



KING SAUD UNIVERSITY

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COLLEGE OF MEDICINE

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# RADIOLOGY OF THE BACK

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# Objectives:

- ▶ **Introduction.**
- ▶ Imaging modalities used to study the back.
- ▶ Anatomy and normal appearance of the back.
- ▶ Common pathological cases.

# Introduction:

▶ What is the radiology?

▶ What is the back?

# Objectives:

- ▶ Introduction.
- ▶ Imaging modalities used to study the back.
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# Imaging modalities:

- ▶ Radiograph.
- ▶ CT.
- ▶ MRI.
- ▶ Nuclear medicine.

# Radiograph (X-ray)

- ▶ Often used as first imaging modality.
- ▶ Cheap.
- ▶ Useful for:
  - ▶ Trauma , fractures.
  - ▶ Degenerative changes.
  - ▶ Osteoporosis.
  - ▶ Deformity.



# Radiograph (X-ray)

- ▶ Image features:
- ▶ Projectional image.
- ▶ Image contrast determined by tissue density.
- ▶ Good evaluation for bony structures.
- ▶ Soft tissue difficult to be seen.





# CT:

- ▶ Same basic principle of radiography
- ▶ Computerized tomography.
- ▶ More precise
- ▶ costly.
- ▶ Useful for
- ▶ Trauma, fracture
- ▶ Tumor, infection.



# CT:

- ▶ Image features:
- ▶ Cross sectional images.
- ▶ Image contrast determined by tissue density.
- ▶ Better evaluation for bony structures.
- ▶ Better evaluation of soft tissue.



# MRI

- ▶ Magnetic resonant imaging.
- ▶ Better evaluation of soft tissue.
- ▶ Expensive.
- ▶ Useful for soft tissue pathology:
  - ▶ Spinal cord
  - ▶ Peripheral nerves.
  - ▶ Inter-vertebral disc.



# MRI

- ▶ Image features:
- ▶ Cross sectional images.
- ▶ Image contrast determine by tissue properties.
- ▶ Excellent for soft tissue evaluation.



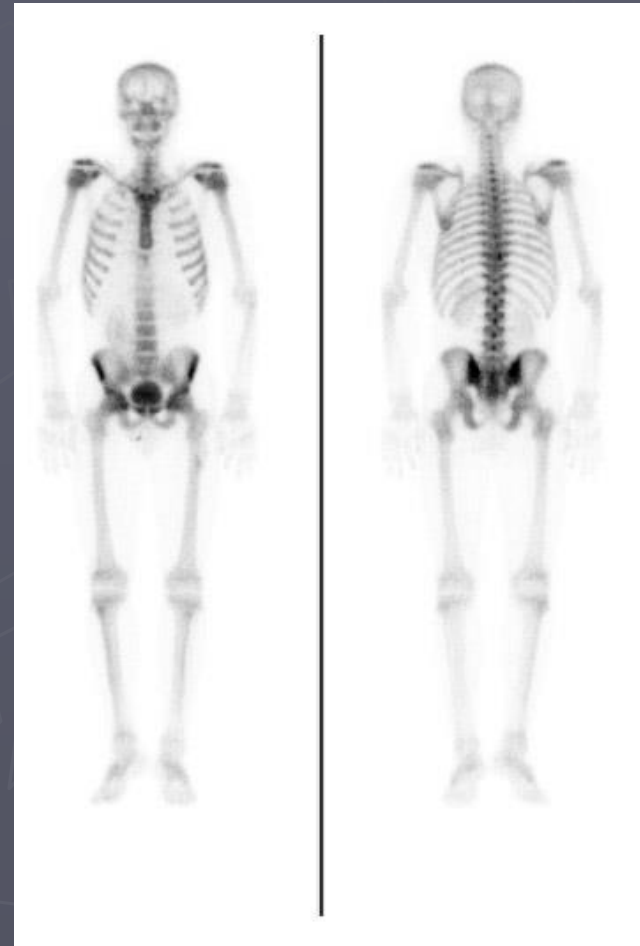
# Nuclear medicine

- ▶ Gama camera.
- ▶ Radioactive isotopes.
- ▶ Functional test (physiology).
- ▶ Less expensive.
- ▶ Useful for:
- ▶ Metastasis.
- ▶ Osteoporosis.
- ▶ Infections.



