

## ORIGINAL RESEARCH

# Assessment of outcome of mersilene tape and ethibond suture in the management of acromioclavicular (AC) injuries

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### ABSTRACT

**Background:** Adolescents that are active often suffer from injuries in and around the shoulder joint, such as acromioclavicular joint injuries. The present study was conducted to assess outcome of mersilene tape and ethibond suture in the management of acromioclavicular (AC) injuries. **Materials & Methods:** 46 cases with acromioclavicular (AC) injuries of both genders presented with isolated, closed, grade III or more as per Rockwood classification system of AC joint disruption were treated with mersilene tape and ethibond suture. All patients were evaluated functionally using Visual analog scale (VAS) and Constant and Murley scores and radiological for re-displacement and fixation. **Results:** Group I had 13 males and 10 females and group II had 12 males and 11 females. The left side was involved in 10 and right side in 13 cases. Etiology was fall in 7 and road traffic accident in 16 cases. VAS score pre-operatively was 6.5, at 6 months was 2.3 and at 12 months was 1.1. Constant Murley score pre-operatively was 52, at 6 months was 84.5 and at 12 months was 92.4. The mean blood loss was 104.2 ml and the duration of surgery was 56.2 minutes. The difference was significant ( $P < 0.05$ ). **Conclusion:** For acute and displaced acromioclavicular joint injuries, reconstruction of the acromioclavicular ligament and the coracoclavicular ligament with mersilene tape may be recommended.

**Keywords:** Acromioclavicular, Constant Murley score, ethibond suture

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### INTRODUCTION

Adolescents that are active often suffer from injuries in and around the shoulder joint, such as acromioclavicular joint injuries.<sup>1</sup> Roughly 9% to 12% of all shoulder injuries are related to the acromioclavicular (AC) joint. Between 25 and 50 percent of these acromioclavicular (AC) separations are attributable to sports-related accidents.<sup>2</sup> The six classes in the Rockwood classification system correspond to these injuries. When treating Grades I and II injuries conservatively, good outcomes are achieved. These injuries indicate strain and partial ripping of supporting ligaments.<sup>3</sup> In most cases, patients with grades IV to VI AC joint injuries should have surgical treatment. Treatment method best suited for patients with grade III injuries is up for dispute.<sup>4</sup> Numerous operational strategies have been put forth. The current course of treatment concentrates on coraco-clavicular (CC) ligament anatomical

reconstruction, which produces better results in biomechanical comparisons.<sup>5</sup> Through anatomically based tunnels in the clavicle, the conoid and trapezoid ligaments are reconstructed using these procedures.<sup>6</sup> The AC joint has been stabilized utilizing a range of techniques, including as suture anchors, hook plates, K-wire trans fixing, reconstruction with autografts, and reconstruction with mersilene tape.<sup>7</sup> However, no gold standard method has been established.<sup>8</sup> The present study was conducted to assess outcome of mersilene tape and ethibond suture in the management of acromioclavicular (AC) injuries.

### MATERIALS & METHODS

The present study consisted of 46 cases with acromioclavicular (AC) injuries of both genders. All patients presented with isolated, closed, grade III or more as per Rockwood classification system of AC joint disruption. All gave their written consent to

participate in the study. Data such as name, age, gender etc. was recorded. Every patient underwent a comprehensive history, a full physical examination, and an assessment of their range of motion. The shoulder joint was examined from the AP, lateral, and Zanca perspectives. Patients were treated with mersilene tape and ethibond suture for ligament

reconstruction. All patients were evaluated functionally using Visual analog scale (VAS) and Constant and Murley scores and radiological for re-displacement and fixation. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

Groups	Group I	Group II
Method	mersilene tape	ethibond suture
M:F	13:10	12:11

Table I shows that group I had 13 males and 10 females and group II had 12 males and 11 females.

