

# Common spine disorders



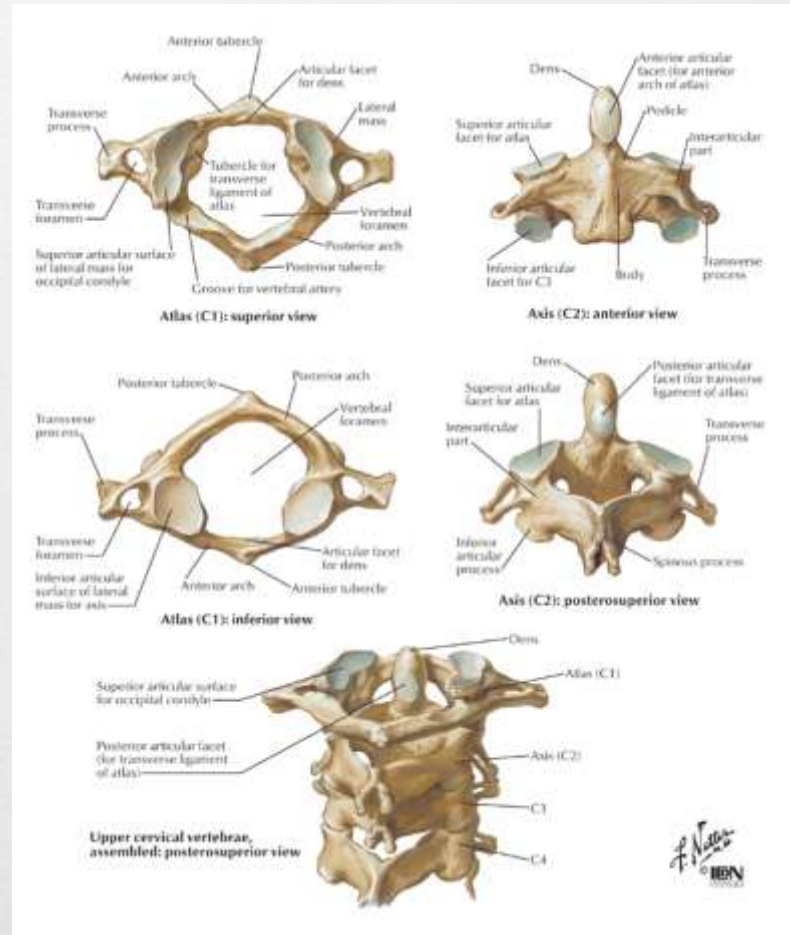
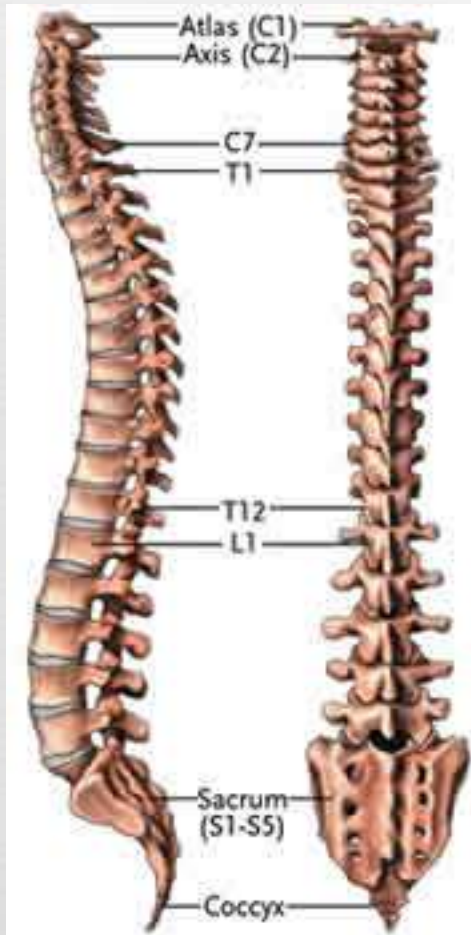
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Assistant professor and Consultant  
Orthopedic Surgery department

# Objectives

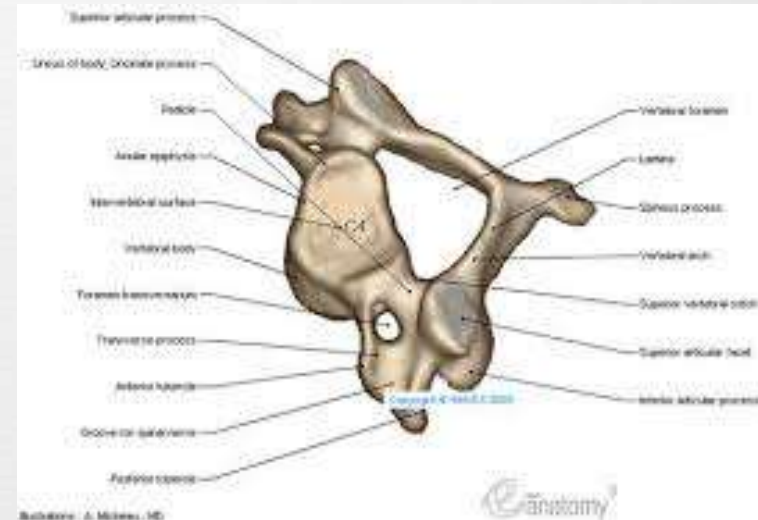
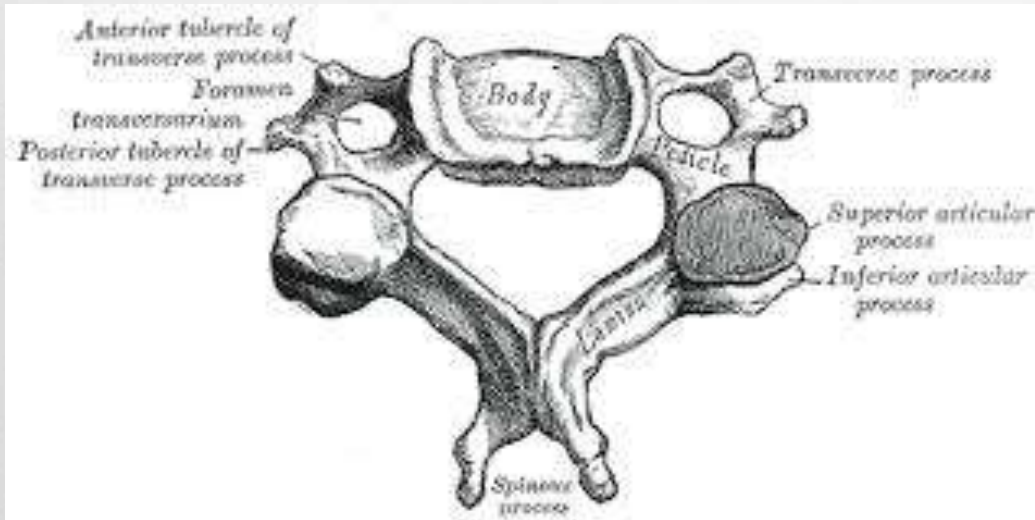


- ❧ Comprehension of the common spine disorder.
  - ❧ Disc degeneration/hernia.
  - ❧ Spinal stenosis.
  - ❧ Common spinal deformity (Spondylolisthesis, Scoliosis).
  - ❧ Osteoporotic fracture.

