Case Study: A Nontraditional Treatment Approach to Acute Acromioclavicular Joint Injury Care

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Across both professional and collegiate athletic settings, injuries to the acromioclavicular (AC) joint are very common.1–9 The severity of injury to the structures of the AC joint can vary widely, and the classification of these injuries is simplified by the Rockwood classification, developed in 1998. Although there are six categories in the Rockwood scale, this case study will review only type I and type II injuries. The type I classification is the least severe of the six. This classification of injury denotes a sprain of only the AC ligaments with no involvement of the coracoclavicular (CC) ligaments. There is no displacement of the distal end of the clavicle. These patients can present with point tenderness at the AC joint or lateral tip of the clavicle, a painful glenohumeral in both passive and active ranges of motion, and a potential decrease in the strength of the muscles associated with glenohumeral joint motion due to pain.6–8,10–12 Classification of a type II injury is indicative of an AC ligament rupture and a sprain of the CC ligament. As a result of the rupture of the AC ligament, the distal end of the clavicle will be elevated. The resulting deformation of the AC joint is referred to as a positive piano key sign. A patient may present with point tenderness at the AC joint, lateral tip of the clavicle, and coracoid process due to the involvement of the CC ligaments. Glenohumeral range of motion can be painful and limited with both active and passive movement. A decrease in the strength of the glenohumeral musculature due to pain will also be observed.6–8,10–12 Collectively, type I and type II AC joint injuries are referred to as low-grade injuries.6–8,10–12 The traditional nonoperative treatment for these acute injuries is to follow a conservative approach, with the most common interventions being immobilization, cryotherapy, nonsteroidal anti-inflammatory drugs (NSAIDs), and rest.6–9,13–16 At this time, there is a lack of research regarding the application of manual therapy as a treatment intervention for acute low-grade AC joint injuries. This case study will focus on two manual therapy techniques: the Mulligan Concept and Positional Release Therapy (PRT).
The Mulligan Concept is a manual therapy paradigm based on the application of a sustained accessory joint mobilization, which uses patient-generated active or functional tasks through a specific range of joint motion to correct a positional fault at a specific joint.\(^\text{17}\) Within the Mulligan Concept paradigm there is a mobilization with movement for the AC joint. The appropriate application of this intervention would reset any positional fault at the AC joint as well as release any impingement of the fibrocartilaginous disc within the joint. While the Mulligan Concept would be beneficial for the passive structures of the AC joint, residual spasm and soft tissue tenderness can be treated with the PRT paradigm.

PRT is a passive manual therapy technique for the treatment of tender points and trigger points.\(^\text{18}\) As defined in the PRT paradigm, trigger points are taut bands of muscle or muscle fascia creating a hyperirritable spot. When palpated, the pain is local but also refers to another area of the body. Tender points are small palpable nodules ranging in size from 0.25–1.0 cm located in the fascial, muscular, or subcutaneous tissues. When palpated, the pain stays local and does not refer. The main tenet of this paradigm is to place the patient into a position of comfort (POC). The purpose of the POC is to reduce the irritability of the tender point and to normalize the tissues associated with dysfunction.\(^\text{18}\) The PRT paradigm contains a protocol for the treatment of the upper trapezius that would be indicated for treatment of the potential tender points resulting from AC joint injury.

To assess the effectiveness of this treatment, patient-oriented outcome measures will be administered. The outcome measures used were the Disability in the Physically Active Scale (DPAS), the Global Rating of Change (GRC), and the Numeric Rating Scale (NRS). The DPAS is used to assess the patient’s perception of the amount of disability the injury is causing.\(^\text{19}\) The DPAS can be administered at the beginning of each day of treatment. The GRC is used to compare the patient’s perceived effectiveness of treatment.\(^\text{20}\) The GRC can be administered after the treatment session. The NRS is a scale that the patient uses to assess his or her pain\(^\text{21}\) and can be administered before and after treatment. To evaluate the scores attained by the outcome measures, the minimal clinically important difference (MCID) was calculated. The reported MCID for the DPAS was 9 points in acute injuries and 6 points in chronic injuries.\(^\text{22}\) The reported MCID for the GRC was 2 points.\(^\text{20}\) The reported MCID for the NRS was 2 points.\(^\text{21}\)

Based on these treatment paradigms, the application of the two manual therapy interventions will be beneficial for acute low-grade AC joint injuries in comparison with traditional acute treatments. The purpose of this case study is to demonstrate appropriate use of the Mulligan Concept and PRT as appropriate acute treatment for apparent low-grade AC joint injuries.

**Case Study**

**History**

The patient, an 18-year-old male collegiate competitive diver, reported to the athletic training room with a complaint of left AC joint pain. The patient stated he felt a “pop” while performing an overhead shoulder press with free weights during a personal weight training session 30 min before entering the athletic training room. The patient reported having a previous history of left AC joint sprains. The athletic trainer was responsible for taking a history and performing the evaluation.

**Evaluation**

Before the evaluation, the patient completed the Nominal Pain Rating Scale (NPRS), with a score of 4 out of 10. The athletic trainer was unable to administer the DPAS because the evaluation was performed immediately following the injury. Upon evaluation, the patient displayed equal glenohumeral range of motion when compared bilaterally. However, the patient noted pain at the end range of shoulder flexion and shoulder abduction. The patient displayed equal strength with manual muscle testing at a 5/5 when compared bilaterally for glenohumeral flexion, extension, abduction, and adduction, and internal and external rotation. Although the patient could resist the testing, he stated there was pain with resisted forward flexion and abduction of the shoulder. The patient was point tender upon palpation of the left AC joint with a positive piano key sign. For further evaluation, the patient performed horizontal adduction, which was also reported by the patient to be painful. A tender point scan of the surrounding musculature was performed, however no points were found. Due to the clinical findings of the evaluation, the athletic trainer concluded that the patient suffered a type II AC joint sprain. The DPAS was administered before each subsequent visit. The NPRS was administered pre- and posttreatment. The GRC was administered posttreatment.