Acromioclavicular Joint Sprain in a College Football Athlete

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Abstract

Background: This is a clinical case study of an athlete who sustained a grade III acromioclavicular joint sprain. In this case, the athlete sustained the injury by getting hit on the lateral part of his shoulder and arm while he was at his sides. The initial treatment was putting the athlete in a sling for three days, then going the non-operative route by starting a progressive rehabilitation which consisted of range of motion exercises, strengthening exercises, and sport-specific activities.

Anatomy

AC joint, the distal clavicle and the medial facet of the acromion along with the AC ligament, costoclavicular (CC) ligament and the fibrocartilaginous disc make all the AC joint (Lee & Bedi, 2016). There is surrounding musculature that can stabilize this joint and other tendons that cross this joint as well that could be affected during an AC joint sprain. The trapezoid ligament being one, which helps stabilize the AC joint (Lee & Bedi, 2016). Muscles that could be affected based on the grade of the injury is the deltoid and the trapezius. According to Virtanen and colleagues, in a grade V injury the origin of the deltoid and pectoralis major on the acromion are torn (Virtanen et al., 2013). It is important to consider all muscles that either connect to the clavicle or crosses the clavicle, because the change in position in possible for the muscles work and how much laxity is noted during an evaluation. It is also important because it can have indirect effects on other muscles and joints.

Case Report

Patient: The athlete is an 18-year-old male college football athlete who was diagnosed with a grade III acromioclavicular joint sprain. He has no prior history of injury and what factors can cause athletes to experience both fast and safe recovery. The information provided will cover the mechanism of injury, clinical examination, imaging techniques, rehabilitation and its results.

Mechanism of Injury: AC joint sprains are common injuries both in non-contact and contact sports. For this reason, the non-operative treatment was chosen because of the AC ligament to prevent anterior and posterior translation. The Shear test was chosen because it tests the ability of the AC ligament to prevent anterior and posterior translation. The AC joint is diagnosed with a grade III acromioclavicular joint sprain, clavicle fracture, clavicular contusion, acromioclavicular joint distortion test (+), acromioclavicular joint piano key test (+), and palpation revealed no signs of a fracture.

Intervention or Treatment: The athlete was removed from competition and put in a sling for three days. After this initial immobilization of the affected arm, the athlete completed a rehabilitation program over the next three weeks which followed a progression of basic range of motion exercises with the goal of increasing range of motion before moving on to the next part of rehabilitation. During this phase of the rehabilitation program, the athlete used ice and electrical stimulation to decrease edema and helped treat pain, then progressed to the strengthening exercises, which the athlete did until he was ready to be tested for his performance during sport specific activities. After this progression through rehabilitation, he was able to return to play with no issues.

Outcomes: The athlete had great success following this method of rehabilitation which focuses on the basic range of motion exercises, strengthening and testing how well the athlete can perform sport specific exercises before returning to play. At the end of the rehabilitation, the athlete had a full active range of motion in all directions and activity-specific strength.

Uniqueness: This case is unique because it is a grade III sprain that had no damage to any other structures. Another interesting aspect of the case is that this athlete had full strength as well as range of motion and was able to return to play after three weeks of rehabilitation. It was also interesting that he did not need any operative treatment to repair the acromioclavicular ligament.

Conclusions: This clinical case highlights the non-operative process the athlete followed for the diagnosis, to the initial treatment, rehabilitation exercise progression, and return to play of an athlete with a grade III acromioclavicular joint sprain. The athlete in this case did not take much time to recover from this injury.

Introduction

AC joint sprains are a common injury amongst athletes, and it is one of the most common injuries that occurs at the shoulder. It is especially common in contact sports, because the common mechanism of injury has a higher chance of occurring in those sports. In the clinical case that will be discussed in this presentation, the athlete presented with a grade III AC joint sprain. The athlete returned to play in three weeks after following a rehabilitation protocol. This is a unique case as the return to play was faster than expected, and this case is presented to gain more knowledge about this injury and what factors can cause athletes to experience both fast and safe return to play.

Purpose

The purpose of this case report was to evaluate an 18-year-old football athlete who received a grade III AC joint sprain during competition. The athlete returned to play in three weeks after following a rehabilitation protocol. This is a unique case as the return to play was faster than expected, and this case is presented to gain more knowledge about this injury and what factors can cause athletes to experience both fast and safe return to play.

After a second evaluation the following day, it was decided that the athlete would start a return to play protocol consisting of four phases. The first phase would be an immobilization phase, where the athlete would be put in a sling for three days in order to protect the AC joint and prevent further injury. After this first phase, the athlete completed another three phases over a span of three weeks in order to return to play safely. The second phase consisted of AAROM as well as ice and electrical stimulation on the premon testing to treat for pain. These were used for the goal of achieving pain-free full AROM. Once this was accomplished, the athlete would start which consisted of strengthening exercises. This phase was designed specifically for the athlete based on his progression through the rehabilitation exercises and changes were made accordingly. The goal of this phase was to build strength and endurance for the athlete to be able to compete at the level that he was competing at before the injury so he does not risk injuring himself or other players. This phase is important because in order for the athlete to progress to the last phase and be able to compete sport specific activities the athlete will need to have accomplished full AROM as well as returned to full strength. The fourth and final phase consists of integrating sport specific activities and workouts in to their rehabilitation program. It is to ensure that if the athlete has any pain or discomfort when doing these exercises, the activity can be modified to something that is not as strenuous and won’t cause damage to the AC joint. Another reason that sport specific activities was integrated in to the rehabilitation protocol for this athlete was to ensure that the athlete was able to correct any improper form that would predispose him to another injury.

With AC joint injuries being so common among athletes competing in both noncontact and contact sports, it is important to have an in-depth knowledge of the anatomy of the shoulder and surrounding structures, what structures could be affected during different grades of AC joint sprains, the common mechanism for this injury, the different treatment options for this injury based on the grade, and the return to play for the different grades of AC joint sprains. Proper diagnosing of an AC joint injury is also important for medical professionals as they need the information provided to make the return to play decision for the athlete from all injuries. Different grades of the injury all follow the same process of rehabilitation. This presentation has covered research covering the anatomy, a case that represents this and the rehabilitation that the return to play that should be expected for this type of injury.

After the mechanism of injury, the athlete followed that initial immobilization phase for three days with the goal of preventing further damage, as well as the range of motion and strengthening exercises that help both the return to play of the athlete as well as preventing injuries in the future. The final phase, which focused on sport-specific exercises, ensured that the athlete was able to meet the demands of his position at that level of football. The return to play of this clinical case was faster than what the research has said for an AC joint injury of the same grade. However, some of the grades take longer to recover based on the grade and if surgery is used. Surgery is not a good option for the early grades (I – II) and is not always necessary for a grade III, but it has shown to be beneficial for the higher grades (IV – VI) of AC joint sprains. The athlete was out for three weeks before returning to play.

Discussion and Summary

References


