Functional outcome of double endbutton technique versus polyster tape technique in management of complete acromioclavicular dislocations. A randomized control trial.

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Abstract

Acromioclavicular (AC) joint dislocation is most commonly a result of a direct impact to the AC joint. The AC joint is surrounded by a capsule and has an intra-articular synovium and an articular cartilage interface. An articular disc is usually present in the joint, but this varies in size and shape. The AC joint capsule is quite thin, but has considerable ligamentous support; there are four AC ligaments: superior, inferior, anterior and posterior. The coracoclavicular (CC) ligament complex consists of the conoid and trapezoid ligaments. Several biomechanical studies showed that horizontal stability of the AC joint is mediated by the AC ligaments while vertical stability is mediated by the CC ligaments. The radiographic classification of AC joint injuries described by Rockwood includes six types .The diagnosis of AC joint dislocation can be based on historical data, physical examination and imaging studies. The Zanca view is the most accurate view for examining the AC joint. The axial view of the shoulder is important in differentiating a type III AC joint injury from a type IV injury. Type I and II injuries are usually treated conservatively. There are differing opinions regarding management of Type III injuries with a shift toward more conservative management. Surgery should be considered for younger more active patients, in individuals who do heavy repetitive lifting and finally in thin individuals with prominent distal clavicles or those who work with their arms above 90 degrees.

Key words

cromioclavicular joint dislocation form a distinct type of shoulder girdle are two groups of surgical treatment A injuries. there

List of abbreviation

AC	Acromioclavicular joint
CC	Coracoclaviculr
ROM	Range of motion
MRI	Magnetic resonance imaging
AP	Antroposterior
RA	Rheumatoid arthritis
PDS	Polydioxa-nonsulphate
UCLA	University Of California , Los Angeles
ST	Semitendenosis
CL	Closed loop
ASES	American shoulder and elbow surgeons.
DASH	Disabilities of the arm, shoulder and hand.
ESSE	European Society of Shoulder & Elbow Surgery
PC	Prothrombin concentration
BUN	Blood urea nitrogen .
CMS	Constant – Murley score
SD	Standard deviation
WD	Weaver Dunn

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INTRODUCTION

The acromioclavicular joint (ACJ) is the articulation between the clavicle and the acromion of the scapula. It is covered by a thin capsule with a meniscus-like disc inside. The joint is reinforced by the surrounding acromioclavicular (AC) ligament. This is further strengthened by the overlying delto-trapezius fascia and the coracoclavicular (CC) ligament. As it is the key linkage between the clavicle and the scapula which couples the glenohumeral and scapulothoracic motion, integrity of the ACJ is important for a smooth coordinated shoulder motion. [(1)].

The acromioclavicular joint is stabilized by two ligaments: the acromioclavicular ligaments control horizontal stability, and coracoclavicular ligaments provide vertical stability [(6)].

Acromioclavicular joint dislocations account for 12% of all dislocations about the shoulder and are five times more common in males than in females. In 1960s.

Allman classified acromioclavicular sprains as grades I, II and III. representing respectively, no involvement, partial tearing, and completedisruption of the coracoclavicular ligaments [(2,8)].

Rockwood has further classified the more severe injuries as grades III- VI [(3,9)]. Types I and II are incomplete injuries and are treated non-operatively. Types III to VI are complete injuries. Majority of the orthopedic surgeons will agree for surgical treatment of types IV–VI ACJ dislocation [(4)].

Standard radiographs of a shoulder trauma series are essential for the initial diagnosis of ACJ injuries. For better delineation of the vertical displacement, a true AP view of the ACJ (Zanca view) with the X-ray beam tilted 10 degrees cephalad centring on the ACJ is sometimes necessary. An axillary view is important for the assessment of AP displacement of the clavicle which could be easily missed . CT scan and MRI are seldom needed in acute ACJ injuries [(1)].

For certain Rockwood type III AC joint separations and all type IV, V, and VI injuries, surgical treatment has been recommended to prevent disabling pain, weakness, and deformity [(5)]. Although more than 60 surgical techniques have been reported, the frequency of failure to maintain reduction after surgical treatment remains high [(6,11)].

There are numerous operative techniques reported in the past. The methods of surgical treatment could be summarised as follows:

Transacromial or intramedullary fixation in terms of K-wires and different pins such as the Steinmann pin, Hagie pin and Knowles pin. This fixation could also be augmented with concomitant tension band wires.

Coracoclavicular indirect fixation with the use of screws, suture anchors, Dacron graft or Mersilene tape.

Open reduction and clavicular plate fixation with the use of different plate systems such as the Balser plate, Wolter hook plate and AO hook plate [(1)].

AIM OF THE STUDY

Our aim was to compare the functional improvement and clinical outcome of AC dislocation using two different surgical techniques namely polyester tape technique and double endbutton technique.

ANATOMICAL CONSIDERATION

The ACJ is a diarthrodial joint between the lateral surface of the clavicle and the medial surface of the acromion. Within the joint is a wedge-shaped fibro-cartilaginous disc that projects into the joint from superior and inferior. The disc is not commonly visualized with routine MR imaging of the shoulder. The ACJ capsule is considered relatively weak with the strongest component at the supero posterior aspect, which is at attachment site of the trapezius muscle [(12)].

Cohen and Magee revealed that the joint has 3 degrees of freedom with 5-8 degrees rotation [(13, 14)]. Johnson RJ revealed that there is a vertical orientation in 36% of population and oblique orientation in 49% [(43)].

Prybyla showed that it has a transverse orientation, and downward forces can cause sheer stresses and disruption of the muscular and ligamentous structures [(42)]

The acromioclavicular joint is stabilized by both static and dynamic stabilizers, the static stabilizers include the acromioclavicular ligaments (superior, inferior, anterior, and posterior), the coracoclavicular ligaments (trapezoid and conoid), and the coraco-acromial ligament [(15)].

The dynamic stabilizers include the deltoid and trapezius muscles. All of the soft tissues at the acromioclavicular joint function in a synergistic, complex manner to provide AC joint stability [(16)].