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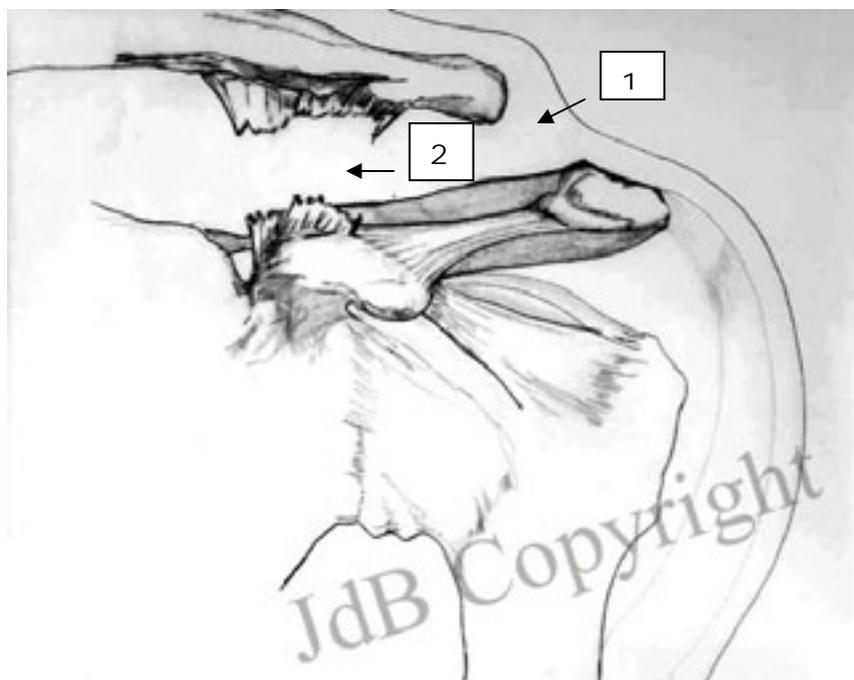
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ACROMIO-CLAVICULAR (AC) JOINT DISLOCATIONS

1. Introduction:

The acromio-clavicular joint is between the clavicle (collar bone) and the acromion (shoulder bone). This injury usually results from a fall onto the tip of the shoulder or on to the back of the shoulder. The acromion is driven downwards and the tip of the clavicle remains behind; this results in tears of ligaments which normally hold them together (Figure 1). Although the injury usually appears like the collar bone is pointing into the air, it is actually the other way around, with the shoulder blade hanging down. The injury is graded into different types depending upon the number of ligaments torn and direction of the dislocation.

Figure 1: Arrows show the torn ligaments. 1 - AC ligaments, 2-CC ligaments.



2. Anatomy: The stabilising ligaments are

1. Acromio-clavicular (AC) ligaments, (the capsule of the joint),
2. Coraco-clavicular (CC) ligaments (conoid and trapezoid).

3. Types (Grades) of dislocation: (Figure 2).

Type I: Mild subluxation only involving a **sprain of the capsular ligament.**

Type II: This is a **tear of the capsular ligament** but the important coraco-clavicular ligaments may still be intact.

