

Radiology Anatomy of the Spine and Upper Extremity

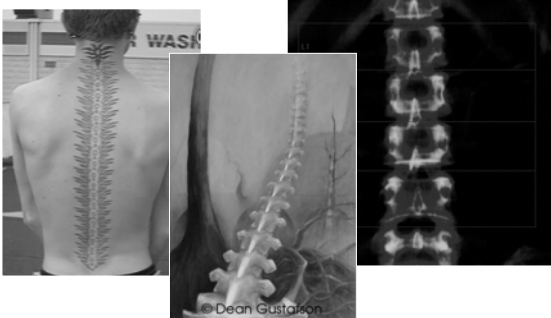
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Department of Radiology
Phone: 531-4566
Email: tmosher@psu.edu



Learning Objective

- Identify anatomic structures of the spine and upper extremities on standard radiographic and cross-sectional images

SPINE



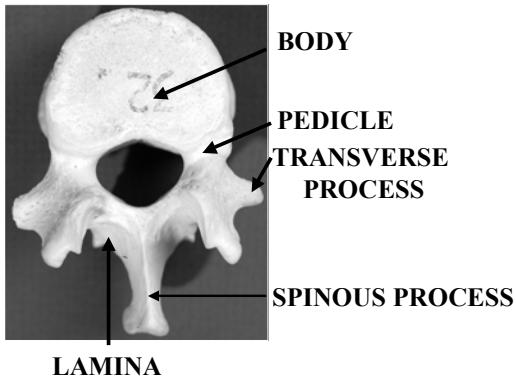
Visual Human Sagittal View



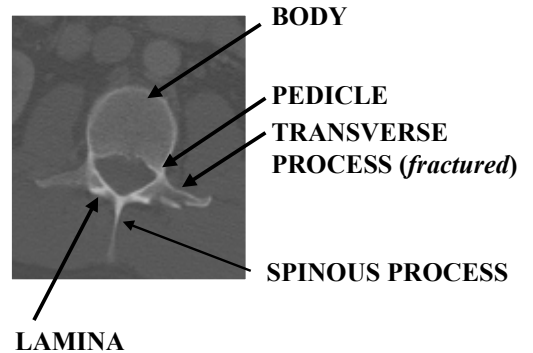
- 7 Cervical Vertebra
- 12 Thoracic Vertebra
- 5 Lumbar Vertebra
- 5 Sacral Vertebra (fused)
- 3 Coccygeal Vertebra (fused)