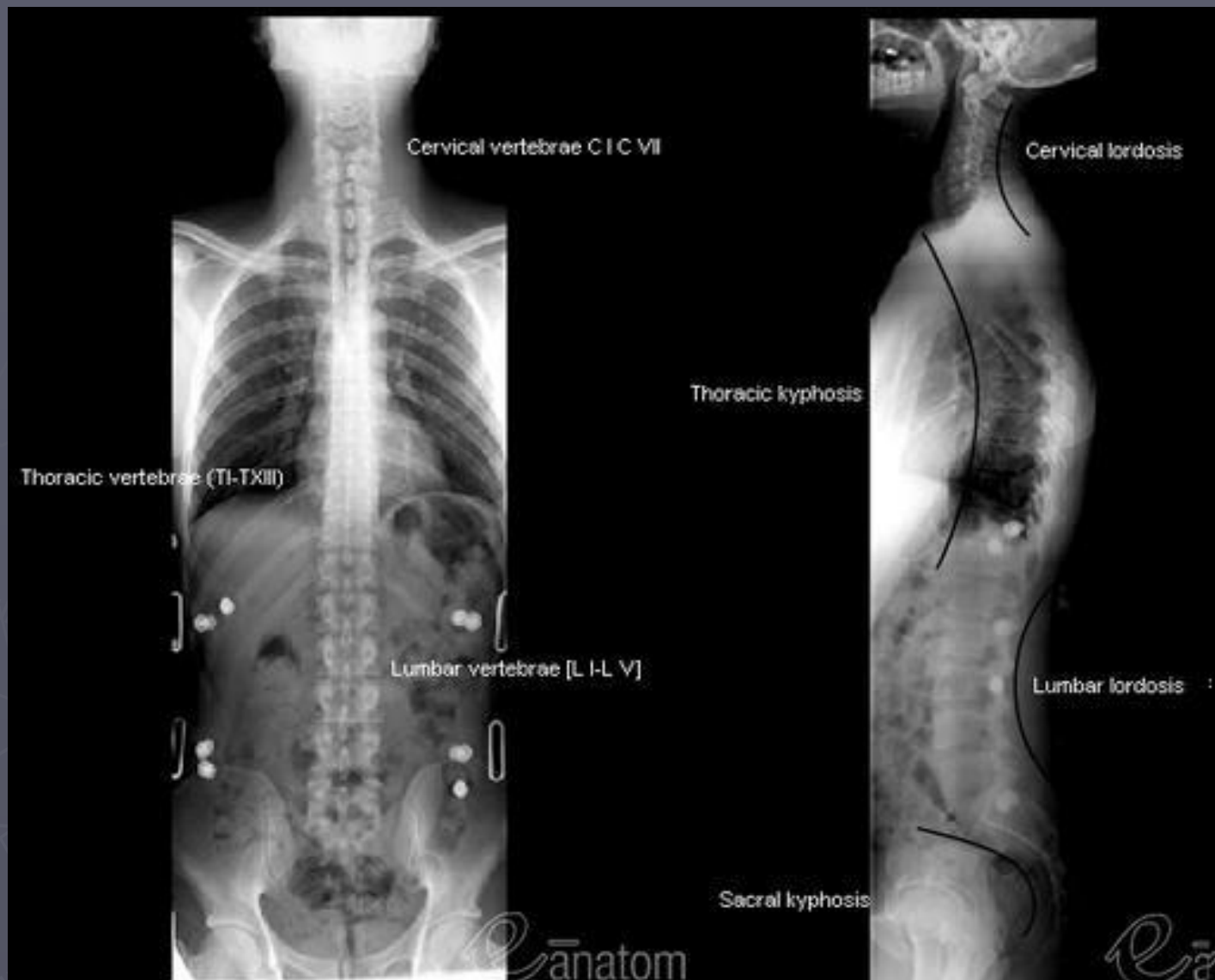
# Nuclear medicine

- ▶ Image features:
- ▶ Projectional image.
- ▶ Image contrast by tissue uptake and metabolism.
- ▶ Sensitive but not specific.

