

Management of low back pain in primary care

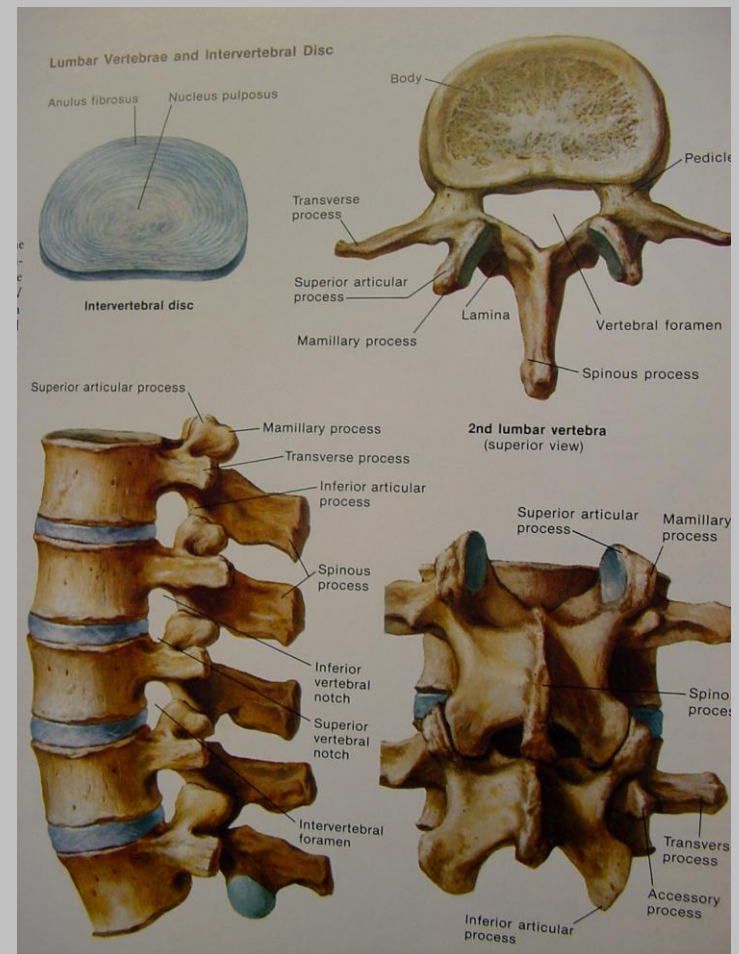
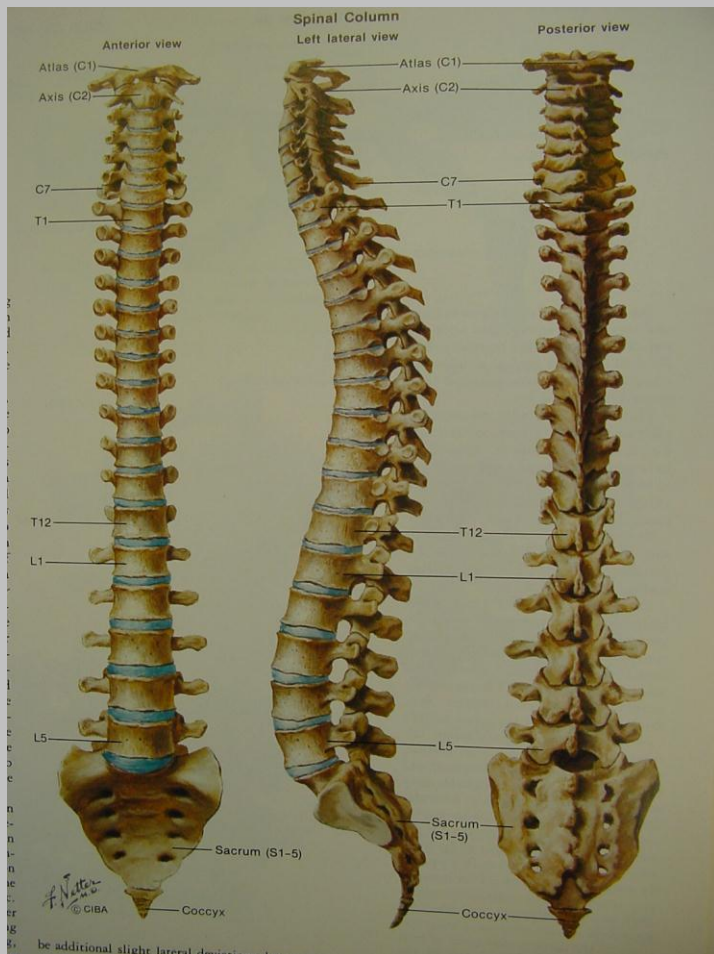
Jean-Claude Theis

