Acromioclavicular instability

Anatomy, Injury Patterns and new Classification Criteria

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Anatomy

The acromio-clavicular joint is a saddle joint being the only articulation between the clavicle and the scapula. The motions are triaxial and apart from the intraarticular disk there are three ligaments to stabilize the joint: The two acromio-clavicular (AC) ligaments of which the superior AC ligament is the strongest, and the two coraco-claviular (CC) ligaments. The lateral CC-ligament is the trapezoid ligament, and the more medial one is the conoid. The CC-ligaments are both fan shaped and apart from resisting upward translation they provide anterior-posterior stability as well as rotational stability. The aponeuroses of the deltoid and of the trapezius interlace and form a “fifth ligament” stabilizing the AC-joint both superiorly and posteriorly. The insertion of the AC-ligaments is close to the joint surfaces, the superior AC-ligament inserting from 3.0 – 5.3 mm from the acromion joint surface and from 3.9 – 6.6 mm from the clavicle joint surface. The inferior AC-ligament insertion is even closer to the joint, meaning that a “safe resection” without damaging the AC-ligaments is 2-3 mm on the acromion and 3-4 mm on the clavicle side. Resection of less than 11.0 mm should not violate the trapezoid ligament and less than 24.0 mm should not violate the conoid ligament in either sex in 98% of the general population.

Injury patterns and epidemiology

There are mainly two injury mechanisms: One is a direct fall with inferior-anterior translation of the acromion, and the other is an indirect cranial force with upward translation of the humerus. The incidence has been reported to be 1.8 per 10,000 inhabitants per year, and the male:female ratio is 8.5:1. 50.5% of all dislocations occurred in individuals between the ages of 20 and 39 years. The most common traumatic mechanism was sport injury, and the most common type of dislocation was Rockwood
type III. In young athletes the overall incidence rate has been reported to be 9.2 per 1000 person-years.

Classification

The most widely used classification is that of Rockwood et al. It is important to note that this is a purely radiographic classification system. In a type I injury, there is a sprain of the acromioclavicular ligament only. There is no radiographic abnormality. In type II injury, the acromioclavicular ligaments and joint capsule are disrupted. The coracoclavicular ligaments are intact but sprained. There is 50% vertical subluxation of the distal clavicle. In Type III injury, the acromioclavicular ligaments and joint capsule, as well as the coracoclavicular ligaments are disrupted. There is 100% superior displacement of the distal clavicle. In Type IV injury, there is posterior subluxation of the clavicle into the trapezius. This is best seen on axillary radiographs. A type V injury is an exaggeration of a type III with 300% superior displacement of the clavicle. In the rare type VI injury, there is subacromial or subcoracoid displacement of the clavicle.

ISAKOS Terminology Project

Whereas treatment of type I, II, IV, V and VI is generally agreed on, treatment of type III remains controversial. The ISAKOS Terminology project resulted in a new suggestion for the Rockwood classification by further subdividing the type III AC joint injuries into IIIA (stable) and IIIB (unstable) is suggested. The basis for the sub-classification is mainly functional rather than anatomic, but special X-ray views may prove to provide the necessary objective information. The unstable ones will continue to have pain (usually on the anterior acromion, rotator cuff, and medial scapular area), weakness to rotator cuff testing, decreased flexion and abduction range of motion, and demonstrable scapular dyskinesis upon observation.

References