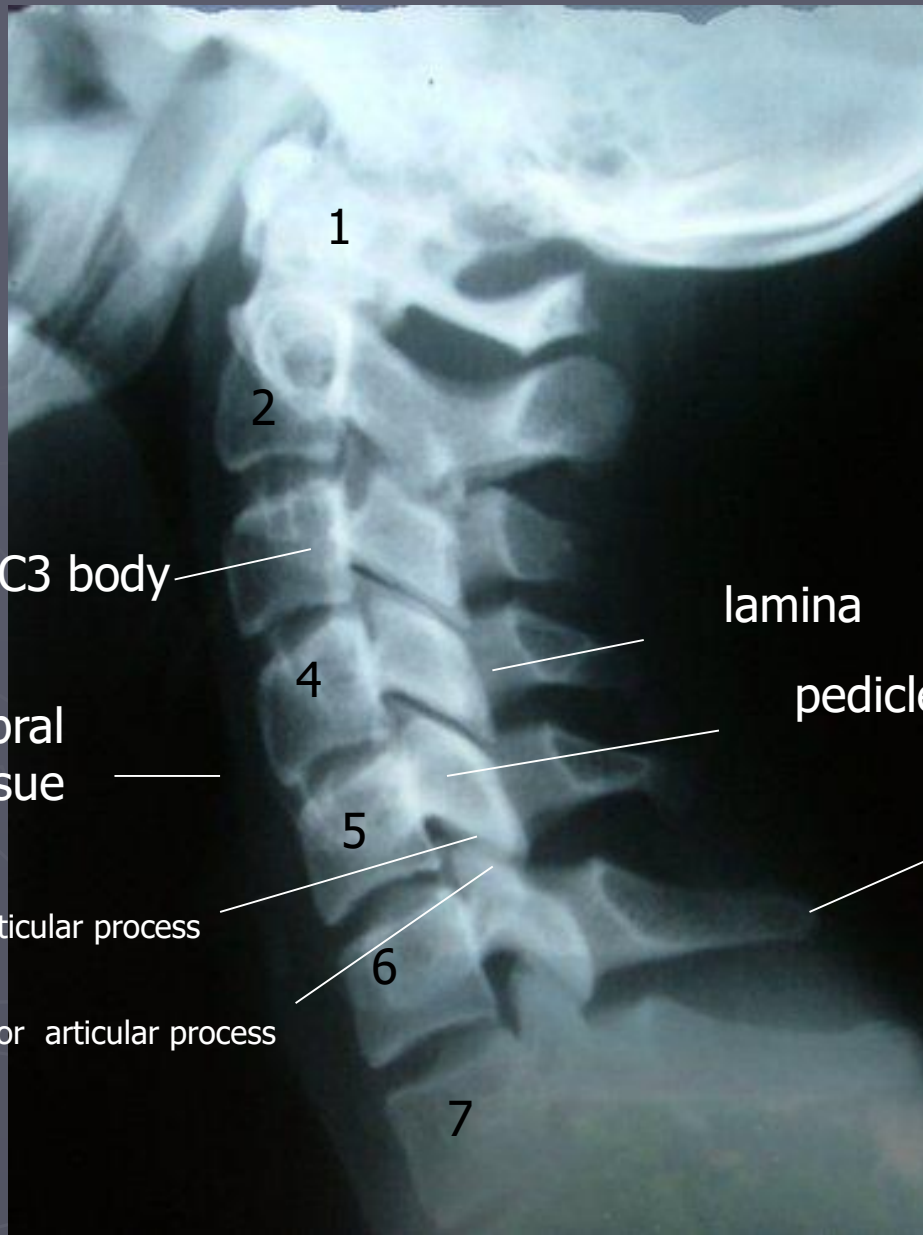


# Objectives:

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1

2

C3 body

lamina

4

Prevertebral soft tissue

pedicle

