MSK US:
Normal Shoulder Anatomy, Standard Protocol & Technique

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Daily
Same-day add-ons

9 Sonographers
9 MSK Rads
Objectives

- Review the normal anatomy of the shoulder
  - Bony
  - Soft tissue
- Briefly describe how a shoulder US is performed
- Standard protocol
Background

- Mskl US in the USA
- Henry Ford Hospital
  - 7000 exams/year in 2007
  - Beijing Olympics
  - NASA
- University of Michigan
- HSS
- Thomas Jefferson
Gray-Scale Imaging
Echogenicity

- Anechoic
- Hypoechoic
- Isoechoic
- Hyperechoic
Echogenicity

- Anechoic
- Hypoechoic
- Isoechoic
- Hyperechoic
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Echogenicity

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- Hyperechoic
Advantages of Ultrasound

- No radiation
- Directed, real time
- Dynamic
- Contralateral comparison
- No magnet
- Cost effective
Limitations

- Operator-dependent
- Training required
- Limited field of view
- Requires patient cooperation
- Body habitus dependent
- Often underused
  - Widely available MRI
  - Few training programs
  - Unaware of potential applications
Advances in Ultrasound Technology

Supraspinatus

FPL
US probes

- L 17-5 MHz
- L 12-5 MHz
- CL 15-7 MHz
Shoulder Ultrasound:
Standard Protocol & Anatomy
Shoulder Ultrasound

- Skin Surface
- Skeletal Anatomy
- Joint Anatomy
- Shoulder Positions
Shoulder Ultrasound Regions

- Anterior
- Superior
- Anterolateral
- Posterior

Shoulder Ultrasound Regions

- Anterior
- Superior
- Anterolateral
- Posterior
Anterior Shoulder

Glenoid labrum

Biceps Long head
Anterior Shoulder

Supraspinatus

Netter
Anterior Shoulder

Subscapularis

Netter
Anterior Shoulder

Transv Humeral

CorHum
Anterior Shoulder

Coracoacromial

Netter
Posterior Shoulder

Teres minor
Posterior Shoulder

Supraspinatus
Posterior Shoulder

Infraspinatus
Posterior Shoulder

Deltoid
Posterior Shoulder

Trapezius

Netter
Soft Tissue Structures
Shoulder Ultrasound

Netter
Shoulder Ultrasound Technique
Shoulder Ultrasound Technique
Shoulder Ultrasound Technique
Shoulder Ultrasound Technique
Orthogonal planes

Long Axis

Short Axis
Biceps tendon
Short Axis
Biceps tendon
Long Axis
Subscap tendon
Long Axis
AC Joint
Supraspinatus
Short Axis
Infraspinatus
Long Axis
Posterior Labrum
Dynamic Maneuver
Spinoglenoid notch
Long Axis
US shoulder Technique & Protocol

- Topographical spots
  - Bony acoustic landmarks
  - Soft tissue structures
- Standard protocol
- Review in next session