



# Acromioclavicular and coracoclavicular cerclage reconstruction for acute acromioclavicular joint dislocations

Alexandre Lädermann, MD\*, Maxime Grosclaude, MD, Anne Lübbecke, MD, DSc, Panayiotis Christofilopoulos, MD, Richard Stern, MD, Thierry Rod, MD, Pierre Hoffmeyer, MD

*Division of Orthopaedics and Trauma Surgery, Geneva University Hospitals, Geneva, Switzerland*

**Background:** Little information is available on the results of the different stabilization techniques described for treatment of acute acromioclavicular (AC) joint injuries. Additionally, no studies have analyzed isometric performance of the shoulder after AC stabilization. The objective of our study was to present functional outcome including isokinetic testing and radiographic evaluation of patients treated with stabilization of AC joint dislocations.

**Patients and methods:** Thirty-seven patients with acute type III to V AC joint disruption underwent open coracoclavicular (CC) and AC stabilization with nonabsorbable sutures.

**Results:** The mean follow-up was  $4.5 \pm 2.5$  years (range, 2-10.5). The mean Constant score (CS) was 96. There were 34 (91.9%) excellent results, 1 good (2.7%), 1 satisfactory (2.7%), and 1 fair (2.7%). The disabilities of the arm, shoulder, and hand (DASH) questionnaire revealed good overall subjective evaluation with a mean of 7 points. The mean visual analog scale (VAS) pain score was 0.8. Patients with a CC distance  $<5$  mm, or an anterosuperior AC reduction less than 50%, showed significantly better results in CS and DASH score in comparison to patients with a subluxated AC joint ( $P < .005$ ). Twenty-two patients agreed to undergo isokinetic evaluation. We were unable to demonstrate any clinically significant difference between the involved and the uninvolved side.

**Discussion:** The described technique of cerclage augmentation offers an attractive alternative in AC joint stabilization, with good to excellent results. In comparison to other techniques, there were no complications related to any implants, no graft donor site morbidity, or need for implant removal.

**Level of evidence:** Level IV, Case Series, Treatment Study.

© 2011 Journal of Shoulder and Elbow Surgery Board of Trustees.

**Keywords:** Acromioclavicular joint dislocation; acromioclavicular stabilization; coracoclavicular cerclage isokinetic strength

All patients gave informed consent and the Ethical Committee of the Geneva University Hospitals approved the study: 07-007 NAC 07-004.

\*Reprint requests: Alexandre Lädermann, MD, Division of Orthopaedics and Trauma Surgery, Geneva University Hospitals, 4 rue Gabrielle-Perret-Gentil, CH 1211 Geneva, Switzerland.

E-mail address: [Alexandre.laedermann@hcuge.ch](mailto:Alexandre.laedermann@hcuge.ch) (A. Lädermann).

It is generally accepted that types I and II acromioclavicular (AC) joint injuries, as classified by Rockwood et al,<sup>24</sup> are best managed conservatively, whereas types IV, V, and VI injuries generally require operative intervention.<sup>16,23,33</sup> The ideal acute treatment for grade III injuries remains

controversial. For treatment of those acute AC dislocations indicated for surgery, a number of reconstructions of the coracoclavicular (CC) ligament complex have been recommended. These include temporary static stabilization of the AC joint with pins or hook plates,<sup>5,8,13,18,25</sup> fixation with a CC screw,<sup>3,32</sup> dynamic stabilization with muscle or ligament transfers,<sup>30,34-36</sup> retention of the joint using a CC loop cerclage,<sup>12</sup> and direct repair of the CC ligaments.<sup>14</sup> For each of these techniques, benefits, disadvantages, and/or complications have been reported. The use of CC cerclage techniques alone have reported to result in persistent malreduction with anterior subluxation, and to lead to erosion of the coracoid and clavicle.<sup>1,17,20</sup> Additionally, stress fractures have been reported with the use of nonresorbable materials.<sup>22</sup>

There is little available in the literature describing the results of different methods of stabilization of acute AC injuries. In addition, isokinetic performance of the shoulder after AC stabilization has not been reported. The objective of our study was to present functional outcome including isokinetic testing, and radiographic evaluation of patients treated with stabilization of types III, IV, and V acute AC joint dislocations by open reduction and nonresorbable AC and CC cerclage augmentation. Our hypothesis was that this technique would avoid the complications related to metallic implants and graft source morbidity; furthermore, the stabilization method described would allow for good control of anteroposterior stability.

