

# Acromio-clavicular Joint and Ligament Injuries

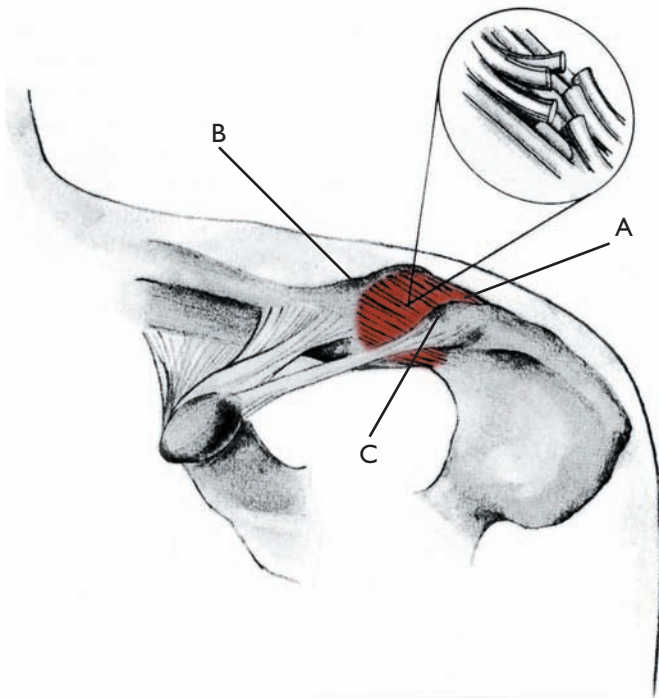
By Ben Benjamin



The field of orthopedic massage offers a unique way to understand pain and injury problems in human joints and muscles. Within this arena, a number of Essential Principles help us assess and treat injuries that present a challenge to many massage therapists and other healthcare practitioners. The best way to learn these principles is by applying them to specific problems we see in our clients. In this article, I will discuss the Essential Principles that help us effectively identify and treat injuries to the acromio-clavicular (AC) joint and ligaments.

## Introduction

AC joint and ligament injuries commonly occur when a person is tackled playing football or falls off a bike. They also can easily occur while wrestling, boxing, playing soccer or basketball, or doing strenuous lifting or pushing movements. When you have one of these shoulder injuries, it is difficult, if not impossible, to move your arm and shoulder without a good deal of pain. Lying on your side at night is almost impossible, and reaching your injured arm over to scratch your ear on the opposite side can be excruciating.



### The AC Joint and the Superior Ligament.

The AC joint is small, relatively weak, and very vulnerable to injury. As seen in the illustration above, the AC joint (A) is formed by the joining of the distal end of the clavicle (B) and the acromion (C). To locate the joint, place your fingers on your clavicle at the front of your neck and follow it out toward the tip of your shoulder. Where the clavicle meets the acromion, there is a slight indentation. This is the joint space.

The AC joint is held together by the joint capsule, two major ligaments (the superior and inferior acromio-clavicular ligaments), and four accessory ligaments

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The most severe AC joint injury is an AC joint separation (often referred to as a separated shoulder), which is always caused by a trauma of some kind. When the joint is separated, the ligaments and the joint capsule are literally torn apart, creating a gap between the two bones. Without proper treatment, an AC joint or ligament injury may last for years.

## Principle: Three Types of Pain Signals

In previous articles, I mentioned that orthopedic massage identifies pain as an important signal and that the principle of referred pain helps us identify injured structures that are distant from the site of the client's pain. Related to this principle is another: The type of pain signal a client presents provides important information to help in identifying the injury.