5

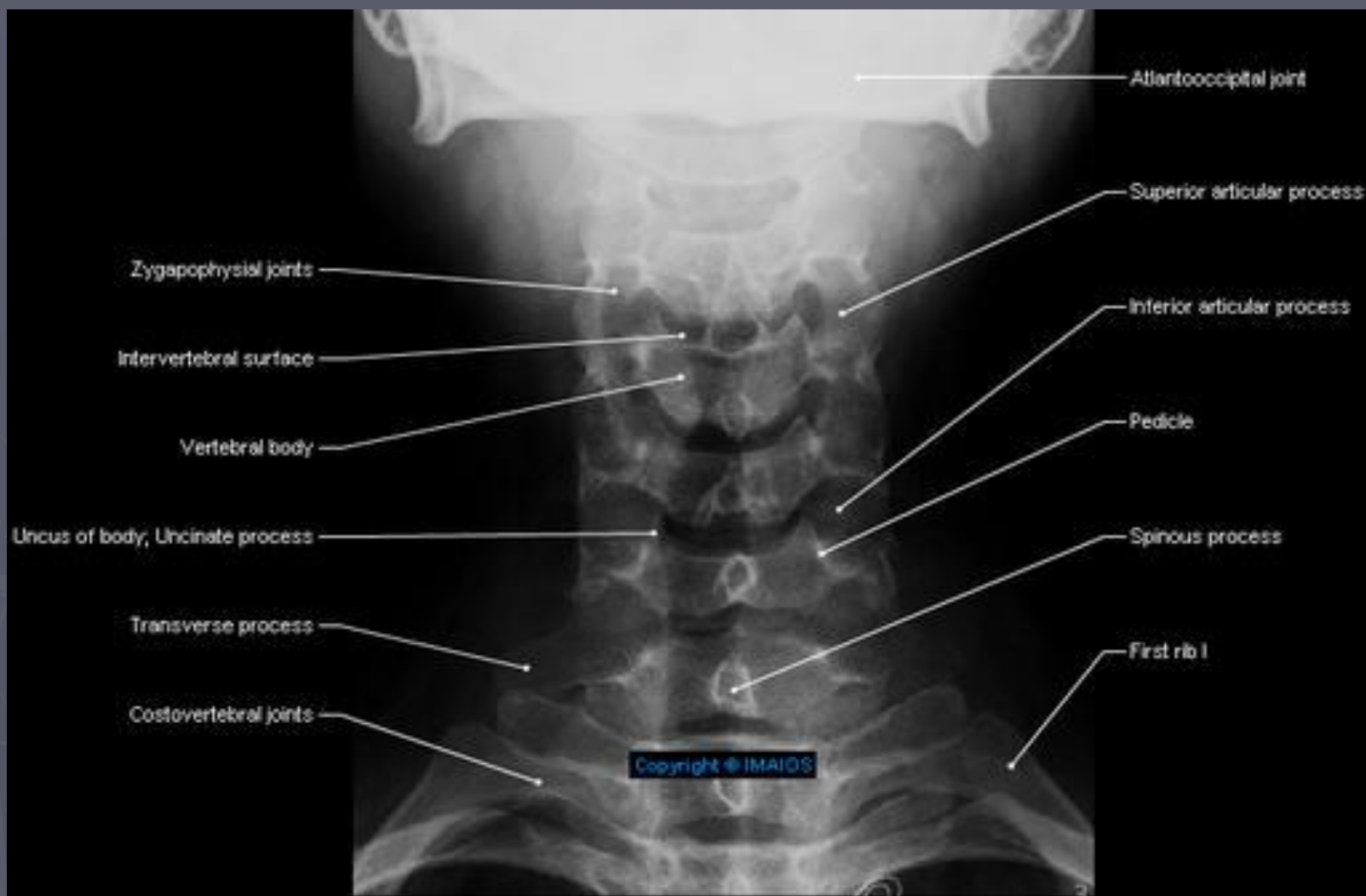
Inferior articular process

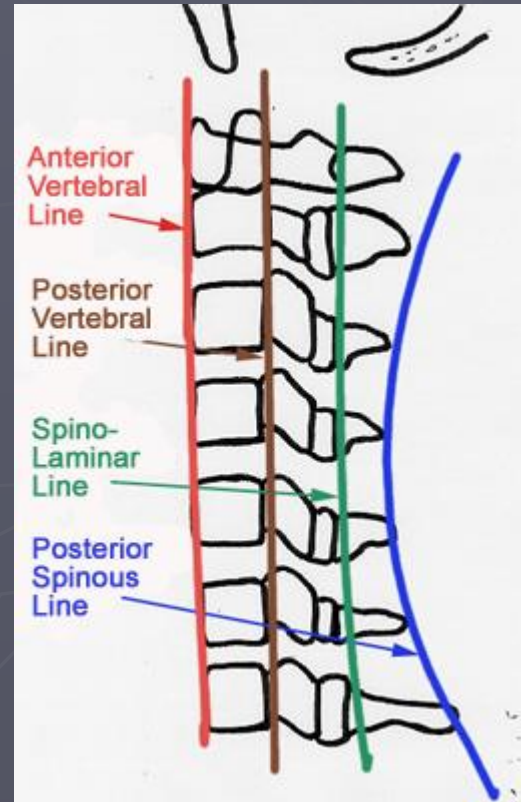
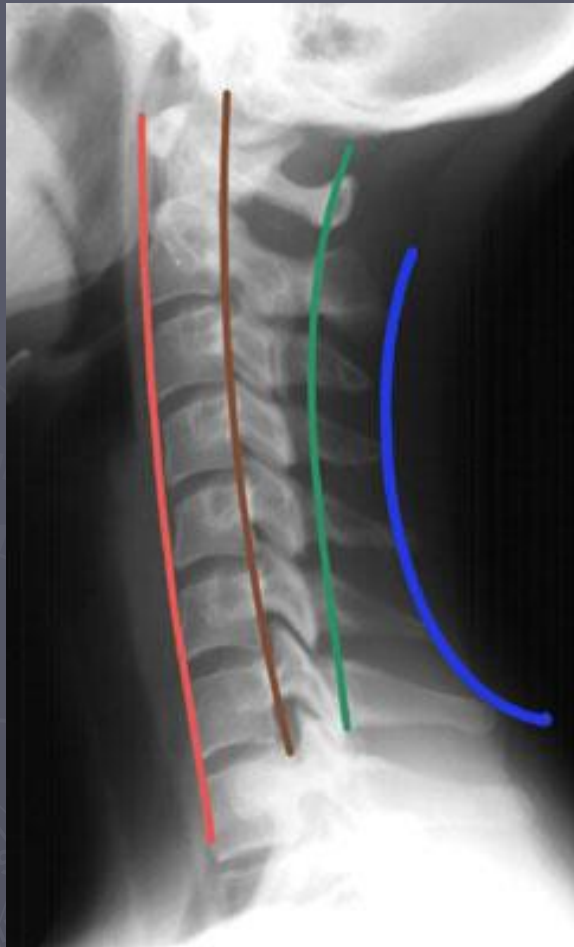
Spinous process

