

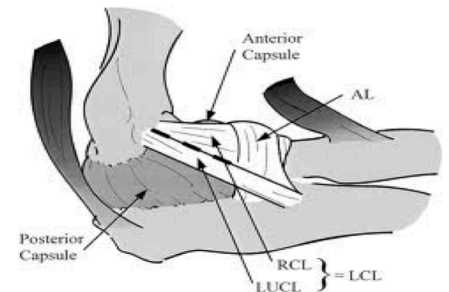
POSTEROLATERAL INSTABILITY OF THE ELBOW

Posterolateral rotatory instability of elbow is considered to be due to the disruption of the ulnar part of the lateral collateral ligament (LUCL). This instability pattern may also be induced by a fracture of components of the lateral column.

The lateral ulnar collateral ligament (LUCL) is a critical component of the lateral ligamentous complex of the elbow.

It originates from the lateral epicondyle and attaches to the crista supinatoris on the proximal ulna.

It acts as a primary stabilizer of the elbow joint. Because the common forearm extensor muscles originate from the lateral epicondyle, fractures of this region are attributed to a traction injury resulting from a varus strain on the elbow.



Lateral column Stability of Elbow

1. Radiocapitellar contact
2. Intact LCL
3. Integrity of LUCL

Clinical Test [Driscoll's test]

Starting position: Patient supine and arm overhead

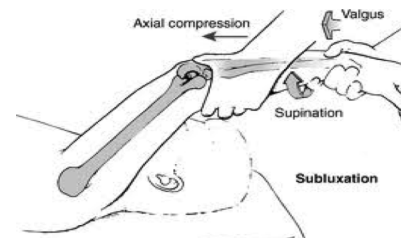
Supination and valgus moments with axial compression

Elbow is now flexed

At 40-70° maximal subluxation of the radial head

With additional flexion caused a visible clunk of reduction

[this is seen only in GA]



Posterolateral rotatory instability (PLRI) of elbow was first described by O'Driscoll in 1991. This instability is considered to be due to the disruption of the ulnar part of the lateral collateral ligament. The majority of cases are posttraumatic, although it can also be iatrogenic or caused by repetitive strain.

Clinical

1. History of injury [usually varus strain in supination]
2. A sensation of his elbow being “out of place.” In certain position of the elbow
3. Mildly swollen in early stages.
4. Range of motion (ROM) may be normal.
5. Attempted valgus and supination motion combined with axial loading [Driscoll's test] may be positive.
6. X-rays may be normal or may show posterior subluxation of radial head and widening of the humeral-ulnar joint

7. A computed tomography scan may show that the radial head was subluxated posteriorly.

8. MRI shows capsular and ligament injury

Treatment

Under general anesthesia, the elbow was examined under fluoroscopy. The elbow was found to have posterolateral instability with a positive pivot shift test.

10 cm Kocher type skin incision

Plane between anconeus and ECU

Triceps reflected off the posterolateral aspect of the distal humerus in continuity with the anconeus

The common extensor origin is partially reflected to expose the capsule.

Capsuloligamentous attenuation is assessed and laxity confirmed

If quality of the ligament is good, repair to the isometric point on the Lateral epicondyle or on the olecranon.

If attenuated, use Palmaris longus graft

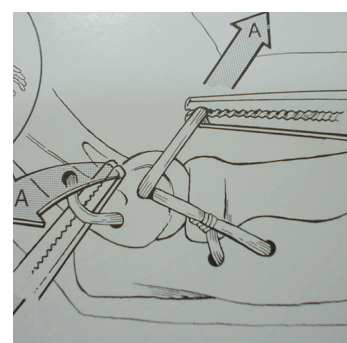
Open the joint for inspection of the capitulum

Anconeus elevated to demonstrate supinator crest and 2 holes

Tendon passed through these holes and tied to itself and it is then pulled toward the lateral epicondyle and grasped with a hemostat at the estimated isometric centre of rotation of the elbow. There is no movement of the suture if the hemostat is on the isometric point. (usually is more anterior)

Postop: Cast in full pronation for 3 wks; cast brace: with 30° extension block for 3-6 weeks.

90% success rate



An anatomic study by Morrey demonstrated that, unlike the medial collateral ligaments, the components of lateral collateral ligament vary for each individual. The LUCL was found to be the primary stabilizer of the lateral elbow.

The sequence of forces acting on the elbow joint to produce PLRI involves valgus, supination, and axial loading. If a completed elbow dislocation occurs, the cascade begins with LUCL disruption, but then progresses to anterior and posterior capsule disruption, and finally the tearing of the medial collateral ligament. In an isolated lateral injury, the radial head subluxates posterior to the capitellum and the ulna supinates on the humerus. If presented chronically, this injury is usually associated with clicking, snapping, or recurrent dislocation.

Ligament avulsions, which result in PLRI, are typically repaired using various soft tissue techniques including reinsertion of the avulsed ligament at the isometric point through bone tunnels or with suture anchors and augmentation or replacement of the ligament with a tendon autograft or allograft. The concept of these techniques was used in our case with repair of the fracture fragment to its anatomic location and reinforcement of the ligament with a suture anchor.

References

1. O'Driscoll SW. Classification and evaluation of recurrent instability of the elbow. *Clin Orthop Relat Res.* 2000;34-43.
2. Sanchez-Sotelo J, Morrey BF, O'Driscoll SW. Ligamentous repair and reconstruction for posterolateral rotatory instability of the elbow. *J Bone Joint Surg Br.* 2005;87:54-61.
3. *Hand (N Y).* 2011 March; 6(1): 71-75.