

SURGICAL TREATMENT OF ALLMAN TYPE III ACROMIO-CLAVICULAR DISLOCATION A LONG-TERM FOLLOW-UP STUDY

V. DE TULLIO, R. ORSI, M. CELENZA

The authors report the results of a long-term follow-up study of surgical treatment of Allman type III acromioclavicular dislocation. Despite numerous publications regarding the validity of closed treatment, the authors believe, in accordance with the anatomic functional and pathological knowledge, that open treatment is justified not only in young people but in older ones too. Among the different techniques, the authors prefer acromioclavicular fixation with threaded wires because the operation time is short and the functional results are good with the lowest number of complications.

Keywords : acromioclavicular dislocation ; shoulder.

Mots-clés : luxation acromio-claviculaire ; épaule.

INTRODUCTION

Acromioclavicular dislocation is very frequent (according to Gui, 8.6% of all dislocations, 12% of dislocations involving the shoulder), and it often occurs in young people, with a ratio of men to women of 5 to 1 (9, 14).

Horizontal stability is provided by the acromioclavicular ligament, while vertical stability comes from the coracoclavicular ligaments (7, 12). Different classifications of acromioclavicular injuries have been suggested. We have followed Allman's classification, distinguishing 3 types of injuries (1). Our study covers Allman type III dislocation, where there is a rupture of the acromioclavicular and coracoclavicular ligaments with dislocation of the acromioclavicular joint.

The choice of treatment is still debatable. Many authors prefer closed treatment (2, 11, 18), Some prefer to operate all patients, and others still select

closed treatment in particular cases only. Our staff has chosen open treatment and, among the different techniques, we adopted the acromioclavicular fixation with threaded Kirschner wires (6, 13).

The purpose of our study was to evaluate the validity of the choice of treatment and the complications (i.e. arthritis), impingement and cuff tears that occurred following the operation.

MATERIAL AND METHODS

From 1977 to 1986 we examined, in our department, 98 patients (80 men and 18 women) with type III acromioclavicular dislocation. The average age at the time of injury was 30.4 years for men (range 14 to 77) and 44.5 years for women (range 19 to 66). Automobile accidents were the most common cause of the injury (55 cases), followed by sports injuries (24 cases), and others (19 cases).

We used Robert's exposure of the acromioclavicular joint : we removed the intraarticular meniscus and we achieved the reduction and fixation. In 80 patients we used 2 threaded Kirschner wires, in 15 patients 3 threaded K-wires, in 2 one wire and cerclage and in one patient we used 2 threaded wires and 1 cerclage. We did not repair the acromio- and coracoclavicular ligaments. A Desault bandage was applied for postoperative immobilization for 30 days. The wires were removed by outpatient operation after 3 months in 85 patients, after 4 months in 7 and after 2 months in 6.

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RESULTS

Sixty patients were available for review (54 men and 6 women) with an average follow-up of 10.2 years (6 to 15 years). We followed clinical parameters suggested by Glorion and Delplace : pain, movement, strength and overall evaluation (excellent 11-10 points ; good 9-8 p. ; fair 7-6 p. ; poor < 5 p.) (8). We made stress films of both shoulders in order to evaluate recurrence, calcification and arthritis.

The following complications arose as a result of open treatment :

- wire loosening without long-term effects in 13 patients ;
- recurrence of the dislocation in 3 patients (2 women and 1 man) ;

A dislocation occurred after 4 months from the first operation and after 2 months from the removal of the fixation in a patient having a fixation with 2 Kirschner wires and 1 cerclage ; recurrence after 6 months from the first operation and after 3 months from removal, occurred in 2 patients having a fixation with 2 K-wires. The first two patients agreed to a resection of the distal clavicle, while the third refused the operation.

The overall results were : excellent 49 (82%), good 8 (13%) and poor 3 (5%). The parameter causing a reduction of the score in «good cases», was pain on heavy labor or during prolonged overhead position. Anyway, all patients returned to their normal working and sporting activities. A jiu-jitsu athlete, having a fixation with 2 threaded K-wires, returned to the sport after removal of the wires and continued for many years ; the clinical result is excellent after 14 years (in spite of the violence of his sport).

DISCUSSION

In the literature there is still controversy between closed and open treatment of type III acromioclavicular dislocations (4, 5, 6, 8, 15, 17, 18). In accordance with anatomofunctional and anatomopathological knowledge (7, 13), we believe that closed treatment causes a high rate of recurrence,

with pain due to fatigue of the shoulder girdle muscles, or incongruity between the distal end of the clavicle and the acromion, or subacromial impingement (12).

From the main four open treatments (primary acromioclavicular fixation — coracoclavicular ligament repair and coracoclavicular fixation — distal clavicle excision — muscle transfer) we chose the easiest and most rapid one, with a low rate of immediate and late complications. We have no experience with other treatments, but we think that it is quite difficult to repair coracoclavicular ligaments. Lancaster *et al.* compared the results of acromioclavicular fixation and those of coracoclavicular fixation and found a higher rate of minor complications with the former, but a higher rate of recurrence with the latter (10).

Among the poor results we noted that recurrence might be attributed to the early removal of the fixation device. When there was pain in the course of particular activities, it could be attributed to a stage 1 impingement with x ray evidence of acromioclavicular arthritis, very frequent in patients without previous acromioclavicular dislocation. Taft *et al.* noted a higher rate of post-traumatic arthritis (16).

We therefore continue to use open treatment for type III dislocations ; in some cases since 1990 we have been using Shapiro staples instead of K-wires : the short follow-up seems good.

In conclusion, we agree with Rockwood, who states that in a person doing heavy labour and in young people under 20 years and up to 25, open treatment may certainly be used, and it may even be used in older patients (14).

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SAMENVATTING

V. DE TULLIO, R. ORSI, M. CELENZA. *Chirurgische behandeling van de acromioclaviculaire luxaties, type III, in de classificatie van Allman.*

De auteurs bespreken de resultaten op lange termijn van de chirurgische behandeling van de acromio-claviculaire luxaties, type III, volgens de classificatie van Allman. Ondanks meerdere publicaties, waarin de onbloedige behandeling van deze luxaties verdedigd wordt, zijn de auteurs ervan overtuigd, rekening houdend met de huidige anatomo-funktionele en pathoog-anatomische kennis, dat een chirurgische behandeling noodzakelijk is, niet alleen bij jongere patienten, maar ook bij een oudere bevolking.

Onder de verschillende procedures gaat de voorkeur van de auteurs naar de acromio-claviculaire fixatie, met gedrade pennen, rekening houdend met de korte duur van de operatie en de goede funktionele resultaten met een minimaal aantal complicaties.

RESUMÉ

V. DE TULLIO, R. ORSI, M. CELENZA. *Traitement chirurgical des luxations acromio-claviculaires, stade III d'Allman. Évaluation à long terme.*

Les auteurs présentent les résultats d'une revue à long terme du traitement chirurgical des luxations acromio-claviculaires de type III. Même s'il y a beaucoup de publications concernant la validité du traitement orthopédique, les auteurs estiment que, sur la base des données anatomo-physiologiques et anatomo-pathologiques, le traitement sanglant est justifié non seulement chez les jeunes mais aussi chez des sujets plus âgés. Parmi les différentes techniques, les auteurs préfèrent la fixation acromio-claviculaire par broches filetées : c'est une opération rapide et les résultats fonctionnels sont favorable avec un minimum de complications.