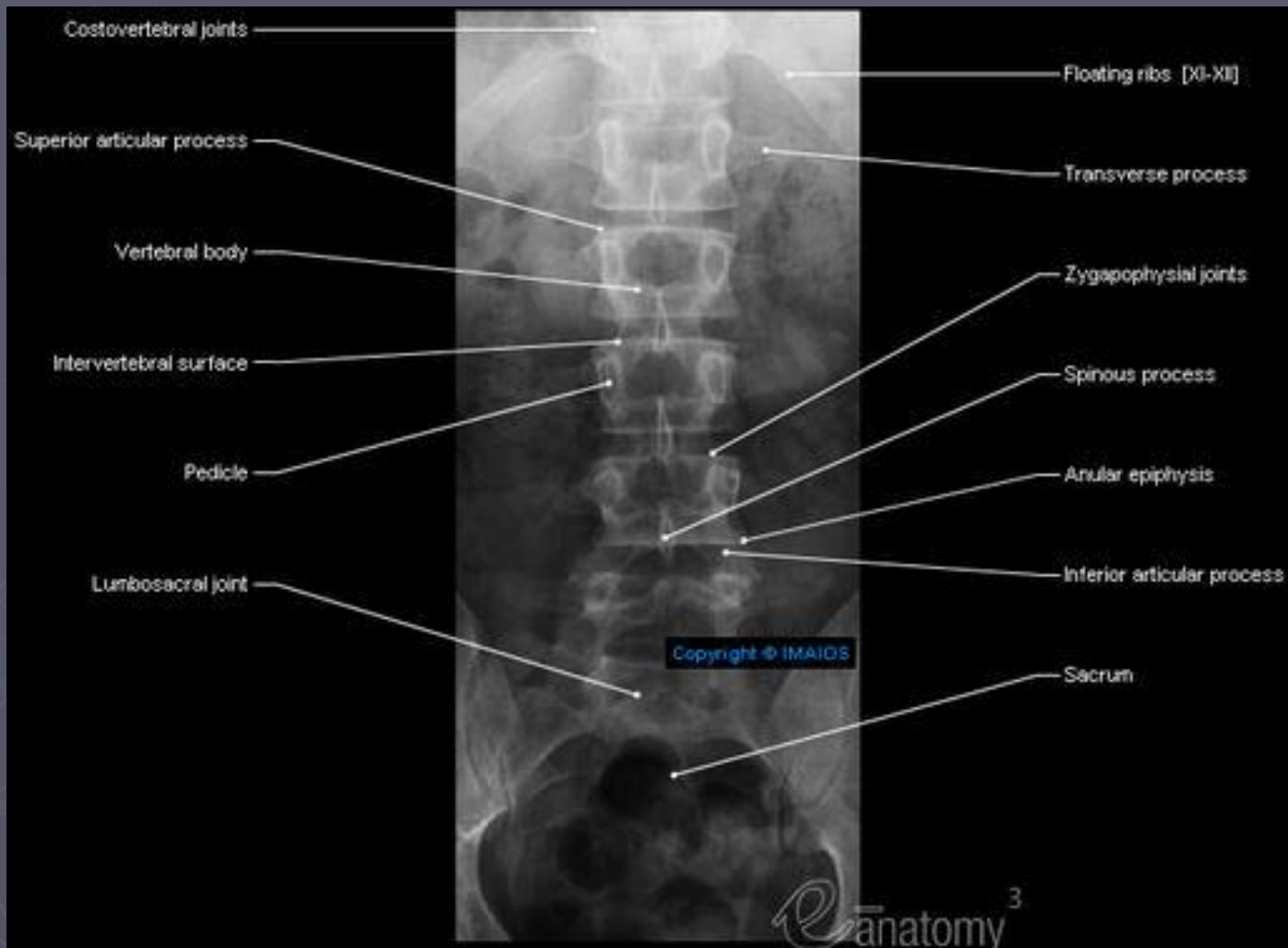
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