

ACROMIOCLAVICULAR (AC) JOINT SYNDROME

The acromioclavicular (AC) joint is a gliding joint between the lateral head of the clavicle and the medial margin of the scapular acromion. The bony ends are secured together by six ligamentous structures, including the articular capsule, acromioclavicular ligament, articular disk, coracoclavicular ligament, trapezoid ligament, and the conoid ligament.

The AC joint appears as a rather “flat” joint at the tip of the shoulder just superior to the shoulder capsule. Inflammation of the AC joint results in a referred pain pattern. The referred pain pattern may include localized pain in and around the joint itself, pain radiating down into the anterior deltoid area, or pain radiating into the lateral triceps area. Alternatively, the pain pattern may include all of

these elements. DSR survey of an inflamed AC joint typically demonstrates a zone of high skin resistance, illustrated below. The sources of AC joint inflammation include osteoarthritis (with or without bone spurring), traumatic joint approximation (bone bruising), ligamentous strain (generally the coracoclavicular ligament), or ligament overstretching (subluxation or dislocation in the extreme). Generally speaking, no overt swelling is observed to be present in the inflamed zone.

A DSR survey should be conducted with the AC joint **closed** (pronated, palm down and the elbow flexed to approximately 90°), and then **open** (supinated, palm up, elbow still flexed).



The high skin resistance pattern associated with the AC Joint Syndrome

Treatment

Treatment of an *AC joint syndrome* amounts to relieving joint derived pain by removing what causative agents may exist. These usually include inflammation, bone spurring, and adhesions in and around the involved joint.

Application:

- If the condition is **acute**, apply an ice pack to the joint. If the condition is **chronic**, electrically stimulate the AC to soften any adhesions that may be present. Place a negative electrode over the AC joint and a positive electrode over the lower trapezius or middle deltoid muscle. Preset the electrical stimulator to deliver a medium frequency current, with a 10-second on 10-second off duty cycle. Stimulate for 15 minutes. Gradually increase the current amplitude to produce a fairly brisk maintained contraction of the musculature adjacent to the AC joint.
- In either case (acute or chronic), manipulate the tissues over and around the AC joint to eliminate any adhesions that might be present (effective manipulation may produce immediate, completely pain-free ranges of motion in the shoulder) (refer to Soft Tissue Manipulation in Tight Areas).
- Before applying ultrasound, paper tape around the margins of the inflamed zone, so that only the inflamed tissues are exposed to the ultrasound, reducing the chance of irritating the surrounding bone periosteum.). Preset the ultrasound unit to deliver a 3 (or 3.3) MHz pulsed waveform, at 1.8 W/cm². Ultrasound the AC joint, utilizing an effective non-steroidal anti-inflammatory as the coupling agent (phonophoresis), for six minutes. The joint should be open while the inflamed zone is being ultrasounded (palm up).
- If bone spurring is suspected, put the previous electrical setup in place, but with the electrode polarity reversed (positive electrode over the inflamed zone). Preset

the stimulator to deliver a 7 Hz, wide-pulsed galvanic current. Stimulate for 20 minutes. Adjust the amplitude high enough to produce a visible contraction in the affected muscles.

- Apply mechanical vibration, delivered at 60 to 120 Hz, to the inflamed zone, for two minutes. Adjust the amplitude (strength) of the vibration to a relatively high level, but one that is tolerably comfortable for the patient. This is performed to increase capillary circulation in the involved tissues.

The following treatment forms have also proven to be effective.

Variation:

- Before applying ultrasound, paper tape around the margins of the inflamed zone, so that only the inflamed tissues are exposed to the ultrasound, reducing the chance of irritating the surrounding bone periosteum. Preset the ultrasound unit to deliver a 3 (or 3.3) MHz pulsed waveform, at 1.8 W/cm². Ultrasound the AC joint, utilizing an effective non-steroidal anti-inflammatory as the coupling agent (phonophoresis), for six minutes. The joint should be open while the inflamed zone is being ultrasounded (palm up).
- Manipulate the tissues over and around the AC joint to eliminate any adhesions that might be present.
- Twenty minutes, after the first ultrasound application, ultrasound the inflamed zone again. Before applying ultrasound, paper tape around the margins of the inflamed zone, so that only the inflamed tissues are exposed to the ultrasound, reducing the chance of irritating the surrounding bone periosteum. Preset the ultrasound unit to deliver a 3 (or 3.3) MHz pulsed waveform, at 1.5 W/cm². Ultrasound the AC joint, utilizing an effective non-steroidal anti-inflammatory as the coupling agent (phonophoresis), for six minutes. This is performed to “cool off” the manipulated

zone by effectively halting the production of prostaglandins by the stressed tissues.

- Apply mechanical vibration, delivered at 60 to 120 Hz, to the inflamed zone, for two minutes. Adjust the amplitude (strength) of the vibration to a relatively high level, but one that is tolerably comfortable for the patient. This is performed to increase capillary circulation in the involved tissues.

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- Before applying ultrasound, paper tape around the margins of the inflamed zone, so that only the inflamed tissues are exposed to the ultrasound, reducing the chance of irritating the surrounding bone periosteum. Preset the ultrasound unit to deliver a 3 (or 3.3) pulsed waveform, at 1.8 W/cm². Ultrasound the AC joint, utilizing an effective non-steroidal anti-inflammatory as the coupling agent (phonophoresis), for six minutes. The joint should be open while the inflamed zone is being ultrasounded (palm up).
- Manipulate the tissues over and around the AC joint to eliminate any adhesions that might be present.
- Apply cold laser (with or without simultaneous electrical stimulation provided by the laser applicator) to the inflamed zones for approximately 6 minutes. This is performed to “cool off” the manipulated zone by effectively halting

the production of prostaglandins (or facilitating enzyme destruction of **all** of the inflammatories being produced) by the stressed tissues.

- Apply mechanical vibration, delivered at 60 to 120 Hz, to the inflamed zone, for two minutes. Adjust the amplitude (strength) of the vibration to a relatively high level, but one that is tolerably comfortable for the patient. This is performed to increase capillary circulation in the involved tissues.

In most cases, only two or three treatment sessions may be required to eliminate the *AC joint syndrome*, if there are no other sources of pain involved (additional coincidental overlying or contributory syndromes).

Trigger Points

The following trigger point formations may, singly or in combination, imitate or contribute to the pain accompanying a *acromioclavicular joint syndrome*: Levator scapulae, Scalenus, Scalenus (minimus), Infraspinatus, Medial teres major, Lateral teres major, Teres minor, Coracobrachialis, Upper trapezius [B], Middle trapezius [B], Lower trapezius [A], Supraspinatus (muscle), Supraspinatus (tendon), Serratus posterior superior, Subclavius, Subscapularis, Posterior deltoid, Anterior deltoid, Pectoralis major (clavicular fibers), Pectoralis major (sternal portion), Triceps (long head), Biceps brachii, and Brachialis.