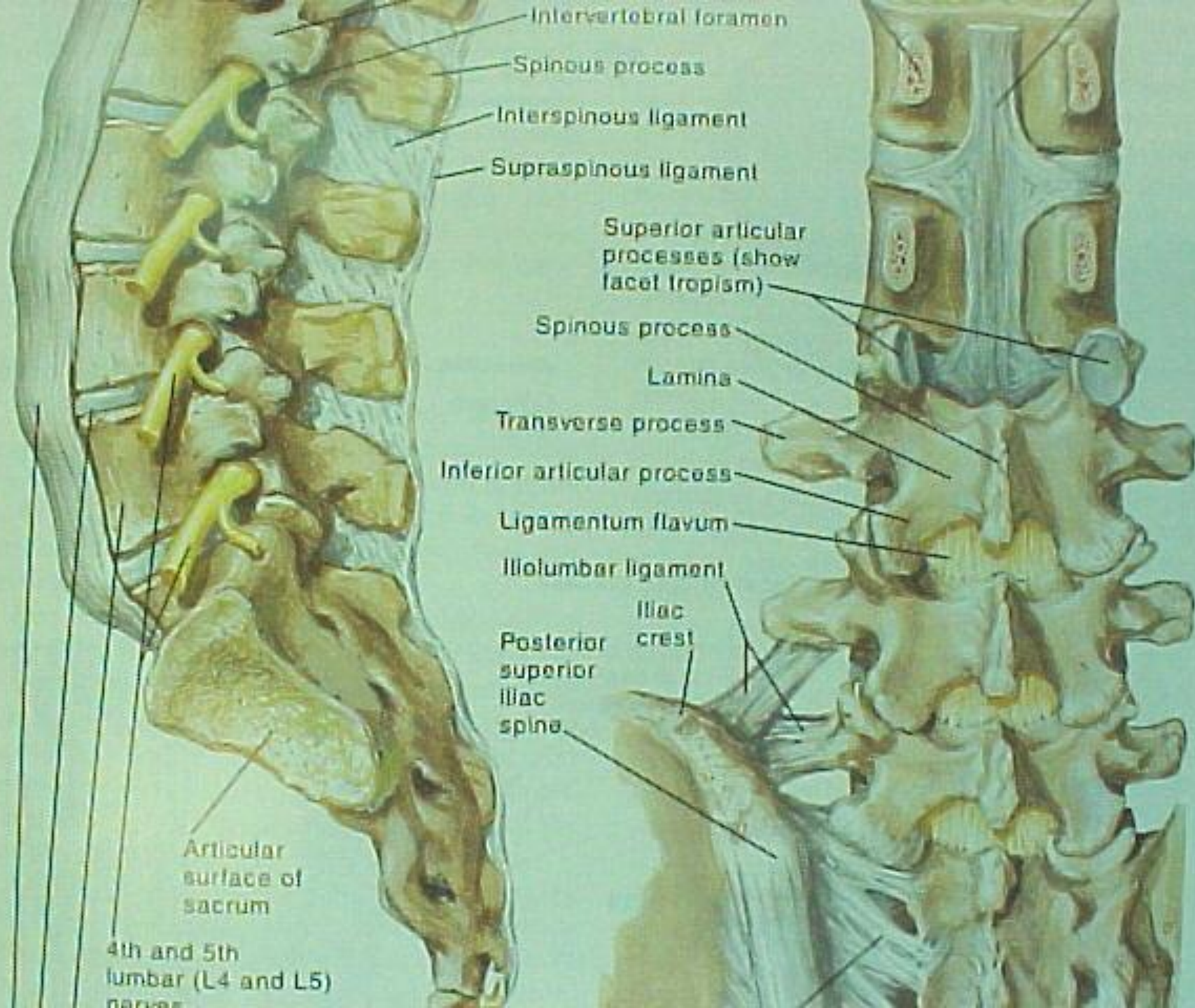
CME GP Meeting

Dunedin

18-19 August 2012

- Spinal anatomy
- Pathology of degenerative disc disease
- Clinical evaluation
- Management of acute back pain
- Disc prolapse
- Spinal stenosis
- Examples

