Elbow: Joint and Bursal Pathology

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Joint Effusion:
- Olecranon recess
- Displaced hyperechoic fat pad by anechoic / hypoechoic fluid
- Best place to look with US*
- More sensitive than radiographs*

De Maeseneer, Invest Radiology 1998; 33:117

Joint Effusion: anterior elbow

Olecran Recess: normal

Olecran Recess: joint effusion
Septic Joint: Streptococcus

- Transverse
- Axial T2w

Complicated Fluid vs. Synovium
- Both may appear hypo- or isoechoic
- Findings that suggest effusion:
  - Displacement with transducer pressure
  - Joint recess collapse with joint movement
  - Negative flow on color Doppler imaging
  - Swirling with transducer pressure

Olecranon Recess
- Synovitis: seronegative arthritis
- Complex Fluid: septic

Septic Joint: Coccidiomycosis
- Longitudinal
- Sagittal T1w + gado

Synovial Hypertrophy and Erosions

Synovitis: osteoid osteoma

AJR 2001; 177:1391
Synovitis: osteoid osteoma

Synovial Chondromatosis

Annular Recess

Intraarticular body
- Olecranon, coronoid, annular recess
- Calcified & ossified bodies: hyperechoic with shadowing
- Surrounded by joint fluid: intraarticular
- Movement during real-time US excludes osteophyte

Frankel, Radiology 1998; 206:41

Intra-articular Body: elbow joint

Intraarticular Body: olecranon recess
Osteochondral Abnormality:
- Cortex: irregular and flat
- Cartilage: thickened
- Hyperechoic fragment: does not unite
- Defect and intraarticular body

Takahara, Radiology 2000; 216:207

Synovial Fold Syndrome
- Normal capsular tissue
  - Hyperechoic, triangular
- Abnormal:
  - Thickened > 3 mm
  - Heterogeneous
  - Adjacent synovitis

Cerezal et al. AJR 2013; 201:W88

Olecranon Bursitis:
- Over olecranon
- Anechoic or hypoechoic
- Well-defined
- Heterogeneous: complicated fluid

Infection
Traumatic

Olecranon Bursitis: Gout

Transverse
Olecranon Bursitis: rheumatoid arthritis

Sagittal

Transverse

Note erosion (white arrow)

Olecranon Bursitis: Gout

Sagittal

Transverse

Olecranon Bursitis: dynamic imaging

Bicipitoradial Bursitis

• Surrounds distal biceps
  – Does not communicate to elbow joint
  – No distal biceps tendon sheath
• If distended:
  – Mechanical, inflammatory
  – Characteristic “U” shape
  – Average: 1.8 – 2.5 cm in size
  – May displace deep branch of radial nerve

Skaf AY, Radiology 1999; 212:111

Bicipitoradial Bursitis

Long Axis to Biceps: Lateral Approach
Take-home Points:

- Posterior recess: most sensitive
- Aspirate if concern for infection
- Synovial hypertrophy versus complex fluid
  - Compressibility, lack of blood flow
- Bicipitoradial bursa: characteristic shape