Imaging of the shoulder
Overview

• X-Ray techniques of the Shoulder
• CT Arthrogram
• MRI of the shoulder
• MR Arthrogram
• Ultrasound of the Shoulder
X-ray Techniques

• Internal rotation
• External rotation
• Axillary view
  – Stryker notch
  – Westpoint
• Modified Grashey
• ? Y-view
External Rotation View

- Clavicle
- Acromioclavicular joint
- Coracoid
- Sternoclavicular joint
- Greater tuberosity of humerus
- Lesser tuberosity or tubercle
West Point View

anterior

coracoid

glenoid

posterior

acromion

humerus
CT Arthrogram

• Pros
  – Labral tears = 95 % Accuracy*
  – Evaluation in a Non MR safe patient
  – Cartilage evaluation
  – Multi-planar evaluation with isotropic voxels

• Cons
  – Invasive
  – Radiation
  – Evaluate integrity not tissue morphology

Shoulder MRI

• Question:
  – Rotator Cuff Tear or No Tear
  – Labral Tear or No Tear
  – Cartilage Loss/Arthritis or No Arthritis

• Answer:
  – Etiology of the patient’s pain.
Shoulder MRI

- Rotator Cuff
  - Supraspinatus Tendon
  - Infraspinatus Tendon
  - Teres Minor Tendon
- Biceps Tendons
  - Long Head
    - Origin = Supraglenoid Tubercle
  - Short Head
    - Origin = Coronoid process
Pectoralis major
deltoid
rhomboid
trapezius
subscapularis
deltoid
infraspinatus
scapula
pectoralis minor
Lung
humerus
Coronal oblique MRI of the shoulder (posterior)

- Infraspinatus muscle and tendon
- Acromion
- Deltoid muscle
- Humerus
- Quadrangular space
Coronal oblique MR image of the shoulder (central)

- Supraspinatus muscle and tendon
- Acromion
- Glenoid
- Biceps tendon, long head
Chronic Massive Rotator Cuff Tear
Acute Hill-Sachs Fracture and Bankart Lesion
Anterior labral tear
Impingement Syndromes

• **Subacromial**
  – Most common
  – Encroachment of subacromial space
  – Loss of normal glide of GH joint and CA arch

• **External (Subcoracoid)**
  – Between humeral head and coracoid process

• **Internal (posteriorsuperior)**
  – Overhead throwing athletes
  – Infraspinatus and posteriorsuperior glenoid labrum

GH=glenohumeral
CA=coracoacromial
Subacromial Impingement

- **Type 1**
  - flat acromion (17% of shoulders)
  - 3% of all cuff tears have this type of acromion;

- **Type 2**
  - curved acromion (43%)
  - 27% of all cuff tears have this type of acromion

- **Type 3**
  - hooked acromion (40%)
  - majority (70 - 90%) of rotator cuff tears may be seen in pts w/ type-2 or a type-3 acromion

MR Arthrogram

• Pros
  – Labral evaluation
  – Cartilage evaluation
  – Very sensitive for evaluation of tissue integrity

• Cons
  – Invasive procedure
  – Increased number of sequences
  – Limited ability to see tissue morphology
Ultrasound

• Pros
  – Dynamic
  – Real Time
  – Provocative maneuvers

• Cons
  – Depth of vision
  – Limited field of view
  – Technically dependent
Calcific Tendinosis
Calcific Tendinosis (injection)
Thank you