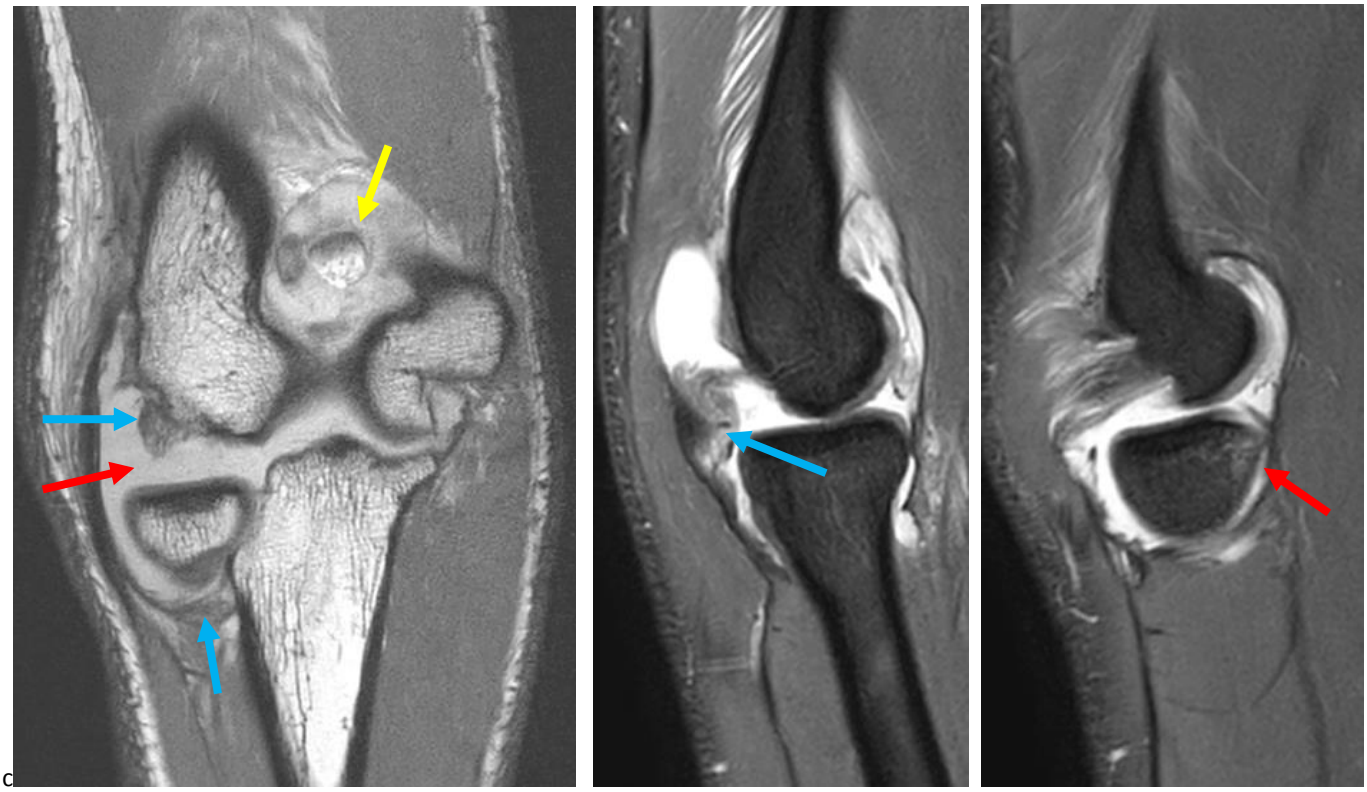
19 M AFL footballer presents with intermittent elbow locking.

MRI Findings:

- Failure of the lateral collateral ligament complex and lateral ulnar collateral ligament
- Scarring of the common extensor tendon origin
- Large joint effusion with synovitis and loose bodies
- Mild radiocapitellar chondropathy

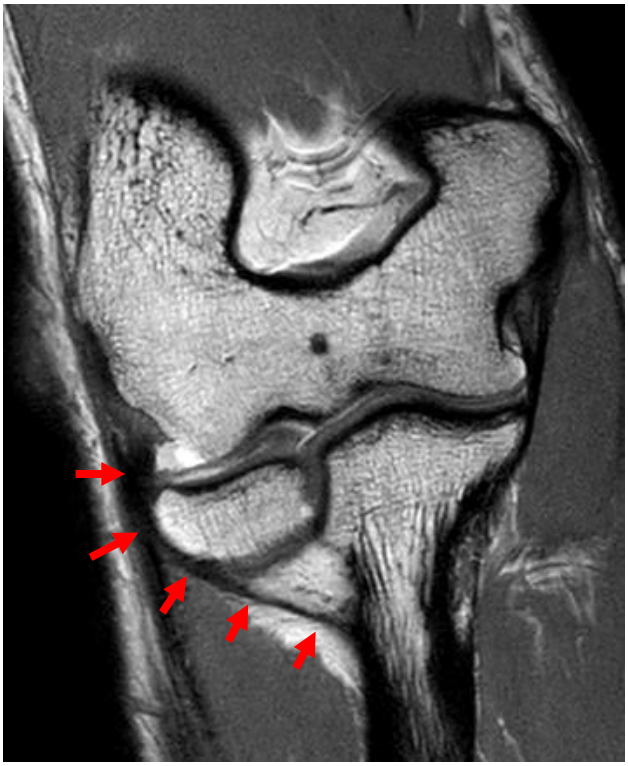


Above left: Coronal PD.

