

# Back pain

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# Back pain

- I. Pain from spinal structures
- II. Pain from visceral organs into the spine

I. spine

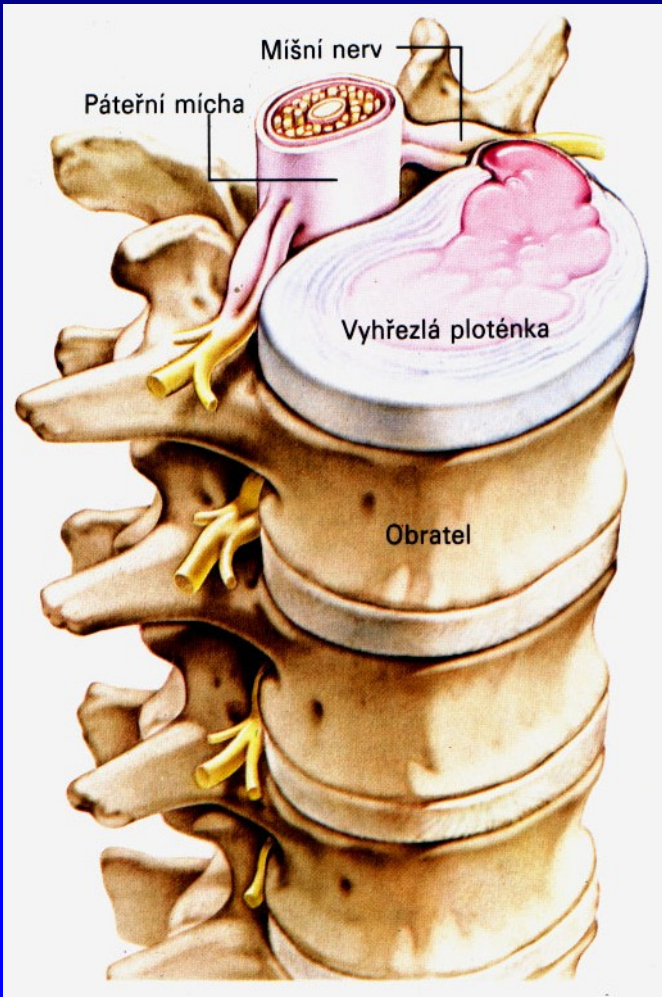
Lumbosacral spine

Thoracic spine

Cervical spine



# Anatomy



## Spinal segment

- two vertebral bodies and intervertebral disc

# Low back pain

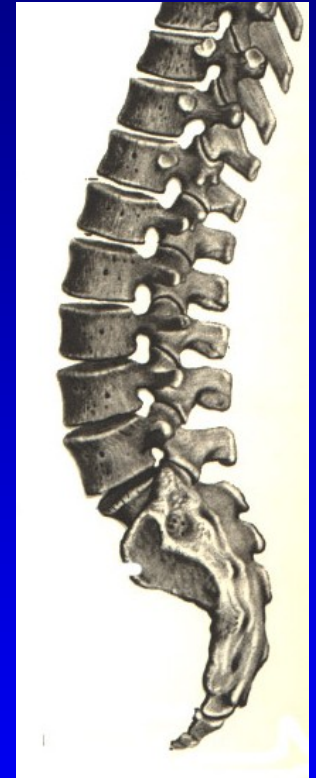
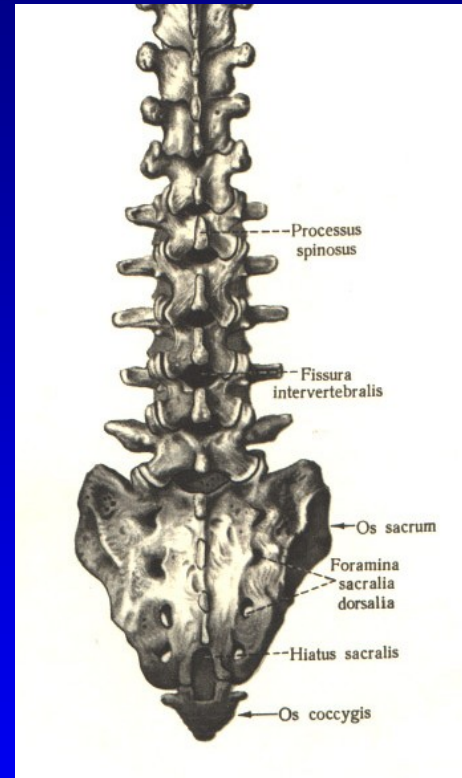
Lumbago

Lumbalgia

Sciatica

SI joint

Coccygodynia



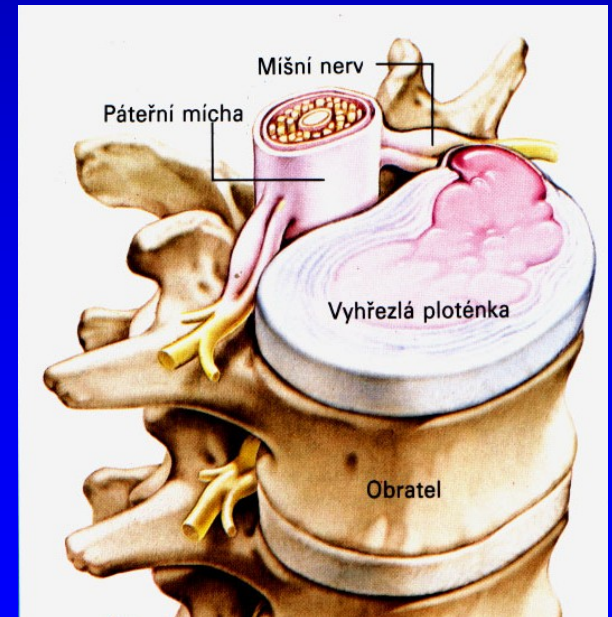
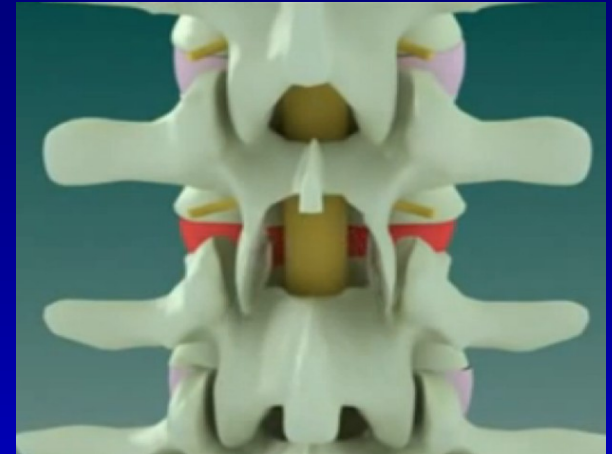
# Lumbago – acute back pain

## Causes

- meniscoids of intervertebral joints
- subluxation in IV joint
- slight protrusion of disc