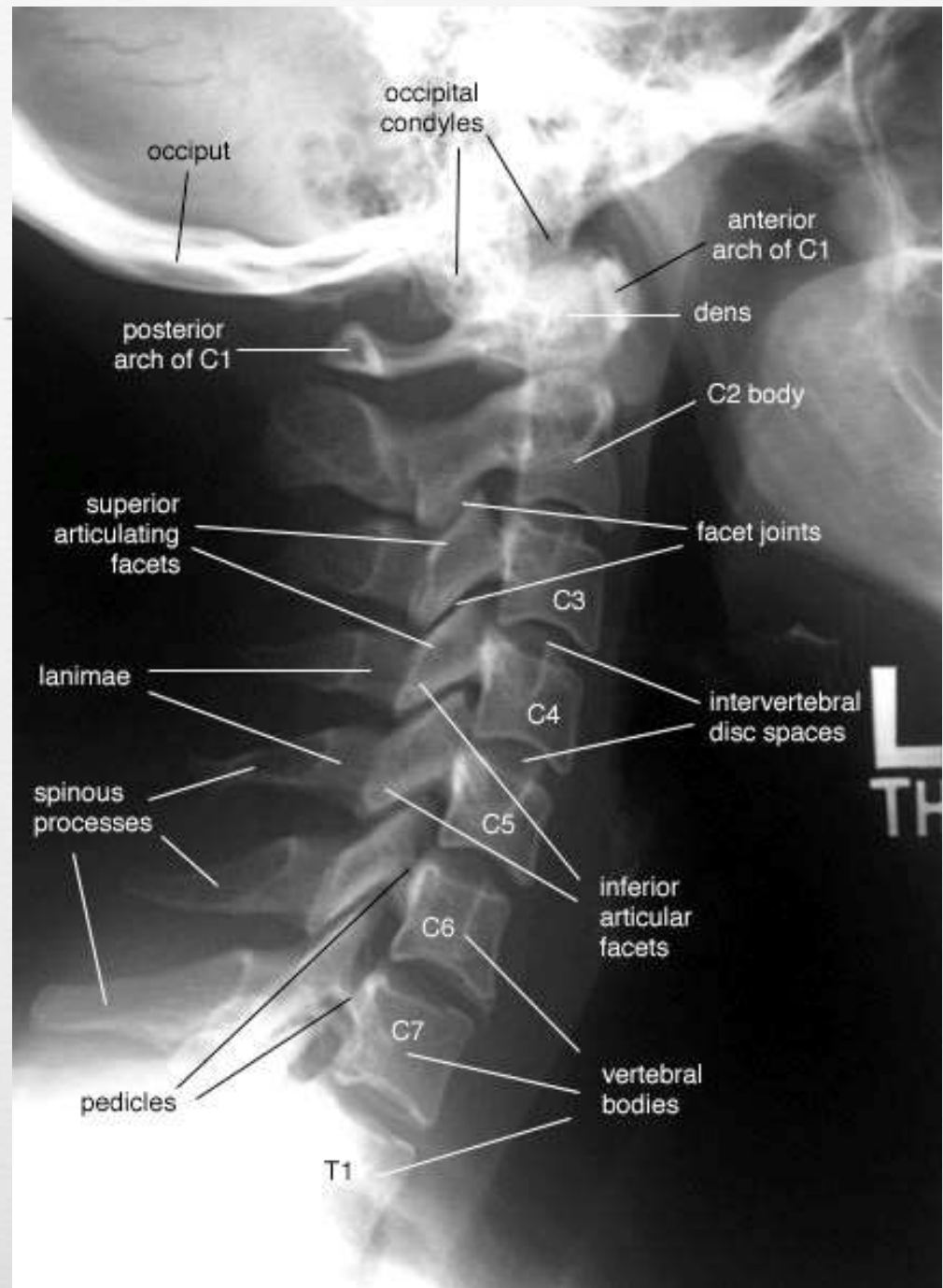
# Anatomy



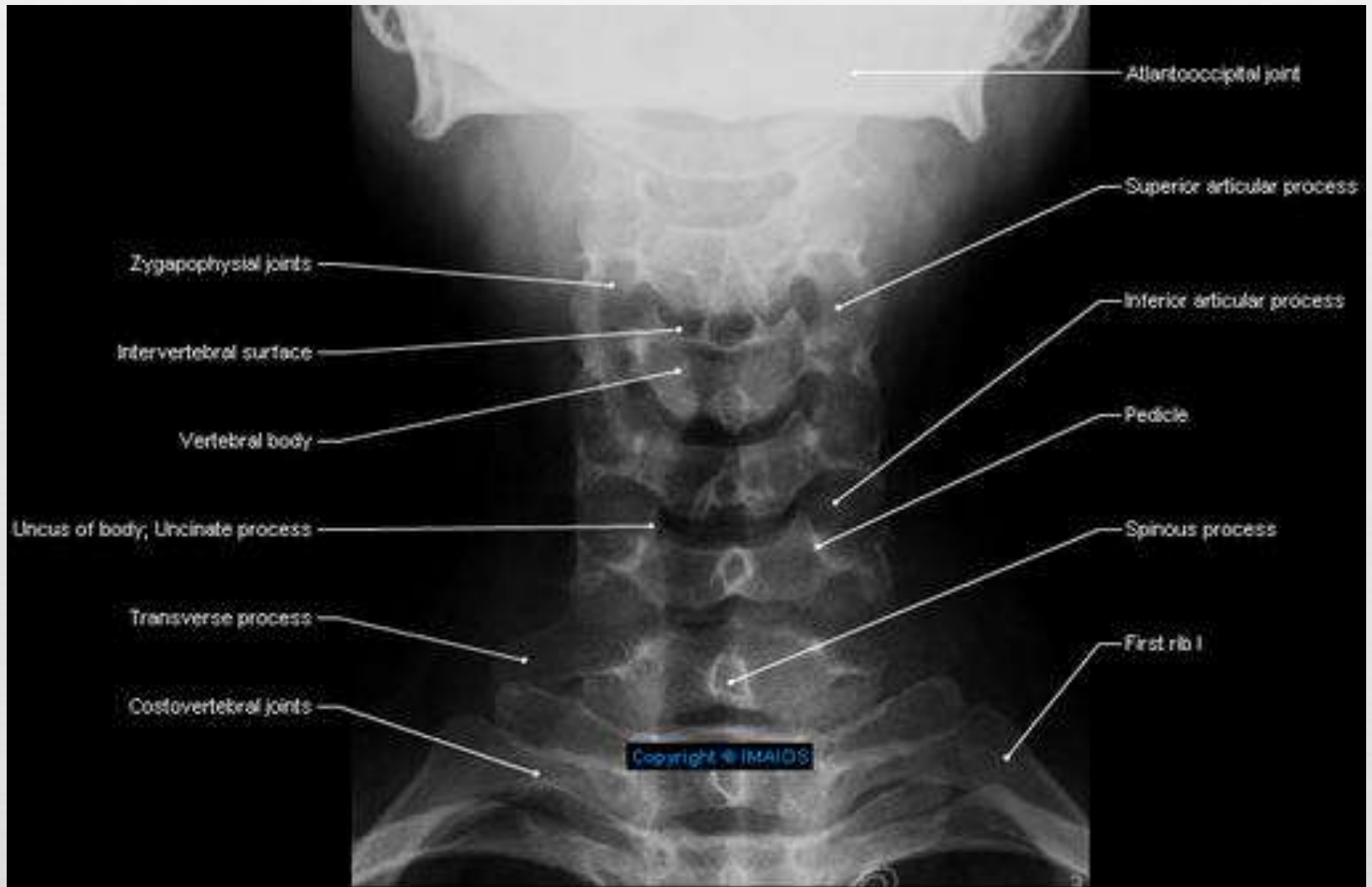
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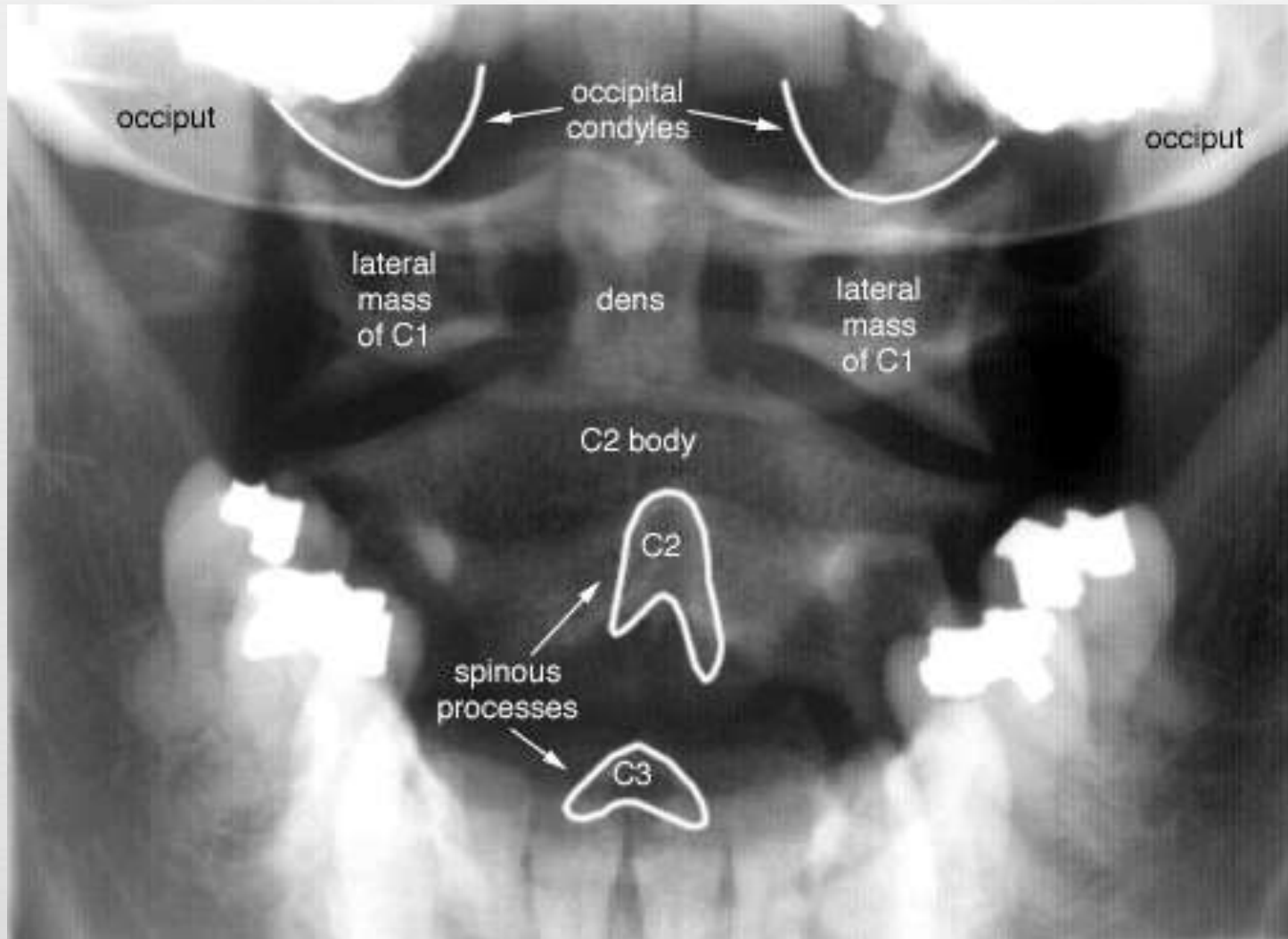
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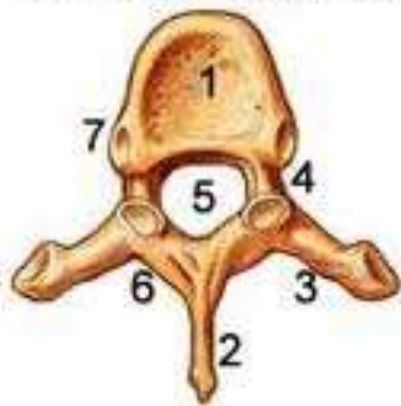