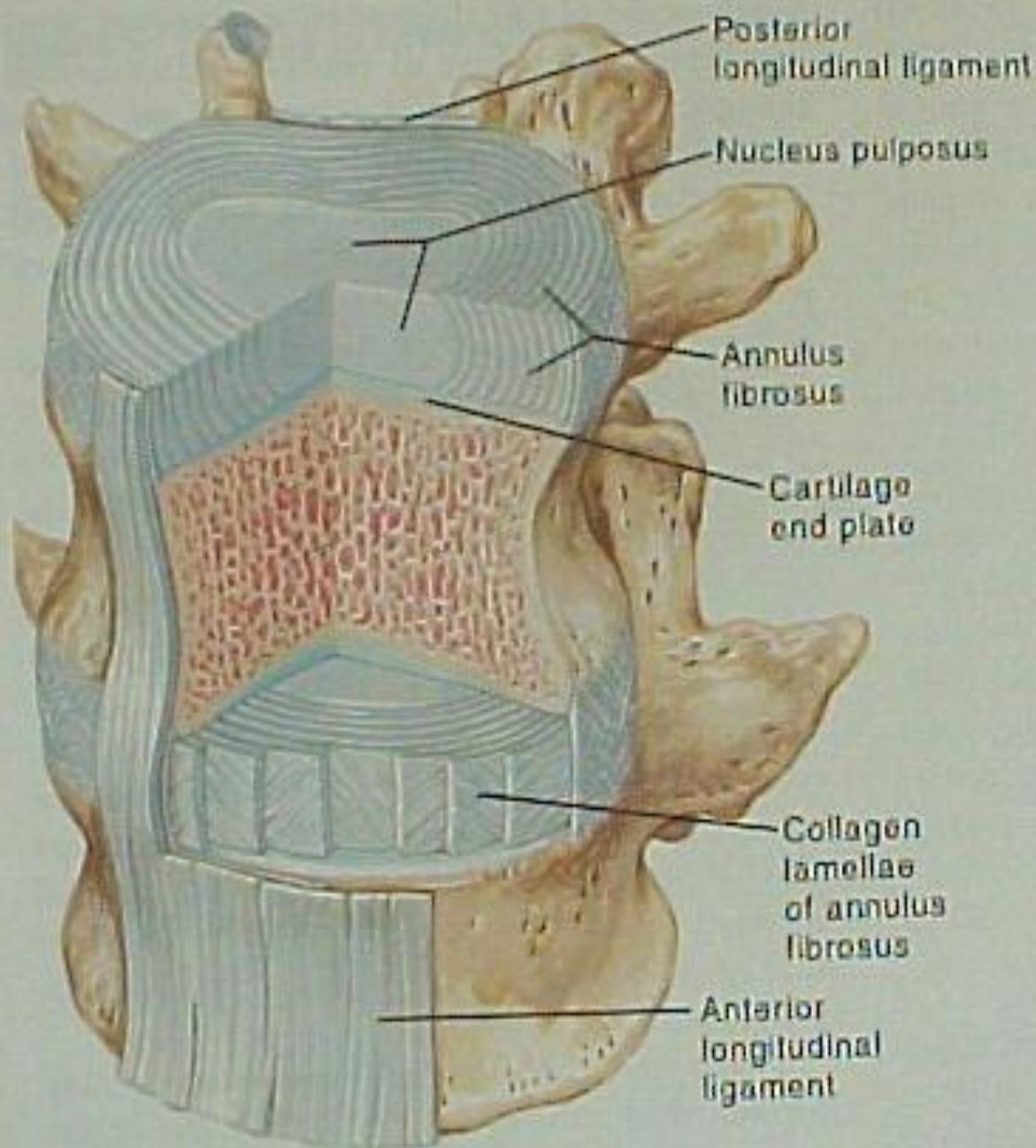




Intervertebral Disc

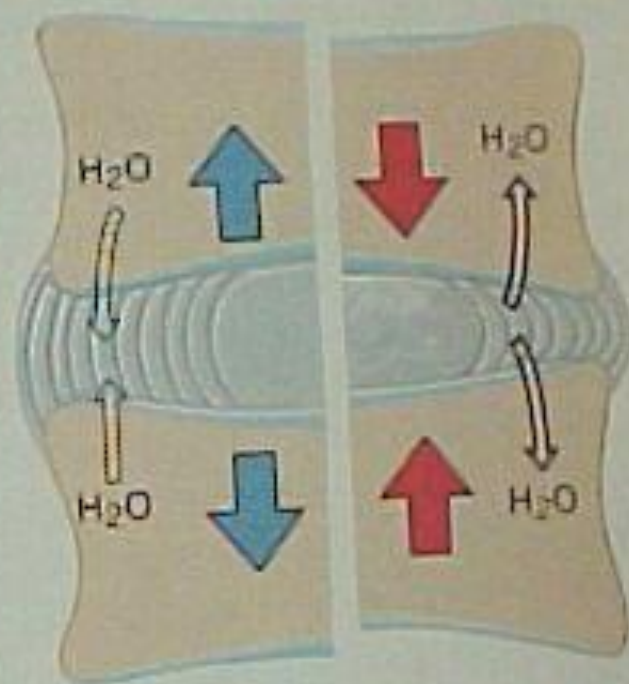
- Anatomy
 - annulus fibrosus
 - nucleus pulposus
 - cartilaginous end plates
- Avascular
- Nerve endings outer layers AF only
- Nucleus pulposus
 - high water content
 - proteoglycans
 - positive pressure

Intervertebral Disc



Pump mechanism of disc nutrition

Non-load bearing Load bearing



Movement-driven pump mechanism alternately compresses and relaxes pressure on disc, pumping water and waste products out and water and nutrients in. Baseline turgor maintained by hydrophilic proteins. Failure of pump mechanism may result in biochemical changes, causing back pain.

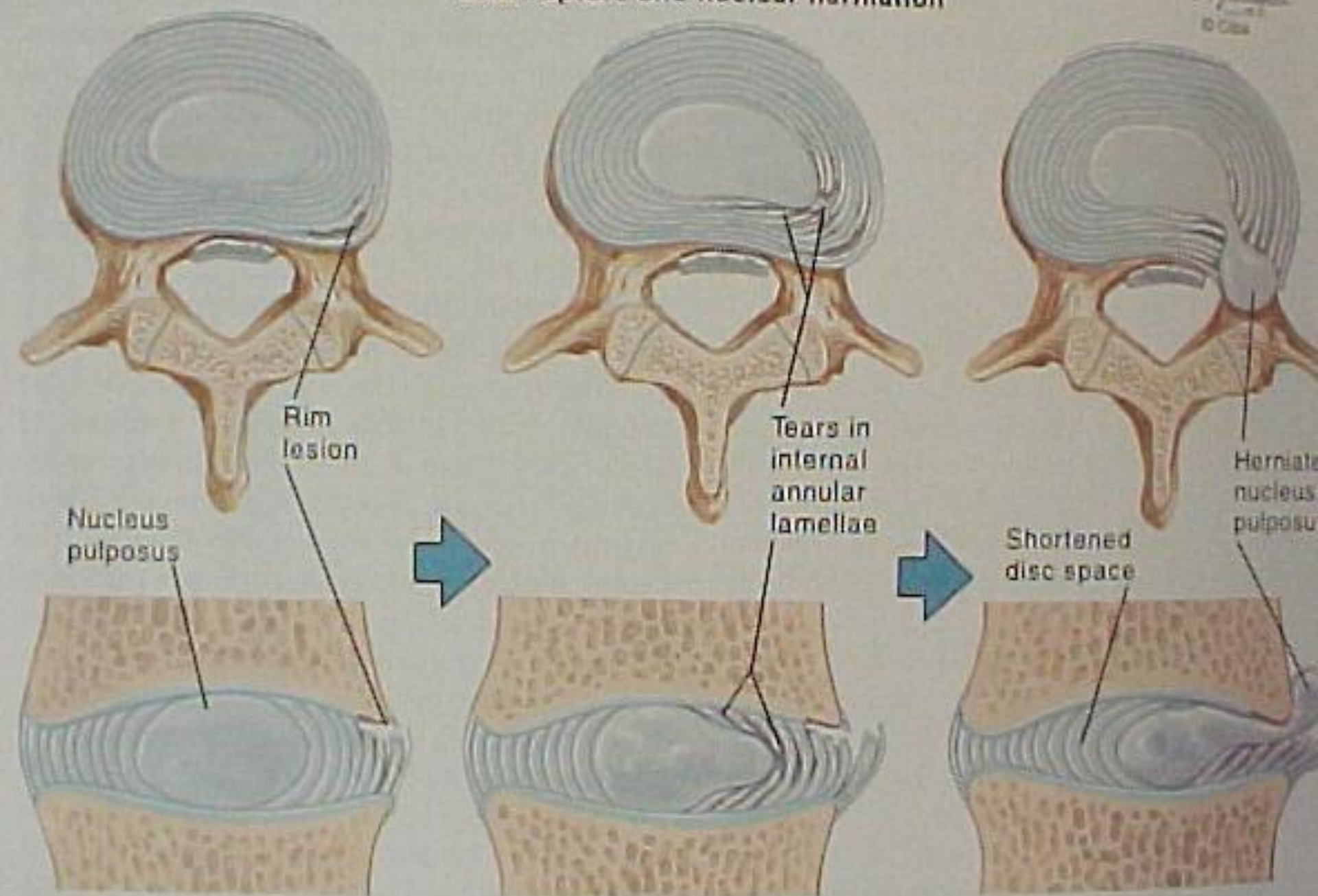
Intervertebral disc composed of central nuclear zone

Lumbar Disc Disease

- Degeneration age-related + ? Injury
- Loss of water content nucleus
- Annular tears
- Disc prolapse
- Facet joint degeneration
- Spinal stenosis
- Instability (spondylolisthesis)