Acute onset, muscle spasm

Therapy: rest, warm  
analgetics  
myorelaxans



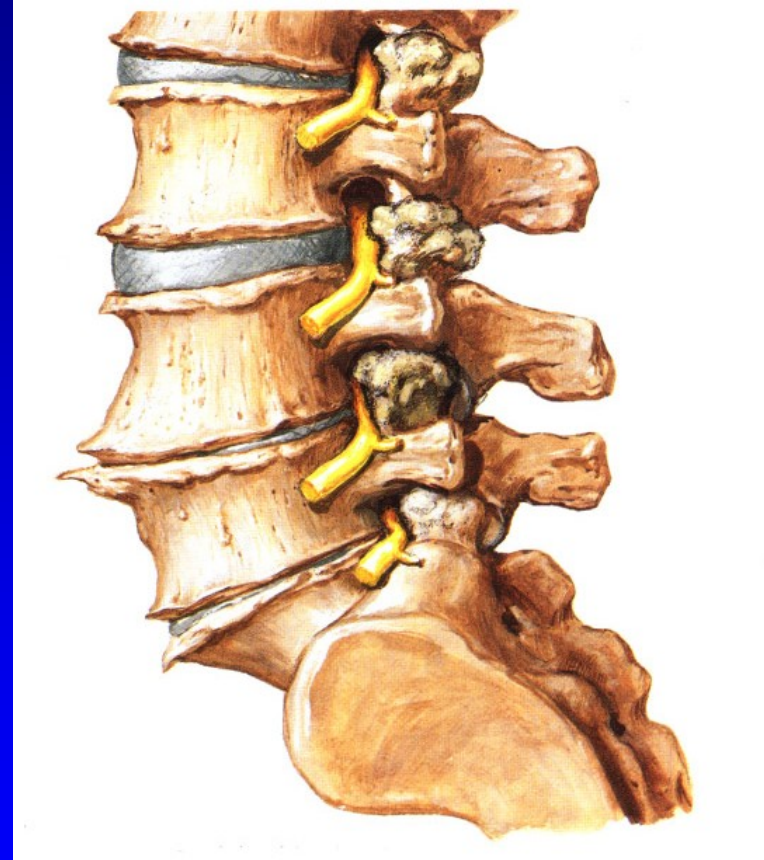
# Lumbalgia

Chronic pain

Osteochondrosis disci

Spondylosis deformans

Spondylarthrosis deformans



# Osteochondrosis disci

Degeneration of the disc  
Narrowing, sclerosis  
Irregular contours

Th.- rest, NSAID  
physical therapy  
fysiotherapy





# Spondylosis deformans

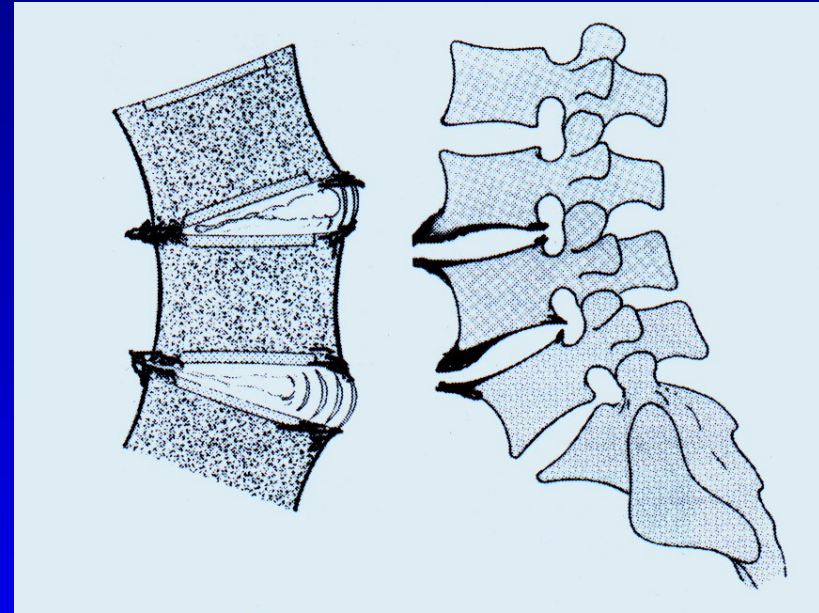
Degeneration between vertebral bodies

X- ray

Osteophytes, sclerosis  
narrowing, instability

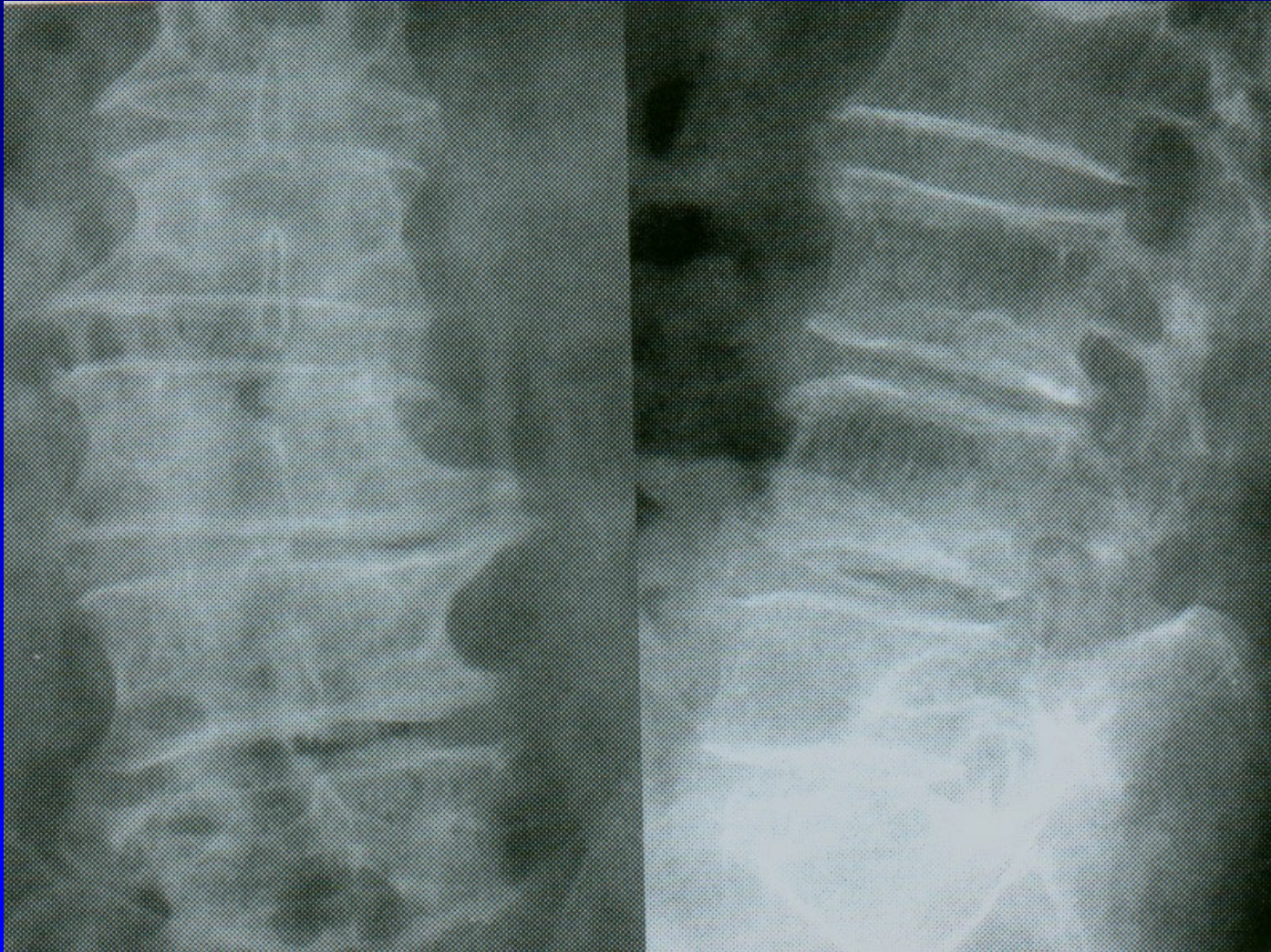
Therapy. rest

NSAID, fysical therapy



Obr. 2

# Spondylosis deformans



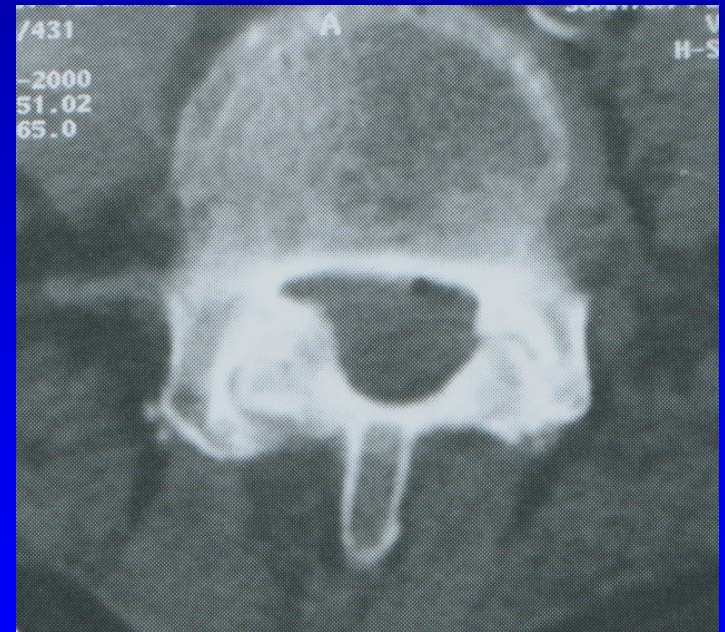
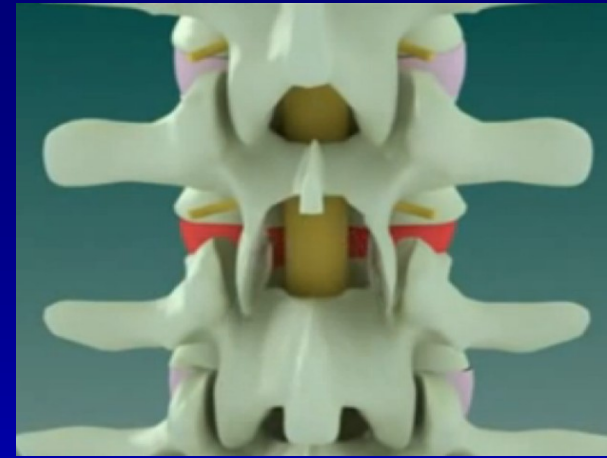
Obr. 3

# Spondylarthrosis deformans

Osteoarthritis of intervertebral joints

Back ache, limited movements

Th: rest, NSAID, analgetics  
fysiotherapy, chondroprotectives

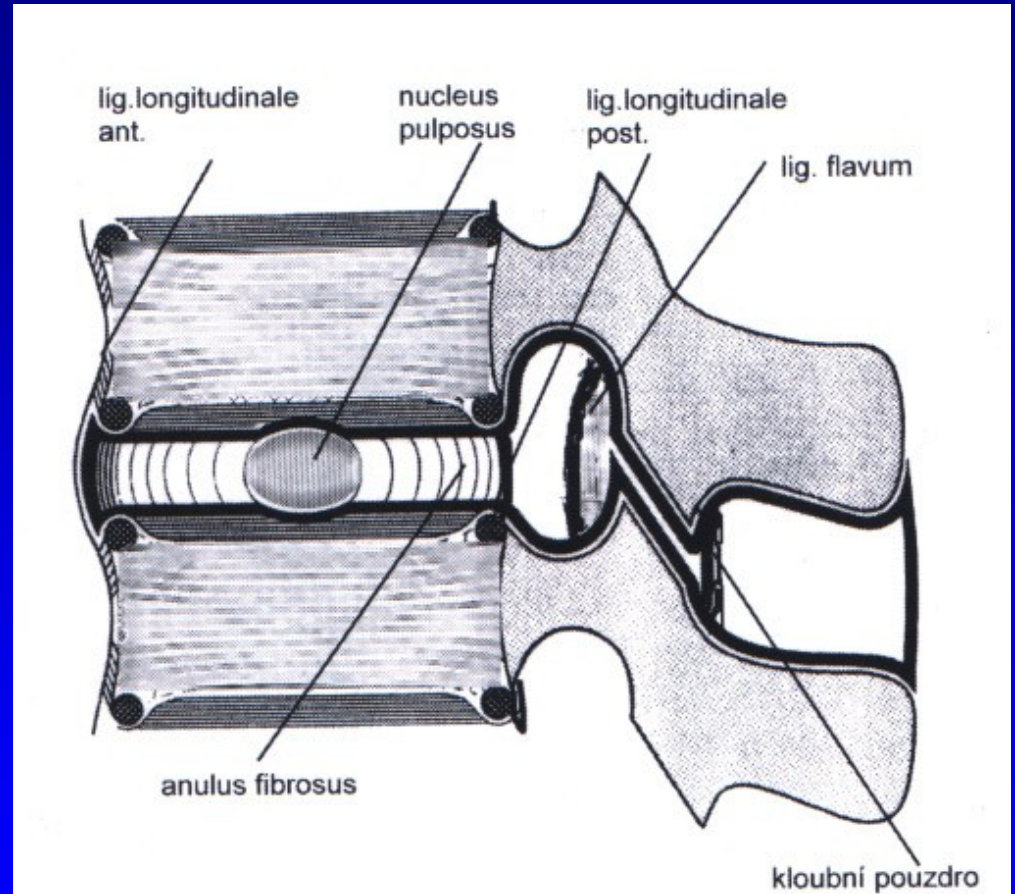


# Sciatica

- Pain in lumbosacral region with limited function and irradiating into lower extremities
- roots L5-S2
- roots L2-L4

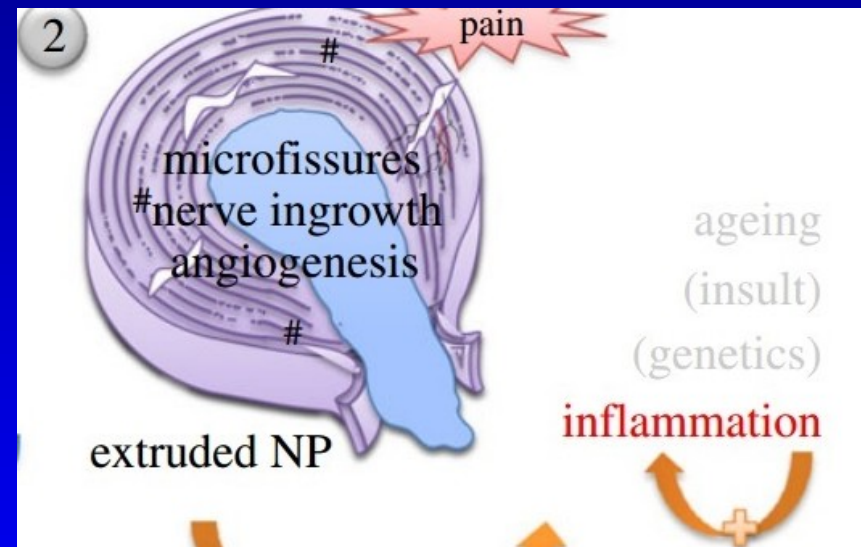
# Intervertebral discs

Upper layer  
Nucleus pulposus  
Anulus fibrosus  
Lower layer

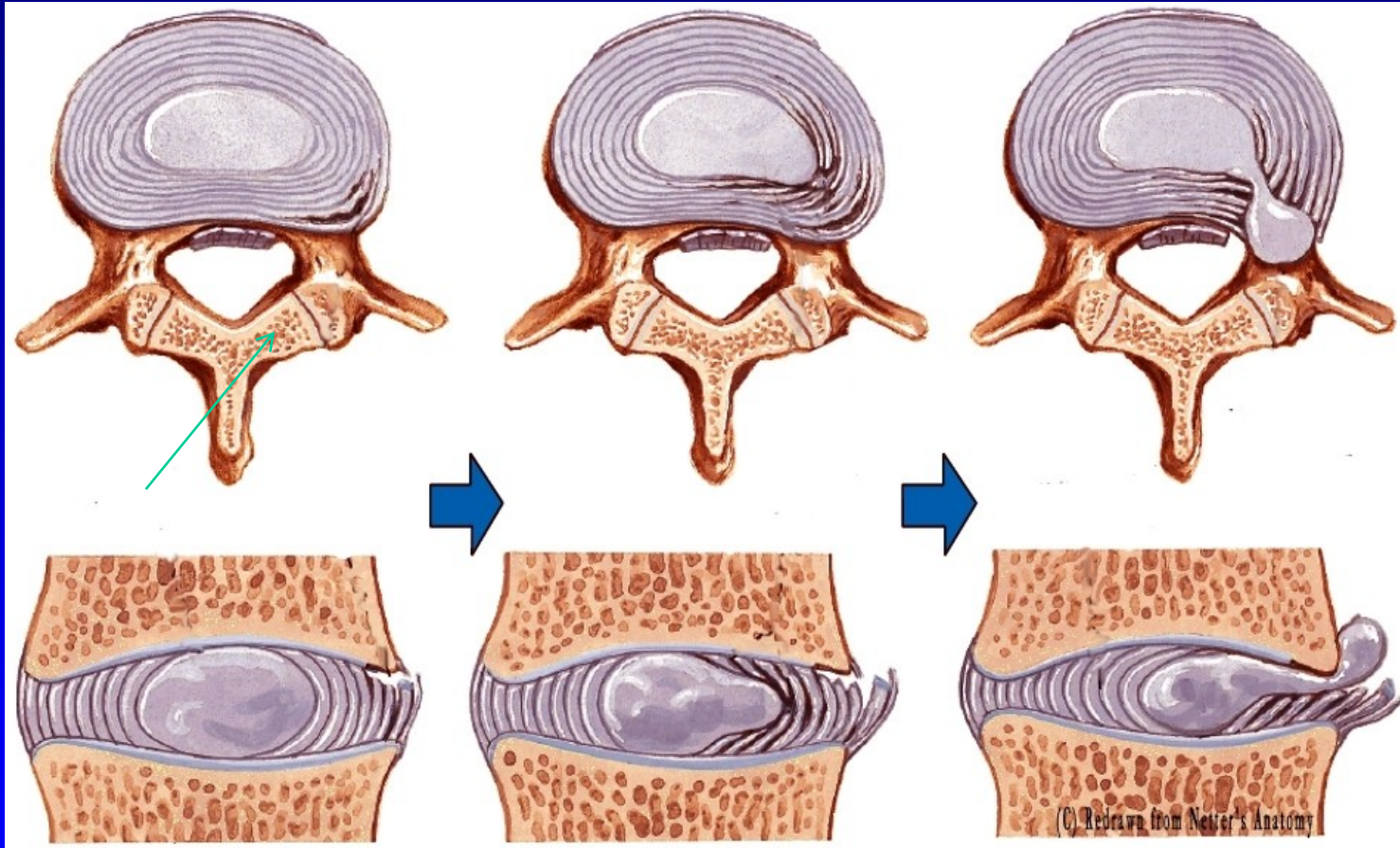


# Pathophysiology

- Less turgor in nucleus pulposus
- Degeneration of the disc with protrusion or extrusion of nucleus pulposus
- Microruptures in anulus fibrosus
- Tear in anulus fibrosus
- Tear of posterior longitudinal ligament



# Tears

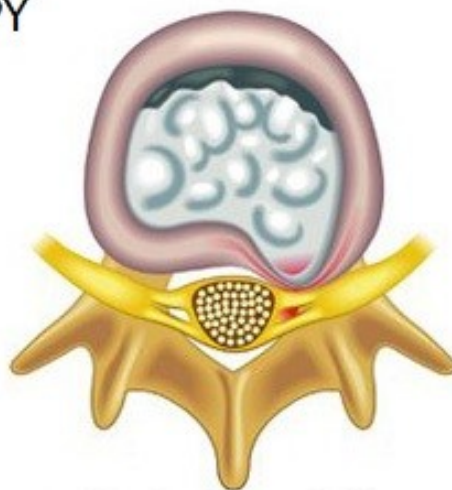


# Types

TYPY



Bulging - vyklenutí



Protruze



Extruze

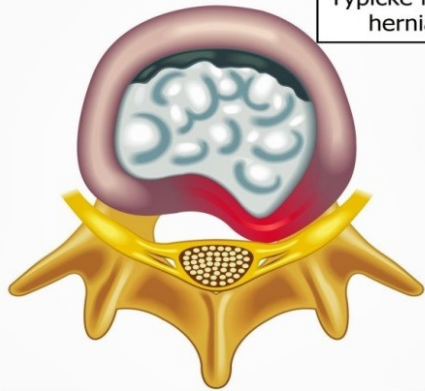


Volný fragment

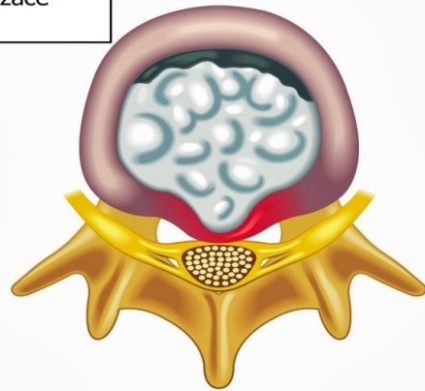


# Localisation

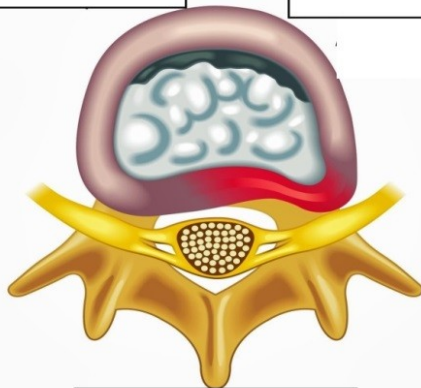
Typické lokalizace  
herniace



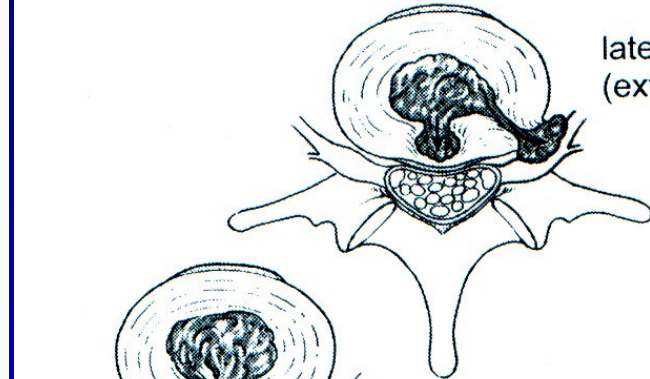
POSTEROLATERÁLNÍ



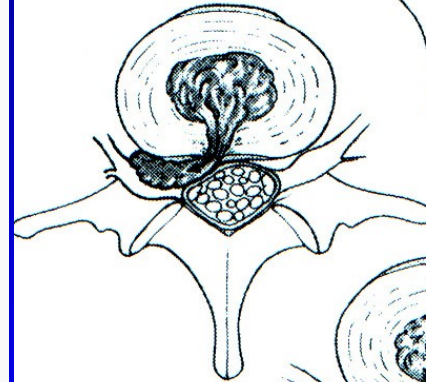
CENTRÁLNÍ



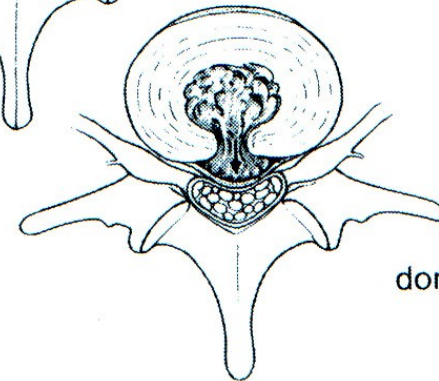
FORAMINÁLNÍ



laterální  
(extraforaminální)



foraminální



dorzální

# Incidence

- 30-50 years
- Hereditary succesibility in younger age
- Mostly segment L5-S1
- 2-3% of population have radicular symptoms
- 70 -85 % of population suffer from bach ache at least once on their lives