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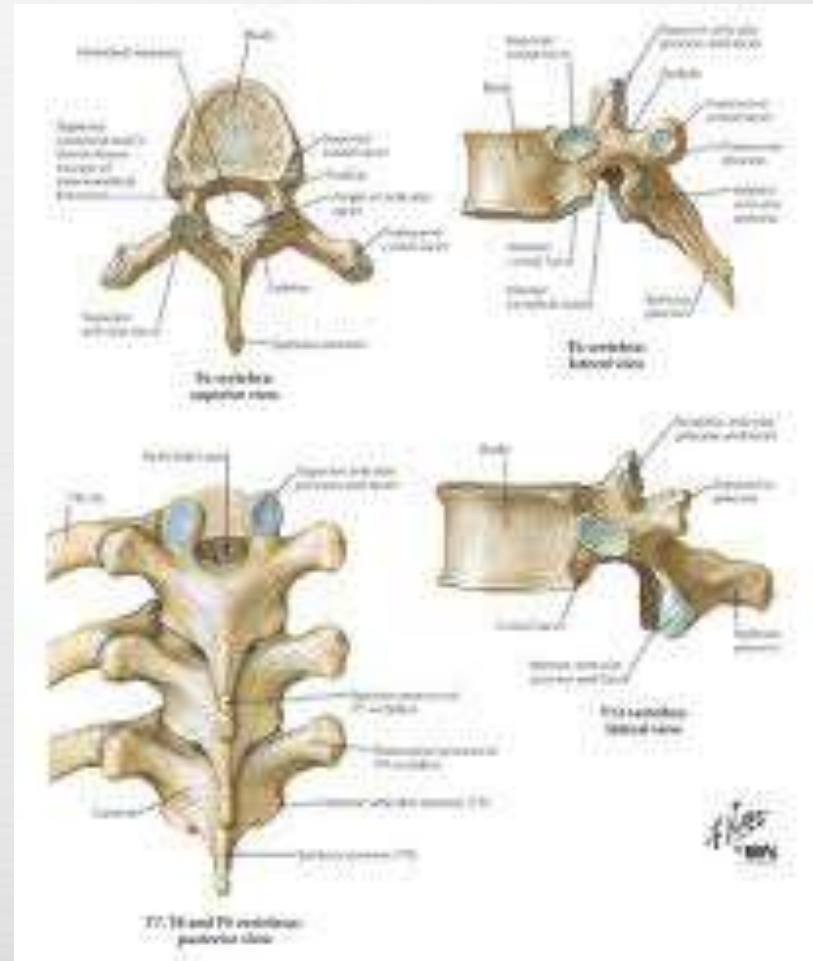


## Thoracic Vertebrae

Axial (Overhead) View



Lateral (Side) View

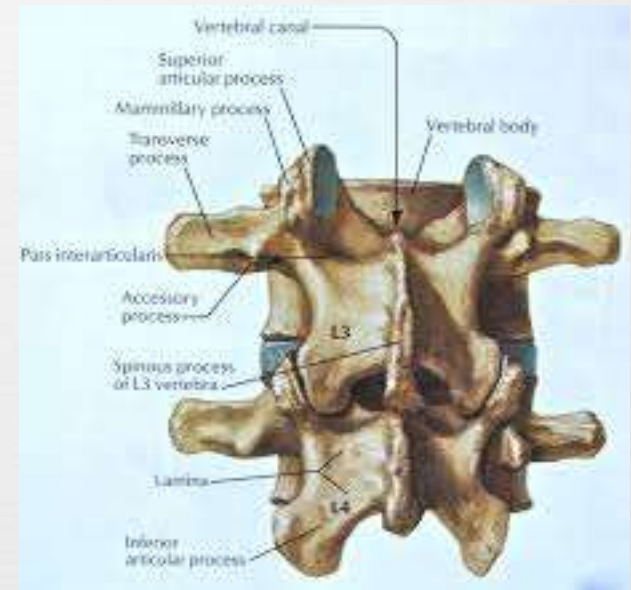
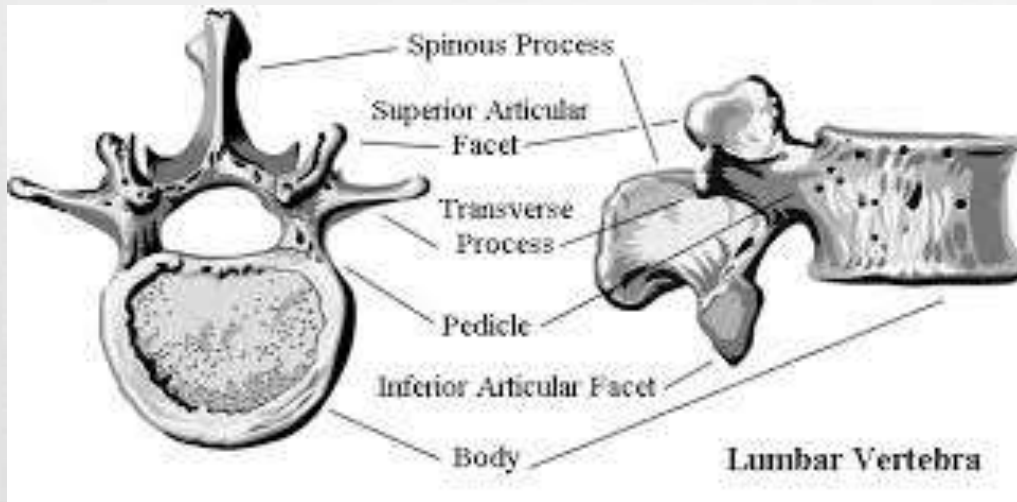