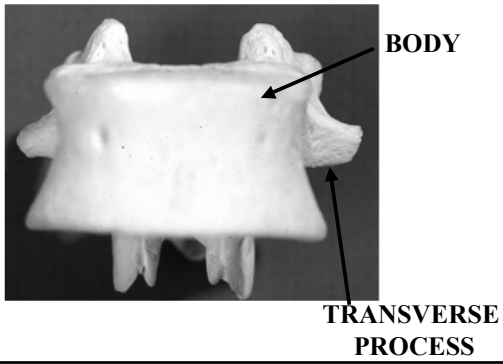
Lumbar Vertebral Body



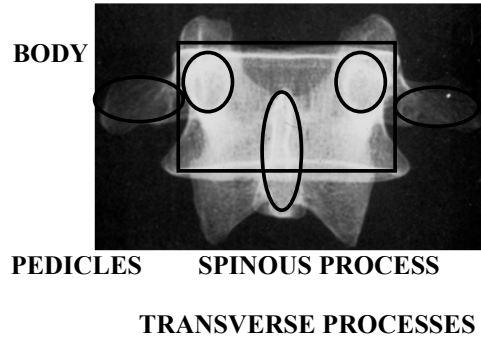
Lumbar Vertebral Body



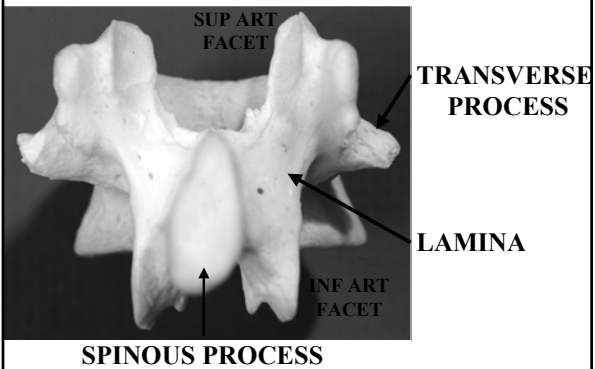
SPINE FROM THE FRONT



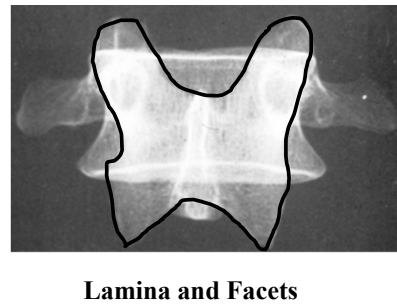
SPECIMEN RADIOGRAPH L4



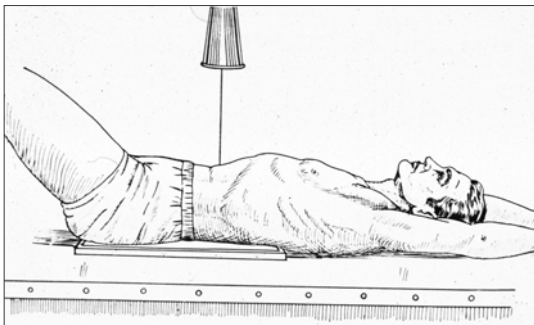
SPINE FROM THE BACK



SPECIMEN RADIOGRAPH L4



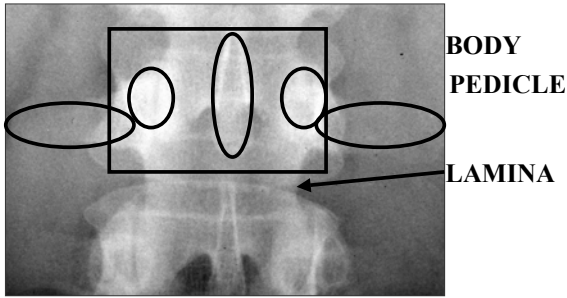
AP Lumbar Spine



AP Lumbar Spine

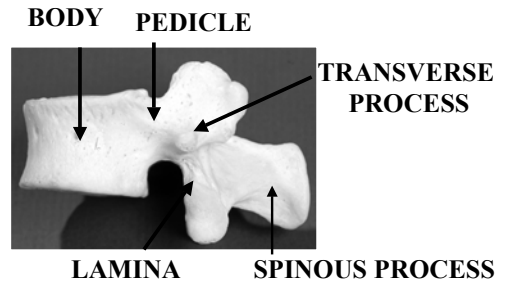


AP Lumbar Spine



TRANSVERSE PROCESS SPINOUS PROCESS

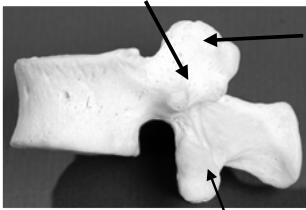
Spine Viewed from Side



LAMINA SPINOUS PROCESS

Spine Viewed from Side

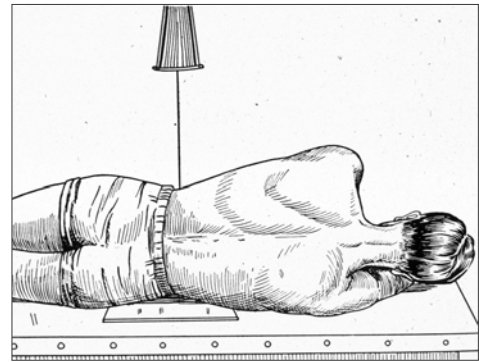
PARS INTRAARTICULARIS