# Symptoms S1

- Pain on dorsal aspect of the extremity
- Changes in sensation on dorsal aspect
- Achilles tendon reflex
- Not able to stand tip toe
- Lasegue maneuver

# Symptoms L5

- Pain on lateral aspect of the extremity
- Changes in sensation
- Not able to stand on heels
- Lasegue maneuver positive
- Limited dorsiflexion of the ankle and toes

# Symptoms L4

- Pain on anterior aspect
- Changes in sensation
- Patellar tendon reflex
- Weak active extension of the knee

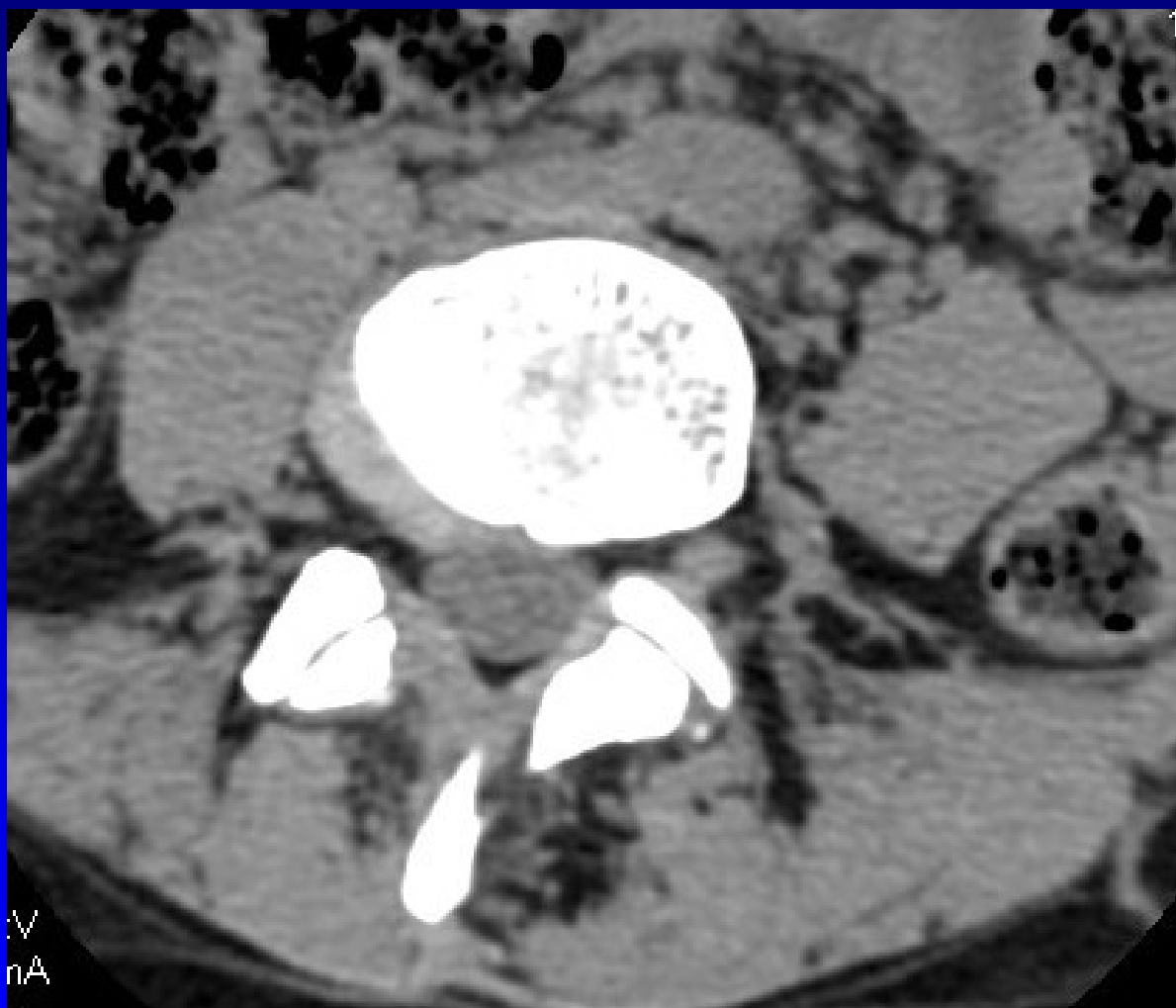
# Imaging methods

- X-ray
- MRI
- CT scann
- CT myelography



# Hernia disci





Hernia disci



# Therapy- conservative

NSAID, myorelaxans, analgetics, rest

Periradicular therapy (corticoids, morfin, marcain)

Drips with NSAID

Fysiotherapy

Effect 80-90 %

# Therapy- surgery

## Indication

- cauda equina syndrom
  - motor dysfunction – conservative treatment not succesful
  - timing- soon, at least up to 6 weeks
- 
- Protrusion up to 5 mm is not indication to surgery

# Cauda equina syndrom

The spina cord terminates at L1

Nerve roots are L2-S4

Supply bladder and rectal sphincter

Supply muscles of the lower limb and sensation of the perineum

Symptoms:

Back pain, lower limb flaccid paralysis, loss of reflexes

Paresthesia of the perineum, loss of anal tonus, faecal incontinence

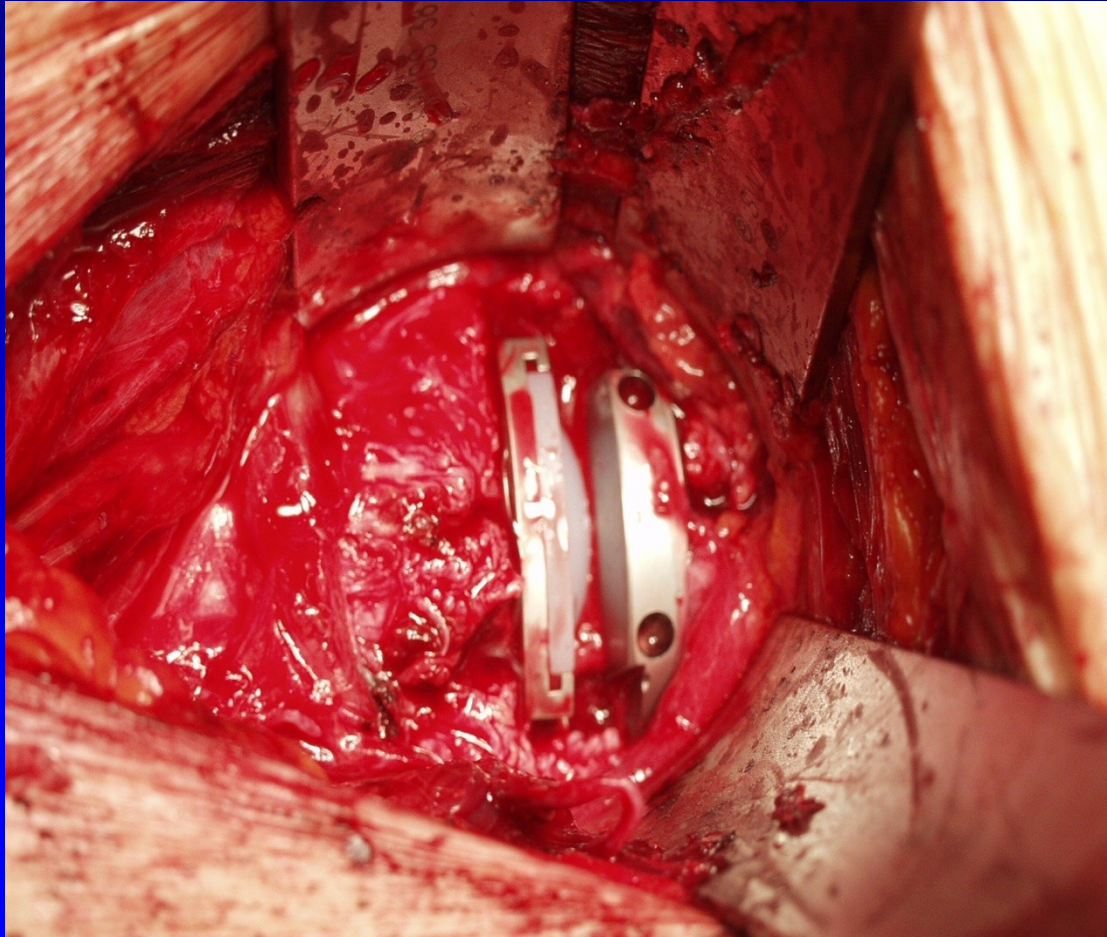
Retention of urine

Cauda equina = emergency

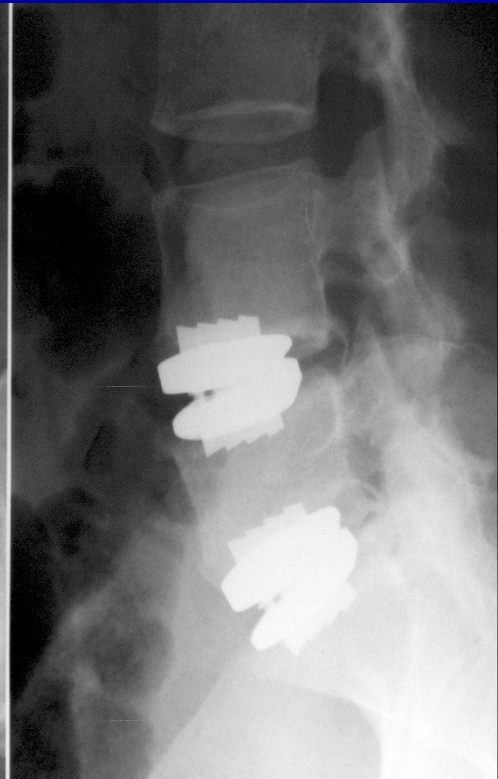
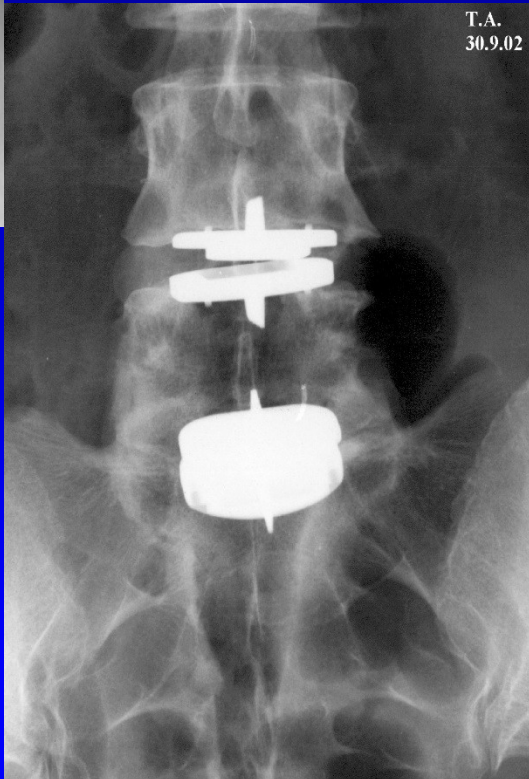
# Therapy - surgery

- Hemilaminectomy, decompression of the nerve root
- Microdiscectomy
- Percutaneous discectomy

# Intervertebral disc replacement



T.A.  
13.6.02



# Complications

- Nerve root lesion
- Some part of the sequestrum left
- Infection
- Recurrence
- Instability
- Failed back surgery syndrom

# Failed back surgery syndrom

## Failure of surgery

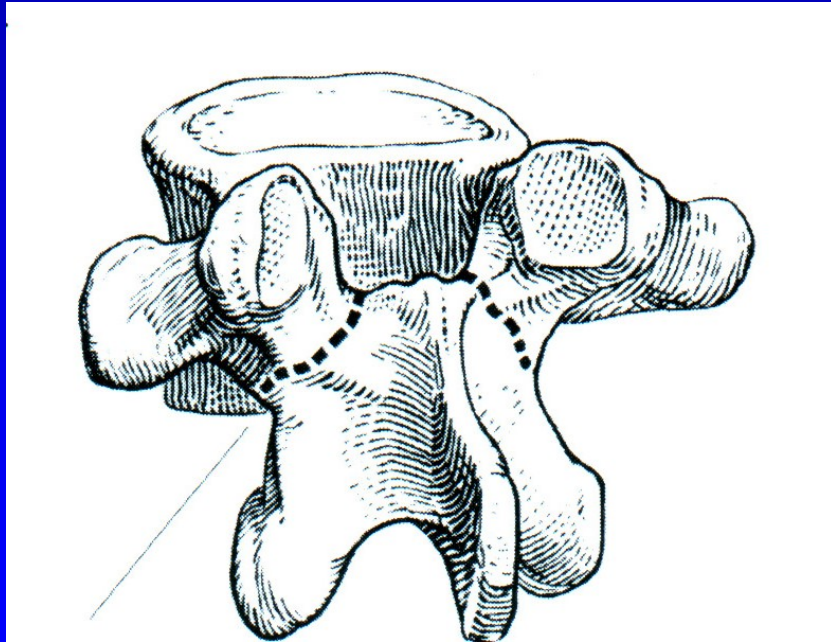
causes: epidural fibrosis, infection  
arachnoiditis  
instability of the spinal segment  
spinal stenosis  
psychological problems

