MRI of the Elbow: Current Concepts

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ANATOMY
lateral collateral ligament (LCL) complex
  radial collateral ligament
  annular ligament
  lateral ulnar collateral ligament (LUCL)

medial collateral ligament (MCL) complex
  anterior bundle
  posterior bundle
  transverse ligament

common flexor tendon

common extensor tendon

biceps tendon & bicipital aponeurosis (lacertus fibrosus)

triceps tendon

PATHOLOGY
Valgus stress injury
  Medial tension overload: extraarticular injury
    medial collateral ligament sprain
    flexor-pronator muscle strain
    medial epicondylitis
    ulnar traction spurs
    ulnar neuritis
  Lateral compression overload: intraarticular injury
    bone contusions
    osteochondritis dissecans of the capitellum or radial head
    loose body formation
    degenerative arthritis

Medial collateral ligament injury
  - anterior bundle of the MCL is the most important stabilizing ligament to valgus stress
  - midsubstance rupture of the MCL requires reconstruction in throwers
  - undersurface partial tears of the distal MCL may occur in throwers
  - intraarticular contrast may improve detection of these partial MCL tears

Medial epicondylitis
  - secondary to tendinosis of the common flexor tendon
  - may progress to complete avulsion
  - often associated with ulnar neuritis
Ulnar neuritis
-anatomic variations of the cubital tunnel retinaculum (CTR) may contribute to ulnar neuropathy
-CTR may be absent in 10%, allowing anterior dislocation of the nerve over the medial epicondyle during flexion with subsequent friction neuritis
-CTR may be replaced by an anomalous muscle, the anconeus epitrochlearis, in 11% resulting in static compression of the ulnar nerve
-thickening of the MCL and medial bony spurring may undermine the floor of the cubital tunnel

Osteochondritis dissecans
-commonly occurs within the anteroinferior aspect of the capitellum
-lesions may fragment and result in loose bodies
-adolescent pitchers or gymnasts at risk due to repetitive valgus stress

Lateral epicondylitis
-secondary to tendinosis of the common extensor tendon
-primarily involves the extensor carpi radialis brevis (ECRB) tendon
-macroscopic tears of the common extensor tendon in 35% at surgery
-unsuspected tears of the LCL may accompany tendon injury
-LCL injury may be iatrogenic due to an overaggressive extensor tendon release
-LCL injury may result in posterolateral rotatory instability and a “trick elbow”

Posterior dislocation injury
-coronoid process fracture suggests posterior dislocation/subluxation
-LCL & MCL rupture, anterior capsular injury, and brachialis muscle strain are typically seen in posterior dislocation of the elbow

Distal biceps impingement syndrome
-tendinosis from mechanical impingement and poor blood supply
-tendinosis precedes rupture
-rupture typically occurs adjacent to the radial tuberosity
-the lacertus fibrosus usually tears in association with biceps rupture
-partial tears and cubital bursitis are less common than rupture
-enlargement of the bursa adjacent to the radial tuberosity (radio-bicipital bursa) may occasionally present as an antecubital fossa mass that may entrap the radial nerve
-fibers from the short head attach distally on the radial tuberosity and flex the elbow, fibers from the long head attach proximally on the radial tuberosity and supinate the forearm

Triceps tendon injury
-tendinosis precedes rupture
-rupture typically occurs adjacent to the olecranon
-rupture may follow or accompany olecranon bursitis

REFERENCES