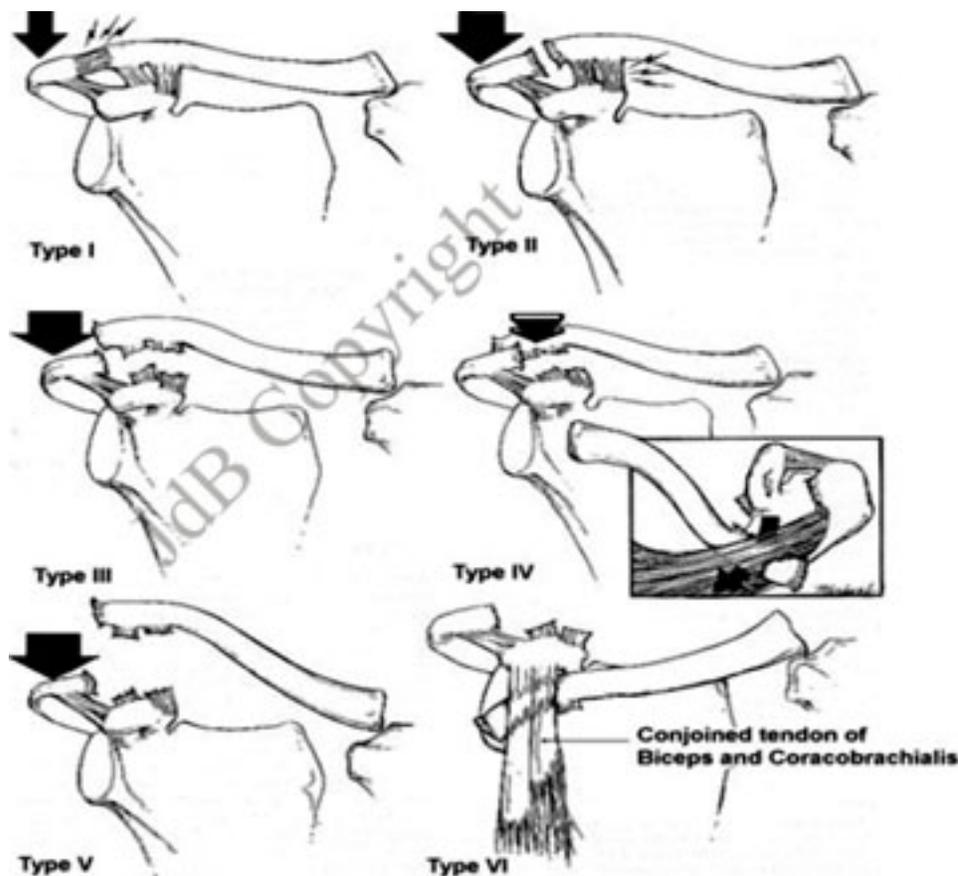
Type III: The **coraco-clavicular and capsular ligaments are torn.** This is the most common injury.

Type IV: The tip of the **clavicle is displaced to the rear.**

Type V: This is a **severe upward displacement** with the tip of the clavicle protruding up through the overlying trapezius muscle.

Type VI: This is a **downward displacement** of the clavicle.

Figure 2: Different grades of AC joint dislocation.



These injuries are common in contact sports and are often seen in rugby. Type III is commonly encountered in clinical practice.

4. Management:

Type I and II: *Does not require surgery.*

Patients with these injuries usually experience pain over the AC joint and there is swelling. They are usually managed conservatively and surgery is not necessary. Conservative treatment includes ice, rest and physiotherapy. A shoulder sling is not necessary to aid healing of the ligaments. The recovery is usually full with return to full and painless activity within a few weeks. Return to sport and other activities is safe as soon as the pain has settled.

Type III: Does not require surgery in the majority of cases and can be managed conservatively. (See below for the management of these common type of AC joint dislocations)

Type IV and V: Early repair of these dislocations is usually indicated. These patients usually have a lot of pain due to the fact that the tip of the collar bone protrudes into the overlying trapezius muscle and non-operative management does not have a favourable outcome

What is meant by “Conservative management” of these injuries? :

This would include ice, anti-inflammatory medicines, physiotherapy and later, exercises within pain limits.

More about the (common) Type III dislocation:

It is very seldom necessary to do an operation in the early period after the injury. The reasons are the following:

1. In a majority (more than 80%) of these injuries, there will be **complete recovery** of pain and return to normal function.
2. In the small number that do not recover as mentioned above, a **late repair** is as successful as an early repair. This implies that, should one do an early repair in everybody there is an 80% chance that this could be unnecessary surgery.
3. Any surgery does carry a complication rate (even if it is low) and one should therefore only do such operations on those that have proven that they will not recover from their pain and return to function.
4. **Scapular Malpositioning and Rotatory Instability of the scapula:** Those AC joint dislocations that do remain symptomatic are usually due to the fact that the shoulder blade is displaced downwards, pulling on the nerves above the shoulder as well as the muscles stabilising the scapula - causing symptoms into the shoulder and down the arm. (This type of displacement of the scapula or shoulder blade is referred to as “winging of the scapula”) Lameness, tingling of fingers and pain at the back in the area of the shoulder blade may result. This lame, tired, aching feeling is often relieved by supporting the elbow and relieving the downward traction of the arm. Carrying bags in the hand with the arm by the side also aggravates the pain down the arm. (Figure 3)

Figure 3: Rotatory instability of the scapula. Left: Normal scapular position. **Middle:** Abnormal scapular position due to torn ligament supports. **Right:** Photograph of a patient with abnormal scapula position.