Therapy: decompression , stabilisation, instrumentation  
conservative treatment

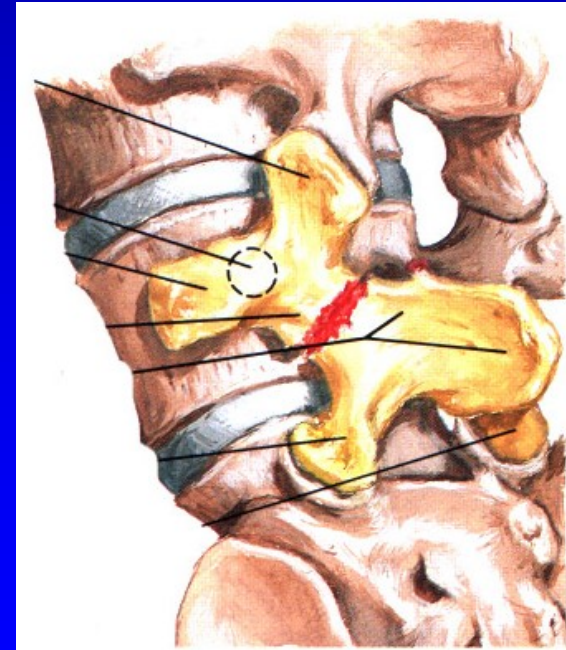


# Spondylolysis

Fibrous tissue in pars interarticularis  
Th- conservative  
surgery



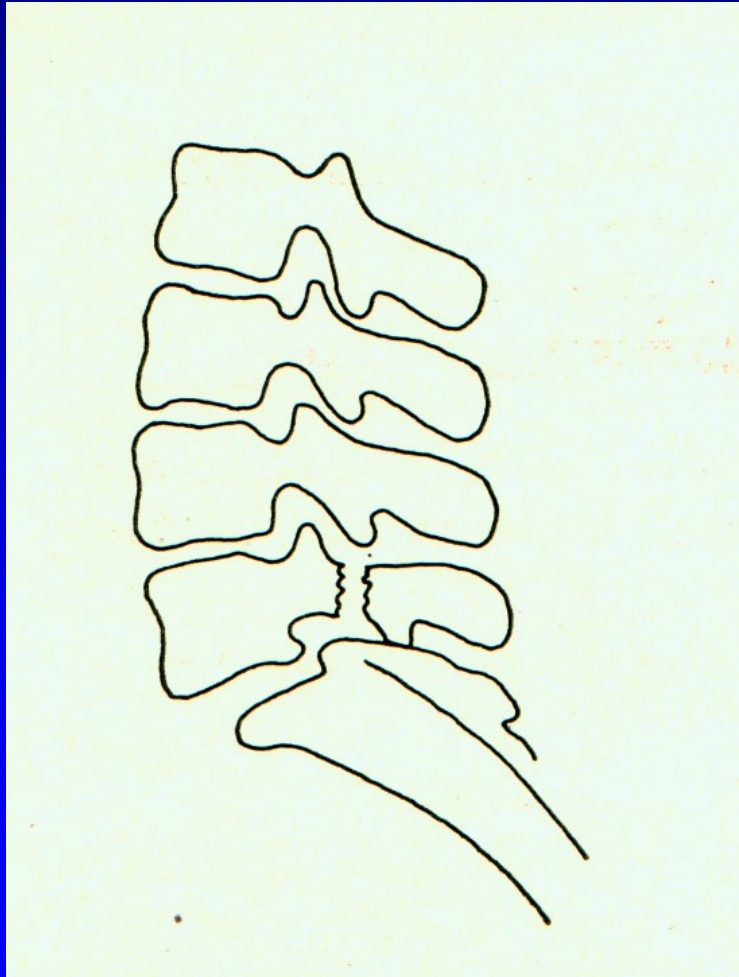
Obr.13



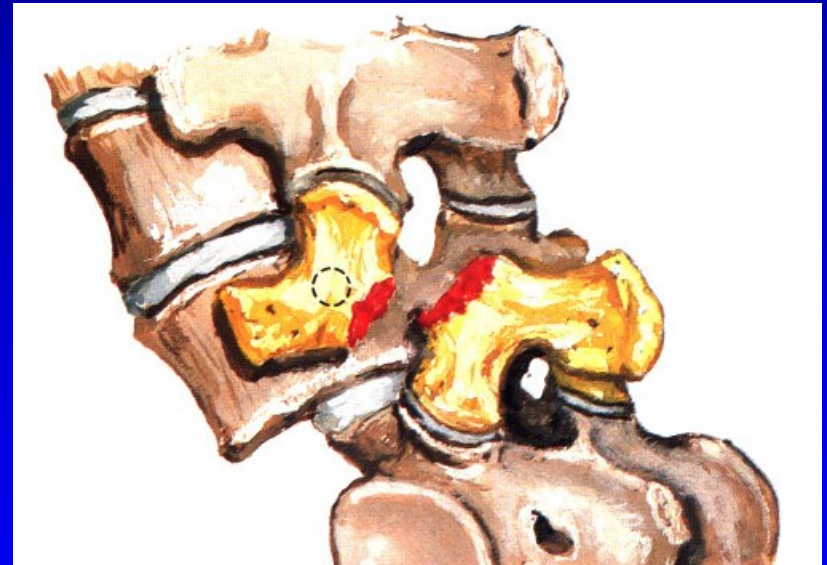
Obr. 14

# Spondylolisthesis

Slip of vertebral body in isthmic region anteriorly

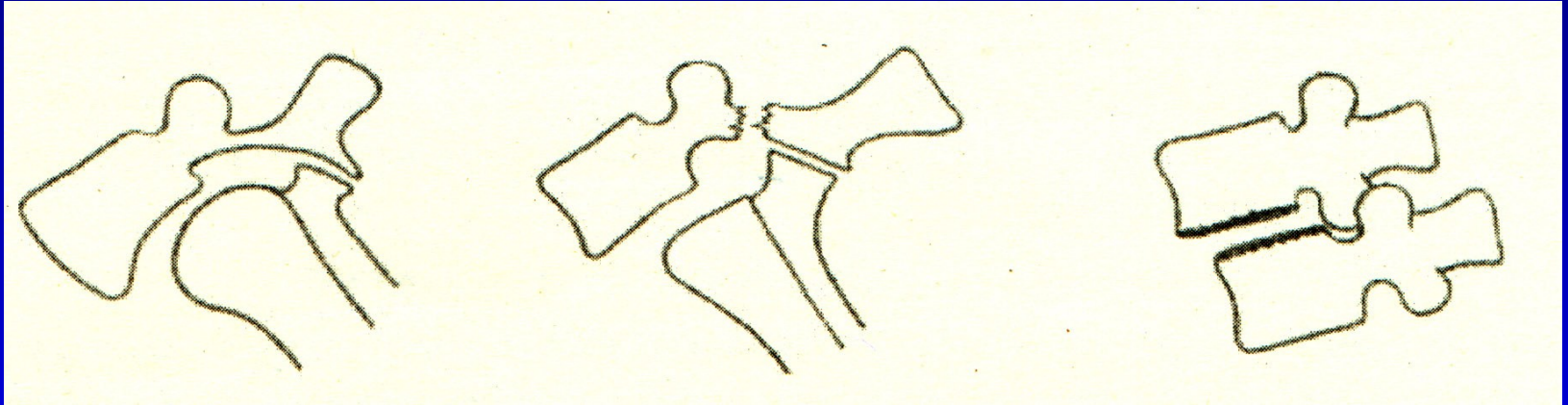


Obr. 15



Obr. 16

# Spondylolisthesis



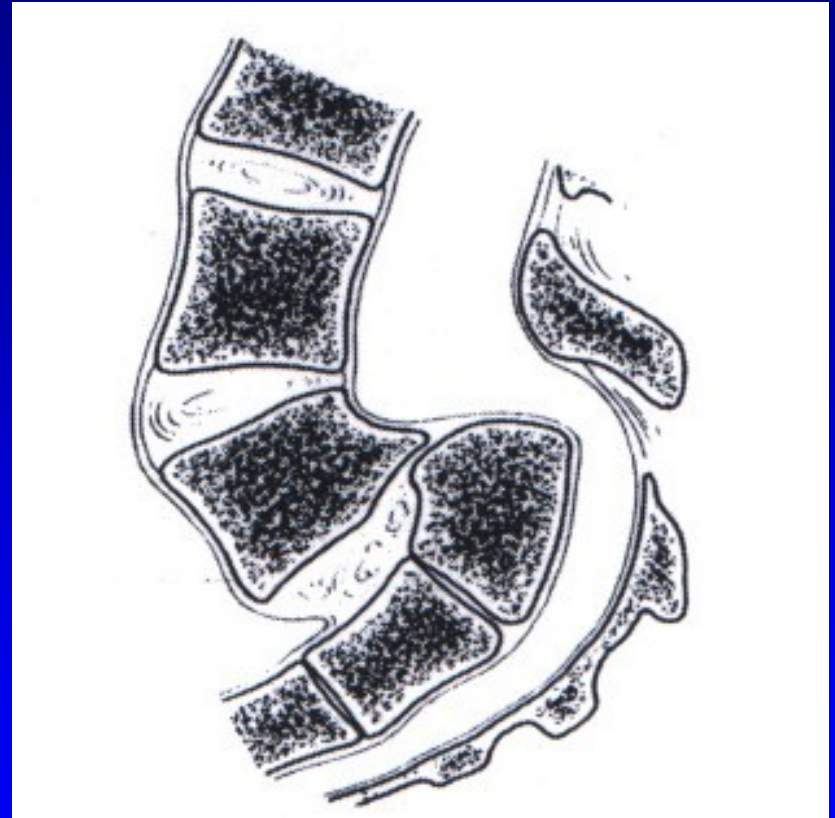
1. dysplastic

2. isthmic

3. degenerative

# Stages of spondylolisthesis

- I. 25 %
- II. 50%
- III. 75 %
- IV. 100 %
- V. spondyloptosis



Obr. 18 Spondyloptosis

# Spondylolisthesis

Low back pain

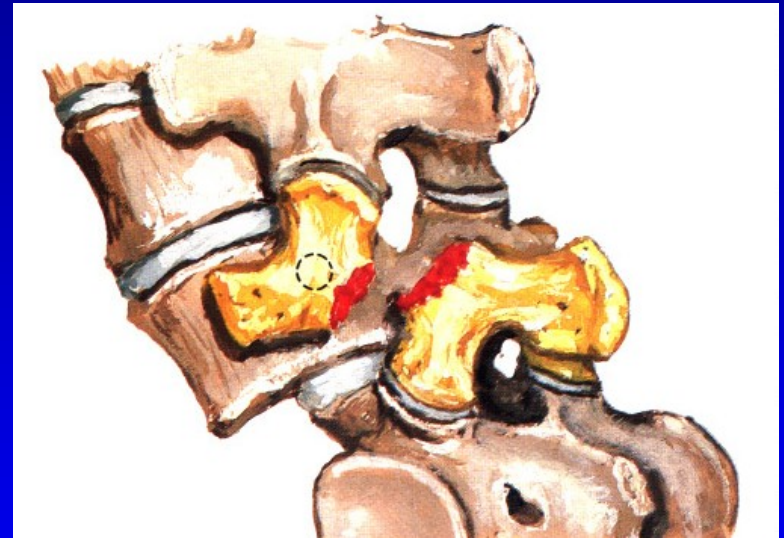
Sciatica

Muscle spasms

Th: fysioth, analgetics

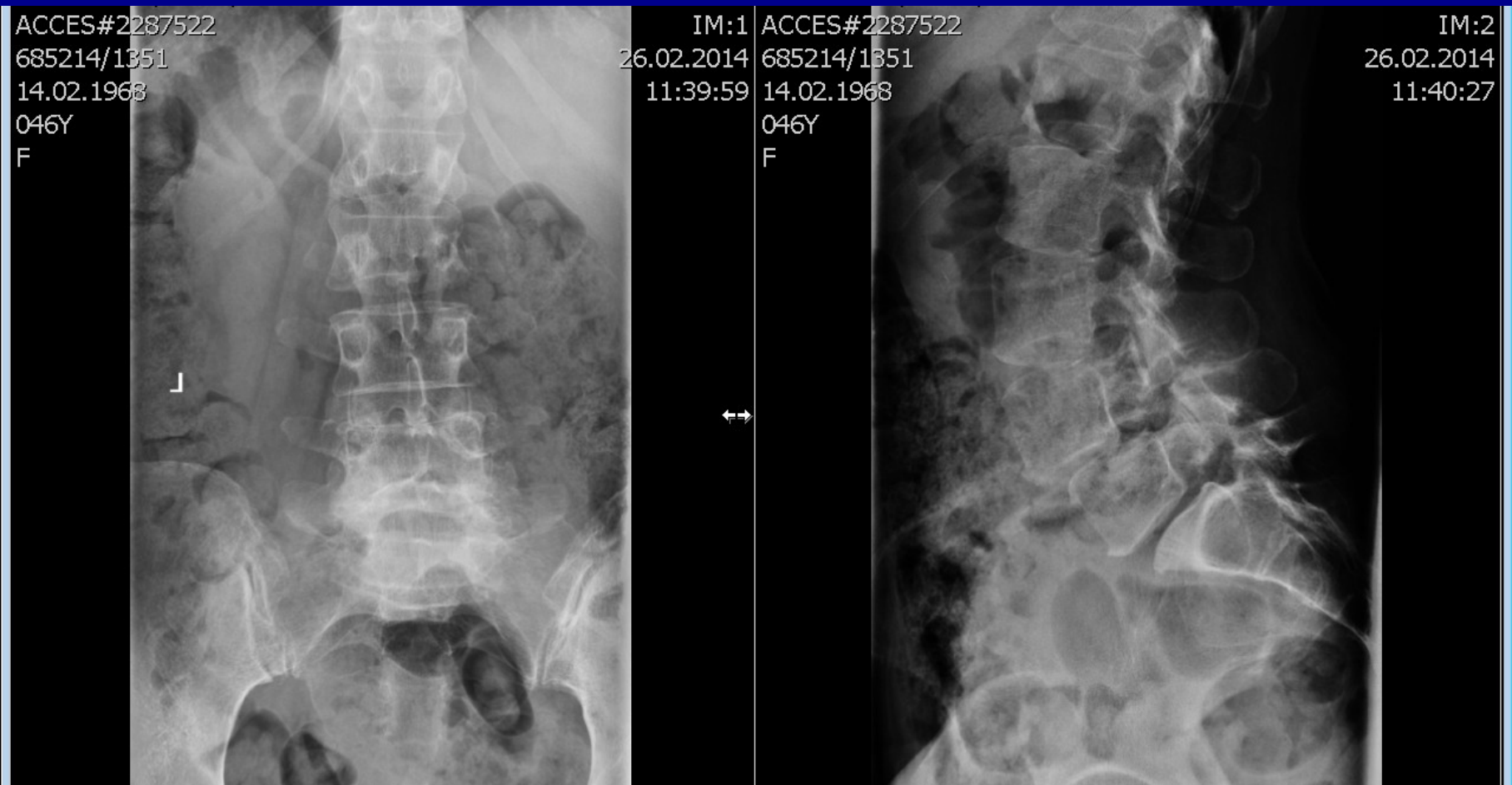
Op: decompression, reduction,  
anterior or posterior fusion