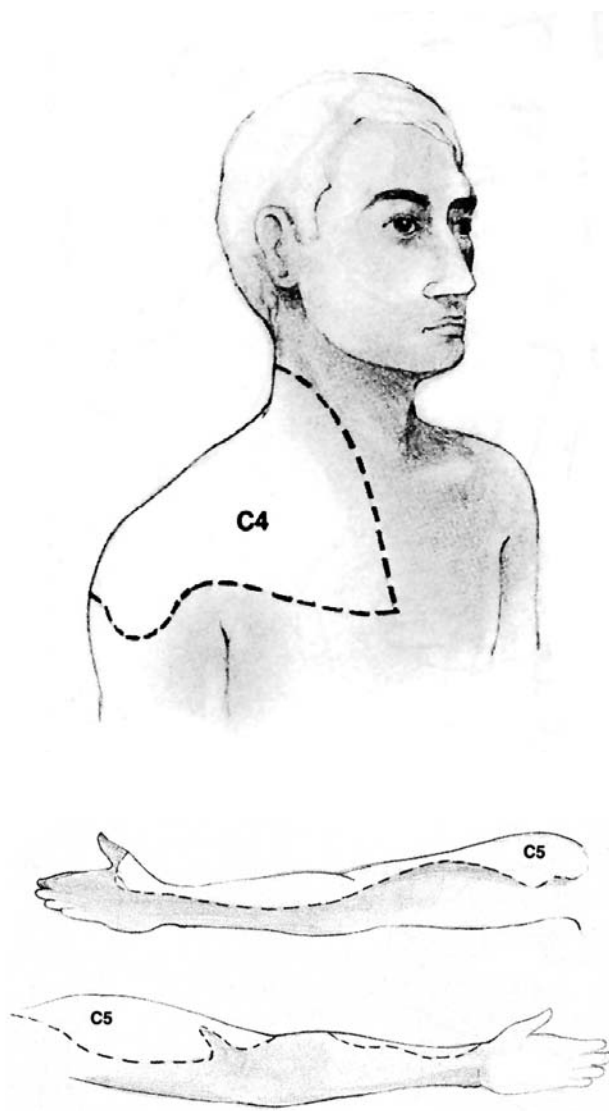
Specifically, this Essential Principle states there are three types of pain: clear pain, confusing pain, and vague pain. Clear pain is felt precisely where the injury is located in the body. Confusing pain is referred pain that is felt at a site some distance from the injury. Vague pain occurs when the source of pain is deep within a joint — the person can describe the general area that is painful, but finds it difficult to pinpoint the exact spot. The word “vague” here does not necessarily imply that the pain is mild; vague pain can be severe.

## Application: Types of Pain Signals in AC Joint and Ligament Injuries

When the AC joint is injured, there are three primary causes of pain: (1) a sprain of the AC superior ligament, which attaches the acromion to the clavicle; (2) an inflammation within the joint capsule; and (3) a sprain of the accessory ligaments.

Unlike many shoulder injuries, AC injury often presents with clear pain. In other words, the client feels pain right at the acromio-clavicular joint (A), making this injury easier to assess.

Another distinctive feature of AC joint and ligament injuries is that they cause little or no referred pain. Most shoulder injuries refer pain down the arm as far as the wrist and can therefore present a confusing picture for assessment. The anatomical reason for this occurrence is that most of the structures in the shoulder are in the C5 dermatome, which extends down to the wrist (see illustrations on page 88).



The C4 and C5 dermatomes.

Referred pain distribution patterns always follow the dermatomes, which are based on embryological development. (This is the same phenomenon that occurs when pain is referred down the leg from a lower back muscle or ligament injury.) The acromio-clavicular joint and ligaments are part of the C4 dermatome, which is located at the top of the shoulder, sloping down the front to the chest and down the back toward the infraspinatus muscle just behind the shoulder.

While these injuries typically cause clear pain localized at the AC joint, pain can be extensive when the acromion and the clavicle are separated (as in AC joint separation). In such cases, any movement of the shoulder girdle causes enormous pain throughout the shoulder area. Especially if the injury is severe, pain may be referred throughout the upper chest and the upper back (encompassing the scapula) and down to the lower insertion of the deltoid muscle. This referred pain pattern takes the

shape of a saddle thrown across one's shoulder. AC joint or ligament injuries that cause pervasive, referred pain can be distinguished from other shoulder injuries because they do not cause pain down the arm.

In mild cases, the pain caused by an AC injury may subside without treatment. More often, the pain gets worse, depending on the degree of tissue damage and the type of activities the person performs. When the joint capsule has been traumatized, it fills with excess synovial fluid and becomes inflamed and painful to move or lie on. If any of the ligaments are sprained, they can easily be reinjured and will continually try to heal, forming painful, matted adhesive scar tissue.

### Principle: Injury Verification

A basic principle of orthopedic massage is that a suspected injury must be verified before being treated. The reasons behind this principle are clear. First of all, practitioners must ensure their treatment is appropriate for the client's problem and will not delay another, more effective treatment. Second, practitioners want to use their, and their clients,' time in the most effective and efficient manner possible by tailoring their treatment to each injury as precisely as possible.

Third, practitioners who are aware of the limitations of their scope of practice are more consistently successful in their work. Orthopedic massage provides a detailed and accurate system of assessment that most practitioners find easy to use after some training and practice. However, correct verification of an injury often requires a team approach among several types of health professionals. Any client with an injury, especially one that has been caused by trauma, should consult a physician. Appropriate referral of a client for assessment elsewhere is therefore another Essential Principle.