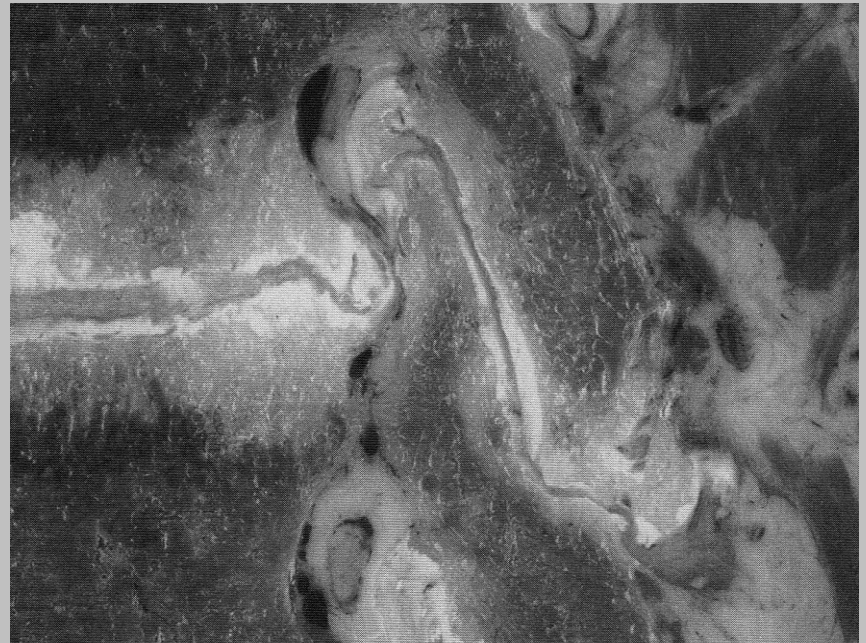
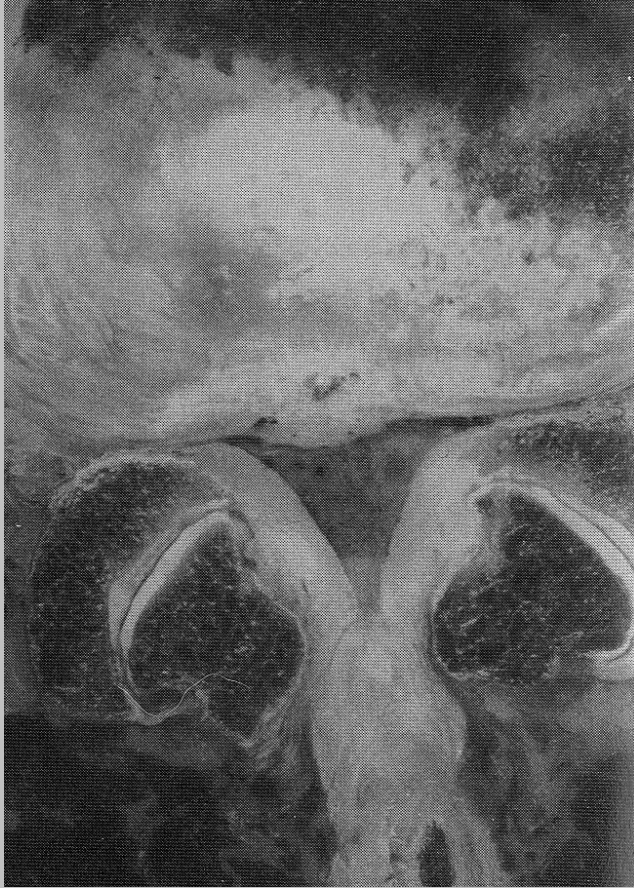
Disc rupture and nuclear herniation

C. Mitchell
© 2004

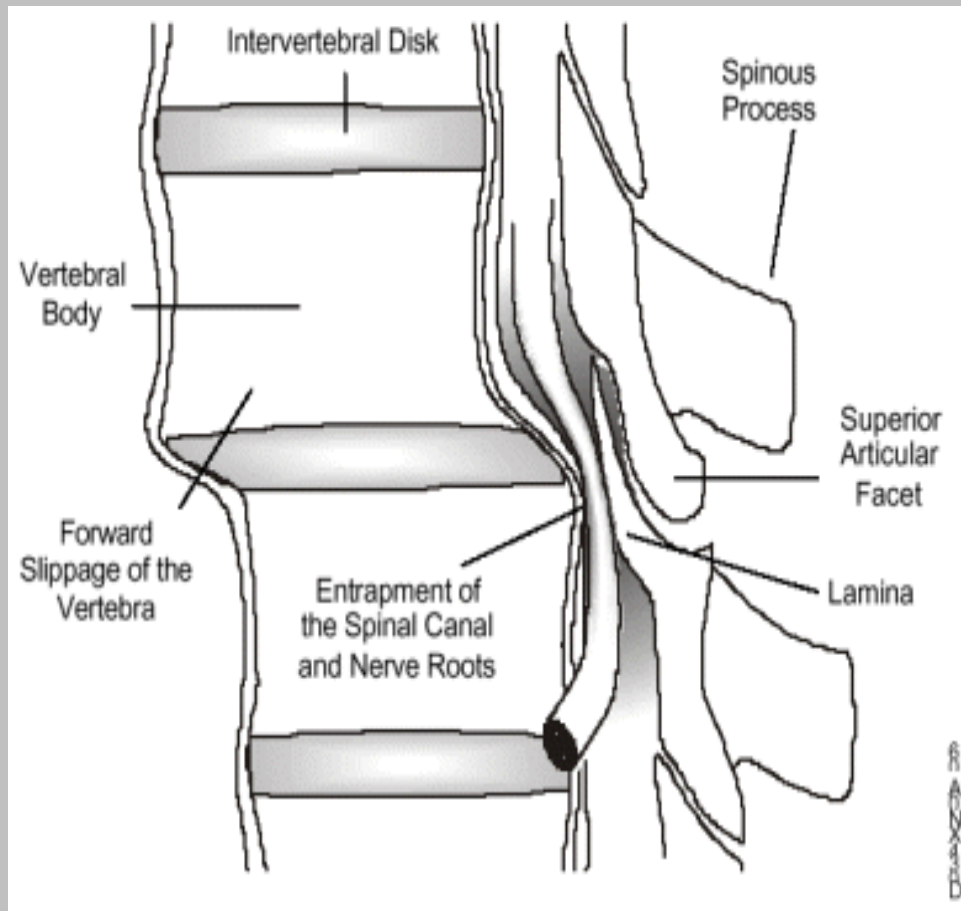


Peripheral tear of annulus fibrosus and cartilage end plate (rim lesion) initiates sequence of events leading to nuclear herniation.

