New Advances in the Treatment of AC Joint Injuries

The acromioclavicular (AC) joint has come back into sharp focus in recent days. Because of changes in surgical technology, new advances have been made in the surgical treatment of this problem. You might know this condition by its more commonly used name: shoulder separation.

A shoulder separation is a fairly common injury, especially in certain sports. Most shoulder separations are actually injuries to the acromioclavicular (AC) joint. The AC joint is the connection between the scapula (shoulder blade) and the clavicle (collarbone). Shoulder dislocations and AC joint separations are often mistaken for each other. But they are very different injuries.

For more complete information on AC joint separation, see A Patient's Guide to Acromioclavicular Joint Separation.

AC joint separations are graded from mild to severe, depending on which ligaments are sprained or torn. The mildest type of injury is a simple sprain of the AC ligaments. Physicians call this a grade one injury. A grade two AC separation involves a tear of the AC ligaments and a sprain of the coracoclavicular ligaments. A complete tear of the AC ligaments and the coracoclavicular ligaments is a grade three AC separation. This injury results in the obvious bump on the shoulder.

Treatment for a grade one or grade two separation usually consists of pain medications and a short period of rest using a shoulder sling. The rehabilitation program may be directed by a physical or occupational therapist. The treatment of grade three AC separations is more controversial as there is no "gold standard" or best known approach to the problem of an unstable AC joint.

One of the reasons why it is difficult to identify a gold standard in the surgical treatment of grade three AC separations is the wide variation in the pattern of injuries. The anatomic complexity of the joint is another reason why treatment is not straight forward or cut and dry. For example, with all of the ligaments connecting everything together, injury to even one ligament shifts the load and strain on the joint. In turn, the rest of the soft tissues surrounding the AC joint are adversely affected by these changes.

With all of these factors and variables in mind, let's take a look at what is happening in the surgical treatment of grade three AC joint separations. The advancement of arthroscopic techniques has made it possible to repair or reconstruct this joint without making a large incision to expose the joint and its soft tissue attachments.

Surgeons have found that the separated joint can be held together with a graft (ligamentous tissues taken from some other part of the body or from a donor bank). Efforts to develop a synthetic (manmade) graft substitute have failed so far. Surgeons have returned to natural graft sources taken from tendons in the patient's forearm.

They have also tried different suture techniques (e.g., suture sling fixation, cortical buttons, flip-button suture device) when putting the joint back together. Keeping the AC joint stable with load, movement, and activity is a challenge. For chronically dislocating AC joints, special "hook plates" have been devised to hold the widely separated joint together until soft tissue healing can take place.

The availability of these new graft and suturing techniques has made it possible for surgeons to refine their surgical technique. The treatment of chronic AC joint dislocation after failed conservative care is now possible with new hardware technology.

Complications previously reported such as button suture migration (movement) and osteolysis (bone absorption) are greatly reduced now. These new fixation practices made possible by the use of arthroscopy has made the difference. In places where extreme trauma has resulted in an injured ligament that is not expected to heal, the combined use of new graft, suturing, and fixation techniques may make reconstruction successful now.

The open-incision surgical technique is still used by many surgeons. In fact, the surgeon who reviewed all the surgical methods available and wrote this review article prefers the open technique. It makes the use of allograft tendon easier to reproduce anatomically correct ligaments for AC joint stability.

The conclusion of this article is that the surgical management of acromioclavicular joint dislocations (shoulder separation) has been updated in the last few years. New techniques, improved fixation hardware, and the study of the biomechanics behind these injuries has led to better surgical treatment of these complex AC joint injuries.

More study is still needed to report on complications with various reconstruction strategies. Comparison of results between the open surgical treatment of AC joint injuries and partially open or closed (arthroscopic) procedures is also needed.

Reference: Cory Edgar, et al. An Update on the Surgical Management of Acromioclavicular Joint Injuries. In Current Orthopaedic Practice. November/December 2011. Vol. 22. No. 6. Pp. 488-493.