5. Surgery for chronic AC joint dislocation:

The DE BEER DOUBLE-LIGAMENT RECONSTRUCTION PROCEDURE:

This can be regarded as a “*modified Weaver-Dunn*” procedure with ***added stabilisation of the AC joint with a tendon graft***

The surgical procedure we do is to reconstruct the dislocated AC joint with a specific method:

The coraco-acromial (CA) ligament is detached from the acromion and transferred to the tip of the collar bone –to take over the function of the torn ligaments. Further reinforcement is done by placing a graft between the tip of the clavicle and the shoulder bone. The purpose of this procedure is to not only realign the AC joint but also realign the shoulder blade to take the tension off the nerves of the brachial plexus. This realignment of the shoulder blade relieves the traction on the nerves and cures the symptoms in the arm.

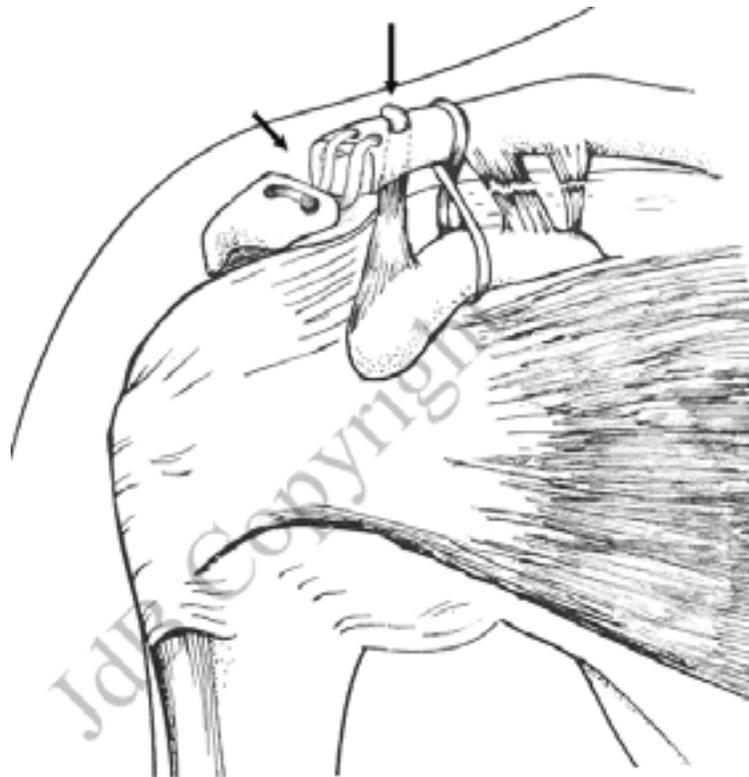
Figure 3: The DeBeer procedure (arrows show the reconstructed ligaments). A modified “Weaver-Dunn” (Left) as compared to a standard Weaver-Dunn (Right).



DeBeer Modification (Both Ligaments restored)



Weaver-Dunn procedure (only CC ligaments restored)



DeBeer Modification (Both Ligaments restored)

This procedure is usually very successful. The patient usually stays in the hospital one night after the procedure and be discharged the next morning in a shoulder sling.

Post-operative rehabilitation:

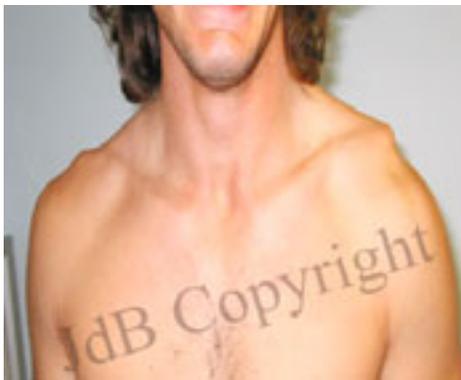
The sling will be worn for about 3 weeks and during this post-operative time the patient is permitted to do movements of the arm without stressing it heavily. Gradual motion to normal activities will be permitted under supervision of the doctor and the physiotherapist.

Everyday activities like dressing, driving etc are permitted. Return to work will be very soon for people in less stressful occupations

Pain following the procedure is usually minimal and the symptoms down the arm are relieved soon after the operation

The success rate of this procedure has been very high with full return to pre-injury activities.

Figure 4: Appearance of the patient: **Left:** Before surgery, **Right:** After Surgery.



Note: *We do not recommend use of metal hardware such as plates/ screws due to the association of these with complications. As shown in the figures below, a metal plate used for AC joint realignment has resulted in severe “wearing-out” of the acromion.*

