



Available online at  
**ScienceDirect**  
[www.sciencedirect.com](http://www.sciencedirect.com)

Elsevier Masson France  
**EM|consulte**  
[www.em-consulte.com/en](http://www.em-consulte.com/en)



Original article

# Complication rates and types of failure after arthroscopic acute acromioclavicular dislocation fixation. Prospective multicenter study of 116 cases



P. Clavert<sup>a,\*</sup>, A. Meyer<sup>b</sup>, P. Boyer<sup>c</sup>, O. Gastaud<sup>d</sup>, J. Barth<sup>e</sup>, F. Duparc<sup>f</sup>, the SFA

<sup>a</sup> Service de chirurgie du membre supérieur, CCOM, 10, avenue Baumann, 67400 Illkirch-Graffenstaden, France

<sup>b</sup> Chirurgie de l'épaule, groupe Maussins, 67, rue de Romainville, Paris, France

<sup>c</sup> Service de chirurgie orthopédique, hôpital Bichat, AP-HP, 46, rue Henri-Huchard, 75877 Paris, France

<sup>d</sup> Institut universitaire de l'appareil locomoteur et du sport, CHU Nice-Pasteur 2, 30, voie Romaine, CS51069, 06001 Nice cedex 1, France

<sup>e</sup> Centre ostéo-articulaire des Cèdres, Parc Sud Galaxie, 5, rue des Tropiques, Échirolles, France

<sup>f</sup> Service de chirurgie orthopédique et traumatologique, hôpital Charles-Nicolas, 1, rue de Germont, 76031 Rouen cedex, France

## ARTICLE INFO

### Article history:

Received 2 July 2015

Accepted 7 September 2015

### Keywords:

Shoulder  
 Acromioclavicular joint  
 Arthroscopy  
 Complication  
 Failure

## ABSTRACT

**Aims:** To report and analyze both the surgical and radiographic complications associated with anatomic coracoclavicular (CC) ligament procedures and to evaluate the effect of these complications on patient outcomes.

**Patients and methods:** From July 2012 to July 2013, 116 primary anatomic CC ligament procedures (all arthroscopic endobutton fixations) were performed in 14 different centers. Demographic, surgical, subjective, and radiographic data were prospectively analyzed in 14 centers with a minimum follow-up of 12 months.

**Results:** This series included 96 men and 20 women, mean age 37 years old, with a mean delay to surgery of 10 days. No intraoperative complications were reported. There were 11 complications due to hardware failure resulting in a loss of reduction, 1 coracoid fracture, 7 cases of adhesive capsulitis, 2 local infections, 5 cases of hardware pain. There were significant differences in outcomes between patients who did and did not develop complications: mean CS = 71 vs. 93, ( $P < 0.0001$ ). All the parameters of the CS were statistically affected ( $P < 0.0001$ ). Forty-eight patients had persistent dislocation > 150% on an AP X-ray which affected the pain and activity CS ( $P = 0.023$  and  $P = 0.044$ ). No preoperative predictive factors were identified. These patients could not return to the same level of sports activities due to persistent pain.

**Discussion:** Anatomic procedures to treat AC joint dislocation using CC ligament reconstruction resulted in an overall complication rate of 22.4% and influenced the return to sports. Good to excellent outcomes were reported in patients without complications.

**Clinical series:** Level of evidence 4.

© 2015 Elsevier Masson SAS. All rights reserved.

## 1. Introduction

There are sixty surgical techniques to treat acromioclavicular (AC) dislocations [1], and none of them has been recognized as a gold standard. At present arthroscopic techniques focus on anatomic reconstruction of the AC joint and the coracoclavicular (CC) ligaments. The rate of surgical complications in the literature following arthroscopic reconstruction of the CC ligaments to

stabilize acromioclavicular dislocations (ACD) varies from 12.5 to 27.1% [2], and can reach 40% if postoperative loss of reduction is taken into account [3]. Complications are usually intraoperative and due to difficulties associated with the surgical techniques and the hardware. Moreover, although the short and/or long term functional consequences of these complications can be significant, their radiographic and clinical consequences have not been systematically evaluated.

The hypothesis of this systematic analysis of complications is that poor clinical and radiographic results of surgery for ACD are correlated with unsuccessful AC joint reconstruction due to the development of complications related to hardware or the surgical

\* Corresponding author. Tel.: +33 88 55 21 51.