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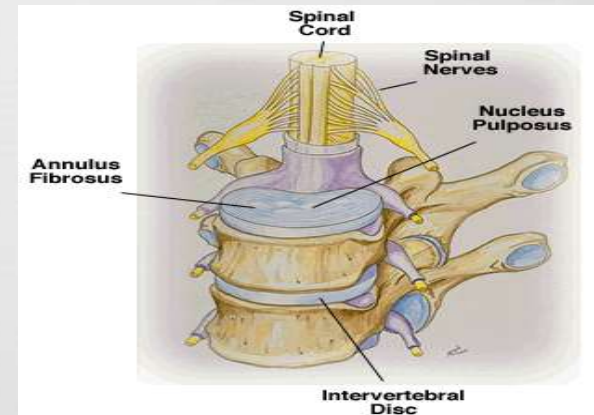
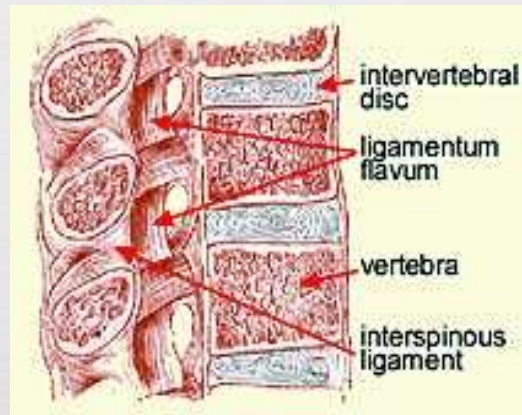
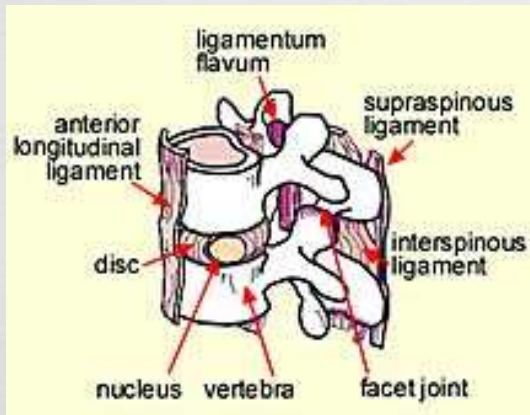
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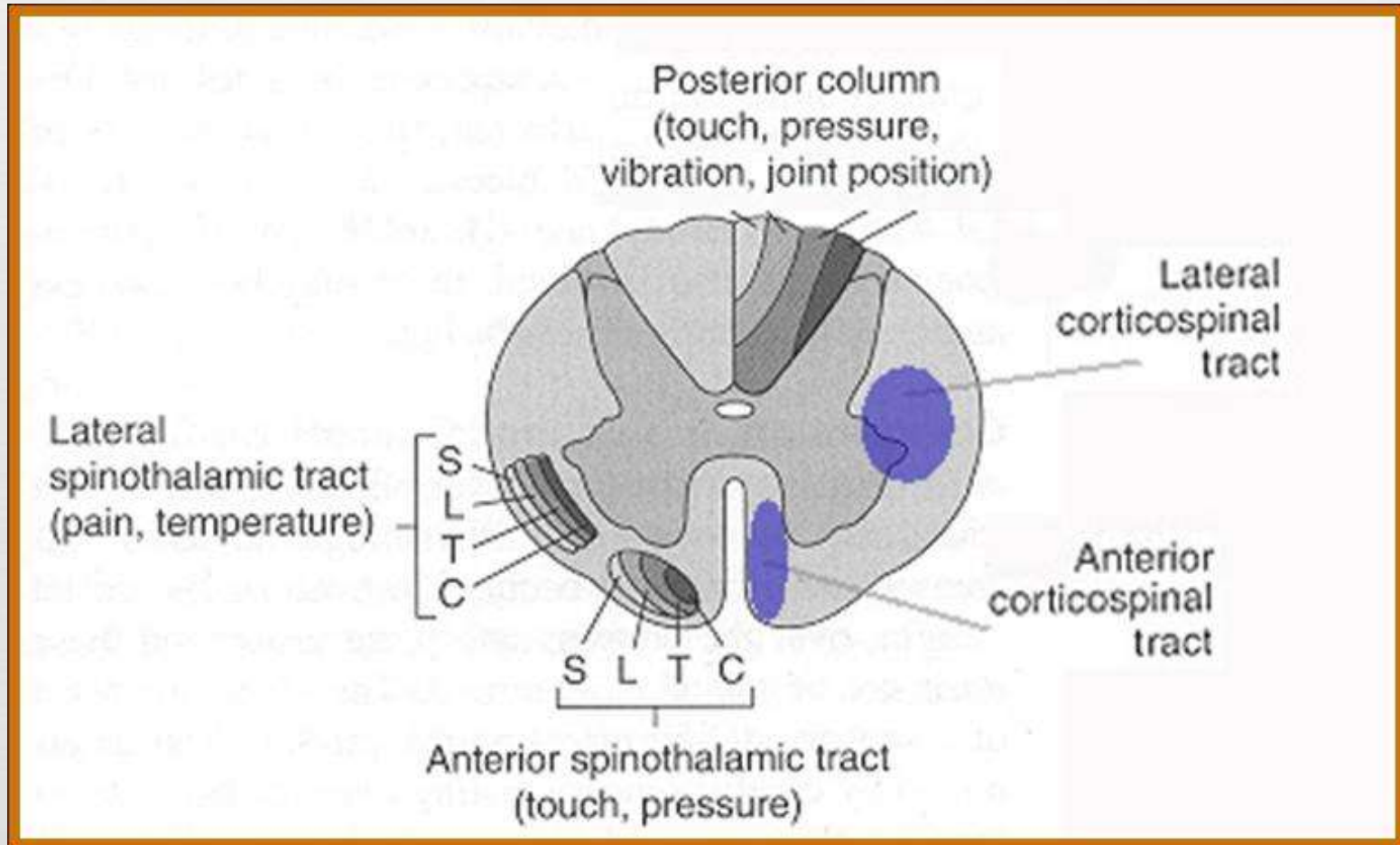
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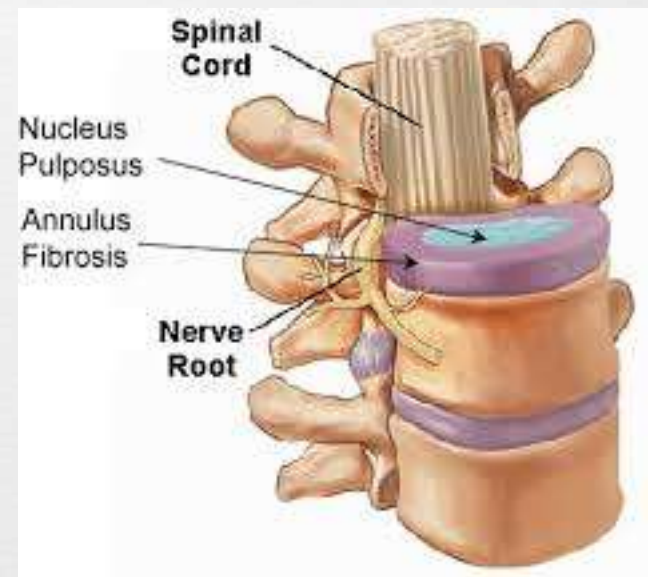
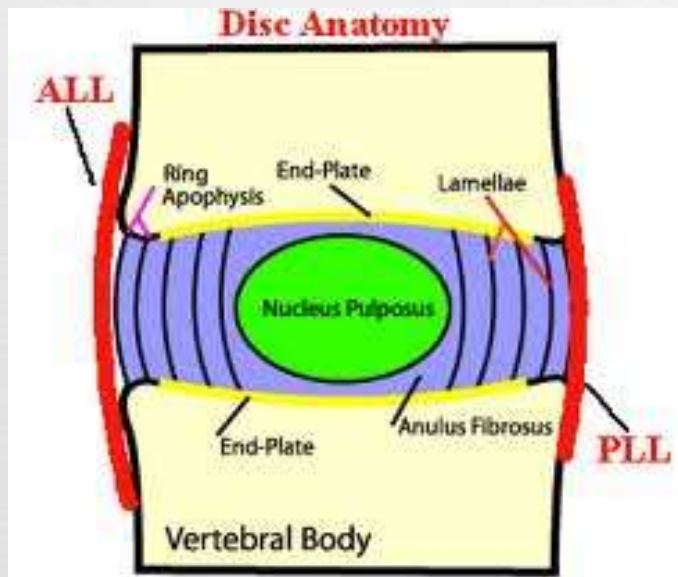
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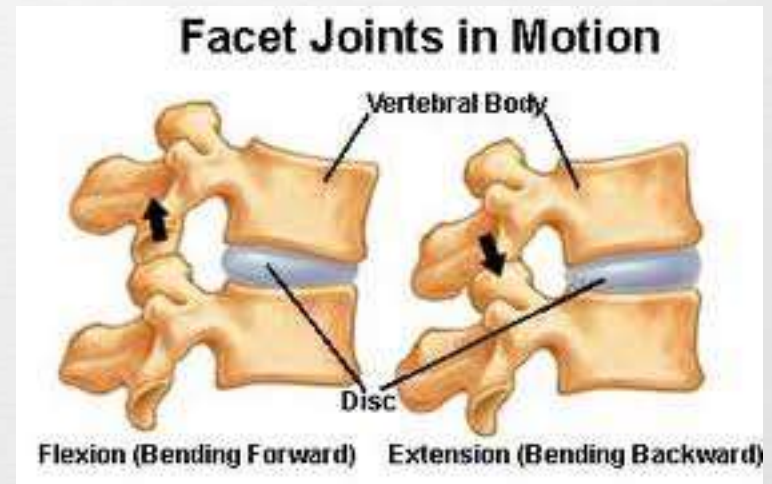
# Anatomy



# Pathophysiology IVD



- Spinal motion segment.
  - Two adjacent vertebrae.
  - Three joint complex.
  - Ligaments.



