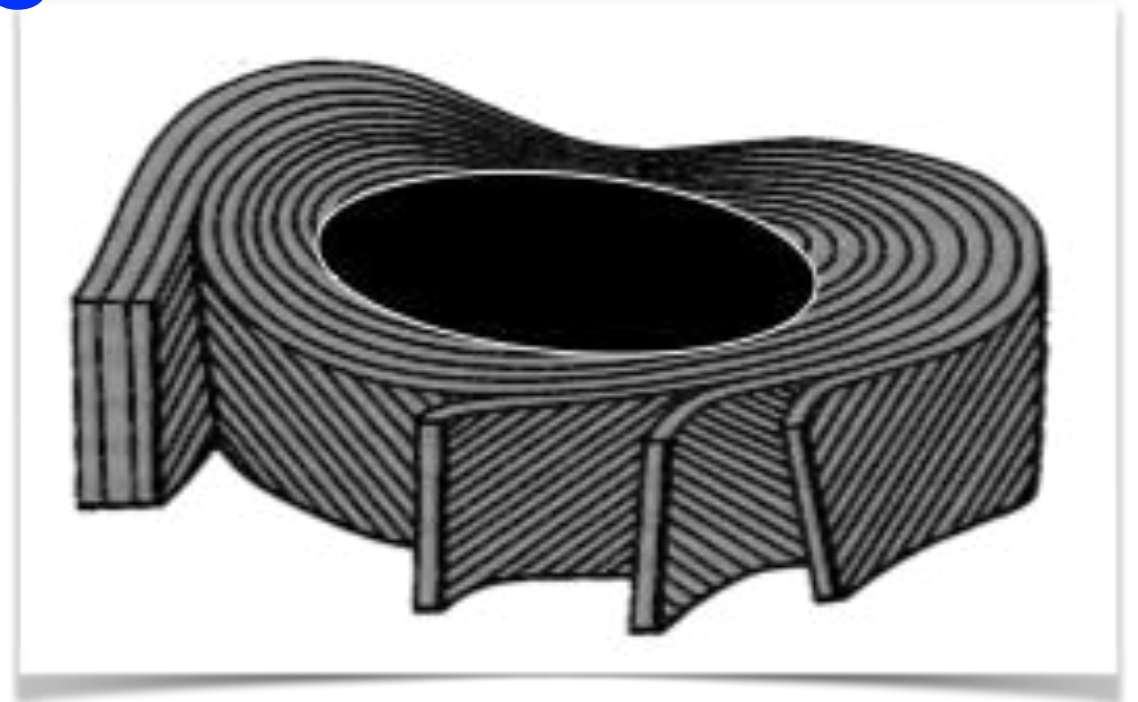
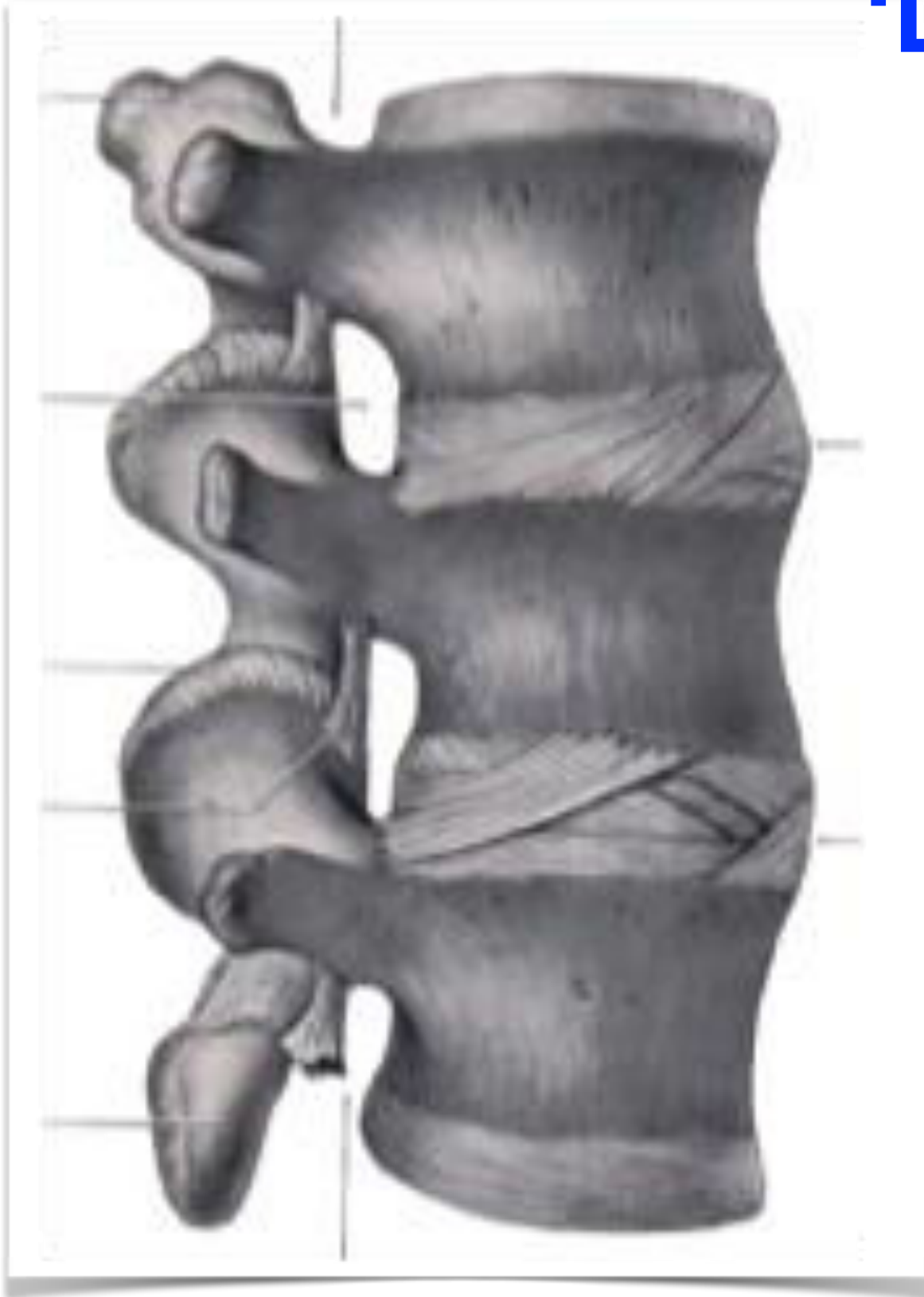


# Pain generators

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

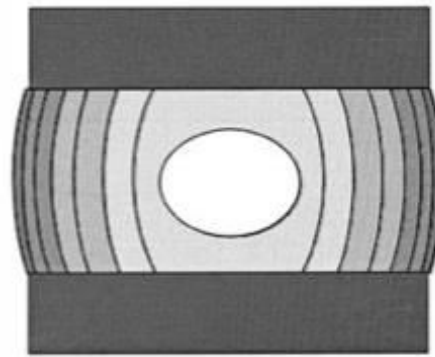


# Inter-vertebral disc 'Disc'

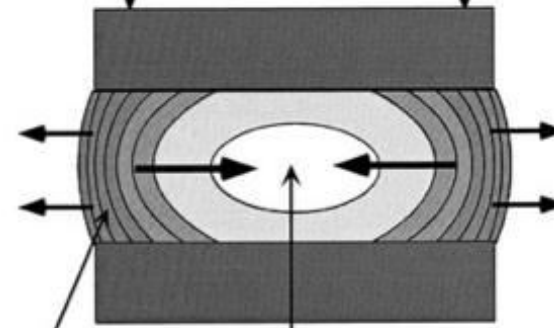




before compression



external load

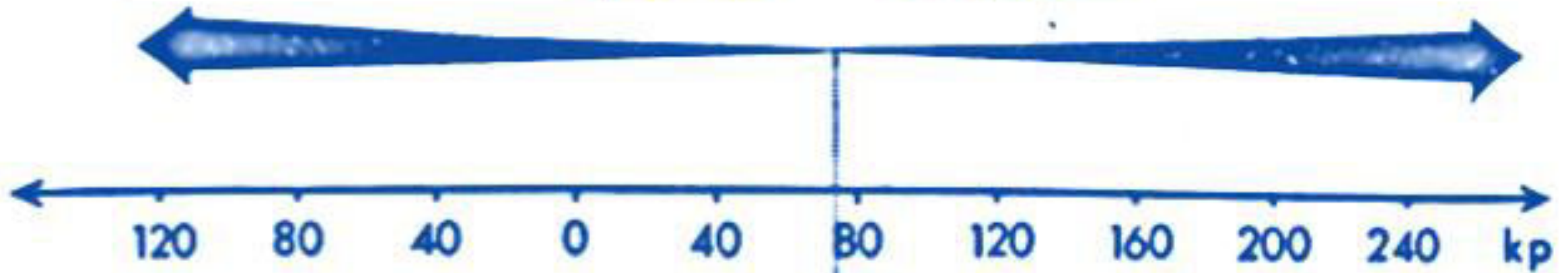


water accumulation  
in the nucleus pulposus

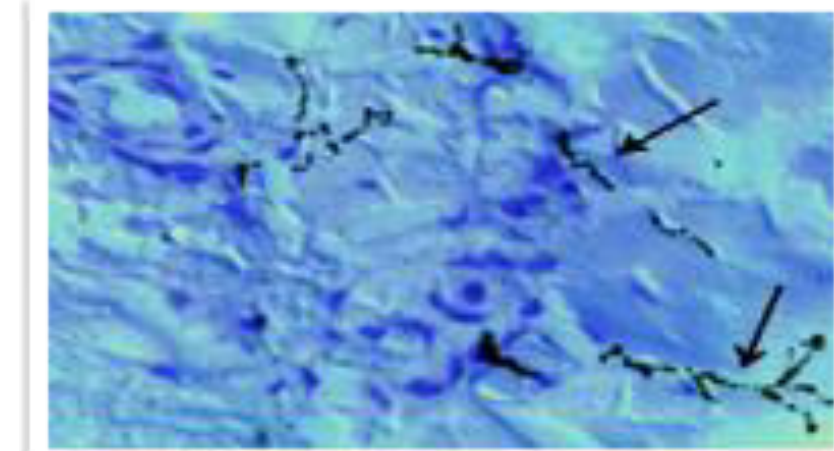
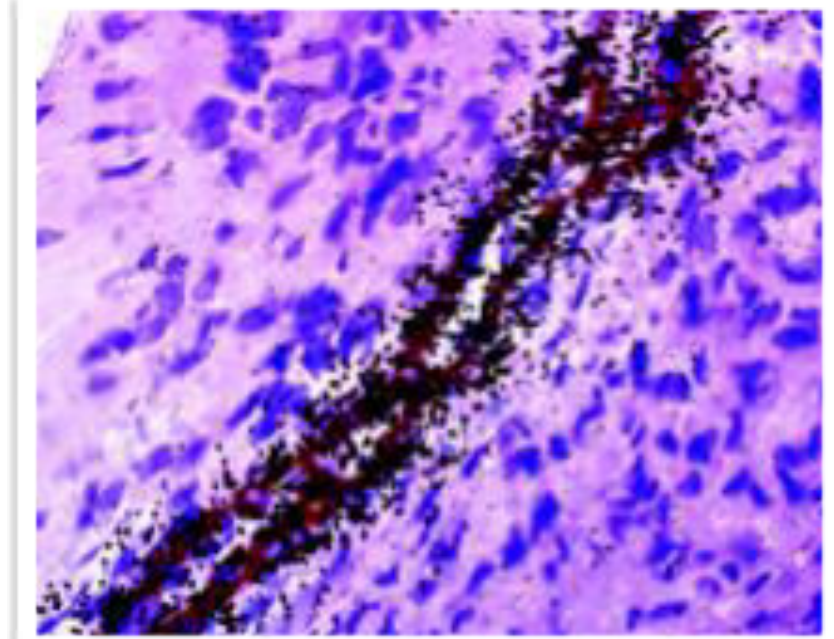
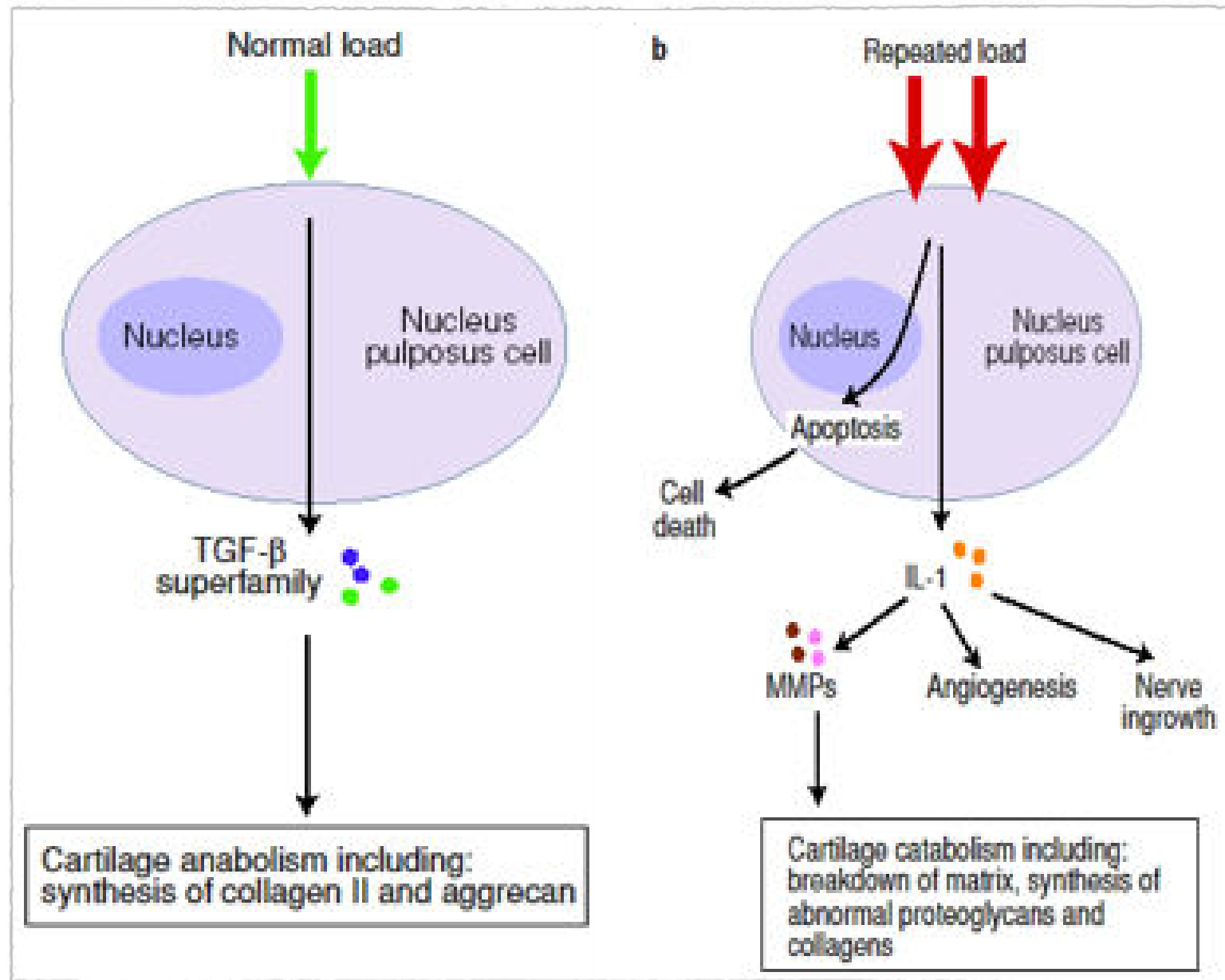
less water permeable layer