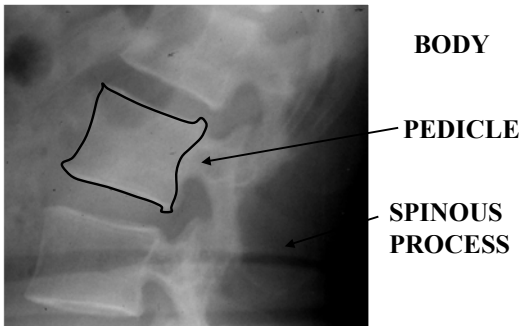
SUPERIOR FACET

INFERIOR FACET

Lateral Lumbar Spine

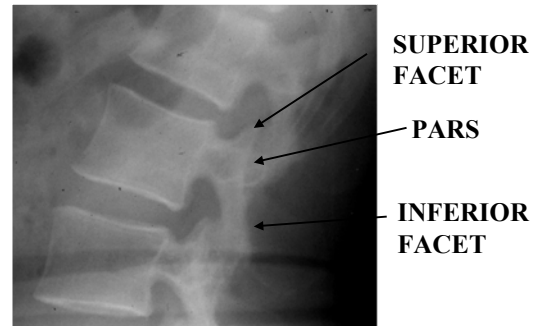


Lateral Lumbar Spine



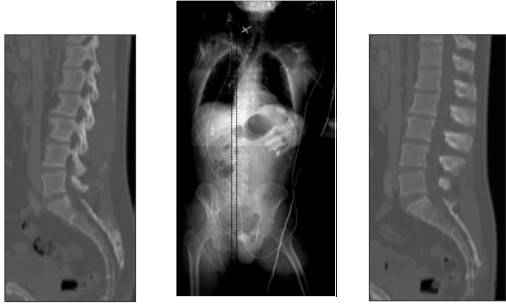
BODY
PEDICLE
SPINOUS PROCESS

Lateral Lumbar Spine

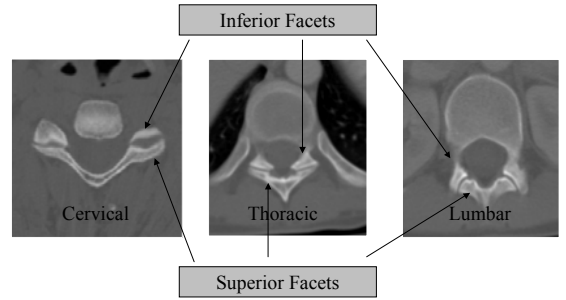


SUPERIOR FACET
PARS
INFERIOR FACET

CT Lumbar Spine Sagittal Reconstructions



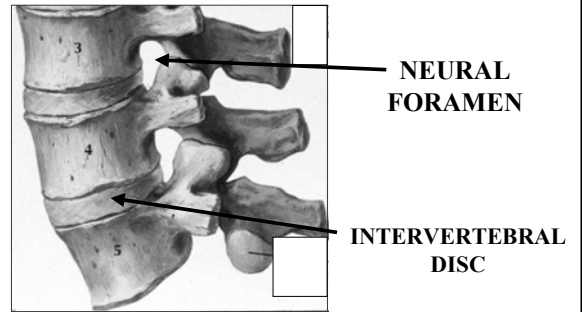
Facet Joints Axial View



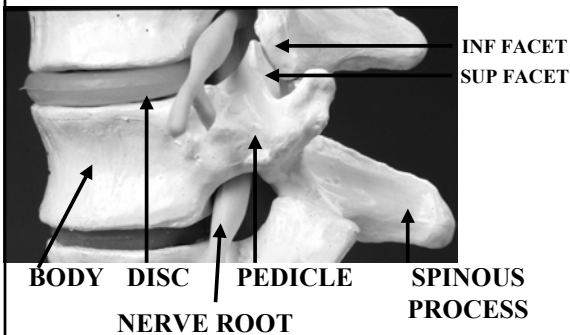
Facet Joints Sagittal Reconstructions



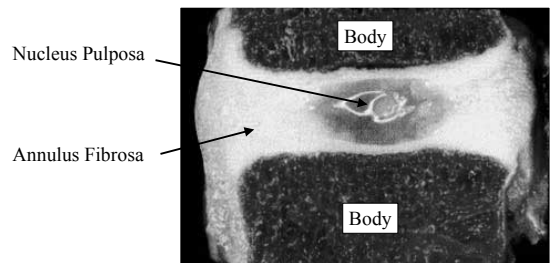
Intervertebral Disc Space



Nerve Roots



Intervertebral Disc



Sagittal Section Lumbar Spine

MRI: Intervertebral Disc

Spinal Cord
(Cauda Equina)