- Degeneration of IVD.

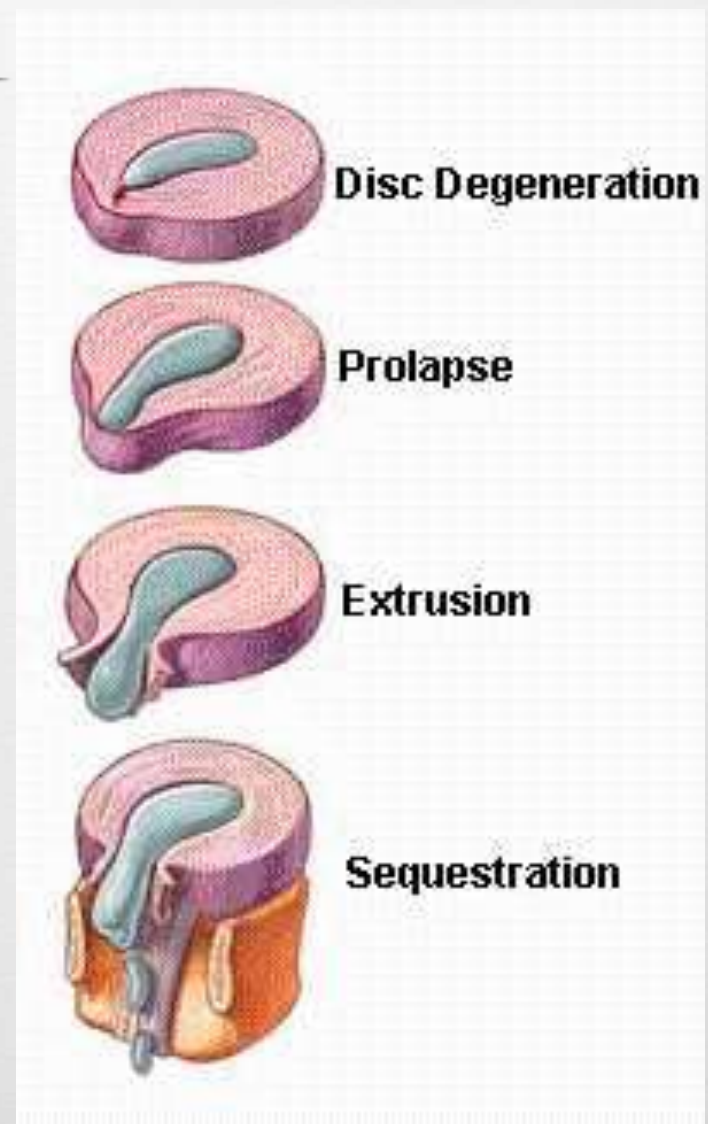
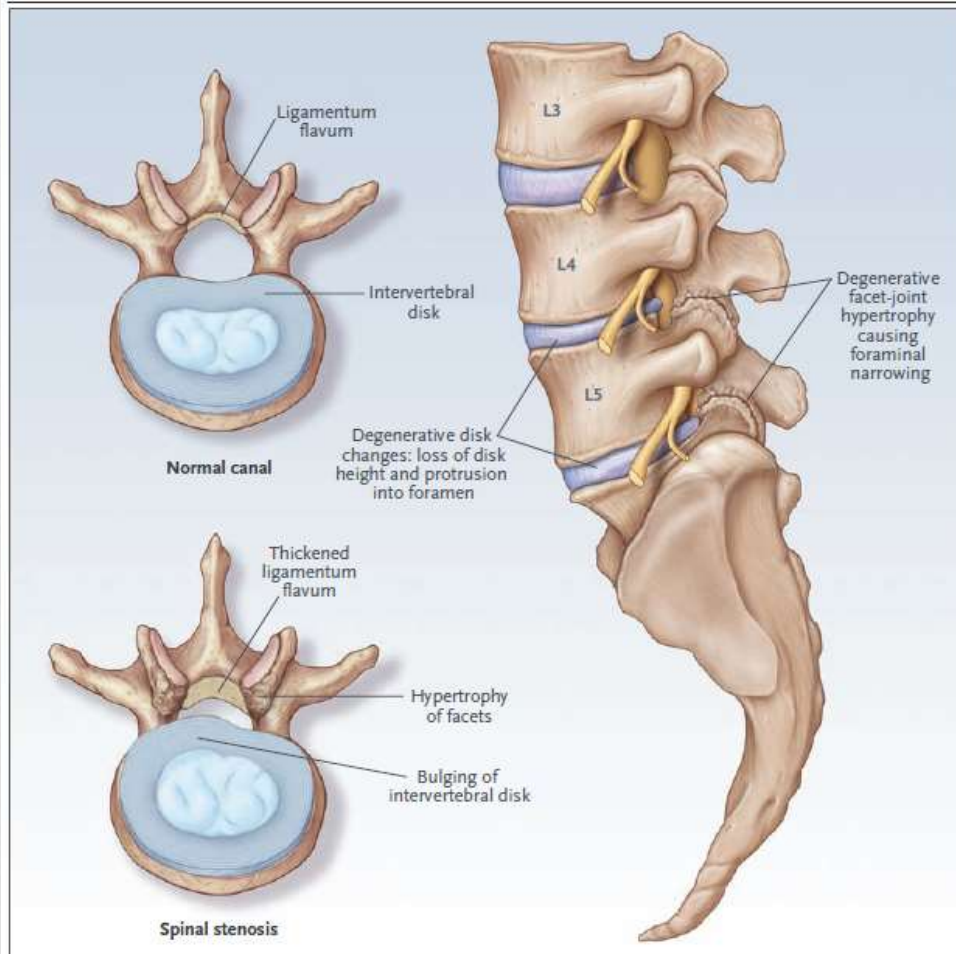
# Pathophysiology IVD



- ↻ Degeneration of IVD.
  - ↻ Loss of cellular material and hydration.
  - ↻ Loss of disc height.
  - ↻ Abnormal loading to the facet.
  - ↻ Facet joints degeneration (Loss of height + facet OA).
  - ↻ Spinal stenosis +/- instability.



# Pathophysiology IVD



**Figure 1. Pathoanatomical Features of Degenerative Lumbar Spinal Stenosis.**

The axial view in the upper left shows a cross-section of a normal lower lumbar spine. The axial view in the lower left shows a cross-section of the lumbar spine with features that are consistent with lumbar spinal stenosis, including bulging of the intervertebral disk, thickening of the ligamentum flavum, and hypertrophy of the facet joints. The sagittal view on the right shows loss of disk height, disk protrusion, and facet-joint osteoarthritis, all leading to foraminal stenosis.