Hydration

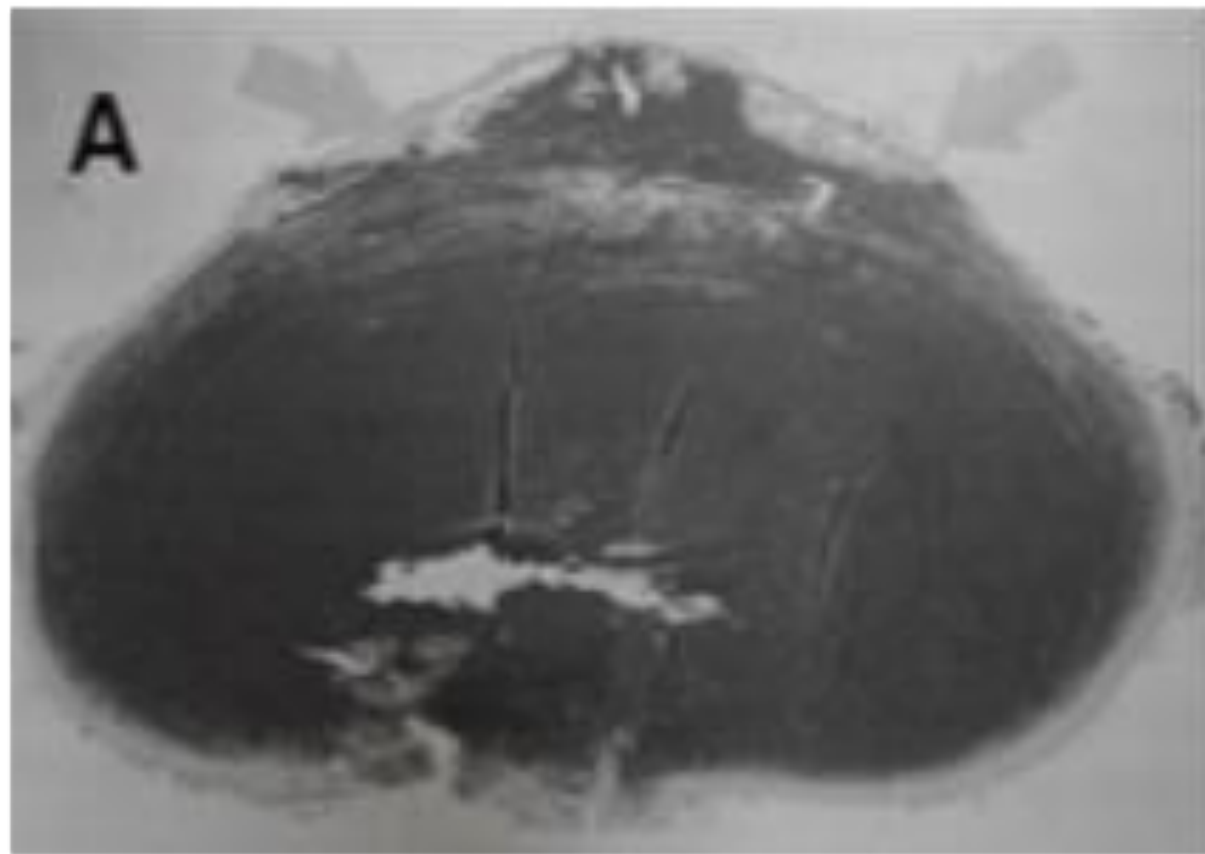
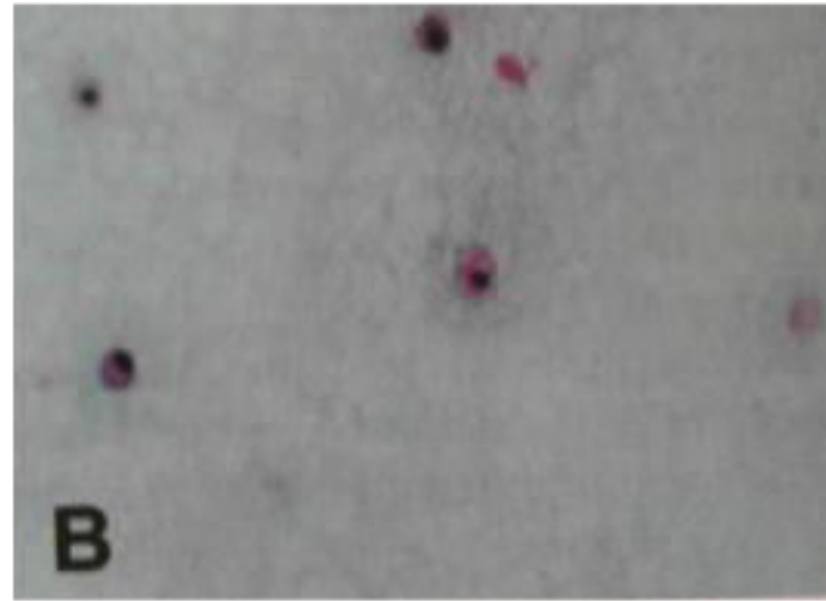
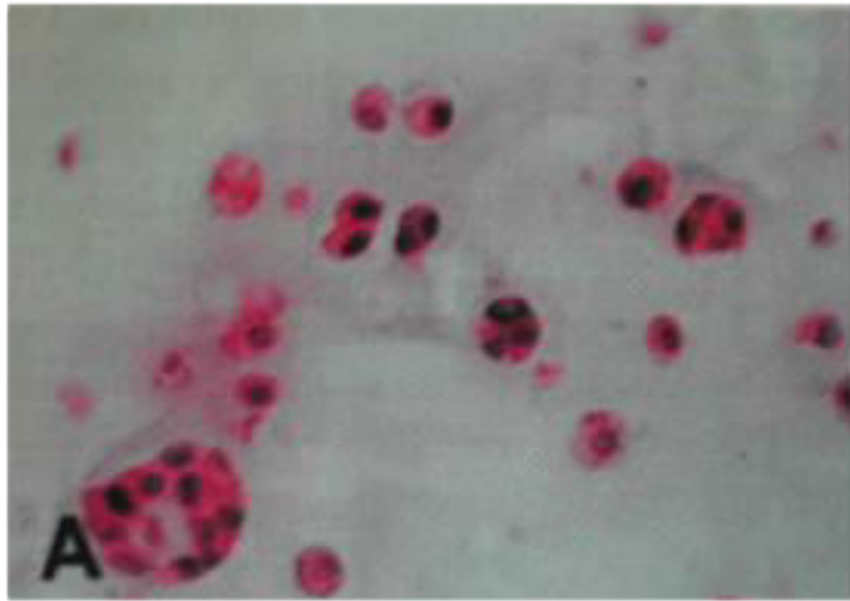
Dehydration



# Cellular pathology leading to disc degeneration

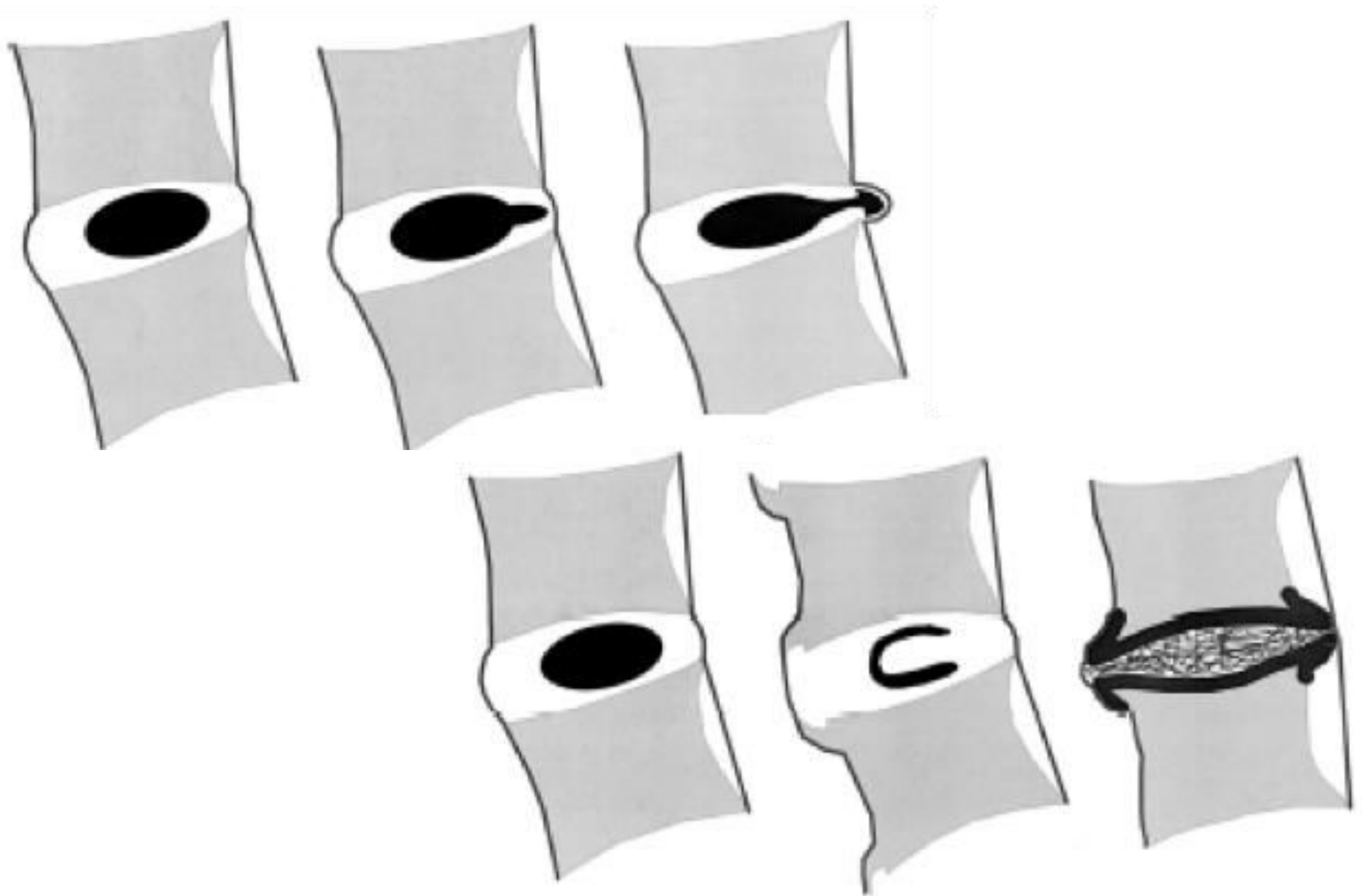


# Micro & Macroscopic changes in the degenerate disc

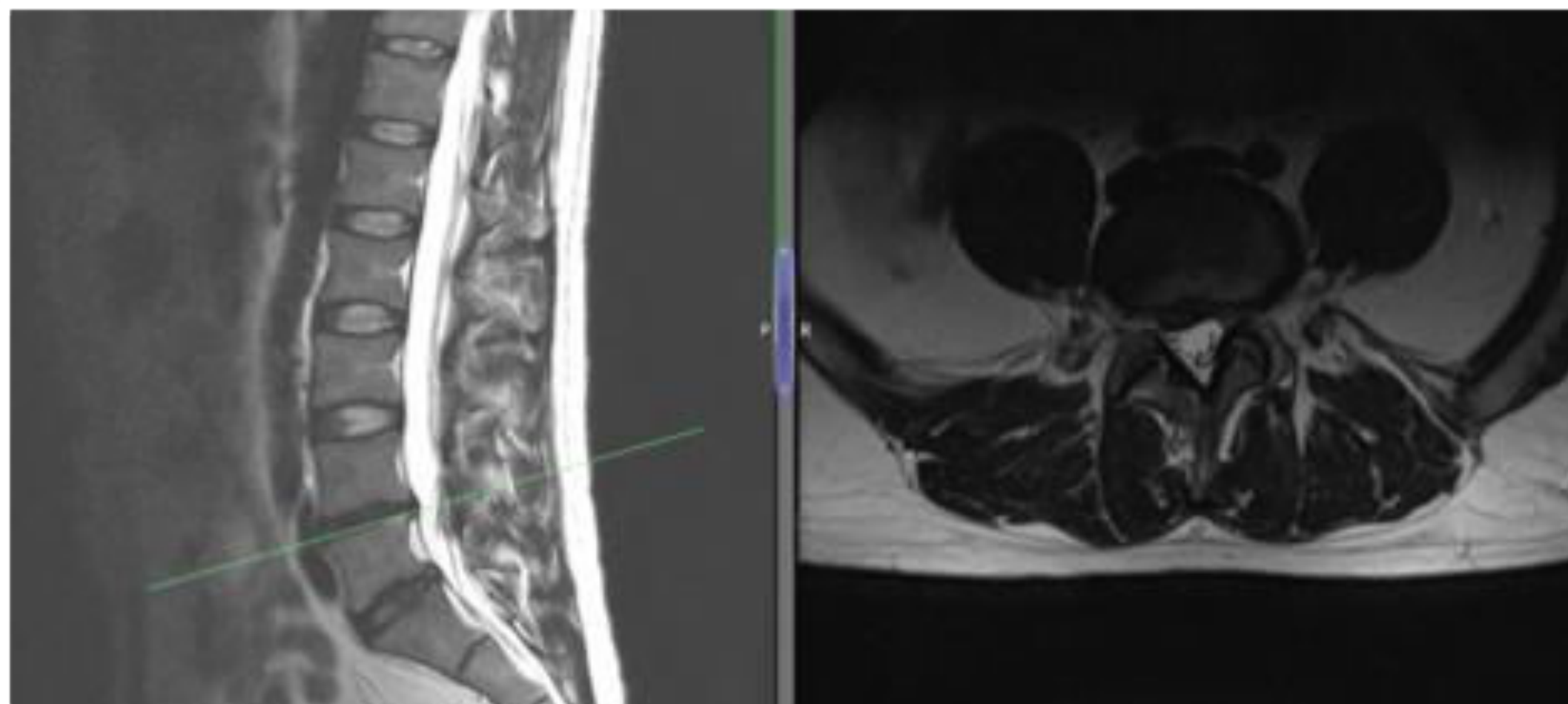
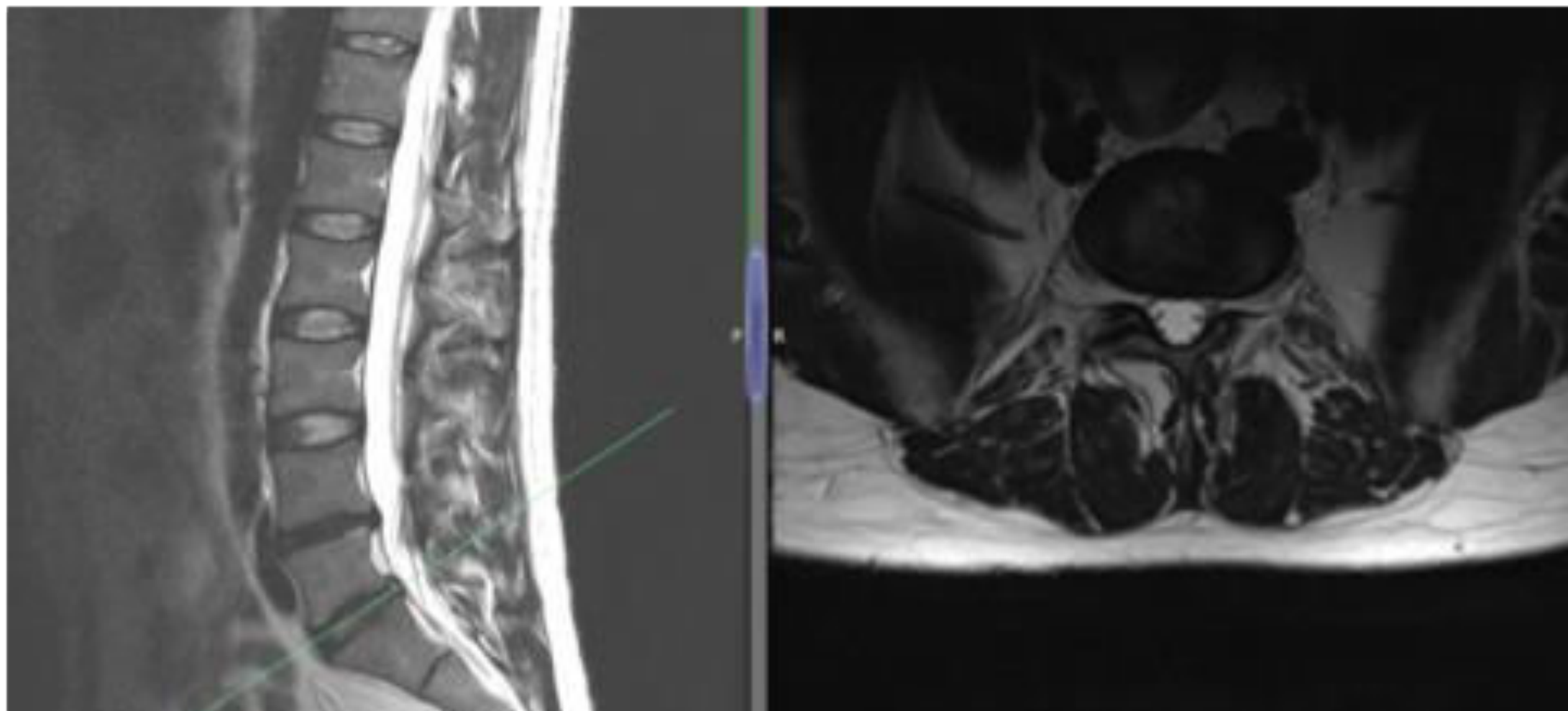