Intervertebral Disc
•Nucleus Pulposus
•Annulus Fibrosus



Neural Foramen



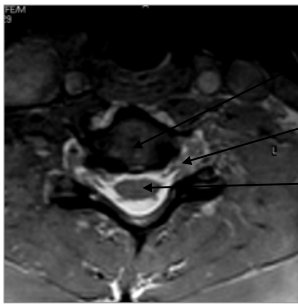
Pedicle (L3)

L3 Nerve Root

L3/L4 Intervertebral Disc

Pedicle (L4)

Neural Foramina Cervical Spine



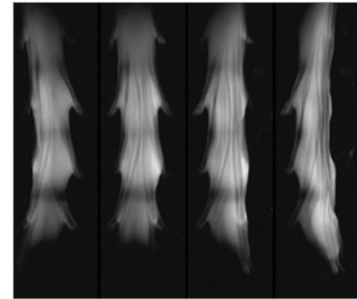
Vertebral Body

Nerve Roots

Cervical Spinal Cord

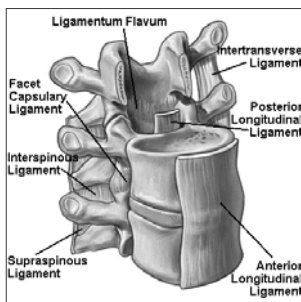
Viewed from bottom

Cauda Equina

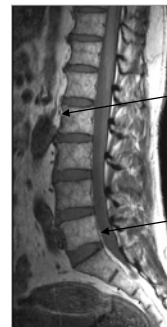


MRI Myelogram

Spinal Ligaments



Spinal Ligament



Anterior Longitudinal Spinal Ligament

Posterior Longitudinal Spinal Ligament

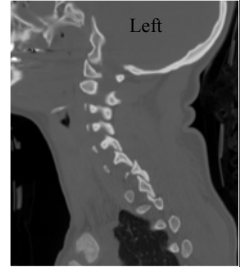
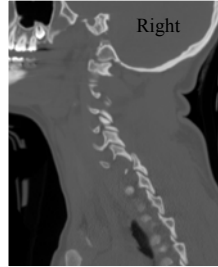
Case Study: 17 year-old Male
involved in a MVA



Do you see a fracture?

Fracture of C7 vertebral body

Case Study: 17 year-old Male
involved in a MVA



What Bilateral Cervical Distortions are injured?

Case Study: 17 year-old Male
involved in a MVA



Spinal Cord Injury

*Anterior Longitudinal
Spinal Ligament*

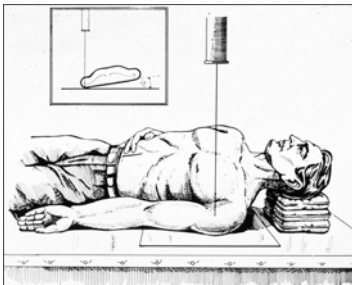
*Posterior Longitudinal
Spinal Ligament*

