CHAPTER 9
Lateral Collateral Ligament Injury
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Introduction

Lateral collateral ligament injuries result from damage to the ulnar part of the lateral ligament complex. They are unlike medial ligament injuries which can be caused by a pure valgus stress since a pure varus stress is uncommonly applied to the elbow joint. These injuries most frequently follow a complete dislocation of the elbow but may also occur as the result of elbow subluxations and fractures. In addition, they are also seen as a result of iatrogenic injury after incorrectly performed tennis elbow surgery and radial head excision.

Pathology

The lateral ligament complex of the elbow comprises the radial collateral ligament, the annular ligament and the lateral ulnar collateral ligament (Fig. 1) [1]. Although any part of this complex may be injured, it is damage to the lateral ulnar collateral ligament that results in posterolateral rotatory instability of the elbow. The ligament takes its origin from the lateral epicondyle of the humerus and attaches to the ulna on the tubercle of the supinator crest. It was first described by Morrey and An in 1985 [2], although earlier in 1958 Martin had noted fibers passing between the supinator crest and humerus. It is most frequently damaged at its humeral origin causing a loss of stability between the lateral aspect of the humerus and the ulna. This allows the entire radio-ulnar joint (radius and ulna) to rotate referable to the humerus and produces the instability symptoms.

Clinical Presentation

Although patients may present at almost any age, the injury is most frequently seen in patients in the second or third decade [3]. The majority are male, and there is usually a history of a first dislocation.
of the elbow before the age of 15 years, or a nonunion of a lateral epicondyle fracture [4]. On occasion, patients will present with a lateral collateral ligament injury as the result of iatrogenic damage to the ligament caused by a poorly performed radial head excision or tennis elbow surgery [5].

A carefully taken history will often suggest the diagnosis although it is possible to confuse the symptoms – clicking, locking, snapping – with those of a loose body within the joint. The absence of evidence of a loose body on plain radiographs is helpful and should lead the clinician to refocus on the possibility of a ligament injury.

Specific questions that should be asked when this diagnosis is being considered are whether the patient can push themselves out of a chair by locking out the affected elbow in full extension and whether the elbow can be fully extended on performing a “press-up”. Both these activities are usually impossible due to apprehension that the elbow will dislocate (Fig. 2).

Clinical examination usually reveals a normal range of movement although the patient may be apprehensive with the elbow fully extended and supinated.

The most sensitive test of this injury is the lateral pivot-shift apprehension test [6]. The patient is asked to lie supine on the examination couch with the shoulder in flexion and the arm above their head. The forearm is supinated and a valgus and axial compression force is applied to the elbow during flexion. As the procedure is performed, the patient senses that the elbow is about to dislocate, becomes apprehensive, and resists the examiner (Fig. 3).

To confirm the instability the patient should be re-examined under general anesthesia with fluoroscopy. The procedure is repeated and as the radius and ulna sublux off the humerus a prominence is produced posterolaterally over the radial head together with a dimple between the radial head and capitellum. As the elbow is flexed to approximately 40º the radius and ulna suddenly reduce with a palpable and visible clunk. Fluoroscopic images taken as the test is performed provide a permanent record of the instability (Fig. 4).

**Management**

The symptoms associated with lateral collateral ligament injuries frequently affect the patients’ ability to perform their work and undertake activities of daily living. As such, since the ligament injury does not heal with time, consideration should be given to surgical repair or reconstruction. In both situations the patient is positioned supine on the operating table with the affected arm across the chest or supported on an arm table. A high tourniquet is applied and the limb exsanguinated.