Spinal stenosis

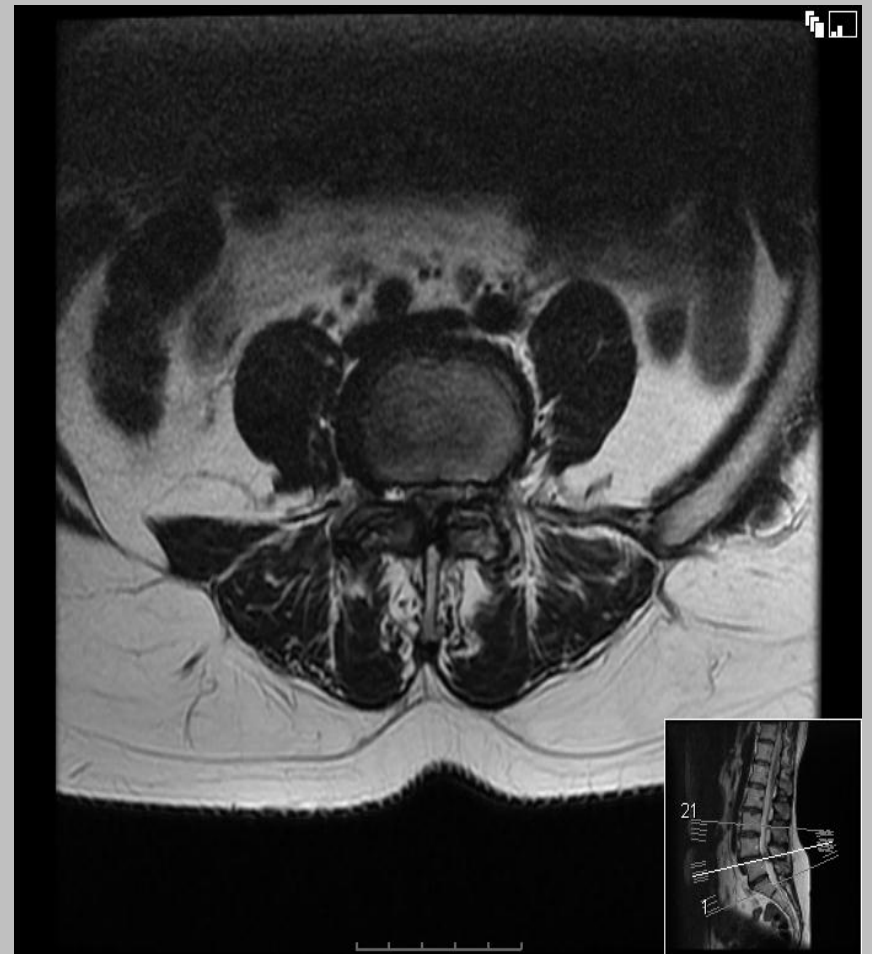


Degenerative Spondylolisthesis









The big picture

- 5th most common cause of GP consultation
- 90% of adults develop LBP
- 50% of working population have LBP every year
- US healthcare expenditure direct 20 billion\$ (50 billion\$ indirect costs included)
- NZ 400-500 million \$ per year

Medical evaluation

- 90% of patients with LBP return to work within 3 months!
- Only small percentage of patients have an underlying identifiable cause
 - Does the diagnosis matter?
 - Exclude serious underlying pathology: trauma, cancer, infection, neural compression
- Surgery for acute LBP rarely required

Role of GP

- GP role is crucial in LBP management
- Comprehensive clinical evaluation is essential
- Only a small percentage of patients require secondary referral
- MRI only indicated if red flags or suspicion of neural compression
- Acute versus chronic LBP
- Prevention of chronic LBP starts in the acute phase

What is the cause of LBP?

- Acute
 - In the absence of red flags it doesn't really matter
 - Disc and or facet joint related degenerative process most common cause
- Chronic
 - Diagnosis again doesn't matter
 - Pain, psycho social and occupational management issue

Clinical evaluation

- Age
- Pain
- Functional impairment
- Systemic symptoms
- Past medical history
- Work
- Red flags
- Yellow flags

Physical examination

- Posture
- Palpation
- ROM spine, hips
- Gait
- Neurological examination
- Vascular assessment
- Nerve root tension signs
- Other organ systems (abdomen, retro peritoneum, pelvis etc)

Signs of nerve root compression

- Unilateral radicular pain
- Leg pain > back pain
- Radiation lower leg/foot
- Numbness dermatomal distribution
- Decreased reflexes
- Positive nerve root tension signs
- Leg pain exacerbated by coughing, sneezing, Valsalva manoeuvre

Waddell Signs

- Non organic/ functional signs:
 - Superficial non anatomical tenderness
 - Pain with simulated testing
 - Inconsistent responses with distraction
 - Non organic sensory disturbance
 - Over reaction

Red Flags

- Cauda equina
- Severe pain at rest not relieved by lying down
- Significant trauma
- Weight loss, fever, history of cancer
- Use of IV drugs or steroids
- Age > 50

Yellow Flags

- Belief that pain and activity are harmful
- Abnormal sickness behaviour
- Low mood, social withdrawal
- Problems with ACC claim/compensation
- Repeat work absences
- Other non specific medical complaints
- Problems at work, poor job satisfaction
- Social/family stressors

Risk factors for CLBP

- Mainly occupational and psychological

(Melloh and Theis 2011: Predicting the transition from acute to persistent low back pain in primary care)

- Resigned attitude to work
- Lack of social support at work
- Depression
- Somatisation

Investigations

- Not necessary in most cases
- Only if red flags
 - Bloods: FBC, ESR, CRP etc
 - Plain Xrays AP, Lat, oblique views lumbar spine and AP pelvis

Indications for Xrays in LBP

- History of significant trauma
- Neurologic deficit
- Systemic symptoms
- Fever > 38 deg Celsius
- Unexplained weight loss
- History of cancer, steroid use, osteoporosis etc

Other investigations

- Mainly reserved for secondary healthcare sector
 - Te bone scan
 - CT
 - MRI
 - EMG, evoked potentials etc
 - Biopsy

When to refer?