# Clinical presentation



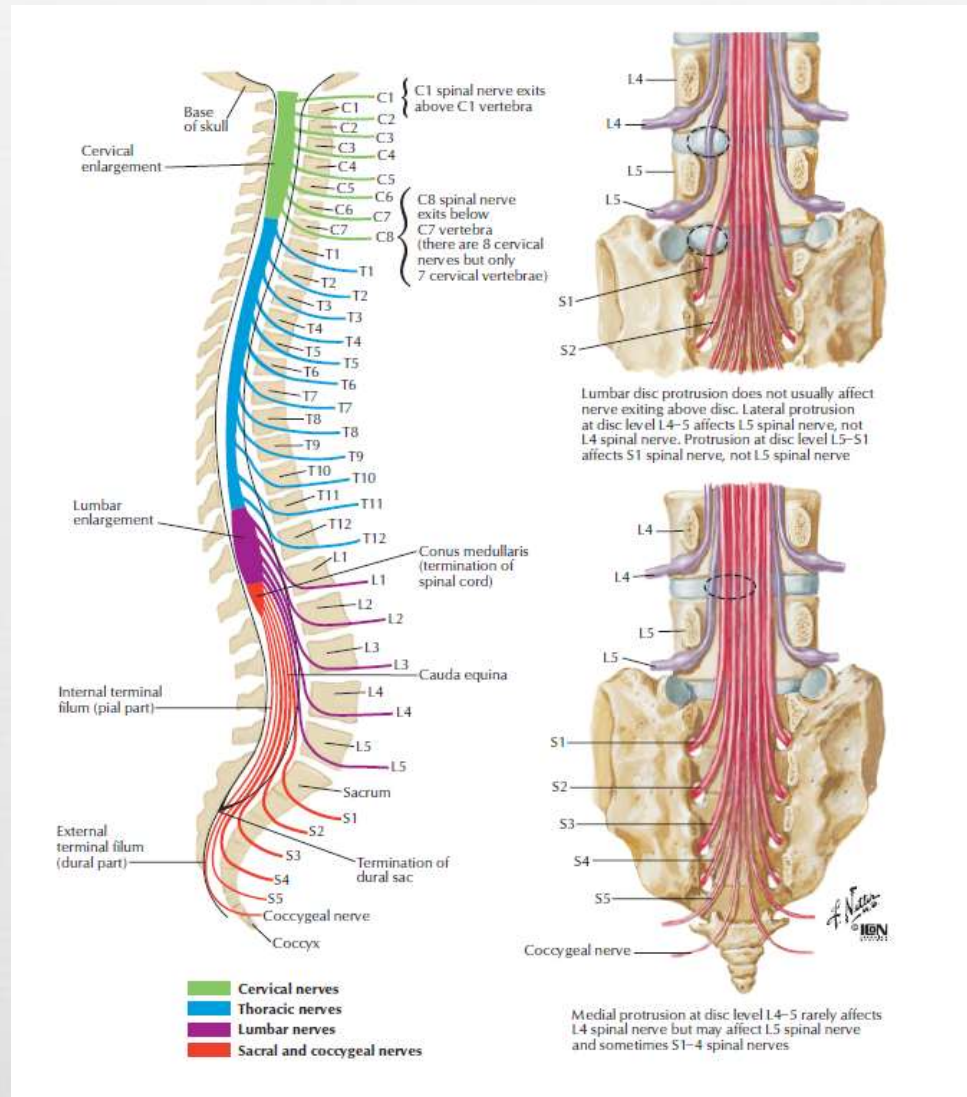
- ❧ Mechanical pain.
  - ❧ Degeneration +/- Instability.
  - ❧ Axial pain.
  - ❧ Activity related.
  
- ❧ Neurological symptom.
  - ❧ Spinal cord: Cervical and Thoracic.
  - ❧ Nerve roots.
  - ❧ Cauda equina.
  - ❧ Spinal stenosis.

# Clinical presentation



- ❧ Neurological symptom.
  - ❧ Spinal cord:
    - ❧ Cervical: Myelopathy (CSM).
    - ❧ Spinal cord injuries: complete vs incomplete.
  - ❧ Nerve roots: Sciatica.
  - ❧ Cauda equina: Prevalence 0.0004/LBP But Serious.
  - ❧ Spinal stenosis: Neurogenic claudication.

# Clinical presentation



# Clinical presentation



**Table III.**<sup>22,32</sup> Differences between neurogenic and vascular claudication

<b>Symptom/sign</b>	<b>Neurogenic Claudication</b>	<b>Vascular Claudication</b>
Pain	Proximal to distal	Distal to proximal
Relief of symptoms	Relieved by sitting/forward bending	Relieved by standing
Walking up hill	Better	Worse
Walking down hill	Worse	Better
Cycling	No symptoms	Symptoms present
Walking distance	Variable	Fixed
Neurological symptoms	Commonly present	Not present
Neurological signs	May be positive especially after walking	Negative
Pulse	Present	Absent
Skin	No changes	Atrophic changes

# Management



- ❧ Cervical spine (CSM).
- ❧ Lumbar spine.
- ❧ Conservative always first.
- ❧ Surgical indication.
- ❧ Surgical procedures.

# Management



- ❧ Cervical spine: axial neck pain and radiculopathy, without neurological deficits.
  
- ❧ Conservative:
  - ❧ rest and short period of immobilization.
  - ❧ Physiotherapy: ROM and strengthening.
  - ❧ Pain management.
  - ❧ Neuropathic medication for radiculopathy.

# Management



❧ Cervical spine:

❧ Surgical indication:

- ❧ Cervical stenosis causing cervical myelopathy.
- ❧ Disc hernia causing radiculopathy associated with weakness.
- ❧ Failure of conservative managements.



# Management



❧ Cervical spine:

❧ Surgical procedures:

- ❧ Anterior cervical discectomy and fusion.
- ❧ Posterior laminectomy +/- fusion.
- ❧ Laminoplasty.
- ❧ Cervical disc arthroplasty.

# Surgical procedure



Anterior discectomy and fusion



# Surgical procedure

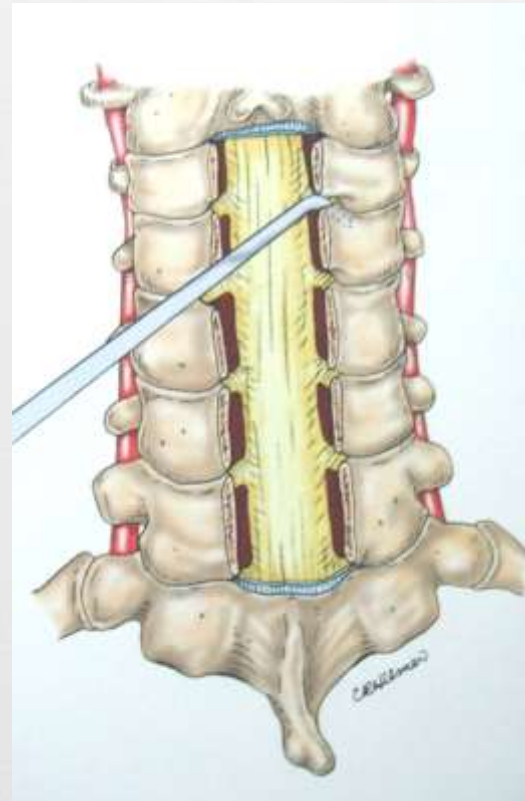
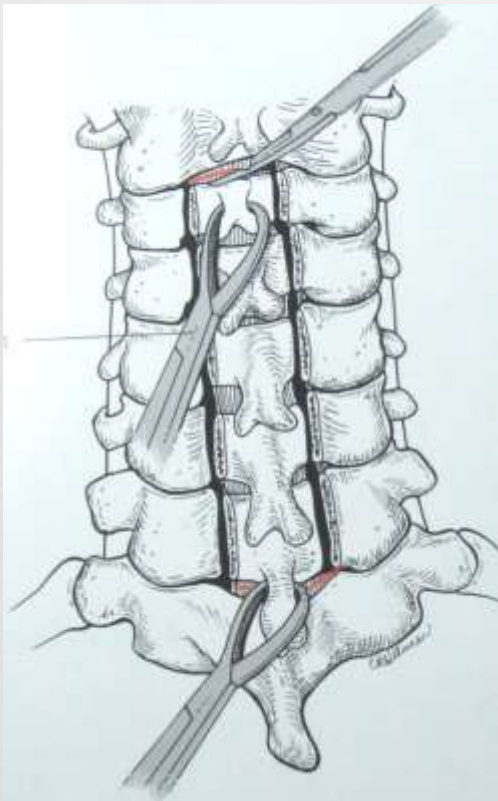
Laminectomy and fusion