PLIF - TLIF, ALIF



Obr. 19

# Spondylolisthesis



340320

351

8



: L 8192

IM:1

14.05.2014

08:58:12

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14.02.1968

046Y

F



Lumbar-spine FN Brno

L,,,

W 16383 : L 8192

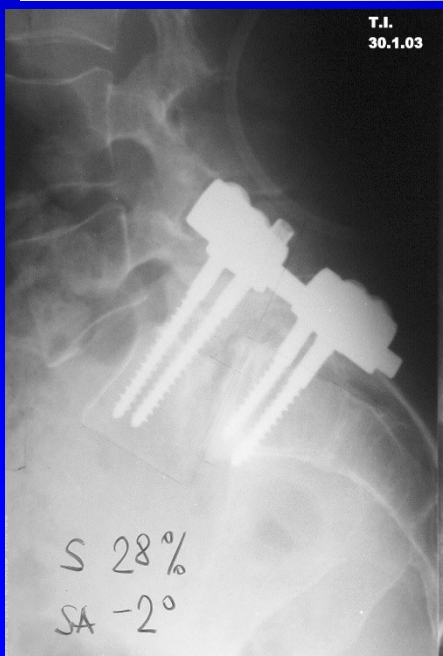
T.I.  
2.10.02



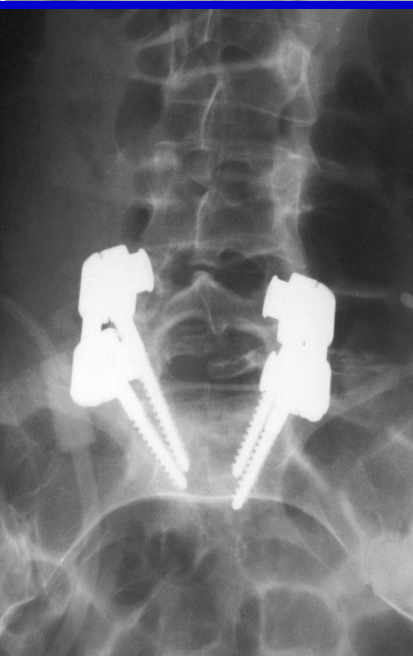
S=50%  
SA +18°



T.I.  
30.1.03



S 28°  
SA -2°



IVANA 398/03

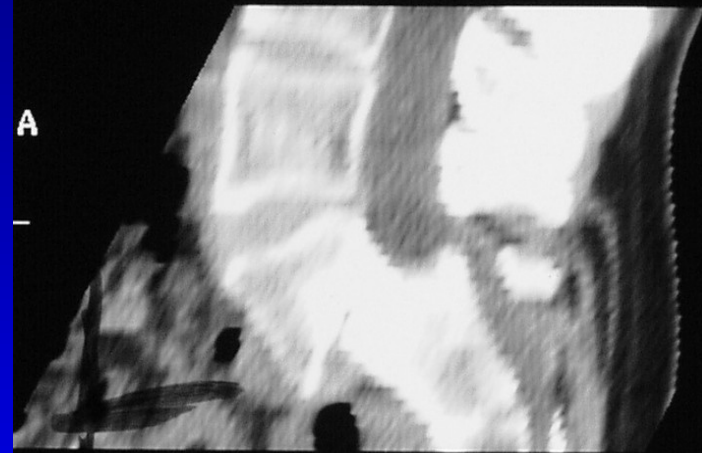
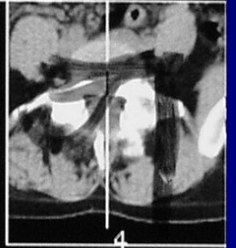
675218/1018

H

21-JAN-2003

IMA 44

Ref Scan 3  
Ref TP -882.5



A

10  
C  
M

L3-S1  
NATIV

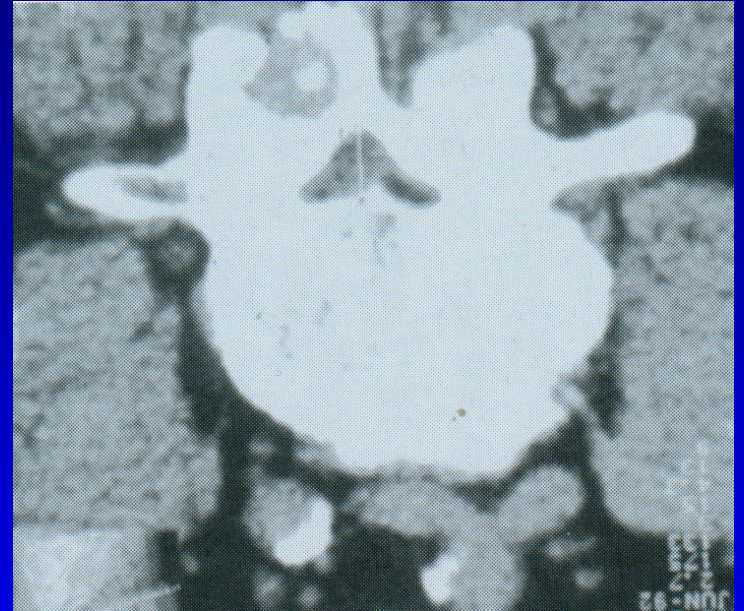
W 350  
C 40

4



# Spinal stenosis

Narrow spinal canal  
Advanced spondylosis and  
spondylarthritis  
Compression of dural sack

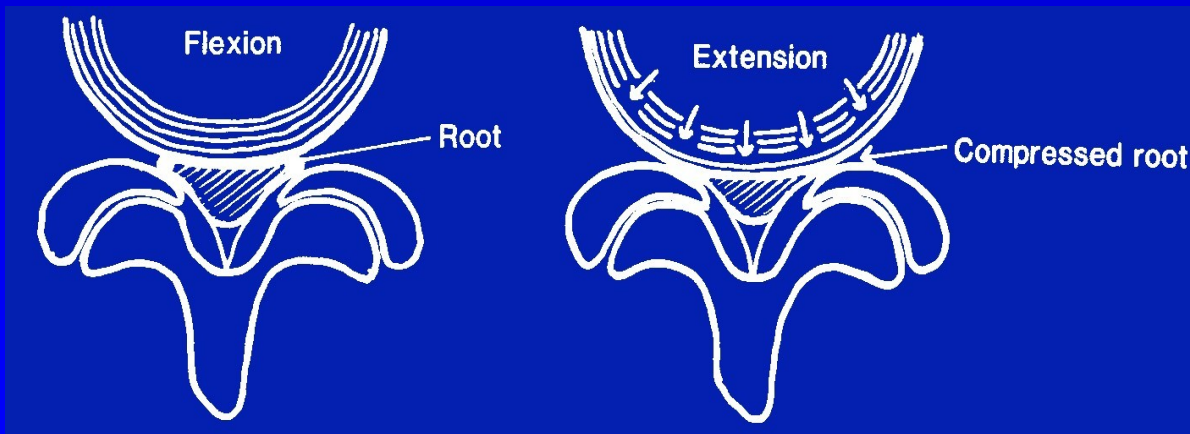


Normal width of spinal canal 17 mm  
Narrowing below 10 mm - myelopathy

# Symptoms

- mild pain
- nerve root compression
- cauda equina syndrom
- neurogenic claudications

# Flexion- extension







# Therapy

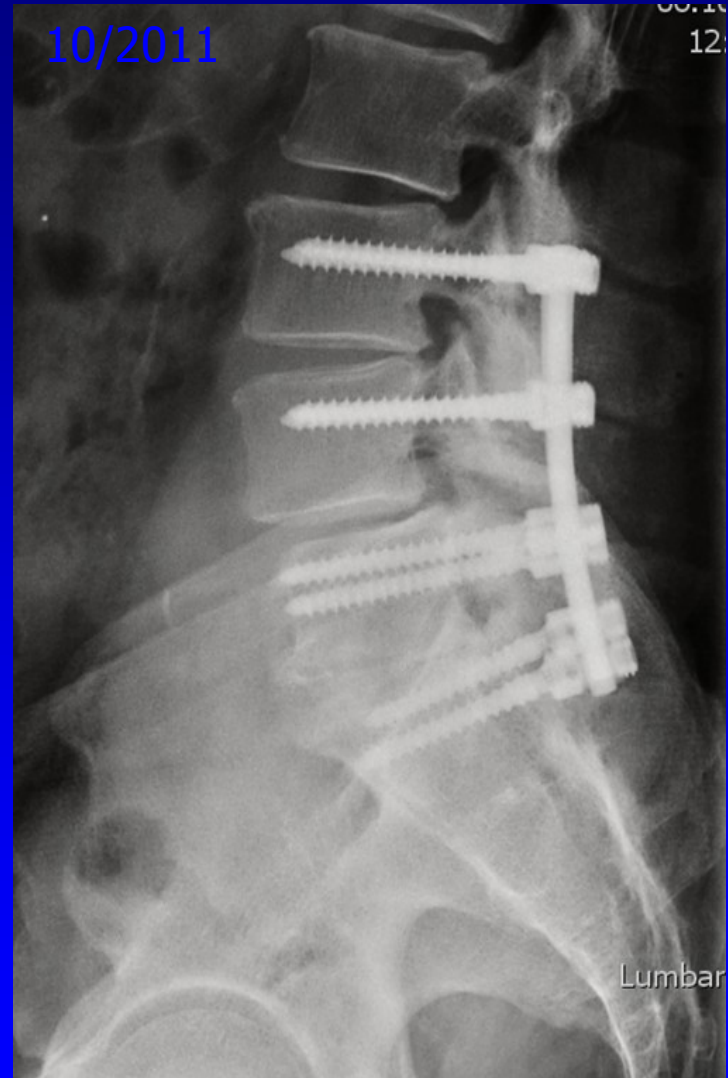
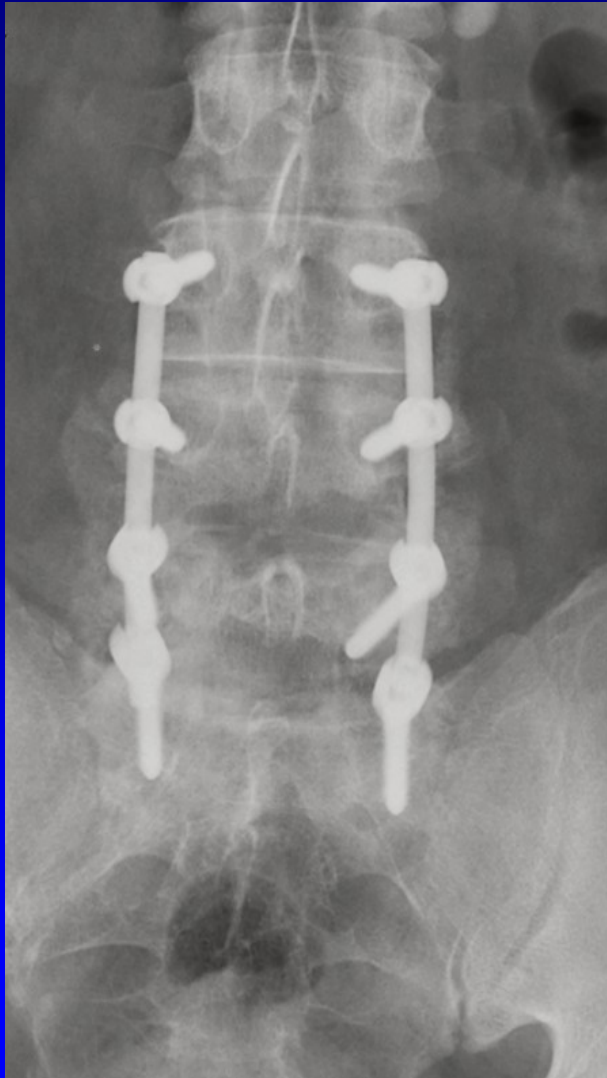
Conservative:

Orthesis, epidural applications of steroids

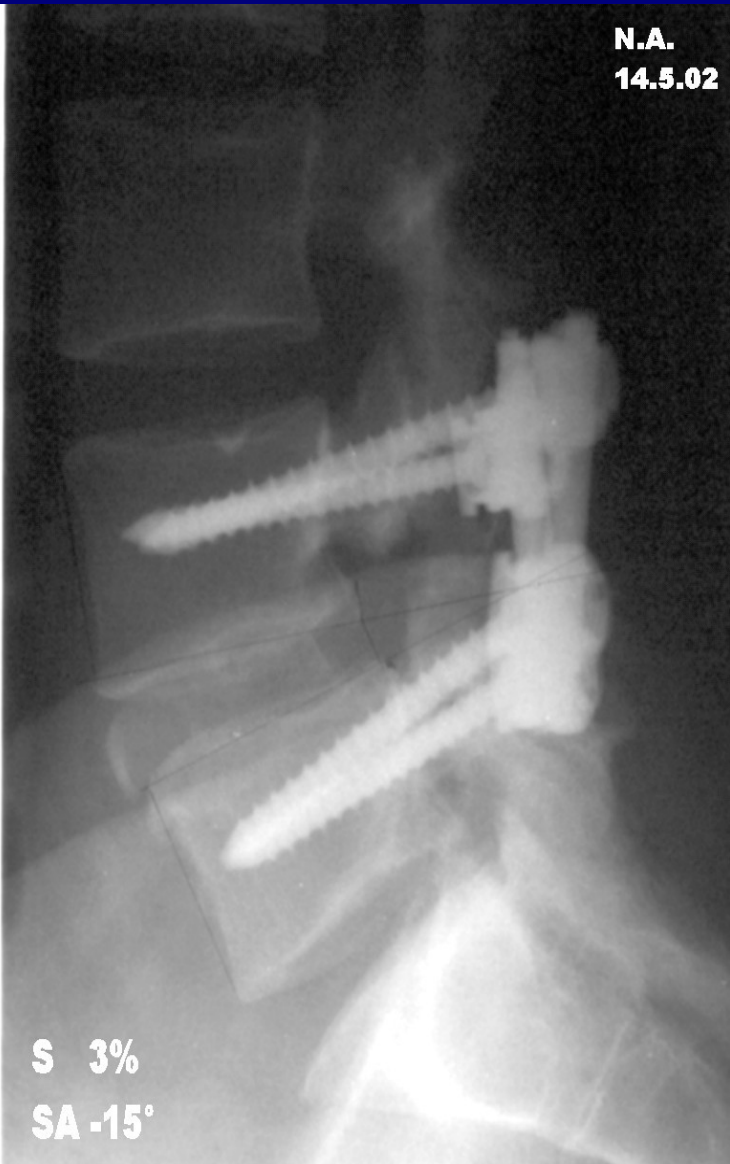
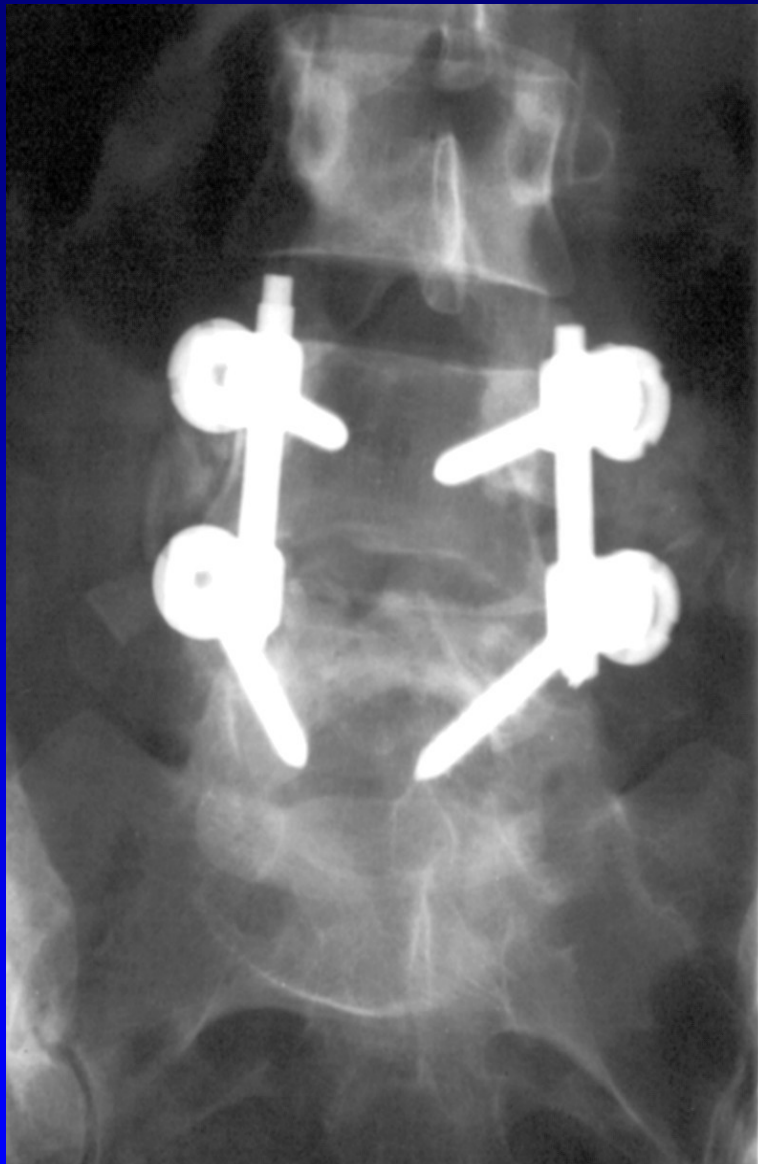
Pain department, exercise

