THE CONSERVATIVE TREATMENT OF ACROMIOCLAVICULAR DISLOCATION

REVIEW AFTER FIVE YEARS

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The treatment of acromioclavicular injuries is controversial; few studies document the late results. We have reviewed 53 patients about five years after conservative management, in nine for subluxation and 44 for dislocation.

Subjective and objective results were satisfactory in all cases except for one with painful subluxation, who was the only patient to change her occupation because of the injury. At review, joint stability was demonstrated by improvement in position and by the very small increase in the coracoclavicular gap on stress radiographs.

The treatment of acromioclavicular joint injuries is controversial. In 1946 Urist reviewed 101 previous papers and reported between 10% and 20% unsatisfactory results following conservative management. These unsatisfactory results were attributed to the position of the joint and this led to the development of different methods of open reduction and internal fixation. Internal fixation has been recommended by some (Bannister 1983) even though the results of surgery may be no better than those of conservative treatment.

Very few studies document the late results following injury. Glick et al. (1977) reported on 35 patients and found no significant functional disability at a mean period of three years after conservative management. Bjerneld, Hovelius and Thorling (1983) reviewed 33 patients six years after injury and came to similar conclusions. We now report a larger group of patients reviewed five years after conservative treatment.

PATIENTS AND METHODS

From 1979 to 1981 a total of 49 patients presented at Leicester Royal Infirmary with Grade III dislocation of the acromioclavicular joint (Allman 1967). In all cases the radiograph showed the lateral end of the clavicle to be above the superior margin of the acromion with an increased distance between the clavicle and the coracoid process. In three cases primary internal fixation by acromioclavicular transfixion was used. One patient could not be traced and another refused to attend the review clinic. The remaining 44 patients had no surgical intervention and form the basis of this report.

These patients were reviewed at a mean of 5.26 years after the injury (range 4.5 to 6.9 years). There were 38 men and six women. Their mean age was 33.3 years (range 19 to 69 years). The cause of injury was contact sport in 25 of the 44 patients, road traffic accidents in 14 and falls in the remainder. All were treated by broad arm slings for three to five weeks followed by mobilisation of the shoulder.

At review, subjective, objective and radiographic criteria were recorded. Any discomfort in the preceding year, difficulty in carrying loads, change in occupation or sporting activities, the type of occupation and the exact reason for any change were documented. The patients were asked about any other complaints and any remarks about shoulder weakness, stiffness or appearance were noted.

The patients were examined and any clinical deformity or local joint tenderness recorded. The range of combined shoulder abduction was measured by goniometer. Carrying capacity was measured by a static distraction test in which the patient stood with upper limbs relaxed, while a progressive downward force was applied (Fig. 1). When the patient felt discomfort in the shoulder the weight registered on a spring balance was recorded for both sides.

At review standard anteroposterior radiographs of both acromioclavicular joints were obtained with a 15°
cephalad tilt as described by Zanca (1971) and these were repeated after loading with 10 lb (4.5 kg). The radiographs were studied to document the position and orientation of the joint, the state of the lateral end of the clavicle and the presence of degenerative change. Ossification in the region of the coracoclavicular ligament was noted to be absent, minor or major. Minor ossification included spurs from the coracoid or clavicle and small discrete ossicles in the region of the ligaments. Major ossification implied complete or almost complete bridging between the coracoid process and the clavicle. The distance between clavicle and coracoid process was measured on both sides before and after loading.

RESULTS

Subjective assessment. Twenty patients had had no recent discomfort in the region of the acromioclavicular joint, but 22 reported some mild discomfort and two had had moderate symptoms. In no patient had the discomfort led to a change of occupation.

Ten patients had had some difficulty in carrying heavy loads. Four had stopped playing rugby football, though in only one of these was the decision clearly related to the shoulder injury alone, the other three also having problems at other sites. No patient complained about the appearance of the shoulder.

Objective assessment. Although 36 patients had a clinically obvious deformity, this was gross in only six. All six women had only mild deformity and none expressed concern about the appearance of the shoulder. Eight patients had local tenderness over the acromioclavicular joint. Five patients had lost over 20° of combined abduction, but only two had a decreased lifting capacity (over 4 kg difference) on the static distraction test when compared to the uninjured side.

Radiographic assessment. The position of the joint on review had improved since the original injury in 21 patients, but in 23 the joint was still dislocated, in 20 it was subluxated and in only one was it in a normal position. The change in distance between clavicle and coracoid process produced by loading normal, subluxated and dislocated joints is shown in Table I. In no patient at review was this change greater than 2 mm.

Radiographic changes were noted in the lateral end of the clavicle in all except four patients. In 30 it was expanded (Fig. 2) and in 10 it had undergone atrophy (Fig. 3), appearing to be tapered as compared with the normal side (Table I). Ossification in the region of the coracoclavicular ligaments was present in 26 patients, minor in 16 (Fig. 4) and major in 10 (Fig. 5).