# Surgical procedure



## Laminectomy



# Management



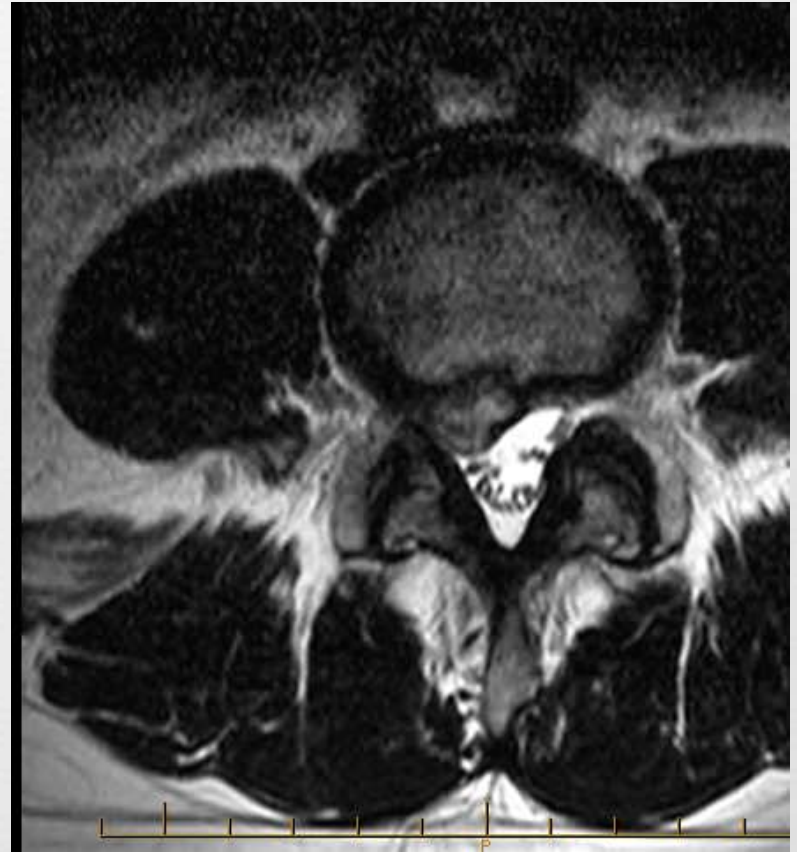
- ❧ Lumbar spine:
  - ❧ Disc hernia.
  - ❧ Axial LBP.
  - ❧ Spinal stenosis.

# Management

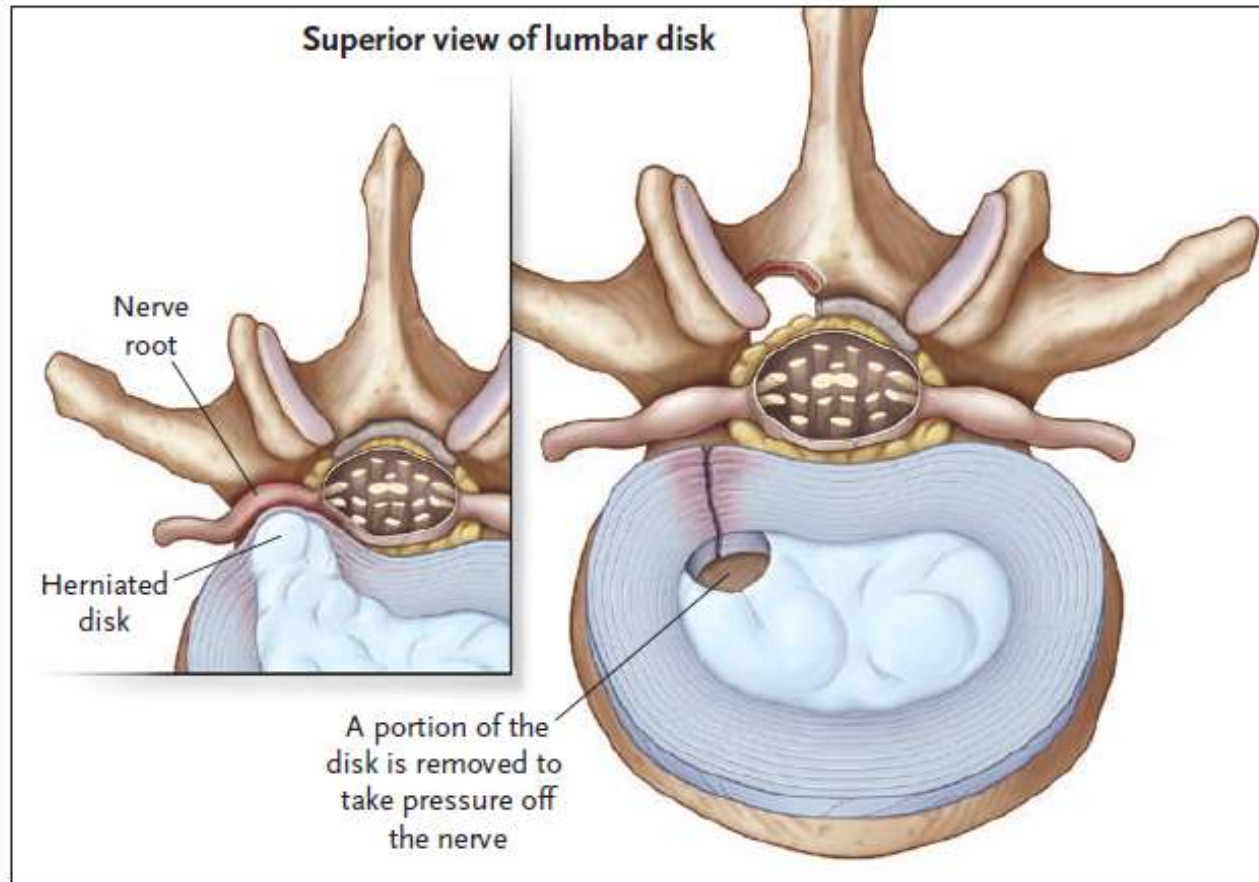


- ∞ Lumbar spine (acute disc hernia): 90% resolved within 12 weeks.
- ∞ Conservative: short period of rest, PT, Pain management (non-invasive and invasive).
- ∞ Surgical indication: Cauda equina, motor deficit and failure of 3 months conservative treatment.
- ∞ Surgical procedure: Discectomy.

# Management



# Management



**Figure 2. Conventional Discectomy.**

The protruding segment of the disk that is causing nerve-root compression is excised. The remainder of the disk is usually left undisturbed.



# Management



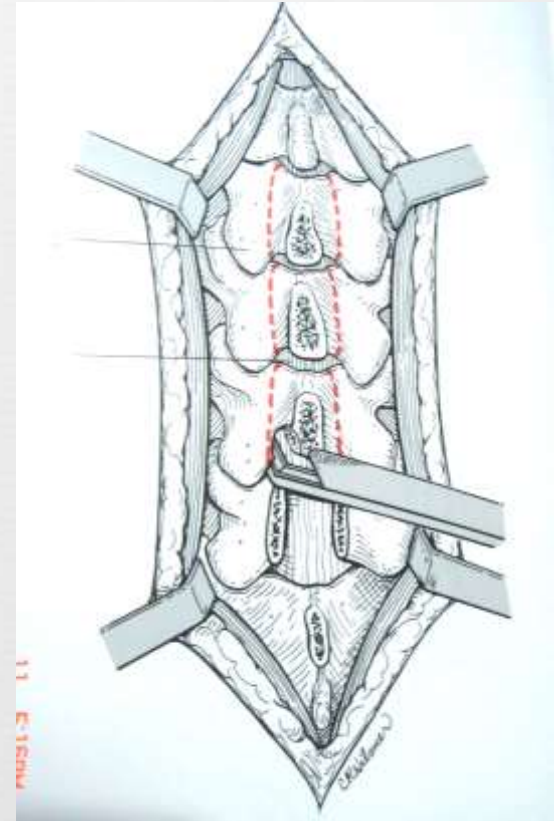
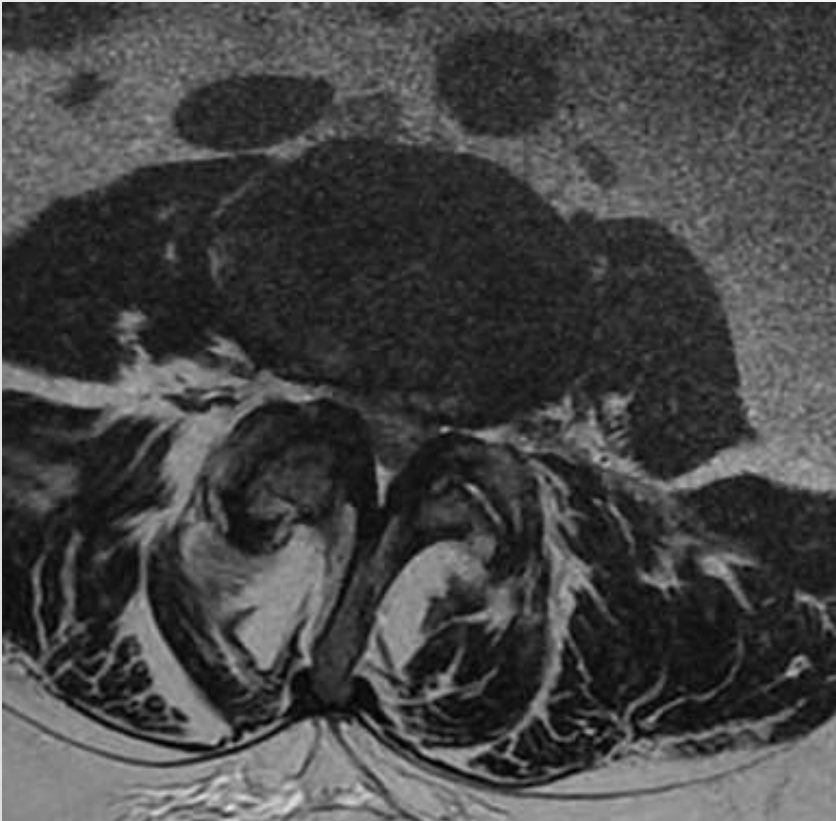
- ❧ Lumbar spine (Axial LBP): Conservative is the mainstay.
- ❧ Conservative: PT, Pain management (non-invasive and invasive).
- ❧ Surgical indication: deformity , instability and failure of conservative treatment.

