



# A Recommendation of the Treatment for Type III Acromioclavicular Joint Separation

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## Editorial

Injuries to the Acromioclavicular (AC) joint are common in the general population [1,2] as well as in the athletes [2,3]. These injuries begin with the AC ligaments and progress to the Coracoclavicular (CC) ligaments, deltoid muscle, trapezius muscle, and finally, the deltotracheal fascia in sequence [4]. The purpose of this short article is to evaluate type III AC separation based on the biomechanic studies, and to enhance the clinical approach including appropriate decision making of treatment methods. The Rockwood classification [4] is the most widely used. In type III, the AC ligaments and joint capsule, as well as the CC ligaments, are disrupted, and the deltotracheal fascia is injured with 25% to 100% superior displacement of the distal clavicle on radiographic finding. Literature [5] shows that nonoperative treatment for type III AC separation is able to restore function even in the elite-level, overhead-throwing contact athlete. Suspension of the scapula from the thorax is accomplished in erect posture by the levator scapulae and trapezius muscles posteriorly, and from the clavicle by the CC ligaments anteriorly [6]. AC separation may provoke the scapula in a protracted and rotated position, and then synchronous movement of the scapulothoracic function is disrupted. Alterations of the position of the glenoid cavity on which the humeral head moves also affect glenohumeral function negatively [7], and finally, synchronous and coordinated motion of the shoulder girdle is difficult. So type III AC separation may cause variable degree of clinical symptoms and signs, containing persisting pain (from several sources, including fatigue of the trapezius and other scapular muscles, infraclavicular plexus symptoms from downward displacement of the coracoid, impingement in the subacromial region, and joint-incongruity pain [8]), weakness, decreased range of motion, limitations in activities, for example, difficult motion of the arm into a cocking position while throwing, and scapular dyskinesis [9]. Even though it is important to distinguish severe form of type III AC separation from its mild form, in this point it is difficult to look for the patients who could adjust their altered abnormal shoulder biomechanics, because of presence of many factors influencing the clinical results after treatment, such as level of impact of initial trauma, delicate different degree of the damaged anatomical structures, the timing and methods of surgery, adaptation ability to abnormal shoulder girdle biomechanics, and demands of the patient including cosmetic problem. When the ligament reconstruction method is chosen among many operative procedures, strong healing of the grafted ligament-bone is important. During operation, it is recommended that the donor ligament is grafted to the bone with a little bit over-reduced position of the AC joint. Because it has been known that graft-bone healing has not been able to replicate the normal soft tissue-to-bone entheses [10], and healing of reconstructed ligament might elongate more than a normal ligament with each increase in load [11]. In conclusions, nonoperative treatment is optimal for mild form of type III AC separation, whereas operative treatment is recommended for patients with severe form of type III AC separation, especially who are active, such as heavy laborers or overhead athletes.

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Received Date: 13 Jun 2019

Accepted Date: 23 Jul 2019

Published Date: 29 Jul 2019

### Citation:

Tae-Soo Park. A Recommendation of the Treatment for Type III Acromioclavicular Joint Separation. *Clin Surg*. 2019; 4: 2519.

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