Collateral Ligament
- Normal: hyperechoic, fibrillary
- Partial tear: hypoechoic, thickened
- Complete tear: anechoic fluid tracking through ligament defect
- Dynamic examination: stress

Miller et al. Skeletal Radiol 2004; 33:386

Ulnar Collateral Ligament
Anterior, Posterior, and Transverse Bundles

Ulnar Collateral Ligament
- Stability during valgus stress
- Anterior bundle:
  - Most important, largest
  - Taut: elbow extension
- Posterior bundle and transverse ligament: not very important
- Injury: throwing athletes

Technique: medial
- elbow partially flexed
  - Ulnar collateral ligament
    - Anterior bundle
  - Common flexor tendon
  - Cubital tunnel
    - Ulnar nerve
UCL and Common Flexor Tendon

Coronal

Humerus

Ulna

Flexors

Tubercle

Jacobson JA et al. Radiology 2003; 227:561

Ulnar Collateral Ligament: thin band

Jacobson JA et al. Radiology 2003; 227:561

Ulnar Collateral Ligament: broad

Jacobson JA et al. Radiology 2003; 227:561

Technique: cubital tunnel

Arcuate Ligament

Olecranon

Med Epicond

Post Bundle UCL

FCUH

FCUu

Distal

Ulnar Collateral Ligament Tear

T1w Coronal post-gadolinium

T2w Coronal post-gadolinium

Normal

Long Axis

Ulna

Longitudinal

Coronal T2w

Normal
Ulnar Collateral Ligament: partial tear

Valgus stress: 30 degrees elbow flexion
- Unlock the olecranon
- Stress the UCL anterior band
Gravity stress is adequate, equal to Telos¹
Ultrasound measurements:
- Reliable and precise²

**Ulnar Collateral Ligament: valgus stress**

- >1 mm asymmetric gapping = 87% accuracy in diagnosis of UCL tear
  - MR arthrography accuracy = 88%
  - US + MR arthrography: accuracy = 98%
- Asymmetric joint space widening with stress:
  - Normal: 1.3 mm or less
  - Partial tear: 1.2 – 3.0 mm
  - Full thickness tear: 2.8 – 4.8 mm

Roedl JB et al. Radiology 2016
Lateral Collateral Ligament Complex

- Radial collateral ligament (arrows)
- Common extensor tendon (E)
- Annular ligament (arrowhead)
- Lateral ulnar collateral ligament (curved arrow)

Radial Collateral Ligament Complex: injury

- Common extensor tendon (curved arrows)
- Radial collateral ligament (arrowheads)
- Annular ligament (a)

Common Extensor Tendon Removed

Lateral Ulnar Collateral Ligament

*LUCL attaches at crista supinator of ulna

Radial Collateral Ligament: complete tear

Long Axis

Lateral Ulnar Collateral Ligament (LUCL)

Lateral Epicondyle

Radial Head

Coronal T2w

Radial Collateral Ligament Complex: injury

Varus Stress

Lateral Ulnar Collateral Ligament
**Take-home Points:**

- **Ulnar collateral ligament:**
  - US complements MR arthrography
  - Gravity stress view
- **Radial collateral ligament:**
  - Anatomic footprints
  - Dynamic imaging

Syllabus on line and other educational material: [www.jacobsonmskus.com](http://www.jacobsonmskus.com)

Twitter handle: @jacobsonm