AC Joint Dislocations

Overview
Acromioclavicular (AC) joint instability is a fairly common and particularly limiting injury that may result in persistent pain and reduced quality of life. In most cases, conservative management is successful. However, in the case of a severe AC joint dislocation, surgical intervention may be warranted. Previous surgical techniques for treatment of AC joint instability include screw fixation between the coracoid and clavicle, coracoacromial ligament transfer from its acromial insertion to the clavicle, and reconstruction of the coracoacromial and/or coracoclavicular ligaments.
Most grade I and II AC joint injuries don't require surgery. There are certain situations, however, in which surgery may be necessary. Most patients recover with full function of the shoulder. Disruption of the AC joint results in pain and instability in the entire shoulder and arm. The pain is most severe when the patient attempts overhead movements or tries to sleep on the affected side.

What does the inside of the shoulder look like?
The shoulder is the most mobile joint in the human body, with a complex arrangement of structures working together to provide the movement necessary for daily life. Unfortunately, this great mobility comes at the expense of stability. Several bones and a network of soft tissue structures (ligaments, tendons, and muscles), work together to produce shoulder movement. They interact to keep the joint in place while it moves through extreme ranges of motion. Each of these structures makes an important contribution to shoulder movement and stability. Certain work or sports activities can put great demands upon the shoulder, and injury can occur when the limits of movement are exceeded and/or the individual structures are overloaded.

What is an AC joint dislocation?

An AC joint separation is a dislocation of the clavicle from the acromion. This injury is usually caused by a blow to the shoulder, or a fall in which the individual lands directly on the shoulder or an outstretched arm. AC joint dislocations are most common in contact sports, such as rugby and hockey. The severity of an acromioclavicular joint injury depends on which supporting structures are damaged, and the extent of that damage. Tearing of the acromioclavicular ligament alone is not a serious injury, but when the coracoclavicular ligaments are ruptured, the whole shoulder unit is involved, thus complicating the dislocation.

Simple AC joint injuries are classified in three grades ranging from a mild dislocation to a complete dislocation:

**Grade I** - A slight displacement of the joint. The acromioclavicular ligament may be stretched or partially torn. **This is the most common type of injury to the AC joint.**
Grade II - A partial dislocation of the joint in which there may be some displacement that may not be obvious during a physical examination. The acromioclavicular ligament is completely torn, while the coracoclavicular ligaments remain intact.

Grade III - A complete dislocation of the joint. The acromioclavicular ligament, the coracoclavicular ligaments, and the capsule surrounding the joint are torn. Usually, the displacement is obvious on clinical exam. Without any ligament support, the shoulder falls under the weight of the arm and the clavicle is pushed up, causing a bump on the shoulder.

There are a total of six grades of severity of AC joint dislocations. Grades I-III are the most common. Grades IV-VI are uncommon and are usually the result of a very high-energy injury such as one that might occur in a motor vehicle accident. Grades IV-VI are always treated surgically because of the severe disruption of all the ligamentous support for the arm and shoulder.
Frequently asked question:

Do all AC joint dislocations require surgery?
No. In fact the vast majority of AC joint dislocations do very well with conservative treatment of the symptoms. Most AC joint injuries are grade I, II, or III and these generally do not require surgery. Usually the joint remains sore for two to six weeks and then starting to return to activity is the norm. Only unstable grade III injuries and high-energy AC joint dislocations, which are often the result of motor vehicle accidents, require surgery for full recovery.

Will the "bump" ever go away?
The clavicle will become stable in its newly elevated position, but without surgery the "bump" will remain. The joint will function normally and will not remain tender to touch or movement. This minor cosmetic deformity will persist but will not interfere with overhead activities or participation in sports.

Will I be able to return to athletics if an AC joint injury is not treated?
Absolutely. Most athletes in contact sports have had a low energy AC joint dislocation at some time in their careers. Except for the slight deformity that remains, there is no clinical significance to a healed AC joint dislocation. Occasionally high-energy AC joint dislocations that have disruption of the AC and CC ligaments will require surgery, but these injuries are usually apparent early on with a correct X-ray evaluation. Grade I, II, and most grade III AC joint dislocations will heal without treatment and a full return to sports can be expected.
What are the signs and symptoms of an AC joint dislocation?

Grade I Injury:
- There may be tenderness at the joint when touched.
- There may be some bruising around joint.
- There is minor pain with arm movement.
- There is no pain in the area of the coracoclavicular ligaments.

Grade II Injury:
- There is moderate to severe pain at the joint.
- Swelling may be present.
- There is pain with arm movement.
- There may be a small bump on the top of the shoulder where the clavicle ends.
- The clavicle may move when pushed.
- The area of the coracoclavicular ligaments may be painful when touched.
Grade III Injury:
- Typically, the injured person immediately supports the elbow while holding the arm close to the side.
- This prevents the pain outward arm movement would cause.
- Pain is present with any arm motion.
- Pain is present around the joint and in the area of the coracoclavicular ligaments.
- Swelling is present.
- As the joint moves, a popping sound may occur.
- There is shoulder deformity and a bump on the top of the shoulder.
- The AC Joint is very unstable.

