

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

A thesis submitted for partial fulfillment of M.D. degree in
orthopedic surgery

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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

acromioclavicular 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	Polydioxanonsulphate
UCLA	University Of California , Los Angeles
ST	Semitendinosis
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

List of figures

Figure number		Page
Figure 1	Diagram showing bony and ligamentous structures of acromioclavicular joint.	7
Figure 2	Diagram showing anatomy of acromio-clavicular joint.	7
Figure 3	Diagram showing ACJ in relation to shoulder girdle	11
Figure 4	A: deltoid posterior force of distal clavicle. B : pull deltoid anteriorly of distal clavicle.	12
Figure 5	View showing mechanism of injury to the acromioclavicular (AC) joint. A: direct force B: Indirect forces	16
Figure 6	Acromion-clavicle disjunction (left shoulder), the shoulder is lower and the "piano key"; is positive.	17
Figure 7	View showing Cross body test.	18
Figure 8	View showing O'Brien test	18
Figure 9	Clinical findings in Rockwood AC type V. dislocation	19
Figure 10	Zanca view of the (AC) joint.	20
Figure 11	View showing stress radiograph.	21
Figure 12	Rockwood type III at MRI A : Anteroposterior radiograph B : axial shoulder projection C : Coronal proton density-weighted image D : Coronal T1-weighted water-selective MR image.	24
Figure 13	Diagram showing Rockwood classification of Acromioclavicular Joint dislocation.	25
Figure 14	Conventional radiograph shows widening of the ACJ	28
Figure 15	Plain x ray showing grade 5 injury in a 40-year-old man. Antero-posterior radiograph.	29
Figure 16	Constant score	34
Figure 17	ASES score.	37

Figure 18	Plain x ray showing : A: type III acromioclavicular dislocation. B : Following screw fixation.	42
Figure 19	View Showing Subcoracoid eight-shaped sling	45
Figure 20	View showing Conoid and trapezoid sutures.	45
Figure 21	View showing U –shaped cerclage	47
Figure 22	Plain x ray showing ST allograft reconstruction of the CC joint with two tunnel technique.	50
Figure 23	Plain x ray showing ST allograft reconstruction of the AC joint with single-tunnel technique.	51
Figure 24	Reaming of clavicle and coracoid.	53
Figure 25	Preparation of implant.	53
Figure 26	Passing the endbutton through clavicle and coracoid.	54
Figure 27	Passing the 2 nd endbutton through the CL	55
Figure 28	View showing endbutton turned flat on the clavicle.	55
Figure 29	View showing sutures have been tied locking the clavicular endbutton in place.	56
Figure 30	Two endbutton used for stabilizing the ACJ.	57
Figure 31	Illustration of fixation technique with 2 endbutton.	59
Figure 32	View showing Hook plate fixation for ACJ dislocation	61
Figure 33	Plain x ray showing fixation with a hook plate (postoperative view).	61
Figure 34	Clinical photo showing swelling , abrasion and ecchymosis of the affected shoulder.	68
Figure 35	Clinical photo showing deformity of the affected shoulder.	68
Figure 36	Plain x-ray for grade IV ACJ.	69
Figure 37	Clinical photo showing beach-chair position.	70
Figure 38	Clinical photo showing deltopectoral approach of ACJ.	71
Figure 39	Clinical photo showing partial detachment of deltoid from distal clavicle.	72
Figure 40	Clinical photo showing polyester tape passes through the lateral hole of the clavicle.	72