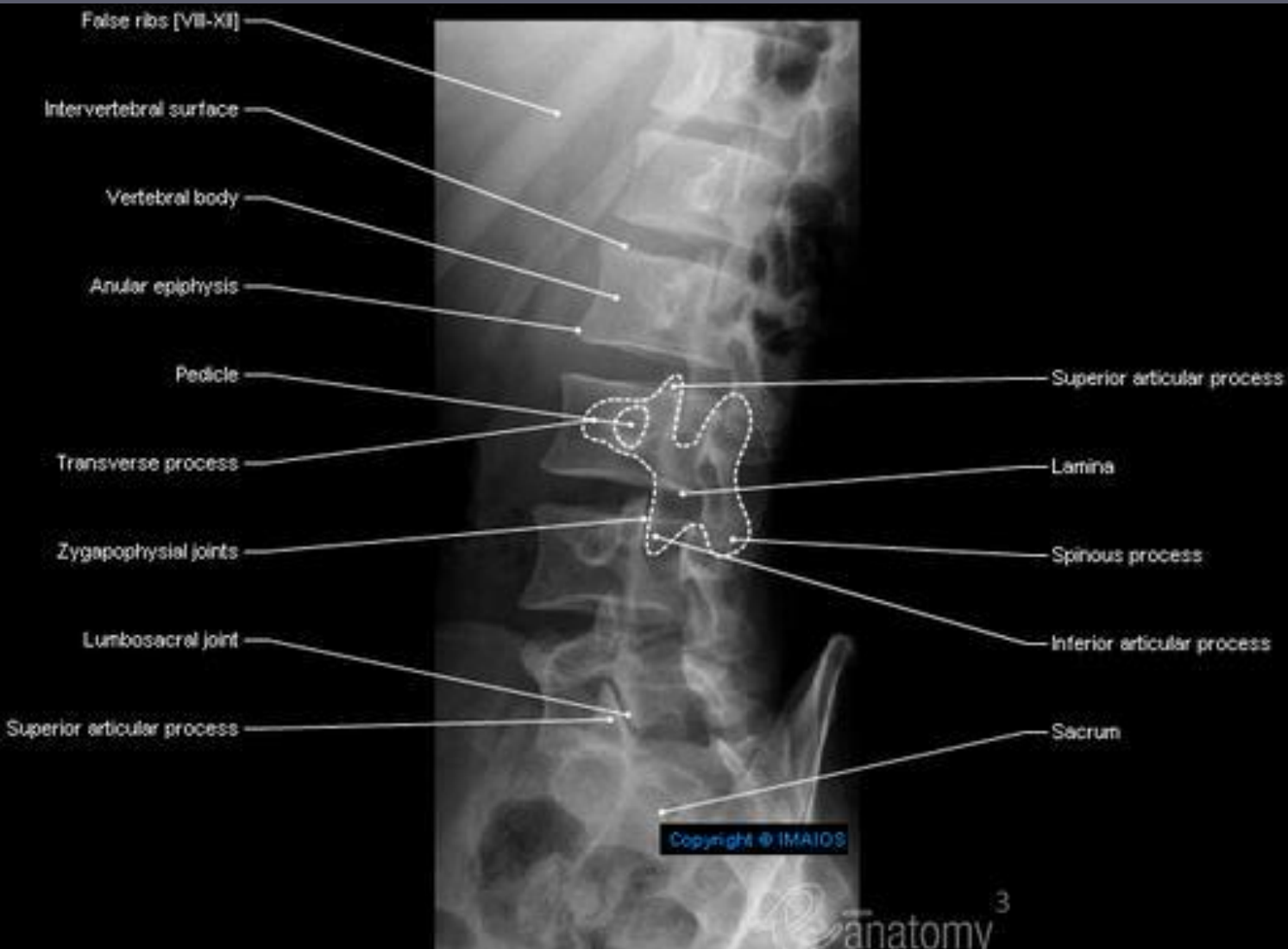
superior articular process