Patients with subluxation. During the period 1979 to 1981, nine patients had presented with subluxation of the acromioclavicular joint, that is a Grade II injury (Allman 1967). All nine attended for review and were studied in the same way as the dislocations. Eight had, on clinical and radiological examination, essentially normal acromioclavicular joints. One patient, with persistent sublux-

![Fig. 1](image-url)
There is expansion of the lateral end of the clavicle with new bone formation on the inferior aspect.

Atrophy but no other radiographic changes, complained of severe pain and difficulty in lifting. She was the only patient in the entire series in whom the injury had led to a change in occupation.

DISCUSSION

There is still considerable controversy as to the best method of treatment of dislocation of the acromioclavicular joint. Bannister (1983) reviewed the literature and found that around 15% of the patients treated conservatively were reported to have poor results. A number of papers report attempts to restore normal anatomy and thereby to prevent disability, but none of these surgical methods have consistently shown an improvement on the outcome of conservative management. Acromioclavicular transfixion was reported to be unsatisfactory in one third of cases as was coracoclavicular fixation by either a screw or a loop in 16% of cases (Bannister 1983). In addition, an operation itself may extend the associated muscular injuries and in one third of cases the reduction was not maintained.

The few prospective studies which have compared conservative and surgical management have failed to demonstrate that early operation led to improved results. Imatani, Hanlon and Cady (1975) compared 12 conservatively treated patients with 11 who had either acromioclavicular transfixion or a coracoclavicular screw. They used an exacting scoring system to assess results and were unable to establish any significant difference between the two groups. Bannister (1983) reported 58 cases of acromioclavicular dislocation 28 of whom had screw fixation. The results were satisfactory in 90% of conservatively treated cases compared to 82% in operated patients, while the patients treated conservatively returned sooner to work and sport.

Reports on the long-term results are summarised in...
Table II. Papers reporting long-term results

<table>
<thead>
<tr>
<th>Authors</th>
<th>Date</th>
<th>Number of patients</th>
<th>Follow-up (years)</th>
<th>Poor result*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservative treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scott &amp; Orr</td>
<td>1973</td>
<td>50</td>
<td>10</td>
<td>2†</td>
</tr>
<tr>
<td>Rosenørn &amp; Pedersen</td>
<td>1974</td>
<td>13</td>
<td>7 (2 to 10)</td>
<td>1</td>
</tr>
<tr>
<td>Glick et al.</td>
<td>1977</td>
<td>35</td>
<td>3 (1 to 10)</td>
<td>†</td>
</tr>
<tr>
<td>Bjerneld et al.</td>
<td>1983</td>
<td>33</td>
<td>6 (over 2)</td>
<td>2</td>
</tr>
<tr>
<td>Dias et al.</td>
<td>1987</td>
<td>53</td>
<td>5.3 (4.5 to 6.9)</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>185</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Surgical treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ejeskær‡</td>
<td>1974</td>
<td>54</td>
<td>9.6 (6 to 12)</td>
<td>4</td>
</tr>
<tr>
<td>Smith &amp; Stewart§</td>
<td>1979</td>
<td>86</td>
<td>4.4 (1 to 16)</td>
<td>9</td>
</tr>
<tr>
<td>Vandekerckhove et al.‡</td>
<td>1985</td>
<td>41</td>
<td>5.7 (1.7 to 12.2)</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td></td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

* Pain or limitation of movement leading to a change in occupation
† Needed operation
‡ Coracoclavicular wiring
§ Resection of the clavicle and wire transfraction

Table II and demonstrate that the outcome of conservative treatment is comparable to, if not better than, that after operation. Our study also suggests that significant disability is uncommon following conservative management with a broad arm sling. The only patient in our series with functional disability which led to a change of occupation had a painful subluxation. No other patient with subluxation and none with initial dislocation had any significant impairment of function.

The radiographic position of the joint improved in nearly half of our patients with dislocation. Such improvement after conservative management was previously reported by Bannister (1983). In addition, the coracoclavicular interval did not increase significantly on stress radiographs, while 59% of the patients showed ossification in the region of the coracoclavicular ligaments, suggesting that stability may appear spontaneously.

The many papers on this injury suggest that comparable results are obtained regardless of the method of management. Operation not only fails to improve on the results of conservative management but also exposes the patients to possible complications, Ejeskær (1974) reporting an 18% complication rate following coracoclavicular loop fixation in 54 patients.

Our study suggests that a satisfactory outcome can confidently be expected after the conservative management of acromioclavicular injury, with spontaneous improvement in the position of the joint in about half the patients. Until a specific surgical procedure is shown to produce better results consistently, conservative management should remain the treatment of choice.

ACKNOWLEDGEMENTS

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REFERENCES