- Acute back pain with red flags:
 - Suspicion of fracture, infection, tumour
 - Spinal cord or cauda equina compression
 - Nerve root compression with motor signs
 - Severe pain not manageable in the community
- Chronic back pain
 - To access pain clinic or chronic back pain rehabilitation services

Management of ALBP

- Pharmacological modalities
 - Simple analgesics+ NSAI's
 - 2-4 week course
 - Avoid opioids and other narcotics

- Physical modalities
 - Activity modification rather than rest
 - Physical therapy controversial
 - Corset not indicated
 - Exercise : McKenzie, weight loss and core muscle strengthening
 - Chiropractic/osteopathic
 - Patient education
 - Psychological

- Spinal injections
- Mainly for radiculopathy secondary to acute disc prolapse
 - Epidural steroids
 - Transforaminal better than caudal or interlaminar
- Other ?quakery?
 - Radiofrequency denervation
 - Intradiscal electrothermal therapy

- Surgical
 - Cauda equina syndrome = urgent surgery
 - Saddle anaesthesia, sensorimotor changes in both legs and urinary retention
 - Large disc prolapse
 - Spinal cord compression
 - Fracture
 - Infection
 - Tumour

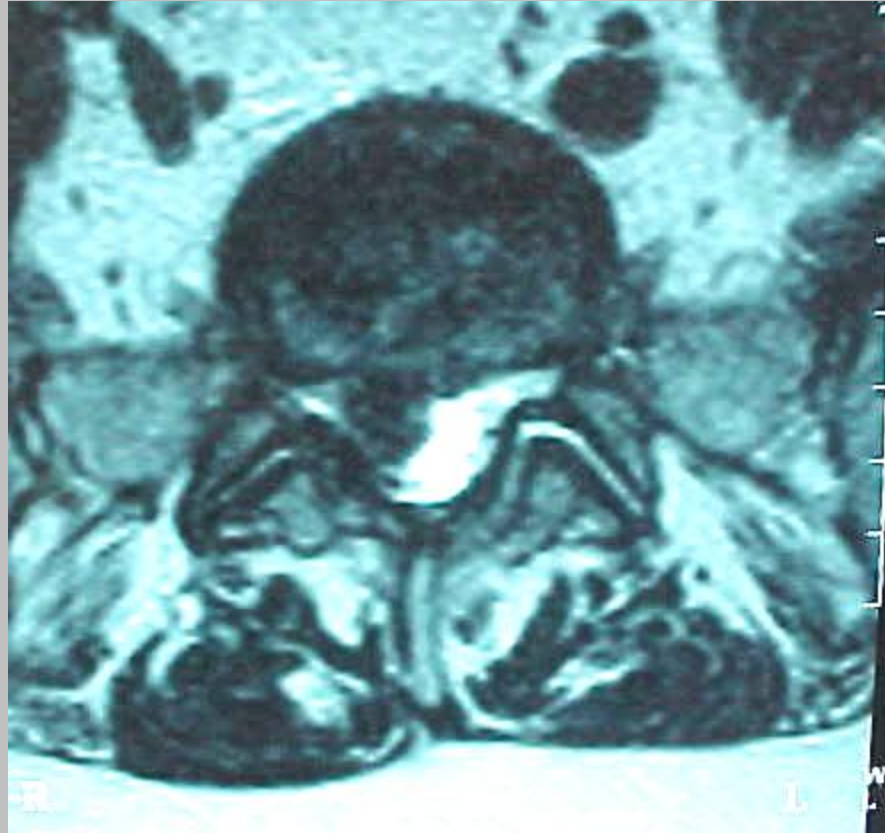
Acute disc prolapse

- Young age group 30-50
- Often history of back pain
- Sudden onset of back then leg pain
- Precipitating event?
- Unilateral leg pain (neuropathic in nature)
- Distal to knee
- Associated neuro symptoms

Clinical findings

- Back stiffness all directions (particularly extension)
- Positive nerve root tension signs
 - SLR, sciatic femoral nerve stretch etc
- Weakness ankle/toes DF (L5) or PF (S1)
- Numbness dorsal (L5) or plantar (S1) aspect foot
- Absence/decreased ankle reflex (S1)
- L3/L4 thigh pain , absence knee reflex

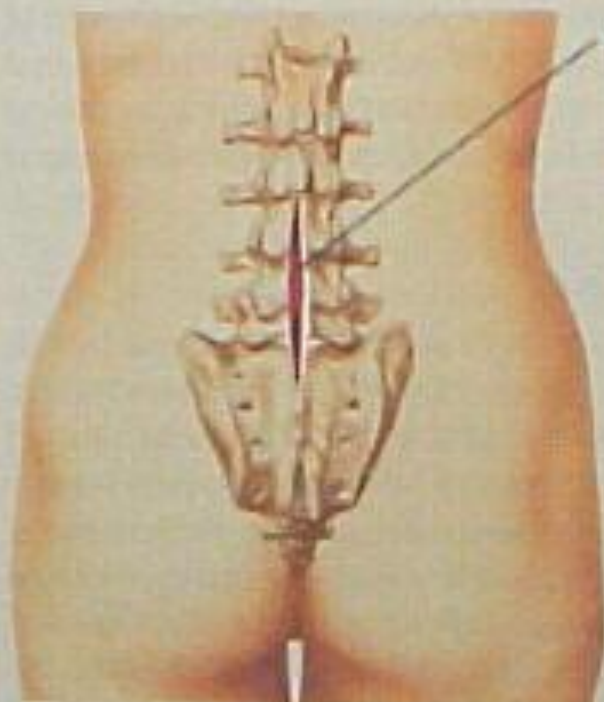




Discectomy

- Aim is to relieve leg pain by decompression of nerve root
- Remove nucleus pulposus leaving annulus intact
- Good relief leg pain (90%) but intermittent back pain persists
- Recurrence of disc prolapse (up to 37%)