### Application: Verification of AC Joint and Ligament Injuries

Acromio-clavicular joint and ligament injuries usually result from a fall or collision. If you suspect an AC injury from such a trauma, make sure the client sees a physician to get an X-ray and a diagnosis (see "Verification by X-ray," page 90).

Your own visual inspection may also suggest the need for a physician's examination. Look carefully at the client's shoulders from the front and from the back. When there has been severe injury to the AC joint/ligament structure, a bump sometimes appears right at the joint. As a result of the full or partial separation of the acromion from the clavicle, the distal end of the clavicle sinks down, causing the acromion to protrude in a bump. When the joint completely ruptures, this bump is fairly obvious to the naked eye. When the tearing or stretching of the fibers is not total, a smaller protrusion often appears. →



### Verification by X-ray

If your inspection or the client's story leads you to believe that an AC injury has occurred, it's important that a physician order a special X-ray to determine whether the bones have been separated. While the client holds a five-pound weight, with the arm hanging down in a normal standing position, an X-ray is taken from the anterior view. The use of the weight makes the separation clearer. Pictures of both shoulders (using the weight on both sides) are usually taken for comparison. This is particularly important when an AC joint separation is slight.

In most of these types of injuries, the AC joint is inflamed or a ligament is sprained. An AC joint separation happens much less frequently, except in contact sports.

### Principle: Passive Testing for Injury Verification

Passive tests are used to assess injuries to joints and ligaments, as well as other structures that do not initiate movement. Remember this key Essential Principle: Passive tests are used to assess passive structures.

During a passive test, the client is fully relaxed, like a rag doll, and does not assist the practitioner. Passive testing therefore allows you to focus on the joints and ligaments and eliminate the muscles from the assessment process.

Another Essential Principle of passive testing is: Test gently. Testing does not have to be painful for the client as long as you are careful. As you perform the tests, move very slowly, telling your client to let you know if there is any pain. Be aware of any involuntary resistance to the movement. Whenever the client feels discomfort or pain, stop the test immediately — you have all the information you need.

Sometimes at the end of passive tests, it is necessary to increase the stress on the joint with a short, sharp movement, generally called a jerk or an over-pressure. The jerk, another Essential Principle of passive testing, adds at least 10 to 20 pounds of stress on the injured structure, thus reproducing the stress of normal activities. The jerk motion is not always necessary and is never done if the client feels pain or discomfort at the end of the range of motion. Stretch the joint as far as you possibly can, removing all of the slack movement, before you attempt a jerk.

## Application: Passive Testing to Verify AC Joint and Ligament Injuries

The Essential Principle of testing gently is particularly important with tests of the AC joint and ligaments. While performing all tests, go very gently at first. Proceed very slowly, telling your client to let you know if there is any pain or discomfort as you move the shoulder. Pain will generally occur on several of the testing movements, particularly passive horizontal adduction.

When you assess AC joint or ligament sprain, you're looking for a particular pattern of results from several passive tests. Note which test is most limited in movement, which tests are painful and somewhat limited, and which are painful but not limited. When an AC joint or ligament is sprained, horizontal passive adduction (Test 4, page 94) is the most painful and the most limited; passive elevation is painful and somewhat limited; passive lateral rotation is generally not limited but often painful at the end of the motion, usually on the jerk; and passive medial rotation is usually painful at the end of the motion or on the jerk. The jerk is especially crucial for getting a positive reading for mild AC joint injuries.



### Test 1 — Passive Elevation

First say, "Raise your arm above your head." (Some clients cannot raise their arm much above 90 degrees. Just note this and go on; do not force the arm up.) Then, if there is no pain or just mild discomfort, place one hand on the client's elbow and your other hand at the top and back of the shoulder to stabilize the joint, as shown in the accompanying photo. Push the arm back in a diagonal motion until you come to the very end of the range of movement. Ask the client if there is any pain. If there is not, give the arm a slight jerk in the same direction, diagonally back behind the head. Remember that your client should be totally relaxed during the test. Keep reminding the person to let you have the weight of the arm. After each test, make a note to yourself if the movement is painful and/or limited.



### Test 2 — Passive Lateral Rotation

Place one hand just above the elbow and push in toward the ribs gently but firmly to stabilize the upper arm, so it does not move away from the body. Place the client's forearm at a right angle, holding the inside of the wrist with your other hand, and slowly rotate the arm outward to a 180 degree angle. If there is no pain at the end of the movement, give the arm a jerk. Be sure to rotate and stretch the arm fully, taking up all the slack, before trying the jerk.