# The degenerative cascade

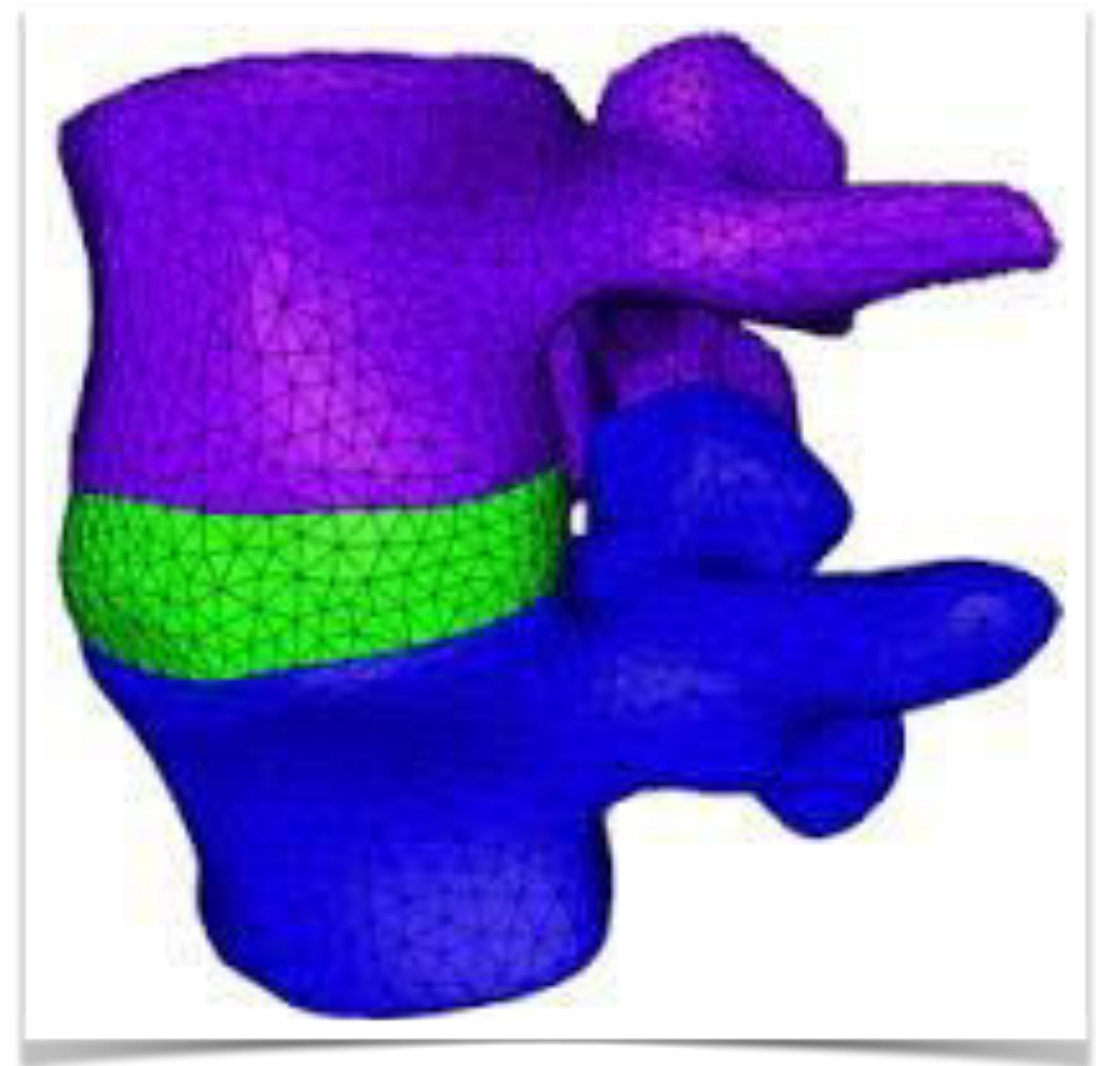




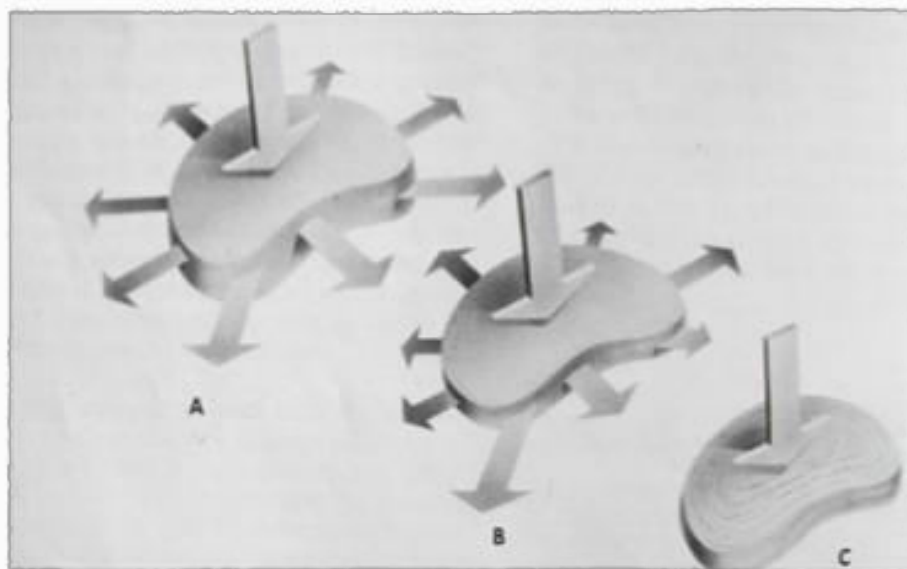
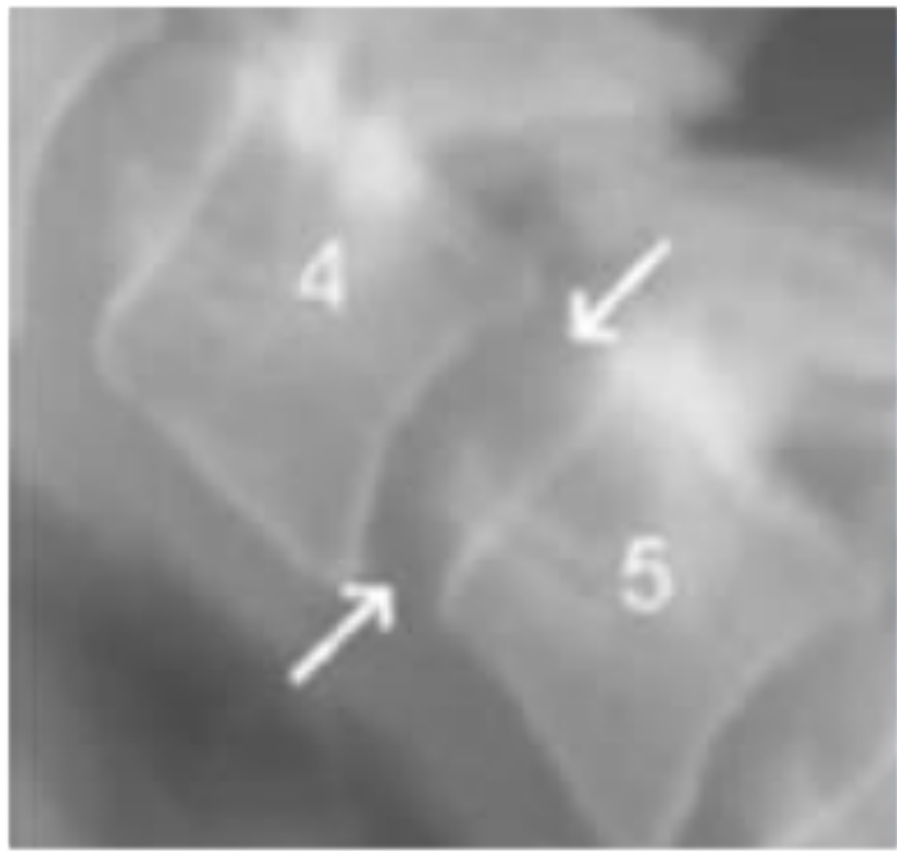