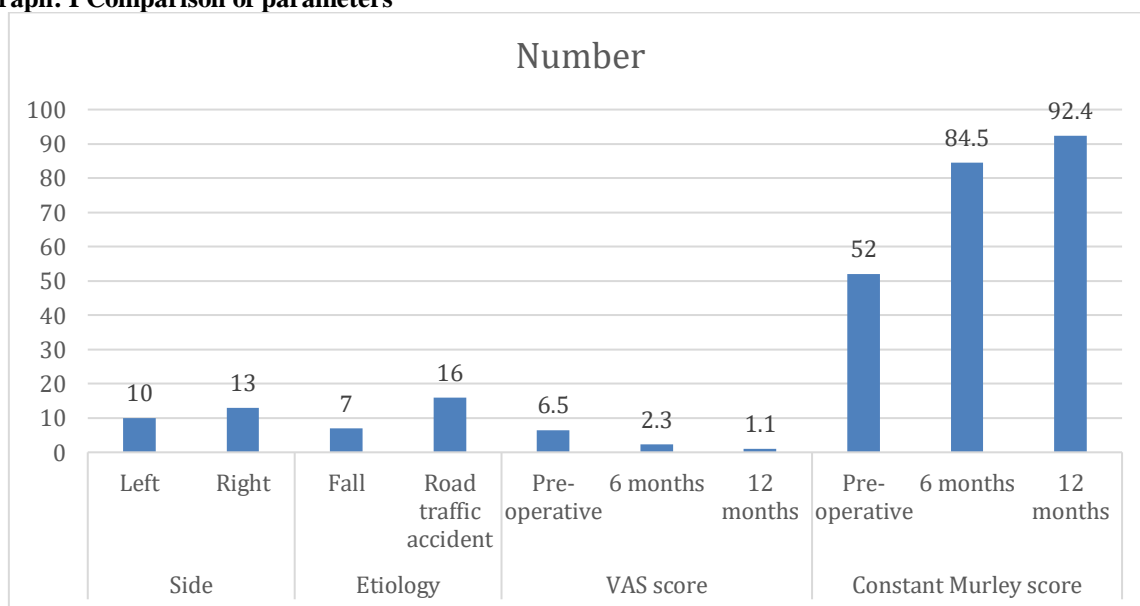
**Table II Comparison of parameters**

Parameters	Variables	Number	P value
Side	Left	10	0.87
	Right	13	
Etiology	Fall	7	0.05
	Road traffic accident	16	
VAS score	Pre- operative	6.5	0.02
	6 months	2.3	
	12 months	1.1	
Constant Murley score	Pre- operative	52	0.01
	6 months	84.5	
	12 months	92.4	
Blood loss (ml)		104.2	-
Duration of surgery (mins)		56.2	-

Table II, graph I show that left side was involved in 10 and right side in 13 cases. Etiology was fall in 7 and road traffic accident in 16 cases. VAS score pre-operatively was 6.5, at 6 months was 2.3 and at 12 months was 1.1. Constant Murley score pre-

operatively was 52, at 6 months was 84.5 and at 12 months was 92.4. The mean blood loss was 104.2 ml and the duration of surgery was 56.2 minutes. The difference was significant (P< 0.05).

**Graph: I Comparison of parameters**



**DISCUSSION**

Even though a variety of surgical techniques have been documented in the literature to treat these

injuries, it has proven challenging to produce a favorable functional outcome in the long run when treating disturbances of the AC joint.<sup>9,10</sup> Surgical

methods include the removal of the clavicle's distal end, K-wires, and Bosworth screw fixation. In 1861, Cooper published the first account of surgically fixing an AC dislocation.<sup>11</sup> The lateral end of the clavicle is removed, and the coraco-acromial ligament is transferred to the remaining portion of the clavicle, as previously reported by Weaver and Dunn.<sup>12</sup> Recurrence of the dislocation was common because the transferred ligament was weaker than the native coracoclavicular ligaments. The present study was conducted to compare mersilene tape and ethibond suture in the management of acromioclavicular (AC) injuries.

We found that group I had 13 males and 10 females and group II had 12 males and 11 females. Huang et al<sup>13</sup> compared the clinical and radiographic outcomes between coracoclavicular (CC) fixation with Mersilene tape and hook plate for acute unstable acromioclavicular (AC) joint dislocation treatment. No significant difference in patient demographics between the two groups in age ( $p=0.709$ ), gender ( $p=0.217$ ), time from injury to surgery ( $p=0.863$ ), and injured side ( $p=1.000$ ). The mean follow-up was 26.2 months (range 24–35 months). Nine cases of reduction loss (36%) and one of distal clavicle osteolysis (4%) were noted in the M group. CC distance improvement in the H group was significantly superior to that in the M group at 3 months (before hook plate removal,  $p<0.001$ ) and 12 months postoperatively (after hook plate removal,  $p=0.004$ ), while subacromial erosions were revealed in nine cases (37.5%) in the H group. No significant difference in operative time ( $p=0.846$ ), complication rate ( $p=1.000$ ), VAS ( $p=0.199$ ), mean UCLA shoulder rating scale ( $p=0.353$ ), and Oxford shoulder ( $p=0.224$ ) scores between the two groups. We observed that left side was involved in 10 and right side in 13 cases. Etiology was fall in 7 and road traffic accident in 16 cases. VAS score pre-operatively was 6.5, at 6 months was 2.3 and at 12 months was 1.1. Constant Murley score pre-operatively was 52, at 6 months was 84.5 and at 12 months was 92.4. The mean blood loss was 104.2 ml and the duration of surgery was 56.2 minutes. Deshpande et al<sup>14</sup> assessed the functional outcome of Rockwood type III-V acute acromioclavicular joint injuries. The study was conducted among ten patients with mean age of 37.25 years with Rockwood Grade III-V Acromioclavicular joint injuries of less than 2 weeks duration treated with reconstruction of acromioclavicular ligament and coracoclavicular ligament using mersilene tape. The assessment of outcome was done in follow-up visits by anteroposterior radiographs and the clinical outcomes were assessed using Constant shoulder Score (CS) and cross-arm test. The mean constant score was 93.1 in the operated shoulder and 95.9 in the normal shoulder. The AC joint was clinically stable with satisfactory range of movements. Patidar A et al<sup>15</sup> in their study twelve patients with AC joint disruption who underwent surgical reconstruction

with ethibond suture and Mersilene tape were assessed. The male to female ratio was 3:1 and the mean age ranged from 26 to 61 years. Surgery took an average of 54 minutes, resulted in a mean blood loss of 100 milliliters, and had an 11-day delay (range: 4 to 14 days). At six and twelve months, respectively, the mean pre-operative VAS score decreased from 6.41 to 2.68 and 1.25 post-operatively. At 6 and 12, the Constant Murley score increased from a mean pre-operative score of 51 to 88.33 and 92.08 post-operatively.

The limitation of the study is the small sample size.

## CONCLUSION

Authors found that for acute and displaced acromioclavicular joint injuries, reconstruction of the acromioclavicular ligament and the coracoclavicular ligament with mersilene tape may be recommended.

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