Upper Extremity



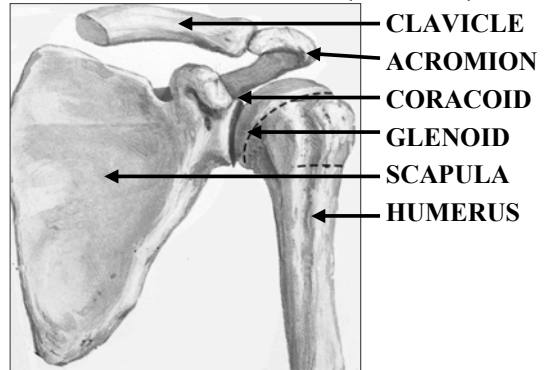
Radiographic Anatomy

X-RAY BEAM

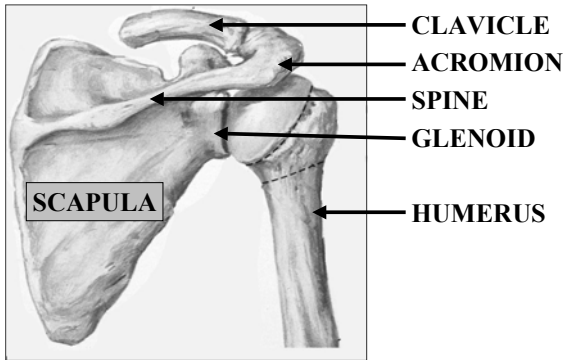


FILM

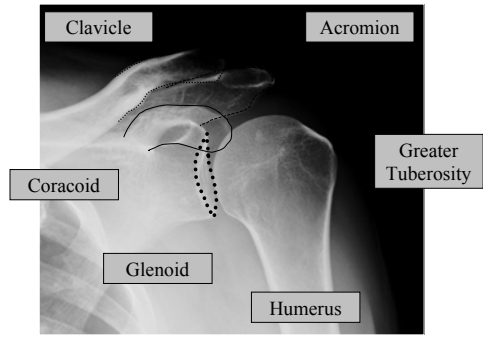
LEFT SHOULDER (FRONT)



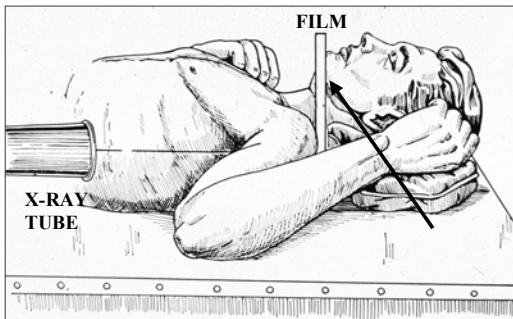
SHOULDER (BACK)



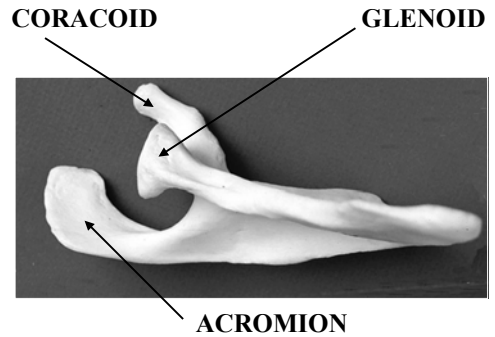
AP Shoulder



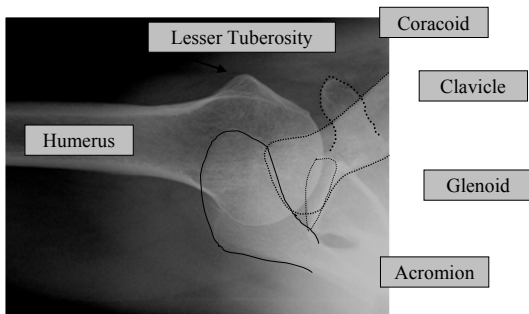
LEFT SHOULDER AXILLARY VIEW



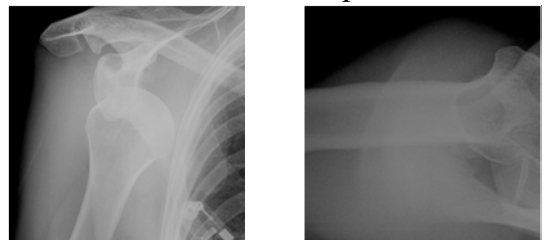
RIGHT SCAPULA FROM BELOW



LEFT SHOULDER (AXILLARY)



Case Study: 52 year old male with shoulder pain

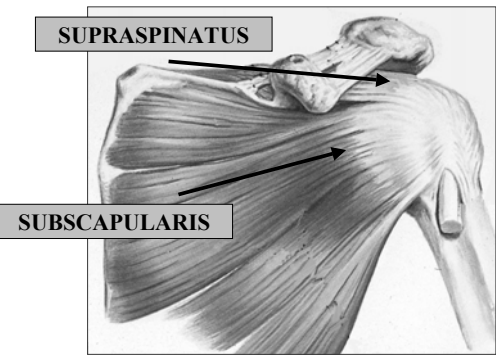


Do you identify the cause of the shoulder pain?