E-mail address: [Philippe.clavert@chru-strasbourg.fr](mailto:Philippe.clavert@chru-strasbourg.fr) (P. Clavert).

**Table 1**  
Epidemiological series of acute ACD.

N	116
Mean BMI	> 25
Limb injured on dominant side	43%
Sports activities	None 10%
	Leisure 56%
	Contact 34%
Professional activity	Manual 51%
Accident	Sports 57%
	Road accident 38%
Rockwood stage	Type III 48%
	Type IV 30%
	Type V 22%

technique. The main goal of this study is to identify clinical and radiographic complications, then correlate them with the final outcome.

## 2. Patients and methods

This prospective study was performed in 14 centers between July 2012 and July 2013 and included 116 patients with severe ACD (Rockwood type III, IV and V [4]). Injuries were considered to be acute if surgery was performed within 21 days after injury. Exclusion criteria were the presence of a fracture, associated tears (torn rotator cuff, labral tears) or glenohumeral arthritis. The choice of surgical technique for CC stabilization was left up to the surgeon and AC stabilization was optional.

All patients underwent clinical (Visual Analogic Scale [VAS]) for pain, Constant score (CS) [5] and a surgical evaluation and quick DASH score and radiological follow-up (AP X-ray, lateral axillary view and comparison with the contralateral side) with a minimum follow-up of 1 year.

The main judgment criteria were the clinical results (EVA and CS) in patients who presented with a clinical and/or radiological complication compared to the rest of the population.

Statistics: descriptive analysis was performed for all the variables. Because of the small number of patients in each group, the results were compared using the non-parametric Mann and Whitney test and the Kruskal-Wallis test. The Spearman correlation coefficient was used for quantitative variables. Significance was determined in relation to the main judgment criteria (variations in the Constant score) and  $P < 0.05$  was considered to be significant. All statistical analyses were performed using XIStat software (Addinsoft, Paris, France).

## 3. Results

This cohort of 116 patients included 96 men (83%) mean age 37 years old (range 20–67), who were operated on a mean 10 days after the initial injury (1–21 days). The other epidemiological data are presented in Table 1. The overall rate of complications was 20.7%.

### 3.1. Intraoperative complications

No general complications (vascular or nerve injuries), or specific complications related to the hardware or the surgical technique were reported.

### 3.2. Complications related to the surgical technique

We identified three cases of hardware failure, with only one revision and good final clinical and radiological results (CS=91 points at 1 year); the CS at the final follow-up in the two patients who did not undergo revision surgery was good (88 and 88.5



**Fig. 1.** Clavicular fracture observed six months after surgery.

points). No specific predictive factors were identified in the three patients who presented with type 3 ACD.

The following hardware-related complications were identified at the final follow-up:

- cases of cutaneous hardware-related pain (superior endobutton fixation and knot);
- 1 displaced fracture of the coracoid process identified during the 6-month follow-up consultation, which was not present on the immediate postoperative radiograph (Fig. 1);
- 8 cases of loss of reduction of the dislocation. No specific event or accident was reported by the patients in these cases.

Once again, no predictive factors were identified.

### 3.3. General complications

The general complications were:

- 2 immediate postoperative infections were diagnosed and treated by debridement/lavage and appropriate antibiotics with a normal clinical outcome and healing of the infection;
- 7 cases of algodystrophy and type I complex regional pain syndrome;
- 1 case of erosion of the distal quarter of the clavicle. We also observed the development of ossifications of the coracoclavicular ligaments in one patient with no clinical consequences (Fig. 2).

### 3.4. Analysis of clinical failures

With defined clinical failures as a final Constant score of less than 85 points. This included 32 patients in our series whose mean Constant score was 71.5 points compared to 93 points for the rest of the series. All of the items on the Constant score were affected (Table 2). The mean Quick DASH score was also statistically higher in patients compared to that of the overall series (20.4 vs. 2.3 [ $P < 0.0002$ ]).

None of the factors such as age, gender, BMI, professional activity, delay to surgery, the type of injury or the type or length of immobilization was found to be a predictive factor for the development of these complications.

An unsatisfactory outcome did not significantly affect the return to work ( $P = 0.076$ ), but did affect the return to sports ( $P = 0.003$ ).

Download English Version:

<https://daneshyari.com/en/article/4081024>

Download Persian Version:

<https://daneshyari.com/article/4081024>

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