### Test 3 — Passive Medial Rotation

Place the client's arm behind her back, with the elbow bent. Her wrist should be resting against her lower spine. Stand behind the client and hold her wrist with your hand. Then, place your other hand over her spine between the shoulder blades, to stabilize the body, and slowly pull backward and upward simultaneously. If no pain is felt at the end of the range, give a slight tug. →



#### Test 4 — Passive Horizontal Adduction

Standing at the client's side, place one hand on her elbow and lift her arm so that it begins to cross in front of her body, parallel to the floor. Now place your other hand behind the shoulder opposing that elbow. Squeeze your hands together as if you were preparing to clap your hands, so that the elbow of the moving arm approaches the opposite shoulder. This is the most painful and difficult movement for almost all clients with AC joint or ligament injuries. A variation of the test is to lower the arm 6 or 8 inches and stress it again. In this position, the superior acromio-clavicular ligament takes more of the stress.

#### Palpation

In order to differentiate a ligament injury from an injury to the AC joint, palpation is required (see "Friction Treatment of AC Ligament Sprain" for instructions). An inflamed AC ligament is quite painful to the touch. If results from the passive tests are positive but the ligament doesn't hurt, the injury is in the AC joint.

## Principle: Self-Treatment, Hands-on Treatment, and Other Professional Treatments

Many people try to treat their injuries on their own, particularly if they feel the injury is relatively minor. For example, your clients may already use ice as a self-treatment technique.

Ice therapy is generally safe, but as with any treatment, it is not recommended under certain conditions. Rheumatoid arthritis, Raynaud's disease, allergy to cold, diabetes, and rheumatic diseases all cause the body to react differently to lowered temperatures. Ice therapy is not recommended for clients with these conditions. If you're unsure whether to recommend self-applied ice treatment for a specific client, check with a doctor first.

As I've discussed in previous articles, a well-trained hands-on practitioner can apply friction therapy to injured tissues. Such treatment can speed the healing process dramatically. To use this technique, you must know the exact location of each structure to be frictioned and how best to access each structure for treatment. You also need to know how much pressure to exert when frictioning, how long to friction the injured tissues, and how to apply friction in a way that is safe for your own hands.

Finally, as mentioned earlier, you want to know when to refer a client to other health professionals. While one client's injury may be treatable by hands-on therapies, another client's injury to the same area may require more invasive treatments in order to reach the affected tissues. It is essential for you to be able to distinguish among such cases and to refer out when necessary.

## Application: Treatment Choices for AC Joint and Ligament Injuries

### Self-Treatment

For minor strains of the AC joint and ligaments, resting the arm and shoulder for three to six weeks will sometimes effect a cure, but more often the pain will linger on for many months, if not indefinitely. A combination of ice treatment and movement has been found to be effective in mild cases.

### Friction Treatment of AC Ligament Sprain

There are two main ligaments holding the AC joint together: superior and inferior. If the superior ligament is injured, a light palpation or friction motion at the AC joint will cause pain. The inferior ligament and the accessory ligaments cannot be reached with the finger.

**Friction Technique:** To find the AC joint space and ligament, place your finger on the clavicle at the front of the client's neck and move your hand outward laterally, tracing the clavicle toward the point of the shoulder.



When you reach the end of the clavicle, you will feel a bump, a very small space, and another bone — the acromion. Between these two bones lies the acromioclavicular ligament. Place the tip of your index finger at the AC joint. Apply friction in an anterior to posterior direction. Use very little pressure at first, deepening very gradually as is tolerable to the client. Work for four or five minutes, take a break, and then do it again. Then perform some massage therapy on the arm and shoulder muscles for 15 or 20 minutes.

### Treatment for AC Joint Inflammation

AC joint inflammation is most effectively and quickly treated by corticosteroid injections. The injections begin working within a few days. If the injection treatment is

done well, the client should be able to resume full activity within two weeks. In my experience, massage and manipulation are not helpful for inflammation of the joint.

### Treatment for AC Joint Separation

Proliferant injections are very helpful in cases of shoulder separation when there are still some fibers holding the joint together. They help the new tissue form more quickly during the healing process. However, if the joint is torn completely apart, surgery is usually required.

### Rehabilitation

When an AC joint or ligament has been injured for more than a few weeks, many shoulder muscles will atrophy. After the pain has disappeared, the client should begin shoulder and arm exercises to rebuild muscle strength.

### Conclusion

In this article, we have examined how several injuries to the acromioclavicular structure can be differentially assessed and treated. Depending on the severity of the injury and the specific structure that is injured, we can determine whether hands-on therapy is applicable or whether referral for injection or surgery is required. Applying an understanding of the Essential Principles to injury assessment and treatment of the shoulder will lead you to develop effective treatment solutions and make appropriate referrals. This understanding not only benefits your clients with these injuries, but also enhances your ability to assess and treat other injuries throughout the body. **M&B**

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