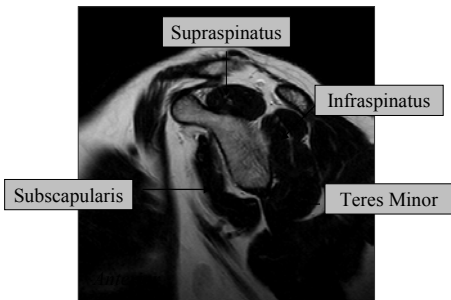
MRI Anatomy of the Shoulder



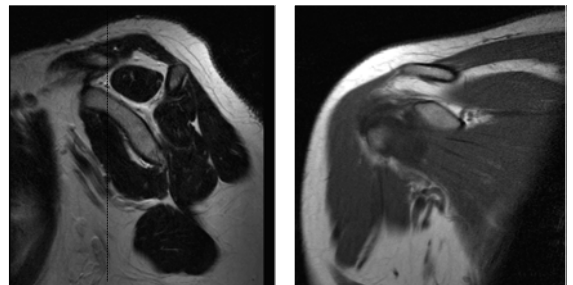
MUSCLES FROM THE FRONT



Rotator Cuff Muscles *Sagittal View*



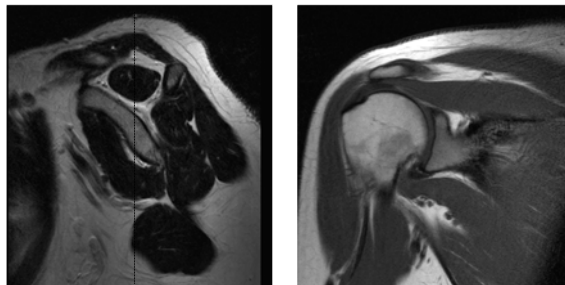
Rotator Cuff: *Subscapularis*



Sagittal View

Coronal View

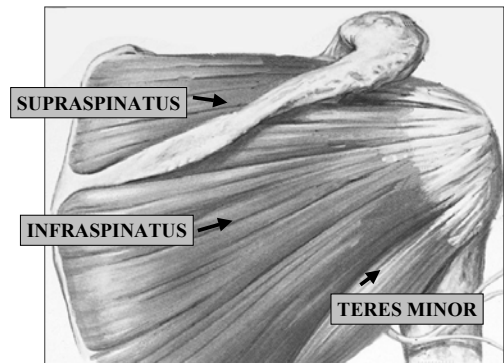
Rotator Cuff: *Supraspinatus*



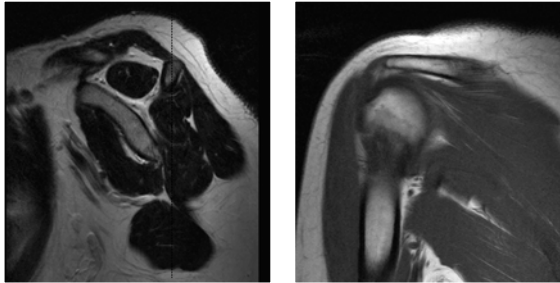
Sagittal View

Coronal View

MUSCLES FROM THE BACK



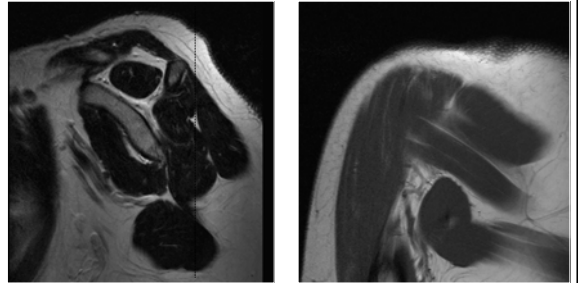
Rotator Cuff: *Infraspinatus*



Sagittal View

Coronal View

Rotator Cuff: *Teres Minor*



Sagittal View

Coronal View

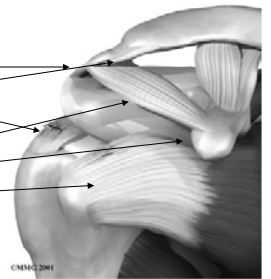
Anatomy Considerations in Rotator Cuff Tears



Impingement of the Rotator Cuff

Coracoacromial Arch

- Acromion
- ~~Sub~~supraspinatus
- Coracoacromial ligament
- Coracoid Process
- Subscapularis