Operative: decompression, instrumentation

# Decompression, fusion, transpedicular screws



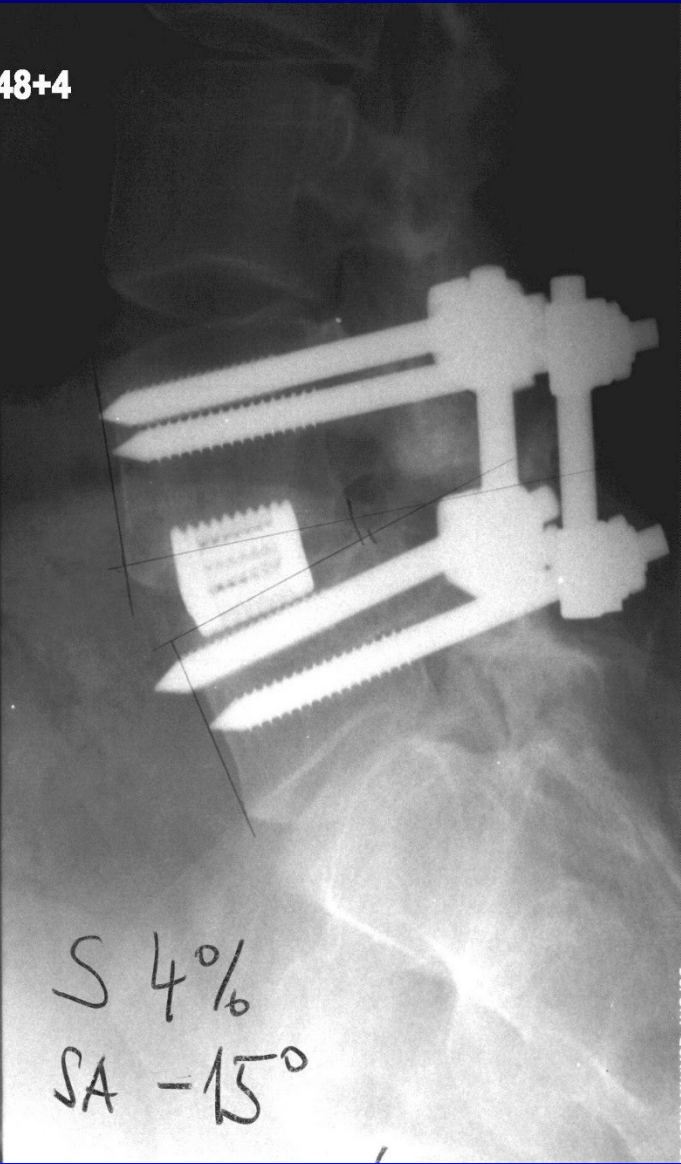
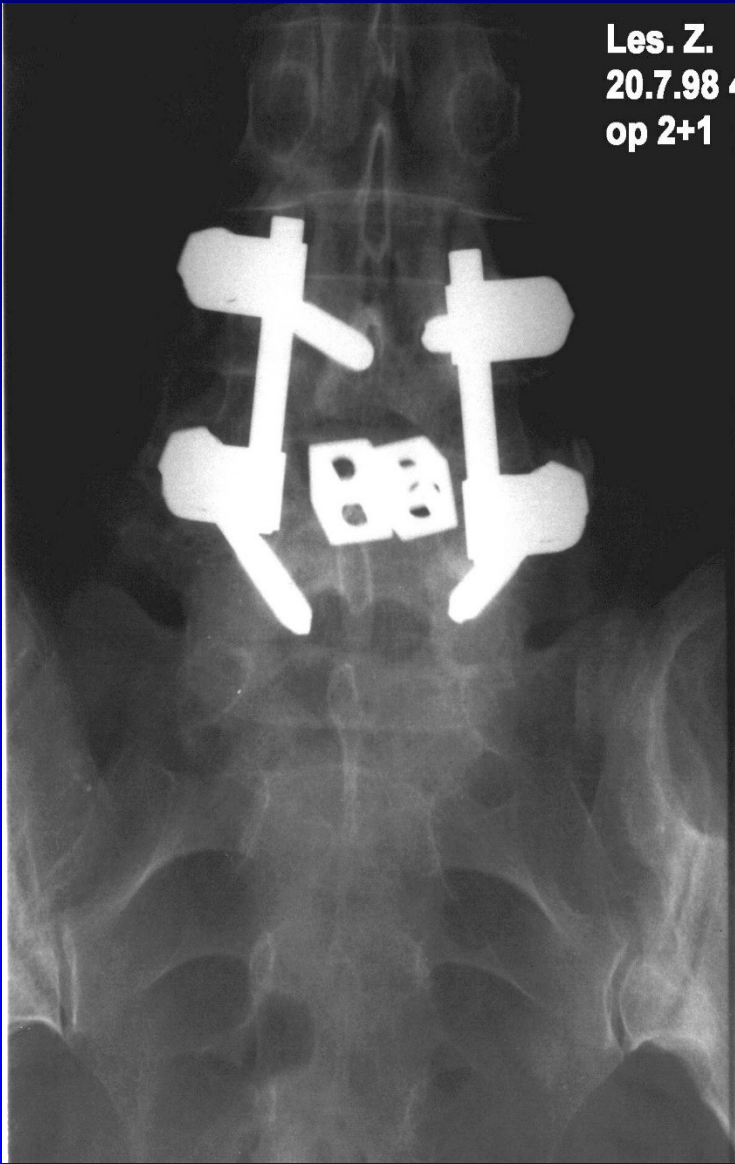
N.A.  
14.5.02



S 3%  
SA -15°



Les. Z.  
20.7.98 48+4  
op 2+1



S 4°  
SA -15°

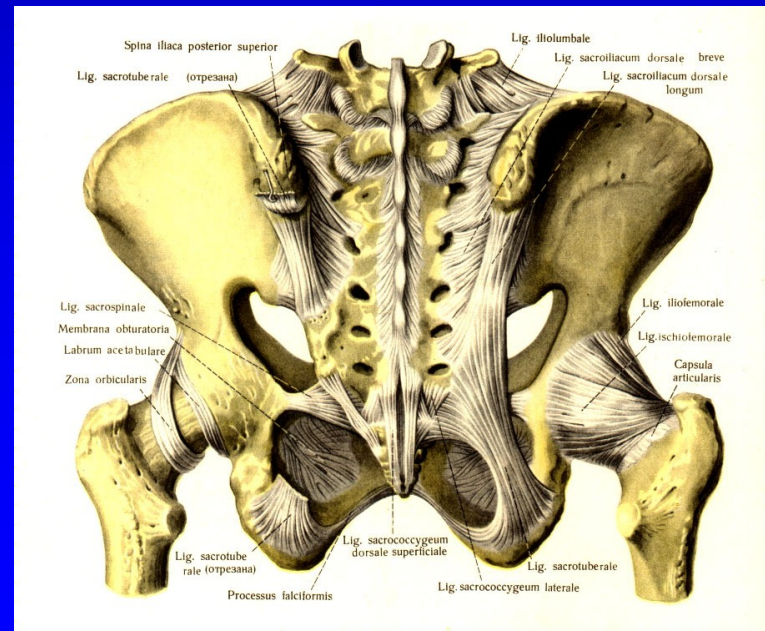
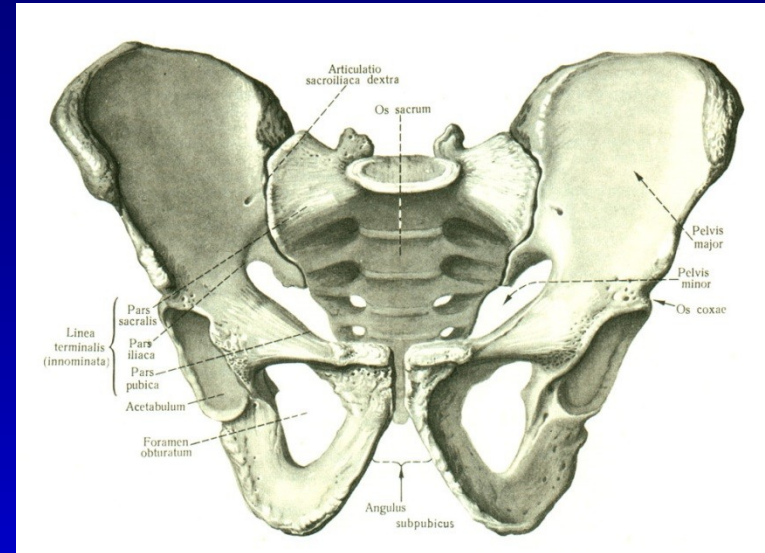
# Pain from SI joint

Sacroileitis

Blockage

Osteoarthritis

Posttraumatic conditions

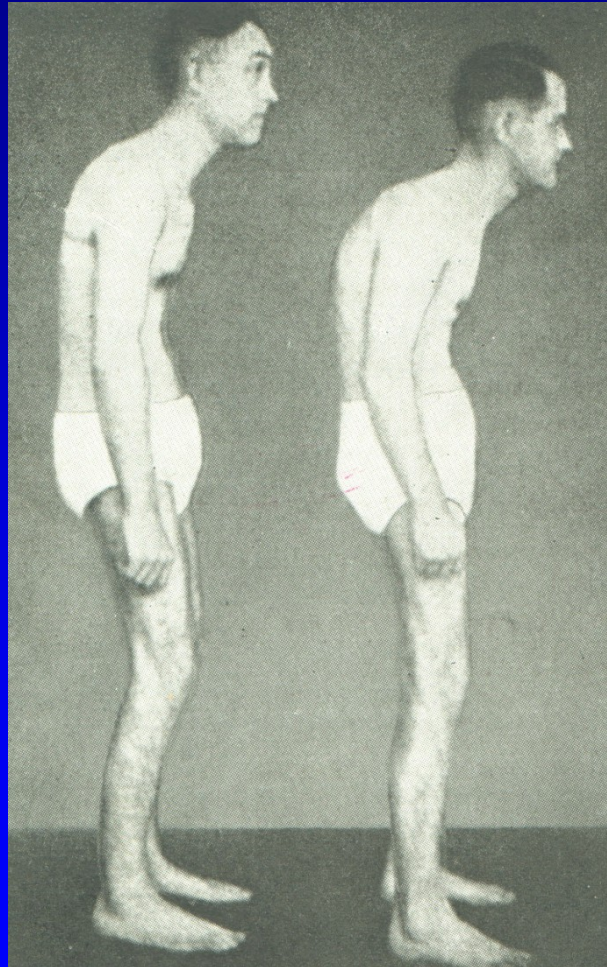


# Coccygodynia

Irritation of nerves around the bone  
Ventral angulation  
Hypermobility  
Posttraumatic conditions  
Irradiation from lumbosacral spine