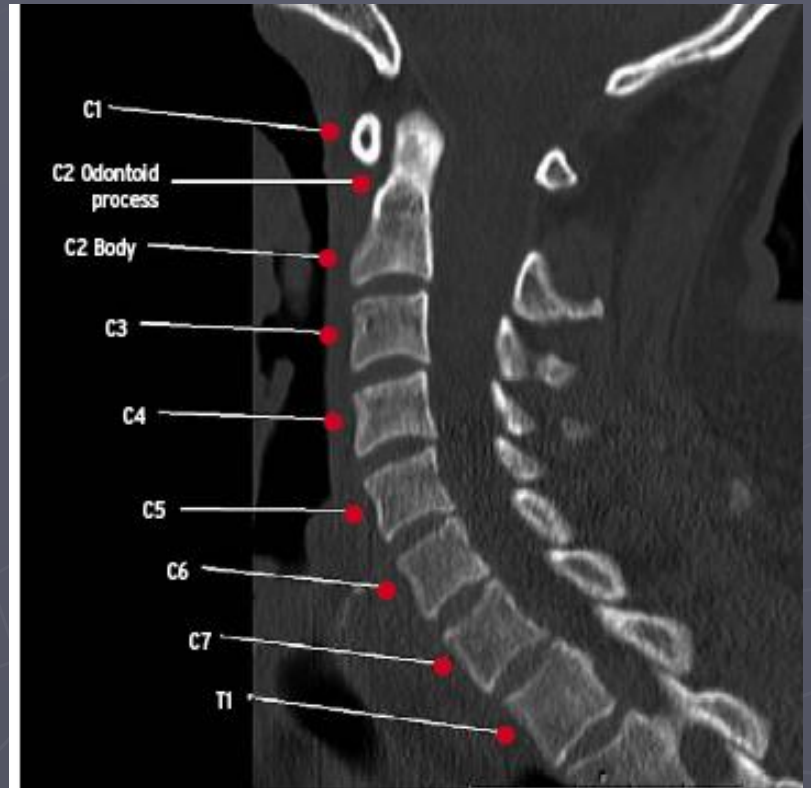
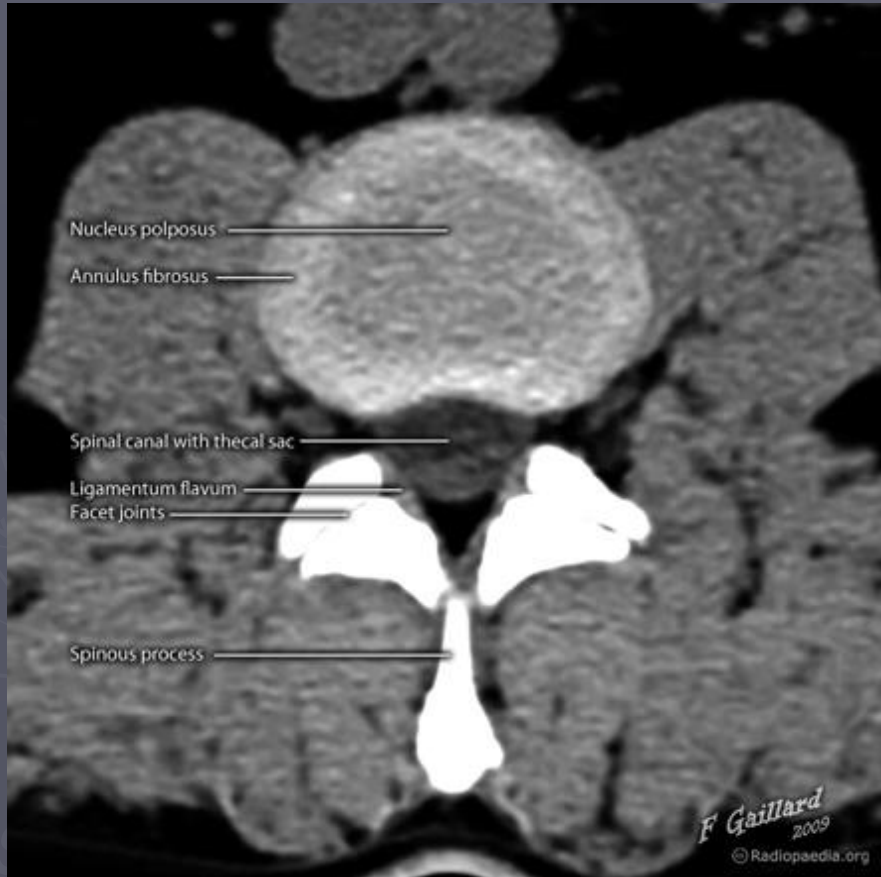
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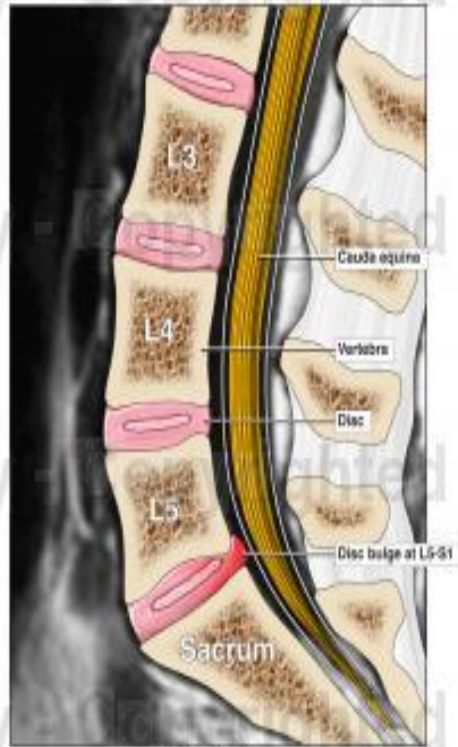


