Zebras in the Shoulder
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Fundamentals of Musculoskeletal Ultrasound are copyrighted by Elsevier Inc.

Pathology
• Bursa
• Trauma
• Abscess
• Tumors

Shoulder Joint Recesses
• Long head biceps tendon sheath
• Posterior recess:
  – Image with shoulder in external rotation
• Axillary recess
• Subscapularis recess

Subacromial-subdeltoid bursa (SASD) vs. subscapularis recess (SSR) vs. subcoracoid bursa (SCB)

Subscapularis Recess
*Note redistribution of joint fluid with internal and external shoulder rotation
Subcoracoid Bursa:

- Located anterior to subscapularis under coracoid
- Unlike subscapularis recess
  - Does not communicate with joint
  - Does not change with internal-external rotation
  - Does not have an inverted “U-shape” over subscapularis

*Invest Radiol 1985;20:311

Subacromial-subdeltoid Bursa:

- Normal:
  - Thin hypoechoic layer: fluid, synovium
  - Hyperechoic: bursal walls and peribursal fat
- Abnormal: >1 mm thick*
  - Fluid: anechoic
  - Synovial hypertrophy: hypoechoic to hyperechoic

*Invest Radiol 1985;20:311

Gout: subacromial-subdeltoid bursa

Hemophilia Infection

Subacromial-subdeltoid bursa: CPPD

Subacromial-subdeltoid Bursa
Calcific Bursitis

Calcific Bursitis: impingement

Calcific Bursitis: treatment

Scapulothoracic Bursa
- Located deep to scapula
- 2 anatomic and 4 possible adventitious bursae
- Rarely distended
- Suspect occult osseous abnormality:
  - Rib or scapula exostosis
  - Scapulothoracic crepitus

Scapulothoracic Bursa: prior anterior dislocation

Pathology
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Hill-Sachs Impaction Fracture: prior anterior dislocation
Lesser Tuberosity Avulsion Fracture

Post-traumatic Osteolysis of the Clavicle

Symptomatic Os Acromiale
- Normal secondary ossification center of acromion
- Normally fused by age 25
- If unfused, synchondrosis may be injured
- Osseous cleft in coronal plane
- Pain with sonopalpation

Ha A et al. AJR 2014; 202:375

Sternoclavicular Joint: dislocation

Fracture: humeral diaphysis

Pathology
- Bursa
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- Tumors
Soft Tissue Abscess

- Anechoic or hypoechoic
  - less likely isoechoic or hyperechoic
- Posterior acoustic enhancement
- Swirling of contents with transducer pressure
- Hyperemia

AJR 1996; 166:149

Abscess: shoulder

Transverse  Longitudinal

Abscess: deltoid muscle

Abscess: isoechoic

Pathology

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Lipoma: subcutaneous

- Oval or oblong
- Homogeneous
- Isoechoic to adjacent fat
- Hyperechoic:
  - With increased fibrous tissue components
- No internal vascularity
- Compressible

Inampudi et al. Radiology 2004; 233:763
Lipomas

- Variable echogenicity
- Often ill-defined
- Often difficult to assess
- Cannot reliably differentiate from low-grade liposarcoma!
- Need MRI

Lipoma: deep

- Paunipager et al. Insights Imaging 2010; 1:149

Liposarcoma: well-differentiated

- Hypoechoic
- Looks like a lipoma
- Need MRI with any suspected deep lipoma!

Lymph Node: normal

- Oval or round
- Echogenic hilum:
  - Due to reflective interfaces, sinuses
  - Not from fat
  - May be absent in normal nodes

Axillary Lymph Node: abnormal

- Enlarged: > 10 mm
- <10 mm + asymmetric cortical thickening
- With breast cancer:
  - 10% risk metastatic disease if < 5 mm
  - 20% if 5 – 20 mm
  - 40% if > 20 mm

Radiology 1992; 183:215
Lymph Node: benign vs. malignant

- Malignant:
  - Round (not oval)
  - Cortical thickening
  - Hilar narrowing or absence
  - Non-hilar blood flow (peripheral, mixed)

Reactive Hyperplasia: axillary

B cell Lymphoma: axillary

Exostosis: humeral diaphysis

Metastasis: acromion

Metastasis: clavicle
**Take-home Points**

- Bursa: consider uncommon etiologies
- Abscess: may be isoechoic
- Trauma: scanning site directed by patient
- Tumors:
  - Lymph node: round, unusual vascularity = malignant
  - Superficial lipoma: superficial, oval, avascular
  - Deep lipoma: get MRI

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