Laminectomy and Discectomy

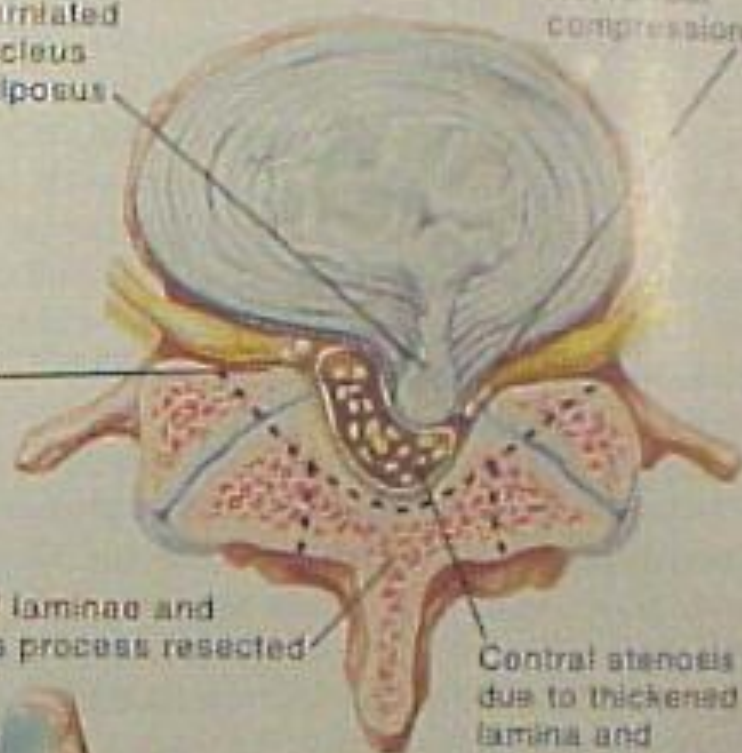


Incision

Herniated
nucleus
pulposus

Nerve root
compression

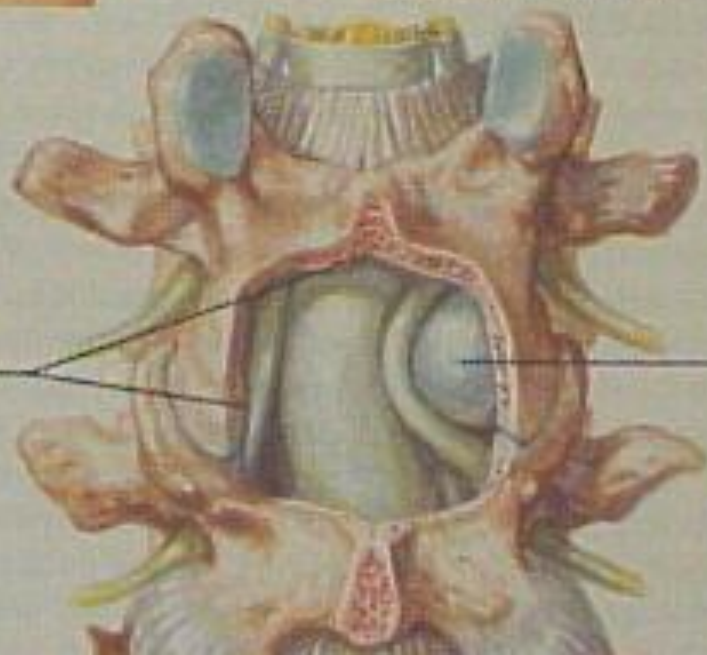
Lateral stenosis
due to facet
enlargement
(dotted lines
indicate area of
facet resection)



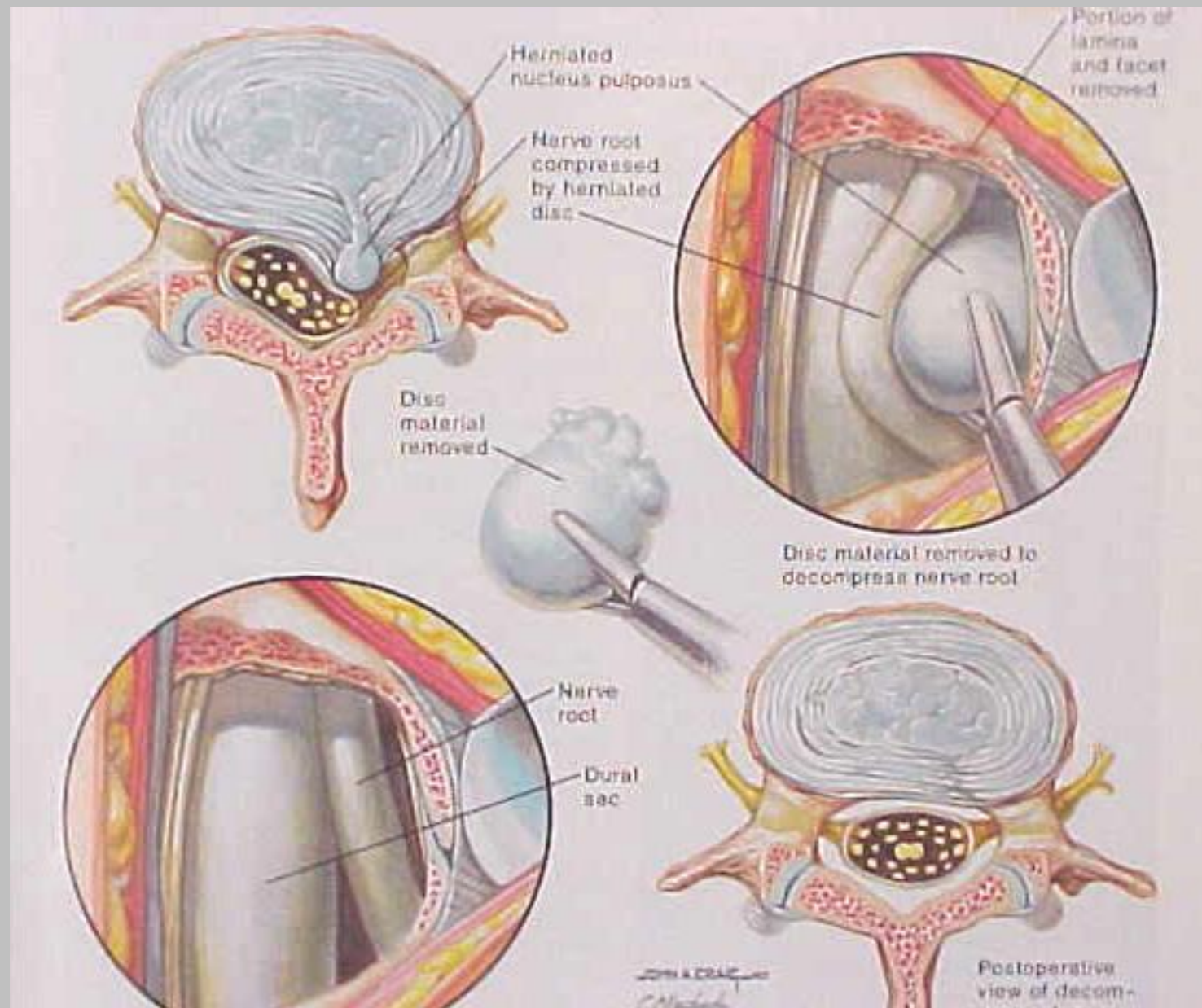
Area of laminae and
spinous process resected