**FIGURE 1.** Sagittal CT of the cervical spine

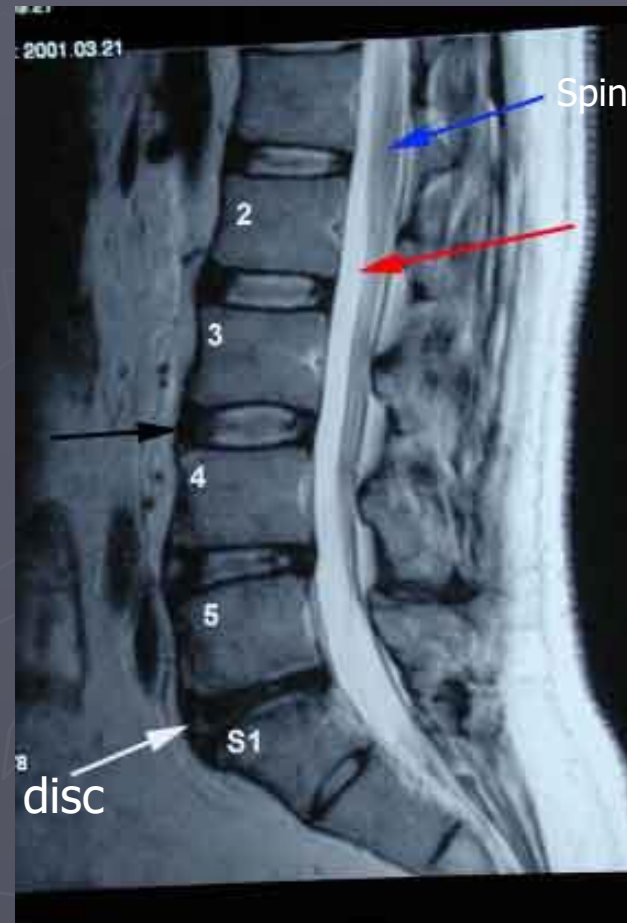
# Lumbar Spine MRI



Sagittal view



Sagittal view



Spinal cord

CSF

disc

skull

sternum



ribs

spine

pelvis





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# Case one:

- ▶ Young male patient involved with road traffic accident



# Trauma:



# Case two:

- ▶ Middle age women complaining of back pain and fever.

# Inflammatory/ infectious



# Case three:

- ▶ Old male patient complaining of low back pain radiated to both lower limb.



# Case four:

- ▶ New born baby presented with low back swelling.



# Congenital:



# Case six:

- ▶ Adult male patient presented with progressive backache which get worse at night.

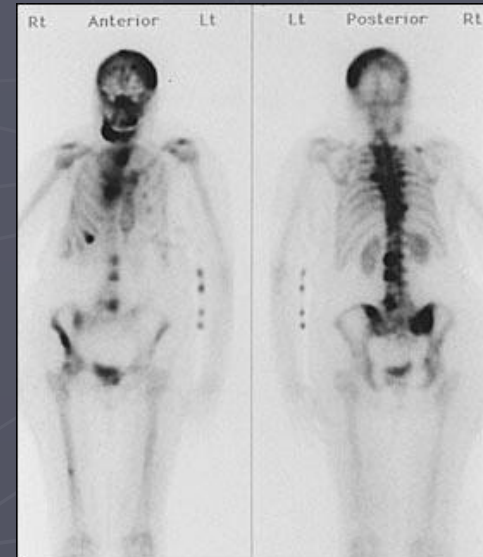
# Tumor:



# Case seven:

- ▶ Old male patient known case of prostatic cancer complaining of back pain.

# Metastasis:



# THANK YOU