# The motion segment

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

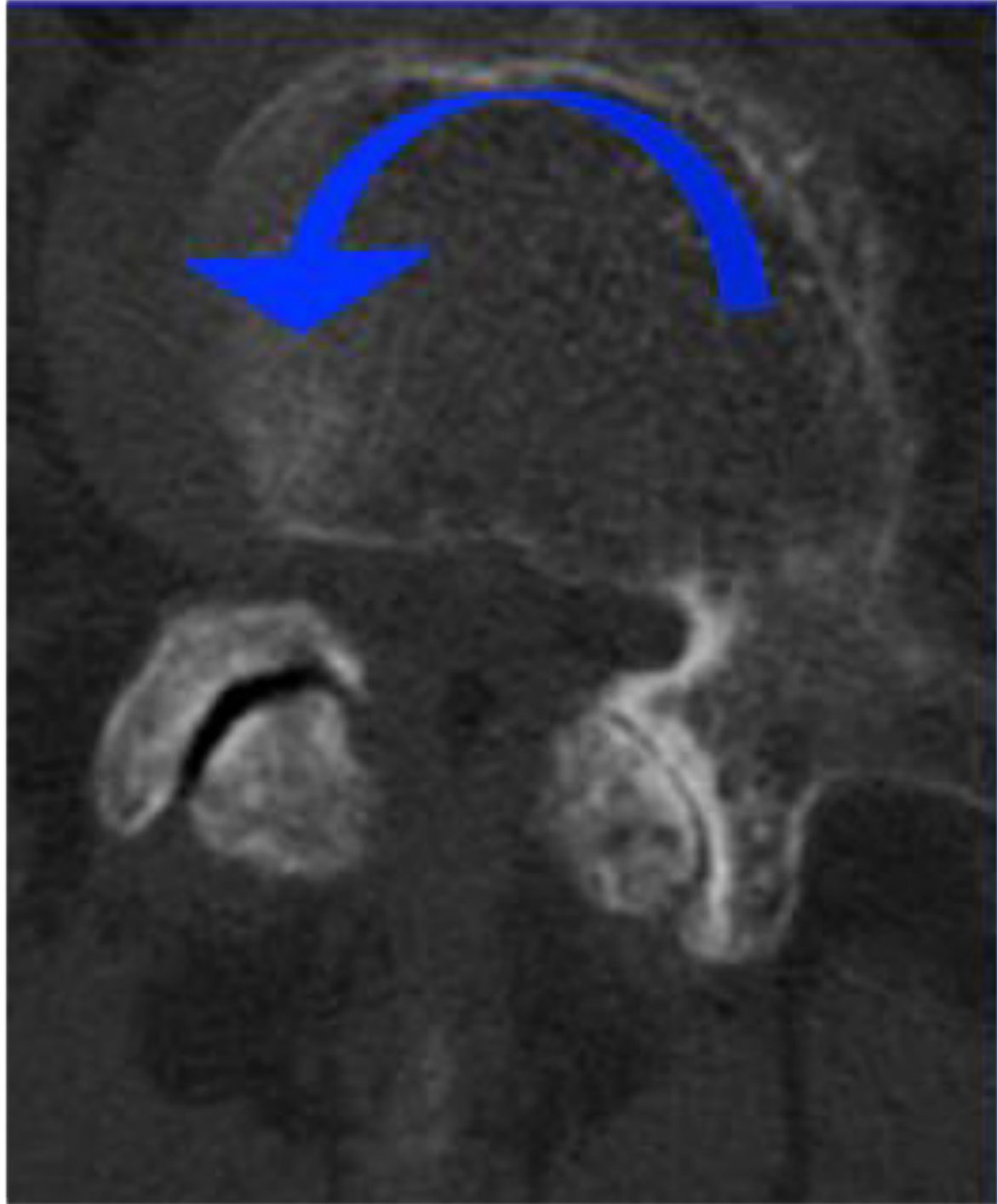


# Disc height and degeneration

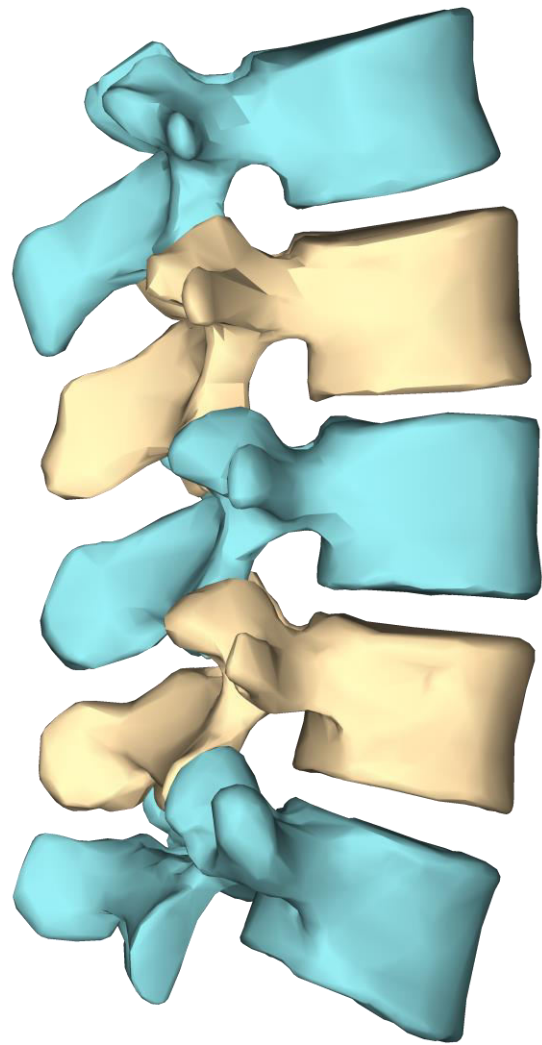




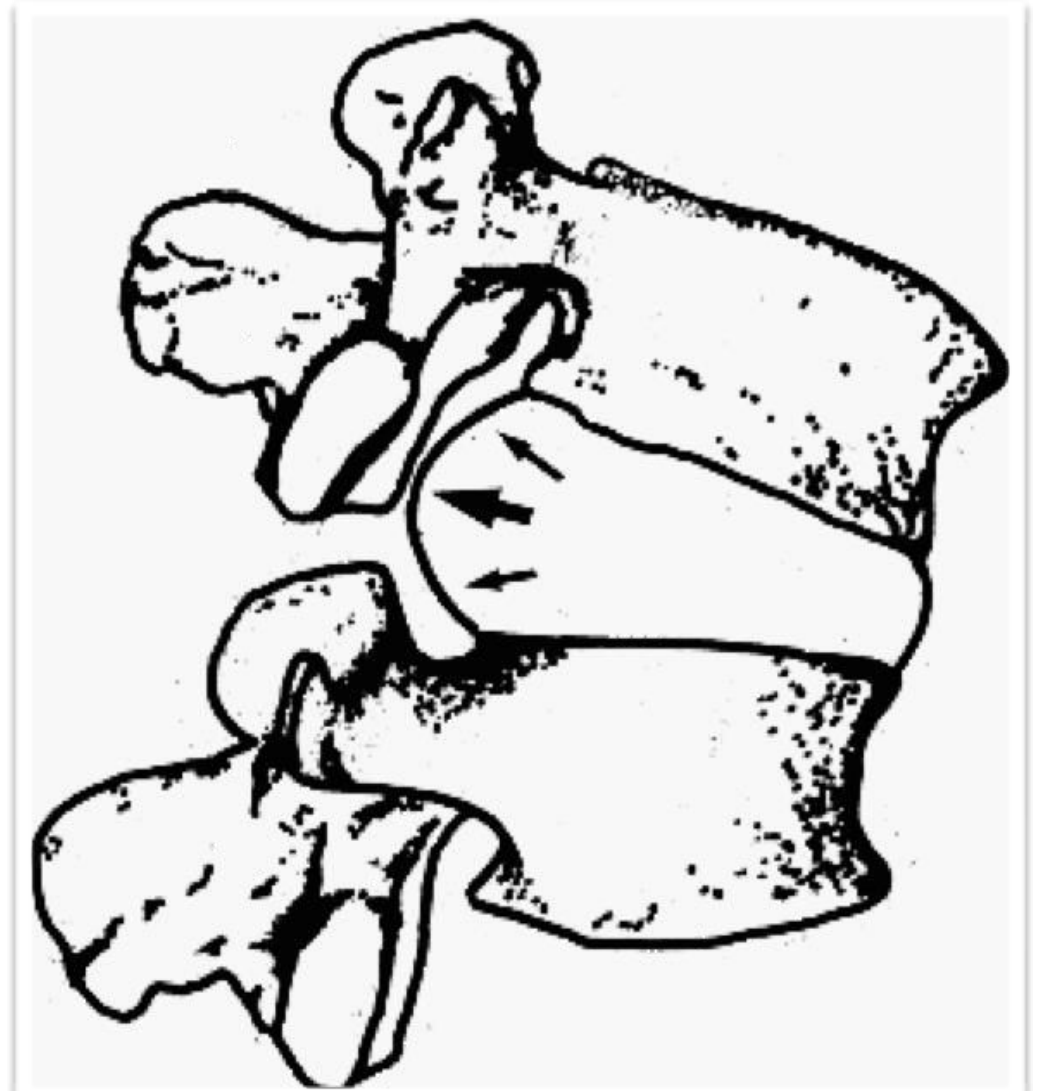
# Disc v facet arthritis



# Discogenic v Facetogenic

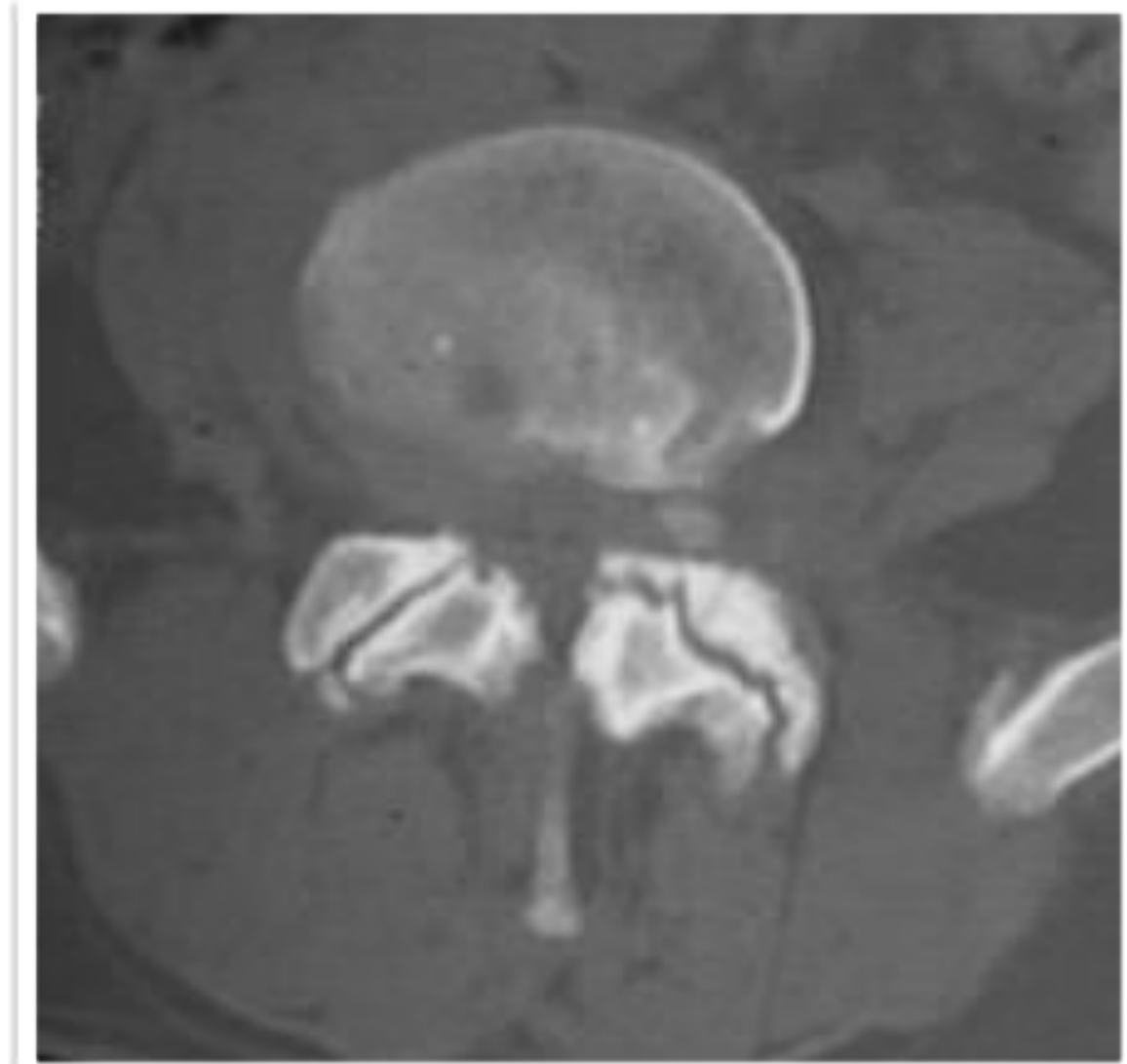
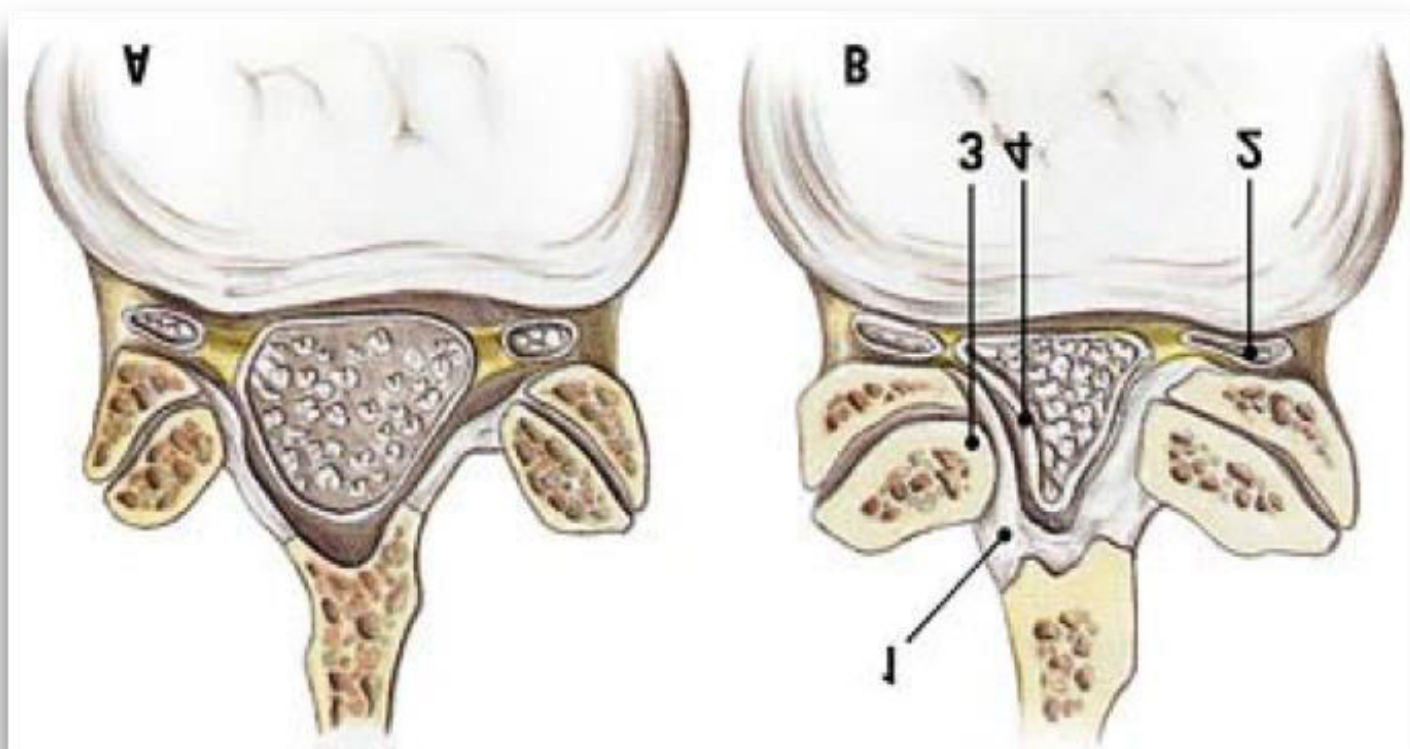


Extension



Flexion

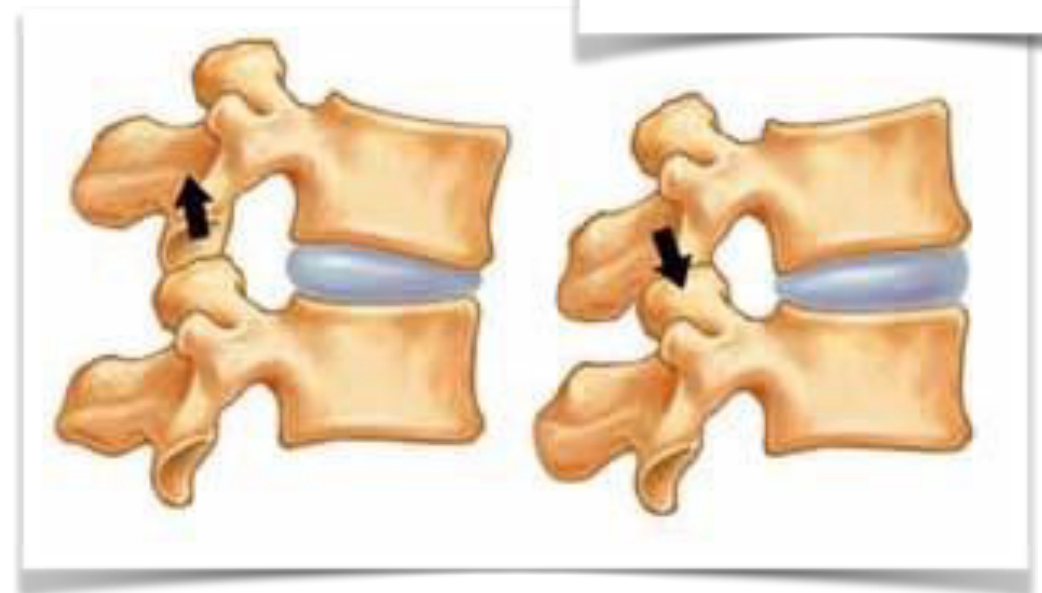
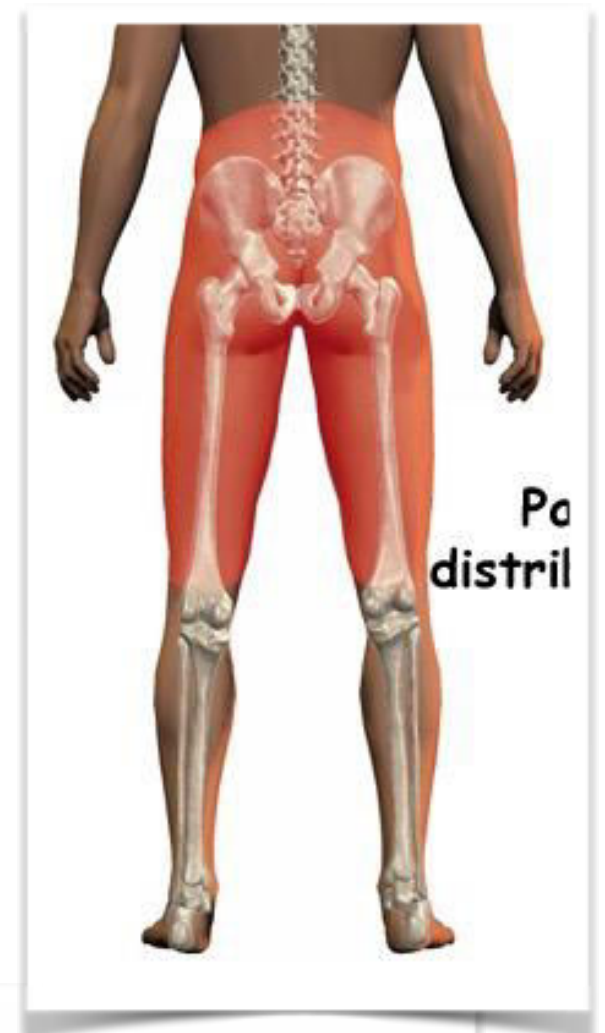
# Facet arthritis