<table>
<thead>
<tr>
<th>Type</th>
<th>AC ligament</th>
<th>CC ligament</th>
<th>Exam</th>
<th>Radiographs</th>
<th>Reducibility</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I</td>
<td>sprain</td>
<td>normal</td>
<td>AC tenderness; no AC instability</td>
<td>normal</td>
<td></td>
<td>sling</td>
</tr>
<tr>
<td>Type II</td>
<td>torn</td>
<td>sprain</td>
<td>AC horizontal instability</td>
<td>AC joint disrupted; increased CC distance &lt; 25% of contralateral</td>
<td>reducible</td>
<td>sling</td>
</tr>
<tr>
<td>Type III</td>
<td>torn</td>
<td>torn</td>
<td>increased CC distance 25-100% of contralateral</td>
<td></td>
<td></td>
<td>controversial</td>
</tr>
<tr>
<td>IIIA</td>
<td></td>
<td></td>
<td>AC vertical instability, no horizontal stability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIIB</td>
<td></td>
<td></td>
<td>AC vertical + horizontal instability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type IV</td>
<td>torn</td>
<td>torn</td>
<td>skin tenting, posterior Fullness</td>
<td>lateral clavicle displaced posterior through trapezius on the axillary lateral XR</td>
<td>not reducible</td>
<td>surgery</td>
</tr>
<tr>
<td>Type V</td>
<td>torn</td>
<td>torn</td>
<td>severe shoulder droop, does not improve with shrug</td>
<td>increased CC distance &gt; 100% of contralateral</td>
<td>not reducible</td>
<td>surgery</td>
</tr>
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</table>
How is an acromioclavicular dislocation diagnosed?

After evaluating the history of the patient's injury, the doctor will examine the shoulder area looking for signs of fracture or dislocation by comparing the overall position of the arm and shoulder to the uninjured side. The AC joint itself is easily examined because it is located right under the skin. The doctor will gently feel the bones and soft tissue around the joint and between the acromion and clavicle. There may be a bump, tenderness or instability, which would suggest a joint dislocation. Crepitus (noise) as the bones move may indicate a fracture. The doctor also evaluates the patient's range of motion and performs tests to isolate specific areas of pain and weakness.

Further evaluation may include:

X-rays can confirm a diagnosis of an AC joint dislocation and can help the physician determine whether the injury is a dislocation or a fracture. A new cross body X-ray has been recently developed which is very helpful in confirming the diagnosis and may be in general use in the near future.

How is an acromioclavicular separation treated?

The treatment of an AC joint dislocations depends on the grade of the injury. The classification helps the physician choose the correct treatment approach. Grades I - III are usually treated non-operatively. The vast majority of patients will have a period of discomfort. Once this discomfort disappears, the shoulder is usually fully functional, although the patient may still have a minor cosmetic defect at the injury site.

Some patients with grade III AC joint dislocations may be candidates for early surgical reconstruction. A discussion between the physician and patient should focus on the patient's expectations and possible return to sports. Many surgeons prefer to first treat the AC joint dislocation conservatively. If grade III patients develop problems or do not heal properly surgical reconstruction is an option. (Most conservative and surgical treatment for grades I - III have essentially the same results after 1 year.)

Non-Operative Treatment

Most Grade I - III AC joint dislocations are treated successfully with non-operative treatment that may include:

- ice to reduce pain and swelling.
- rest and a protective sling.
- pain and anti-inflammatory medications.
- A rehabilitation program to restore normal motion and strength.

Depending on the grade of injury, most patients heal within 2 to 3 months without surgical intervention. The patient is allowed to return to sports when there is full and painless range of motion, no more tenderness when the AC joint is touched, and manual traction does not cause pain. This usually takes about 2 weeks for a grade I injury, 6 weeks for a grade II injury, and up to 12 weeks for a grade III injury.
Operative Treatment

Surgery may be necessary for AC joint dislocation that do not respond well to non-operative treatment. If, after 2 to 3 months, pain continues in the AC joint with overhead activity or in contact sports, surgery may be necessary. There are some physicians who offer early surgery for a select group of Grade III AC joint dislocations based upon the activities and demands these patients place upon the shoulder.

These patients include:

- young, active individuals (over the age of 13).
- laborers whose jobs require heavy overhead work.
- athletes in non-contact sports whose overhead movements are stressful and frequent.

A variety of surgical methods have been used to stabilize a dislocated AC joint.

What types of complications may occur?

Complications of AC joint injuries are persistent instability of the shoulder girdle or residual pain with activity. These complications can be present with either non-operative treatment or operative treatment. Failure of the acromioclavicular ligament and coracoclavicular ligaments to heal can lead to pain and a sense of instability with overhead activity. If the end of the clavicle remains unstable because of lack of scarring, contact sports or overhead tasks may be painful.

Other complications associated with the reconstruction of the AC or CC ligaments are related to hardware failure. Fixation of the clavicle to the coracoid process is difficult because of the rotation of the clavicle with all overhead activity. The screws used to fix these two bones together can pull out if the patient does not wear a sling after surgery as instructed.

Recovery:

Non-Operative

Patients with lower energy AC joint injuries that respond to conservative non-operative treatment can recover in as little as one week for a Grade I injury to an average of twelve weeks for a Grade III injury.

Operative

Specific recovery programs following surgical reconstruction of the AC joint vary depending on the type of surgery performed. General care recommendations include:

- The use of a sling is required for 6 weeks.
- Incisions must be kept dry for two weeks after surgery.
- Stitches are usually removed 14 days after surgery.
- No lifting for 6 weeks.
- Overhead motion is limited for the first 8-12 weeks because the fixation of the clavicle to the coracoid process prevents the normal rotation necessary for overhead movements.
• The patient is allowed use of the arm at waist height to write or perform computer work for the first 12 weeks.
• After the removal of the sling, 6-12 weeks of physical therapy is necessary to regain full motion.
• Strength and velocity motions of the throwing athlete may be delayed for 4-6 months.