## Patients and methods

From May 1998 to December 2006, we reviewed retrospectively the records of all patients with acute AC joint dislocations treated surgically in our institution by open reduction with AC and CC cerclage. The diagnosis of an AC joint dislocation was established clinically and radiologically (anteroposterior and axillary views of the involved shoulder), and classified according to Rockwood et al.<sup>24</sup> The inclusion criteria were patients between 16 and 70 years of age who had been operated upon for an acute (less than 3 weeks after trauma) Rockwood et al type III to V AC joint dislocation, and followed for a minimum of 24 months. The indications for surgery in selected patients with type III injuries included: 1) young patients involved in heavy labor; 2) patients demanding surgical treatment; 3) athletes; and 4) patients with an unacceptable cosmetic deformity. Exclusion criteria included bilateral AC joint stabilization, additional injuries to the same limb, and previous shoulder symptoms or pathologic conditions in the same or contralateral shoulder.

## Operative technique

Surgery is performed in the beach-chair position under general anesthesia, and an interscalene regional block is often added. A saber-cut incision is made from the posterior acromial angle to the coracoid process along Langer's lines.<sup>16</sup> After subcutaneous dissection, a longitudinal incision is made in the deltotrapezial fascia which permits visualization of the clavicle, base of the coracoid process, AC joint, and acromion (Figure 1). The coracoacromial ligament is identified and carefully protected. The base of the coracoid process is

then exposed by blunt dissection, and subcoracoid transfer of 4 nonresorbable Ethibond No. 6 sutures (Ethibond; Ethicon®, Hamburg, Germany) is then performed using a long clamp with a 90° angulation. These sutures are then inserted in the clavicle through two 3.2-mm drill holes made to approximate the normal insertion points of the CC ligaments (Figure 1). The knots are placed under the clavicle to avoid skin irritation. The intra-articular disk is reduced, or removed if torn. The joint is reduced under direct visualization and the CC cerclage is tied tightly. Two AP 2.5-mm drill holes are made 5 mm from the lateral end of the clavicle and 5 mm from the medial end of the acromion. Two Ethibond No. 6 sutures are passed around the AC joint (Figure 2) and tied tightly to reduce anteroposterior translation. The deltotrapezial fascia is carefully repaired and the wound is closed in routine fashion.

## Postoperative care

The limb is immobilized in a sling for 6 weeks. Passive shoulder motion is initiated at 3 weeks postoperative, and exercises against resistance are subsequently added 3 weeks later. Sports and heavy labor are allowed to commence at 12 weeks postoperative.

## Clinical evaluation

In all patients, the clinical and radiological follow-up was performed by 2 physicians who did not participate in the treatment of the patients. Clinical evaluation consisted of a complete examination of both shoulders with special focus on any glenohumeral and/or AC joint pathology. Outcome measures included the Constant score (CS)<sup>4</sup> and the disabilities of the arm, shoulder, and hand (DASH) 30-item self-reported questionnaire.<sup>10</sup> CS results were subdivided into the following categories: excellent (100–90 points), good (89–80 points), satisfactory (79–70 points), and fair (<70 points).<sup>31</sup> The DASH score was rated with 0 points as the best possible score and 100 points as the worst. Additionally, patients were assessed for pain by using a visual analog scale (VAS) pain score graded from 0 (no pain) to 10 points (maximal pain). Each patient received a satisfaction questionnaire and individual satisfaction was classified into very satisfied, satisfied, or unsatisfied.

## Radiographic evaluation

Preoperatively, postoperatively, and at final review, each patient had radiographs of the AC joint. Routine Zanca views<sup>38</sup> of both AC joints were obtained simultaneously on one large cassette with the patient standing, back against the x-ray cassette and the arms hanging unsupported at the side. We did not perform stress radiographs, as the weight of the arm and scapula already places considerable forces on the AC joint, and this maneuver can be painful in the preoperative and postoperative period. Axillary views were also performed with the cassette on the superior aspect of the shoulder, medial enough to expose as much of the lateral one-third of the clavicle as possible. On the anteroposterior radiograph, we measured the distance (in millimeters) between the coracoid process and the clavicle, and this was analyzed by comparing the difference between the operated and contralateral sides. The AC joint was considered to be reduced when there was no displacement compared with the contralateral side, subluxated when there was a moderate (<50%) upward displacement of the clavicle relative to the acromion and dislocated if the

Download English Version:

<https://daneshyari.com/en/article/4074693>

Download Persian Version:

<https://daneshyari.com/article/4074693>

[Daneshyari.com](https://daneshyari.com)