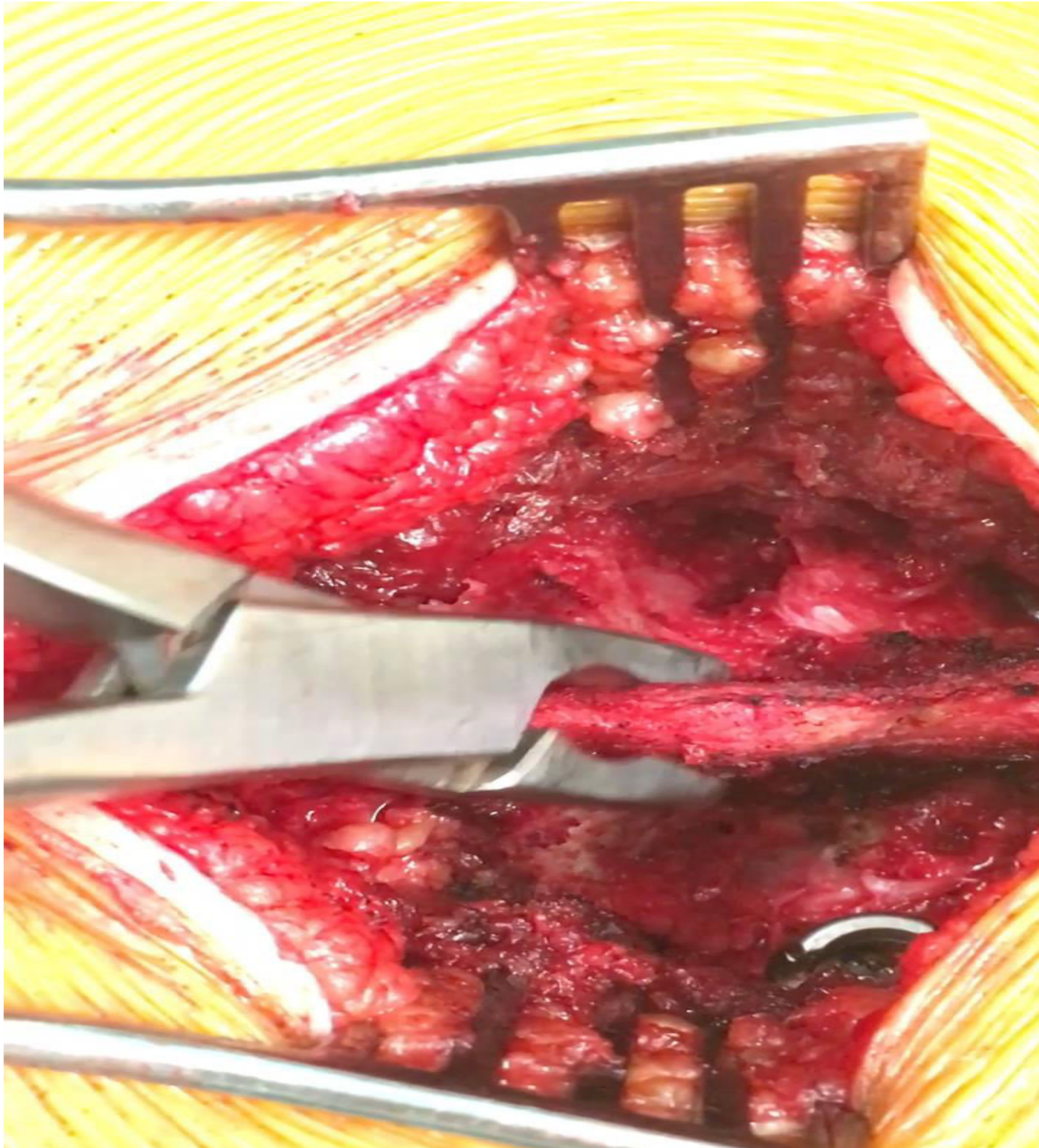
# Facetogenic back pain

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





# Spondylolysis



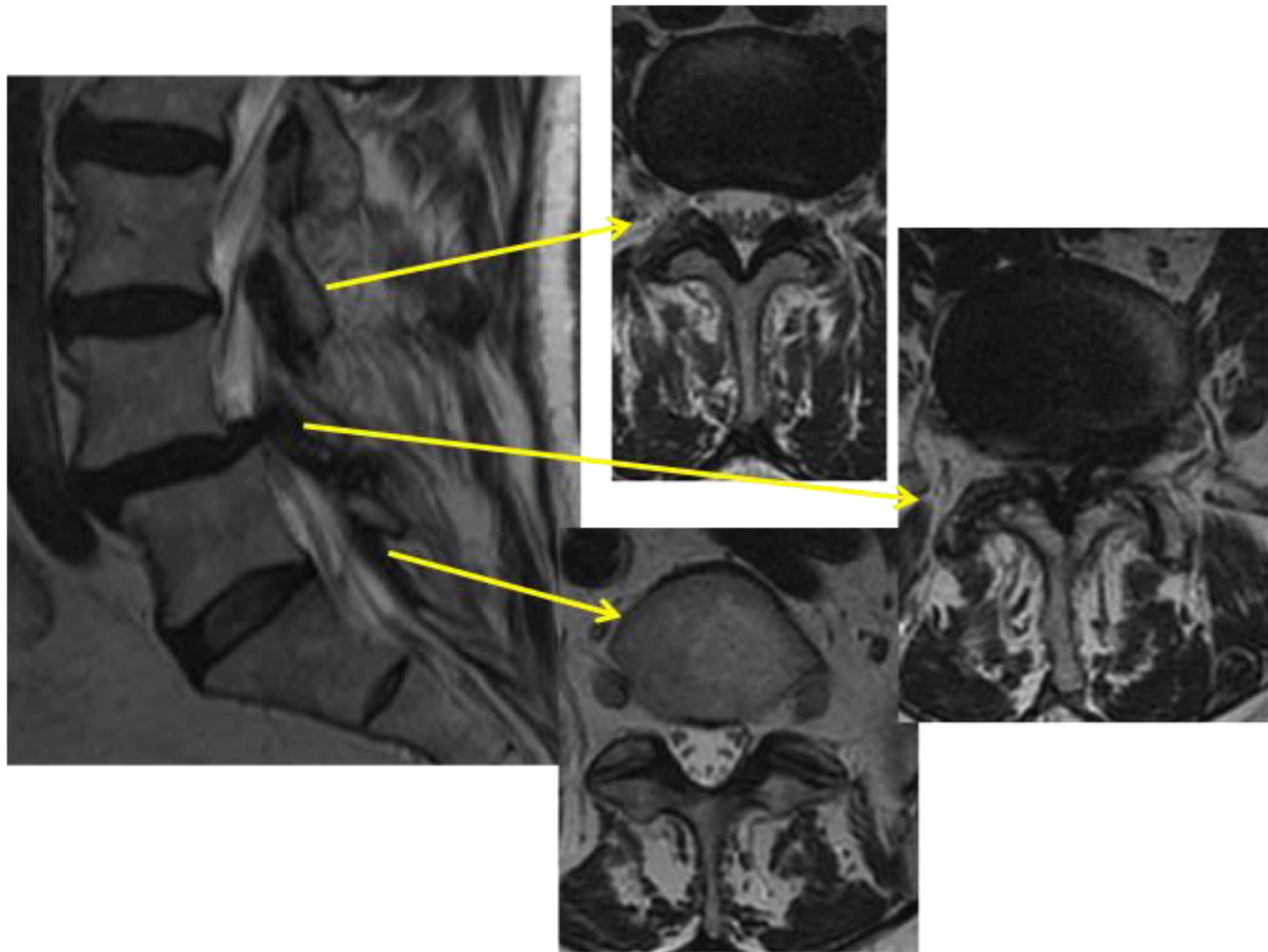
# Lumbar canal stenosis

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

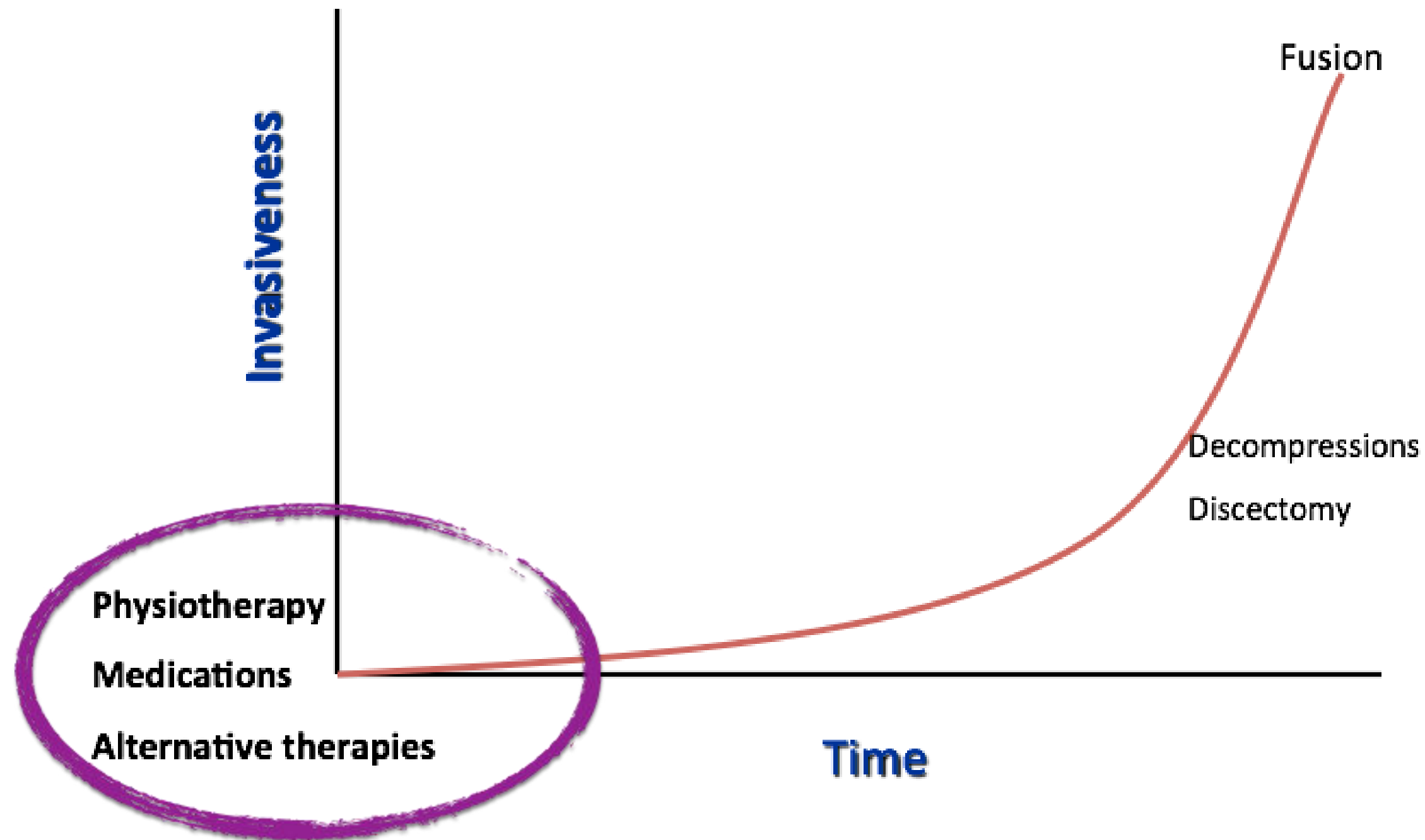




# Degenerate spondylolisthesis



# Treatment options



# Treatment options with positive benefit

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

Physiotherapy

Medications

Alternative therapies

Fusion

Decompressions

Discectomy

Time

Cochrane review

w

# Treatment options with no benefit

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

Physiotherapy

Medications

Alternative therapies

Time

Decompressions

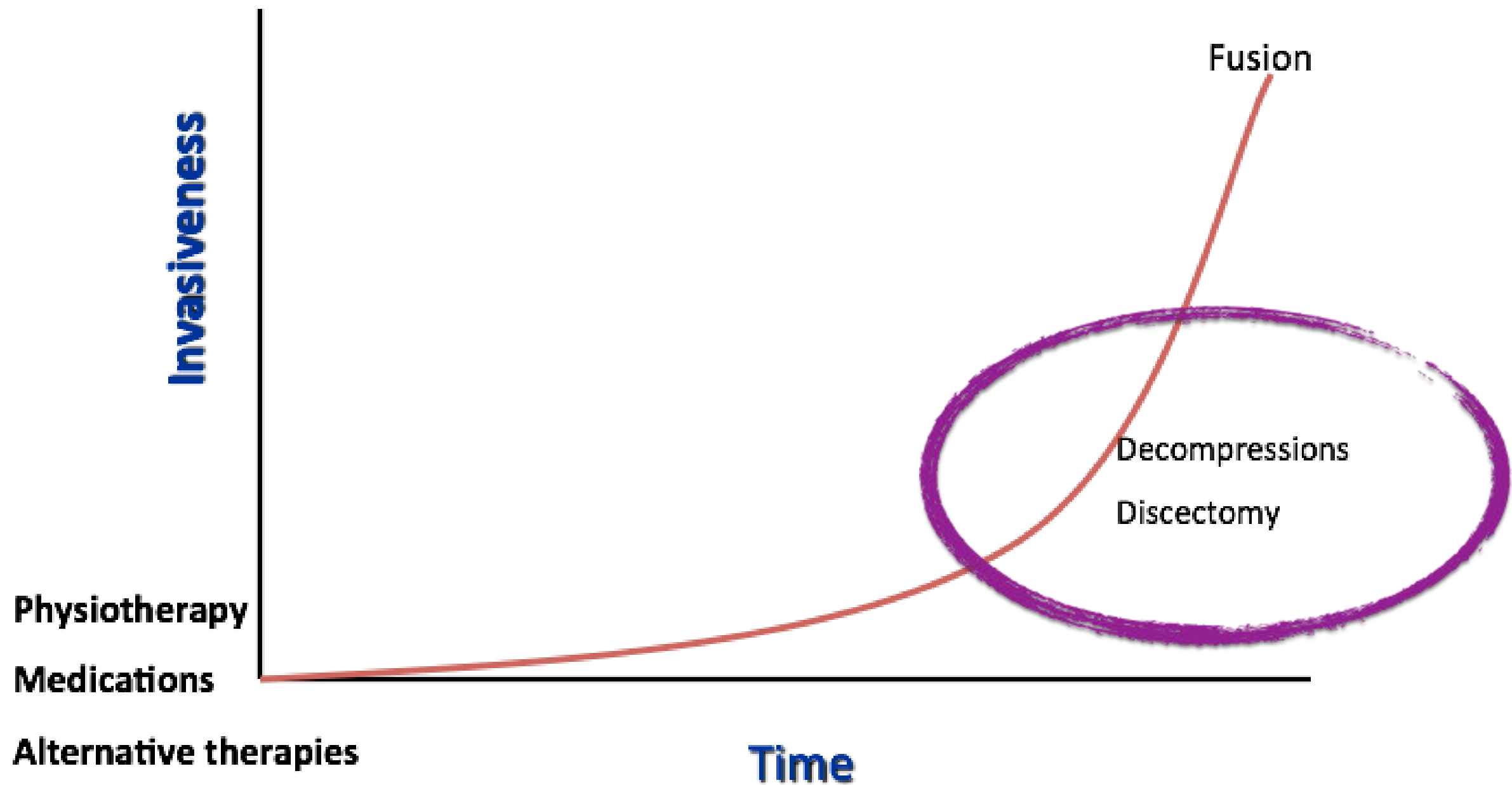
Discectomy

Fusion

Cochrane review

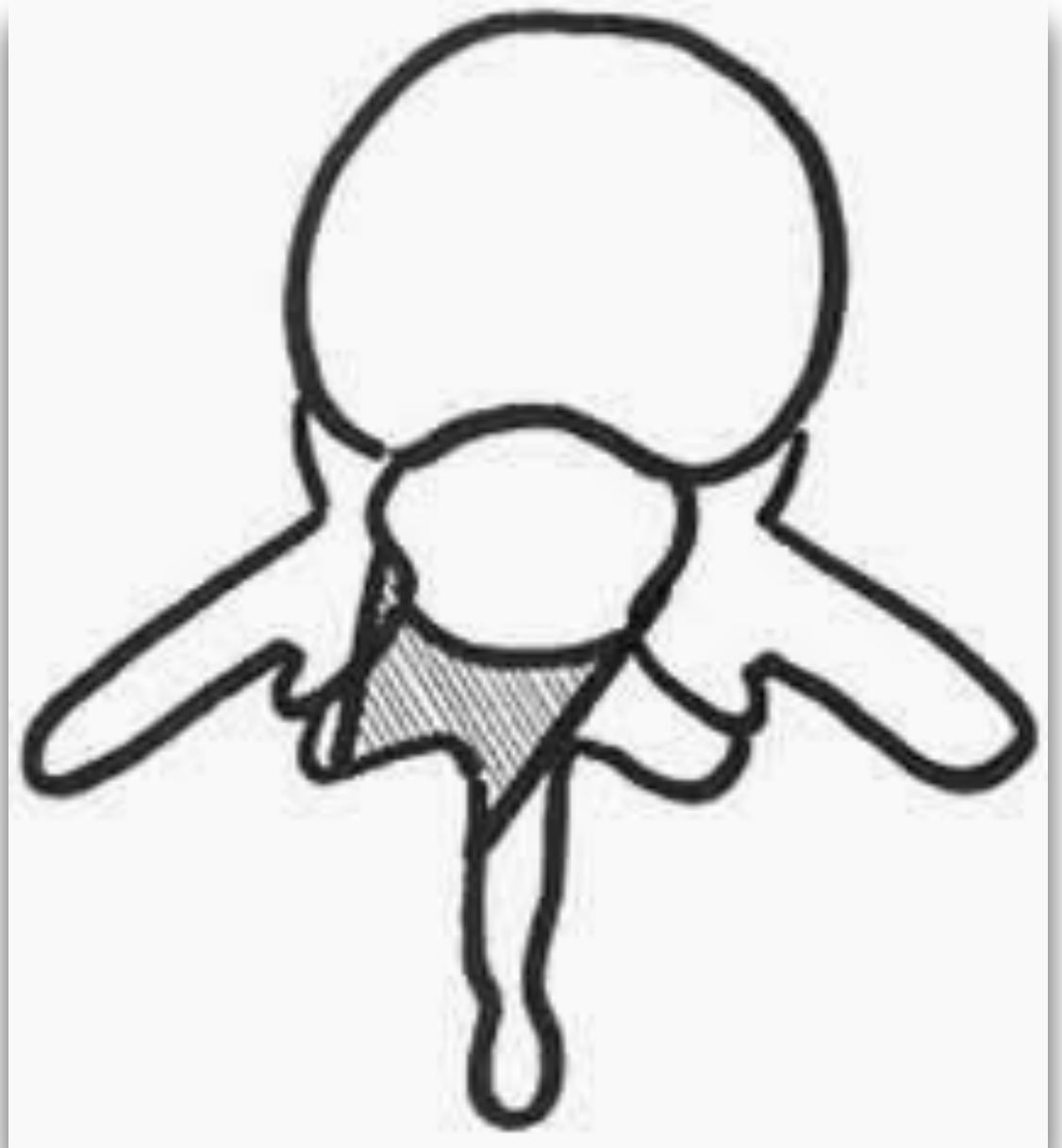
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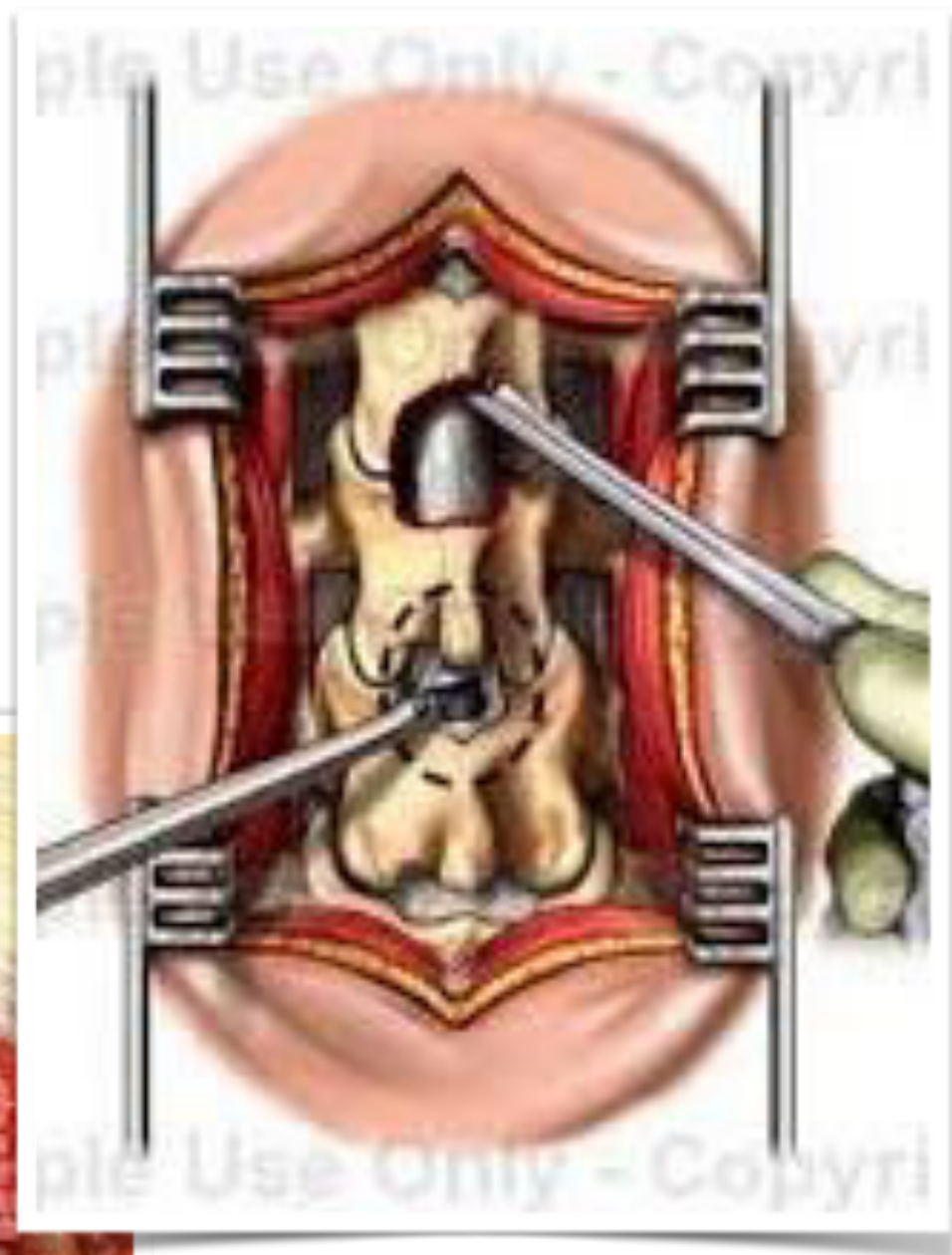
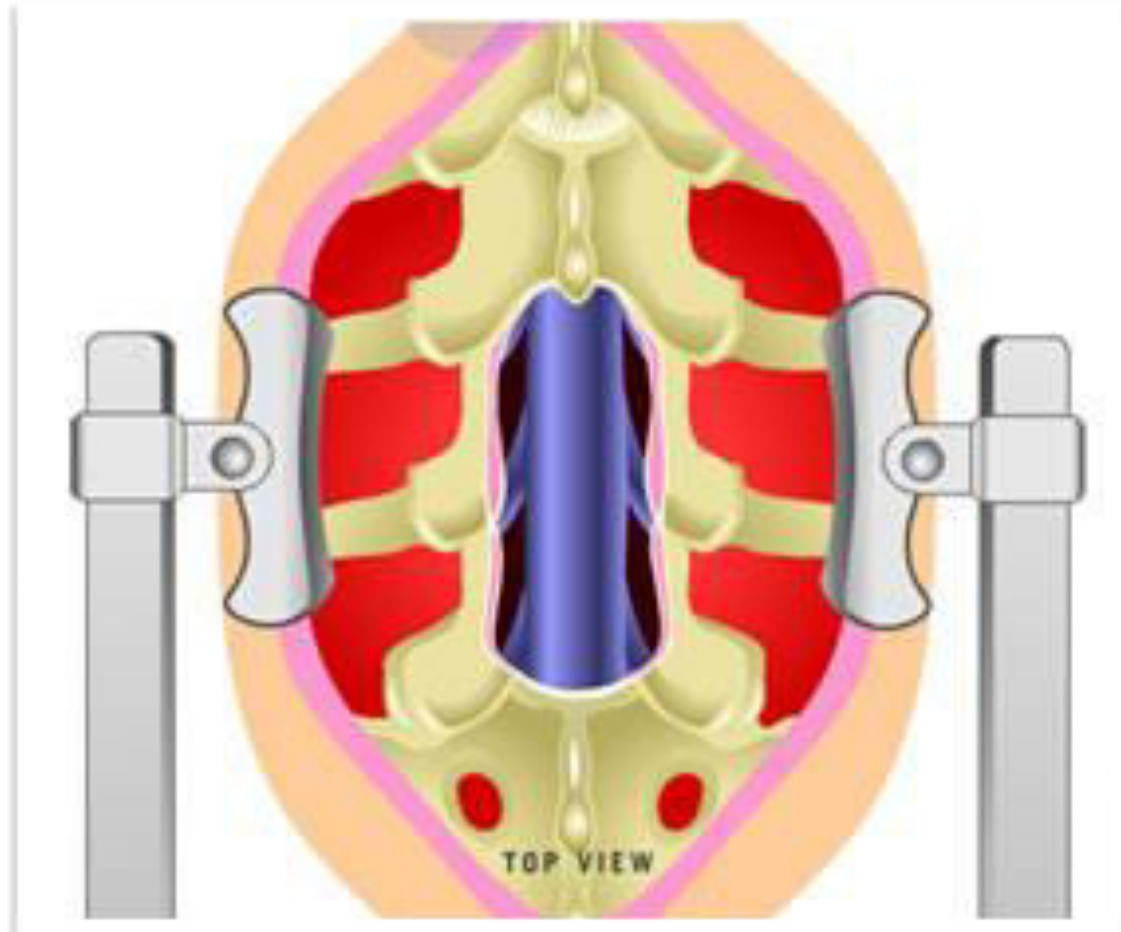
# Treatment options





