COMMON ULTRASOUND FOR PRIMARY CARE PHYSICIANS

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MSACOFP- WINTER SCIENTIFIC SEMINAR
Disclosures

- NONE
OBJECTIVES

- Understand ultrasound basics
- Understand musculoskeletal uses for ultrasound
- Understand diagnostic and procedural anatomic Ultrasound
- Hands on practice US
### Accuracy of Imaging in Rotator Cuff Tears*

<table>
<thead>
<tr>
<th>Type of Tear</th>
<th>Sensitivity</th>
<th>Specificity</th>
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</thead>
<tbody>
<tr>
<td><strong>Full thickness tears</strong></td>
<td></td>
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<tr>
<td>MRA</td>
<td>95.4</td>
<td>98.9</td>
</tr>
<tr>
<td>US</td>
<td>92.3</td>
<td>94.4</td>
</tr>
<tr>
<td>MRI</td>
<td>92.1</td>
<td>92.9</td>
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<tr>
<td><strong>Partial Thickness tears</strong></td>
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<tr>
<td>MRA</td>
<td>85.9</td>
<td>96.0</td>
</tr>
<tr>
<td>US</td>
<td>66.7</td>
<td>93.5</td>
</tr>
<tr>
<td>MRI</td>
<td>63.6</td>
<td>91.7</td>
</tr>
</tbody>
</table>
ULTRASOUND

- USING MRI & US HELP IDENTIFY STRUCTURES EASIER*
- US improves accuracy, outcomes, and patient satisfaction in injections*
- Meta analysis Literature study shoulder injections 2015*
ULTRASOUND USES

- Diagnostic Musculoskeletal Evaluations
- Procedural Injections
- Advanced - Trigger finger fenestration A1 pulley, Carpal Tunnel Release, Adhesive Capsulitis
ULTRASOUND BASICS*

- GREY SCALE ECHOS
- BONE/FAT - HIGHLY REFLECTIVE HYPERECHOIC
- CYSTIC FLUID, EFFUSIONS - APPEAR BLACK - ANECHOIC
- TENDONS - APPEAR GRAY - HYPOECHOIC
- MUSCLES - APPEAR AS LATTICE
- ANISOTROPY - ANGLE DEPENDENT - PERPENDICULAR BEST
- No radiation like CT
ULTRASOUND BASICS*

- long axis=longitudinal look at structure
- short axis= cross section=transverse= shortest structure length
- In Plane- needle follows the plane of the transducer
- Out of Plane- needle is perpendicular to transducer= white dot on screen
Needle Positions

IN Plane Injection

Out of Plane Injection
ULTRASOUND EXAMS

- VERIFY WITH PHOTOGRAPHS
- VERIFY IN DICTATIONS
- PARTIAL VS FULL DIAGNOSTIC EXAMS
- PROCEDURAL EXAMS AND DOCUMENTATION
ULTRASOUND FEATURES

- PROBES- LINEAR AND CURVED
- LINEAR- GENERALLY HIGHER FREQUENCY & RESOLUTION
- DEPTH OF FIELD
- BODY PARTS
DIAGNOSTIC COMMON EXAMS

- EFFUSIONS
- GANGLIONS
- BURSA
- TENDONS
- FRACTURES
- JOINTS
DIAGNOSTIC COMMON EXAMS

- SHOULDER
- WRIST
- HAND
- KNEE
- HIP
- FOOT
DIAGNOSTIC EXAMS

- KNEE EFFUSIONS
- PROBE SHORT AXIS, AXIAL OR PERPENDICULAR TO JOINT
- CAN SEE ENTIRE EFFUSION IN SUPINE POSITION
- NEEDLE EASILY SEEN BENEATH PROBE
- DOCUMENT ULTRASOUND GUIDED ASPIRATION
ULTRASOUND EXAMS

- COMMON WRIST GANGLIONS, AND OTHER AREAS
- VOLAR AND DORSAL
- VOLAR GOOD FOR RADIAL ARTERY
- GOOD TO SEE SMALL AND LARGE GANGLIONS
ULTRASOUND EXAMS

- WRIST TENDONS DORSAL FIRST COMPARTMENT DEQUERVAINS
- ACHILLES TENDON
- TRICEPS TENDON
- BICEPS TENDON
- QUADRATEPS TENDON
- PATELLA TENDON
Wrist Ganglion
Wrist Dequervains

tendon long axis

tendons short axis
Achilles tendon
SPECIFIC SHOULDER EXAMS

- MUST DOCUMENT TENDONS IN NAME
- ‘SITS’ TENDONS
- BICEPS MOST EASILY IDENTIFIED AXIAL
- SUPRASPINATUS- ARM POSITION- Crass or Middleton position*
- INFRASPINATUS- NEUTRAL POSITION
- SUBSCAPULARIS- EXTERNAL ROTATION FIND WITH BICEPS*
- TERES MINOR- NEUTRAL POSITION
SHOULDER SPECIFIC EXAM

- AC JOINT - CORONAL PROBE - ANTERIOR TO POSTERIOR-
- GLENOHUMERAL JOINT - BEST SEEN POSTERIORLY*
Typical Shoulder Arm Positions
AC JOINT

Clavicle

Acromion
BICEPS TENDON

short axis biceps view
SUPRASPINATUS TENDON

Tendon

Humerus
SUBSCAPULARIS TENDON

Bicipital Groove

Subscap tendon
INFRASPINATUS TENDON
Distal Biceps
KNEE EFFUSION

Effusion Black
PATELLA TENDON

Tibia

Patella

Patella Tendon
QUADRACEPS TENDON

Quad Tendon
TYPICAL TENDON TEAR

Supraspinatus
ULTRASOUND EXAMS

- PREPATELLA BURSA
- OLECRANON BURSA
- SEROMA/HEMATOMA
Reimbursement

- Varies by provider
- Varies by exam documentation as diagnostic vs US guidance injection etc
- Maintain hardcopy of procedures
REFERENCES


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References


Practical Reference

- SonoSite