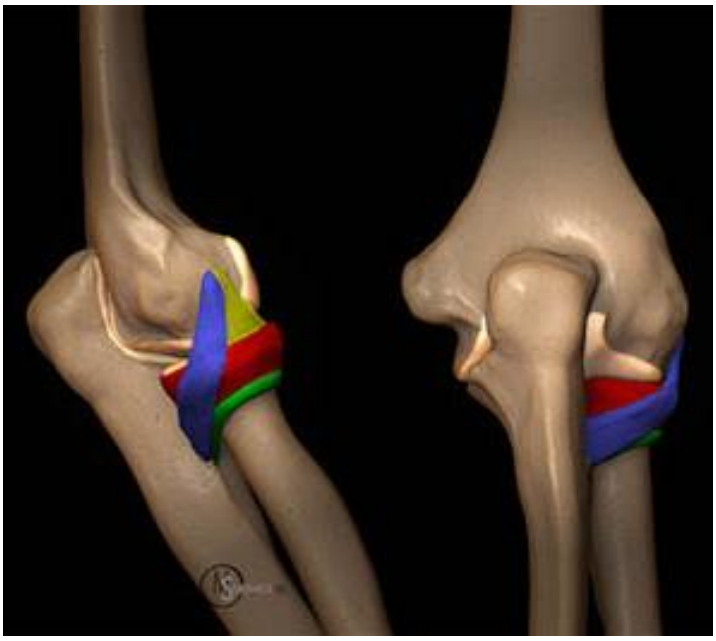
- Blue arrows demonstrate the torn proximal and distal components of the LUCL with resultant subluxation of the radial head.
- Red arrow demonstrates widening of the radiocapitellar joint.
- Loose body (yellow arrow).

Above middle and right: Sagittal PD SPAIR.

- Sagittal sequences nicely demonstrate posterior subluxation of the radial head relative to the capitellum.
- Blue arrow demonstrates the torn proximal fibres of the LUCL.
- Red arrow: subchondral oedema due to secondary chondropathy.



Ref: http://radsource.us/lateral-ulnar-collateral-ligament/



Above left: Normal anatomy of LUCL (red arrows) extending from the lateral epicondyle to the supinator crest of the ulna.

Above right: Components of the LCL complex include: LUCL (blue), annular ligt (red), radial collateral ligt (yellow), accessory lateral collateral ligt (green).

Discussion:

- Posterolateral rotatory instability (PLRI) of the elbow was first described by O'Driscoll in 1991 (O'Driscoll) as an injury to the lateral ulnar collateral ligament (LUCL) leading to posterolateral subluxation of the radial head relative to the capitellum.
- Clinical Presentation:
    - Occurs as a result of axial compression, valgus force and torsion, typically from falling on an outstretched hand.
    - Other associations include prior lateral elbow surgery and chronic lateral epicondylitis (resulting instability).
    - Mechanical symptoms are common including clicking, locking and giving way.
- Characterised on MRI by:
    - Posterolateral subluxation or dislocation of the radius relative to the capitellum.
    - Posterior displacement of ulna relative to trochlea.
    - Proximal radioulnar joint remains intact.
- The primary constraint to PLRI is from the lateral ligamentous complex, the most important of which is the LUCL.
- Additional support is provided by the coronoid process, radial head-capitellum articulation and the common extensor tendon origin.
- PLRI is the only mechanism that can result in elbow dislocation without a fracture.
- Management:
    - Conservative – with bracing and avoidance of provocative manoeuvres
    - Surgery – reconstruction. Repairing avulsed ligament or using autografts to reconstruct the LUCL.

Further Reading:

O'Driscoll S, Bell D, Morrey BF. Posterolateral instability of the elbow. J Bone Joint Surg. 1991;73:440–446.
Bredella MA, Tirman PF, Fritz RC, et al. MR imaging findings of lateral ulnar collateral ligament abnormalities in patients with lateral epicondylitis. AJR Am J Roentgenol 1999;173(5):1379–1382.
Bucknor MD, Stevens KJ, Steinbach LS. Elbow Imaging in Sports: Sports Imaging Series. Radiology 2016. Published Online: Mar 18 2016.
Sanchez-Sotelo J, Morrey BF, O'Driscoll SW. Ligamentous repair and reconstruction for posterolateral rotator instability of the elbow. J Bone Joint Surg (Br) 87-B:54-61, 2005.
Stadnick ME. Radsource MRI Web Clinic – January 2009. Lateral Ulnar Collateral Ligament. http://radsource.us/lateral-ulnar-collateral-ligament/