# M. Bechtěrev - spondylitis ancylopoetica ankylosing spondylitis

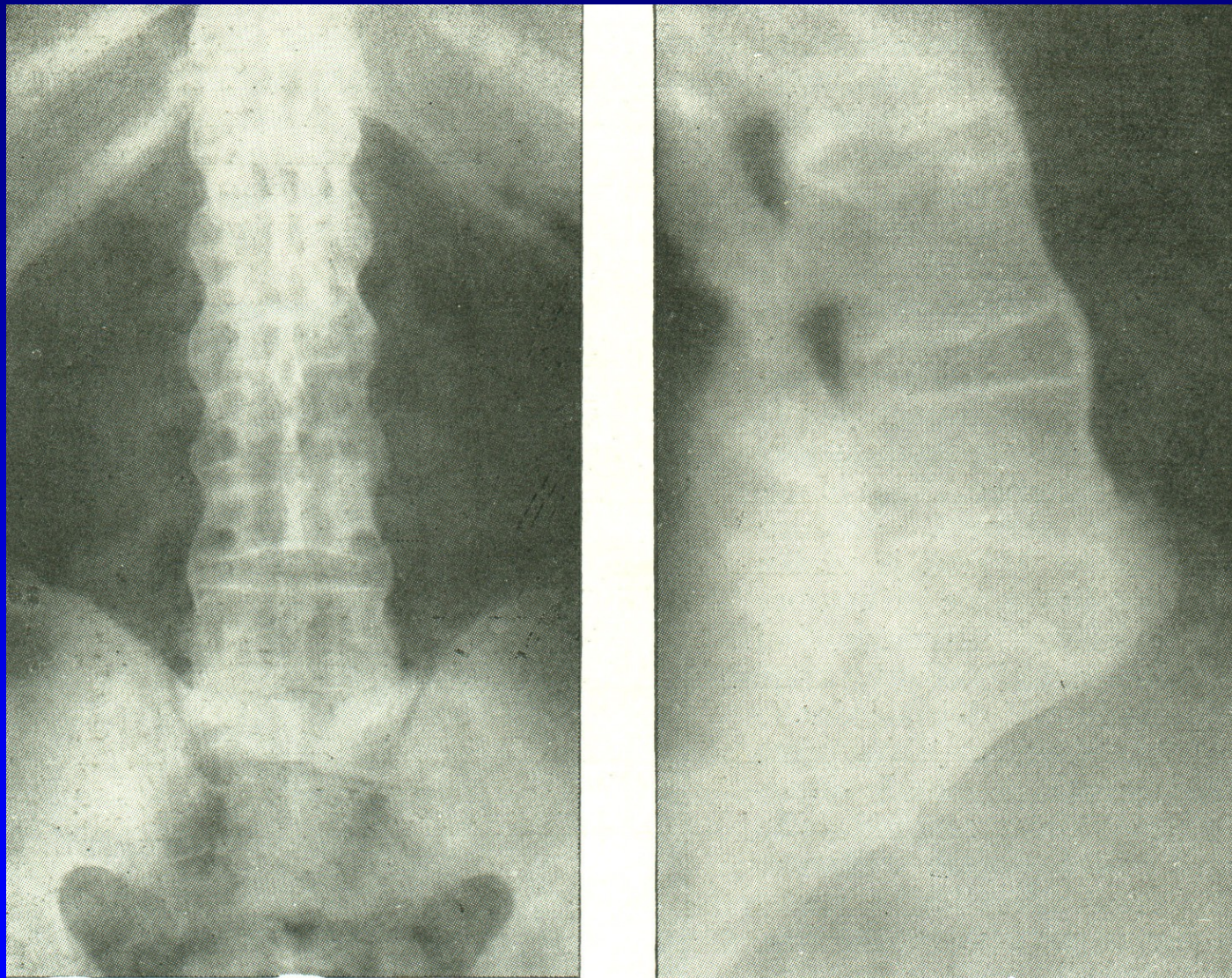


Obr. 20



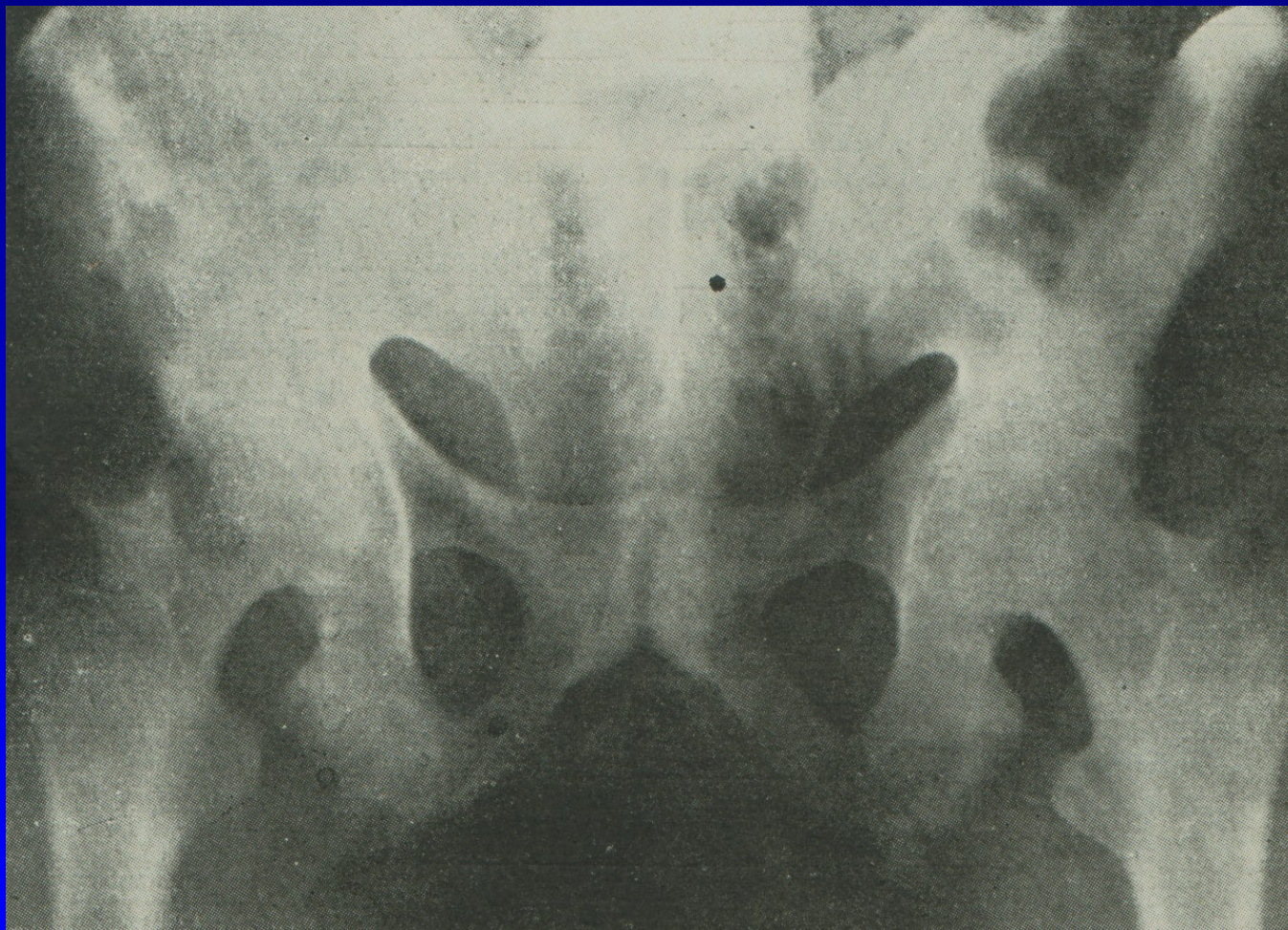
Obr. 21

# M. Bechtěrev



Obr. 22, obraz bambusové tyče

# M. Bechtěrev



Obr. 2

Therapy

Rheumatology, physiotherapy

Total hip replacement



# Thoracic spine

Osteochondrosis disci

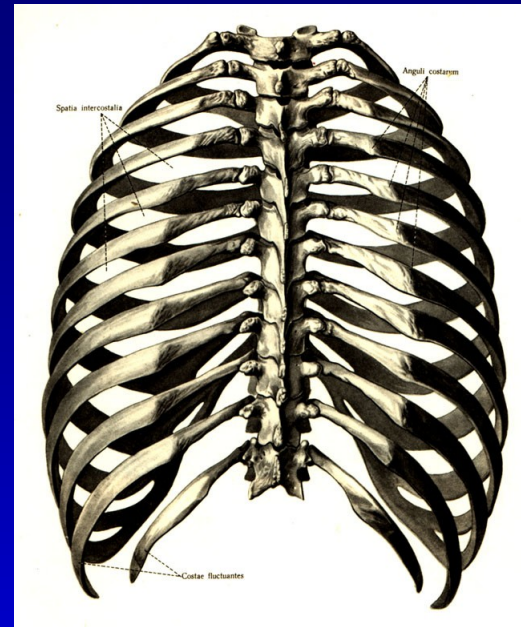
Spondylosis deformans

Spondylarthrosis deformans

Arthrosis costovertebralis

Hyperkyphosis

Scoliosis



# Cervical spine

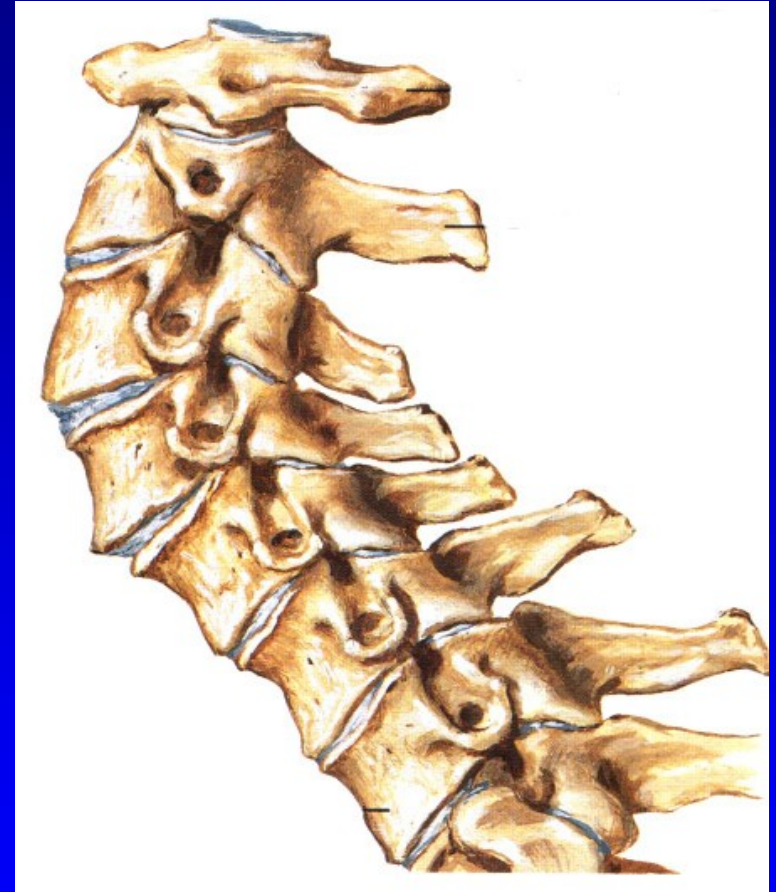
Osteochondrosis disci

Hernia disci

Spondylosis deformans

Spondylarthrosis intervertebralis

Spondylarthrosis uncovertebralis



# Neck pain

Torticollis

Chronic neck pain

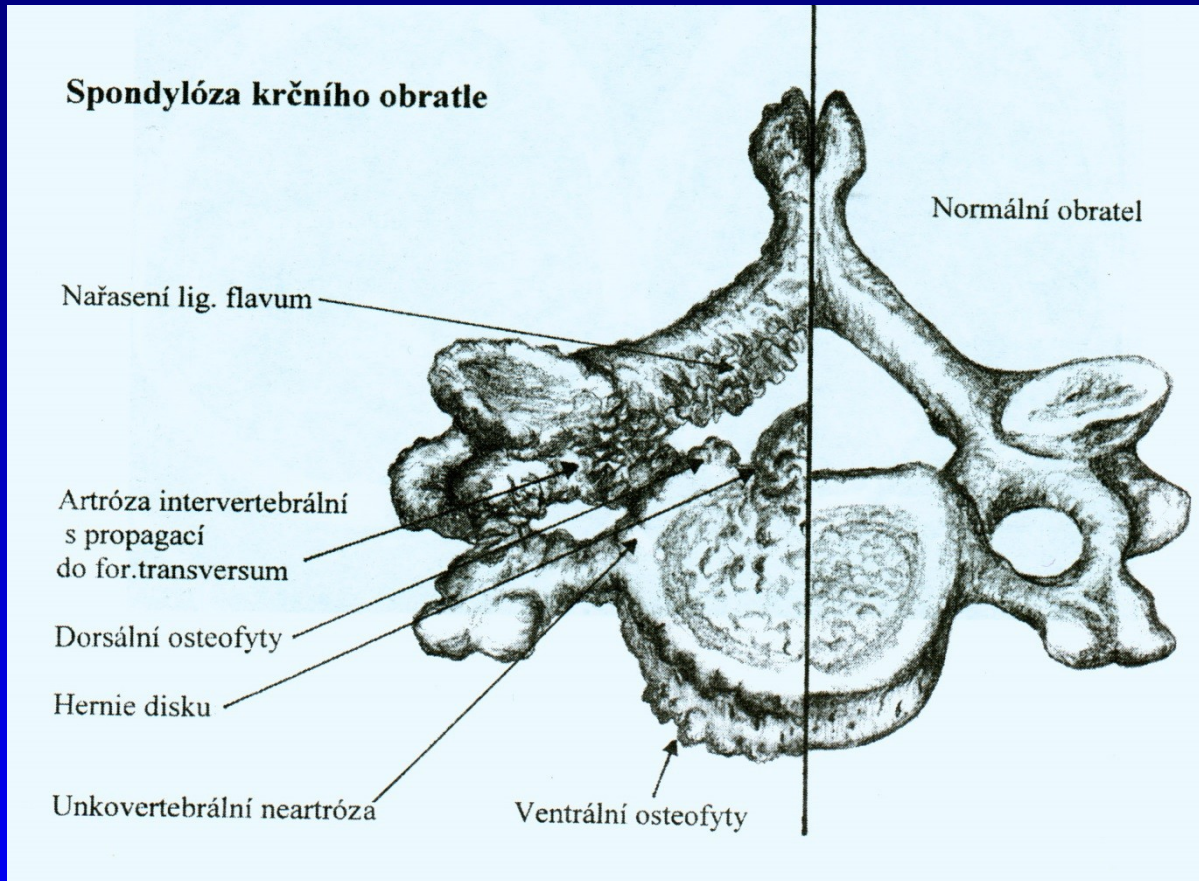
Cervicocranial syndrom

Cervicobrachial syndrom

Nerve roots syndroms

Spondylogenic myelopathy

# Spondylosis in cervical spine

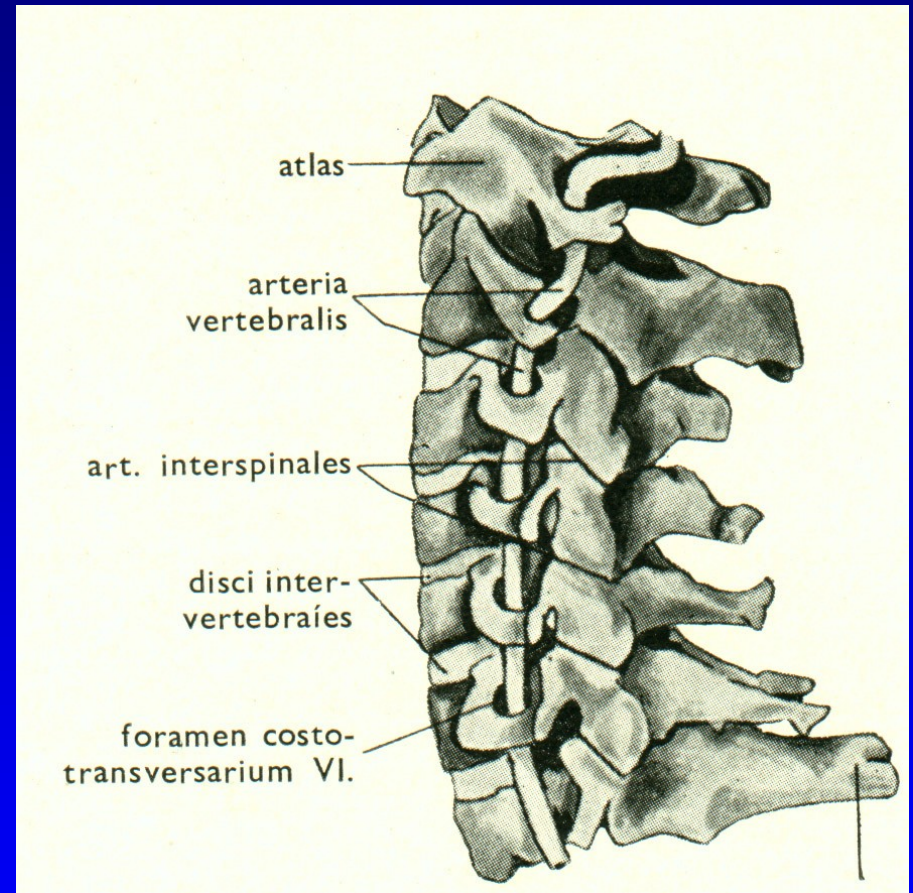


Obr. 26. Foramen costotransversarium with vertebral artery

# Cervicocranial syndrom

Neck pain  
Irradiation in to head and forehead  
Muscle hypertonus  
Nausea, vomiting, sweating  
Dizziness