# Lumbar decompression

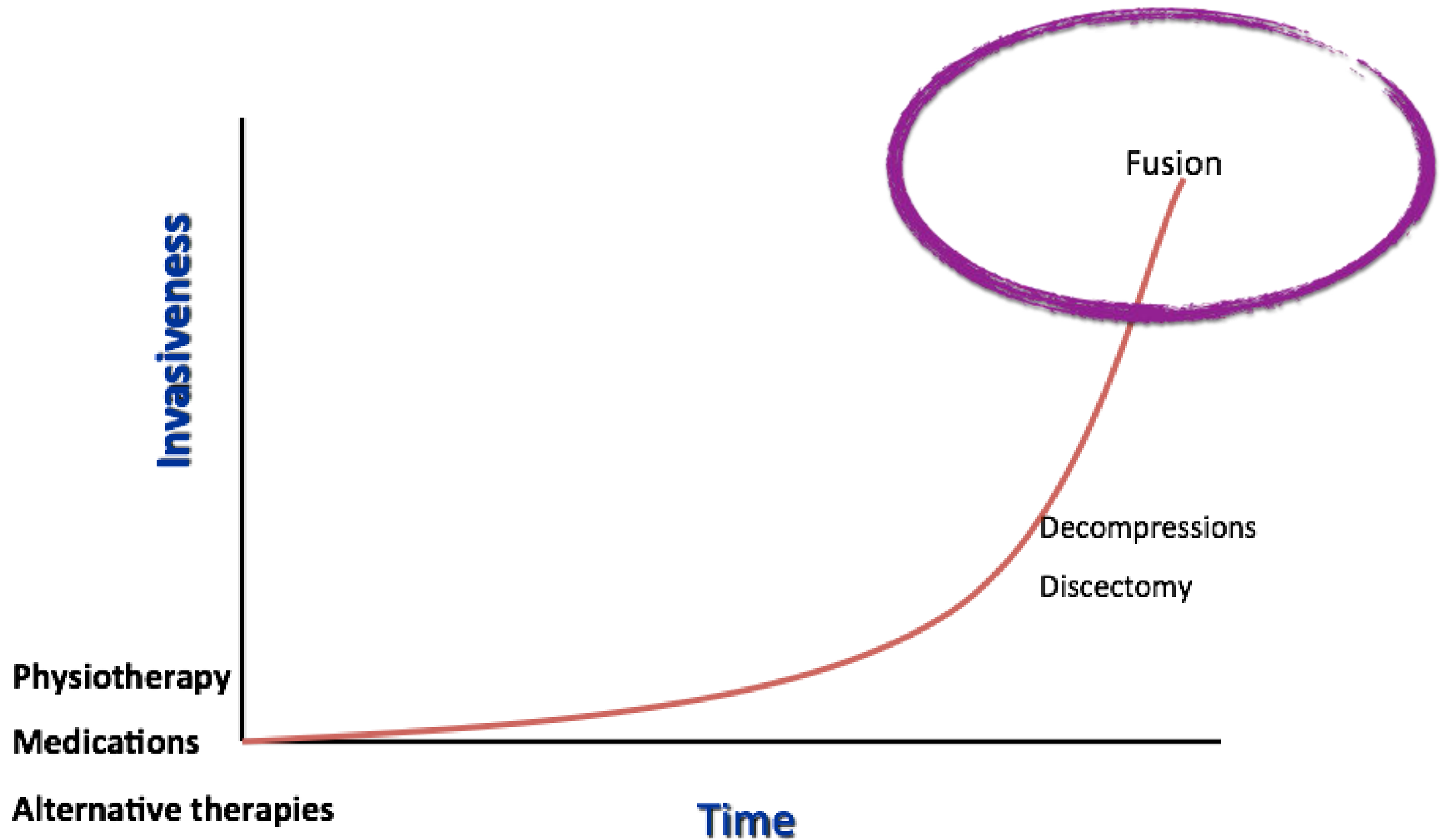




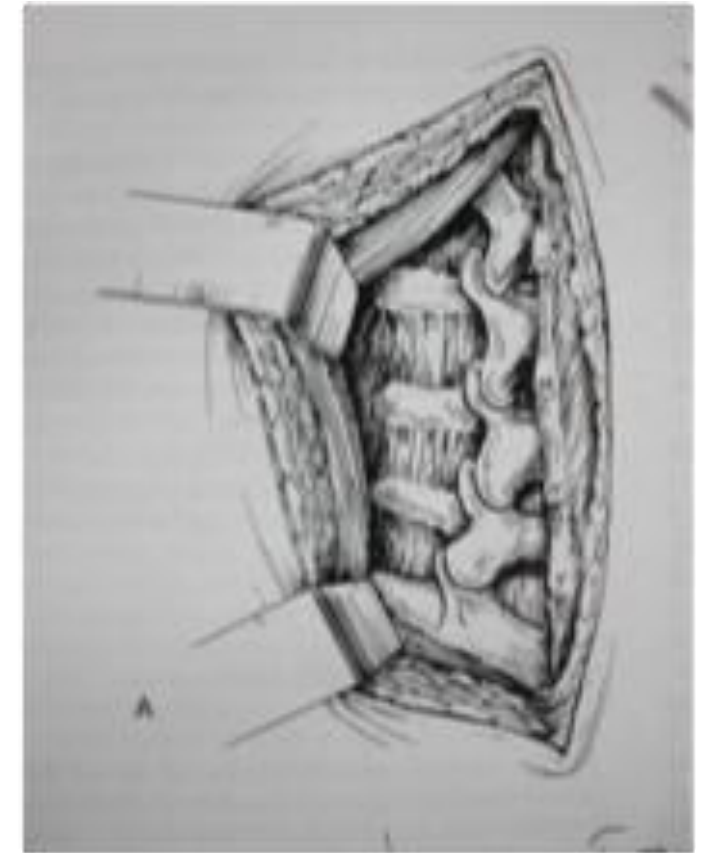
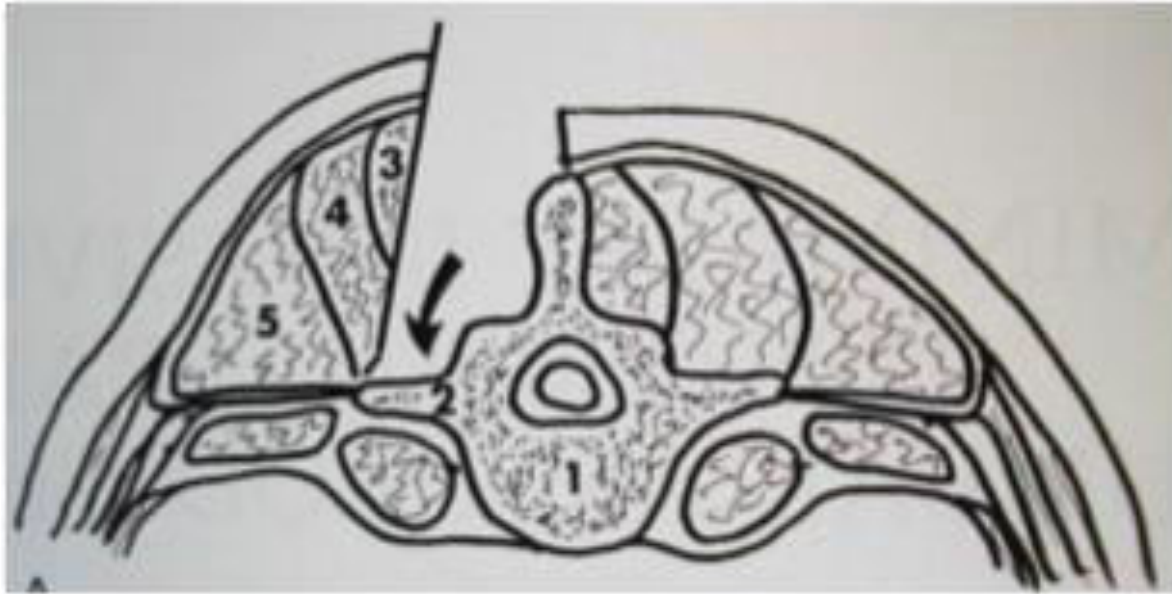




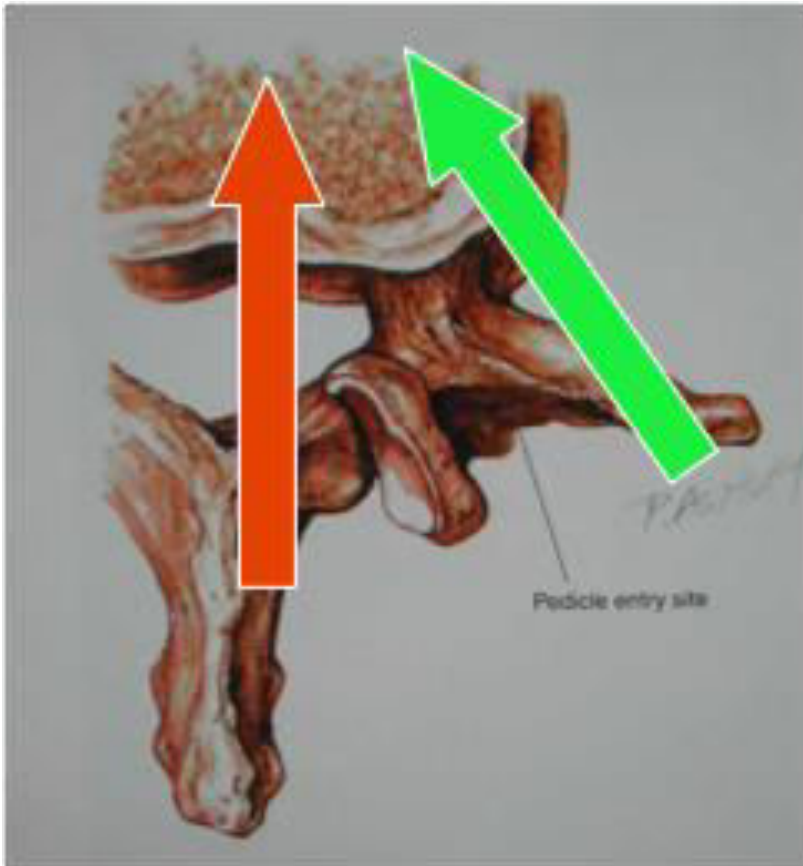
# Treatment options



# Postero-lateral fusion

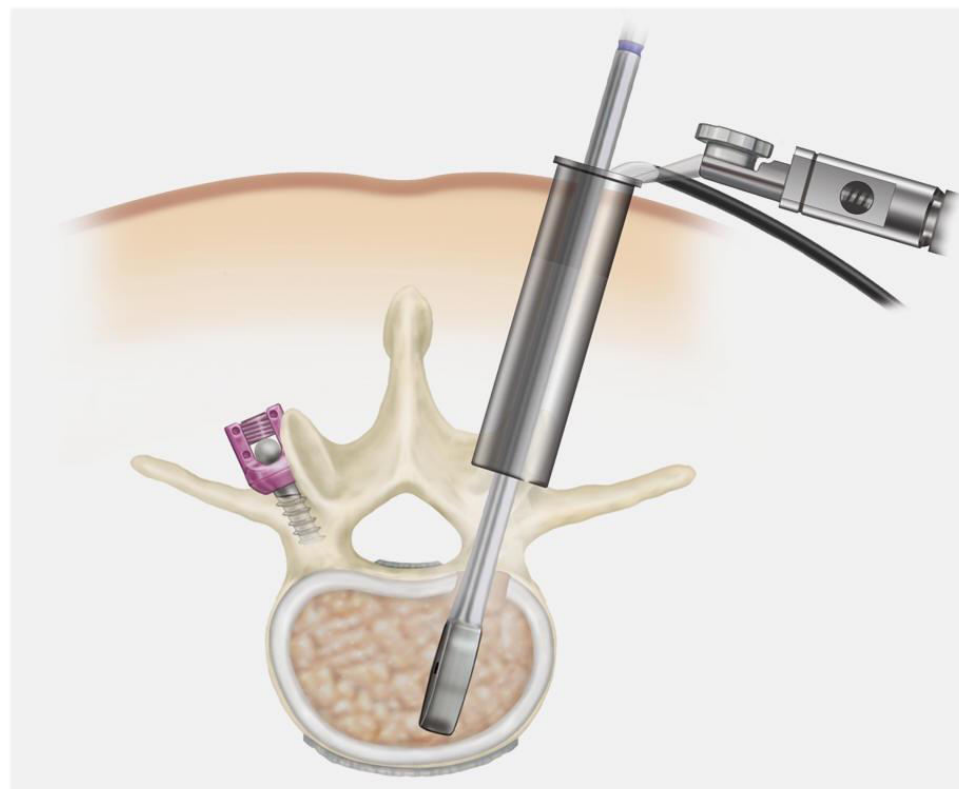
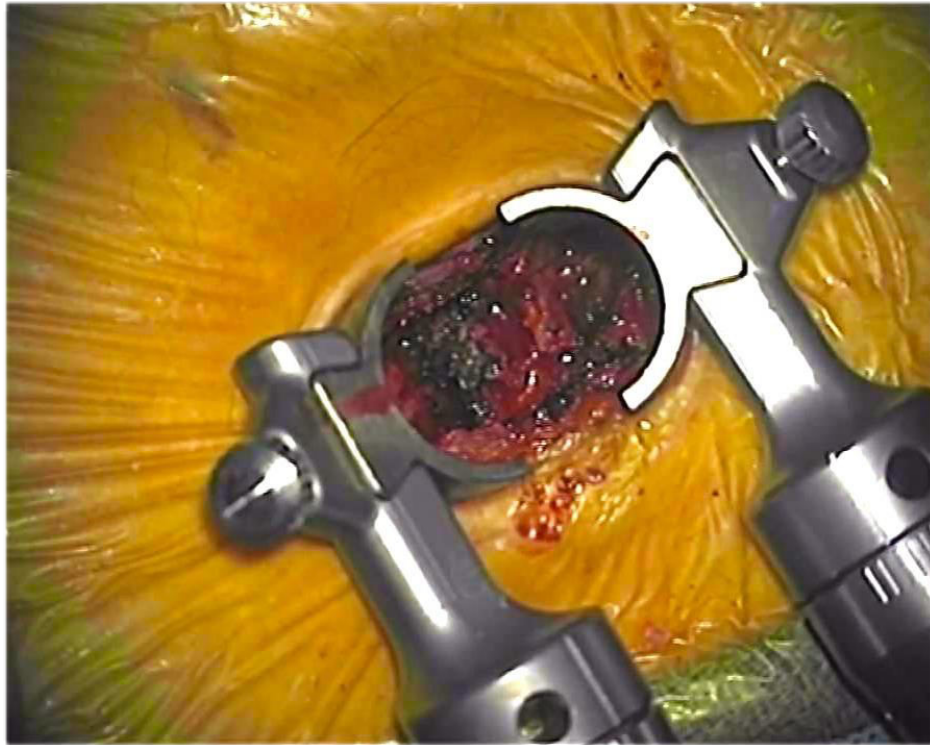


# Inter-body fusion





# Minimally invasive surgery



# Exploring expectations and treatment options





# Age or Mileage

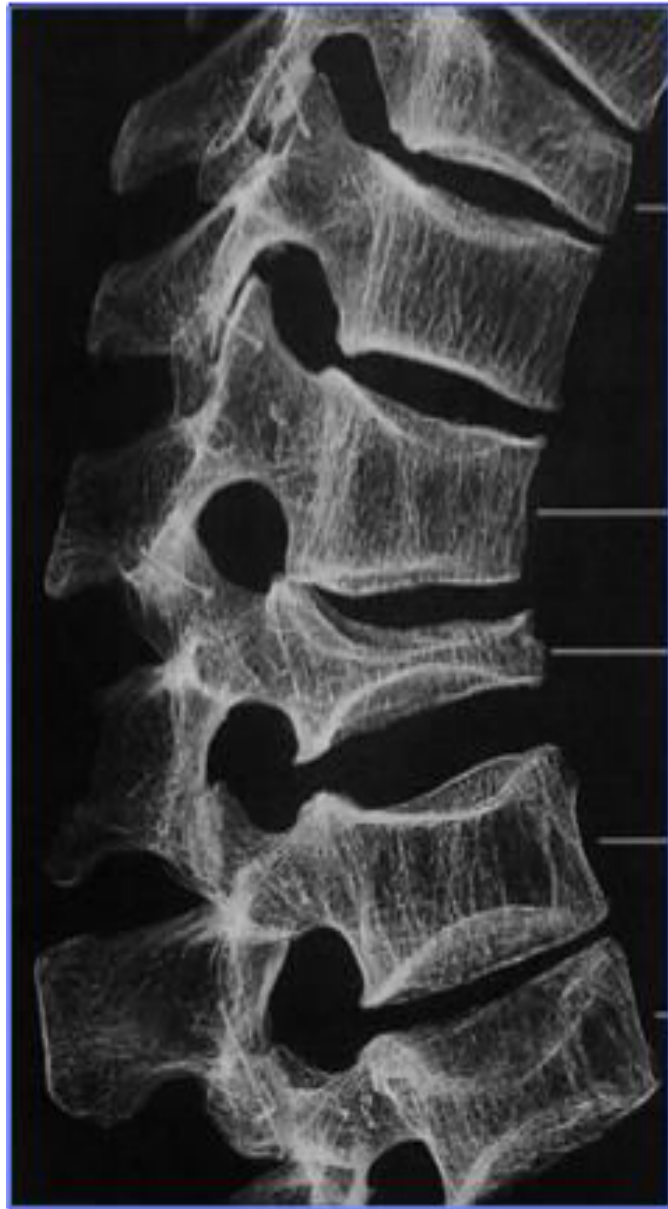
- Changing expectations from life
- Longevity
- Doing more.....
- .....for longer!