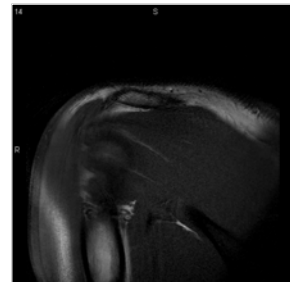


Anterior View

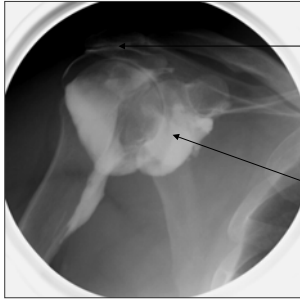
MRI Anatomy of the Rotator Cuff



MRI Anatomy of the Rotator Cuff



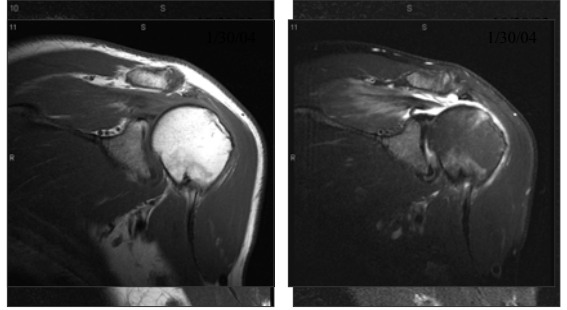
Rotator Cuff Tear



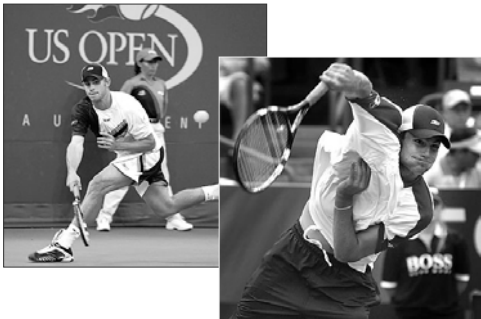
Contrast leaking into subacromial bursa through tear in supraspinatus