# Management



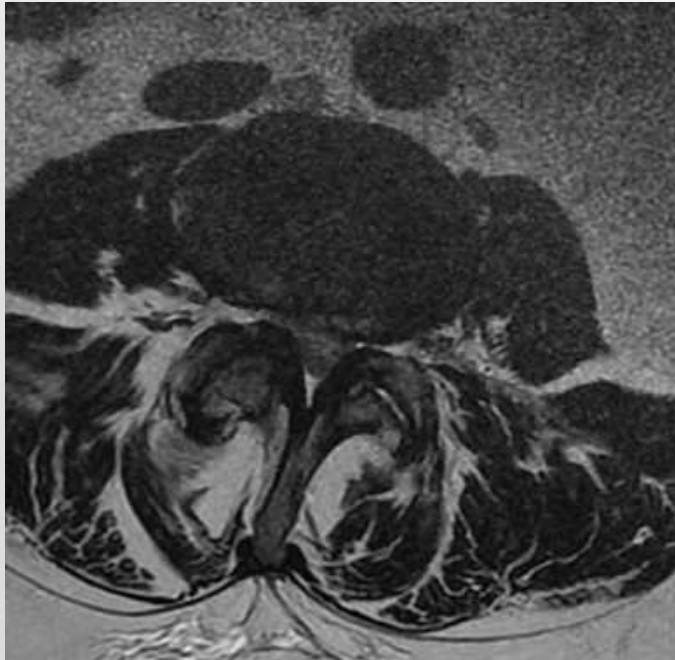
- ❧ Lumbar spine (Spinal stenosis):
  - ❧ Conservative: PT, Pain management (non-invasive and invasive).
  - ❧ Surgical indication: Motor deficit, severe neurogenic claudication and failure of 6+ months of conservative treatment.
  - ❧ Surgical procedure: Laminectomy is the commonest.

# Management



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# Management



# Spinal deformities



Common spinal deformities:

- Scoliosis (less common Kyphosis or combined).
- Spondylolisthesis.

# Spinal deformities



∞ Causes of scoliosis:

- ∞ Congenital.
- ∞ Syndromic.
- ∞ Neuromuscular.
- ∞ Acquired.
- ∞ Idiopathic: most common type.

# Spinal deformities



- ❧ Adolescent idiopathic scoliosis:
  - ❧ Between 10 and 14 years.
  - ❧ Vertebral rotation.
  - ❧ Deformity without significant pain.
  - ❧ Normal neurological examination.
  - ❧ Surgical indication: 45 degrees or more.
  - ❧ Surgical procedure: instrumented PSF.

# Spinal deformities



∞ Adolescent idiopathic scoliosis:



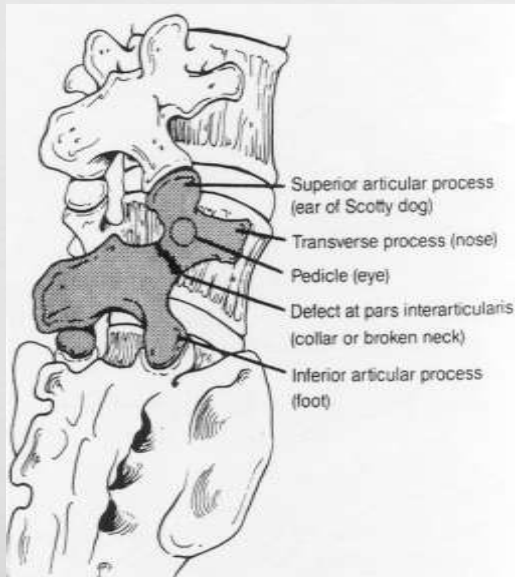


# Spinal deformities



## ∞ Spondylolysis

- ∞ Is a defect in the pars interarticularis.
- ∞ Plain lateral radiograph 80%, oblique another 15%.
- ∞ Single photon emission computed tomography.



# Spinal deformities

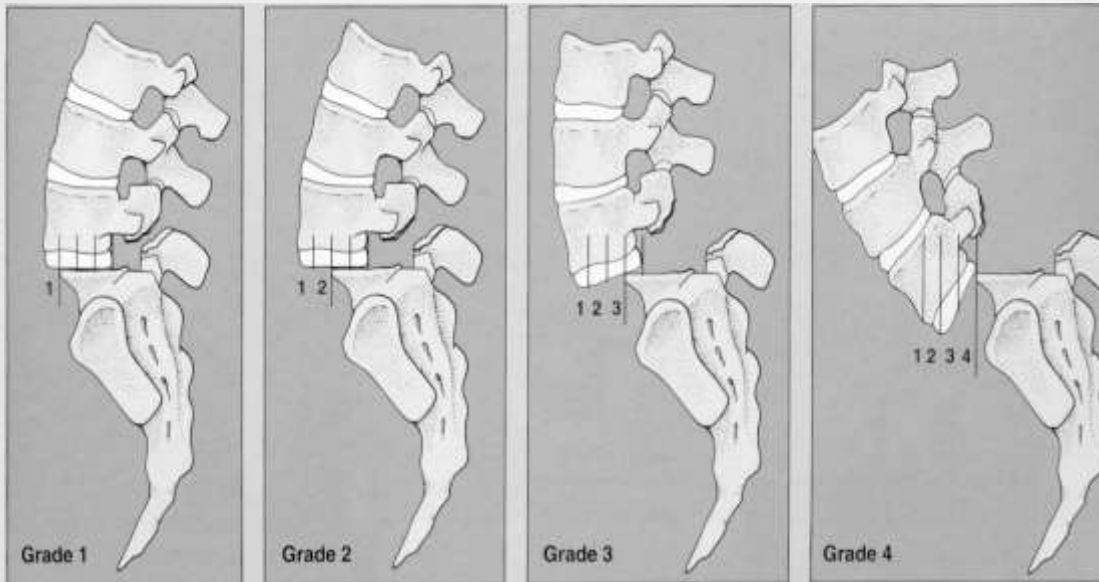


- ❧ Spondylolisthesis: Displacement of a vertebra in relation to a vertebra below.
- ❧ Most people are asymptomatic.
- ❧ Commonest causes are:
  - ❧ Degenerative.
  - ❧ Isthmic.
- ❧ Severity according to the degree of displacement.
- ❧ Surgical indication: grade 3 or more, failed conservative.
- ❧ Surgical procedure: according to severity. Instrumented PSF +/- interbody fusion is the commonest.

# Spinal deformities



## ∞ Spondylolisthesis



∞ Grade 5: spondyloptosis.

# Spinal deformities



## ∞ Spondylolisthesis



# Pathologic fractures



- ❧ Low-energy fractures.
- ❧ Osteoporotic is common.
- ❧ Usually due to infection or tumour.
- ❧ X-rays: “winking owl” sign.

# Osteoporotic fracture



- ❧ Pathological fractures.
- ❧ Common injury post menopausal, if repetitive will result in loss of height and kyphotic deformity.
- ❧ Often missed.
- ❧ Treatment:
  - ❧ Underlying disease.

# Pathologic fractures



# Questions