# Truncal mal-alignment



# Life is a kyphosing event



# Spectrum of pathology

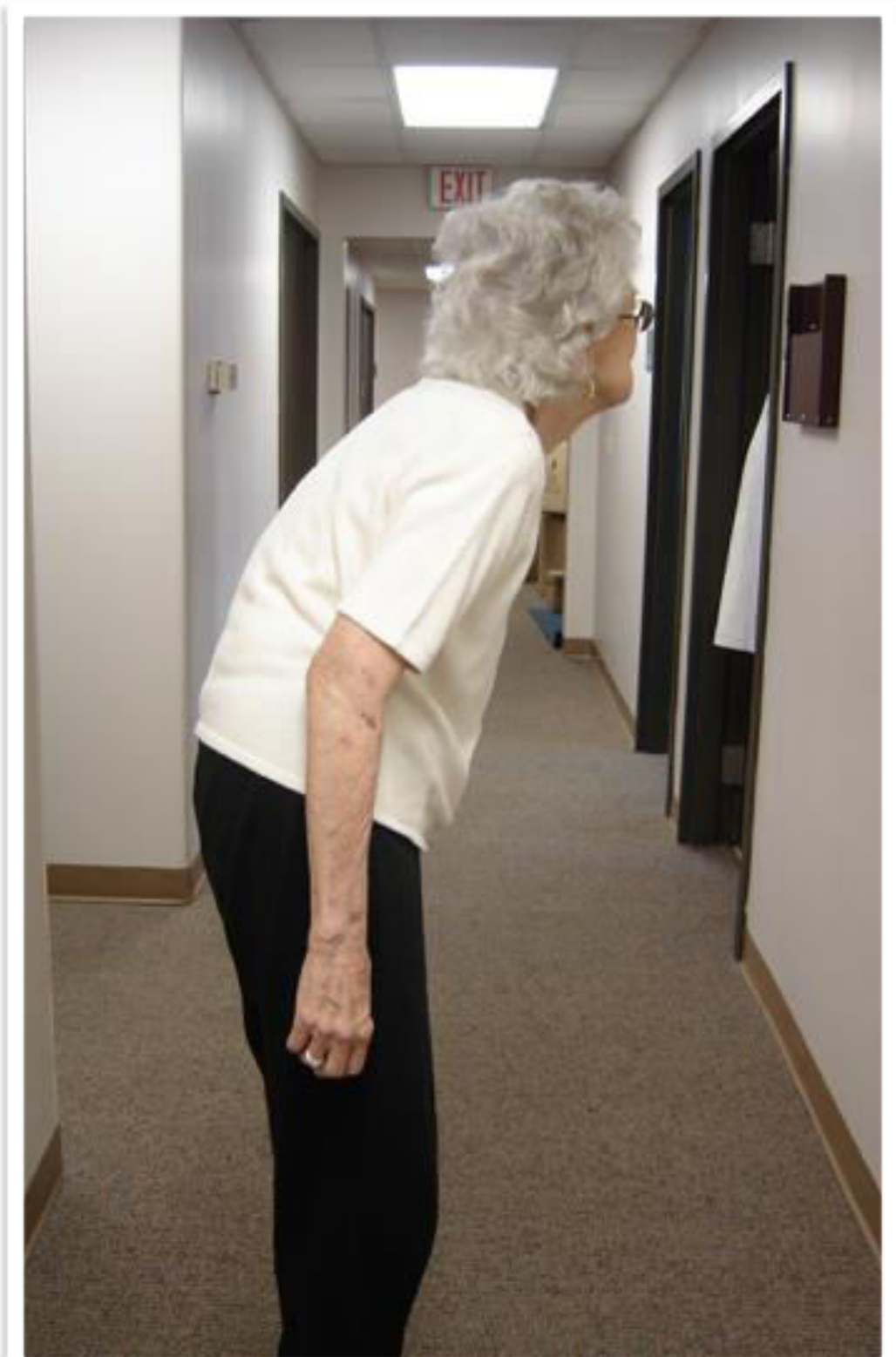
- Osteoporosis
- Discs and facet joints
- Failure of the spinal column