Figure 41	Clinical photo showing polyester tape passes through the medial hole of the clavicle.	73
Figure 42	Clinical photo showing tightening of the polyester tape after reduction of ACJ.	73
Figure 43	Clinical photo showing 2 limbs of polyester tape.	74
Figure 44	Clinical photo showing closure of the wound, temporary two k- wire fixation.	74
Figure 45	Clinical photo showing endbutton with two ethibond no 5 strands.	76
Figure 46	Clinical photo showing superior endbutton fixed to the clavicle.	76
Figure 47	Clinical photo showing double endbutton fixation of AC joint with ethibond suture.	77
Figure 48	Clinical photo showing postoperative superficial infection	93
Figure 49	Plain x ray showing double endbutton fixation.	93
Figure 50	Plain x ray showing removal of infected superior endbutton.	94
Figure 51	Plain x-ray of dislocated left ACJ (preoperative view).	112
Figure 52	Plain x-ray of reduced ACJ(postoperative view).	112
Figure 53	plain x-ray of reduced ACJ (24 weeks postoperative) .	113
Figure 54	Clinical photo showing lateral elevation at 24 weeks postoperatively.	113
Figure 55	Clinical photo showing internal rotation.	113
Figure 56	Plain x-ray of dislocated right ACJ(preoperative view).	117
Figure 57	Plain x-ray of reduced ACJ(postoperative view).	117
Figure 58	Plain x-rays showing double endbutton fixation of ACJ.	118
Figure 59	Plain x-ray showing removal of superior endbutton.	118
Figure 60	Clinical photo showing lateral elevation at 24 weeks postoperatively.	118
Figure 61	Clinical photo showing internal rotation at 24 weeks postoperatively.	118
Figure 62	Plain x-ray of dislocated left ACJ(preoperative view).	122
Figure 63	Plain x-ray of reduced ACJ(postoperative view).	122
Figure 64	plain x-ray of reduced ACJ (24 weeks postoperative) .	123

Figure 65	Clinical photo showing lateral elevation at 24 weeks postoperatively.	123
Figure 66	Clinical photo showing internal rotation at 24 weeks postoperatively.	123
Figure 67	Plain x-ray of dislocated left ACJ(preoperative view).	127
Figure 68	Plain x-ray of reduced ACJ(postoperative view).	127
Figure 69	Plain x-rays showing double endbutton fixation of ACJ(24 weeks postoperative).	128
Figure 70	Clinical photo showing lateral elevation at 24 weeks postoperatively.	128
Figure 71	Clinical photo showing internal rotation at 24 weeks postoperatively.	128

List of tables

Table number		Page
Table 1	Rochwood classification of acromioclavicular joint dislocation.	26
Table 2	Summery of operative treatment of ACJ dislocation.	41
Table 3	Age distribution in both groups.	80
Table 4	Sex distribution in both groups.	81
Table 5	Affected side distribution in both groups.	81
Table 6	Mode of trauma in both groups	82
Table 7	Dominance in both groups	82
Table 8	Rochwood classification in both groups.	83
Table 9	Occupation in both groups.	83
Table 10	Time interval between onset of trauma and time of operation in both groups.	84
Table 11	Severity of pain at different postoperative times.	84
Table 12	Activity level between both groups at different postoperative times.	85
Table 13	Arm positioning between both groups at different postoperative times.	86
Table 14	Strength of abduction between both groups at different postoperative times.	87
Table 15	Forward elevation between both groups at different postoperative times.	88
Table 16	Lateral elevation between both groups at different postoperative times.	89
Table 17	External rotation between both groups at different postoperative times.	90
Table 18	Internal rotation between both groups at different times.	91
Table 19	Postoperative complications in both groups.	94
Table 20	Constant scoring at different times in both groups.	95
Table 21	ASES scoring at different times in both groups.	96
Table 22	Comparison between our technique and others.	106

List of Charts

Chart number		Page
Chart 1	Severity of pain at different postoperative times.	85
Chart 2	Activity level between both groups at different postoperative times.	86
Chart 3	Arm positioning between both groups at different postoperative times.	87
Chart 4	Strength of abduction between both groups at different postoperative times.	88
Chart 5	Forward elevation between both groups at different post-operative times.	89
Chart 6	Lateral elevation between both groups at different postoperative times.	90
Chart 7	External rotation between both groups at different times.	91
Chart 8	Internal rotation between both groups at different times.	92
Chart 9	Postoperative complications in both groups.	95
Chart 10	Constant scoring at different times in both groups.	96
Chart 11	ASES scoring at different times in both groups.	97

List of contents

Contents	Page number
Acknowledgment	
Abstract	I
List of abbreviations.	II
List of figures.	III
List of tables.	VII
List of charts.	VIII
Contents	IX
Chapter 1: Introduction and aim of the study	1
Chapter 2: Review of literature.	5
Anatomical consideration	5
Biomechanical concepts	9
Pathomechanics	15
Diagnosis and classification	17
Functional scores	32
Managements	39
Complications	62
Chapter 3: Patients and methods.	66
Chapter 4: Results.	79
Chapter 5: Discussion.	98
Chapter 6: Summary and conclusion.	107
Chapter 7: Case presentation	109
Chapter 8 :References	129

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⁾.