Cause:  
Irritation of posterior sympatic cord  
along vertebral artery



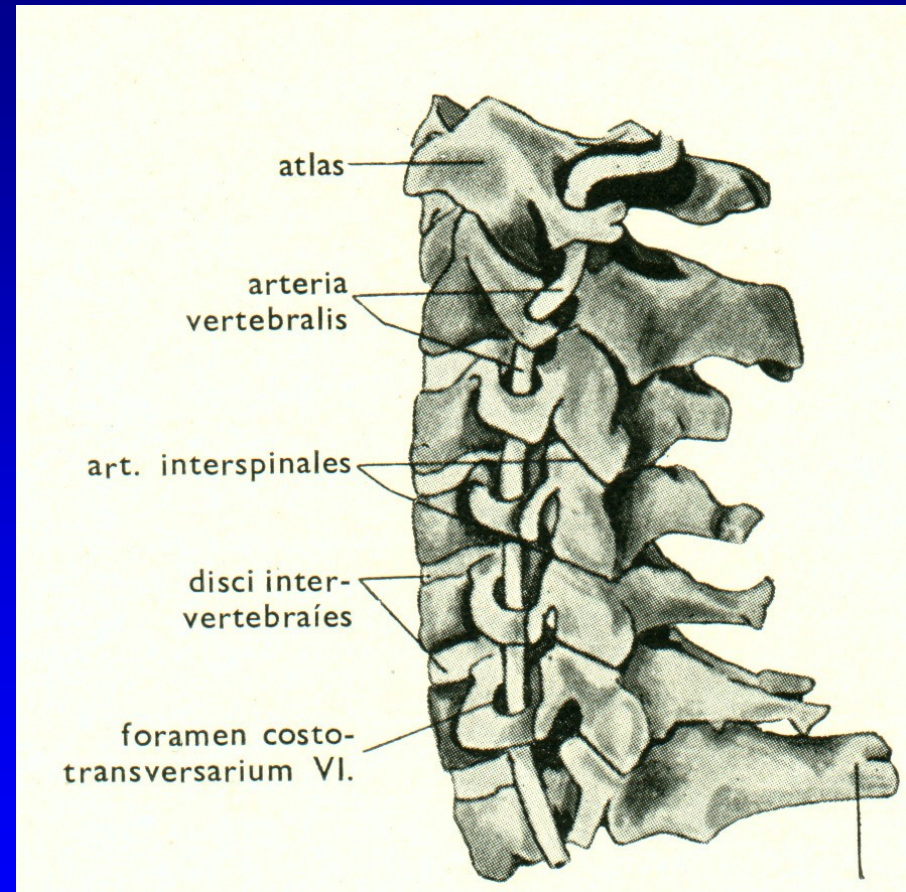
Obr. 27

# Cervicobrachial syndrom

Neck pain irradiating into  
upper extremity up to fingers

Diffuse localisation

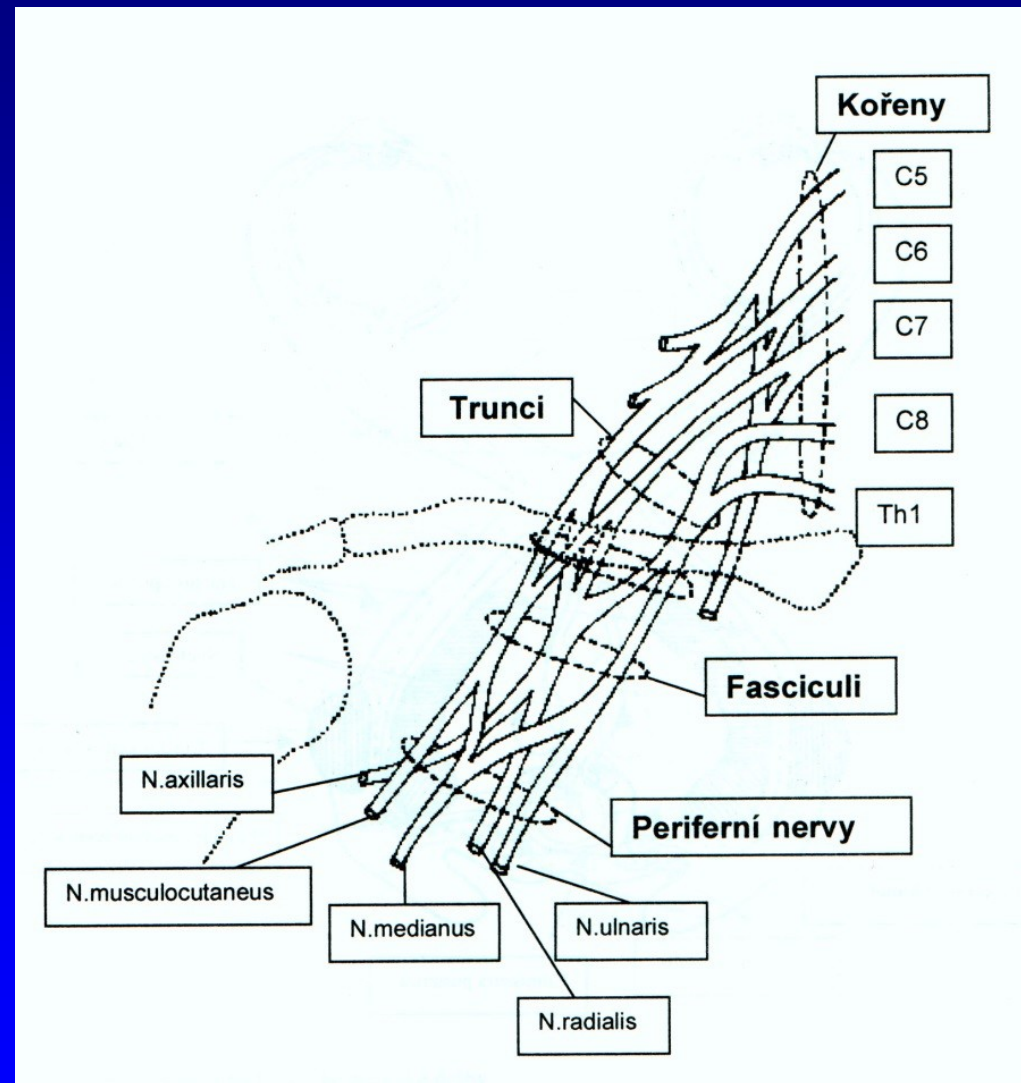
No nerve root localisation



# Nerve roots cervical syndroms

Compression of nerve roots  
Often C6 and C7  
Motor and sensor deficit

The cause:  
Herniation of disc



# Spondylogenic cervical myelopathy

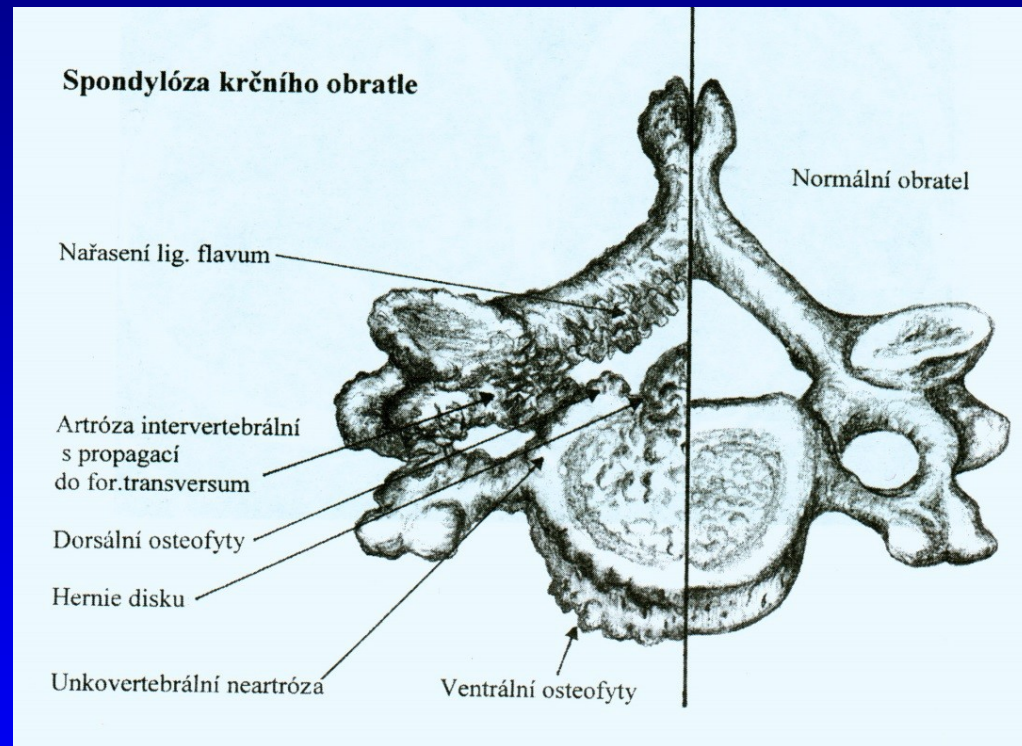
Narrow spinal canal

Direct compression of the spinal cord

Ischemia of spinal cord

Mixed palsy of upper and lower extremity

Impaired gait





# Therapy of spondylogenic myelopathy

Anterior approach

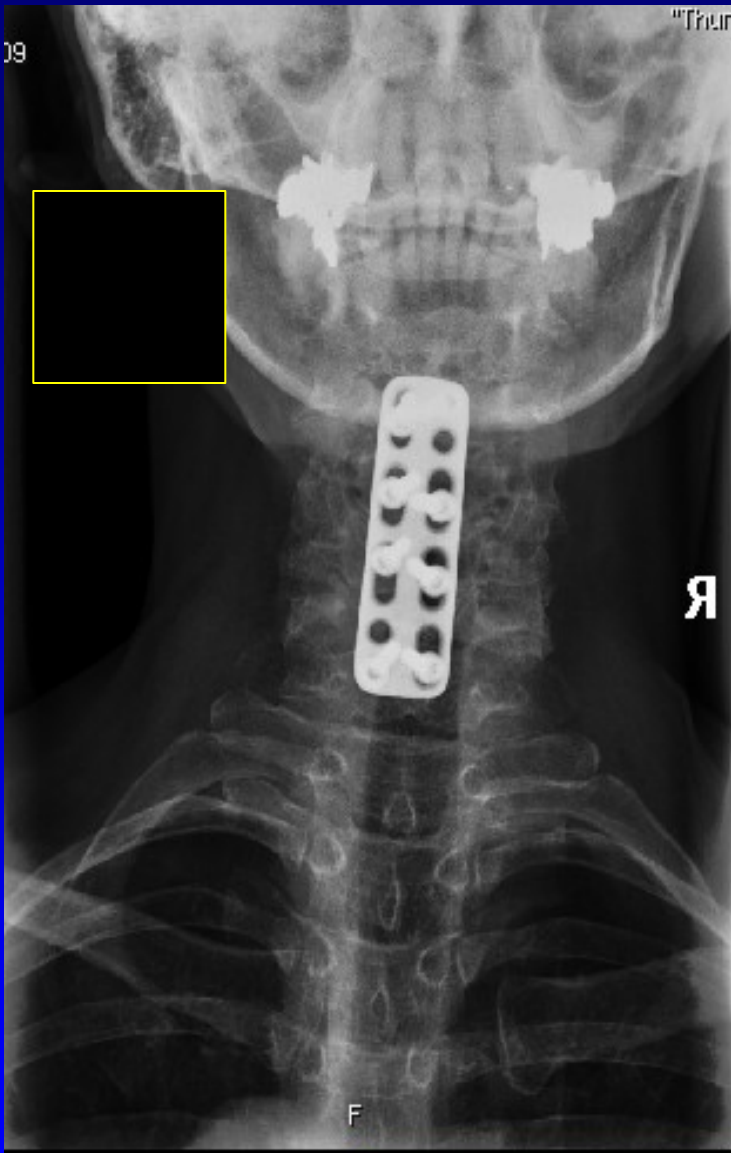
Posterior approach

Combined approaches









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2006-11-16  
11:32:21  
No. 2

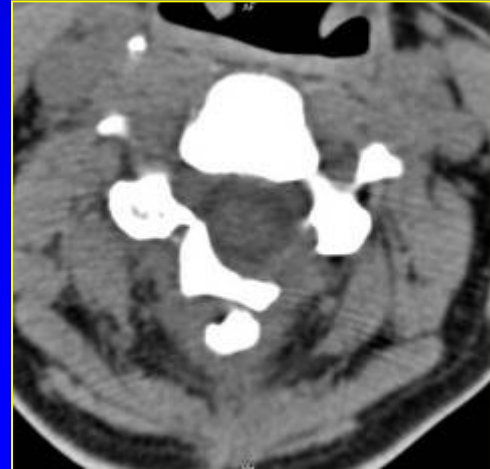
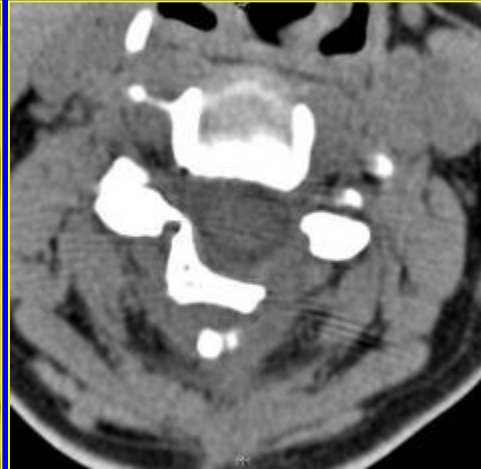
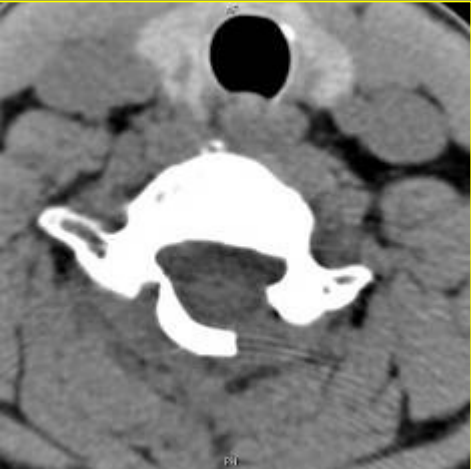
R

A

C: 8192  
W: 16383



Open door  
laminoplasty  
and fusion





# Differential diagnosis

R.A.

Ancylosis spondylitis

Tumors

Myeloma

Entesopathy

Osteoporosis

Fractures

Herpes zoster

Peripheral neuropathy

Deformities of the spine

Spondylodiscitis



## II. Pain from visceral organs

Larynx, pharynx, lymphonodes

Pleura, lungs, diaphragma

Gall bladder, liver, pancreas, duodenum

Retroperitoneum, kidney, ureter

Gynecological region

Urinary bladder, prostate