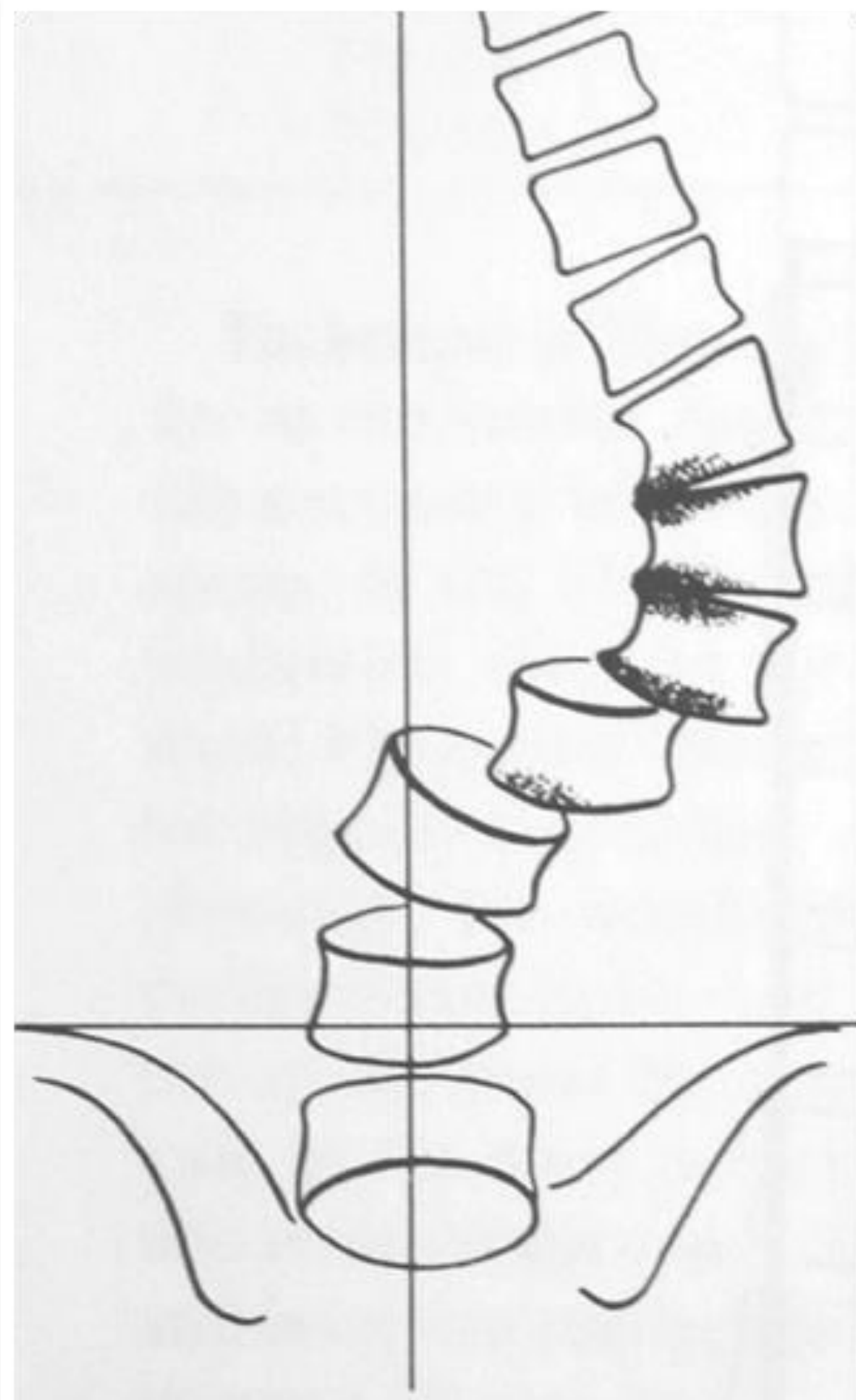




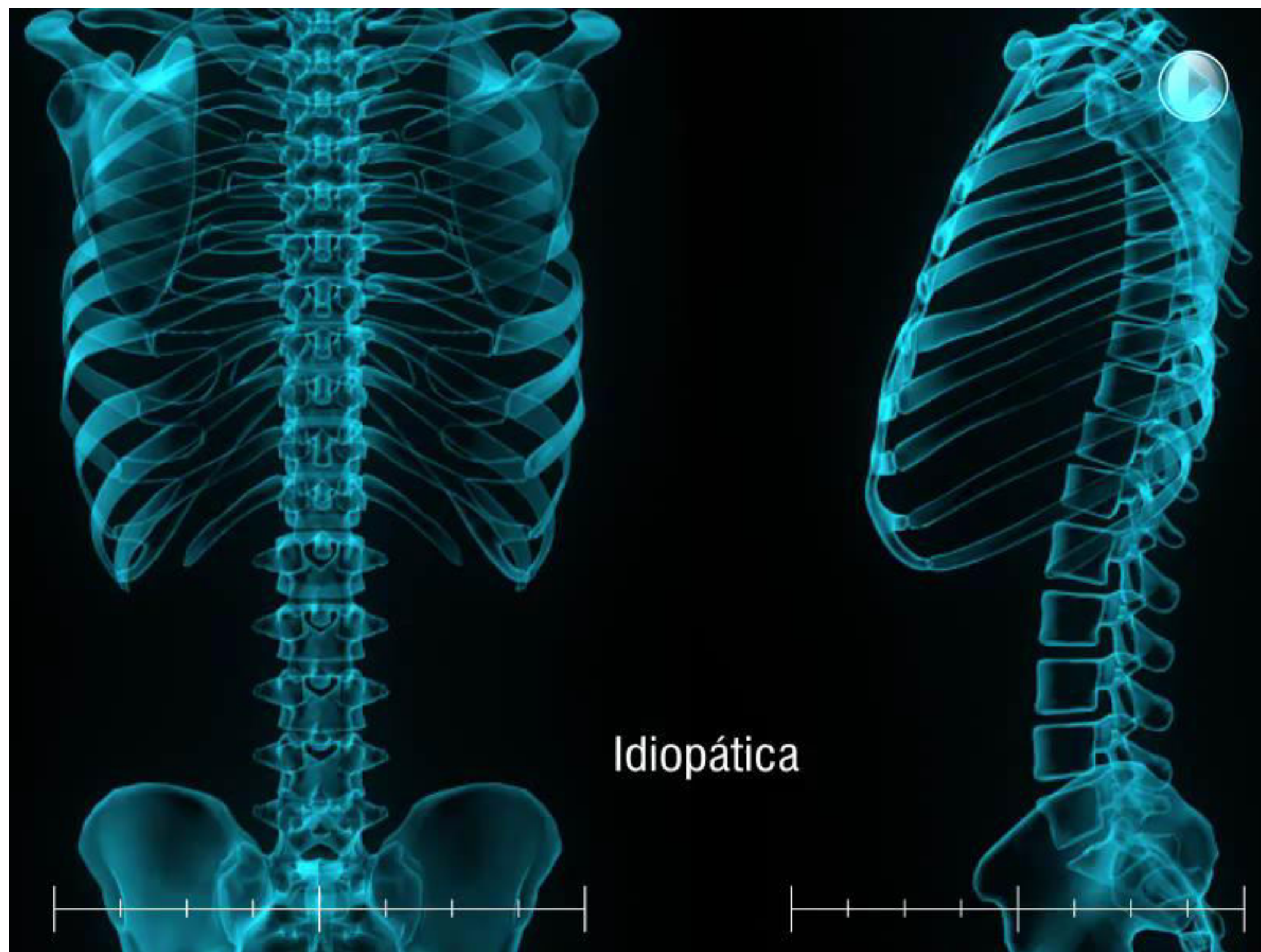
# Degenerate deformity

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





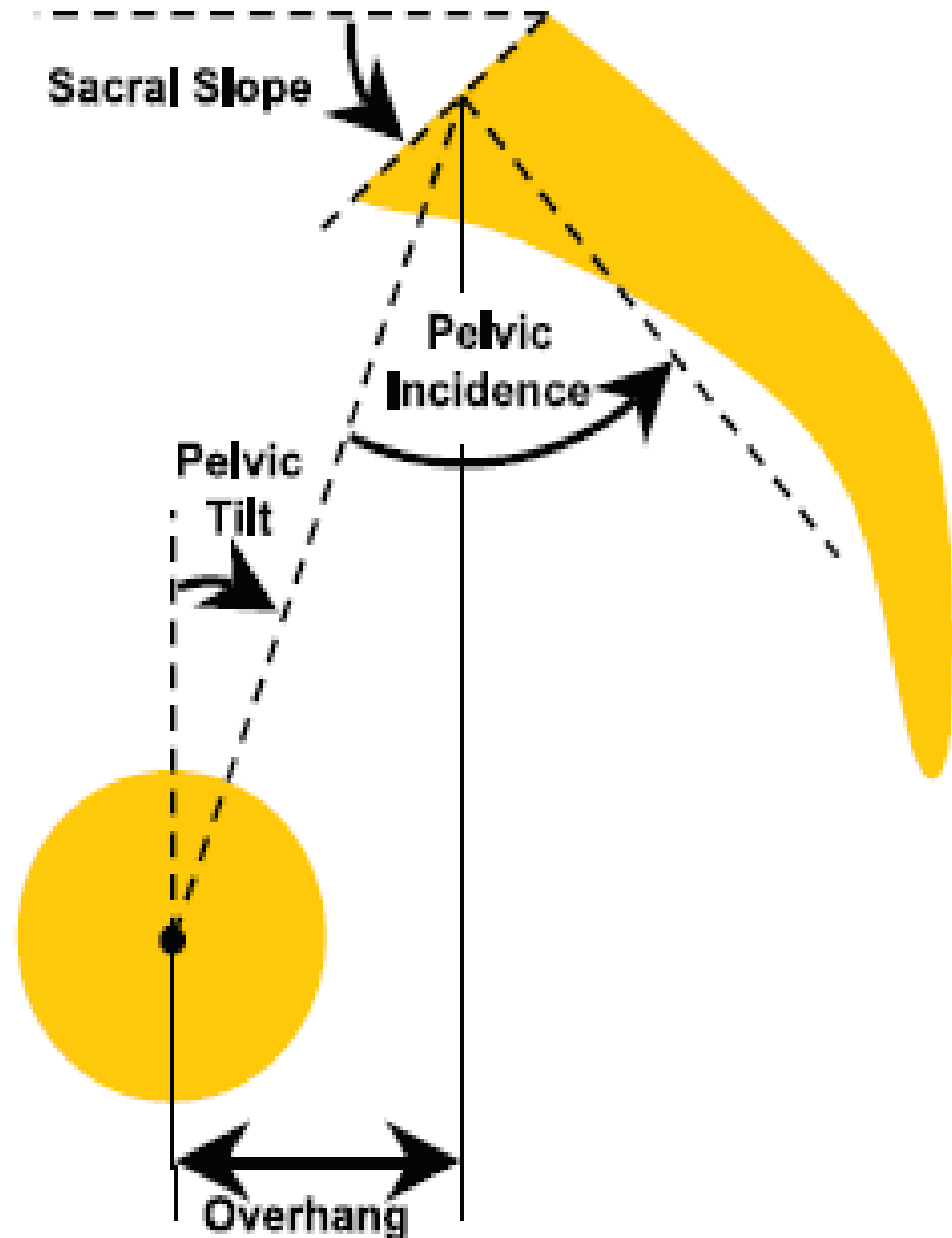




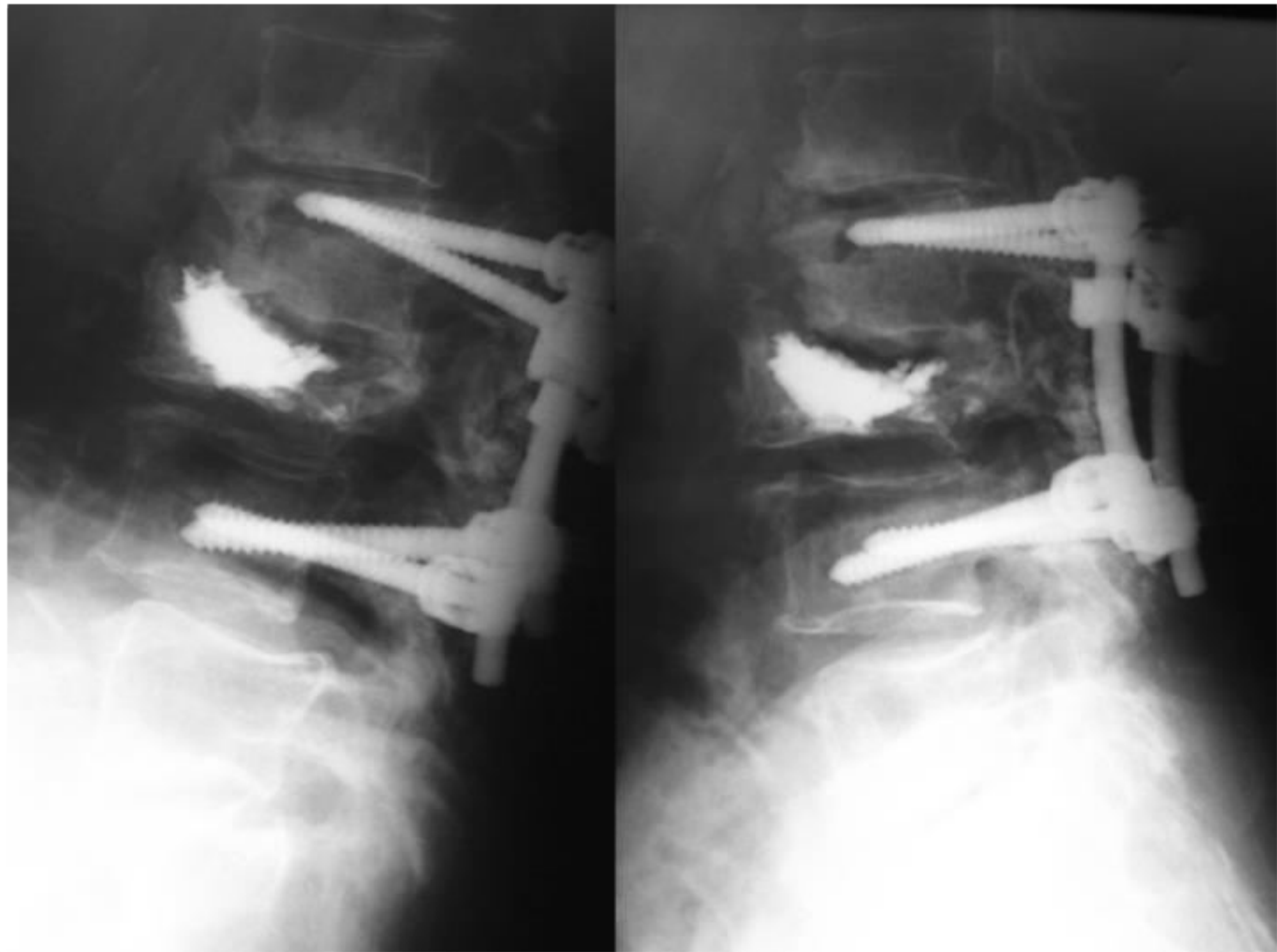


# Pelvic compensation

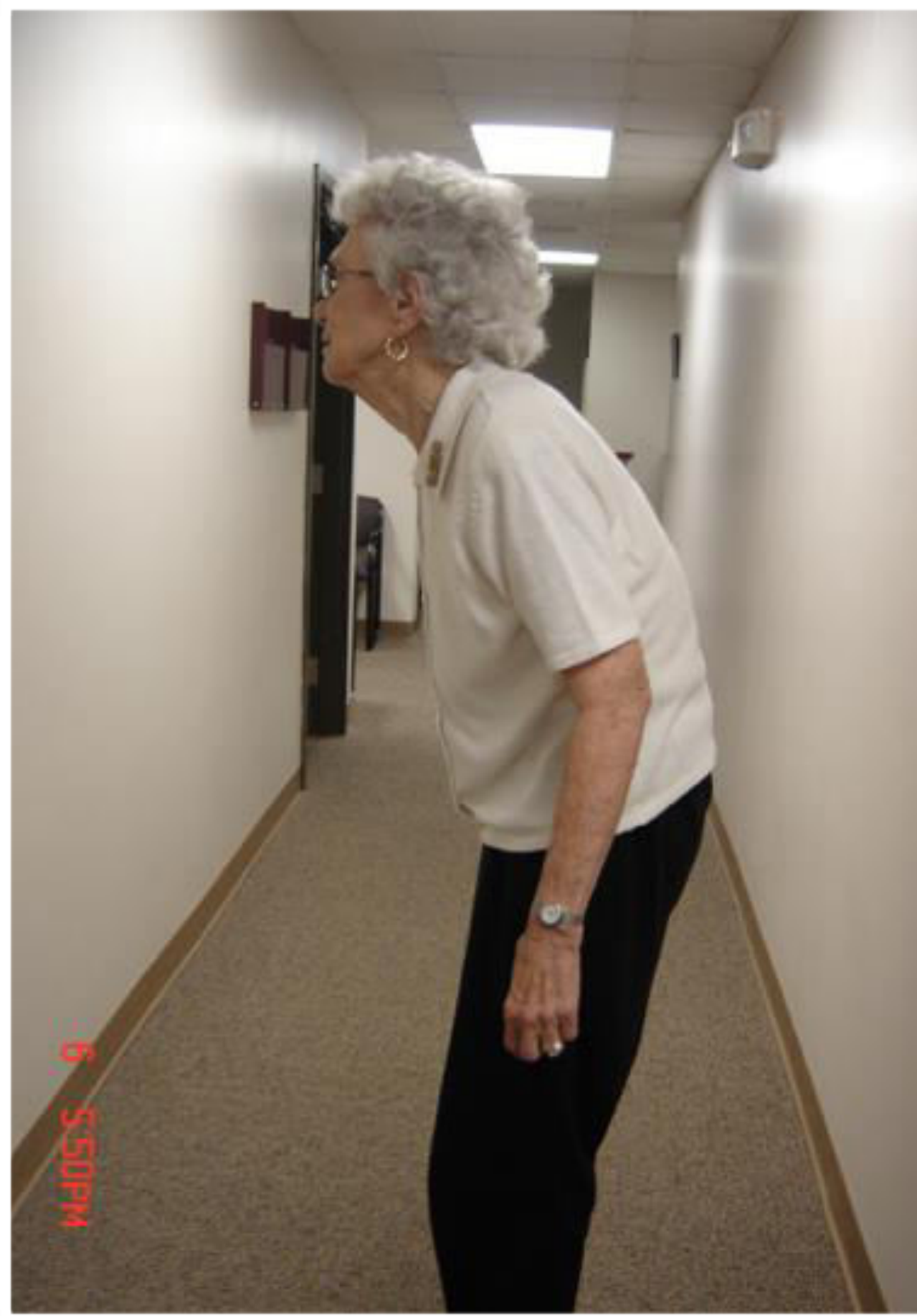
- Sacral slope (SS)
- Pelvic tilt (PT)
- Pelvic incidence (PI)











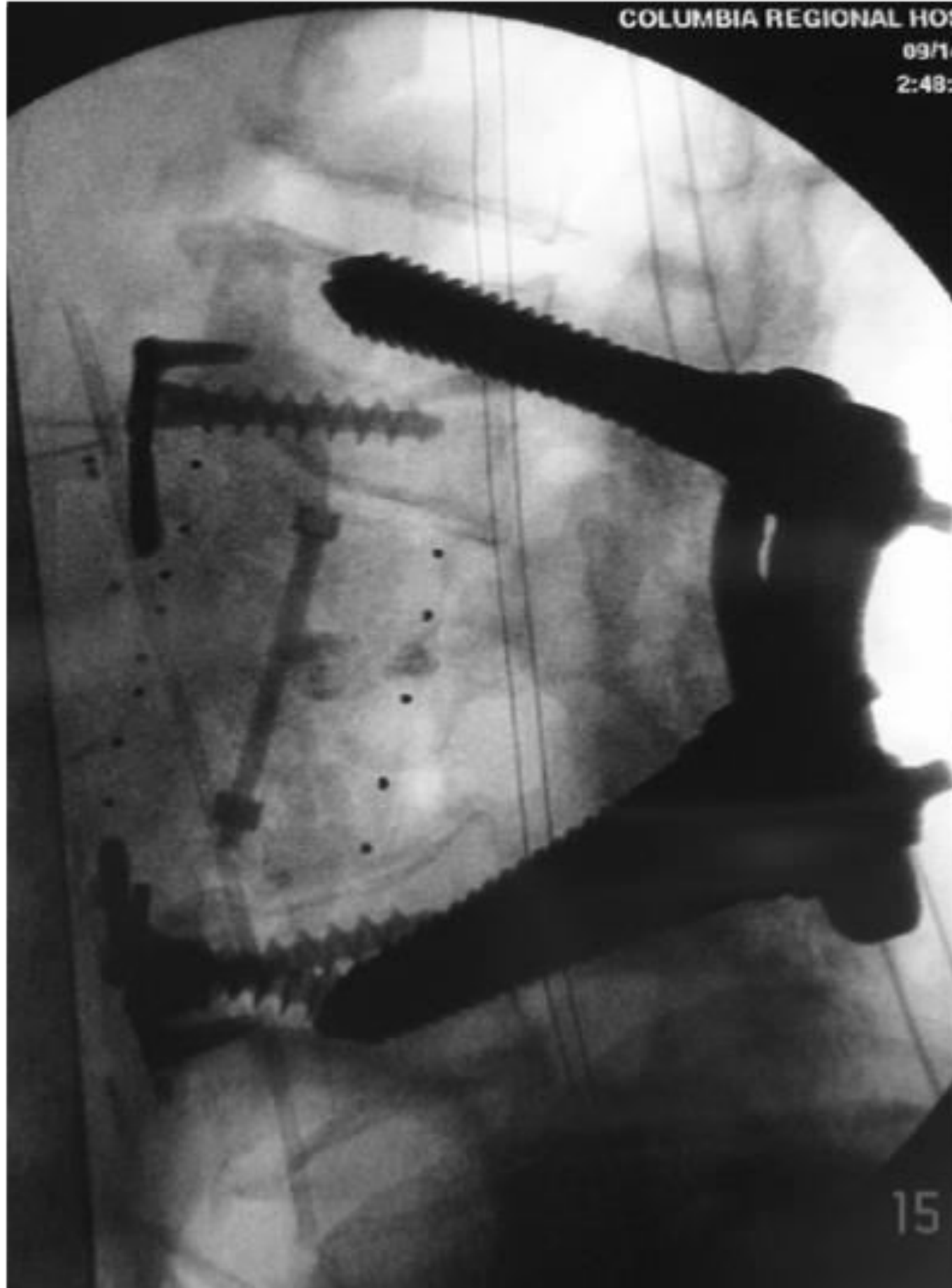
COLUMBIA REGIONAL HOSPITAL

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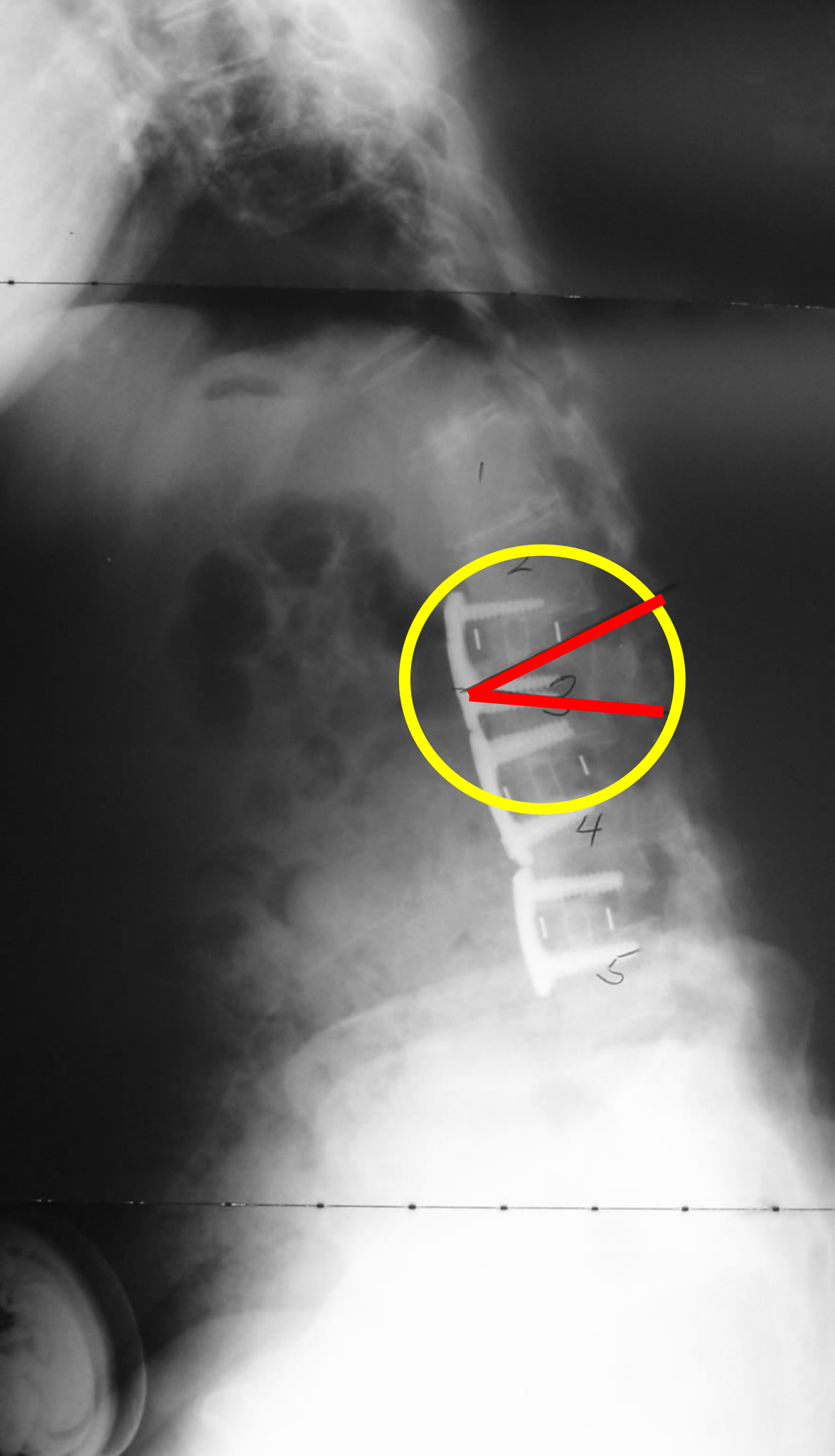






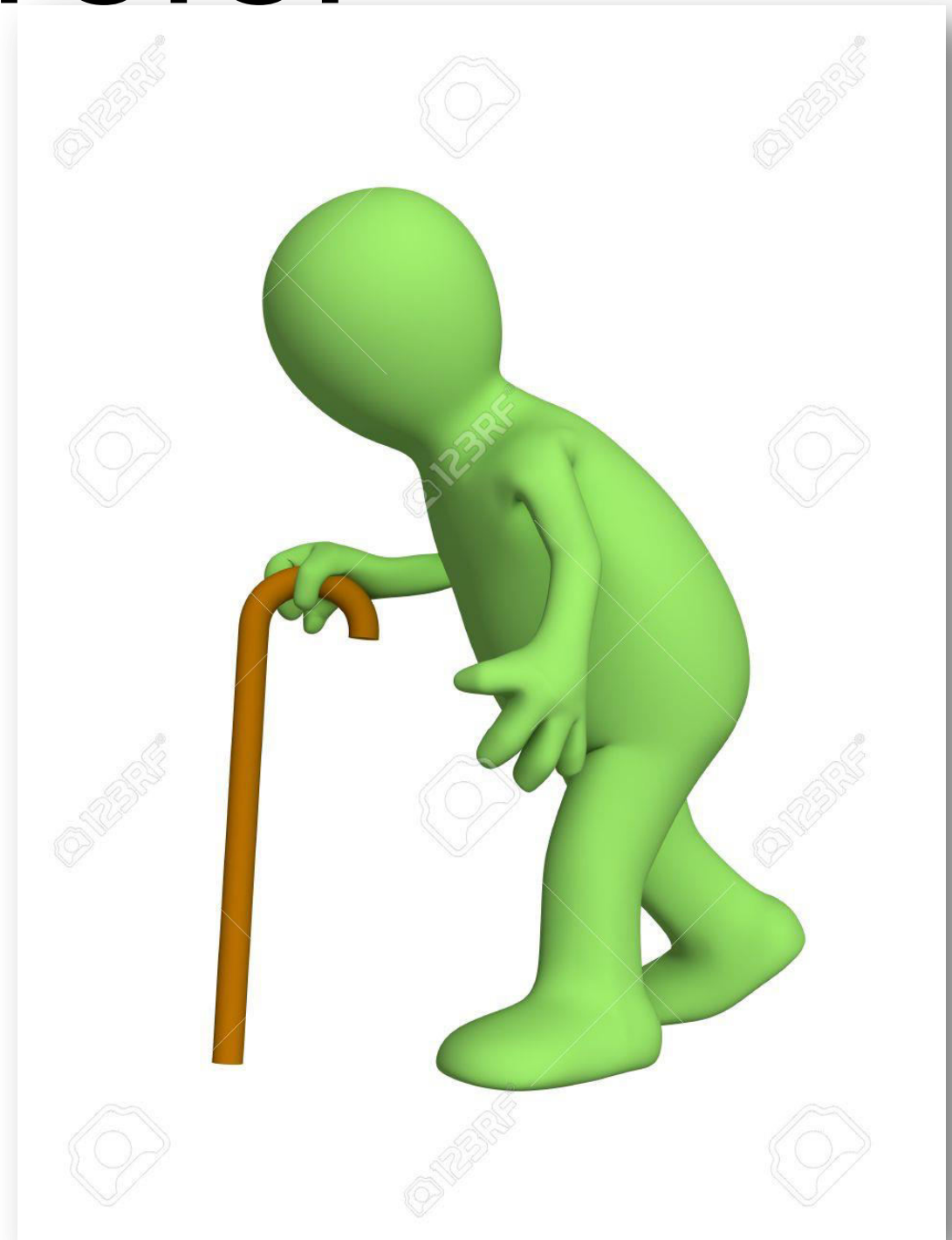






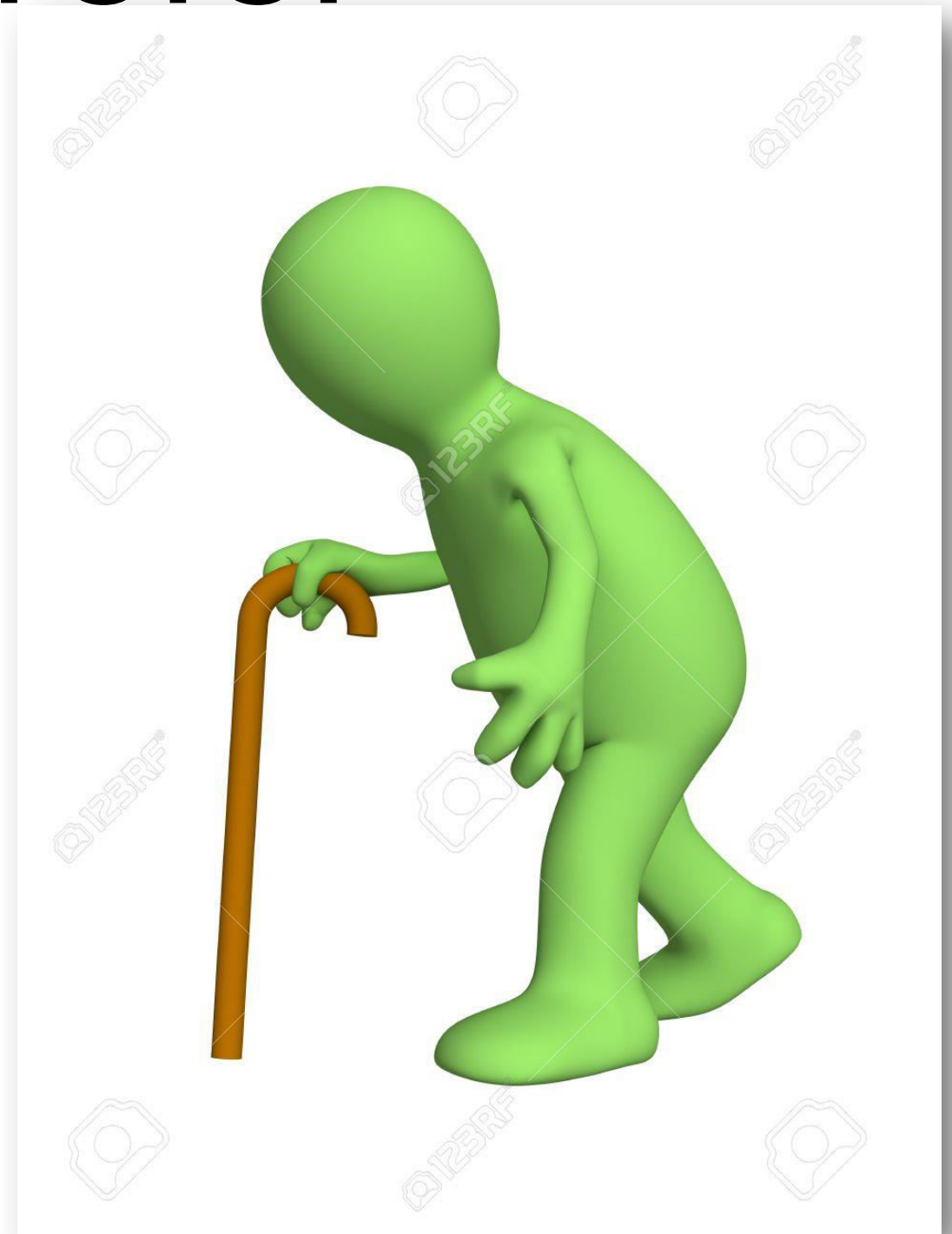
# When to refer

- 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**