Contrast injected into glenohumeral joint

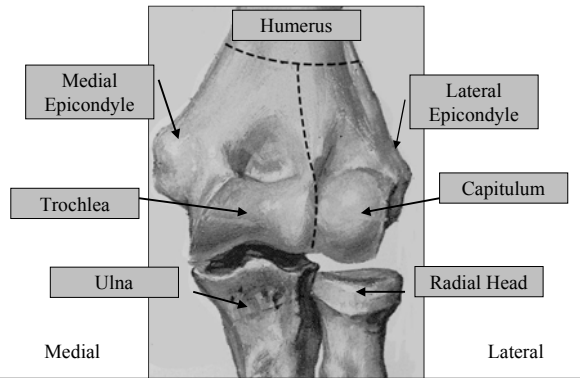
ROTATOR CUFF TEAR



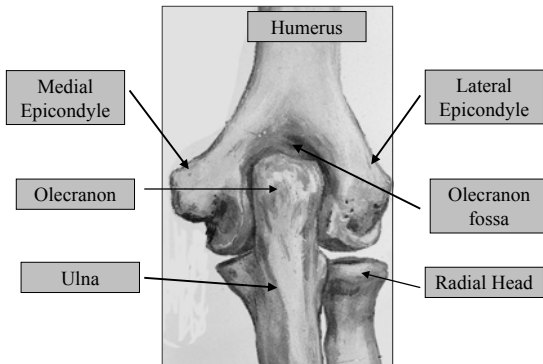
The Elbow



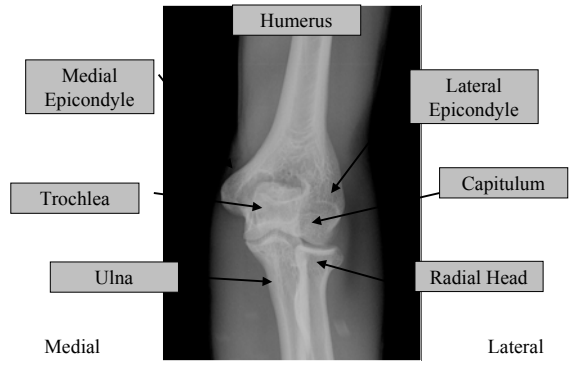
LEFT ELBOW FROM FRONT



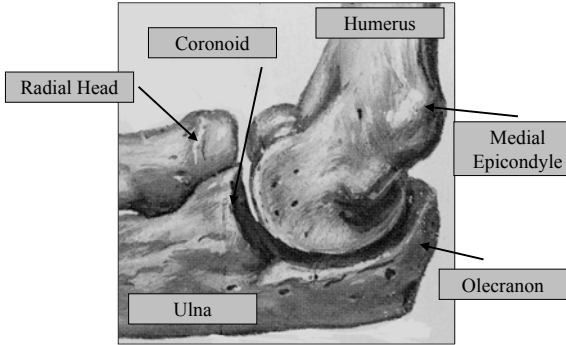
Elbow from the Back



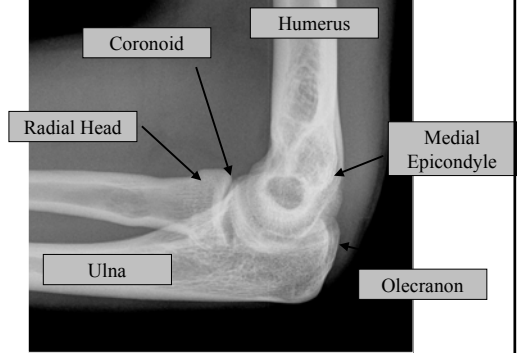
AP ELBOW



Medial View of Elbow



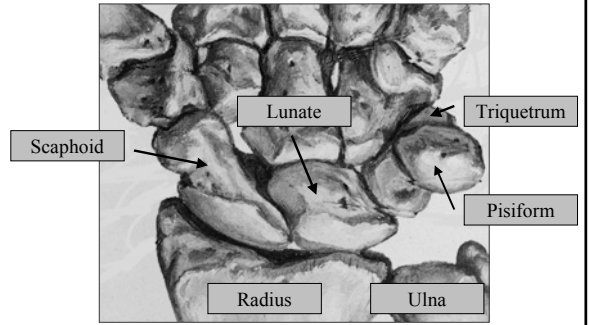
Medial View of Elbow



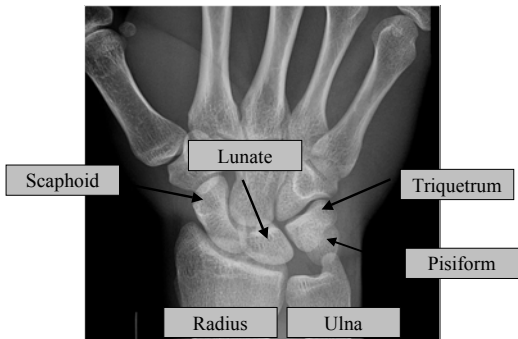
The Wrist



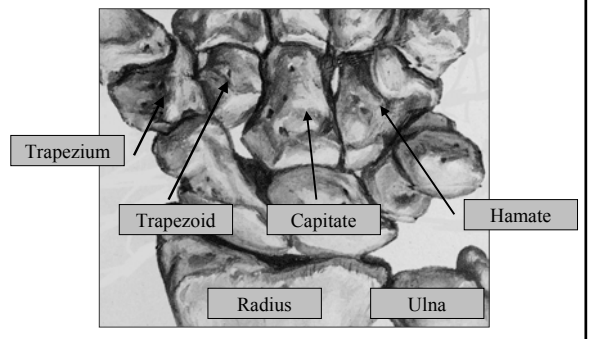
The Wrist Palmar View Carpal Bones (Proximal Row)



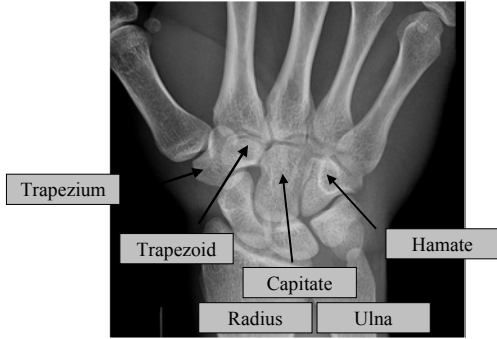
The Wrist Palmar View Carpal Bones (Proximal Row)



The Wrist Palmar View Carpal Bones (Distal Row)



The Wrist Palmar View Carpal Bones (*Distal Row*)



MR Anatomy of the Wrist