Central stenosis
due to thickened
lamina and
herniated disc

Laminae, spinous
process, and medial
one-third of facets
removed to relieve
central and periph-
eral stenosis



Disc herniation and
nerve compression



Spinal stenosis

- Insidious onset of low back pain and stiffness in an elderly patient
- Worse with activity and relieved by rest
- Often pain in the buttocks
- Individuals often accept the discomfort as part of the normal ageing process and adjust their ADL's

Differential diagnosis: OA hip!!

Neurogenic claudication

- Unilateral or bilateral leg pain
- Associated numbness and tingling
- Posterior/posterolateral aspect lower limb
- Sometimes feeling of cramping, weakness, giving way etc.
- Motor weakness i.e. foot drop rare
- Worse with spine in extension, relieved by flexion (leaning on a fence, supermarket trolley)
- Limited walking distance

Differential diagnosis: Vascular claudication, peripheral neuropathy, spinal cord !!

Physical examination

- Often normal at rest
- Lumbar spine stiffness
- Muscle wasting rare
- Asymmetrical reflex changes
- Motor weakness related to the L5 nerve root common (occasionally foot drop)
- SLR and nerve root tension signs negative
- Stress neurological examination

Examine hips and peripheral circulation!

Exclude spinal cord pathology, tumour and infection!

Imaging

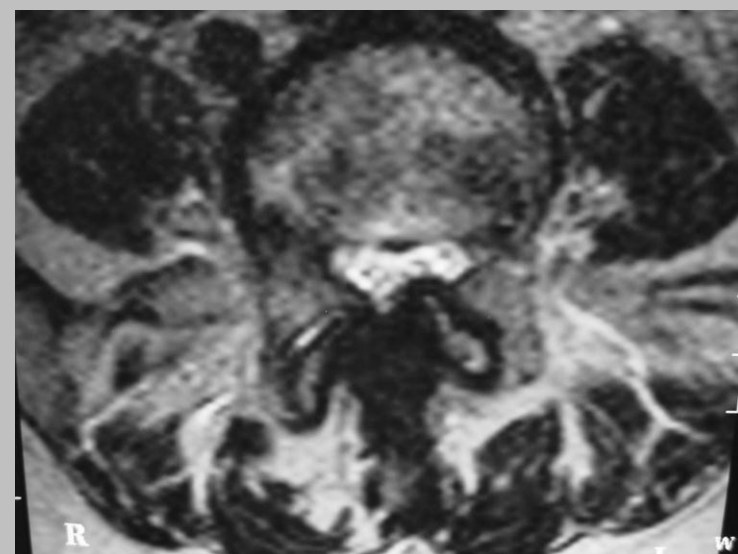
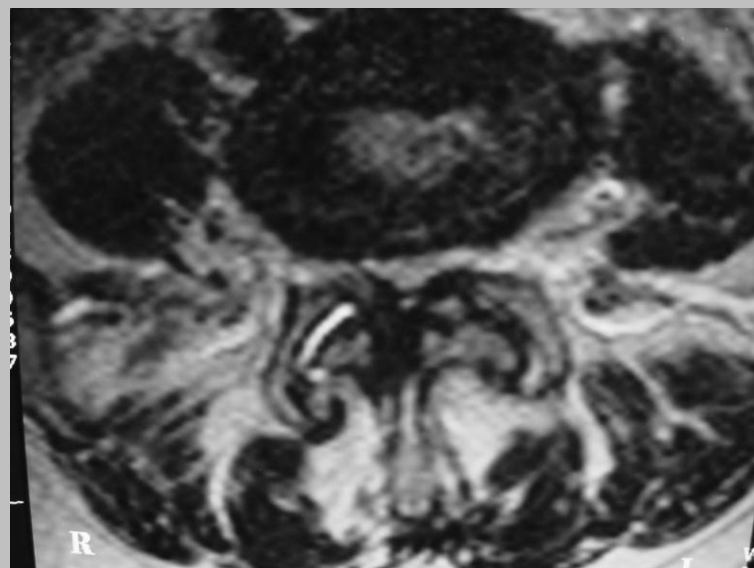
- Plain lumbar spine Xrays AP, Lat , Flex/ext views
 - Degenerative spondylolysis
 - Spondylolisthesis often L4-L5
 - Scoliosis
 - Short pedicles
- AP pelvis
- MRI,CT myelography





MRI spinal stenosis

- Sagittal and transverse cuts
- Dimension central canal/ lateral recess
- Number of levels involved (mostly L4L5,L3L4)
- Maximum stenosis at disc level (mostly bilateral and symmetrical)
- Posterior elements cause of stenosis
 - Ligamentum flavum
 - Facet joints:hypertrophy capsule,osteophytes,effusion





Clinico radiological correlation

- Severity of symptoms does not always correlate with MRI findings
- Multiple levels of stenosis on MRI but which levels are symptomatic?
- Symmetrical stenosis but symptoms often unilateral

EMG studies to help identify symptomatic nerve roots and levels

Spinal stenosis

- History often is the key to the diagnosis
- Physical examination often not very helpful
- MRI is the gold standard to confirm the diagnosis
- Don't forget about the differential diagnosis:
 - OA hip
 - Vascular disease
 - Neuropathy
 - Spinal cord pathology
 - Tumour/infection

Summary

- Back pain is mostly benign and self limiting
- Serious causes of back pain are rare (red flags)
- Psycho social and occupational risk factors (yellow flags) can lead to chronic back pain
- Prevention of chronic back pain starts in the acute phase
- Patient education/reassurance important
- Refer to secondary care if suspicion of serious pathology and or signs of spinal cord, cauda equina, or significant nerve root compression

Examples



